ITC publications

Trade promotion handbooks

Introduction to Export Market Research — 1978
Duty Drawback on Exports — 1979
Export Product Development — 1979
Going into Trade Fairs — 1982
Case Studies on Selected Export Promotion Methods for Small and Medium-sized Firms — 1983
The Export Performance of the Republic of Korea: 1961-1982 — 1984
The Financing of Exports from Developing Countries — 1984
International Procurement: A Training Manual — 1985

Directories and bibliographies

Annotated Bibliography of Product Serials — 1977
A Guide to the World's Foreign Trade Statistics — 1977
Annotated Bibliography of Country Serials — 1978
Sources of Commodity and Product Price Information — 1981
ITC Core List: Basic Documentation for Trade Information Services — 1982
World Directory of Trade Promotion Organizations and Other Foreign Trade Bodies* — 1985
World Directory of Training Opportunities in Import Management and Procurement Techniques* — 1985
International Trade Documentation: Annotated List of Publications Received by ITC — Monthly

Market surveys

Marketing of General Purpose Machine Tools — 1976
The Oil-exporting Developing Countries: Venezuela; Iran; Nigeria — 1977, 1978
Major Markets for Unmanufactured Tobacco — 1978
International Trade in Tropical Aquarium Fish — 1979
Fresh Horticultural Products in Selected Gulf Countries — 1980
Survey of Selected Middle Eastern Markets for Wood-based Building Materials from Developing Countries — 1980
The Market for Tools from Developing Countries — 1980
The Scope for Increased Trade Between Developing Countries in Vegetable Oils, Other Oilseed Products — 1981
The Market for Dehydrated Vegetables in Selected European Countries, the USA and Japan — 1981
Major Markets and Suppliers for Hand-knotted Carpets. Vols. I, II and III — 1981, 1983
Pilot Survey of the World Seaweed Industry and Trade — 1981
Spices: A Survey of the World Market. Vols. I and II — 1982
Markets for Selected Medicinal Plants and Derivatives — 1982
The World Market for Fruit Juices with Special Reference to Citrus and Tropical Fruit Juices — 1982
Major Import Markets for Wooden Household Furniture — 1982
Unglazed and Glazed Ceramic Tiles — 1983
Republic of Korea: A Market for Products from Other Developing Countries — 1983
The Development of Trade in Selected Agricultural Machinery and Implements Among Developing Countries — 1983
Shrimps: A Survey of the World Market — 1983
Selected Markets for Rabbit Meat — 1983
The World Market for Horsemeat — 1983
Rice: A Survey of Selected Markets in the Middle East — 1984
Gelatin: An Overview of the World Market with Special Reference to the Potential for Developing Countries — 1984

Monographs on trade channels*

Selected Household Textiles in the United Kingdom — 1979
Leather Clothes and Accessories in Austria — 1979
Cordage, Rope and Twine in the United Kingdom; Denmark; Belgium; USA; Netherlands — 1979, 1980, 1981
Household Utensils in Denmark — 1980
Precious and Semi-precious Stones in Belgium; F.R. of Germany — 1980
Hand-knotted Carpets in F.R. of Germany; Italy — 1980, 1984
Cutlery and Metal Tableware in the United Kingdom — 1980
Wooden Joinery in Netherlands; Canada — 1981, 1982
Selected Builders' Wood-based Products in the United Kingdom — 1981
Sports Goods in Netherlands; Belgium — 1981, 1983
Ceramic and Porcelain Tableware and Ornaments in the United Kingdom — 1981
Handbags, Travel Goods, Small Leather Goods in Canada; USA —
Canned Fish and Shellfish in F.R.
Jewellery in the Netherlands; Be
Leisure Shirts, Blouses, Dresses
Flatware in the USA — 1985
Rattan Furniture in the USA — 1985

Short market surveys*

Crustaceans in the F.R. of Germany — 1977
Frogs' Legs with Reference to the French Market — 1980
Dates in the United Kingdom, France and Italy — 1982
Knitwear in the United Kingdom and France: the Nordic Countries — 1983
Imitation Jewellery in the United Kingdom and France — 1984
Precious and Semi-precious Stones in the United Kingdom — 1984

Monographs on trade functions*

Some Aspects of Packaging for Transport — 1977
Guidelines for Strengthening Import-oriented Trade Information Activities in Developing Countries — 1980
Basic Guidelines on Government Procurement — 1981
Basic Guidelines on Materials Management for Imported Supplies and Equipment — 1982
Packaging Graphic Design for Exports — 1982
Chambers of Commerce under Public and Private Law — 1982
Organization and Structure of Chambers of Commerce — 1982
Income-generating Activities of Chambers of Commerce — 1982
Making the Most of Trade Fairs — 1982
The Czechoslovak Chamber of Commerce and Industry: Its Legal Status and Organization — 1982
Income-generating Activities of the Hungarian Chamber of Commerce — 1982
The Role of Packaging in the Distribution System — 1983
The Preparation of Publications and Publicity Material: A Guide for Chambers of Commerce — 1983
The Role of Chambers of Commerce in Import Management — 1983
Export Packaging: Calendar of Selected Exhibitions and Conferences (1985-88) — 1984
Comparative Analysis of Institutional Systems for Export Promotion in Latin America and the Caribbean — 1984
Guidelines for the Formulation of Export Development Programmes — 1985
Core Papers on Import Management — 1985

Training materials**

** ITC training materials have been designed for and are available only to training institutions with courses in foreign trade. The cost of each pack is $250 for training institutions in developing countries and $500 for those in developed countries, plus postage.

Export Promotion (pack)** — 1976
Export Marketing (pack)** — 1976
Trade Representation Abroad (pack)** — 1978
Export Product Development (pack)** — 1979
Trade Information Exercises (kit)** — 1980
Tosca Carpets (business game)** — 1981
Export Procedures (pack)** — 1982
Devexport (business game)** — 1982
Export Marketing Research (pack)** — 1983
Advisory Skills in Export Marketing (pack)** — 1984

Other

ITC: Promoting Trade of Developing Countries — 1981
Export Potential of Nontraditional Products: The Least Developed Countries — 1983
International Trade FORUM 20-year Index — 1984
ITC Twenty-year History: 1964-1964 — 1984
Import Promotion Offices — 1985

* Distribution limited to relevant specialized institutions.

ITC publications are available from the International Trade Centre UNCTAD/GATT, Palais des Nations, 1211 Geneva 10, Switzerland. They are free of charge to public and private trade-related institutions and firms in *developing countries* (requests should be sent on business letterheads) and are available on an exchange basis for libraries and similar organizations. Most ITC publications are issued in English, French and Spanish versions. Titles that are out of print (not listed above) can usually be consulted in the ...raries of government or trade bodies. Please write for ...ission to reproduce or translate material from ITC ...ications, except for brief quotations for reviews.

International Trade Centre
UNCTAD GATT

ANIMAL FEED INGREDIENTS: A STUDY OF SELECTED MARKETS

The preparation and publication of this study was financed by a grant to the International Trade Centre UNCTAD/GATT from the Government of the Netherlands.

Geneva, 1984

Abstract for trade information services

* IP85-11 1984 SITC 081
ANI

INTERNATIONAL TRADE CENTRE UNCTAD/GATT
Animal feed ingredients: a study of selected markets
Geneva, xix, 244 p.

Market study on animal feed in the EEC, Spain, Portugal, Japan, Korea R, Philippines, Saudi Arabia, Algeria, Morocco, Nigeria, Tunisia, Mexico, Venezuela - gives overall introduction and summary with notes on international trade, world supply and demand, market and marketing factors for feed ingredients and summary findings for individual markets covered; for each country gives comments and data on the livestock sector, compound-feed supply and demand, compound-feed manufacturing industry, transport aspects, trade barriers, market prospects for developing countries, and conclusions and recommendations; also lists trade associations.

CCCN 23

Engl, Fren, Span $50.00 (Free to developing countries)

Contents

		Page
Chapter 1	Introduction and general summary	1
A.	Scope, purpose and methodology of the study	1
B.	Product description	2
C.	The international trade in feed ingredients	3
1.	Introduction	3
2.	World supply and demand	4
3.	Trade channels and practices	8
4.	Trade barriers	8
5.	Factors affecting supply and demand in developing countries	8
6.	Price formation	9
7.	Purchasing criteria	9
8.	Infrastructure	10
D.	Summary of findings	10
1.	General	10
2.	Individual markets	13
(a)	European Economic Community (EEC)	13
(b)	Spain	14
(c)	Portugal	15
(d)	Japan	16
(e)	Republic of Korea	17
(f)	Philippines	17
(g)	Saudi Arabia	18
(h)	Algeria	19
(i)	Morocco	20
(j)	Nigeria	21
(k)	Tunisia	22
(l)	Mexico	22
(m)	Venezuela	23
Chapter 2	European Economic Community	25
A.	Introduction	25
1.	General data (1982)	25
2.	Market overview	26
B.	The livestock sector	26
1.	Demand fer livestock products	26
2.	Livestock production	27

		Page
C.	Supply of, and demand for, feeds	36
1.	General	36
2.	Imports	41
3.	Exports	43
D.	The compound-feed industry	43
1.	Overview	43
2.	The industry in individual countries	45
3.	Compound-feed production	47
4.	Trade channels	51
5.	Pricing	51
6.	On-farm mixing	52
E.	EEC legislation on feedstuffs	52
1.	General	52
2.	EEC directive on straight feedstuffs	53
3.	Marketing of compound feeds	54
4.	Micro-organism protein and non-protein nitrogen	54
5.	Undesirable substances and products in feedstuffs	54
6.	Additives	55
F.	Infrastructure, transport and storage	55
G.	Trading practices, contracts and pricing	56
H.	Tariff and non-tariff barriers	56
I.	Conclusions and recommendations	57
Annex I:	EEC: selected addresses	58
Annex II:	EEC directives on feedstuffs	63
Annex III:	EEC tariffs on feed ingredients	64
Chapter 3	Spain	66
A.	Economic and social indicators	66
1.	General country data (1983)	66
2.	Economic indicators (1982)	66
B.	Livestock sector	67
1.	Livestock inventory	67
2.	Livestock products	69
C.	Supply of, and demand for, compound feeds	71
1.	Compound-feed production	71
2.	Supply of feed ingredients	72
3.	Imports and exports	77
4.	Government policy	78

Page

D. The compound-feed industry 78

1. Overview 78
2. Procurement systems and trade channels 79
3. Quality standards and control 79

E. Transport 79
F. Trade barriers 80

1. Tariff barriers 80
2. Import licences 80
3. Sea transport 80
4. Health and sanitary regulations 80

G. Market prospects for developing countries 81
H. Conclusions and recommendations 81

Annex: Spain: selected addresses 83

Chapter 4 Portugal 84

A. Economic and social background 84

1. General country data 84
2. Economic indicators 84

B. Livestock sector 85

1. Overview 85
2 Pigs 87
3. Poultry 87
4. Cattle 87
5. Sheep and goats 87

C. Supply of, and demand for, compound feeds 88

1. The compound-feed industry and production 88
2. Feed ingredients 89
3. Quality standards and control 91

D. Imports of feed ingredients 92

1. Overview 92
2. Sources of supply 92
3. Prices 92
4. Import channels and procedures 94
5. Infrastructure 95
6. Tariff and non-tariff barriers 95
7. Prospects for developing country suppliers 96

E. Summary 96

Annex: Portugal: selected addresses 98

		Page
Chapter 5	Japan	100
A.	Economic and social background	100
B.	The livestock sector	100
1.	General	100
2.	Beef and veal	102
3.	Dairying	102
4.	Pigs	103
5.	Poultry	103
C.	Supply of, and demand for, feeds	104
1.	Overview	104
2.	Roughage	106
3.	Industrial by-products	106
4.	Government policies	108
5.	Imports of feed ingredients	109
6.	Exports of feed ingredients	111
D.	The compound-feed industry	111
1.	Overview	111
2.	Pricing	111
3.	Regulations	111
4.	Production	112
5.	Procurement systems	112
6.	Future developments	112
E.	Trade channels and marketing systems	112
F.	Infrastructure: transport, handling and storage	114
G.	Trading practices, contracts and pricing	114
H.	Tariff and non-tariff barriers	115
I.	Prospects for imports from developing countries	115
J.	Conclusions and recommendations	116
Annex I:	Japan: selected list of importers of feed ingredients	117
Annex II:	Japan: policies affecting the livestock sector	119
Annex III:	Japan: import tariffs on feed ingredients	120
Chapter 6	Republic of Korea	121
A.	Economic and social indicators	121
B.	Livestock sector	121
1.	Overview	121
2.	Pigs	122
3.	Cattle	123
4.	Poultry	123

Page

C. Supply of, and demand for, feeds 124

1. General 124
2. Domestic feed ingredients 124
3. Imports of feed ingredients 125

D. The compound-feed industry 128

1. Overview 128
2. Production 130
3. Feed ingredients 130
4. Feed prices 130
5. Quality standards and control 130
6. On-farm mixing 133

E. Trade infrastructure, transport and storage 133
F. Trading practices, procurement systems and contracts 133
G. Tariff and non-tariff barriers 134
H. Prospects for imports from developing countries 134
I. Conclusions and recommendations 135

Annex I: Republic of Korea: selected addresses 136
Annex II: Some quality requirements of the Korea Feed Association 137

Chapter 7 Philippines 139

A. Economic and social indicators 139

1. General country data 139
2. Agriculture 139

B. The livestock sector 140

1. General 140
2. Pigs 140
3. Cattle 140
4. Poultry 142

C. Supply of, and demand for, feeds 142

1. General 142
2. Domestic feed ingredients 142
3. Exports 145
4. Imports 146

D. The compound-feed industry 147

1. Overview 147
2. Production 148
3. Quality standards and control 150

Page

E. Trade channels and practices 151

1. General 151
2. Handling, distribution and storage 151
3. Trade practices 152
4. Prices 152
5. Tariff and non-tariff barriers 152

F. Prospects for imports from developing countries 153
G. Conclusions and recommendations 153

Annex I: Philippines: selected addresses 154
Annex II: Feed regulations and rules 156
Annex III: Philippines: duties on imported feed ingredients 157

Chapter 8 Saudi Arabia 160

A. Economic and social background 160

1. General country data 160
2. Economic indicators 160

B. Livestock sector 161
C. Supply of, and demand for, compound feeds 162

1. Overview 162
2. Supply of feed ingredients 163
3. Government policy 164
4. Imports 165
5. Exports 166
6. Prices 166

D. The compound-feed industry 166

1. General 166
2. Processing of feed ingredients 167
3. Quality standards and controls 168

E. Trade channels and practices 168

1. Overview 168
2. Import barriers and prospects for developing countries 168

Annex: Saudi Arabia: feed manufacturers in the private sector 169

Page

Chapter 9 Algeria 172

A. Economic and social background 172

1. General country data 172
2. Economic indicators 172

B. Livestock sector 173
C. Supply of, and demand for, compound feeds 174

1. Production 174
2. Feed processing and formulation of compound feed 175
3. Quality standards and control 176

D. Feed ingredients 176

1. Domestic supplies 176
2. Imports 176

E. Tariff and non-tariff barriers 178
F. Prospects for imports from developing countries 179
G. Summary 179

Annex: Algeria: selected addresses 181

Chapter 10 Morocco 182

A. Economic and social background 182

1. General country data 182
2. Economic indicators 182

B. Livestock sector 183
C. Supply of, and demand for, compound feeds 184

1. Compound-feed industry 184
2. Feed ingredients 185

D. Domestic supplies of, and foreign trade in, feed ingredients 186

1. Domestic supplies and imports 186
2. Exports 190

E. Summary 191

Annex: Morocco: selected addresses 192

Page

Chapter 11 Nigeria 195

A. Economic and social background 195

1. General country data 195
2. Economic indicators 195

B. Livestock sector 195
C. Supply of, and demand for, compound feeds 196

1. The compound-feed industry 196
2. Demand for compound feed and main industrial problems 199

D. Feed ingredients 199

1. Domestic supplies 199
2. Imports 200
3. Prices 201
4. Import procedures 203
5. Infrastructure 205

E. Tariff and non-tariff barriers 205
F. Prospects for imports from developing countries 205
G. Conclusions and recommendations 206

Annex: Nigeria: main manufacturers of compound feeds and importers of ingredients 207

Chapter 12 Tunisia 208

A. Economic and social background 208

1. General country data 208
2. Economic indicators 208

B. Livestock sector 208
C. Supply of, and demand for, compound feeds 209

1. Production 209
2. Quality standards and control 211

D. Feed ingredients 212

1. Overview 212
2. Domestic supplies 212
3. Imports 214
4. Exports 215

E. Tariff and non-tariff barriers 216
F. Prospects for imports from developing countries 216
G. Summary 217

Annex: Tunisia: selected addresses 219

		Page
Chapter 13	Mexico	220
A.	Economic and social background	220
1.	General country data	220
2.	Economic indicators	220
B.	Livestock sector	221
C.	Supply of, and demand for, compound feeds	222
1.	Overview	222
2.	Supply of feed ingredients	223
3.	Government policy	225
4.	Imports	225
5.	Exports	227
D.	The compound-feed industry	227
1.	General	227
2.	Processing of feed ingredients	227
3.	Quality standards and control	228
4.	Trade channels and procedures	228
E.	Import barriers and prospects for imports from developing countries	229
F.	Conclusions and recommendations	229
Annex:	Mexico: selected addresses	231
Chapter 14	Venezuela	233
A.	Economic and social background	233
1.	General country data	233
2.	Economic indicators	233
B.	Livestock sector	234
1.	Cattle	234
2.	Pigs	235
3.	Sheep, goats and rabbits	235
4.	Poultry	236
C.	Supply of, and demand for, compound feeds	236
1.	Overview	236
2.	Supply of feed ingredients	237
3.	Government policy	239
4.	Imports	239
5.	Exports	240

		Page
D.	The compound-feed industry	240
	1. General	240
	2. Processing	240
	3. Quality standards and control	241
E.	Trade channels and practices	242
	1. Trade infrastructure	242
	2. Trading systems and regulations	242
	3. Trade barriers	242
	3. Prospects for imports from developing countries	242
F.	Summary and recommendations	243
Annex:	Venezuela: selected addresses	244

List of tables

		Page
1.1	Estimated average annual world demand for feedstuffs, 1976-1980 and projections for 1985	5
1.2	Estimate of ingredients used by the compound-feed industry, 1981	6
1.3	Some basic data on the feed industry in the markets reviewed	11
2.1	EEC: cattle numbers, 1980-1983	28
2.2	EEC: beef and veal supply, by quantity, 1980-1982	28
2.3	EEC: dairy herds (1980-1984) and milk yields (1980-1982)	30
2.4	EEC: milk deliveries, by quantity, various years	31
2.5	EEC: pig numbers (1981-1983) and slaughter (1980-1982)	33
2.6	EEC: number of utility chicks of table strains hatched, 1980-1982	34
2.7	EEC: net domestic production of poultry meat, 1980-1982	34
2.8	EEC: number of laying hens, 1980-1982	35
2.9	EEC: production of eggs in shell, 1980-1982	36
2.10	EEC: consumption of feedstuffs, by quantity, 1978-1982	37
2.11	EEC: imports of feed ingredients from third countries, by quantity, various years	38
2.12	EEC: imports of feed ingredients, by quantity and by origin (group of third countries), 1982	39
2.13	EEC: imports of feed ingredients, by SITC category and by origin, 1978-1983	42
2.14	EEC: production of compound feeds by type, 1975, 1980-1983	44
2.15	EEC: ingredients in the production of compound feeds, by quantity and by country, 1976 and 1979	48
2.16	EEC: ingredients in compound-feed production, as percentage of total, by country, 1973, 1978, 1980-1982	50

		Page
2.17	EEC: quantities of feed ingredients used in compounds and as straights, 1980	51
3.1	Spain: meat supplies and apparent consumption, 1982	69
3.2	Spain: supplies of dairy products and eggs, 1982	70
3.3	Spain: feed mills and compound-feed output, 1980-1982	71
3.4	Spain: grain supply and use, 1981-1982	73
3.5	Spain: supplies of oilseed meals, 1981-1982	74
3.6	Spain: domestic production and use of legume seeds, 1981-1982	75
3.7	Spain: supplies of industrial by-products, 1981-1892	76
3.8	Spain: imports of feed ingredients, 1981-1982	77
4.1	Portugal: livestock numbers and output of livestock products	86
4.2	Portugal: production of compound feeds, by type, 1977-1983	88
4.3	Portugal: quantity of grains and oilseed meals used in compound-feed manufacture, 1975, 1980-1983	90
4.4	Portugal: average formulation of compound feeds, 1983-1984	91
4.5	Portugal: imports of grains and oilseed meals, by quantity and by origin, 1979-1982	93
4.6	Portugal: evolution of prices of principal feed ingredients paid by manufacturers of compound feeds, 1980-1984	94
5.1	Japan: production of major livestock products, 1965, 1970, 1975-1981	101
5.2	Japan: feed supply and demand, 1965, 1970, 1975-1983, and forecast for 1990	105
5.3	Japan: supply of, and demand for, pasture and forage, 1965, 1970, 1975, 1980-1983 and forecast for 1990	107
5.4	Japan: imports of feed ingredients, 1975, 1978, 1980-1982	110

		Page
6.1	Republic of Korea: livestock numbers, 1982-1983, and output of livestock products, by quantity, 1982-1984	122
6.2	Republic of Korea: consumption of compound feeds, 1979 and 1983-1984	124
6.3	Republic of Korea: imports of feed ingredients, by quantity, 1975 and 1980-1984	127
6.4	Republic of Korea: compound-feed industry, capacity and production, 1975 and 1980-1985	129
6.5	Republic of Korea: industrial production of compound feeds, by type and by quantity, 1975 and 1980-1983	131
6.6	Republic of Korea: ingredients in the manufacture of industrial compound feed, by quantity, 1975 and 1980-1983	132
7.1	Philippines: livestock numbers and output of livestock products, 1978, 1981-1983	141
7.2	Philippines: imports of feed ingredients, by type and by quantity, 1978-1983	146
7.3	Philippines: production of compound feeds, by feed mill association, 1977-1981	148
7.4	Philippines: compound-feed production capacity of major feed mill associations, as of 31 March 1980	148
7.5	Philippines: production of compound feeds, by type, 1977-1983	149
7.6	Philippines: estimated production of compound feeds, by subtypes, 1980	149
8.1	Saudi Arabia: livestock numbers and production of livestock products, 1982	161
8.2	Saudi Arabia: compound-feed production by feed mills, by feed types, 1976, 1980 and 1982-1983	162
8.3	Saudi Arabia: grain supplies for feed purposes, 1981-1983	163
8.4	Saudi Arabia: supplies of crop by-products, 1980-1983	164

		Page
8.5	Saudi Arabia: imports of feed ingredients, 1981-1983	165
8.6	Saudi Arabia: volume of feed ingredients used in commercial processing, 1982-1983	167
9.1	Algeria: livestock numbers and output of livestock products, 1979 and 1982	173
9.2	Algeria: supply and apparent consumption of compound feed, 1980-1984	174
9.3	Algeria: demand for compound-feed ingredients, 1984 and 1989	175
9.4	Algeria: tariffs on imported feed ingredients	178
10.1	Morocco: livestock numbers and products, 1980, 1982, 1985	183
10.2	Morocco: compound-feed production, by quantity, 1976-1981 and 1893	184
10.3	Morocco: domestic production of oilseed meals, 1981-1983 and estimate for 1985	186
10.4	Morocco: exports of feed ingredients, by quantity, 1979-1983	190
11.1	Nigeria: estimated livestock numbers, 1974, 1980 and 1982; domestic output of, and demand for, livestock products, 1980 and 1985	197
11.2	Nigeria: number and capacity of feed mills, mid 1984	198
11.3	Nigerian oilseed meals: production and foreign trade, 1965, 1975 and 1979-1981	201
12.1	Tunisia: livestock numbers and output of livestock products, 1980, 1982 and 1986	210
12.2	Tunisia: compound-feed industry: production and facilities, 1976, 1981-1982, 1986	211
12.3	Tunisia: demand for feed ingredients, 1982, 1984 and forecast for 1986	213
12.4	Tunisia: average formulation of compound feeds: ingredients as percentage of total	213
12.5	Tunisia: imports of feed ingredients, by quantity and by origin, 1980-1982	214

		Page
12.6	Tunisia: estimated import requirements, by feed ingredient, 1986	217
13.1	Mexico: livestock numbers and output of livestock products, 1982	221
13.2	Mexico: compound-feed production by commercial mills, 1978-1982	222
13.3	Mexico: grain supplies for compound-feed production, 1981-1983	223
13.4	Mexico: supplies of crop by-products, 1980-1983	224
13.5	Mexico: imports of feed ingredients, 1981-1984	226
13.6	Mexico: estimated consumption of feed ingredients, 1981-1983	227
14.1	Venezuela: cattle numbers and slaughterings; supply of beef and dairy products, 1980-1982	234
14.2	Venezuela: supplies of mutton, goat meat, and rabbit meat, 1980-1982	235
14.3	Venezuela: supply of poultry products, 1981-1982	236
14.4	Venezuela: supplies of maize and sorghum, 1981-1983	237
14.5	Venezuela: supplies of crop by-products, 1981-1983	238
14.6	Venezuela: imports of feed ingredients, by quantity, 1981-1983	239
14.7	Venezuela: raw materials for compound-feed manufacture, by quantity, 1981-1983	241

Note

Unless otherwise specified, all references to dollars ($) are to United States dollars, and all references to tons are to metric tons.

The full titles of acronyms/abbreviations appearing only in individual chapters are given in the annexes to those chapters. The following other abbreviations are used:

EEC	European Economic Community
FAO	Food and Agriculture Organization of the United Nations
GAFTA	Grain and Feed Trade Association
GATT	General Agreement on Tariffs and Trade
ITC	International Trade Centre UNCTAD/GATT
NAEGA	North American Export Grain Association

c. & f.	Cost and freight
c.i.f.	Cost, insurance, freight
f.o.b.	Free on board

Measures

ha	Hectare
kg	Kilogram
km	Kilometre

Tables

A dash (-) indicates that the amount is negligible or nil. The letters "n.a." denote that data are not available or are not separately recorded. Figures may not add up due to rounding.

Chapter 1

INTRODUCTION AND GENERAL SUMMARY

A. Scope, purpose and methodology of the study

In recent years, the International Trade Centre UNCTAD/GATT (ITC) has undertaken activities aiming at the integrated development of the agricultural sector and related industries. The co-ordination of the production, handling and export of agricultural products, as well as the expansion and/or the creation of agro-based industries, constitutes a viable strategy for generating employment opportunities and higher foreign exchange earnings in many developing countries. In this context, animal feed ingredients (or raw materials for the manufacture of compound feeds) are of particular interest as numerous developing countries have the potential for increasing or initiating export-oriented production of many of these ingredients.

With this potential in mind and from the point of view of economic and technical co-operation among developing countries, ITC has been implementing a project for the purpose of promoting trade in, and improving technical know-how on, animal feed ingredients in these countries. The project emphasizes products that could replace and/or supplement feed grains.

The project's three phases are as follows:

Phase I:

Analysis of the export situation in six supplying countries, namely, Brazil, Senegal, the Ivory Coast, India, Indonesia and the Sudan. The report on the study, which was carried out during September-December 1983, provides a synoptic view of the animal feed industry in these countries, stresses feed ingredients for both domestic consumption and export, and gives information on the development of the livestock industry and feed production capacity.

Phase II:

Analysis of demand in selected major importing countries, both developed and developing. The field investigations were carried out during the latter half of 1984 and covered the following regions and countries:

Asia:	Japan, the Philippines and the Republic of Korea.
Europe:	Current member countries of the European Economic Community (EEC), Portugal and Spain.
Africa and the Middle East	Algeria, Morocco, Nigeria, Saudi Arabia and Tunisia.
Latin America:	Mexico and Venezuela.

Phase III

Dissemination in selected developing countries of the findings of phases I and II above. This will cover information on market opportunities, trade flows and recommendations on measures to be taken by governments and other entities.

This study covers the second phase of the project, i.e. the demand survey, which was carried out in four stages:

- Preparatory work including collection of general data.
- Data collection in each country, chiefly through interviews with officials of government institutions and the trade.
- Analysis and interpretation of data.
- Preparation of study.

More recent statistics will be made available for the dissemination seminars envisaged under phase III.

B. Product description

Feeds must provide basic needs such as water, energy, bulk, various amino acids, minerals and vitamins. Actual requirements depend on the type and age of the animal, and the way it is reared. Feeds may be classified on the basis of their fibre content and the amount of total digestible nutrients they furnish. Concentrates are feeds that are low in fibre and high in total digestible nutrients; they include various grains and high-grade by-products such as wheat bran, oilcake, skim milk, etc. Roughages are feeds, such as hay, straw and silage, which are high in fibre but low in total digestible nutrients.

No single feed element provides all the nutritional requirements of a certain type of livestock, and balanced feeds have become more and more important as livestock producing units have increased in size. These feeds are normally referred to as compound feeds and are made up of carefully measured ingredients.

There is a wide range of compound feeds manufactured to feed requirements for each type of animal product; the most important categories are those for cattle, poultry and pigs. Because of the variety of ingredients to choose from, linear programming techniques are used by compounders to obtain least-cost formulations. Within limits, compound-feed ingredients are interchangeable. In setting up a programme the compounder takes into account such factors as tolerances, i.e. toxic levels in certain ingredients, the nutritional value of the major items used and the cost of the ingredients. Since feed manufacturers are able to adapt themselves quickly to variations in prices and supply of the basic raw materials, the price elasticity of demand and supply has greatly increased. Consequently, the compound feed industry, particularly in the developed countries, has become increasingly flexible in its use of raw materials.

The diversity of ingredients has been further enhanced by increasing integration of compounding and meat producing operations, particularly in the poultry and pig sectors, and the resulting narrower profit margins, which has led to a continued search for the most efficient and economical ingredients. Research, which constantly produces new insights into the relationship between inputs and needs, is yet another reason for this diversity.

The products and groups of products covered by this study are defined as follows:

- Feed ingredients, in general: any product used for the manufacture of compound feeds, the latter being also known as mixed feeds and formula feeds.

- Feed grains: unmilled cereals, such as maize, barley, milo (sorghum) and others.

- Feed-grain substitutes (hereinafter referred to as grain substitutes): dried roots and tubers, chiefly manioc (cassava) and sweet potatoes, traded as chips and pellets, and by-products obtained from the processing of grains and other crops; examples of by-products are bran, maize gluten feed, brewer's and distiller's grains, dried pulp from citrus and other fruit.

- Oil meals and cakes: the by-products of oil mills, obtained by pressing or solvent extraction of oilseeds such as soyabean, copra, groundnut, sunflower seed, palm kernel, cottonseed, and others. Oilcakes (or expellers) are obtained by pressing and oilmeals by solvent extraction.

- Other feed ingredients: all other products not specifically mentioned above.

There are some differences in the usage of terms in the various markets reviewed. Furthermore, the above definitions are based on marketing, rather than nutritional, considerations. From the latter point of view, oil meals and cakes would also be grain substitutes inasmuch as certain quantities of these meals and cakes would be required to attain desirable protein levels when, for instance, manioc is substituted for grains in formula feeds.

C. The international trade in feed ingredients

1. Introduction

This section is largely based on the study Integrated Export Development Programme for Animal Feed Ingredients in Developing Countries, which was prepared by the Tropical Development and Research Institute (TDRI) (London, August 1983) for ITC. Information on trends in the animal feed industry have been obtained from Economic and Social Development Paper No. 37 of the Food and Agriculture Organization of the United Nations (FAO), Changing Patterns and Trends in Feed Utilization (Rome, 1983) and Agricultural Trade with Developing Countries, a document issued by the Organisation for Economic Development (OECD) (Paris, 1984).

Unfortunately, more recent statistics on the international trade in fe ingredients are not available. Nevertheless, it is hoped that this stu of demand for feed ingredients in selected major importing countries wi provide prospective suppliers with some indication of expo opportunities.

2. World supply and demand

(a) Compound-feed manufacture

The main determinant of demand for feedstuffs at the global level i demand for livestock products, which has expanded rapidly during the pas several decades. Up to the 1960s, the developed countries had bee largely responsible for the expansion; however, with slower populatio growth and per capita consumption reaching near saturation levels, deman for, and production of, livestock products have tended to level off i these countries in recent years. In contrast, demand for such products a eggs, poultry and pigmeat has accelerated in developing countries sinc the 1970s. Despite impressive gains, absolute and per capita consumptio of livestock products in these countries remain low in terms of calori and protein intake and growth has in the main been limited to a few amon them with higher incomes.

An important feature of the world livestock sector has been th change in the feed consumption of livestock. The food intake o monogastric animals, such as pigs and poultry, has risen rapidly compare with that of ruminants such as cattle, buffaloes, sheep and goats. As a result, demand for concentrates has increased and is now estimated to b three times as much as that for other feeds. This, together with a shif in technology towards more intensive feeding, has had a significant impac on the pattern of feed use.

World manufacture of compound feeds totalled 377 million tons ir 1981, of which developing countries accounted for 43 million tons (11.4%) as against 334 million tons (88.6%) in developed countries. The annual growth rate in the preceding five years was 13.4% in developing countries compared with 3.6% in developed countries or almost four times as high.

Among the developed countries, the United States of America was the largest producer with 125.4 million tons in 1981, followed by Western Europe with 105 million tons of which the European Economic Community (EEC) contributed 80 million tons. Recent statistics show that production in EEC (excluding Greece) declined to 81.1 million tons in 1984 compared with 83.5 million tons in the preceding year. The shortfall was largely in cattle and pig feeds. It is reported that several companies have had to close down, while others are taking measures to restructure themselves.

The Latin American region and East Asia accounted for the bulk of the manufacture of compound feeds in developing countries, while countries in West Asia registered the most impressive growth rates. Although gains have been made in Africa, the region accounted for only 1.8 million tons in 1981.

Estimated demand for feedstuffs, both for straight feeding and for the manufacture of compound feeds, for the period 1976-1980 and projections for 1985 are shown in table 1.1.

Table 1.1

Estimated average annual world demand for feedstuffs, 1976-1980 and projections for 1985
(Millions of tons)

Average 1976-1980	World total	of which in:	
		Developing countries	Developed countries
Total	722	174	548
of which:			
All grains	542	95	447
Grain by-products	99	59	40
Oil meals and cakes	81	20	61
Projections 1985			
All grains	628	113	515
Wheat	98	6	92
Coarse grains, total	530	107	423
of which:			
Maize	265	58	207
Barley	153	25	128
Sorghum and millet	51	21	30
Others	61	3	58

Sources: Tropical Development and Research Institute, Integrated Export Development Programme for Animal Feed Ingredients in Developing Countries (London, August 1983). FAO Committee on Commodity Problems, Intergovernmental Group on Meat, Livestock Development in Developing Countries and Implications for Feed Consumption and Trade (Rome, 1983).

Maize accounts for about 50% of all feed grains in both developing and developed countries. A tentative estimate[1/] of the quantities of ingredients used world-wide for the manufacture of compound feeds is given in table 1.2, which is based on an assumed average composition of compound feeds. The percentage of grains may vary between, say, 35% and 70% or more, higher figures generally being the rule in countries where poultry feeds account for the bulk (90% or more) of compound-feed production.

1/ For data on countries belonging to EEC and the European Free Trade Association (EFTA), see: European Feed Manufacturers Federation, Feed and Food Statistical Yearbook 1982 (Brussels, August 1982).

Table 1.2

Estimate of ingredients used by the compound-feed industry, 1981

Ingredients	%	World total	of which:	
			Developing countries	Developed countries
			(Millions of tons)	
Total of which:	100	377	43	334
All grains	50	189	22	167
Grain by-products	10	38	4	33
Oil meals and cakes	20	75	8	67
Other ingredients	20	75	8	67

Source: Tropical Development and Research Institute, London.

(b) International trade

(i) Feed grains

World trade in feed grains reached an annual 4.5 million tons in 1969-1971 and 10 million tons in 1979-1981. North, Central and South America, and to a lesser extent, Africa, were net exporters, whereas Asia, Western Europe and the Union of Soviet Socialist Republics were net importers.

(ii) Grain substitutes

The most important grain substitute is manioc (cassava or tapioca), but its use is negligible outside EEC. The Community imported 6.8 million tons in 1981, of which 5.7 million tons came from Thailand, about 400,000 tons from Indonesia, and 700,000 tons from other suppliers, chiefly China. In 1982, EEC negotiated voluntary restraint agreements with Thailand, Brazil and Indonesia on cassava imports. In the case of Thailand, EEC agreed to import 5 million tons of tapioca annually in 1983 and 1984 and 4.75 million tons in 1985; for 1986, the quota is 4.5 million tons with a 10% flexibility margin. Quotas have also been assigned to the other supplying countries for the period 1982-1986.

World trade in brans and other milling by-products amounted to 3.7 million tons yearly in 1979-1981. Developed countries accounted for 89% of total imports (EEC: 70%). More than 50% of exports were from developing countries. It may be assumed that supplies will increase as a result of growing consumption of bread and other wheat products in developing countries.

EEC is practically alone in its demand for maize gluten feed. Imports rose from about 300,000 tons in 1976 to 3 million tons in 1982, the main supplier being the United States. Demand from feed manufacturers seems to be increasing, but EEC may limit further expansion of imports.

The United States exports citrus pulp and other fruit wastes, brewer's grains and distiller's grains chiefly to EEC. Brazil has a large citrus processing industry with drying facilities. Imports into EEC countries in 1981/82 amounted to 1.3 million tons of dried citrus pulp, 115,000 tons of other fruit wastes, and 357,000 tons of spent grain.

(iii) Oil meals and cakes

In 1983, soyabean meal accounted for about 71% (22.8 million tons) of the world trade in this group of products (32.2 million tons). Other oil meals and cakes made up between 2.1 and 4.6% respectively (0.7 million and 1.5 million tons). The principal importers were the EEC countries (approximately 20 million tons in 1983) while the principal exporters/ re-exporters in 1983 were Brazil (9.0 million tons), the United States (7.3 million tons), Argentina (3.1 million tons), India (1.4 million tons), and EEC (5.5 million tons). Of total world exports of oil meals and cakes during the period 1970-1974, soya accounted for 55% (7.1 million tons yearly) and groundnut for 11% (1.4 million tons annually compared with 740,000 tons or 2.3% in 1983). The strong position attained by soyabean meal during the last decade is due to the following characteristics:

- Its high protein content and digestibility.
- The quality of its protein, i.e. amino acid content, particularly lysine, which is of great importance in poultry and pig feeds.
- The absence of any toxic substance as a result of the processing technology (toasting) used.
- Its good physical structure, resulting in easy handling, i.e. it has good flow properties and a low proportion of dust.
- Its high degree of stability due to a low fat content; hence it has no tendency to become rancid.
- Its low crude-fibre content, an important advantage in poultry and pig feeds.

(iv) Molasses

World trade in molasses amounted to 5 million-6 million tons yearly during the period 1970-1980. Central America, South America and the Caribbean supplied about 50% of exports, the Pacific Ocean area 30%, the Middle and the Far East and Africa 20%. Western Europe absorbed about 50% of imports, North America 30%, and the Far East 20%. In Europe, about 60% of the molasses imported is used in compound-feed manufacturing and 40% for other industrial purposes.

3. Trade channels and practices

The international trade in most feed ingredients is dominated b perhaps 10 companies and their associates. Trading is generally based o written contracts covering large volumes, preferably shiploads. consignment of 2,000 tons would be a minimum and 20,000 tons a small carg for the European markets.

Importers use the services of inspection firms for quantitative an qualitative control of the product purchased. There are several suc firms operating world-wide and maintaining branch offices or agencies i exporting countries. The trade in feed ingredients is almost wholl conducted under GAFTA (Grain and Feed Trade Association, London) and NAEG (North American Export Grain Association) contracts.

4. Trade barriers

The EEC policy is of particular interest in this context. Import of feed grains and substitutes are limited through levies and quotas i order to protect grain production in the EEC countries. With regard t oil meals and cakes, the EEC policy allows free imports, but these ar subject to legislation on aflatoxin content. Similar regulations hav been adopted in other countries.

5. Factors affecting supply and demand in developing countries

(a) Land resources

Of the 90 developing countries reviewed in the TDRI study fo availability of arable land, 52 have abundant to moderately abundan arable land, and 38 have very little or none at all. India has ver little arable land whereas the other five supplying countries reviewed i phase I of this project (see page 1) have abundant to moderately abundan resources of arable land. About half of the 38 countries with scarce t very scarce resources are small or very small countries. Therefore, lan resources are not considered as a severe limiting factor to cro production in developing countries as a whole. In the case of India, i can be assumed that exports of feed ingredients will continue but thes may decline in the future.

(b) Production and export policies

Developing countries in general envisage increased self-sufficienc in grains for processing into food, with special emphasis on bread an other wheat products. This would limit the opportunities for othe countries to export grain by-products to developing countries wit favourable conditions for food-grain production.

Oil meals and cakes may be used internally for compound-feed manufacture and/or may be exported from countries with adequate oilseed processing facilities. Oilseed production is subsidized in most develop- ing countries importing oil, oil meals and cakes. The United States, despite acreage reduction programmes for soyabeans and feed grains in

order to reduce expenditure on subsidized production, will probably maintain its position as a major supplier of feed grains and soyabean meal.

6. Price formation

Under intensive livestock production - especially of poultry and pigs - and free market conditions, feed accounts for 75% to 80% of total production costs. The price that a livestock producer can afford to pay for compound feeds is closely related to: the price he expects to obtain for livestock and/or livestock products; the feed conversion ratio (kg of feed required per kg of live-weight gain or per kg or unit of livestock products); and profit margin. This price will, in turn, determine the price feed manufacturers can pay for feed ingredients after having considered other production costs and profit margins.

Soyabean meal and maize are the protein and energy sources most widely used in compound-feed manufacturing. Since the United States dominates the world supply of both these commodities, world market prices of other energy and protein sources closely follow the price trends for United States maize and soyabean meal. Prices of other ingredients are largely dependent on the amount and quality of their protein and energy contents, and on other quality considerations such as evidence of anti-nutritive and toxic substances (e.g. gossypol in cottonseed cakes, aflatoxin in groundnut meals and cakes), texture, and content of foreign matter. In general, the f.o.b. export prices of supplying countries correspond to world market prices, which again reflect prices at terminal markets, e.g. Chicago for grains and oil-meals, and Hamburg for manioc.

There are three ways of estimating the selling price of a new feed ingredient:

- Production and handling costs plus profit margin.
- Multiplying the protein and energy content of the new ingredient with unit prices of "standard" ingredients providing energy and protein.
- Calculating the shadow price of a new ingredient by means of computerized least-cost formulation programmes, which require a full analysis (of protein content, etc.) of the new ingredient.

7. Purchasing criteria

Apart from price, the criteria that are most likely to determine the export market prospects of a new feed ingredient are the following:

- Its physical form and moisture content: pelletized ingredients are accepted more readily than meals by trading companies.
- Adequate minimal quantities (2,000 to 20,000 tons per shipment); regular and continuous supplies.

- Levies and taxes and quantitative restrictions in importing countries.

- Acceptable nutrient specifications; absence of undesirable components (at least below maximum tolerable levels).

Representative samples should be made available to prospective importers and to feed manufacturers with a description of the products. The description should cover at the very least a full analysis of contents and, whenever possible, reports on feeding trials. For successful export promotion, the information should be made available in the languages of prospective customers in importing countries.

8. Infrastructure

For regularity in trade, the appropriate infrastructure for collection and storage along the producer-to-exporter chain, in addition to efficient transport and port handling facilities, are required. Adequate storage facilities are particularly important in order to avoid product deterioration due to moisture, mould and insects.

D. Summary of findings

1. General

The summary given in table 1.3 provides information on compound-feed production capacity, the main types of feeds utilized and the ingredients imported into the countries/areas covered by this study.

The above countries/areas produce an estimated 140 million tons of compound feeds annually or some 40% of the world total. The Western European countries (EEC, Spain and Portugal) and Japan account for around 120 million tons annually and the nine developing countries reviewed produce only about 14 million - 15 million tons. Despite this, the study indicates that the compound-feed industry in developing countries is likely to grow as a result of the expansion of their livestock sectors, the poultry subsector in particular. Therefore, greater quantities of feed ingredients will be consumed in the producing developing countries themselves. At the same time, market opportunities are likely to arise in other developing countries.

Despite its current size as a market, EEC will offer more restricted trade opportunities in the future as a result of its large grain surpluses, the recent curtailment in the production of dairy products and the consequent reduction in the size of herds, and the stringent sanitary and health requirements being introduced, particularly concerning the levels of toxic substances in oilseed meals. Imports of feed ingredients averaged 36.7 million tons annually during the period 1979-1983. The principal items imported are cereals, cassava (mainly from Thailand), and oilcakes which account for just under half the total imported.

Table 1.3

Some basic data on the feed industry in the markets reviewed
(in thousands of tons)

Importing country/area	Compound feed production	Main types of compound feed used	Imported compound-feed ingredients						
			Total	Soya-bean	Other oilseeds	Maize	Sorghum	Other grains	Other
EUROPEAN ECONOMIC COMMUNITY	83,232[a/b/] (1983)	Cattle (38%) Pig (32%) Poultry (25%) Others (5%)	35,978[c/]			5,686[c/]			
SPAIN (1982) Main supplier: United States (80% of total).	13,190[d/]	Pig (36%) Poultry (33%) Cattle (19%) Others (12%)	10,955	3,260	134	5,431	1,410	692	28
PORTUGAL Main supplier: United States (95% of total).	2,964 (1983)	Pig (41%) Poultry (33%) Cattle (23%) Others (3%)	3,474 (1982)	33	124	2,407	237	673	-
JAPAN Feed grain: 90% of total imports.	22,000-23,000 (average)	Poultry (50%) Pig (30%) Cattle (20%)	18,095 (1982)	89	50	10,757	2,945	2,890	1,364
KOREA, REP. OF (1983)	5,852	Poultry (38%) Pig (34%) Beef cattle (15%) Dairy cattle (12%) Others (1%)	4,944	866	54	3,400	-	603	21
PHILIPPINES (1983) Main supplier of maize: United States (63%). Main supplier of soybean meal: Brazil (75%).	1,061	Poultry (76%) Pig (23%) Others (1%)	869	275	5	528	-	-	61
SAUDI ARABIA (1983) "Other grains": 100% wheat.	740	Poultry (78%) Cattle (20%) Others (2%)	3,808	39	2	704	17	2,858	188
ALGERIA (1983) "Other grains": 100% wheat.	640	Poultry (80%) Others (20%)	1,140[e/]	165	5	400	-	550	20
MOROCCO (1983) "Other grains": 100% wheat. Main cereal supplier: United States.	360	Poultry (90%) Cattle and others (10%)	1,830[f/]	26	14	120	-	1,600	70
NIGERIA (1983)	400[g/]	Poultry (90%) Cattle (7%) Pig (3%)	758[f/]	5	18	270	-	430	35
TUNISIA (1982) Barley: 66,000 tons	515	Poultry (51%) Cattle, sheep & goats (49%)	410[h/]	83	-	255	-	69	3
MEXICO Main supplier: United States (90-95%).	4,550 (1982)	Poultry (51%) Pig (29%) Cattle (18%) Others (2%)	6,543 (1983)	1,198	444	879	3,409	548	65
VENEZUELA (1983) Main supplier: United States.	2,500[i/]	Poultry (65%) Pig (25%) Cattle (6%) Others (4%)	1,374	58	10	1,030	276	-	-

SOURCE: Country chapters.

a/ Excluding Greece.
b/ Provisional.
c/ From third countries.
d/ Preliminary figure.
e/ Average annual imports 1980-1984.
f/ Average annual imports 1979-1983.
g/ Estimate.
h/ Average annual imports 1980-1982.
i/ Average annual production 1981-1983.

Japan is the second most important market, with imports averaging 19 million tons during 1979-1983, of which 17 million tons were grains. Maize is easily the main import, averaging 10 million - 11 million tons annually, followed by sorghum and barley. Imports of oilseed meals and cakes currently total some 0.1 million - 0.2 million tons only.

Spain and Portugal are sizeable markets with annual imports of 11 million and 3.5 million tons respectively. Grain is the dominant import in both countries and the United States is the principal supplier.

The nine developing country markets reviewed together import an estimated 22 million tons annually. The Republic of Korea (4.9 million tons), Saudi Arabia (3.8 million tons) and Mexico (6.5 million tons) account for some 69% of the total. In all these markets, grains (maize and barley) are the predominant imports. In the Philippines, Algeria and Mexico, significant quantities of oilseed meals, mainly soyabean, are also obtained from external sources.

In general, soyabean meal and grains, in particular maize, sorghum and barley, are the most important feed ingredients in the markets reviewed. The United States is the leading supplier of feed ingredients.

As mentioned earlier, the rapid expansion and intensification of livestock production, of poultry in particular, have not only stimulated demand for feed ingredients but have also changed feed consumption patterns in developing countries. Although pastures, crop residues and other roughages still provide the bulk of total feed-energy supplies in these countries, the proportion of utilization has declined. In contrast, the use of cereals and oil-meals has increased sharply.

Consumption of concentrates, as can be seen in the individual country chapters, has risen. Coarse grains account for the largest proportion of animal feeds in the developing countries reviewed, with maize predominating in the Republic of Korea and the Philippines. It is also the leading feed grain in Latin America; followed by sorghum and millet. Barley is the most important feed ingredient in Saudi Arabia and the North African countries.

Consumption of oil-meals has intensified as a result of expansion of oilseed-crushing capacity in many developing countries. This is particularly evident in India and is becoming more and more notable in such countries as Brazil, Indonesia and the Republic of Korea.

Other products that have grown in significance as feed ingredients are molasses, pulses and various pulp residues. However, expansion in their utilization in developing countries will depend to a large extent on the availability of adequate shipping facilities and foreign exchange, reduction in tariff barriers, and their price competitiveness vis-à-vis the traditional feed items.

2. Individual markets

(a) European Economic Community (EEC)

The EEC compound-feed industry is the largest in the world. Output of the then nine member countries rose by 63% in the 1970s from 47.8 million tons in 1970 to 77.9 million tons in 1979. In 1983, production reached 83.2 million tons. Mixed feeds for pigs and dairy cattle were the main contributors to growth.

The EEC compound-feed industry comprises approximately 3,500 feed mills, privately owned mills producing about two thirds of the total. The industry provides for about one half of the Community's total feed needs, on-farm mixers accounting for the balance.

Recent developments within the Community tend to indicate a stagnation or even decline in the output of segments of its livestock sector. This is expected to affect medium-term demand for mixed feeds. However, the Community will remain an enormous consumer of feed ingredients, of which it has used about 300 million tons annually in grain equivalent in recent years. Total concentrates consumed have risen from an annual 115 million tons in 1972-1974 to 133 million tons in 1982, an average rise of 1.5% per annum. Of this total, cereals have taken a major but declining proportion. Total imports of feedstuffs from third countries have increased over the last decade, rising from 34 million tons of grain equivalent in 1972/73 to 42 million tons in 1980/81 and climbing to even higher levels in the following years. Imports make up about 30% of EEC's total usage of concentrates.

As far as import trends are concerned, the growth areas have been processing by-products (particularly maize by-products and citrus pulp pellets) and oil-meals (or imported oilseeds processed in EEC). Imports of processing by-products increased from 17 million tons of grain equivalent in 1972/73 to around 27 million tons in the early 1980s. Domestic supplies of concentrates have tended to rise, particularly in the case of cereals, milk products and, more recently, certain oilseeds.

As mentioned, the Community is a vast market for a great variety of feedstuffs from many origins. Third-country exports to EEC reached an estimated 57 million tons in 1982. Developing countries supply molasses, manioc and brans in comparatively large quantities as well as a variety of other feed ingredients on a more limited scale. EEC has sometimes attempted to curtail imports of certain feedstuffs such as manioc and maize by-products, which it considers potentially harmful to its internal cereal market. Despite this, however, developing countries generally have easy access to the EEC market under the provisions of the Lomé Convention. However, certain other factors are growing in importance. Apart from normal needs for regularity of supply, price competitiveness, ease of access to, and size of, available supplies, increasing attention is being focused on the quality of the feed ingredient, not only from the point of view of consistency of nutritional composition but also in terms of contents of toxins and other anti-nutritive substances. Requirements for testing and analysis of feed ingredients are becoming increasingly stringent.

Consequently, developing countries must apply stricter measures to control the handling and transport of their products. Greater care must also be taken to avoid crop contamination by pesticides and other agro-chemicals. The aim should be to provide the buyer greater assurance of quality before the product is unloaded at the port of destination.

Those concerned with production, processing and marketing of feed ingredients will have to be more informed about legislation and other factors affecting the trade in the market concerned. They should see to it that they are establishing a reputation as suppliers of feedstuff of consistently high quality.

(b) Spain

Annual production of compound feeds in Spain has reached 15 million - 16 million tons in recent years. About 650 industrial feed mills produce around 13 million tons, of which about 38% are for pigs, 34% for poultry, 18% for cattle, 4% for sheep and goats, 4% for rabbits, and 2% for other animals. On-farm mixing, chiefly by commercial pig, dairy and egg production enterprises, account for the remaining 2 million-3 million tons.

Total imports of feed ingredients vary from 6 million to 8 million tons yearly according to the domestic harvest of feed grains. Annual imports are as follows: maize, around 5 million tons; sorghum, 0.5 million - 1.5 million; barley, around 0.5 million tons; oilseed meals, 0.1 million - 0.2 million tons of which 80%-85% is soyabean meal. In addition to these raw materials, about 3 million tons of soyabeans are imported yearly for processing in domestic oil mills.

Annual exports of feed ingredients are small, i.e. 150,000-300,000 tons of soyabean meal and 117,000-227,000 tons of sugar-beet pulp.

The Spanish import market for feed ingredients is dominated by the United States which supplies 80%-85% of total imports. Import operations are handled by a few large grain and feedstuff trading companies on the basis of import licences. Such licences are also available to the feed industry. However, compound-feed manufacturing companies are said to make little use of this facility.

Imports of feed ingredients and oilseeds are subject to a special internal charge to protect domestic production of these crops against competition from cheaper imports. Other levies and taxes vary according to the product, its origin, trade agreements and other factors.

Two laws issued in 1975 and 1976 and their subsequent amendments and modifications define quality standards, health and sanitary regulations for feed ingredients and compound feeds. They have provisions on maximum permissible contents of aflatoxin, free gossypol and other toxic and anti-nutritive substances.

Compound-feed manufacturing in Spain is based on coarse grains (chiefly maize, sorghum and barley) and soyabean meal. These ingredients make up about 80% of all raw materials used by the feed industry. Hence, there exists, in principle, a market potential for grain substitutes and protein sources other than soya. But the extent to which the feed industry would be willing to use such raw materials remains to be seen. Prospective exporters would have to take the initial step of undertaking market promotion activities.

(c) Portugal

Compound-feed production in Portugal rose from about 2.8 million tons in 1977 to 3.6 million tons in 1981. However, it then decreased to about 3 million tons in 1983 and is expected to drop further to an annual 2.5 million - 2.6 million tons in 1984-1985. The main reason for the decline is the crisis in the domestic livestock sector caused by the general economic depression in the country.

About 85% of compound-feed production comes from the 103 industrial feed mills operated by the 93 member companies of the Portuguese Feed Milling Association (IACA). On-farm mixers account for the remaining 15%. More than half of the national output is attributed to 25 industrial mills with capacities of over 25 tons per hour. The feed-milling industry is concentrated around the Lisbon and Leixoes harbours, the entry points for imported feed ingredients. The feed mills located in the Lisbon area produce about 70% of the country's total output, those in the Leixoes area around 4%.

The Portuguese feed-milling industry is heavily dependent on imported raw materials. In 1983, for example, 1.9 million tons of coarse grains were utilized, comprising 88% maize, 8% sorghum, and 2% barley. Oilseed meals accounted for 120,000 tons in the same year, consisting mainly of palm kernel meal from Malaysia and Indonesia, soyabean meal from the United States and Brazil, groundnut meal from Senegal, India and the Gambia, and sunflower meal from Argentina, Spain and the Netherlands.

Annual production of compound feeds is between 2.5 million and 3 million tons. Import requirements in 1986 are not expected to exceed the 1983 levels, i.e. between 1.5 million and 1.7 million tons of grains and 115,000 to 120,000 tons of oilseed meals.

All quality regulations for feed ingredients are being adapted to EEC standards and norms in anticipation of entry into EEC.

The Public Grain Supply Organization (EPAC) is the sole importer of grains and the Oilseed and Oilseed Derivates Institute (IAPO) has the monopoly of imports of oilseeds and oil-meals. The Feed Industry Supply Co-operative (CAIACA) imports other feed ingredients and has recently started importing manioc and maize gluten. Direct imports by feed milling companies are practically nil as these companies prefer to avail of the import services offered by CAICA. In this way, they avoid to some extent the time-consuming procedures for obtaining import licences and the financial risks and expenses involved.

Import handling costs are high as a result of restrictions regarding sea transport, steep harbour and railway transport costs and other factors.

Customs duties and taxes on imported feed ingredients currently vary between 1% (maize gluten) and 16% (citrus pulp) of c.i.f. values. All EEC restrictions and quotas will apply when Portugal joins EEC. Prospective exporters will then have to cope with the competitive environment prevailing in the rest of the Community and with similar quality standards and health regulations.

Portuguese compound-feed manufacturers are interested in replacing grains and protein sources with lower-priced substitutes. Hence, suppliers of such products would have the best chances of penetrating this import market. However, newcomers will find a competitive situation as a result of Portugal's broad trading experience with a number of well-established supply sources.

(d) Japan

Industrial production of compound feeds reached 22 million-23 million tons per annum during the period 1979-1983. About 50% were poultry feeds, 30% pig feeds, and 20% cattle feeds.

Annual imports of feed ingredients during the period 1981-1982 amounted to about 18 million tons, of which just over 16 million tons were grains with maize accounting for about two thirds, the balance consisting mainly of sorghum and barley. Wheat bran imports amounted to 0.9 million tons. Imports of other feed ingredients were as follows, in millions of tons: beet pulp 0.5; oilseed meals and cakes 0.1-0.2; fish-meal, meat-meal and other products of animal origin 0.3-0.4; miscellaneous: 0.5-1. The most important supplying countries are the United States (almost all of the maize, 50% of sorghum), Canada (barley and wheat bran), Australia (sorghum), and Argentina (sorghum).

Japan is one of the world's principal import markets for feed ingredients, a situation that is likely to continue during the next decade. Hence, opportunities for exporters of feed ingredients in developing countries can be expected to persist in the foreseeable future. However, newcomers to this market will have to take account of the fact that Japanese importers have stringent requirements, especially with regard to buying procedures, quality standards, sanitation, delivery, inspection and testing of product samples. Competitive pricing is equally important.

Compound-feed production is currently heavily based on grains and soyabean meal. Therefore, producers of grain substitutes (such as manioc) ought to undertake export promotion activities in Japan.

(e) Republic of Korea

Compound-feed production in the Republic of Korea is expected to climb from 900,000 tons in 1975 to 5.9 million tons annually by end 1984 and to around 9 million tons by 1991, chiefly as a result of rapidly growing demand for pig and cattle feeds. This growth is attributable to the expanding demand for livestock products, an effect of rising per capita incomes and consequent changes in food consumption habits.

There are 78 feed mills, of which 62 are operated by the Korea Feed Association, an association of 55 feed milling companies. Sixteen are run by the National Livestock Co-operatives Federation.

Compound-feed manufacturing in the Republic of Korea is, and will continue to be, heavily dependent on imported ingredients which currently meet around 85% of domestic demand. In 1983, imports amounted to 4 million tons of grains (of which 3.6 million tons were maize and 400,000 tons sorghum and other grains), 330,000 tons of soyabean meal, 53,000 tons of rapeseed meal, and about 548,600 tons of other feed ingredients including 536,000 tons of soyabeans. The main supplying countries and their shares of imports were the following: the United States (95% of maize, 30% of sorghum and 35% of soyabean meal), Canada (95% of rapeseed meal), Brazil (60% of soyabean meal) and Argentina (30% of sorghum). Small quantities of maize and other grains were imported from Thailand, Australia and Argentina. Soyabeans were imported principally from the United States.

The Korea Feed Association and the National Livestock Co-operation Association are authorized by the Government to handle import operations on behalf of their members on the basis of import licences and tendering. Individual feed mills are also allowed to import, but they prefer to avail of the services and know-how of the associations. Samples of feed ingredients are taken at entry points for testing by government or association authorities before clearance is given.

The construction of additional unloading facilities at one port is now under way. When this is completed port handling facilities will be able to cope with the expected expansion of imports of feed ingredients.

Compound-feed production is based on a limited number of ingredients, of which the most important are maize and soyabean meal. Bids are submitted principally by agents or representatives of international shippers and brokers. Future imports of non-traditional ingredients (such as grain substitutes) are, in principle, not precluded. However, quality, reliability and continuity of supplies, and competitive prices are crucial to potential exporters wishing to take advantage of the business opportunities in this large and growing import market.

(f) Philippines

Commercial compound-feed production in the Philippines increased from around 0.8 million tons in 1977 to 1.1 million tons in 1983, of which about 70% was for poultry, 25% for pigs and 5% for other animals. In 1983, registered compound-feed mills totalled 285, of which 136 were

commercial mills and the remainder plants producing for their own consumption. On-farm mixing is estimated at 300,000-400,000 tons annually.

Maize is the most widely used feed ingredient. The quantity used for compound-feed manufacturing, on-farm mixing and straight feeding was estimated at 1.5 million-1.6 million tons in 1983, of which 528,437 tons were imported; the United States and Thailand were the leading suppliers. Imports of other ingredients during the same year and the corresponding supplying countries were as follows: 274,704 tons of soyabean meal (Brazil and the United States); 42,245 tons of meat- and bone-meal (Australia, New Zealand and the United States); and 14,000 tons of fish-meal (Peru, Chile and Thailand).

The Philippines is a major exporter of copra meal and cakes (1983: 550,000 tons). Other exported feed ingredients are dehydrated sugar-cane tops (5,000-10,000 tons a year). Exports of molasses are comparatively small owing to transportation problems and insufficient storage and handling facilities in the ports.

The National Food Authority (NFA) currently handles imports of maize and soyabean meal, that is, about 90% of the total quantity of imported feed ingredients, and sells them to feed millers at fixed prices. Imports are generally made on the basis of bids. Government policy is expected to change to allow private firms to participate in the import trade.

The Government controls the import, manufacture, distribution and sales of feed ingredients and compound feeds in accordance with the health and quality regulations stipulated by the Livestock and Poultry Feeds Act.

Restrictions on foreign currency allocations have, to a certain extent, led to decreasing imports of feed ingredients. Tariffs on imported feed ingredients vary from 10% (for oilseed meals) to 50% (for grains). Furthermore, there is a sales tax of 10% as well as a 25% mark-up.

(g) Saudi Arabia

The Saudi Arabian compound-feed industry comprises two main sectors: integrated poultry and dairy enterprises processing feeds for their own consumption and marketing the surplus, and public and private feed mills supplying farmers and integrated enterprises.

About two thirds of the country's feed mills have been established since 1980. Total production of animal feeds is expected to reach 800,000 tons in 1984/85. Poultry feed accounts for 80% of the annual total.

Imports reached 3.8 million tons in 1983, of which 3.6 million tons consisted of maize and barley alone. Several other raw materials are imported but in small quantities, fish- and meat-meals being the most significant. In addition, some 187,000 tons of concentrates were imported in 1983 for incorporation into compound feeds, mainly from the Netherlands and Belgium. The bulk of the maize comes from the United States, barley from Australia, France and Belgium.

Imports are subsidized at 50%. Following a change in policy, the subsidy will in the future be given to manufacturers of compound feeds.

No import licence is required and no duties and taxes are applied on imports of feed ingredients.

(h) Algeria

Compound-feed production in Algeria rose from 278,000 tons in 1980 to 640,000 tons in 1983, and is expected to reach 980,000 tons in 1984. Imports of feed ingredients will reach an estimated 30,000 tons in 1984, as against 58,000 tons in 1983 and nil in 1980. Of the 1984 output, about 80% is likely to be poultry feeds and 20% feed for cattle, goats, sheep, horses and other animals. The livestock production targets of the Development Plan 1985-1989 indicate an annual demand for 2.1 million tons of compound feeds by 1989, of which 1.6 million tons would be for poultry, 450,000 tons for cattle, and 80,000 tons for other animals.

In mid 1984, the Algerian compound-feed industry comprised 15 State-owned mills with capacities of 15-20 tons per hour, and around 350 small mills, inclusive of on-farm mixers. Ten more State-owned mills are to be established by 1986/87.

Domestic production of grains does not meet demand for human consumption and animal feeding. Annual grain imports for animal feeding purposes are estimated at 80,000-110,000 tons of maize and 400,000 tons of barley; imports of oilseed meals average 165,000 tons of soyabean meal and 5,000 tons of various meals and cakes annually. Other regularly imported feed ingredients are fish- and meat-meals (about 20,000 tons a year), molasses, milk preparations for calves, calcium phosphates (15,000 tons) and vitamin mixes (about 1,000 tons).

The main supplying countries are the following: the United States, Argentina and Canada for maize; Canada, the United States, Belgium, the United Kingdom, France and the Federal Republic of Germany for barley; Belgium, the United States and France for soyabean meal; Belgium, France and Italy for meat- and fish-meals.

By law, the Algerian government has the monopoly of all imports and exports; there are no middlemen in trade negotiations and operations. Regarding feed ingredients, there are two State organizations authorized to import, namely the Algerian Bureau of Grain Imports for grains and grain derivatives, and the National Feedstuffs Bureau for compound feeds and feed ingredients other than grains.

Import contracts are based on tendering and EEC quality standards and norms. Controls are carried out by the National Institute of Animal Health at ports, in feed mills and throughout the distribution system.

All grains and grain by-products are imported tax free. Duties and taxes levied on the c.i.f. values of other main ingredients are as follows: 25% for soyabean meal; 28.75% for other oilseed meals and cakes, fish- and meat-meal; and 100% for manioc.

The competitiveness of the Algerian market for feed ingredients is due to its established trade relations with Western European and other supply sources, which offer the advantages of low freight rates, short delivery times, regular supplies and quality guarantees.

Prospective suppliers should undertake export promotion on this market. Furthermore, they should negotiate lower tariffs on groundnut meal and manioc.

(i) Morocco

Compound-feed production in Morocco rose from 97,000 tons in 1976 to 360,000 tons in 1983. This paralleled the development of intensive poultry operations which utilize about 90% of the total output of compound feeds. Other feeds, mostly for cattle, account for the remaining 10%. An estimated 629,000 tons of compound feeds are required to achieve the Government's livestock production targets for 1985. Of these 569,000 tons are for poultry, 57,000 tons for cattle and 3,000 tons for other animals.

There are 31 compound-feed producers, 15 of which account for more than 95% of the total output. Most of the industry is concentrated in the Casablanca and Rabat areas which produced 51% and 27% respectively of the 1983 output.

Average annual imports of feed ingredients during 1976-1983 amounted to 1.6 million tons of wheat, 120,000 tons of maize, 3,000 tons of soyabean meal, all largely from the United States. About 2,000 tons of miscellaneous products were obtained from other sources. During the same period, 23,000 tons of soyabeans annually were imported for the domestic oilseed crushing industry. In 1982, 63,000 tons of dry sugar-beet pulp were procured from Spain.

By 1985-1986 annual imports of an estimated 275,000 tons of maize, 30,000 tons of soyabean meal (or an equivalent quantity of soyabeans), up to 25,000 tons of manioc and 4,000-5,000 tons of groundnut meal will be required.

The pricing policy of the Government favours straight feeding of grains and grain by-products. These are sold by public agencies to livestock producers at subsidized prices which are about 50% less than the prices charged to feed millers.

The importing State companies are also responsible for the distribution of feed ingredients to millers. Import contracts are awarded on the basis of tenders to Moroccan representatives of international grain traders and shippers. Imports, except those of grains, are subject to licensing. High freight, storage, and inland transport rates raise import costs.

Quality standards are similar to those in Western Europe.

Grains are imported duty free by the State organization ONICL, which has the trade monopoly. The other feed ingredients are subject to customs duties and taxes of 29% to 35% of c.i.f. values, depending on the product. For instance, manioc, the import of which was authorized in mid 1984, has a duty of 35%; oilseed meals are taxed at 29%.

During the 1979-1983 period, Morocco exported an annual 7,000-12,000 tons of fish-meal; 4,000-110,000 tons of molasses, up to 1,000 tons of oilseed meals and 3,000-10,000 tons of other feed ingredients. Exporters intending to enter the Moroccan market for feed ingredients should study the possibilities of bartering, for example, grains, grain substitutes and oilseed meals for Moroccan molasses and fish-meal.

(j) Nigeria

Total production of compound feeds in Nigeria was estimated at around 800,000 tons in 1981, 600,000 tons in 1982, and 400,000 tons in 1983. The decline has been attributed to the serious domestic economic crisis then prevailing and its impact on the livestock sector. The approximate shares by feed type in total output during those years were as follows: poultry feeds: 90%; cattle feeds: 7%; feeds for pigs and other animals: 3%. Production will reach an estimated 480,000 tons at end 1984. By 1986, demand for compound feeds from industrial livestock farms (of which 90% will be commercial poultry operations) will climb to about 600,000 tons of poultry feeds, 210,000 tons of cattle feeds and 90,000 tons of feed for pigs and other animals, or a total of 900,000 tons.

Of the 350 feed mills registered in 1983, only 185 were operating in mid 1984. Their total production capacity is 1.2 million tons of compound feeds annually. Three companies account for about 50% of total production, plants integrated into large-scale poultry operations 20% and small plants with hourly capacities of up to 2.5 tons 30%.

During the last 10 years, 70-90% of all ingredients used in compound-feed manufacturing have been imported. To produce 900,000 tons of compound feeds in 1986, import requirements have been estimated at about 350,000 tons of grains (80% maize), 50,000 tons of oilseed meals, 13,000 tons of fish- and meat-meal, and about 10,000 tons of vitamin/mineral premixes.

Imports of grains are a monopoly of the Nigerian Grain Board. All other feed ingredients are imported by the trade under licensing. Import clearance and licensing procedures are complicated and time-consuming. The scarcity of foreign exchange and protectiveness towards the domestic agricultural sector have induced the Government to impose high customs duties and taxes and to establish financial barriers in order to limit imports of feed ingredients to the minimum. The customs duty on imported maize, soyabeans (for processing by Nigerian oilmills), soyabean meal and fish-meal is equivalent to 55% of c.i.f. values. A tax of 5 naira per ton is also applied to these imports. Imported groundnut meal is duty free.

In spite of the above-described constraints, the Nigerian market is comparatively large and offers short- and medium-term trade opportunities. Potential exporters able to provide attractive payment terms would find easier access to this market; direct contacts with the principal manufacturers and traders in the country would also facilitate the initiation of business relations.

(k) Tunisia

Compound-feed production in Tunisia increased from 156,000 tons in 1976 to 473,000 tons in 1981 and 515,000 tons in 1982. It is expected to reach 786,000 tons in 1986. The number of feed mills likewise rose from 21 in 1976 to 140 in 1982. This growth has been due to government measures taken since 1977 to maintain livestock herds during the drought period of 1977-1983, including subsidies on compound feeds and government financing of new feed mills. It is estimated that around 62% of the cattle, 52% of the sheep and 64% of the goat population were at least partly fed on compound feeds in 1982. In that year, the compound-feed output was almost equally divided between feed for poultry and feed for ruminants. Private mills produce about 75% of the total and State-owned companies and co-operatives 25%.

As most ingredients are imported, the Tunisian feed industry is vulnerable to fluctuations in price and supply availability on the international market. Average annual imports during the 1980-1982 period amounted to 200,000 tons of maize, 60,000 tons of barley, 83,000 tons of soyabean meal and 5,500 tons of grain by-products. The main supplying countries were the United States (for maize), the United Kingdom (for barley), Brazil and Argentina (for soyabean meal).

The State-run Office national des céréales (National Grain Bureau), has a monopoly of the import trade. Most grain imports are duty free; the exception is sorghum which has a duty of 30% on its c.i.f. value. Oilseeds are dutiable at 13% c.i.f. and manioc, were it imported, at 40%.

In order to reduce dependency on imported feed ingredients, the Government is encouraging the substitution of imports by products of domestic origin. However, import requirements in 1986 are tentatively estimated at about 260,000-290,000 tons of maize, 50,000-175,000 tons of barley and 110,000-135,000 tons of soyabean (meal equivalent), depending on the extent of import substitution achieved.

Opportunities exist for imports of grain and soyabean meal substitutes, but competition would be rather keen, the latter being due to the established trade relations of Tunisian importers with exporters able to supply grains and soyabean meal at international prices, of guaranteed quality, at low freight rates and within specified delivery times.

(l) Mexico

Annual compound-feed production in Mexico reached about 9 million tons in recent years. Commercial feed manufacturers and on-farm mixers have about equal shares of production.

Annual imports of feed ingredients vary widely from year to year, as illustrated by the figures given below for the period 1981-1983, in accordance with domestic production and the f.o.b. prices of maize, sorghum and feed-grade wheat.

Product	Average 1981/83	Lowest	Highest
Sorghum	2,300	1,371	3,409
Maize No. 3	370	-	879
Barley	30	-	85
Wheat, feed-grade	150	-	463
Soyabeans	700	495	1,056
Sunflower seed (for domestic processing)	330	29	499
Soyabean meal (for domestic processing)	70	30	142

Imports are authorized as a function of domestic production. The government body CONASUPO handles all imports and subsequent sales of feed ingredients. Import contracts are awarded on the basis of bids from registered Mexican importers and representatives of international broker firms.

Imports from the United States accounted for 90-95% of the total in recent years, Argentina, Australia, Brazil and Canada taking the balance of 5-10%. Contracts are based on United States quality standards. Since the Mexican import market is firmly in the hands of United States exporters, with their comparative advantages of short distances, short delivery times, low shipping costs, quality guarantees, newcomers would have to face a rather tough competitive environment.

Sorghum and soyabean meal account for about 80% of the raw materials utilized by the Mexican feed industry. No grain substitutes are used. Prospective suppliers of such products (e.g. manioc) ought to undertake export promotion activities in order to test the extent of their acceptability on the Mexican market.

(m) Venezuela

In recent years, Venezuela's average annual imports of feed ingredients have amounted to about 1.2 million tons of maize (including maize for human consumption), 550,000 tons of sorghum, 110,000 tons of oilseed meals (of which soya: 80-80%). Total compound-feed production reached about 2.5 million tons/year. This import market is dominated by United States suppliers.

Import licences for feed grains are granted to feed mills on condition that they purchase domestic maize and sorghum. Customs duties amounted to 3.5% of c. & f. values as of August 1984. Import contracts are issued on the basis of tenders from licence holders. Any exporter can participate in the bidding but he would have to face stiff competition from United States suppliers.

The feed industry comprises 30 companies, five accounting for about 75% of the commercial compound feeds produced. These companies handle import operations on their own account. The less important feed manufacturers usually form pools under the auspices of the Venezuelan Feed Milling Association (AFACA), in order to obtain import contracts for large shipments on more favourable commercial terms.

Chapter 2

EUROPEAN ECONOMIC COMMUNITY

A. Introduction

1. General data (1982)

	EEC	Belgium	Denmark	Germany Fed.Rep.	Greece	France	Ireland	Italy	Luxem-bourg	Nether-lands	United Kingdom
Population millions	272	10	5	62	10	54	3	57	0.37	14	56
% employed in agriculture (1983)	7.6	3.0	8.5	5.6	30.0	8.1	17.0	12.4	4.7	5.1	2.7
Agricultural area in use, million ha	101.7	1.4	2.9	12.1	9.2	31.6	5.7	17.8	.13	2	18.8
Arable land, million ha	49.2	0.8	2.6	7.2	2.9	17.4	1.0	9.4	.06	0.8	6.9
Agriculture as % of total export value[a/] (1983)	10.5	9.8[b/]	28.7	5.0	27.4	15.8	27.8	6.5	c/	19.3	6.8

Source: Office statistique des Communautés Européennes, Statistiques de base de la Communauté (Luxembourg).

a/ Including beverages. b/ Includes Luxembourg. c/ See footnote b/.

2. Market overview

The European Economic Community (EEC), in 1984 comprising 10 member countries, is one of the most important developed agricultural markets and one of the largest consumers of livestock products in the world. Its livestock sector makes considerable demands on its own feed resources and on external supplies.

As EEC has a substantial deficit in protein-rich feedstuffs, it is a large importer of such items as oilseed meals and is also one of the biggest processers of imported oilseeds. In addition, it imports substantial volumes of a wide variety of other feedstuffs.

Recent developments (1984) tend to indicate a stagnation or even decline in the output of segments of its livestock sector. For example, medium-term legislation for the dairy sector, introduced in 1984 to stabilize the output of milk and milk products, has already led to a reduction in its dairy herd and to a sharp cut-back in the use of cattle feeds, particularly of imported by-products.

The EEC market for feedstuffs is highly developed and strictly regulated. The development of the livestock and feedstuff sectors is continually being legislated on either the Community or the national level as regards quality, health and sanitation. As internal supplies of certain crops (e.g. cereals) and livestock products (dairy products) have exceeded requirements, efforts are being made to balance the situation. In the case of cereals, for example, recent moves have been made to try to limit or control the entry of imported cereal substitutes as feedstuffs into the Community, as they are considered somewhat unsettling to the domestic market.

The different positions of member countries have meant lengthy discussions on such matters as common legislation. However, the general direction has been to strengthen or introduce legislation on harmful substances, in oilseed meals in particular, in order to minimize danger to animal or human health and to ensure that feedstuffs favour livestock productivity.

Although EEC remains the largest and most flexible user of imported feed ingredients in the world, its increasing focus on health and quality standards has meant, for instance, decreasing imports of certain oilseed meals and cakes.

B. The livestock sector

1. Demand for livestock products

By international standards EEC is a large consumer of livestock products. Its consumption of meat, which was 77 kg per capita in the early 1970s, rose to almost 90 kg per capita in 1983. The economic recession seems, on the one hand, to have slowed down the growth in demand for beef in particular and for sheep meat to a lesser degree, and on the other, to have led to a proportionate rise in demand for pig and poultry meat.

Intraregional trade provides about one sixth of total meat supplies, the balance being obtained from domestic sources. The volumes of its import and export trades are roughly equivalent.

Consumption of milk products has stagnated. Over the period 1973 to 1981, annual per capita consumption of fresh dairy products rose by only 0.1% per annum compared with production increases over the same period of 1.7% per annum. While butter consumption has steadily declined, that of margarine has risen.

Consumption of eggs has also reached a saturation point, indicating a very limited elasticity of demand. Consumption has basically remained unchanged since 1978 at around 14 kg per capita per year.

2. Livestock production

(a) General

Production of all types of meat accounts for about one third of the EEC's total agricultural output: it is thus the Community's most important agricultural activity. EEC produces about 17% of the world's meat, the third largest producer after China and the United States.

In 1982, gross domestic production of all meats (including offals) declined slightly for the first time in about 10 years but rose again to some extent in 1983. The 1982 drop was due to a cyclically reduced output of beef and moribund pigmeat production, although the output of poultry meat rose markedly. Pig and poultry meat increased their combined share in the total EEC meat output to over 60% in 1983 from about 50% in 1973. EEC production of sheep and goat meat is the world's second largest after that of the Soviet Union and, although small in relation to EEC production of other meats, has grown steadily at an annual average of 2.7% since 1973.

(b) Beef and veal

Beef production takes place on about one half of all farms, contributing around 16% to total agricultural production in the Community. It is mostly concentrated in member countries with large grass production. Beef output comes mainly from milk-producing herds. There has been a trend towards larger cattle units since 1973, with the number of producers decreasing at a yearly rate of 3.7% since 1975. At the end of 1983, the total cattle and calf population was 79.4 million head. France is the leading cattle grower, followed by the Federal Republic of Germany (see table 2.1).

Generally speaking, the dairy policy decision taken in 1984 (see following section) makes it difficult to forecast future beef output. Liquidation of herds of cows could mean temporarily increased beef output but subsequent shortages in young calves for fattening. EEC produces about 14% of the world's beef and is the second largest producer after the United States. Table 2.2 summarizes the beef/veal supply situation in EEC in recent years.

Table 2.1

EEC: cattle numbers, 1980-1983
(in thousands of head)

	1980	1981	1982	1983
Total of which:	77,344	77,940	78,772	79,381
France	23,605	23,493	23,656	23,519
Germany, Fed. Rep.	15,069	14,992	15,098	15,552
United Kingdom	13,112	12,961	13,163	13,157
Italy	8,836	8,904	9,127	9,221
Netherlands	5,010	5,046	5,192	5,359
Ireland	5,826	5,758	5,783	5,812
Belgium	2,896	2,859	2,891	2,896
Denmark	2,921	2,890	2,857	2,876
Greece	848	824	785	769
Luxembourg	220	213	219	220

Source: Statistical Office of the European Communities, Yearbook of Agricultural Statistics (Luxembourg, 1984) and Statistiques de base de la Communauté (Luxembourg).

Table 2.2

EEC: beef and veal supply, by quantity[a/], 1980-1982
(in thousands of tons)

	1980	1981	1982
Gross domestic production	7,167	7,003	6,670
Net production	7,177	6,934	6,668
Changes in stocks	- 11	- 113	+ 13
Imports[b/]	470	423	439
Exports[b/]	681	818	522
Intra-Community trade	1,141	1,040	1,117
Internal use (total)	6,971	6,721	6,566
Gross consumption (kg/head/year)	26	25	24
Degree of self-sufficiency (%)	103	104	102

Sources: Statistical Office of the European Communities, Yearbook of Agricultural Statistics (Luxembourg, 1984).

a/ Carcass weight.
b/ Total trade, including live animals.

In terms of husbandry practices, beef/veal production in EEC comes from three different sources: dairy farms (culled cows and young calves); suckler herds and grass-reared adult cattle (beef animals); and young male cattle fattened on grain-based feeds and maize silage in special production units. As a result of the sharp expansion in the organized fattening of young bulls, young male animals now account for about one third of all of the beef produced in the Community.

The beef and veal market is regulated under the Common Agricultural Policy.

(c) Dairy products

By the end of 1983, the EEC dairy herd totalled 25.8 million head, reflecting only a slight increase over recent years (see table 2.3). Yields per animal have continued to increase, however, and as a consequence milk deliveries in 1983 were 103 million tons, compared with 96 million tons in 1980 (see table 2.4).

The main efforts in the milk sector in the past had been directed to finding markets both within and outside the Community. With the sharp climb in domestic production of butter and skim-milk powder during 1983, coupled with stagnation in internal consumption and declining possibilities for export, public stocks rose very rapidly, in spite of increased subsidies for internal disposal (such as for encouraging the use of skim-milk powder as a feed ingredient).

The tendency for Community milk deliveries to rise at a significantly greater rate than both normal internal consumption and export demand is not a recent phenomenon but has been a feature of the milk sector since the earliest days of the Common Agricultural Policy. The achievement of self-sufficiency had led to structural imbalances in the dairy market even by 1973 and to recourse to public intervention. Subsidized disposal schemes on the internal market and other measures were used to try to eliminate growing surpluses.

After more recent attempts to stabilize milk output, the Community introduced a five-year production quota system beginning 1 April 1984. The linchpin of the system is that guaranteed total quantities for each member country (see table 2.4) are determined in relation to deliveries of milk to purchasers. A superlevy, designated to discourage additional production and - as necessary - to finance the cost of disposing of the surplus milk, is applicable to deliveries exceeding the reference quantities. There are special arrangements, including the establishment of national reserve quantities, to take account of the difficulties of certain producers in special situations. The new quota system has had an impact both on milk yields as a result of more restrained feeding practices and on the level of cow slaughter, which has risen with the increased liquidation of dairy herds.

Table 2.3

EEC: dairy herds (1980-1984) and milk yields[a/] (1980-1982)

	1980		1981		1982		1983	1984
	Dairy cows '000 head	Milk yield kg/head	Dairy cows '000 head	Milk yield kg/head	Dairy cows '000 head	Milk yield kg/head	Dairy cows '000 head	Dairy cows '000 head
Total	23,032	4,073	24,961	4,117	25,363	4,314	25,750	25,755
of which:								
France	7,452	3,605	7,120	3,756	7,166	3,848	7,195	7,195
Germany, Fed. Rep.	5,443	4,552	5,469	4,545	5,530	4,683	5,735	5,730
United Kingdom	3,352	4,757	3,296	4,831	3,353	5,078	3,429	3,426
Italy	3,074	3,384	3,013	3,394	3,044	3,469	3,068	3,069
Netherlands	2,343	5,030	2,356	5,156	2,482	5,280	2,521	2,521
Ireland	1,503	3,234	1,449	3,314	1,512	3,547	1,535	1,539
Belgium	978	3,847	977	3,879	969	3,942	969	995
Denmark	1,056	4,846	1,066	4,725	1,014	5,115	988	988
Greece	252	1,777	242	3,156	221	3,089	237	237
Luxembourg	67	4,007	69	4,016	71	4,116	73	69

Source: Statistical Office of the European Communities, Yearbook of Agricultural Statistics (Luxembourg, 1984).

a/ As of December of the previous year.

Table 2.4

EEC: milk deliveries[a/], by quantity, various years
(in thousands of tons)

	1979	1980	1981	1982	1983	1984/85	1985/86-1989/90[b/]
Total of which:	n.a.	95,787	96,194	99,960	103,572	99,024	98,152
France	23,683	24,830	25,060	25,568	26,120	25,585	25,325
Germany, Fed. Rep.	22,050	22,984	23,032	23,670	25,176	23,487	23,248
United Kingdom	15,409	15,494	15,394	16,280	16,585	15,487	15,327
Netherlands	11,245	11,444	11,818	12,492	12,909	12,052	11,929
Italy	7,753	7,867	7,756	8,244	8,323	8,323	8,323
Ireland	4,611	4,556	4,514	4,881	5,280	5,280	5,280
Denmark	5,025	4,917	4,837	5,017	5,227	4,932	4,882
Belgium	2,973	2,986	3,022	3,092	3,225	3,138	3,106
Greece	n.a.	447	499	444	444	472	467
Luxembourg	254	262	262	272	283	268	265

Source: Statistical Office of the European Communities, Luxembourg.

a/ Including deliveries of cream, given in milk equivalent.
b/ Guaranteed total quantity.

(d) Pig meat

Production of pigmeat in EEC is the second largest in the world after that of China. In 1982, pigmeat output accounted for about 12% by value of total agricultural production in EEC and 45% of its total meat output.

Pig holdings are concentrated in the areas surrounding the North Sea and the English Channel as well as northern Italy. The size of EEC pig holdings has steadily increased, rising from an average of 25 animals in 1973 to 40 animals by 1981. The most notable change has been the rise in the proportion of pigs held in larger-sized holdings of over 400 pigs each. In the Netherlands, the United Kingdom and Denmark, between 10 and 20% of all pig holdings are in this size category.

At the end of 1983, the total number of pigs in EEC was 79 million. The Federal Republic of Germany, with 30% of the total, is the Community's largest raiser of pigs (see table 2.5).

Pig slaughtered in the EEC generally have a deadweight per animal of 80 to 85 kg but there are variations according to particular market requirements. For instance, bacon-type pigs in the United Kingdom, Ireland and Denmark are about 65 kg deadweight and the heavy pigmeat favoured for some product specialities in Italy have a deadweight of up to 110 kg.

(e) Poultry meat

Together with eggs, poultry meat contributes about 8% of the total value of agricultural production in EEC. Poultry production is characterized by concentrated operations and by various forms of horizontal and vertical integration. The degree of concentration is greater in the broiler than in the egg subsector. In the northern part of EEC, more than 90% of the poultry units are holdings of more than 10,000 birds. Concentration is less marked in France, Italy and Belgium where the more traditional forms of production and marketing remain important. An indication of the extent of the EEC poultry operations is given in table 2.6.

EEC contributed 15% to the world poultry-meat output in 1981, being the second largest producer after the United States. With one third of the world's exports, it is the leading poultry-meat exporter, followed by Brazil and the United States; France is the Community's largest single exporter. In 1983, the Middle East and the Soviet Union were the Community's principal outlets for broiler meat, but falling export demand and increased competition from Brazil are likely to have an adverse effect on its position in these markets.

Broiler meat makes up about 70% of the region's total poultry-meat production (see table 2.6). The sector goes through periodic peaks and troughs. Since 1984, i.e. following an over-supply in the market and poor returns on production, the industry has returned to a cautious growth policy.

Table 2.5

EEC: pig numbers (1981-1983)[a/] and slaughter (1980-1982)[b/]
(in thousands of head)

	1980	1981		1982		1983
	Slaughter	Population	Slaughter	Population	Slaughter	Population
Total of which:	124,677	78,288	126,435	78,196	125,515	79,099
Germany, Fed. Rep.	37,998	22,553	37,914	22,310	37,379	23,449
France	21,109	11,963	21,618	11,421	21,059	11,251
Netherlands	13,239	10,188	14,065	10,193	14,349	11,008
Denmark	14,483	9,696	14,611	9,785	14,416	9,016
Italy	10,285	8,928	10,522	9,015	10,542	9,187
United Kingdom	14,630	7,770	14,724	7,910	14,991	7,781
Belgium	8,145	5,011	8,228	5,076	7,968	5,113
Greece	2,292	995	2,292	1,323	2,331	1,167
Ireland	2,375	1,096	2,335	1,090	2,363	1,053
Luxembourg	122	88	123	73	117	71

Source: Statistical Office of the European Communities, Luxembourg.

a/ As of December of the previous year.
b/ Including animals of foreign origin.

Table 2.6

EEC: number of utility chicks of table strains hatched, 1980-1982
(in thousands of head)

	1980	1981	1982
Total of which:	n.a.	2,299,897	2,380,458
France	528,759	619,117	667,101
United Kingdom	408,830	429,917	444,389
Italy	392,793	369,077	390,451
Netherlands	335,207	367,101	346,420
Germany, Fed. Rep.	256,748	259,489	263,143
Belgium/Luxembourg	74,711	85,538	95,391
Denmark	70,711	78,758	83,155
Greece	n.a.	67,237	65,517
Ireland	24,999	23,669	24,895

Source: Statistical Office of the European Communities, Animal Production (Luxembourg, 1984).

Table 2.7

EEC: net domestic production of poultry meat, 1980-1982
(in thousands of tons)

	1980	1981	1982
Total of which:	4,021	4,199	4,430
France	1,136	1,238	1,333
Italy	1,007	1,009	1,040
United Kingdom	748	747	809
Netherlands	376	410	419
Germany, Fed. Rep.	374	378	379
Belgium/Luxembourg	113	122	134
Greece	120	146	156
Denmark	97	104	110
Ireland	50	45	49

Source: Statistical Office of the European Communities, Yearbook of Agricultural Statistics (Luxembourg, 1984).

(f) Eggs

Production of eggs in the Community makes up about 6% of the value of livestock production and 3% of total agricultural production. In 1982, with 14% of the world total, the Community was the second largest egg producer after China. It is also the world's largest egg exporter, in 1982 accounting for one third of world exports.

In terms of structure, large-sized holdings currently account for over one half of production in most member countries and up to three quarters in the United Kingdom and in the Netherlands.

The egg market goes through phases of supply adjustment and is highly responsive to market price movements and margins of returns. As with the broiler sector, the egg industry has recently been marked by greater cautiousness resulting from stagnating internal demand and limited opportunities for sales in the world market. The volume of trade to third countries of eggs in shell is much lower than intra-Community trade. The Netherlands is EEC's largest exporter to third countries. For details on the numbers of layers and egg production in EEC countries see tables 2.8 and 2.9.

Table 2.8

EEC: number of laying hens, 1980-1982
(in thousands of head)

	1980	1981	1982
Total	296,584	301,141	283,133[a/]
of which:			
France	72,550	76,100	74,800
United Kingdom	57,330	55,457	55,448
Germany, Fed. Rep.	55,800	54,200	53,800
Italy	47,513	50,202	49,527
Netherlands	26,610	27,598	29,408
Greece	16,764	17,318	n.a.
Belgium	12,559	12,303	12,292
Ireland	2,800	3,227	3,134
Denmark	4,563	4,646	4,634
Luxembourg	95	90	90

Source: Statistical Office of the European Communities, Animal Production (Luxembourg, 1983).

a/ Excluding Greece.

Table 2.9

EEC: production of eggs in shell, 1980-1982
(in thousands of pieces)

	1980	1981	1982
Total	4,062	4,156	4,256
of which:			
France	853	894	950
United Kingdom	822	801	804
Germany, Fed. Rep.	785	768	763
Italy	634	666	658
Netherlands	540	590	643
Belgium/Luxembourg	199	195	195
Greece	120	126	125
Denmark	76	79	83
Ireland	33	37	35

Source: Statistical Office of the European Communities, Yearbook of Agricultural Statistics (Luxembourg, 1984).

C. Supply of, and demand for, feeds

1. General

In EEC as a whole, approximately 300 million tons of feedstuff have been consumed annually in recent years (see table 2.10). Consumption of concentrates rose from an average of 115 million tons annually in 1972/74 to 133 million tons in 1982, with cereals taking a major but declining share. In absolute terms, grain usage for feed has stagnated in EEC, although the use of domestic resources has risen slightly as feed-grain imports have decreased.

Total imports of feedstuffs from third countries increased from 34 million tons of grain equivalent in 1972/73 to 42 million tons in 1980/81 and even higher in the following years (see tables 2.11 and 2.12). In terms of total usage of concentrates, imports from third countries represented about 30% of the total in the early 1970s but only slightly more in the early 1980s.

As to industrial by-products (particularly maize by-products from the United States and citrus pulp pellets from Brazil in addition to oilmeals and oilseeds imported for processing in EEC), imports rose from 17 million tons of grain equivalent in 1972/73 to around 25 million tons in 1980/81. Expressed in terms of percentage of total concentrates used, this represents a rise from 15% to 20% over the same period.

Table 2.10

EEC: consumption of feedstuffs, by quantity, 1978-1982
(in millions of tons of grain equivalent)

	1978	1979	1980	1981	1982	1980/82 Average	1980/82 Share of total
Total[a/b/]	293	303	300	296	299	298	100.0
of which:							
Concentrates	125	134	135	131	133	133	44.6
Cereals	69	72	72	70	70	71	23.8
Grain-milling by-products	7	7	7	7	7	7	2.3
Oilmeals	19	22	24	23	21	23	7.7
Grain protein feeds	3	4	4	4	4	4	1.3
Manioc	5	7	5	6	8	6	2.0
Molasses	2	3	3	2	2	2	0.7
Sugar-beet pulp and slices	5	4	4	4	5	4	1.3
Milk products	7	7	7	6	7	7	2.3
Fats and oils	2	3	3	3	3	3	1.0
Other[c/]	6	5	6	6	6	6	2.0
Roughages	168	169	165	165	166	165	55.4
Harvested roughage[d/]	32	31	32	32	33	32	10.7
Maize silage	17	17	18	18	19	18	6.0
Other[e/]	15	14	14	14	14	14	4.7
Pastures	131	133	128	127	127	127	42.6

Sources: Eurostat, Feed Balance Sheet and Resources (Sienna) (various editions). Statistical Office of the European Communities.

a/ Rounding errors due to averaging.
b/ Barley equivalent.
c/ Mainly feed pulses, processed tubers, beet and citrus pulp pellets.
d/ Mainly hay and silage.
e/ Mainly straw and husks.

Table 2.11

EEC: imports of feed ingredients from third countries, by quantity, various years
(in thousands of tons of grain equivalent)

Ingredients	1972/73	1975/76	1978/79	1979/80	1980/81
Of vegetable origin					
Total	15,437	15,269	18,555	15,744	14,779
of which:					
Cereals	12,761	12,026	10,425	9,183	7,667
Rice	24	46	19	38	32
Pulses	338	242	147	163	121
Potatoes	3	-	-	-	-
Sugar	17	-	-	-	-
Vegetable fruit and oils	165	201	766	823	861
Processed green fodder	45	124	200	261	205
Manioc	1,682	2,429	6,686	4,805	5,388
Others	402	201	312	471	505
Industrial by-products					
Total	17,325	19,526	23,751	26,738	25,455
of which:					
Milling	2,048	1,992	2,180	2,248	2,099
Brewing	66	63		)	)
Distilling	6	4	1,694	) 2,087	) 2,243
Starch industry	701	959		)	)
Sugar industry					
- sugar-beet pulp	-	1	-		)
- dried sugar pulp	129	90	177	1,810	) 1,481
- molasses	577	506	1,150		)
- others	-	21	44		)
Oilcakes	13,399	15,427	17,912	19,707	18,654
Others	399	463	594	886	978
Of animal origin					
Total	1,431	1,054	1,165	1,771	1,805
of which:					
Fish-meal	679	607	475	460	400
- others	-	-	-	-	-
Meat-meal	39	6	28	16	41
- others	28	21	-	-	-
Animal fats and oils	672	416	662	1,295	1,364
Skim-milk powder	13	4	-	-	-
Lactoserum powder	-	-	-	-	-
Total	34,193	35,849	43,471	44,253	42,039

Source: Statistical Office of the European Communities, Yearbook of Agricultural Statistics (Luxembourg, 1984).

Table 2.12

EEC: imports of feed ingredients, by quantity and by origin (group of third countries), 1982
(in millions of tons)

Goods	Of which from:	
	Non-member countries	Developing countries
Cereal grain of which:	10.9	0.5
Common wheat grain	3.0	-
Grain barley	0.5	-
Grain maize	7.2	0.4
Other cereal grain	0.2	0.1
High-protein feedstuffs of which:	29.1	10.9
Soyabeans and soya meal	20.9	5.6
Other oilseeds and oilcake	7.2	4.7
Meals of animal origin	0.7	0.6
Other high-protein feedstuffs	0.3	-
High-energy feedstuffs of which:	17.6	11.9
Manioc	8.1	7.7
Corn gluten feed and starch residues	2.8	0.1
Citrus pellets and fruit waste	1.4	0.7
Bran and cereal sharps	2.0	1.3
Molasses	2.8	2.1
Other high-energy feedstuffs	0.5	-
Total	57.6	23.3

Source: Official Journal of the European Communities (No. C 200/2/3 of 30 July 1984).

Supplies of concentrates of EEC origin have tended to increase, particularly in the case of cereals, milk products and, more recently, certain oilseeds. The size of stocks of the first two feedstuffs has created major disposal problems. Oilmeals, and compound feeds to a much smaller extent, are the principal exports to third countries, but this has relatively little bearing on the net EEC supply situation.

In terms of supplies of roughage, the most important development has been the growth of supplies of domestic maize silage. These supplies have expanded at an average of 9% yearly over the last decade.

Of the domestic feedstuffs, cereals have been the most important. I the Community as a whole, slightly over one half of the total arable lan is planted to cereals and grain production has been steadily rising Surpluses have developed within a market-regulating system which allow grain farmers to increase their yields substantially as a result of levie protecting them against cheaper world market grains. Measures are no being taken to lower price support levels and thus to bring about reduction of production surpluses.

The use of grains for feed varies a great deal within the Community. In countries such as the Netherlands and Belgium, which grow relatively little grain, alternative low-priced feedstuffs tend to be used. I grain-producing countries such as the United Kingdom, a large amount o barley is fed to farm-raised pigs as is maize in Italy. The commercial feed usage of higher-priced domestic grain has been affected by cheape third-country cereal substitutes. But the degree of substitution depend on the location of grain-growing and livestock-raising areas.

In 1978, EEC adopted special measures to increase the use of peas an beans for animal feed. Under an aid system currently in operation, feed manufacturers are granted a subsidy for using Community-grown peas an field beans when their "activating" price is higher than the price o soyabean meal. In 1982/83 aid was granted for 400,000 tons of peas an 200,000 tons of field beans, reflecting increased usage of these items i the United Kingdom and France in particular. In 1978/79, subsidies fo incorporation in feed mills covered only 165,000 tons of both products. EEC has recently decided to add lupins, another legume, to the subsidized crops in order to attain greater self-sufficiency in proteins.

EEC has a common system for marketing dried fodder, covering dehydrated fodder, sun-dried legumes, protein obtained from lucerne and grass juice, and by-products of the manufacture of protein concentrates. The system has been operating since 1978.

Production of dehydrated fodder in 1982 reached 1.3 million tons. The tendency is for output to decline. As drying accounts for a considerable proportion of production costs, the pricing of fodder is greatly affected by changes in energy costs.

Among the industrial by-products, meals from domestic rapeseed and sunflower seed have grown in importance as protein sources in recent years. However, these meals make up a modest proportion of the EEC's total oilseed meal requirements. In 1982, for example, the region's degree of self-sufficiency in oilseed meals and cakes reached only 8%. However, production of rapeseed appears to be on the rise, e.g. 2.7 million tons in 1982/83 compared with 2 million tons only two years earlier, and rapeseed meal production has been expanding over the last decade at an annual rate of about 6%. Oilseed crushers receive subsidies for processing domestic oilseeds.

The use of skim-milk powder in compound feeds has helped to reduce the surplus that has been plaguing the EEC market for many years. Apart from the aid normally given to feed mills in the form of a price reduction of 40% for incorporating the powder into calf milk replacers, a special

measure covering use in pig and poultry compound feeds was brought into operation in July 1982; skim-milk powder sales for this purpose in 1983 are estimated at 500,000 tons. As a component of calf milk replacers where its rate of inclusion must be 60% of the compound, usage of the powder remained basically unchanged in 1983 at 1.28 million tons.

2. Imports

The Community is a vast market for imports of a great variety of feedstuffs from many origins. The principal imports from third countries are oilmeals and oilcakes (imported either as seed for crushing or as meals and cakes), high-energy feedstuffs such as manioc, maize by-products, citrus pellets, brans, and molasses (see table 2.12).

As the above-mentioned table shows, EEC imported about 57 million tons of feedstuffs from third countries in 1982. Over 23 million tons of which originated from developing countries.

Table 2.13, which classifies imports according to the Standard International Trade Classification (SITC), shows that imports of "feedingstuff for animals" (item 081), which excludes molasses, maize and manioc, increased sharply from 17 million tons in 1978 to 26 million tons in 1983, half of which came from developing countries. However, overall imports remained largely unchanged as a result of the drop in the volumes of maize, manioc and molasses. The steady decline in imports of maize, principally from the United States, was due to the following: increasing use of grain substitutes such as corn gluten feed from the United States (over 3 million tons in 1983), citrus pulp pellets (from Brazil and the United States), and wheat bran (from Canada, Argentina, Indonesia and China); the EEC grain levy system; and expansion in domestic supplies of maize.

As mentioned elsewhere, the rapid growth in EEC purchases of manioc, especially from Thailand, has been curbed under a voluntary restraint agreement as the imports were considered to have had an unsettling influence on the EEC cereals market. Almost all of Thailand's export supplies of this product have been destined for the EEC market. EEC shippers have developed integrated facilities in that country for handling and shipping manioc.

The rapid increase in imports of another grain substitute, i.e. maize by-products from the United States, has also been the subject of an EEC attempt at stabilization under the auspices of the General Agreement on Tariffs and Trade (GATT) (see section on tariffs). As imports reach around 3 million tons per annum and as EEC is a captive market for these by-products, it is difficult to visualize a comparable alternative market for United States suppliers.

About 1.5 million tons of citrus pulp pellets are imported from Brazil and the United States. As with corn by-products, they are destined for end-use in supplementary feed for dairy cattle, particularly in the northern EEC countries. Wheat bran from Argentina, Canada and Indonesia fulfils a similar function to a lesser extent.

Table 2.13

EEC: imports of feed ingredients, by SITC category and by origin, 1978-1983[a/]
(in thousands of tons)

SITC No./Item	1978[b/]	1979[b/]	1980[b/]	1981	1982	1983
081 - Feedingstuffs for animals						
EEC extra	17,130	19,381	21,035	21,094	22,375	25,645
Developed countries	7,441	8,383	10,372	9,832	10,313	12,166
of which:						
EFTA[c/]	224	331	243	240	225	355
Developing countries	9,414	10,698	10,395	11,055	11,842	13,025
of which:						
ACP (59)[d/]	763	892	858	631	652	706
Centrally planned economies	274	299	268	208	221	454
054.81 - Roots, tubers, dry						
EEC extra	5,983	5,456	5,190	6,765	8,156	4,647
Developed countries	2	2	2	2	11	5
Developing countries	5,978	5,326	4,534	6,074	7,657	4,349
of which:						
Thailand	5,669	4,529	4,116	5,620	7,350	4,247
Indonesia	219	694	372	413	286	86
Centrally planned economies	3	128	654	690	489	293
of which:						
China	2	128	654	690	489	269
044 - Maize						
EEC extra	12,756	11,252	9,906	9,505	7,228	5,686
Developed countries	10,942	9,355	9,421	9,024	6,820	4,958
of which:						
EFTA	1	1	12	1	4	2
Developing countries	1,773	1,885	467	466	385	687
Centrally planned economies	409	12	18	14	23	41

Source: Statistical Office of the European Communities, Analytical Tables of Foreign Trade: NIMEXE (Luxembourg, 1984).

a/ Including re-exports.
b/ Excluding Greece.
c/ European Free Trade Association.
d/ African, Caribbean and Pacific States (associated with EEC).

All the grain substitutes have a higher protein content than unprocessed grains. In addition, they have a high energy content.

About one half of EEC purchases of molasses, which total 1.3 million tons yearly, are used in the feed industry, the balance being used mainly in the production of alcohol. Developing countries are the major suppliers.

Soyabean is the most important of the imported high-protein feed ingredients. Imported either as oilseed or as meal, its two major suppliers are the United States and Brazil. Paraguay and Argentina also export soyabeans to the EEC for crushing purposes. Problems with regard to aflatoxin levels have arisen recently in imported groundnut meal pellets and copra meal from certain origins.

3. Exports

In 1983, EEC exported approximately 2 million tons of soyabean meal to third countries. The meal is produced from imported soyabeans, principally in crushing mills in the Federal Republic of Germany and the Netherlands. About 1.4 million tons were exported to the Soviet Union, by far the most important buyer; 400,000 tons were shipped to Austria and smaller quantities to Yugoslavia, Poland, Libyan Arab Jamahiriya, Egypt and Sweden.

EEC is also an exporter of a wide variety of other feedstuffs such as by-products of the sugar and starch industries as well as fish and other marine meals. In addition, Switzerland bought 177,000 tons of cereal straw and husks in 1983, mainly from France and the Federal Republic of Germany.

EEC also exports compound feeds to third countries. In 1983, 255,000 tons of various types of compound feeds were exported, chiefly to Eastern Europe, the Middle East and Sweden.

D. The compound-feed industry

1. Overview

The EEC compound-feed industry, in keeping with the growth of the livestock sector, has become the largest producer of mixed feeds in the world. As can be seen from table 2.14, output grew from 58 million tons in 1975 to 83 million tons in 1983.

The main contributors to this expansion of mixed feed production had been the pig and dairy cattle sectors. The outlook, however, at least in the medium term, is for a stagnation or even decline in total Community demand for mixed feeds, especially because of regulations limiting any further growth in milk production.

Table 2.14

EEC[a/]: production of compound feeds, by type, 1975, 1980-1983
(in thousands of tons)

	Germany Fed.Rep.	France	Italy	Netherlands[b/]	Belgium/ Luxembourg	United Kingdom	Ireland	Denmark	Tot EEC
Poultry feeds									
1975	3,480	3,180	2,530	2,180	1,020	3,350	240	550	16,5
1980	3,217	5,191	4,252	2,793	936	3,472	269	546	20,6
1981	3,496	5,603	4,240	2,972	961	3,459	263	543	21,5
1982	3,398	5,668	4,208	3,095	1,081	3,630	272	567	21,9
1983[c/]	3,272	5,300	4,675	3,102	952	3,532	278	522	21,6
Pig feeds									
1975	4,130	4,200	2,040	4,550	2,650	2,180	400	1,110	21,2
1980	6,249	4,839	2,314	6,112	2,617	2,269	508	2,106	27,01
1981	6,290	4,752	2,541	6,219	2,469	2,182	492	2,102	27,04
1982	6,140	4,670	2,549	6,222	2,445	2,297	489	1,981	26,79
1983[c/]	6,173	4,620	2,365	6,256	2,540	2,292	474	1,900	26,62
Cattle feeds									
1975	3,470	2,220	1,130	3,740	920	4,470	360	1,150	17,46
1980	6,841	3,287	3,207	5,354	1,271	4,985	958	2,088	27,99
1981	7,251	3,452	3,404	5,197	1,239	5,011	1,070	2,005	28,62
1982	7,163	3,636	3,412	5,193	1,344	5,482	1,034	1,957	29,22
1983[c/]	7,787	3,745	3,124	5,821	1,455	5,960	1,244	2,228	31,36
of which: Milk replacers for calves									
1975	410	708	256	421	53	34	25	23	1,93
1980	378	848	325	512	60	33	42	28	2,22
1981	338	837	298	589	55	34	49	28	2,22
1982	366	897	274	527	69	31	42	22	2,22
1983[c/]	n.a.	n.a.	n.a.	549	n.a.	34	n.a.	n.a.	n.a
Other feeds									
1975	420	870	300	230	110	200	20	90	2,24
1980	489	1,378	705	197	81	361	31	102	3,34
1981	587	1,349	771	182	109	355	35	103	3,49
1982	534	1,378	693	194	123	408	30	109	3,46
1983[c/]	494	1,535	836	238	125	450	65	118	3,86
Total									
1975	11,500	11,100	6,000	10,700	4,700	10,200	1,020	2,900	58,12
1980	16,796	14,695	10,478	14,456	4,905	11,082	1,766	4,842	79,02
1981	17,624	15,156	10,956	14,570	4,778	11,007	1,860	4,753	80,70
1982	17,235	15,352	10,862	14,704	4,993	11,817	1,825	4,609	81,39
1983[c/]	17,727	15,200	11,000	15,417	5,071	12,284	2,061	4,528	83,23

Source: European Feed Manufacturers Federation, Brussels.

a/ Excluding Greece.
b/ Seasonal basis.
c/ Provisional.

The EEC compound-feed industry comprises approximately 3,500 feed mills whose interests are represented by two principal associations. The largest, representing private producers, is the European Feed Manufacturers Federation (FEFAC); the other, representing co-operatives, is the General Committee of Agricultural Co-operation (COGECA). FEFAC members produce approximately two thirds of the EEC's mixed feed. It proposes guidelines and actions in the interest of its members and is in continued contact with Community institutions such as the Commission of the European Communities, the European Council and the European Parliament. It is also officially represented in the Advisory Committees set up by the Commission for the main EEC agricultural markets.

Annex I gives an extensive list of industrial associations in the region and their members as well as the names of associated organizations dealing with mixed-feed processing either directly or indirectly.

2. The industry in individual countries

In the Federal Republic of Germany, there are about 900 compound feed manufacturers. Of these, 300 have an annual production exceeding 5,000 tons while 370 have an annual output ranging from 250 to 5,000 tons.

About 135 compound-feed manufacturers with 200 feed mills are members of the feed milling association, Fachverband der Futtermittelindustrie e.V. They produce almost 50% of the compound-feed output of the Federal Republic, manufacturing livestock feeds, mineral mixes, milk replacers, feeds for game, pet animals and others. They have a large share in the European market for milk replacers, mineral feeds as well as semi-finished products and premixes. They vary considerably in location, capacity, and production.

Privately owned mills account for 65% of the national output. The balance is produced by feed mills belonging to central and local co-operatives.

Other trade associations are the Bundesverband der Mischfutterhersteller e.V. and the Deutscher Müllerbund e.V., with about 750 feed mills, producing some 15% of the national compound-feed output. Many members of these associations are major merchants, local co-operatives and millers. Raiffeisen-Futterring e.V., an association of central co-operatives with 12 members, produces about 35% of the Federal Republic's total.

The Netherlands compound-feed associations are members of the Produktschap Voor Veevorder, which has highly organized contacts with all segments of the industry. In 1982/83, there were 451 feed mills in the country. The larger private manufacturers among them belong to the Vereniging Van Nederlandse mengvoederfabrikanten; the smaller private producers fall under a consultative organization called NINO which, among its other activities, disseminates information on technical developments and trends to its members. There are 368 privately owned mills in the Netherlands, contributing 46% to the national output; the other 83 are co-operative mills, producing the balance of 54%.

About 80 mills have an individual annual output of between 10,000 and 25,000 tons, contributing 9% to total production; 39 mills produce between 25,000 and 50,000 tons each (10% of production); 20 mills have an output of 50,000 to 100,000 tons each (7% of total output) and 30 mills produce more than 100,000 tons yearly (60% of the total). Concentration in large units with individual outputs of over 50,000 tons per annum is steadily growing. There are 28 producers of milk replacers, the private sector accounting for 78% of the output.

Belgium is reported to have 300 compound-feed manufacturers. There is only one organization representing them, the Association professionnelle des fabricants d'aliments composés pour animaux (APFACA). The organization comprises 98 firms, whose production in 1982 represented about 60% of the national output. The only major manufacturer that is not a member of the organization is the Boerenbond Belge, a co-operative that accounts for about 18% of total domestic production. The remainder of the national output is divided among about 200 regional manufacturers and traders/mixers, in many cases small, family operations. Production, however, is concentrated in larger operations, with some 30 manufacturers accounting for more than 75% of the national output, 20 of these firms producing 65% of the national total. About two thirds of their production is undertaken in the north-western part of the country, partly because large ports such as Antwerp are located there and because livestock production is concentrated in the area.

In France, privately owned firms account for about two thirds of the national compound-feed production, the balance being handled by co-operatives. In 1982, 522 feed mills were privately owned. About 60% had annual capacities of less than 5,000 tons each and accounted for only 4% of total production of privately owned firms; 85 mills produced between 5,000 and 15,000 tons each; 124 mills produced over 15,000 tons individually, accounting for about 89% of the total for privately owned firms. Of the last group of mills, 34 had annual capacities of more than 50,000 tons, 16 producing over 100,000 tons each or 50% of the total output of the private sector. Members of the Syndicat national des industriels de l'alimentation animale (SNIA) handle about 80% of total production in the sector. Co-operatives belong to Syndicat des coopératives fabriquant des aliments composés (SYNCOPAC).

In Italy, about two thirds of the national mixed-feed output come from the 210 members of the only organization representing the animal-feed industry, the Associazione nazionale tra i produttori di alimenti zootecnici (ASSALZOO). In addition to these compound-feed producers, ASSALZOO has 28 producers of straight feedstuffs and 24 producers of premixes. About 25% of the national output of compound feeds is supplied by plants affiliated to the Federazione Italiana dei consorzi agrari, a federation of co-operatives. The remainder comes from small-scale, irregular producers.

The United Kingdom has about 450 plants producing compound feeds, situated near small harbours and cereal-producing and livestock-raising regions. Over 90% of production is carried out by members of the United Kingdom Agricultural Supply Trade Association Ltd (UKASTA), which covers national, local and co-operative compounders. It represents not only feed manufacturers but also sections of the trade involved in the distribution

of animal feedstuffs, marketing and processing of cereals and products used in the agricultural sector. The feed market in the United Kingdom is served by three major groups of compound-feed producers: national companies with mills located throughout the country and with nationwide distribution, local compound-feed producers buying raw materials and selling mixed feeds within a local area, and co-operative compound-feed producers with strong links with farmers' organizations. Privately owned firms produce about 90% of the domestic compound-feed supply.

Most of Denmark's 400 to 500 animal feed traders are also manufacturers of compound feeds for pigs. However, only between 10 to 20 of them produce compound feeds for poultry and cattle as well. Total production is shared equally by private producers and co-operatives. The Danske Korn- og Foderstof-Importørers og Eksportørers Faellesorganisation (DAKOFO) is the trade organization for the largest importers and manufacturers of compound feeds as well as exporters of grains, and covers both private and co-operative producers. It accounts for about two thirds of national production of compound feed. The smaller traders and pig compound-feed manufacturers belong to either of two organizations, one for private firms and the other for co-operatives.

In Ireland, there are 141 producers of compound feeds. The Irish Corn and Feed Association represents manufacturers of compound feeds and importers of cereals, oilcakes and other feedstuffs and includes private companies as well as some co-operatives.

3. Compound-feed production

The preceding table (2.14) shows production of compound feeds in EEC (excluding Greece) over the period 1975-1983. Production in each member country is a function of the size of its livestock sector and of the quantity of domestically available feedstuffs for on-farm mixing. As table 2.15 shows, the Federal Republic of Germany is the largest producer of compound feeds in EEC, with around 17 million tons annually or 20% of the Community total, followed by France and the Netherlands with about 15 million tons each yearly, and the United Kingdom, with about 12 million tons. The share of different types of feeds in total national output can vary, for example, with the size of the livestock sector, its degree of commercialization and its location. Pig-feed production can be more concentrated in pig-raising areas such as North Brabant in the Netherlands, Brittany in France and north-eastern England. Output of dairy feeds may be concentrated in dairy-growing areas such as Friesland in the Netherlands, north-western Federal Republic of Germany, and south-western England. Other factors can also operate. For example, in Belgium where about 5 million tons of compound feeds are produced yearly, of which about one half is pig feed, production has in the past varied according to whether carcass weights were rising or falling. In this country's cattle sector, compound feeds continue to be considered as supplementary feeds except when used for final fattening. However, until recently, growth in the use of compound feeds increased with the development of specialized, rather than mixed, breeds for dairy and meat production.

Table 2.15

EEC[a]: ingredients in the production of compound feeds, by quantity and by country, 1976 and 1979
(in thousands of tons)

	Germany Fed.Rep.	France	Italy	Netherlands[b]	Belgium-Luxembourg	United Kingdom	Ireland	Denmark	Total EEC 9
1976									
Cereals of which:	4,336	5,902	4,542	2,836	1,830	6,426	954	1,100	27,926
Maize	2,077	3,562	3,633	1,948	752	1,716	300		
Barley	1,247	1,202	681	199	306	2,126	500		
Wheat	452	904	63	95	64	2,206	14	n.a.	n.a.
Sorghum	76	-	-	515	382	272	140		
Other	484	234	163	79	326	107			
Milling by-products	1,110	1,250	838	1,012	733	1,042	-	200	6,185
Manioc	630	160	-	1,225	565	-	-	60	2,640
Oils and fats	150	250	-	191	52	90	-	-	733
Oilseed cakes and meals	4,475	2,415	1,185	2,193	1,116	1,304	190	1,440	14,318
Maize gluten feed	349	-	-	876	-	-	-	-	1,225
Animal meals	350	230	168	278	93	634	50	-	1,803
Dried beet pulp	20	-	-	776	-	-	-	-	796
Molasses	300	340	-	471	204	482	-	-	1,797
Dairy products	440	460	249	398	84	17	21	25	1,694
Dried forage (lucerne meal)	365	350	-	219	111	-	-	-	1,045
Miscellaneous of which:	562	943	431	1,445	229	1,706	19	-	5,415
Pulse crop	10			93	n.a.			-	
Citrus pulp				492	n.a.			-	
Additives, minerals, vitamins, etc.	300	n.a.			214	n.a.		-	n.a.
Other	252			860	15			-	
Total	13,087	12,300	7,413	11,920	5,017	11,781	1,234	2,825	65,577
1979									
Cereals of which:	5,014	6,208	6,000[c]	2,453	1,544	5,036	966	1,400	28,621
Maize	1,561	3,349	-	1,702	693	1,118	193		7,616
Barley	1,837	1,002	-	349	300	2,438	712		6,638
Wheat	863	1,446	52[c]	189	101	2,369	32	n.a.	5,052
Sorghum	14	-	-	85	274	32	-		434
Other	1,039	311	-	128	649	81	-		2,208
Manioc	1,302	575	190[c]	2,490	734	29[c]	199	82	5,601
By-products, food industry of which:	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cereal by-products	1,200	1,340	1,140[c]	1,122	649	1,065[c]	80[c]	150[c]	6,746
Maize gluten feed	800	200	13[c]	1,316	120[c]	23[c]	21[c]	-	2,493
Citrus pellets	-	-	-	970	-	-	-	-	970
Beet pulp	-	140	-	759	-	-	-	-	899
Molasses	500[c]	340	150[c]	513	202	460	-	500[c]	2,665
Oils and fats	250[c]	260	-	283	70	124	-	-	987
Cakes and meals	6,159	2,770	1,500[c]	2,594	1,104	1,531	492	2,000	18,150
Dried forage	450[c]	560	200[c]	262	142	-	-	40	1,654
Animal meals	531[c]	340	200[c]	241	84	572	46	80	2,094
Dairy products	389[c]	496	212	556	87	24	22	11	1,797
Minerals, additives	350	-	-	587	223	-	-	-	1,160
Miscellaneous	-	778	375[c]	604	36	2,192	237	487	4,709
Total	16,945	14,007	9,980	14,750	4,995	11,056	2,063	4,750	78,546

Source: European Feed Manufacturers Federation, Brussels.

a/ Excluding Greece.
b/ August-July.
c/ Estimate.

Most compound feeds marketed in EEC are pelletized. In the Federal Republic of Germany, for example, about 70% of the commercialized compound feeds are in pellets although regional proportions vary. In the Netherlands the figure reaches 90%; the exception is poultry feeds of which one half comprises mash.

Table 2.16 shows usage (as percentage of the total) of cereals and oilseed meals in the manufacture of compound feeds in EEC countries. There has been a noticeable overall trend towards a drop in the use of cereals and a rise in the use of other products such as manioc and by-products of food and other processing industries, particularly maize by-products. In addition there has been a slow rise in the use of oilseed meals, partly to compensate for the use of lower-protein substitute ingredients in energy formulations. Proportions vary greatly, however, in individual countries. For example, cereal inclusion rates are highest in Italy (over 50%) and lowest in the Netherlands (about 17% in 1982). In Italy this is partly due to the availability of large quantities of domestic maize. The Netherlands, on the other hand, is highly dependent on imported raw materials for its mixed-feed industry and is far more flexible about raw material usage, this being determined by price, availability and quality.

Table 2.17 provides an idea of the quantities of feed ingredients used in the production of compound feeds and as straights in 1980. Since then, the use of industrial, principally imported, by-products which amounted to over 14 million tons in 1980, has grown steadily.

It should be mentioned that some imported soyabean meal (either crushed in EEC or imported as such) is used for on-farm mixing, the actual quantities varying with price and quality at particular points in time. By-products such as corn gluten feed and citrus pulp pellets are basically used in cattle feeds. Usage of these raw materials has been substantially affected by the restrictions on milk production introduced in 1984. As a result imports into the Netherlands and the Federal Republic of Germany, which have been substantial markets for these by-products, have declined. In the United Kingdom, the costs of trans-shipping raw materials from the large receiving continental ports, such as Rotterdam and Antwerp, the expansion in supplies of domestic grains and rapeseed meal, and the depressed dairy sector have meant lower requirements of imported feed ingredients.

Table 2.16

EEC[a/]: ingredients in compound-feed production, as percentage of total, by country, 1973, 1978, 1980-1982

Country/year	1973	1978	1980	1981	1982
Cereals					
Italy	51.3	59.2	57.3	51.2	53.7
France	49.3	44.1	45.6	43.4	42.3
Ireland	58.8	58.5	45.2	40.3	41.1
United Kingdom	54.1	50.9	51.3	49.3	40.7
Denmark	48.0	33.2	34.3	33.7	35.8
Belgium/Luxembourg	44.3	34.3	30.4	29.3	28.0
Germany, Fed. Rep.	39.7	30.3	26.7	25.6	22.3
Netherlands	33.2	19.4	19.5	17.4	16.5
EEC, 9 countries	45.6	38.5	37.5	36.0	33.5
Oilseed meals					
Germany, Fed. Rep.	27.5	33.0	40.5	34.0	36.1
Belgium/Luxembourg	19.3	21.0	22.2	23.6	22.6
Ireland	14.7	21.8	19.4	16.5	16.8
Netherlands	19.5	18.5	19.6	20.0	16.1
United Kingdom	8.9	12.6	14.7	16.1	15.0
Denmark	31.4	46.5	41.3	42.1	n.a.
France	19.1	18.8	19.5	19.2	n.a.
Italy	15.7	14.9	14.3	14.3	n.a.
EEC, 9 countries	18.9	22.1	24.1	23.1	n.a.
Other ingredients					
EEC, 9 countries	35.5	39.4	38.4	41.0	n.a.
Total, 9 countries	100.0	100.0	100.0	100.0	100.0

Source: Statistical Office of the European Communities, Luxembourg.

a/ Excluding Greece.

Table 2.17

EEC: quantities of feed ingredients used in compounds and as straights, 1980
(in thousands of tons)

	Total supply[a/]	Usage	
		In compounds	As straights
Cereals	71,000	29,700	41,300
Manioc	4,866	4,517	349
Cereal by-products	7,647	5,781	1,866
Maize gluten feed	3,396	n.a.	n.a.
Maize germ meal	1,125	n.a.	n.a.
Citrus pellets	1,727	n.a.	n.a.
Beet pulp	4,900	1,632	3,268
Molasses	3,050	1,156	1,894
Oils and fats	n.a.	816	n.a.
Cakes and meals	23,300	19,077	4,223
Animal meals	777	2,161	n.a.
Dairy products	2,756	1,813	943
Dried forage	2,710	1,026	1,684
Minerals, vitamins, etc.	n.a.	1,340	n.a.
Miscellaneous	n.a.	11,137	n.a.
Total	n.a.	79,000	n.a.

Source: European Feed Manufacturers Federation, Brussels.

a/ Including imports.

4. Trade channels

The trade channels for feed ingredients vary with the source (i.e. non-EEC, EEC, domestic), the buyer (groups of, or individual, firms) and the type of operation (e.g. integrated feed milling and shipping). For ingredients of non-EEC origin, international shippers are the major suppliers. In the case of "landed" non-EEC ingredients, ingredients procured from other EEC countries, and domestic ingredients, specialized brokers intervene between buyers and sellers. The trade channel also depends very much on the volume concerned.

5. Pricing

The pricing of feed ingredients varies with their origins. For materials from third-country sources, world market price movements tend to be the major operating factor. Support and intervention measures and currency relationships may influence the price levels of ingredients from EEC. Domestic feed ingredients such as grains may be priced in advance or at current market values (ex farm or ex store). Oilseed crushing mills dealing directly with feed mills may set prices in advance of the current period, but variations in practice can be wide ranging.

Advanced price formulation systems for compound feeds are used in most EEC countries, with least-cost formulation being widespread in the EEC feed-milling industry. Regulations requiring constant testing and analysis of samples of feed ingredients and price checking have important consequences on the levels of incorporation of feed ingredients into feed formulae.

6. On-farm mixing

The extent of on-farm mixing is difficult to assess from Community data. In the United Kingdom it is estimated that 60% of compound-feed supplies is produced by industrial feed mills and the balance by home-mixers. In the Netherlands, farm-mixed feeds make up negligible proportions as domestic feed resources are extremely limited. A little over 50% of the feed ingredients used in EEC goes into the compound-feed industry, a percentage that has changed very little in recent years. The amount of on-farm mixing for poultry feeding would be much less than the overall average, given the general scale and conditions of poultry operations.

E. EEC legislation on feedstuffs

1. General

Legislation affecting particular areas of the EEC compound-feed industry has become an increasing focus of attention in recent years. This has partly arisen from regulations in some member countries protecting the livestock farmer from food substances harmful to his animals by ensuring that he obtains feedstuffs of minimum acceptable quality standards, that he is in some way given information about the product he is buying and that materials added for nutritional or health reasons are maintained within acceptable bounds. These areas of concern have also come under Community legislation.

EEC legislation can only become operative first by being accepted unanimously by Member States and thus becoming an EEC directive, and second by being adopted under the national laws of these States. Directives are not binding on the mixed-feed producer unless they are adopted by the country concerned; such adoption is either compulsory or optional. It should also be mentioned that the process of legislating an EEC directive takes time, sometimes several years.

To summarize:

- EEC directives are the basis of EEC feedstuff laws.
- These directives are not legally binding on compound-feed industries until they are adopted by Member States under national law.
- The directives are sometimes optional, giving each Member State flexibility as regards incorporating them into national law.

The titles and numbers of EEC directives on feedstuffs are given in annex II.

2. EEC directive on straight feedstuffs

The marketing of straight feedstuffs comes under Council Directive 77/101/EEC. The directive gives details of 140 individual feedstuffs, viz., 42 oilcakes and meals; 7 milling by-products; 12 products and by-products of grinding, flaking, etc.; 9 by-products of rice and maize processing; 21 products and by-products of starch manufacture; 7 products and by-products of sugar processing; 5 products and by-products of brewing, distilling, and vegetable and fruit processing; 8 artificially dried agricultural products; 2 other products of vegetable origin; 5 milk products; 10 products from processing of land animals; 2 products from fish or other marine animals; and 10 mineral substances.

Some national regulations cover a larger number of feedstuffs: regulations in the Federal Republic of Germany, for example, focus on 362 straight feedstuffs, of which 43 fall under the category "mineral substance". The EEC directive restricts itself to the most important feedstuffs.

The regulations are sometimes concerned with negative variations in quality and specify minimum contents such as those given for barley meal below.

Declared value	Variations are negative when the sample has:	Allowable tolerance	Acceptable limits
Starch: 38%	Less starch	3 units (%)	35%
Crude fibre: 7%	More crude fibre	+15% of fibre value	8.05%

For a group of other compositional indicators, either maximum or minimum contents can be stipulated. The crude fat content of extracted oilseeds, for example, would be fixed only at the higher level while that of wheat middlings or rice bran would be set at the lower level. An example of the EEC directive on extracted rapeseed and its corresponding item in legislation of the Federal Republic of Germany is given below.

	EEC	Germany, Fed. Rep.
Description	By-product of oil manufacture, obtained by extraction from seeds of colza, Indian sarson or rapeseed.	As for EEC but including other plants.
Compulsory declarations	Crude protein, crude fibre.	Crude protein, crude fibre, crude fat.
Optional declarations	Crude ash, moisture, crude fat.	Crude ash, moisture.
Composition requirements	Protein: minimum 38.5% Fat: minimum 3% Fibre: maximum 10% Moisture: maximum 12% Botanical purity: minimum 94%	Protein: minimum 34% Moisture: minimum 13% Botanical purity: minimum 94%

3. Marketing of compound feeds

The basic directive on the marketing of compound feeds is 79/373/EEC of 2 April 1979 (see annex II). Member States did not incorporate the directive into their national legislation until much later and France and Italy have not yet done so. It concerns the labelling of compound feedstuffs, sets content levels that are obligatory at the Community level and that can in whole or in part be made obligatory at the national level, and defines additional and optional contents permissible to manufacturers at the Community and the national levels. In addition, it specifies minimum and maximum tolerances for contents that, on official inspection, are found to exceed or fall below those declared.

The Proposal for a Council Directive dated 14 September 1984, defines compound feedstuff as a "mixture of products of vegetable or animal origin in the natural state, fresh or preserved, and products derived from the industrial processing thereof, or of organic or inorganic substances whether or not containing additives for oral animal feeding in the form of complete feedingstuffs or complementary feedingstuffs".

4. Micro-organism protein and non-protein nitrogen

EEC directives dated 30 June 1982 and 18 April 1983 cover protein sources, technically manufactured and marketed either as feedstuffs or for incorporation into compound feeds. They include bacteria, yeasts, algae and lower fungi, urea and its derivatives, as well as amino acids and similar products. The directives specify the products permitted under various product groups (e.g. urea, biuret, urea phosphate and diureidoisobutane fall under the group urea and its derivatives), their chemical designations or name of micro-organism, their nutrient substrate if any (e.g. for yeasts - molasses, distillery residues, etc.), composition characteristics (e.g. for urea, minimum purity of 98%) and the animal species to which they can be fed (e.g. urea for ruminants from the start of rumination).

5. Undesirable substances and products in feedstuffs

The directive considering the above subject is 74/63/EEC dated 7 December 1973. The subject itself is the focus of much current attention, particularly in reference to aflatoxin, whose high levels in certain imported feedstuffs and whose susceptibility to being transmitted to livestock products for human consumption are causing great concern. Some Member States have fixed maximum permitted levels or taken other steps to limit the presence of certain undesirable substances in raw materials. However, as these national measures differ, the Commission has submitted Proposal 84/C258/06 dated 14 September 1984 to harmonize permitted limits. The proposal suggests not only limiting the presence of particularly undesirable substances in raw materials to an acceptable level, but also restricting the use of contaminated raw materials to manufacturers of compound feedstuffs in order to ensure dilution to the maximum permitted levels. It also proposes that certain raw materials

should be appropriately marked if their contents of undesirable substances or products exceed the maximum levels permitted for straight feedstuffs. The aflatoxin B1 maximum content in raw materials of vegetable origin is proposed at 0.3 parts per million.

Directive 74/63/EEC applies to straight feedstuffs and compound feedstuffs. Some feedstuffs would naturally contain higher proportions of harmful substances than others. For example, linseed, linseed cakes and manioc products would normally contain more hydrocyanic acid than other feedstuffs. These feedstuffs constitute exceptions to the rule. Exceptions are also allowed in the case of compound feeds. However, higher limits are permitted only when the livestock species has a higher tolerance for the substance in question. Occasionally a maximum content of nil is indicated (e.g. in seeds and processing derivatives), but an absolute value of zero is not meant here, only the lowest level detectable by known methods of analysis.

6. Additives

Legislation on additives has been incorporated on both the Community and national levels since the early 1970s. The EEC directive covers a wide range of substances and is revised as new substances come into the market. It lists antibiotics and other medicinal substances, for example, giving the type of animal to which the substance applies, the maximum age of the animal at which the substance can be added, and the minimum and maximum permissible contents in compound feeds. Other substances include vitamins and provitamins, carotinoids, xantophyll, antioxidants, colourants, emulsifiers, stabilizers, binders, trace elements and preservatives.

After lengthy discussions, the directive was amended to authorize the use not only of additives but also of preparations containing certain active substances such as antibiotics and other medicinal substances as well as growth promoters. Similar discussions have been held on other technical matters, their basic objective being to keep the directive up to date.

F. Infrastructure, transport and storage

The EEC transport system for feed ingredients and compound feeds is well established and is determined by the location of feed mills, the areas where domestic ingredients are produced, or processed and stored, whether the ingredients are imported from third countries, costs of alternative transport methods, etc. In northern Europe, intensive use is made of inland waterways and barges both within and between countries.

As far as imported feed ingredients are concerned, handling facilities at most of the large continental ports (such as Hamburg, Bremerhaven, Antwerp, Ghent and Rotterdam) are modern and efficiently operated. Large-sized vessels are unloaded quickly, and goods are stored in modern silos and lightered into smaller vessels or barges for onward transport. Rotterdam port has by far the largest capacity for handling feed ingredients from third countries.

G. Trading practices, contracts and pricing

Most international trading in feed ingredients in EEC is done under GAFTA and NAEGA contracts, the latter if the goods are of United States origin and obtained on f.o.b. terms. GAFTA contracts are accepted world-wide, are frequently reviewed and revised in accordance with changing commercial practices and cover a wide range of raw materials for animal feed. There are over 100 types of contracts currently in use; in addition there are shorter contracts for trading in other feed ingredients. Disagreements between buyer and seller on the execution of a contract can be resolved by arbitration.

There are other specialized contracts not related to GAFTA, for example for the carriage of domestic cereals on waterways in France, the Netherlands and the Federal Republic of Germany. There are also more local contracts, drawn up by the feed manufacturer for example when buying locally produced or processed feed ingredients. These contracts tend to be much simpler in form than the above-mentioned international contracts.

H. Tariff and non-tariff barriers

Access of third country agricultural products into the Community has been a permanent source of friction between particular countries and EEC. In this section, brief mention is made of barriers to imports of feedstuffs into the Common Market.

Under the Community cereals scheme, grain imports are prevented from entering EEC at prices considered seriously detrimental to the price support levels set for domestic cereals. This protection is applied through a levy system, the levy being the difference between the representative world market price (say for United States No. 3 yellow corn, c.i.f.) and the artificially set "threshold price", the protective entry price into EEC.

As a result of the recent rapid rise in imported supplies of manioc particularly of Thai origin, moves were made to limit imports into EEC. Mutually agreed quantitative restrictions or "voluntary restraint agreements" were brought into force, such as that covering Thailand which signed a co-operation agreement with EEC on manioc production, marketing and trade. The agreement with other supplying countries, such as Indonesia, provides for the replacement of previous arrangements by a system comprising a tariff quota and a levy, the latter with a ceiling of 6% ad valorem. Supplies exceeding quotas would be subject to a levy corresponding to the levy normally applicable to cereals.

Of more recent date has been the proposal by the EEC Commission to the Council to enter into negotiations and consultations with a view to modifying the GATT concessions on certain maize industry residues, including maize gluten feed. This move resulted from the rapid growth in imports, particularly from the United States, of maize by-products which are considered a grain substitute. The proposal aims at stabilizing imports of maize by-products while partially and temporarily suspending the tariff concession on the products in question.

Quality standards, health and sanitary regulations are discussed in the section on feedstuff legislation. It should be mentioned that recent and increasingly strict standards have a bearing on the marketability of imported feedstuffs in EEC.

Annex III summarizes EEC tariffs on imported feedstuffs.

I. Conclusions and recommendations

EEC, the world's largest import market for feedstuffs, currently imports over 50 million tons of these products yearly. The outlook is for stagnation in the livestock sector, with little prospect for much further growth in the short to medium term. The curtailment of milk production in the Community will likewise influence demand for certain imported feedstuffs, particularly processing by-products and some oilseed meals.

The EEC's normal requirements are for regularity of supply, price competitiveness, ease of access, adequate supply availability, and quality. The last-named is the focus of increasing attention, not only as regards consistency of nutritional contents of protein, fibre, fat, etc. but also concerning the presence of toxins and other harmful substances. A few large feed mill operators in EEC make regular visits to their suppliers to check on quality, supply and other related matters; often little else is known about the condition of the feedstuff before it actually arrives at the port of destination.

Governments of exporting countries need to introduce more stringent systems of control over the quality of feedstuffs after they have left the producer and before they are loaded for shipment. This would involve the use of laboratories to test the feedstuff on such matters as nutritional composition and the presence of harmful substances before it is committed for shipment to the purchaser. Controls over handling, storage and transport to the port and during loading should likewise be established.

Those concerned with the production, processing, handling and marketing of feed ingredients will have to be constantly informed about EEC legislation and any other factors affecting the marketability of their products.

In the above ways, the exporting country can have greater assurance that it is establishing a reputation for supplying a product of consistently high quality. Prospective exporters of feed ingredients are advised to contact the trade organizations listed in annex I for information on business opportunities in EEC countries.

Annex I

EEC: selected addresses

A. Fédération européenne des fabricants d'aliments composés pour animaux (FEFAC)
(European Feed Manufacturers' Federation)
223, rue de Loi, Boîte 3, B-1040 Brussels
Belgium
Tel: 734 3970
Telex: 23 993

B. Feed manufacturers' associations in EEC countries

BELGIUM
Association professionnelle des fabricants d'aliments composés pour animaux (APFACA)
31, rue de l'Hôpital, Boîte 7
B-1000 Brussels
Tel: 512 0955
Telex: 23403

DENMARK
Danske Korn- og Foderstof-Importørers og Eksportørers Faellesorganisation (DAKOFO)*
Børsen
DK-1271 Copenhagen K
Tel: 155 320
Telex: 19126

FEDERAL REPUBLIC OF GERMANY
Fachverband der Futtermittel-industrie
32, Buschstrasse
Postfach 190163
D-5300 Bonn
Tel: 213 001
Telex: 886303

FRANCE
Syndicat national des industriels de l'alimentation animale
41 bis, boulevard de Latour-Maubourg
F-75007 Paris
Tel: 555 7106
Telex: 270283

ITALY
Associazione nazionale tra i produttori di alimenti zootecnici (ASSALZOO)
6, Via Lovanio
I-00198 Rome
Tel: 85 1641
Telex: 611073

LUXEMBOURG
Association des fabricants d'aliments contrôlés pour le le bétail
41, rue Glesener
L-Luxembourg
Tel: 488051

NETHERLANDS
Vereniging van Nederlandse mengvoederfabrikanten (VNMF)
12, Johan de Witlaan
Postbus 17477
NL-2502 CL The Hague
Tel: 603 3917
Telex: 32 513

UNITED KINGDOM
United Kingdom Agricultural Supply Trade Association Ltd (UKASTA)*
3 Whitehall Court
GB-London SW1A 2EQ
Tel: 930 3611
Telex: 917868

* Also a grain and feed trade association.

IRELAND
Irish Corn and Feed Association*
66 Merrion Square
IRL-Dublin 2
Tel: 760 941
Telex: 30232

C. Comité du commerce des céréales et des aliments du bétail de la Communauté économique européenne (COCERAL)
(EEC Grain and Feed Trade Committee)
28, avenue Livingstone
Boîte 8
B-1040 Brussels
Belgium
Tel: 230 6170
Telex: 26047

D. Grain and feed trade associations in EEC countries

BELGIUM

Chambre syndicale pour le commerce d'importation et d'exportation de grains, graines et aliments pour le bétail (IMEXGRA)**
29, Borzestraat
B-2000 Antwerp
Tel: 335 135
Telex: 31 454

Syndicat national du commerce des céréales et légumes secs (SYNAGRA)
Résidence Lemonier
57, boulevard du Midi
B-1000 Brussels
Tel: 512 1550

DENMARK
Danske Korn- og Foderstof-Importørers Faellesorganisation
(see B. for address)

Landsforeningen af Grovvarehandlende
41, Svanemøllevej
DK-2900 Hellerup

FRANCE

Fédération nationale du commerce des grains
248, Bourse de commerce
F-75002 Paris
Tel: 233 9065
Telex: 220575

Syndicat national du commerce extérieur des céréales, graines, légumes secs, produits oléagineux et dérivés (SYNACOMEX)
171, Bourse de commerce
F-75040 Paris Cédex 02
Tel: 233 5300
Telex: 670808

IRELAND

Irish Corn and Feed Association
(see B. for address)

The Irish Grain and Agricultural Merchants' Association
13, Northbrook Road
IRL-Dublin 6
Tel: 971 930
Telex: 5891

* Also a grain and feed trade association.
** Also an association for animal protein importers and traders.

FEDERAL REPUBLIC OF GERMANY
Zentralverband des Deutschen
Getreide-, Futter- und
Düngemittelhandels e.V.
2-4, Fritz-Schaffer-Strasse
D-5300 Bonn
Tel: 260 58
Telex: 886497

ITALY
Associazione nazionale
cerealisti
Via Po 102,
I-100198 Rome
Tel: 856 554
Telex: 610354

LUXEMBOURG
Syndicat professionnel des
négociants luxembourgeois en
produits agricoles
41, rue Glesener
L-Luxembourg
Tel: 27 627

NETHERLANDS
Koninklijke vereniging
Het comité van graanhandelaren**
21, Posthoornstraat
Postbus 202
NL-3001 Rotterdam
Tel: 139 270
Telex: 21486

UNITED KINGDOM
The Grain and Feed Trade
Association (GAFTA)
24/28, St. Mary Axe
GB-London EC3A 8EP
Tel: 283 5146
Telex: 886984

United Kingdom Agricultural
Supply Trade Association
Ltd (UKASTA)
(see B. for address)

E. Fédération de l'industrie de l'huilerie de la CEE (FEDIOL)
(EEC Seed Crushers' and Oil Processors' Federation)
74, rue de la Loi
Boîte 4, B-1040 Brussels
Belgium
Tel: 230 3125
Telex: 23628

F. Oilseed crushers' associations in EEC countries

BELGIUM
Fédération des fabricants
d'huiles de Belgique
74, rue de la Loi
Boîte 4
B-1040 Brussels
Tel: 230 1192
Telex: 23628

DENMARK
Aarhus Oliefabrik AS
DK-800 Århus
Tel: 126 000
Telex: 64 341/ 64 342

Dansk Sojakagefabrik AS
24, Islands Brygge
DK-2300 Copenhagen S
Tel: 546 600
Telex: 31313

** Also an association for animal protein importers and traders.

FRANCE

Syndicat général des fabricants d'huile et de tourteaux de France
10A, rue de la Paix
F-75002 Paris
Tel: 261 5721
Telex: 230905

Fédération nationale des huileries métropolitaines et industries dérivées
10A, rue de la Paix
F-75002 Paris
Tel: 261 6134, 261 7931
Telex: 230905

ITALY

Associazione italiana dell' industria olearia
3, Via del Governo Vecchio (Piazza dell' Orologio)
I-00186 Rome
Tel: 654 3251
Telex: 61552

IRELAND

The Irish Oil and Cake Mills Limited
Marsh Road, IRL-Drogheda
Tel: Drogheda 87 36
Telex: 5360

W & C McDonnell Ltd
PO Box 231
68, Upper Sheriff Street
IRL-Dublin 1
Tel: 747 981
Telex: 4331

NETHERLANDS

Vereniging van Nederlandse fabrikanten van eetbare oliën en vetten (VERMOF)
44, Raamweg
NL-'s Gravenhage
Tel: 468 812/13
Telex: 32616

UNITED KINGDOM

Seed Crushers' and Oil Processors' Association
6, Catherine Street
GB-London WC2B 5JJ
Tel: 836 2460
Telex: 299388

G. Fédération pour le marché commun des importateurs et négociants de protéine animale
(Euromarket Federation of Animal Protein Importers and Traders)
24, Börse Kontor
D-2000 Hamburg 11
Federal Republic of Germany
Tel: 352 152/54
Telex: 0213657

H. Animal protein importers' and traders' associations in EEC countries

BELGIUM

Chambre syndicale pour le commerce d'importation et d'exportation de grains, graines et aliments pour le bétail (IMEXGRA)
(see D. for address)

FRANCE

Syndicat national des importateurs de protéine animale
Franklin Building
Boîte 716
F-72000 Le Havre
Tel: 427 062
Telex: 19032

ITALY

Associazione italiana fra gli importatori di farine animali (AIFA)
c/o Unione Commerciale Lombarda
11, Via Vittorio Emanuele II
I-85-25100 Brescia
Tel: 58 561
Telex: 30032

FEDERAL REPUBLIC OF GERMANY

Fachgruppe Importeure u. Grosshändler von Fischmehl und anderen tierischen Futtermitteln des Vereins der Getreidehändler der Hamburger Börse e.V.
D-2000 Hamburg
Tel: 352 152/54
Telex: 0213657

NETHERLANDS

Koninklijke Vereniging Het. Comité van graanhandelaren, Sectie dierlijke eiwitten
(see D. for address)

UNITED KINGDOM

The Grain and Feed Trade Association Ltd (GAFTA)
Marine and Animal Products Committee
Baltic Exchange Chambers
(see D. for address)

Annex II

EEC directives on feedstuffs

Council Directive 77/101/EEC of 23 November 1976 on the marketing of straight feedingstuffs, published in Official Journal of the European Communities No. L 32/1, 3 February 1977, and Annex: Part A, General provisions; Part B, Special provisions.

Council Directive 79/373/EEC of 2 April 1979 on the marketing of compound feedingstuffs, published in Official Journal of the European Communities No. L 8630, 6 April 1979.

Proposal for a Council Directive amending Directive 74/63/EEC on the fixing of maximum permitted levels for undesirable substances and products in feedingstuffs, Directive 77/101/EEC on the marketing of straight feedingstuffs and Directive 79/373/EEC on the marketing of compound feedingstuffs. COM(84) 445 final. (Submitted by the Commission to the Council on 14 September 1984.) (84/C 258/06). Published in Official Journal of the European Communities No. C 258/7, 26 September 1984.

Council Directive 74/63/EEC of 17 December 1973 on the fixing of maximum permitted levels for undesirable substances and products in feedingstuffs, published in Official Journal of the European Communities No. L 38/31, 11 February 1974.

Annex III

EEC tariffs on feed ingredients

Heading number	Description	Rate of duty	
		Autonomous % or levy (L)	Conventional %
23.01	Flours and meals, of meat, offals, fish, crustaceans or molluscs, unfit for human consumption; greaves:		
	A. Flours and meals of meat and offals; greaves	4	Free
	B. Flours and meals of fish, crustaceans or molluscs	5	2
23.02	Bran, sharps and other residues derived from the sifting, milling or working of cereals or of leguminous vegetables:		
	A. Of cereals:		
	I. Of maize or rice:		
	(a) With a starch content not exceeding 35% by weight	21 (L)	-
	(b) Other	21 (L)	-
	II. Of other cereals:		
	(a) Of which the starch content does not exceed 28% by weight, and of which the proportion that passes through a sieve with an apperture of 0.2 mm does not exceed 10% by weight or alternatively the proportion that passes through the sieve has an ash content, calculated on the dry product, equal to or more than 1.5% by weight	21 (L)	-
	(b) Other	21 (L)	-
	B. Of leguminous vegetables	8	-
23.03	Beet-pulp, bagasse and other waste of sugar manufacture; brewing and distilling dregs and waste; residues of starch manufacture and similar residues:		
	A. Residues from the manufacture of starch from maize (excluding concentrated steeping liquors), of a protein content, calculated on the dry product:		
	I. Exceeding 40% by weight	27 (L)	-
	II. Not exceeding 40% by weight	Free	Free
	B. Other		
	I. Beet-pulp, bagasse and other waste of sugar manufacture	Free	Free
	II. Other	Free	Free
23.04	Oilcake and other residues (except dregs) resulting from the extraction of vegetable oils:		
	A. Oilcake and other residues resulting from the extraction of olive oil:		
	I. Containing 3% or less by weight of olive oil	Free	-
	II. Containing more than 3% by weight of olive oil	Free (L)	-
	B. Other	Free	Free
23.05	Wine lees; argol:		
	A. Wine lees:		
	I. Having a total alcoholic strength by mass not exceeding 7.9% mas and a dry matter content not less than 25% by weight	Free a/	-
	II. Other	2.03 ECU per kg of total alcohol a/	-
	B. Argol	Free	-

Source: EEC, The International Customs Journal (Brussels, 1983).

a/ In certain conditions, a countervailing tax is provided for in respect of certain products in addition to the customs duty.

Heading number	Description	Rate of duty	
		Autonomous % or levy (L)	Conventional %
23.06	Products of vegetable origin of a kind used for animal food, not elsewhere specified or included:		
	A. Acorns, horse chestnuts and pomace or marc of fruit:		
	I. Grape marc:		
	(a) Having a total alcoholic strength by mass not exceeding 4.3% mas and a dry matter content not less than 40% by weight	Free[a/]	Free
	(b) Other	2.03 ECU per kg of total alcohol[a/]	-
	II. Other	Free	Free
	B. Other	4	2
23.07	Sweetened forage; other preparations of a kind used in animal feeding:		
	A. Fish or marine mammal solubles	9	6
	B. Other, containing starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup:		
	I. Containing starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup:		
	(a) Containing no starch or containing 10% or less by weight of starch:		
	1. Containing no milk products or containing less than 10% by weight of such products	15 (L)	-
	2. Containing not less than 10% but less than 50% by weight of milk products	15 (L)	-
	3. Containing not less than 50% but less than 75% by weight of milk products	15 (L)	-
	4. Containing not less than 75% by weight of milk products	15 (L)	-
	(b) Containing more than 10% but not more than 30% by weight of starch:		
	1. Containing no milk products or containing less than 10% by weight of such products	15 (L)	-
	2. Containing not less than 10% but less than 50% by weight of milk products	15 (L)	-
	3. Containing not less than 50% by weight of milk products	15 (L)	-
	(c) Containing more than 30% by weight of starch		
	1. Containing no milk products or containing less than 10% by weight of such products	15 (L)	-
	2. Containing not less than 10% but less than 50% by weight of milk products	15 (L)	-
	3. Containing not less than 50% by weight of milk products	15 (L)	-
	II. Containing no starch, glucose, glucose syrup, maltodextrine or maltodextrine syrup, but containing milk products	15 (L)	-
	C. Other	15	-

Source: EEC, The International Customs Journal (Brussels, 1983).

a/ In certain conditions, a countervailing tax is provided for in respect of certain products in addition to the customs duty.

Chapter 3

SPAIN

A. Economic and social indicators

1. General country data (1983)[1/]

Area: 504,750 km^2

Total population	38.1 million
Economically active population	13.1 million
of which in:	
Agriculture and forestry	2.0 "
Fishery	0.1 "
Industry	3.2 "
Construction	1.3 "
Services	5.6 "
Other	0.8 "

Land resources (million ha) (1872)

Land type	Irrigated	Non-irrigated	Total
Total	3.1	40.3	43.4
of which:			
Under annual crops	2.1	8.6	10.7
Fallow and idle	0.2	4.6	4.8
Under tree crops	0.6	4.3	4.9
Pastures: Intensive	0.2	1.2	1.4
Other	-	5.2	5.2
Forest land	-	16.0	16.0
Other land	-	0.4	0.4

2. Economic indicators (1982)[2/]

(a) Gross domestic product

Total: Pesetas 19,737 billion (about $180 billion)
Per capita: Pesetas 522,885 ($4,770)
By sector (as percentage of total):

Primary	6%
Secondary	36%
Tertiary	58%

1/2/ Sources: Ministerio de Agricultura, Pesca y Alimentación (MAPA) Anuario de Estadística Agraria 1982 and Manual de Estadística Agraria 198 (Madrid).

(b) Major trading partners, 1981[3/]

	Percentage share	
	In Spain's exports	In Spain's imports
EEC	43.1	29.0
of which:		
France	14.4	8.0
Germany, Federal Republic	8.7	8.1
Italy	5.8	n.a.
United Kingdom	6.9	4.5
United States	6.7	13.9
Saudi Arabia	n.a.	11.0

B. Livestock sector

1. Livestock inventory

The following summarizes national statistics[4/] on the livestock population of Spain in 1983.

(a) Cattle, by age groups

	'000 head	
Total:		4,956
of which:		
Below 12 months		1,182
12-24 months		768
Above 24 months		2,657
of which:		
Dairy cows	1,877	
Other cows	780	
Males: breeding bulls		51

(b) Sheep: 16,731,000 head

(c) Goats: 2,414,000 head

3/ Sources: Handelsbank N.W., Spain 1982 (Zurich); extracts from a publication of the National Westminster Bank (London, July 1983).
4/ Ministerio de Agricultura, Pesca y Alimentación (MAPA), Anuario de Estadística Agraria 1982 and Manual de Estadística Agraria 1984 (Madrid).

(d) Pigs

		'000 head
Total		12,364
of which:		
Below 2 months		3,201[a/]
2-6 months		3,631[b/]
of which:		
Breeding (Males 28; females 303)	331	
Fattening	5,635	
Above 6 months		3,154
of which:		
Breeding (Males 100; females 1,542)	1,642	
Fattening	1,512	

(e) Horses, mules and asses[c/]

Horses:	250,000
Mules:	169,000
Asses:	177,000

(f) Poultry and fowl

Laying hens:	53.9 million
Turkeys (layers):	216,000
Ducks (layers):	104,000
Geese (layers):	19,000

a/ Piglets weighing up to 20 kg.
b/ Pigs weighing 20-50 kg.
c/ Source: FAO, Production Yearbook 1983 (Rome).

2. Livestock products

Data on Spanish supplies of livestock products are summarized in tables 3.1 and 3.2.

Table 3.1

Spain: meat supplies and apparent consumption, 1982

Livestock type	Slaughterings '000 head	Meat supplies ('000 tons)			Apparent consumption ('000 tons)
		Domestic[a/]	Imports	Exports	
Total of which:	692,536	2,668.0	56.6	24.8	2,699.8
Cattle	1,815	419.9	21.8	1.0	440.7
Sheep and goats of which:	12,570	141.5	0.4	1.5	140.4
Sheep	11,247	131.1	-	-	-
Goats	1,333	10.4	-	-	-
Pigs	15,161	1,114.5	6.0	1.3	1,119.2
Horses, mules, asses	66	9.5	0.1	0.7	8.9
Poultry	561,516	853.0	13.7	2.9	863.8
Rabbits	101,408	129.6	-	-	129.6
Various	n.a.	n.a.	14.6	17.4	n.a.

Source: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid).

a/ From slaughterings.

Table 3.2

Spain: supplies of dairy products and eggs, 1982

Item	Unit	Domestic production	Imports	Exports	Apparent consumptio
DAIRY PRODUCTS					
Total, fresh milk of which:	Million litres	6,481	18	-	6,499
Fresh cow's milk	"	5,947	n.a.	n.a.	n.a.
Other fresh milk a/	"	534	n.a.	n.a.	n.a.
Other dairy products b/					
Powdered milk	'000 tons	n.a.	32.6	1.0	n.a.
Butter	"	n.a.	2.6	1.9	n.a.
Cheese	"	n.a.	22.2	0.7	n.a.
Other dairy products	"	n.a.	31.3	1.4	n.a.
EGGS					
Total of which from:	Million dozen	1,027	0.2	43.4	984
Hens	"	1,025	n.a.	n.a.	n.a.
Others	"	2	n.a.	n.a.	n.a.

Source: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid).

a/ From sheep and goats.
b/ Of the fresh milk produced domestically, 896 million litres are consumed on-farm, 902 million litres are sold as fresh milk, and 4,683 million litres are processed into powdered milk, cheese, butter and other dairy products.

C. Supply of, and demand for, compound feeds

1. Compound-feed production

(a) Commercial compound feeds

Table 3.3 gives some data on Spain's compound-feed industry and its output.

Table 3.3

Spain: feed mills and compound-feed output, 1980-1982

Items	1980	1981	1982[a/]
Industrial feed mills[b/] (units)	649	689	n.a.
Compound-feed production, by type		in '000 tons	
Cattle feeds	1,845	2,476	2,486
Dairy	784	1,045	1,031
Fatteners	731	1,002	1,136
Other cattle feeds	330	429	319
Sheep and goat feeds	416	518	596
Pig feeds	4,484	4,885	4,766
Fatteners and finishers	3,141	3,422	3,380
For farrows and piglets	497	603	486
For sows and boars	612	709	634
Other pig feeds	234	151	266
Poultry feeds	3,864	4,560	4,358
Layer feeds	1,742	2,097	2,003
Broiler feeds	1,674	2,009	1,919
Other poultry feeds	448	454	436
Rabbit feeds	463	503	623
Other feeds and products[c/]	160	200	361
Total	11,232	13,142	13,190

Source: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid).

a/ Preliminary figures.
b/ Exclusive of on-farm mixing plants.
c/ For fish, horses and other animals, and vitamin/mineral premixes.

Of the industrial compound-feed output during the period 1980-1982 about 38% was for pigs, 34% for poultry, 18% for cattle, 4% for sheep an goats, 4% for rabbits, and 2% for other animals.

(b) On-farm mixing

There are no statistical data on on-farm mixing by livestoc producers. However, this has been estimated at around 5 million tons year, of which 2 million - 2.5 million tons are feed grains (see table 3.4 and 3.5).

The Ministry of Agriculture states that the livestock subsector listed below mix compound feeds on farm. On-farm mixing in othe subsectors is negligible.

Subsectors	Main types of compound feeds
Pig industry	Fatteners and finishers
Dairy farms	Dairy cow feeds
Egg farms	Layer feeds

(c) Total production

It can be seen from the previous sections that total compound-feed production reached 15 million - 16 million tons a year in 1981 and 1982, of which industrial feed mills accounted for 13 million tons and on-farm mixing for 2 million - 3 million tons.

2. Supply of feed ingredients

(a) Grains, oilseed meals, and legumes

Tables 3.4 and 3.5 show domestic production, imports, exports and use of grains and oilseed meals. Imported oilseeds are processed into oils and meals.

Table 3.4

Spain: grain supply and use, 1981-1982
(in thousands of tons)

Items	Wheat		Barley		Oats		Rye		Rice (paddy)		Maize		Sorghum		Other grains a/		Total	
	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982
Domestic production	3,408	4,410	4,758	5,270	445	443	212	169	444	402	2,157	2,330	143	114	9	9	11,576	13,147
Imports	211	216	481	445	-	-	-	-	-	-	4,830	5,431	472	1,410	17	31	6,011	7,533
Exports	1,086	84	758	1	-	6	-	-	84	-	2	1	-	-	-	-	1,930	92
Stock changes b/	- 1,665	-	- 2,999	-	- 41	-	- 72	-	- 17	-	422	-	- 13	-	-	-	-4,385	-
Total supply	4,198	4,542	7,480	5,714	486	437	284	169	377	402	6,563	7,760	628	1,524	26	40	20,042	20,588
Use																		
On-farm consumption of which:	501	449	1,756	1,589	242	267	136	117	10	11	587	636	56	43	5	5	3,293	3,117
Seeds	383	313	514	240	51	49	29	31	8	9	19	4	1	-	1	-	1,006	646
Household consumption	74	91	-	-	-	-	11	7	2	2	4	3	-	-	-	-	91	103
Animal feeding	44	45	1,242	1,349	191	218	96	79	-	-	564	629	55	43	4	5	2,196	2,368
Industrial use of which:	3,697	4,093	5,724	4,125	244	170	148	52	-	391	5,976	7,124	572	1,481	21	35	16,749	17,471
Compound feeds c/	341	400	5,155	3,525	244	170	148	52	-	-	5,494	6,624	572	1,481	21	35	11,970	12,287
Other industries d/	3,356	3,693	569	600	-	-	-	-	367	391	482	500	-	-	-	-	4,749	5,184

Sources: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid); Ministerio de Hacienda, Estadísticas del Comercio Exterior de España 1981-1982 (Madrid); ITC estimates.

a/ Maslin, millet, canary seed, spelt.
b/ Assumption for 1982: nil.
c/ Including on-farm mixing.
d/ Estimates.

Table 3.5

Spain: supplies[a/] of oilseed meals, 1981-1982
(in thousands of tons)

Oilseed meals	Domestic production		Imports		Exports		Apparent consumption	
	1981	1982	1981	1982	1981	1982	1981	1982
Soyabean	2,145[b/]	2,234	111	161	152	308	2,104	2,087
Sunflower	175[c/]	323	13	16	4	6	184	333
Cottonseed	51	38	-	-	4	-	47	38
Safflower	2	7	-	-	-	-	2	7
Groundnuts	1	-	-	5	-	-	1	5
Linseed	-	-	7	6	-	-	7	7
Other[d/]	25	12	6	2	31	14	-	-
Total	2,399	2,614	137	190	191	328	2,345	2,476

Source: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid).

a/ Stock changes assumed to be nil.

b/ From domestically produced and imported soyabeans, as follows, in '000 tons:

	Domestic		Imported		Total	
	1981	1982	1981	1982	1981	1981
Soyabeans	6	5	2,970	3,099	2,976	3,104
Meal	5	4	2,140*	2,230*	2,145	2,234

* Estimated at 72% of the soyabean volume.

c/ From domestically produced and imported sunflower seed, as follows, in '000 tons:

	Domestic		Imported		Total	
	1981	1982	1981	1982	1981	1981
Seed	293	638	87	65	380	703
Meal	135	293	40*	30*	175	323

* Estimated at 46% of the volume of sunflower seed.

d/ Includes statistical differences.

Imports and exports of oilseeds other than soyabeans and sunflower seeds are negligible or nil.

Beans and other legumes are used on farms for various purposes, as shown in table 3.6.

Table 3.6

Spain: domestic production and use of legume seeds, 1981-1982
(in thousands of tons)

Item	1981	1982
Production	246	291
On-farm consumption	108	114
of which:		
As seeds	40	36
For household consumption	23	27
For animal feeding	45	51
Sales (for human consumption)	138	177

Source: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid).

(b) Other products

Table 3.7 summarizes available data on supplies of meat by-products, fish-meal, bran and other industrial by-products.

Table 3.7

Spain: supplies[a/] of industrial by-products, 1981-1982
(in thousands of tons)

By-products	Domestic production		Imports		Exports		Apparent consumption	
	1981	1982	1981	1982	1981	1982	1981	1982
Meat by-products and fish-meal	n.a.	n.a.	38	28	12	9	n.a.	n.a.
Wheat bran[b/]	940	1,034	-	-	-	-	940	1,034
Rice bran[c/]	55	59	-	-	-	-	55	59
Grain by-products[d/]	-	-	7	4	1	-	6	4
Maize by-products[e/]	145	150	-	-	-	-	145	150
Sugar-beet pulp, dry	424	477	-	-	117	227	307	250
Cane molasses	21	26	-	-	-	-	21	26
Beet molasses	369	446	-	-	-	-	369	446

Sources: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid); ITC estimates.

a/ Stock changes assumed to be nil.
b/ Estimates: domestic production = 28% of item "Wheat" under "Other industries" in table 3.4.
c/ Estimates: 15% of the appropriate item under "Other industries" in table 3.4.
d/ Wheat bran, rice bran, maize by-products.
e/ Estimates: 30% of the appropriate item under "Other industries" in table 3.4.

3. Imports and exports

Import data given in tables 3.4, 3.5 and 3.7 are grouped in table 3.8 below. The principal suppliers and their percentage shares in the import trade are also indicated.

Table 3.8

Spain: imports of feed ingredients, 1981-1982
(in thousands of tons)

Items	1981	1982	Principal suppliers and % share in imports
Grains	6,011	7,533	United States 75%; Argentina 8%; Brazil 6%
Barley	481	445	United States 60%; Canada 35%
Maize	4,830	5,431	United States 84%; Brazil 8%
Sorghum	472	1,410	United States 56%; Argentina 42%
Other	228	247	Not available
Oilseeds	3,094	3,204	United States 95%
Soyabeans	2,970	3,099	United States 96%
Sunflower seed	87	65	United States 97%
Linseed	11	10	Canada 92%
Other	26	30	Not available
Oilseed meals	137	190	United States 47%; Brazil 31%; Argentina 8%
Soyabean	111	161	United States 56%; Brazil 37%
Sunflower seed	13	16	Argentina 96%
Other	13	13	Not available
Meat by-products and fish-meal	38	28	Italy 37%; France 23%; Argentina 12%
Grand totals:			
Including oilseeds	9,280	10,955	United States 80%; Argentina 6%; Brazil 5%
Excluding oilseeds	6,186	7,751	United States 74%; Argentina 8%; Brazil 7%

Source: Ministerio de Agricultura, Pesca y Alimentación, Anuario de Estadística Agraria, 1981 and 1982 (Madrid).

As can be seen, the Spanish import market for feed ingredients is dominated by the United States. Argentina, Brazil, Canada, Italy and France are the other main suppliers. Maize accounts for about 50% of all imports including oilseeds, or 70-80% exclusive of oilseeds.

Exports of various feed ingredients were nil or negligible in 1981-1982. The exceptions were soyabean meal (see table 3.5) and sugar-beet pulp (see table 3.7).

4. Government policy

A special internal charge is applied to imported feed grains and oilseeds to cover the difference between the lower import prices and the higher domestic production costs of these products. Details are given in the section on tariff barriers.

The Spanish market for domestically produced feed grains and legumes is regulated by the Government. Market regulation is achieved through:

- A price system covering the market segments between the farmers and the wholesale trade and providing minimum price guarantees to the farmers.

- Market intervention in order to maintain guaranteed farm incomes on the one hand and the purchasing power of consumers on the other. Such interventions take the form of building up or releasing reserve stocks, buying or selling by the Government, limiting or extending import quotas in accordance with market price levels.

D. The compound-feed industry

1. Overview

According to the Ministry of Agriculture, Fishery and Food, there were 649 industrial feed mills in 1980 and 689 in 1981 (refer to table 3.3). The Confederación Española de Fabricantes de Piensos Compuestos, the Spanish feed milling federation, is the central industrial organization and comprises several regional associations. As of July 31, 1984, the federation had a membership of 292 feed milling companies. The largest regional associations are those of Galicia (30 members), Murcia (28 members) and Barcelona (26 members).

Industrial compound-feed production reached about 13 million tons annually in 1981 and 1982 (cf. table 3.3). Spain is heavily dependent on imported grains, chiefly maize and sorghum, and soyabean meal from imported soyabeans for compound-feed manufacturing. Imported feed ingredients and oilseed meals from imported seeds accounted for about 50% of the total compound-feed output in 1981, inclusive of on-farm mixing, and for about 65% in 1982.

2. Procurement systems and trade channels

Feed millers buy raw materials of domestic origin from traders and oil mills. There is no government regulation or intervention in this area. The price of soyabean meal produced in Spain is fixed daily by the trade in accordance with Chicago Stock Exchange indicators.

Mills obtain imported feed ingredients from specialized trading companies. These are few in number, with six or seven companies dominating the feed ingredient and oilseed import market. Most are associated in one way or another with international grain and feedstuff brokers.

3. Quality standards and control

The Ministry of Agriculture, Fishery and Food, through its inspection service, is responsible for the quality control of feed ingredients and compound feeds under Decree Number 851 of March 20, 1975[5/] and subsequent modifications and amendments. Inspectors have free access to all establishments and facilities involved in the production-to-consumption chain for feed ingredients and finished feeds. The Order of 23 July 1976[6/] and subsequent modifications give details on the registration of feed ingredients and additives, on products authorized for sale and use for animal-feeding purposes, as well as quality standards for these products. These legal provisions, as well as their amendments and modifications are published in the official gazette Boletín Oficial del Estado.

Most compound-feed manufacturing companies are equipped with laboratories and have trained staff for the quality control of feed ingredients and finished products.

E. Transport

Imported feed ingredients are handled in the following seaports, listed here in descending order of importance: Tarragona, Santander, Valencia, Cartagena, Barcelona, Bilbao, La Coruña, Vigo, Sevilla, and Gijón. These ports have adequate storage and handling facilities, and are efficiently operated. Feed ingredients are transported from port areas to the feed mills by road and rail, the former means being considered significantly more important.

5/ Decreto 851/1975, de 20 de marzo 1975, por el que se establece la reglamentación de las sustancias y productos que intervienen en la alimentación de los animales.

6/ Orden de 23 de junio 1976, sobre autorización y registro de las sustancias y productos que intervienen en la alimentación de los animales.

F. Trade barriers

1. Tariff barriers

Imported maize, barley, oats, sorghum, and oilseeds are subject to a special internal charge (derecho regulador) which is equal, in principle, to the difference between the cost of domestic production of these crops (as calculated by the Government) and the c.i.f. value of imports. In October 1984, this charge was fixed at 20% of the c.i.f. value. Its purpose is to protect domestic production, the cost of which is higher than the corresponding world market prices.

Imported feed ingredients are subject to several other levies and taxes, frequently changing and varying with the type of ingredient, the country of origin, trade agreements and other factors. Details on tariffs on imported feed ingredients are available in the corresponding sections of Impuestos y Desgravaciones en las Aduanas, issued by the Dirección General de Aduanas e Impuestos Especiales, Ministerio de Economía y Hacienda in Madrid (Customs Duties and Charges, Directorate General of Customs and Special Taxes, Ministry of Economy and Finance).

2. Import licences

As mentioned earlier, the import of feed ingredients is in the hands of a few large trading firms. These imports are subject to licences issued by the Ministry of Commerce. Although feed-milling companies are entitled to apply for such licences, they are said to make little use of the opportunity - reportedly only for occasional imports of soyabean meal from the United States and Brazil.

3. Sea transport

Imported feed ingredients have to be shipped on Spanish vessels. Feed industrialists are of the opinion that the resultant transport costs are higher than they would be under free transport-market conditions.

4. Health and sanitary regulations

Maximum permissible contents of toxic and anti-nutritive elements (including aflatoxin) in feedstuffs are given in the Order of 23 July 1976 published in the Boletín Oficial del Estado (Official Gazette), No. 214, dated 6 September 1976, reference 1734. The following contents of gossypol and aflatoxin in compound feeds are the maximum permissible.

Free gossypol	Parts per million (ppm)
Pig and rabbit feed	60
Feeds for adult ruminants	500
Feeds for young ruminants and poultry, except laying hens	100
Other compound feeds	20

Aflatoxin B1	Parts per million (ppm)
Simple (non-mixed) feeds	0.05
Feeds for adult ruminants, except lactating females	0.05
Feeds for lactating females (ruminants)	0.02
Feeds for pigs and adult poultry	0.02
Other feeds	0.01

G. Market prospects for developing countries

The Spanish import market for feed ingredients is characterized by the predominance of the United States as a supplier and that of a few firms in the import trade. Although in principle the market is open to any supplier, prospective exporters would have to be competitive as regards size of shipments, quality guarantees and, to a certain extent, efficiency in export operations.

Compound-feed manufacture in Spain is heavily dependent on coarse grains and soyabean meal from imported soyabeans. The extent to which the feed industry would be willing to use grain substitutes (such as dried manioc) and protein sources other than soyabean meal cannot be quantified and any effort to initiate trade must be supported by promotional activities in conjunction with the Spanish feed milling federation (commercial service) and/or the Spanish grain import/export association whose addresses are given in the annex to this chapter.

H. Conclusions and recommendations

In 1981 and 1982, compound-feed production in Spain reached 15-16 million tons annually of which 13 million tons were from 649-689 industrial feed mills and 2 million - 3 million tons from on-farm mixing plants. Total imports of feed ingredients amounted to 6 million - 8 million tons a year, to which must be added soyabean meal processed from 3 million tons of imported soyabeans processed into oil and meal by domestic oilseed crushers. The main imported feed ingredients were the following (average per year, in rounded figures): barley, 0.5 million tons; maize, 5 million tons; sorghum 0.5 million tons (1981) and 1.5 million tons (1982) and oilseed meals, 0.1 - 0.2 million tons, of which 80-85% was soyabean meal. Soyabean imports amounted to 3 million tons per year. Exports of feed ingredients were negligible, except for soyabean meal (150,000 - 300,000 tons annually) and sugar-beet pulp (117,000 - 227,000 tons a year).

Imported feed ingredients are shipped exclusively on Spanish vessels which are unloaded in 10 ports on the Atlantic and Mediterranean coasts. Port facilities are adequate and reported to be efficiently managed and operated. Transport to feed mills is mostly by road and sometimes by rail.

The Spanish import market for feed ingredients is characterized by the following:

- Predominance of the United States as a supplier, which accounts for about 80% of total imports;

- Control of import operations by a few large grain and feedstuff trading companies;

- Availability of import licences to the trade and to the feed industry, the latter using this facility only occasionally, for example, to import soyabean meal;

- Tariff barriers, i.e. a special internal charge on imported feed grains and oilseeds in order to protect domestic production against competition from cheaper imports, and other levies and taxes, varying with the type of product, its origin, trade agreements and other factors;

- The existence of legal quality standards, health and sanitary requirements, e.g. maximum permissible contents of toxic and anti-nutritive substances, including aflatoxin, in compound feeds.

Compound-feed manufacturing in Spain is based on coarse grains and soyabean meal, which account for about 80% of all ingredients used. In principle, therefore, there are prospects for exporters of grain substitutes such as dried manioc and of protein sources other than soyabean meal.

Annex

Spain: selected addresses

Confederación Nacional de Fabricantes de Piensos Compuestos
Servicio Comercial
Avenida de Bruselas, 30
Madrid 28028
Tel: 256 4229
Telex: 27270 Madrid

Asociación Española de Comercio Exterior de Cereales
Calle Pedro Muguruza, 3 - 1D
Madrid 16
Tel: 250 3160

Chapter 4

PORTUGAL

A. Economic and social background[a/]

1. General country data

Area

Mainland:	92,083 km^2
Azores:	2,344 km^2
Madeira:	798 km^2

Population (1982):	9.8 million
Annual growth rate (1975-1981):	0.9%
Economically active population (1982, percentage of total)	46.6

2. Economic indicators

(a) Gross domestic product (1981)

Total, billion escudos	1,442.7
of which:	
	%
Agriculture, forestry, fishing	8.5
Mining and quarrying	-
Manufacturing	30.0
Electricity, gas, water	1.6
Construction	7.6
Services	50.7
Import duties	1.6

1/ Sources: Organisation for Economic Co-operation and Development and national statistics.

(b) Major trading partners (1982)

	Percentage share	
	In Portugal's imports	In Portugal's exports
EEC	40.4	57.5
of which:		
United Kingdom	7.6	14.7
Germany, Fed. Rep.	11.8	13.2
France	8.7	13.1
Netherlands	3.5	6.0
Italy	5.5	4.9
Others	59.6	42.5
of which:		
Spain	6.3	3.7
Japan	3.3	1.0
Sweden	1.9	3.9
Switzerland	2.4	3.5
United States	10.7	6.1

Source: International Monetary Fund, Direction of Trade (Washington, D.C. 20431).

B. Livestock sector

1. Overview

Agricultural production in Portugal is low compared with production in EEC countries, its contribution to gross national product having fallen from 15% in 1973 to 10% in 1983. Livestock production, which accounts for over 30% of the total for the agricultural sector has, however, been comparatively dynamic and has expanded at an average annual growth rate of 6.9% over most of the last decade. It should nevertheless be noted that the sector entered a crisis situation in 1981 because of the domestic economic depression, declining purchasing power per capita, drought, and the effects of previous agricultural policies.

Meat production reached a total of 459,000 tons in 1982, as table 4.1 shows. The shares of the various types of meat were as follows: 38.4% for poultry, 32.4% for pork, 26.7% for beef, 2.0% for mutton and 0.5% for goat meat.

Table 4.1

Portugal: livestock numbers and output of livestock products

Livestock	Numbers ('000 head)		Item	Livestock products	
	1980	1982		1982 (Tons)	Average annual growth rate 1972-1982
Cattle	1,110	1,000	Meat	122,665	4.6
			Milk	695,000	3.3
			Cheese	21,875	-1.3
			Butter	3,787	13.6
Pigs	3,300	3,500	Meat	148,707	7.9
Sheep	5,210	5,200	Meat	9,057	-1.5
			Milk	95,000	n.a.
			Cheese	18,105	n.a.
Goats	745	750	Meat	2,502	3.2
			Milk	39,000	n.a.
Poultry	17,300	17,600	Meat	176,124	8.7
			Eggs	75,038	7.2
Others[a/]	305	301	-	-	-
Total			Meat	459,055	6.9
			Cheese	39,980	-1.2
			Milk	82,900	3.3
			Eggs	75,038	7.2

Source: Junta Nacional dos Produtos Pecuários; FAO, Production Yearbook 1982 (Rome).

a/ Horses, mules, asses.

According to the Directorate of Services for Animal Production, Ministry of Agriculture and Fishery, consumption of livestock products should rise to the following levels by 1985:

	Per capita kg/year
Meat	53.3
Milk	77.5
Cheese	4.0
Butter	1.5
Eggs	5.8

Portugal's gradual achievement of self-sufficiency in livestock products is reflected in the sharp drop in imports of these products which in 1982 amounted to 11,580 tons, equivalent to 1% of the domestic production of beef and 55% of the domestic production of butter. The livestock population having changed little between 1978 and 1982, the rise in the production of meat, milk and eggs was obtained through rationalization and improvement of farming techniques, including the increased use of compound feeds.

2. Pigs

Pig farming is characterized by the large number of small farms scattered all over the country with low yields in terms of farrows and carcass weights. In 1982, the average number of sows per farm was below 12 and the number of piglets per sow was only 8.7.

3. Poultry

Poultry farming has developed rapidly and poultry meat has become the most important source of protein in the Portuguese diet. Only 22% of the breeding stock is domestically produced, the rest being imported.

Around 2,846 broiler farms are inventoried and are either industrial farms or members of co-operatives. Only about 14% produce over 50,000 head annually; 86% are small artisanal farms covering 71% of total broiler production. Industrial poultry farming is concentrated in the regions of Beira Litoral and Ribatejo.

About 81% of the eggs produced in 1982 came from 785 inventoried farms and the balance from other farms. Only 6% of the inventoried farms had over 25,000 laying hens.

4. Cattle

Cattle farming is highly influenced by the terrain and the country's climatic conditions. Thus, small farms are found in the north of the country, while large farms and co-operatives are found south of the Tage river and in the coastal regions between Setubal and Braga.

Production of beef and milk is conditioned by the lack of good pastures and the low technical level of farming. About 90% of the farms have less than 20 head of cattle. Two thirds of the milk produced comes from widely dispersed holdings of 3 cows or less in the coastal region north of Aveiro.

5. Sheep and goats

Sheep and goat farming is the most economically viable livestock subsector. Large farms are found principally on the Azores and Madeira islands.

C. Supply of, and demand for, compound feeds

1. The compound-feed industry and production

The compound-feed industry is concentrated around Lisbon and Leixoes, the entry points for imported raw materials. Mills around Lisbon harbour produce 70% of the total and those surrounding Leixoes harbour 4%.

The installed feed-compounding capacity is 3.5 million tons yearly, calculated on the basis of one daily shift. The current rate of utilization of capacity is only 28%, based on which production should have reached 2.5 million tons by end 1984, i.e. below the volume attained in 1983 (see table 4.2).

About 15% of production comes from on-farm mixing, as against 85% from the 103 industrial mills operated by the 93 companies affiliated to the Portuguese Feed Milling Association (IACA). Output of on-farm artisanal mixing units increased from 10% of the total in 1981 to 15% in 1983.

More than half of the national total comes from 25 plants with capacities of over 25 tons per hour; 34% from 36 plants with capacities varying between 10 tons/hour and 25 tons/hour; and 13% from 42 plants with capacities of up to 10 tons per hour.

Table 4.2 shows the evolution of the production of compound feeds from 1977 to 1983. In the latter year, pelletized feeds made up 26% of the feeds for poultry, 55% for cattle, 82% for horses, 87% for sheep, 100% for goats and 25% for pigs, i.e. 32% of the total production of feed.

Table 4.2

Portugal: production of compound feeds, by type, 1977-1983
(in thousands of tons)

Year	Type of feed					Annual growth rate
	Poultry	Cattle	Pig	Others	Total	
1977	909	612	1,202	62	2,785	
1978	886	602	1,010	78	2,576	- 8%
1979	957	749	1,002	110	2,816	+ 9%
1980	1,077	873	1,438	124	3,512	+24%
1981	1,049	943	1,506	139	3,637	+ 4%
1982	997	879	1,258	117	3,251	-11%
1983	984	669	1,202	109	2,964	- 9%

Source: Portuguese Feed Milling Association.

Although the compound-feed industry is under-utilized, production is not likely to expand substantially as the domestic market for compound feeds has reached saturation point. Furthermore, until the current economic depression lifts, demand for livestock products is unlikely to rise notably.

Imports and exports of compound feeds are nil.

The structure of production of compound feeds is likely to reflect demand for meat, which will continue to shift from the more expensive beef and veal to the cheaper poultry and pork. Thus, of the production estimated for 1985 (2.65 million tons) 33.5% will be poultry feeds (21.5% for broilers and 12.0% for laying hens), 39.8% pig feeds, 22.7% cattle feeds and 4% sheep and goat feeds. The same percentages would have applied to production in 1984.

2. Feed ingredients

Table 4.3 shows the quantities of grains and oilseed meals used in the manufacture of compound feeds. About 90% of the grains consisted of maize, sorghum 6%, and other grains (oats, barley and some wheat and rye) 4%. All maize, sorghum and barley were imported. The small quantities of oats, wheat and rye used were of domestic origin.

The use of oilseed meals, entirely imported, had increased rapidly since 1975 to reach 645,490 tons in 1983. However, the share of oilseed meals in total imports dropped from just under 50% in 1973 to 18% in 1983, while imports of oilseeds for domestic processing rose.

Of the 645,490 tons of oilseed meals consumed in 1983, 63.3% was soyabean meal; 22.8% sunflower meal; 7.4% palm kernel meal, 4.7% groundnut meal and 1.8% other meal. Crop by-products totalled 158,000 tons in 1980 and 166,000 tons in 1983, of which 87% was wheat bran, 7.5% rice bran and 1% rye bran.

Of about 40,000 tons of other ingredients used in 1983, meat-meals made up 41.6%, alfalfa meal 33.3%, fish-meal 22.3%, meals of poultry by-products 2.5%, and others 0.3%.

Some 7,142 tons of grain germ (96% maize and 4% rice) and 9,980 tons of maize gluten were also imported in 1983 for feed compounding.

In addition to the earlier mentioned grains, domestic supplies consisted mainly of molasses, meat- and fish-meal, olive cakes, carbonates, phosphates, by-products of the wine and brewery industries, and tomato pulp.

Table 4.3

Portugal: quantity of grains and oilseed meals used in compound-feed manufacture, 1975, 1980-1983
(in tons)

Year	Grains (imports + domestic production)							Oilseed meals		
	Oats	Rye	Barley	Maize	Sorghum	Wheat	Total	Imports	Domestic production	Total
1975	-	10,835	-	1,062,233	133,533	9,286	1,215,887	65,663	179,528	246,191
1980	56,463	-	23,755	2,565,795	73,042	-	2,719,055	385,358	386,758	772,116
1981	58,891	-	15,066	2,447,665	173,694	39,680	2,734,996	418,050	432,415	850,465
1982	99,876	1,765	51,958	2,140,277	228,745	20,360	2,543,181	157,335	620,286	777,621
1983	33,034	138	31,846	1,642,399	159,120	-	1,866,537	120,000	525,490	645,490

Sources: Empresa Pública de Abastecimento de Cereais; Instituto do Azeite e Produtos Oleaginosos.

Table 4.4 shows the formulation of compound feeds in 1983-1984 for the country as a whole in terms of quantity and percentage of total.

Table 4.4

Portugal: average formulation of compound feeds, 1983-1984

Quantity (Q): '000 tons

	1983		1984	
	Q	%	Q	%
Total	2,965	100.0	2,509.0	100.0
of which:				
Grains	1,867	63.0	1,461	58.3
Manioc	-	-	-	-
Oilseed meals	645	21.8	540	21.5
Food industry by-products	251	8.5	245	9.8
Animal by-products	26	0.9	86	3.4
Minerals and additives	105	3.4	122	4.8
Other	71	2.4	55	2.2

Source: Associação Portuguesa dos Industriais de Alimentos Compostos para Animais.

There is a definite trend towards a decline in the use of grains and an upswing in the consumption of oilseed cakes, and industrial and animal by-products. Manioc is expected to be utilized from 1985 onwards.

3. Quality standards and control

All quality norms and standards for feed ingredients are being revised to conform to EEC standards. The standards and norms are fixed by the Commission for Animal Feeds of the Ministry of Agriculture and Fisheries. The most important current legal provisions are the following:

- Legal Order No. 50/84, on the regulation of marketing and utilization of feed ingredients and labelling of compound feeds.
- Legal Order No. 808/83, on permitted contents of proteins, sugars, starches, minerals and amino-acids in animal feeds.
- Legal Order No. 221/83, on admitted tolerances of humidity, foreign matter, and on quality control of feedstuffs.

The major producers of feeds have their own quality control laboratories for raw materials and finished formulations.

The Institute for the Quality of Feeds analyses the quality of products in case of litigation. The results of this analysis are further interpreted by the Sanitary Service of the Ministry of Agriculture.

D. Imports of feed ingredients

1. Overview

Portugal depends on imports for 75% of its annual needs for feed grains and for over 90% of its annual needs for oilseeds and meals. Of about 3.1 million tons of raw materials used yearly in 1982 and 1983 for feed compounding, some 62% were imported grains, 22% imported oilseed meals and cakes and 9% other imported ingredients such as fish-meal, grain by-products and germs.

Despite efforts to maximize the use of locally available substitutes, the industry is likely to remain dependent on imported raw materials in the foreseeable future.

2. Sources of supply

(a) Feed grains

As table 4.5 shows, imports of grains, e.g maize and sorghum, are almost wholly from the United States. Some imports of sorghum came from Uruguay in 1981 and from Argentina in 1979.

Barley, obtained from Australia in 1979, now originates mainly in France (100% of imports in 1980-1981 and 89% in 1982).

(b) Oilseed meals

Imports of oilseed meals for animal feed uses increased steadily from 1975 to 1981 and dropped subsequently. The main suppliers were the United States, Brazil and Argentina for soyabean meal; Malaysia and Indonesia for palm kernel meal; the Federal Republic of Germany, Spain, Argentina and the Netherlands for sunflower meal; and Senegal and India for groundnut meal.

3. Prices

The prices of imports have increased sharply since 1982, partly because of the rise in international prices and partly because of the devaluation of the escudo. The selling prices of grains, oilseeds and oilseed meals are fixed by the Government through the Public Grain Supply Organization (EPAC) and the Oil and Oleaginous Products Institute (IAPO). Liberalization of these prices is expected shortly.

Table 4.5

Portugal: imports of grains[a/] and oilseed meals, by quantity and by origin, 1979-1982

Quantity (Q): tons

	1979 Q	1980 Q	1981 Q	1982 Q
Maize	2,090,800	2,805,200	2,693,300	2,407,200
of which from:				
United States	100%	100%	100%	100%
Sorghum	134,300	125,600	156,200	236,600
of which from:				
United States	37%	100%	97%	100%
Argentina	63%	-	-	-
Uruguay	-	-	3%	-
Barley	60,000	15,800	55,400	47,900
of which from:				
France	-	100%	100%	88%
Australia	100%	-	-	22%
Soyabean meal	170,613	266,827	287,549	32,855
of which from:				
United States	71%	25%	76%	85%
Brazil	20%	55%	14%	-
Argentina	4%	18%	4%	-
Netherlands	3%	-	1%	-
Spain	-	-	-	15%
Palm kernel meal	n.a.	33,831	56,815	71,994
of which from:				
Malaysia		12%	46%	59%
Indonesia		85%	50%	37%
Ivory Coast		-	1%	4%
India		-	3%	-
Nigeria		3%	-	-
Sunflower meal	nil	3,910	17,029	25,420
of which from:				
Germany, Fed. Rep.		48%	46%	-
Spain		52%	-	-
Netherlands		-	23%	23%
United States		-	19%	9%
France		-	12%	-
Argentina		-	-	61%
Spain		-	-	7%
Groundnut meal	40,577	80,789	54,609	27,057
of which from:				
Senegal	71%	44%	36%	73%
India	12%	22%	57%	19%
Gambia	-	4%	-	7%
Guinea	1%	-	-	1%
Sudan	7%	14%	-	-
United States	-	16%	-	-
Angola	9%	-	-	-

Sources: Empresa Pública de Abastecimento de Cereais; Instituto do Azeite e Produtos Oleaginosos.

a/ For animal feed and other uses.

Table 4.6 shows the evolution of the prices of raw materials paid by manufacturers of compound feeds.

Table 4.6

Portugal: evolution of prices of principal feed ingredients paid by manufacturers of compound feeds, 1980-1984
(in escudos per kg)

Raw materials	1980	1981	1982	1983	1984
Maize	7.00	9.50	11.50	21.40	27.75
Sorghum	6.70	9.20	11.00	21.15	26.30
Oats	7.50	8.50	9.50	16.00	21.65
Soyabean meal, 44%	11.00	15.00	18.00	31.20	41.30
Groundnut meal	9.50	13.50	16.50	25.80	30.62
Sunflower meal, 30%	5.50	7.50	9.00	20.50	23.30
Wheat bran	7.00	9.30	11.00	20.00	25.00
Molasses	7.30	8.40	9.24	10.00	n.a.
Fish-meal	29.18	35.02	42.02	55.40	60.00

Source: Associação Portuguesa dos Industriais de Alimentos Compostos para Animais.

4. Import channels and procedures

EPAC is the sole importer of cereal grains in Portugal. It also fixes the prices of these commodities for the domestic market and maintains reserve stocks. Since 1975, IAPO has had the monopoly of imports of oilseeds and oilseed meals. The meals are distributed either directly to large compound-feed producers or through CAIACA, a trading co-operative supplying most of the small- and medium-sized feed mills and handling up to 60% of the total supply. CAIACA also imports and stores other raw materials such as fish-meal, meat-meal and, more recently, corn gluten and manioc. The first imports of the latter two products were made in early 1984, despite opposition from EPAC on the grounds that these products are grain substitutes and therefore affect EPCA's grain monopoly.

Direct imports by feed mills are almost non-existent because of the cumbersome procedures for obtaining import licences. The use of CAICA's services is considered the more convenient means of obtaining supplies from abroad.

Annex I gives the addresses of the organizations and companies mentioned above as well as those of important compound-feed manufacturers.

Imports are paid against documents. The system of open credits is not practiced in Portugal. Contracts are negotiated on the basis of the price of the day, but as payments are made at the exchange rates of three to four months later, when the merchandise is unloaded at the harbour, importers often run the risk of incurring additional costs.

5. Infrastructure

(a) Transport

Shipping costs add substantially to the prices of imported grains and oilseed meals. Freight costs are high, and the situation is aggravated by the fact that IACA and IAPO are obliged to use the services of the Portuguese National Shipping Company and are thus unable to take advantage of lower costs available elsewhere.

The above shipping company currently charges an additional tax on products imported from Brazil (oilseed meals for example). This has led to distortions in the prices of products from this source, making them less advantageous than similar products from other sources.

Lisbon harbour costs are high; however, negotiations are currently under way to lower them for grains and oilseed meals. Inland transport is also rendered more costly by the fact that railway freights are calculated on the tonnage transported irrespective of the distance involved.

(b) Storage

Storage capacity in Lisbon harbour is inadequate. It is reported that the quality of imported grains sometimes deteriorates because of poor storage facilities at the harbour.

Imported oilseeds and oilseed meals are stored by the oil mills or by compound-feed manufacturers. CAIACA has its own storage facilities near Lisbon harbour.

6. Tariff and non-tariff barriers

Portugal needs to import the bulk of its ingredients for compound-feed manufacture. However, the general economic recession and the scarcity of foreign exchange have tended to affect the volume of imports and led to substitution by lower-cost ingredients of domestic origin.

The import duties on feed ingredients are as follows:

Product	Maximum tax % ad valorem	Additional tax, %
Maize	9	0
Sorghum	8	0
Manioc	6	10
Citrus pulp	6	10
Oilseed meals	7	0
Fish-meal	2	0
Meat-meal	2	2
Wheat bran	7	0
Maize gluten	1	0

Direct imports by feed manufacturing companies are subject to import licensing.

If Portugal joins EEC as expected, it will apply EEC restrictions and quotas on imports of feed ingredients. Prospective exporters will need to cope with the same competitive environment as in EEC, and with similar quality standards and sanitary regulations.

7. Prospects for developing country suppliers

Portuguese compound-feed manufacturers have a vital interest in reducing the cost of their raw materials. This is reflected in their efforts to liberalize imports, to obtain direct access to the international market, and to gain exemptions from customs taxes and duties. As regards alternative protein sources and grain substitutes, they have succeeded recently in importing corn gluten and manioc pellets, the latter from Thailand.

By 1986, the import requirements of the Portuguese animal-feed sector will not exceed the 1983 levels, i.e. between 1.5 million and 1.7 million tons of grains and 115,000 to 120,000 tons of oilseed meals. The United States and EEC will probably remain the main suppliers of grains. If the experiment with imported manioc proves satisfactory and prices are competitive, an estimated 50,000 to 60,000 tons of this product could be imported as a substitute for grains.

As far as oilseed meals are concerned, the use of more domestic sunflower meal is anticipated, although its protein content is somewhat lower than that obtained in EEC countries. There is a potential market for imported groundnut and palm kernel meals. However, stringent sanitary and quality requirements must be taken into account by potential exporters.

E. Summary

In recent years, production of compound feeds in Portugal has amounted to 2.5 million to 3.0 million yearly, of which 40% for pigs, 33% for poultry, 23% for cattle and 3% for other animals.

Production capacity is under-utilized. The compound feed industry is currently in crisis as a result of the general economic depression, the scarcity of foreign exchange and the industry's heavy dependence on imported raw materials.

On-farm mixing makes up around 15% of the total production of compound feeds. About 85% is produced industrially, mostly in small and medium-sized mills. Almost all grains and oilseed meals, as well as oilseeds processed in Portugal, are imported by two State monopolies. Grains used for compound-feed manufacture amounted to over 1.9 million tons in 1983, of which 88% was maize from the United States.

Imports of oilseed meals reached 120,000 tons in 1983; in addition 525,000 tons of oilseeds were imported for processing in Portuguese oil mills. The meals comprised palm kernel meal (46%) from Malaysia and Indonesia, soyabean meal (21%) from the United States and Spain, groundnut meal (17%) from Senegal, India and the Gambia, and sunflower meal (16%) from Argentina, Spain and the Netherlands.

Imports of feed ingredients are subject to increasingly higher quality and sanitary standards.

In the depressed current economic conditions, the level of production of compound feed is not expected to exceed 2.65 million tons by 1985.

A process of liberalization of imports has already been announced and is expected to create a more competitive supply situation.

Portuguese compound-feed manufacturers are interested in replacing grains and protein sources with more competitive ingredients. Hence, suppliers of lower-priced substitutes would have the best chances of penetrating the market.

An estimated 1.5 million to 1.7 million tons of grains and 115,000 to 120,000 tons of oilseed meals a year from foreign sources will be required in 1985/86. The potential market for manioc, which will be ready for tapping if the recent experiment with manioc pellets proves satisfactory, is estimated at 50,000-60,000 tons a year. However, the future of this market segment will ultimately be determined by the price and quality of manioc supplies. As Portugal has broad trading experience with Brazil, Senegal and Indonesia, current negotiations and agreements aiming at lowering freight rates will primarily benefit these supply sources.

Annex

Portugal: selected addresses

A. Associations/government offices

Associação Portuguesa do Industriais de Alimentos Compostos para animais (IACA)
Av. 5 de Outubro
21-2o. Esq - 1000 Lisbon
Tel: 558 042, 535 091
Telex: 42510 IACAP

Instituto do Azeite e Produtos Oleaginosos (IAPO)
1-1o. Esq, Av. Sidónio Pais
Lisbon 10
Tel: 563 881, 576 318

Cooperativa Abastecedora dos Industriais de Alimentos Compostos para Animais Lda (CAIACA)
Rua D. João da Silva 34
Lisbon
Telex: 18889 caiaca p

Ministério da Agricultura, Florestas e Alimentação
Direção de Serviços de Produção Animal
Divisão de Alimentação Animal
Rua Victor Cordon 4-3o. Andar
Lisbon 1200
Tel: 365 165/8

Direcção Geral das Alfândegas
(Directorate General of Customs)
Rua da Alfandega
Lisbon 1100

B. Major compound-feed producers

Soja de Portugal, S.A.R.L.
Rua Gonçalo Sampaio
271, 1o. Esq
4100 Porto
Telex: 22363

Quimigal - Química de Portugal, EP
Av. Infante Santo
34-5o. Esq
Lisbon 1300
Telex: 42847

Vitamealo Portuguesa - Alimentos Vitaminados para animais, S.A.R.L.
Rua de Marvila, 151
Lisbon 1900
Telex: 18312

Provimi Portuguesa - Concentrados para Alimentação de Animais, Lda.
Estrada do Adarse, Apartado 26
2616 Alverca Codex
Telex: Alverca 18159

Estabelecimentos Isidoro M. de Oliveira, S.A.R.L.
Av. de Olivença
2870 Montijo
Telex: Montijo 42074, Lisbon 12743

Chapter 5

JAPAN

A. Economic and social background[1/]

	1970	1983
Population	103.7 million	119.5 million
Farm population	26.6 million	20.8 million
Number of households of which:	28.1 million	37.4 million
Farm households	1.8 million	731,000
Agriculture as percentage of gross domestic product	6.1	3.4 (1982)
Agricultural work force as percentage of total	17.4	9.7 (1982)
Agricultural products as percentage of total imports by value	33.1	20.0

B. The livestock sector

1. General

As a result of a radical dietary change, consumption of livestock products in Japan has risen substantially over the past 25 years. However, compared with other developed countries, Japan consumes small amounts of meat and dairy products and, despite the rise in per capita consumption of meat from 9 kg in 1965 to 22.4 kg in 1980, the Japanese diet still largely consists of fish and rice.

The dietary change has been due partly to increased real incomes and partly to cultural influences. Larger proportions of the food budget are now spent on meat and on meals outside the home where substantial meat consumption occurs. Meat consumption appears to be more responsive to changes in income than the intake of other livestock products or fish, although the volume of the fish consumed remains higher than that of meat. Growth rates in meat consumption are expected to slow down over the next five years and the future intake of livestock products in general will largely reflect changes in income, population, price levels, and government policy.

1/ Source: national statistics.

Over the last 20 years, livestock production in Japan has been steadily increasing, in 1982 making up 24% of gross agricultural income compared with 15% in 1960. It has thus kept in step with growth in consumer demand for livestock products. The Government has played an important role in this development through policies implemented since the introduction of the Basic Agricultural Law of 1961. The Law for Price Stabilization of Livestock Products (1961) is administered by the Livestock Industry Promotion Corporation (LIPC) which is directly concerned with acquiring, storing and selling particular livestock products to maintain wholesale prices within a predetermined range. LIPC advises the Minister of Agriculture on such matters as stabilizing livestock and feed prices.

In general, the Japanese livestock sector, particularly the dairy and beef subsectors, is highly protected. This is considered essential partly because of the difficulty of improving farming operations as a result of severe land constraints.

Subsectoral characteristics and government policy have affected the economic performance of each subsector. Beef and dairy products are highly protected, ensuring the profitability of the subsector but also slowing down its rate of structural change. In contrast, much greater consolidation and growth in operational efficiency have taken place in the pig and poultry subsectors. The policies affecting the livestock sector are summarized in annex II. Outputs of major livestock products in various years are shown in table 5.1.

Table 5.1

Japan: production of major livestock products, 1965, 1970, 1975-1981
(in thousands of tons)

Year	Eggs	Chicken	Pork (carcass weight)	Milk	Beef and veal (carcass weight)
1965	984	204	407	3,221	216
1970	1,734	490	734	4,761	278
1975	1,788	740	1,040	4,961	353
1976	1,859	824	1,056	5,262	298
1977	1,883	903	1,169	5,735	361
1978	1,938	1,005	1,284	6,117	403
1979	1,991	1,092	1,430	6,463	402
1980	1,999	1,128	1,476	6,502	418
1981	1,990	1,100	1,396	6,620	471

Source: Ministry of Agriculture, Forestry and Fishery.

2. Beef and veal

In line with rising beef consumption, cattle numbers have increased. However, the degree of self-sufficiency in beef (73%) is lowest for all livestock products. To meet demand, a complex import quota arrangement is implemented. Together with dairying, the beef and veal subsector is the slowest to consolidate and move towards greater efficiency despite government efforts.

Wagyu, the native breed of cattle, makes up roughly one quarter of the beef produced in Japan. Dairy herds, mainly fat steers and culled cows, provide about two thirds.

The cost of producing beef depends on the type of operation, i.e. whether the producer breeds and grows calves or fattens older animals to finishing weight in feedlots. The former calls for higher labour but lower feed costs because of the use of farm-produced raw materials. For fattening operations, the reverse is the case, although the cost of buying cattle is usually the largest expense.

In 1975, a price stabilization scheme was introduced to maintain the wholesale prices of beef and set floor and ceiling prices. Calf support prices are also fixed as a safeguard against downward trends in beef prices. To help expand beef cattle breeding and feeding units, subsidies are given to improve pastures and develop large-scale feedlot operations. In 1964, MAFF set aside funds for interest-free loans to producers seeking to expand domestic supplies of farm forage and roughage.

Support prices for cattle have been kept unchanged since 1982 partly because operations have generally been profitable as a result of reduced production costs and partly because of the Government's desire for greater efficiency in the subsector. However, domestic output of beef does not appear to have much prospect of expanding greatly in the medium term.

3. Dairying

Dairying is carried out in the more remote areas of Hokkaido and Tohoku, which have about one half of the national dairy herd and a large part of the country's pasture and forage crop area. The breed is mostly Holstein and the trend in recent years has been towards larger holdings.

With increased use of feed concentrates and improved management, milk production per cow has been growing steadily from around 5,000 litres in 1970 to well over 6,000 litres in the early 1980s. Feeding rates of mixed feed have likewise risen from an annual 625 kg per cow in the 1970s to about 1,100 kg in 1983.

Feed makes up about 60% of total dairying costs, and half of that is spent on commercially purchased feed. The use of concentrates is higher in winter than in the summer months.

Japan is about 90% self-sufficient in dairy products. The balance of its needs, i.e. for non-fat dry milk for livestock feed purposes, is met by imports.

4. Pigs

Pig raising in Japan has been moving towards fewer but larger operations. The average herd size has increased substantially, rising from about six animals per holding in 1965 to 114 in 1984. Recently, the large feed mills linked with the important trading companies have ventured into large-scale production of pigs.

Although subject to environmental constraints, many pig farms are found around large urban areas. Consolidation of pig operations in recent years has resulted from improved management practices, good operating margins, higher litter size and slaughter weights, better feed conversion rates and a reduction in the fattening period. Feed, almost completely consisting of compound feeds, is one of the main cost items.

There are generally two types of pig farms: those that undertake piglet farrowing to finishing, and those that fatten older pigs to finishing weight. Whereas in the first type of farms, feed costs are about 60% of the total, labour making up an additional 25%, in the second type, feed accounts for 37% of the total.

Floor and ceiling prices are set for domestic pork carcass and prices in turn are regulated by controlling stocks. These prices have not been changed since 1982 owing to budgetary pressures, stable production costs, and sustained profitability of operations.

5. Poultry

(a) Eggs

Production of eggs is undertaken largely near the population centres of central Honshu and Kyushu. The average size of holdings has increased considerably over recent years. Improved economies of scale have resulted in generally profitable operations, and efficiency in feed conversion has offset rising feed prices. Feed, mainly commercial formula feed, is the major cost component, constituting 65% of the total. Use of feed has been fairly constant over recent years at about 45 kg per layer per annum.

Japan is almost entirely self-sufficient (95-100%) in eggs. Per capita consumption is one of the highest in the world and appears to have reached near-saturation level. Future growth will depend entirely on population increase.

Feed manufacturing companies play a major role in the marketing of eggs by way of feed agents. Egg yields have steadily increased, having risen from an annual 230 in 1970 to about 270 per bird in 1983.

Government involvement in the subsector compared with the other livestock subsectors is more indirect. The Egg Price Stabilization Fund, begun in 1966, covers about 40% of national egg output; it grants subsidies when market prices fall below the guaranteed price. When prices

are weak, the Government resorts to "administrative guidance" such as encouraging stockholding, slowing down imports and limiting flock growth. Specialization and the scale of operations have made producers increasingly vulnerable to price fluctuations.

(b) Poultry meat

Broiler production is concentrated in central Honshu and Kyushu, with the large trading companies gradually increasing their shares in recent years. Hatcheries and feed mills sell chicks and feed to broiler producers, which then raise, process and market the birds. Some hatcheries and feed mills are owned by, or are affiliated with, integrated broiler companies. In 1983, deliveries of broilers totalled 643 million head.

The main breeds are Arbor Acres (40%), Hubbard (20%) and Ross (20%). The survival rate for chicks hatched has been constant at about 97% over recent years. About 60% of the female chicks are killed at about nine weeks of age (2.2 - 2.5 kg liveweight), another 20% at about seven weeks (1.7 kg liveweight); the remainder are kept for reproduction. Males are generally killed at nine to ten weeks (about 2.5 - 2.8 kg liveweight). The average liveweight has been gradually rising, reaching 2.3 kg in 1983 compared with 2 kg in the mid 1970s.

About 10% of the meat produced comes from culled layers. The Ministry of Agriculture, Fishery and Fishing has set medium-term targets of 2.4 kg liveweight per bird, a feed conversion rate of 2.2 to weight and a survival rate of 98%. Feed costs as a percentage of total costs were between 67% and 70% in the early 1980s, having been around 65% in 1970. Almost all feed comprises commercially purchased compound feed. As in egg farms, increasing economies of scale through highly integrated systems have made poultry meat operations profitable.

No government-funded programme exists for the broiler industry. In 1970, a price stabilization fund was set up for broilers by Zennoh, the national co-operative, as a self-support scheme covering about 22% of the industry. Trigger levels are set for supplementary payments. The fund is built strictly upon contributions from producers.

C. Supply of, and demand for, feeds

1. Overview

The expansion in Japan's livestock sector over the last quarter of a century has been greatly helped by the availability of regular and generally ample supplies of feed ingredients in the world market. Domestic production has been increasingly unable to fulfil the livestock sector's needs. In the 1960s, domestic feed resources (including processed by-products) provided 60% of feed needs but by 1983 this percentage had been reduced to 30%. Despite the Government's announced intention to expand domestic feed production, this situation is unlikely to change. Data on Japan's feed supply and demand in recent years and forecasts for 1990 are shown in table 5.2.

Table 5.2

Japan: feed supply and demand, 1965, 1970, 1975-1983, and forecast for 1990

(in thousands of tons)[a/]

Year	1 Total utilization/ demand (2 + 3)	2 Roughage	3 Total concentrates (4 + 5 + 6)	4 Domestic ingredients[b/]	5 Imported processing materials[c/]	6 Other imports	Self-sufficiency $\frac{2+4}{1}$ x 100
1965	13,359	4,519	8,840	2,771	1,136	4,932	55
1970	18,394	4,656	13,739	2,297	2,176	9,266	38
1975	19,867	4,793	15,074	2,060	2,639	10,375	34
1976	21,402	4,815	16,587	1,944	2,690	11,952	32
1977	22,782	4,879	17,903	1,844	2,805	13,255	30
1978	24,114	5,181	18,933	1,792	3,102	14,039	29
1979	25,529	5,175	20,354	1,888	3,181	15,285	28
1980	25,107	5,118	19,989	1,965	3,038	14,986	28
1981	24,899	5,168	19,731	2,283	3,180	14,268	30
1982	25,491	5,441	20,050	2,694	3,217	14,139	32
1983	26,069	5,206	20,863	2,538	3,313	15,012	30
1990	32,730	9,412	23,318	1,963	4,006	17,349	35

Sources: Livestock Industry Bureau, Ministry of Agriculture, Forestry and Fishery; Japan Feed Association, Yearly Reports on Concentrate Feed (various issues) (Tokyo).

a/ In terms of total digestible nutrients.
b/ Grain and by-products, fish-meal, and non-fat dry milk.
c/ Products imported, e.g. soyabeans, for crushing in Japan.

Domestic production of formula feeds is the most important source of livestock feed in Japan; these feeds constitute about 60% of the total feed supply. Japan's commercial feed industry is in many respects one of the most advanced in the world and feeding from a technical point of view could not be better adapted to a dynamic livestock sector.

The production of simple feeds (e.g. flaked corn, rice bran and soyabean meal) has recently increased in response to the larger number of producers wanting to make up their own rations as required. Grains and wheat bran are the most common ingredients used. Flaked corn has grown in importance in the last few years.

2. Roughage

After concentrates, which are largely imported, roughage is the most notable feed resource in Japan although it is less important now than it was two decades ago. Limited land availability restricts the cultivation of forage crops and the acreage under pasture; despite government efforts to encourage the expansion and improvement of pastures, the targets set for 1990 (table 5.3) would appear to be somewhat optimistic given recent production trends. Nevertheless, production of forage crops has risen in recent years as a result of the use of higher-yielding varieties.

There has been an improvement in the number of ruminants to the volume of forage and pasture supplies (see table 5.3), supplies per head having more than doubled in the last twenty years. Less important sources of roughage are rice straw, potatoes and sugar-beet pulp. Roughage imports are increasing, especially for the dairy herds outside Hokkaido and northern Honshu.

3. Industrial by-products

According to the Ministry of Agriculture, Forestry and Fishery, 3 million tons of industrial by-products (or 10% of total feed usage) are processed in Japan each year. The most important of these feed ingredients, apart from soyabean meal which is discussed elsewhere, is wheat bran of which almost 2 million tons annually are used for feed purposes. Domestic supplies, making up half of the total, come almost entirely from imported wheat processed in the country. These supplies are of two types: processed ordinary wheat bran from private mills, and Senkan and Zosan wheat bran which are marketed under government supervision and sold at fixed prices. The balance of the supply consists of imported wheat bran.

Although wheat bran is principally utilized in farm-mixed feeds, an increasing amount goes into the manufacture of commercial compound feeds, i.e., about 37% of total supplies of this ingredient in 1983 compared with 27% in 1975. Its largest use in formula feeds is in dairy rations which absorb about 10% of total supplies.

Table 5.3

Japan: supply of, and demand for, pasture and forage, 1965, 1970, 1975, 1980-1983 and forecast for 1990

Year	1 Grazing animals	2 Area under pasture	3 Production: pasture[a]	4 Area under forage and pasture	5 Production: forage and pasture[a]	6 Yield	1 ÷ 4	5 ÷ 1
	Million head[b]	'000 ha	Million tons	'000 ha	Million tons	Tons/ha	Animals per ha	Ton/ head
1965	3,550	303	8.3	596	14.3	24.0	6.0	4.0
1970	3,749	484	17.5	717	24.0	33.5	5.2	6.4
1975	3,699	691	25.2	840	32.2	38.3	4.4	8.6
1980	4,280	788	28.5	977	37.3	38.2	4.4	8.7
1981	4,416	798	29.5	993	38.4	38.7	4.4	8.7
1982	4,516	808	31.7	1,009	41.4	41.2	4.5	9.2
1983	4,622	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1990[c]	6,430	n.a.	n.a.	1,550	60.5	39.0	4.1	9.4

Source: Ministry of Agriculture, Forestry and Fishery.

a/ Green basis.
b/ One horse and one head of cattle are counted as 1; one sheep and one goat are counted as 0.1.
c/ Cattle only. From Government of Japan, The Long-Term Prospects for the Demand and Supply of Agricultural Products (November 1980).

Since the late 1950s, the Government has authorized and directed certain wheat flour mills to produce wheat bran for livestock feed. The Senkan system, initiated in 1958, authorized a small number of mills to produce wheat bran as a primary product, this bran being higher in carbohydrates and lower in protein than regular wheat bran. Under this system of price subsidies, the Government encourages the more effective use of lower-grade wheat and increased utilization of the bran as a feed ingredient. The Zosan system, begun in 1959, was designed to increase bran production as a by-product in general mills by lowering the flour yield to between 40% and 45% (compared with a normal milling yield of 75-78%). As mentioned, the bran produced under both systems is sold at fixed government prices and is marketed mainly through dairy associations.

Rice bran and rice-bran oilcake are used in comparatively large quantities for feeding. Of the 800,000 tons of rice bran utilized for this purpose, only about 200,000 tons are absorbed by the mixed feed industry (mainly for cattle feed), the remainder being either used in simple feed mixes or mixed directly on the farm.

Sugar-beet pulp is mainly imported but about 200,000 tons yearly are produced in Hokkaido. About 70% of the domestic output is consumed in Hokkaido itself, the balance being shipped to the main island. Beet pulp is put on the market in October and the supply is normally exhausted by March the following year.

4. Government policies

(a) General

The Government controls fluctuations in grain prices through State trading, stockpiling, supply/purchase agreements and a price stabilization fund. Its policies are implemented through direct intervention and through arrangements with the private sector.

The Government Food Agency, by authority of the Feed Supply and Demand Stabilization Law of 1953, directly controls the purchase, storage and sale of wheat, barley and rice. Although they are considered staple foodgrains, they are also used as feedstuffs either regularly (as are wheat and barley) or occasionally (as is rice). The Food Agency controls the prices of these grains and their by-products.

Stockpiling is part of the Japan's feed-supply policy and is endorsed by the Feedstuff Supply and Demand Stabilization Act of 1952. Stockpiles have however been small in comparison with feed consumption. A new programme in the 1970s to increase the government-held stock of barley and to subsidize expanding privately-held stocks of maize and sorghum was implemented. Currently, the Government holds in reserve about a month's supply of the grains.

(b) Feed price stabilization funds

A combined government and private sector agency, the Mixed Feed Supply and Stabilization Organization (MESSO) was set up in 1975 to administer a feed price stabilization fund for the benefit of livestock producers.

There are other entirely private industrial funds, viz., those established by Zennoh (in 1968), Zen-rakuren, the Dairy Co-operative Association (in 1968), and the Japan Feed Manufacturers Association (in 1973). The private industrial funds are used for minor price adjustments and the MESSO fund for markedly adverse situations.

5. Imports of feed ingredients

Details on imports of feed ingredients are shown in table 5.4.

Japan is one of the major international importers of feed ingredients, in 1981 and 1982 importing about 18 million tons of feed ingredients yearly compared with around 13 million tons in 1975. About 90% consists of feed grains which averaged 16.2 million tons in 1981-1982. Two thirds of the grains are maize, in 1982 amounting to 10.8 million tons. Almost all the maize imported in that year was obtained from the United States.

The United States, Argentina and Australia supply sorghum. The cultivation of Australian sorghum was in fact encouraged by Japanese trading houses during the late 1960s.

Wheat bran is imported from Canada and Indonesia, the latter being a regular supplier to the Japanese market.

Between 400,000 and 500,000 tons of sugar-beet pulp are imported into Japan. The United States is a regular supplier.

Alfalfa and lucerne are important ingredients in many feed rations. They are imported into Japan in the form of pellets, hay cubes or crumbles. Japan has been a regular buyer of these items for many years, largely from the United States and Canada. Smaller amounts are obtained regularly from New Zealand which supplies fresh alfalfa of high quality after the North American production season.

Alfalfa may be sun cured (in which form it is obtained mainly from California) or dehydrated (of which the principal supplier is Canada). Dehydration by artificial drying causes a smaller loss of nutrients than does sun-curing.

Most soyabean meal consumed in Japan as feed comes from the domestic oilseed-crushing industry, using imported soyabean as raw material. Only a small quantity is imported as meal, of which the United States and Brazil are the principal suppliers. Given demand for vegetable oil and the crushing capacity in Japan, substantial changes in requirements for imported soyabean meal are unlikely.

Table 5.4

Japan: imports of feed ingredients, 1975, 1978, 1980-1982
(in tons)

Type \ Year (April-March)	1975	1978	1980	1981	1982
Grains of which:	11,943,918	15,565,204	16,478,060	16,289,302	16,210,763
Maize	5,813,260	8,023,750	10,117,276	10,156,563	10,756,532
Sorghum	3,409,239	4,666,269	3,477,919	3,273,663	2,945,315
Barley	1,307,203	1,316,413	1,417,895	1,492,650	1,137,446
Wheat a/	1,225,738	1,357,107	1,280,781	1,257,858	1,256,095
Rye	45,435	54,762	14,643	13,562	23,133
Oats	143,043	146,903	169,546	95,006	92,242
By-products of which:	481,248	783,188	879,900	801,020	863,731
Wheat bran	100,534	159,933	182,887	231,522	231,596
Rice bran	530	10,492	-	15	-
Miscellaneous grain by-products	81,671	142,329	129,669	131,443	149,846
Beet pulp	193,265	458,308	565,421	426,646	478,920
Others	105,248	12,126	1,923	11,394	3,369
Oilseed meal of which:	125,312	360,293	394,389	141,249	139,185
Soyabean meal	25,725	308,592	363,366	115,347	89,191
Groundnut meal	25,602	760	-	-	-
Cottonseed meal	-	-	535	15	265
Linseed meal	4	-	-	345	-
Rapeseed meal	-	17,589	5,972	2,495	35,009
Sunflower seed meal	-	-	10	292	-
Palm kernel meal	) 73,981	7,222	2,425	25	25
Coconut meal	)	1,651	397	259	321
Others	-	24,479	21,684	22,470	14,374
Animal meals of which:	214,466	404,201	426,643	298,050	370,031
Fish-meal	66,801	66,854	138,046	47,456	70,684
Feather meal	13,696	3,165	8,316	8,651	10,392
Meat- and bone-meal	78,807	195,693	176,887	151,401	167,970
Bone-meal	15,854	22,596	26,062	23,407	31,687
Blood powder	447	1,238	1,492	1,069	852
Skim-milk powder	26,859	104,801	68,916	57,112	73,943
Whey powder	12,002	9,854	8,924	8,954	14,503
Others of which:	534,411	622,944	562,116	498,156	511,439
Molasses	157,151	146,571	88,964	69,024	65,383
Beef tallow	24,469	16,134	12,757	6,931	5,636
Alfalfa meal pellets	267,307	338,523	310,405	282,680	335,535
Cassava meal	28,618	625	-	-	-
Other vegetable products	56,866	121,091	149,990	139,521	104,885
Total	13,299,355	17,735,830	18,741,108	18,027,777	18,095,149
Hay of which:	95,852	269,691	409,147	327,146	371,114
Hay cubes	52,564	211,567	294,647	237,212	311,139
Other	43,288	58,124	114,500	89,934	59,975

Source: Ministry of Agriculture, Forestry and Fishery.

a/ Only about 200,000 tons annually were used for direct feeding, the balance being imported by the Government partly for the manufacture of special wheat bran for feed use.

6. Exports of feed ingredients

Exports are limited to fish-meal and small quantities of oilseed cakes. In 1983, 80,000 tons of fish-meal were exported, almost entirely to China (Taiwan Province), compared with 136,000 tons in 1982 and 74,000 tons in 1981. The trade is handled principally by the large trading houses, and a minimum crude protein content is guaranteed in addition to the terms of a normal GAFTA contract.

D. The compound-feed industry

1. Overview

Compound feed is Japan's most important livestock feed. Over the last 20 years there has been a very rapid growth in the production of animal feeds, although it would appear that the high growth rates have now tapered off.

There are two principal groups of feed producers. One is Zennoh, a national federation of co-operatives, which controls some 40% of the market and the other, the private feed mills, which have most of the balance. In 1983, Zennoh produced 50% of Japan's cattle feed but only 24% of the national broiler feed output. The output of each group depends very much on the location of individual producers and various other factors.

The private feed mills are members of the Japan Feed Manufacturers Association (see annex I for the address). At the beginning of 1984, the association had 65 member companies owning 131 mills. The largest companies are affiliated to the so gu sho sha, i.e. the large Japanese general trading companies.

The total capacity of feed mills in Japan was estimated at 1.53 million tons monthly at the beginning of 1984 on the basis of an 8-hour working day and a 25-day month. About 30% of total capacity is located in central Honshu.

The Government uses the licensing system to control mill operations. To become an authorized or bonded mill, a feed manufacturer must obtain a government licence and to use imported feed ingredients, he must hold an operating licence. Established feed manufacturers wanting to open a new mill or expand must likewise be licensed to do so.

2. Pricing

Japanese feed mills use linear programming to calculate least-cost formulations for animal rations, maize, sorghum, bran and barley being the principal ingredients. Soyabean meal is of lesser importance and is used largely as a protein and energy supplement.

Zennoh, in consultation with the Ministry of Agriculture, Forestry and Fishery, sets quarterly prices for the industry. Although attempts are made to dampen market price rises, the price of compound feeds can be raised if the cost of feed ingredients has increased considerably.

3. Regulations

Japan has a strict, comprehensive and well-enforced code on compound-feed manufacture. The Law on Safety Assurance and Quality Improvement of Feed, implemented in 1976, not only ensures the safety and quality of the feed produced, but also provides for the supervision of its use in livestock farms. The Law indicates minimum content requirements for crude protein, energy, etc., for the different types of rations, specifies maximum tolerable levels for toxins and anti-nutritive substances in rations, and prescribes labelling requirements as regards the contents, chemical composition and origin of packed feed. Feeds are officially inspected at seven inspection centres throughout the country. In addition, many feed mills have their own laboratories and quality-control facilities.

4. Production

Least-cost formulations affect the composition of feed within the constraints of its end-use and the requirements of livestock producers. High proportions of grain are normally found in poultry and pig rations, whilst beef and dairy rations use more brans. Dairy feeds have a high protein content (that is, a high oilseed meal content) because they tend to supplement forage supplies and grazing. Otherwise, price is the basic determinant within quality constraints. Compound-feed formulas are determined quarterly.

More and more compound feeds are being pelletized, the current percentages being 15% for pig feed, 30% for dairy rations, and 37% for cattle rations. In 1982, 18% of all mixed feeds were pelletized.

5. Procurement systems

Feed mills obtain their foreign supplies through importers, many of the mills being subsidiaries or affiliates of the major importers. A small number of traders, including Zennoh, handle a large proportion of the feed ingredients entering Japan.

6. Future developments

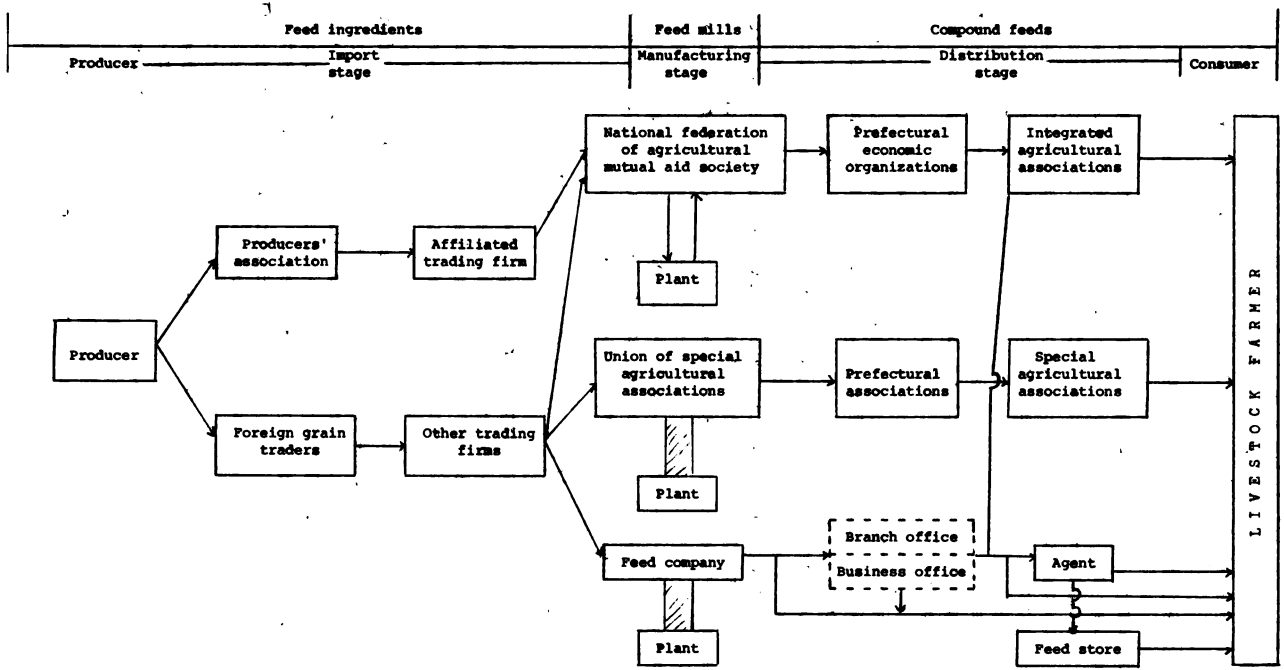
A much more moderate growth than has occurred in earlier years for the Japanese compound-feed industry can be inferred from forecasts of demand for livestock products and the expected stability of fish supplies. At the same time, the industry is moving towards greater rationalization of production, partly by shifting locations and partly by company mergers. Amalgamation or merging procedures follow the administrative guidelines for rationalization established by the Ministry of Agriculture, Forestry and Fishery. It is also likely that more simple, rather than compound, feed, will be sold to larger customers and delivered in bulk rather than in bags.

E. Trade channels and marketing systems

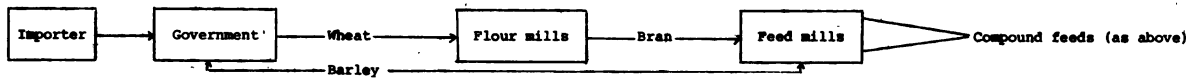
The distribution channels for feed ingredients and mixed feeds are shown in figure 1.

Figure 1

Distribution channels for feedstuffs in Japan



Special government purchases: wheat bran and barley



Source: Livestock Industry Bureau, Ministry of Agriculture, Forestry and Fishery.

The principal channels are: from manufacturer to wholesaler to branch wholesaler to retailer to livestock farmer (35% of total sales); from manufacturer to branch wholesaler to farmer (26%); and from manufacturer to branch wholesaler to retailer to farmer (19%).

F. Infrastructure: transport, handling and storage

As Japan imports a large proportion of its feed ingredients, the location of mills is important to the cost efficiency of its feed-marketing operations. In view of continually rising internal transport costs, more and more mills situated in the interior are being closed down and replaced by others at ports or areas nearby.

Large shipments are often offloaded at major ports and trans-shipped to smaller ports for use by mills close by. No feedstuff is transported by rail as costs are considered too high.

Delivery from the feed mill to the user is generally in bags although bulk deliveries to large livestock farmers are on the upswing. The use of intermediate storage points is becoming less common. Most deliveries are made by Transbag, i.e. in shipments of four tons in 20 kg paper bags.

Bulk deliveries are being made increasingly possible by the provision of storage facilities at the farm. Deliveries of simple feeds are also on the rise as more and large livestock producers undertake on-farm mixing.

It is reported that there are 510 distribution points for compound feed in Japan. About 46% of deliveries are made within an average radius of 6 km, 40% within 36 km, and 10% within 136 km.

G. Trading practices, contracts and pricing

The c.i.f. prices at which importers sell their goods to users are often based on a premium on a futures price. For example, maize may be sold so many cents higher than the Chicago December contract. Importers also hedge their purchases on the futures market.

C.i.f. prices to the user of imported feed ingredients (such as alfalfa pellets) are also sometimes calculated by comparing quoted Canadian prices with the price of maize, the basic measure, and with the prices of other ingredients. The c.i.f. prices of ingredients imported in smaller quantities, such as ipil-ipil leaf meal, are negotiated by the importer and the producer of the feed ingredient on the basis of the price of a comparable product, say alfalfa pellets.

Where f.o.b. pricing is involved, NAEGA contracts are often used. For c.i.f. pricing, GAPTA contracts are the norm. Both types of contract generally specify quality requirements. In other types of contracts, the buyer specifies his requirements.

The price ex mill of soyabean meal crushed in Japan from imported soyabeans is based on c.& f. prices for imported meal, plus delivery charges.

The size of shipments depends on the volume and the type of ingredient. Maize from the United States or alfalfa pellets from Canada are most likely to be shipped on large vessels of up to 50,000 tons. Smaller quantities are sometimes transported on liner terms.

There are some long-term supply agreements with large exporters of feed ingredients. In these cases, the price is often negotiated with the supplier periodically, e.g. every three months rather than on the basis of the price of the day.

H. Tariff and non-tariff barriers

Japan has liberalized its import trade in feed ingredients over the past 20 years to reduce costs to users. However, some domestic feedstuffs continue to be protected by law. These include dairy products such as non-fat dairy milk and whey, and grains such as barley and wheat, which are considered staples. Oats, fish-meal and maize, when imported by non-bonded mills, also fall under protective measures. Most other feed ingredients, including roughage, are under an automatic approval system and have a small tariff or none at all. The Customs Tariff Act of 1968 reduced or eliminated tariffs on raw materials for compound feeds such as maize, sorghum, soyabean meal, and blood meal. Zero duties on feather meal and soyabeans resulted from the GATT Multilateral Trade Negotiations (MTN) of 1978. For details of duties on individual ingredients, see annex III to this chapter.

Exchange rates are an important factor in buying decisions. The strength or weakness of the yen has often resulted in varying decisions as to the timing and the quantity of feed ingredients entering the country.

I. Prospects for imports from developing countries

Although its rate of growth in the next five years is expected to be low, the large Japanese market for feed ingredients will continue to offer trade opportunities to exporting developing countries. The Government has shown great interest in diversifying its sources of supply over the last 15 years. Among the most notable efforts in this direction has been the promotion of grain production in South-East Asia and Australia by Japanese trading companies.

The preconditions for the maintenance of good business relations with Japanese importers can be illustrated by the trade in ipil-ipil leaf meal from the Philippines. The meal is produced in the southern part of this country from leucaena, a rapidly regenerating tree with high leaf yields. Rich in xanthophyll and protein, the meal is used by the Japanese as a substitute for Canadian alfalfa pellets. Japan's two principal importers of ipil-ipil have been buying about 15,000 tons annually over the last five years. Transport costs are high, shipment being made under liner terms. Contracts, f.o.b.-based, are agreed between buyer and supplier, and the maximum moisture content is stipulated. The meal is dried artificially or is sun dried, the former being preferred.

Location is not necessarily an advantage when small quantities and high freight rates are involved. For example, whereas Canadian alfalfa pellets are bulk shipped, ipil-ipil is bagged and handling costs are high. Consistency of quality is an important factor, and occasional mould in shipments would discourage further imports, especially when the contract stipulates maximum moisture levels. Continuity and regularity of supplies are other important considerations.

Japanese importers and feed millers expect strict conformity with their technical and other requirements. Developing country suppliers able to meet this expectation would in general have bright prospects of penetrating the market, even if they had only limited (but regular) quantities of ingredients to offer.

Imports from the Philippines of small quantities of sugarcane tops are also a possibility but prospective suppliers should be able to offer conditions of trade similar to those for ipil-ipil leaf. Japan imports about 3,000 to 4,000 tons yearly of maize cobs from Thailand and China.

J. Conclusions and recommendations

Japan will continue to be a major importer of feed ingredients because of its limited fish supplies, further westernization of diets, population and income growth, and declining self-sufficiency in domestic feed ingredients. Its agricultural policies will remain a positive determinant of the direction of the import trade in feed ingredients, particularly its policy of protecting and developing the livestock sector.

Feed grains will retain their importance and will continue to be supplied mainly by the United States. Soyabean meal will remain the major source of protein. Demand for other feed ingredients as substitutes will persist, influencing to a great extent the buying decisions of the feed-milling sector.

Hence, opportunities for exports of feed ingredients from developing countries to this large market should continue to arise in the foreseeable future. However, potential exporters should note that Japanese are extremely strict as regards conformity to contractual requirements for quality, stability and regularity of supply, and handling and inspection procedures. They are also highly price conscious. The health and sanitation aspects of feed must be tightly monitored by the exporter, who should initially send samples to a neutral body for testing.

Annex I

Japan: selected list of importers of feed ingredients

ACT B Corporation
6-20 Honda Yaesu Bldg
2-chome, Yaesu
Chuo-ku, Tokyo 104
Tel: 271 7851

C. Itoh & Co., Ltd
4 Nihonbashi, Honcho, 2-chome
Chuo-ku, Tokyo 103
Tel: 245 7145

Kanematsu-Gosho Ltd
14-1 Kyobashi, 2-chome
Chuo-ku, Tokyo 104
Tel: 562 7076

Kinsho-Mataichi Corporation
8, 2-chome, Kayabacho, Nihonbashi
Chuo-ku, Tokyo 103
Tel: 668 4481

UNICOOPJAPAN
8-3 Ohtemachi, 1-chome
Chiyoda-ku, Tokyo 100
Tel: 270 0044

Marubeni Corporation
4-2 Ohtemachi, 1-chome
Chiyoda-ku, Tokyo 100
Tel: 282 2111

Meiwa Trading Co., Ltd
New Tokyo Bldg
3-1 Marunouchi, 3-chome
Chiyoda-ku, Tokyo 100
Tel: 212 8151

Mitsubishi Corporation
3-1 Marunouchi, 2-chome
Chiyoda-ku, Tokyo 100
Tel: Dial-in

Mitsui & Co., Ltd
2-1 Ohtemachi, 1-chome
Chiyoda-ku, Tokyo 100-91
Tel: Dial-in

Nichimen Co., Ltd
13-1 Kyobashi, 1-chome
Chuo-ku, Tokyo 104
Tel: 566 2111

Nichiryo, Ltd
2-2-1 Azabudai
Minato-ku, Tokyo 106
Tel: 584 0151

Nissho-Iwai Co., Ltd
4-5 Akasaka, 2-chome
Minato-ku, Tokyo 107-91
Tel: 588 2111

Okura & Co., Ltd
Toshida Bldg, 6th Floor
3-6 Ginza, 2-chome
Chuo-ku, Tokyo 104
Tel: 563 6051

Rasa Trading Co., Ltd
Chitose Bldg
6 2-chome, Kayabacho, Nihonbashi
Chuo-ku, Tokyo 103
Tel: 668 8231

Sanyo Trading Co., Ltd
Sanyo Boeki Bldg, 7th Floor
11 2-chome, Kanda-Nishikicho
Chiyoda-ku, Tokyo 101
Tel: 292 3411

Sumitomo Shoji Kaisha, Ltd
24-1 Kandanishiki-cho, 3-chome
Chiyoda-ku, Tokyo 100-91
Tel: 296 3818

Taiyo Bussan Kaisha, Ltd
Shiga Bldg, 2 2-chome
Kodemma-cho, Nihonbashi
Chuo-ku, Tokyo 103
Tel: 663 3171

Taiyo Fishery Co., Ltd
1-5-1 Marunouchi
Chiyoda-ku, Tokyo 100
Tel: 216 0811

Toho Bussan Kaisha, Ltd
18-16 1-chome, Shimbashi
Minato-ku, Tokyo 105
Tel: 507 3304-9

Toshoku Ltd
4 Nihonbashi-Muromachi, 2-chome
Chuo-ku, Tokyo 103
Tel: Dial-in Information 245 2211

Toyo Menka Kaisha Ltd
Iino Bldg, 8th Floor
1-1 Uchisaiwai-cho, 2-chome
Chiyoda-ku, Tokyo 100-91
Tel: 506 3332

Yuasa Trading Co., Ltd
Kowa Bldg, 25 8-7 Sanban-cho
Chiyoda-ku, Tokyo 102
Tel: 265 4411

Wako Koeki Co., Ltd
Kyoei Bldg, 6-1 Hachobori, 1-chome
Chuo-ku, Tokyo 104
Tel: 552 8281

Association

Japan Feed Trade Association
4-3-13 Ginza
Chuo-ku, Tokyo 104
Tel: 563 6441

Annex II

Japan: policies affecting the livestock sector

Type of policy	Dairy	Beef	Pork	Eggs	Poultry meat
Price	Deficiency payments paid to producer to guarantee price for manufactured milk. Limit on amount of manufactured milk eligible for support. Wholesale price established for designated dairy products.	Wholesale floor and ceiling prices are established for Wagyu and dairy steer beef.	Wholesale floor and ceiling prices are established.	Government participates in egg price stabilization fund. Production adjustment by linking performance to eligibility for compensatory payments.	Private price stabilization fund.
Stockholding	LIPC buys, holds, and sells designated dairy products to keep market price within predetermined floor and ceiling prices.	LIPC purchases and releases beef to the market.	LIPC buys domestic pork at the floor price and sells it at the ceiling price. Administrative guidance.*	Government participation in National Fluid Egg Manufacturer and Stockpiling Company.	Administrative guidance.*
Imports	Quotas set for milk products. Tariff quota on natural cheese.	Semi-annual quota set for beef. Most of the trade is controlled by LIPC through the licensing system. Surcharges.	Trade controlled by private trade. Variable levy system restricts imports; system is waived from time to time. Tariff. Administrative guidance.*		Tariff. Administrative guidance.*
Subsidies	Various subsidies to promote consumption of dairy products and to encourage dairy production (lower input costs).	Feeder calf and feed prices are subsidized through price stabilization funds.	Some producers subscribe to a government-supported feed price stabilization scheme.		

Source: Ministry of Agriculture, Forestry and Fishery.

* Gyoseishido in Japanese. Consists of recommendations, advice, or directions from a government agency. Such advice has no coercive legal power.

Annex III

Japan: import tariffs on feed ingredients

Tax number	Import item number	Article	Customs' tariff			
			Basic tariff	Conventional tariff	Provisional tariff	Import methods $
*04.02	04.02-214	Dry skim milk (fat content 1.5% or less)	(45%)	(45%)	25%	IQ
*04.02	04.02-217	Dry skim milk (fat content more than 1.5%)	(45%)	(45%)	25%	IQ
*04.02	04.02-311	Whey powder (with sugar)	35%			IQ
*04.02	04.02-319	Feather powder (without sugar)	(35%)		25%	IQ
05.07	05.07-100	Feather meal	0%			AA
05.08	05.08.100	Bone powder	0%			AA
*05.15	05.15-600	Blood powder	(5%)	(0%)	0%	AA
*07.06	07.06-010	Cassava	15%	$.6%		AA
10.01	10.01-911	Wheat	(20%)		0%	IQ
*10.02	10.02-010	Rye	(15%)	(11%)	5%	AA
10.03	10.03-011	Barley	(10%)		0%	IQ
10.03	10.03-021	Naked barley	(10%)		0%	IQ
10.04	10.04-010	Oats (by TQ)	(10%)		0%	TQ
*10.04	10.04-090	Oats (other)	10%			AA
*10.05	10.05-010	Corn (for formula feed)	(10%)	0%		TQ
10.05	10.05-090	Corn (other)	(10%)		(first 10%)	TQ
					(second ¥15/kg)	AA
*10.07	10.07-310	Kaoliang (for formula feed)	(5%)	0%		AA
10.07	10.07-390	Kaoliang (other)	5%			AA
*11.04	11.04-200	Cassava meal	25%	9.4%		AA
12.10	12.10-010	Alfalfa meal	0%	(0%)		AA
12.10	12.10-091	Feed hay (in cubes)	0%	(0%)		AA
12.10	12.10-099	Feed hay (other)	0%	(0%)		AA
*15.02	15.02-110	Tallow	(5%)	(1.6%)	0%	AA
*17.03	17.03-211	Molasses (fat content 60% or less)	¥18/kg	¥6.75/kg		AA
23.01	23.01-111	Fish-meal (by TQ)	0%		0%	TQ
23.01	23.01-119	Fish-meal (other)	0%		¥17/kg	AA
23.01	23.01-290	Meat- and bone-meal and others	0%	(0%)		AA
23.02	23.02-110	Rice bran	0%	(0%)		AA
23.02	23.02-190	Rice and corn refuse, bran	0%	(0%)		AA
23.02	23.02-210	Wheat bran	0%	(0%)		AA
23.02	23.02-290	Bran of other cereals	0%	(0%)		AA
23.02	23.02-300	Soyabean cake	0%	(0%)		AA
23.03	23.03-000	Beet pulp and others	0%	(0%)		AA
*23.04	23.04-100	Soyabean oilcake	(5%)	(8.1%)	0%	AA
23.04	23.04-210	Peanut oilcake	0%	(0%)		AA
23.04	23.04-220	Cottonseed oilcake	0%	(0%)		AA
23.04	23.04-230	Linseed oilcake	0%	(0%)		AA
23.04	23.04-240	Sunflower oilcake	0%	(0%)		AA
23.04	23.04-250	Palm oilcake	0%	(0%)		AA
23.04	23.04-260	Coconut oilcake	0%	(0%)		AA
23.04	23.04-270	Rapeseed oilcakes	0%			AA
23.04	23.04-290	Other oilcakes	0%	(0%)		AA
23.05	23.05-000	Wine lees	0%	(2.5%)		AA
23.06	23.06-000	Vegetable products for feed	0%	(0%)		AA
23.07	27.07	1. Prepared feed	10%	(5%)		
	-110	Prepared vitamin				AA
	-190	Others				AA
		2. Others	(0%)			
	-210	1) Articles of which the assessment value is more than 70 yen/kg		(15%)	15%	AA
		2) Others				
		(1) Lactose is more than 10%				
	-221	1. For white veal			0%	TQ
	-231	2. Others (pet food, others)			¥70/kg+1%	
	-239				¥7/kg	AA
		(2) Lactose is 10% or less	0%			
	-241	1. 10 kg or less in air-tight containers (pet food, lucerne meal pellets, beet pulp pellets and others)		(0%)		AA
	-249	2. Others			15%	
	-251	1. Meal, powder, flakes, pellets (pet food and others)				AA
	-259					
	-291	2. Others (pet food and others			¥60/kg	AA
	-299					

Source: Customs and Tariff Bureau, Ministry of Finance.

* Exempt from tax if they are used as raw materials for formula feed.
$ IQ = Import quota system. TQ = Tariff quota system. AA = Automatic approval system.

Note: Additional details on figures enclosed in parentheses may be obtained from JETRO, "Feed and Roughage", Access to Japan's Import Market, No. 19 (Tokyo, 1979).

Chapter 6

Republic of Korea

A. Economic and social indicators[1/]

Population (1983):	39.9 million
Total area:	99,020 km^2
Cultivated land (1982):	22% of total area
Forests (1982):	66.2% of total area
Farm population (1982):	9.7 million
Agriculture as percentage of gross national product (1982):	18

B. Livestock sector

1. Overview

The livestock industry of the Republic of Korea has grown substantially over the last decade. Rising personal incomes have led to changes in food consumption habits, i.e. a fall in the use of the traditional rice-barley-fish diet and increasing consumption of meat, particularly pork, and of milk. Continued growth in personal incomes is likely to lead to greater demand for livestock products.

However, the livestock sector has been slow to restructure itself in response to demand. In general, livestock farming remains traditional and on a small scale, partly because of limited land availability (particularly in the cattle subsector) and partly because of a certain disinclination to change in the farming areas. Government efforts to intensify livestock production have been substantial but much remains to be done to meet projected demand over the next five to ten years.

Table 6.1 shows livestock numbers and production of livestock products during 1982-1984.

1/ Source: national statistics.

Table 6.1

Republic of Korea: livestock numbers, 1982-1983, and output of livestock products, by quantity, 1982-1984

Livestock	Numbers ('000 head)		Livestock products	Production (tons)		
	1982	1983		1982	1983	1984
Cattle[a/]	1,754	2,215	Meat Milk	61,390 576,236	66,089 712,206	86,345 867,876
Pigs	2,183	3,649	Meat	237,530	294,912	326,784
Sheep	4	6	Meat	n.a.	n.a.	n.a.
Goats	251	349	Meat	n.a.	n.a.	n.a.
Chicken[b/]	46,592	49,239	Meat Eggs (millions)	96,683 4,505	119,871 4,936	127,027 5,089
Total	50,784	55,458	Meat	397,603	480,872	540,156

Source: Ministry of Agriculture and Fishery.

a/ Of which dairy cattle: 1982, 228,000; 1983: 275,000.
b/ Of which laying hens: 1982, 27.0 million; 1983, 27.7 million.

2. Pigs

After rice farming, pig farming contributes the most value (about 8% of the total) to domestic farm production. Growth in demand for pigmeat has been substantial in recent years. Slaughter levels have risen from some 2 million head in 1976 to 5 million head in 1983.

Pig farming has accelerated and occasionally decelerated rather quickly during the last decade. Over-production led in 1979 and 1980 to short term but extensive breeding stock liquidation. The subsector expanded in 1983 as higher prices and profitability attracted new producers, particularly to establishing medium-sized holdings of 100-500 pigs.

The Government has recommended optimum levels for the size of the national pig herd, i.e. a total of 3.5 million head, including 450,000 sows. However, as can be seen from table 6.1, the number of pigs in 1983 slightly exceeded the targeted level; whether the Government will attempt to impose its targets remains to be seen.

3. Cattle

(a) Beef

The Republic of Korea is about 60% self-sufficient in beef. According to official forecasts, this rate should rise to around 70% by 1987 and to 85% by 1991.

The number of holdings of beef cattle has tended to vary somewhat over the last 10 years but it has been on a generally rising trend in the past few years. The average number of head per holding is low, but it doubled from 1 in 1970 to 2 in 1983. The number of large-scale holdings, i.e of 50 head of cattle or more, has also registered a slow rise.

Although compound-feed production for beef cattle has increased from only 33,000 tons in 1975 to 871,000 tons in 1983, fodder crops and grassland yields have also become more important factors in beef cattle raising and fattening.

(b) Dairying

Milk production and, consequently, per capita consumption have risen rapidly in the last 10 years. Production grew from 163,000 tons in 1975 to 712,000 tons in 1983 and 868,000 tons in 1984, and is forecast at 1.84 million tons by 1991.

The most notable development in the dairy sector has been the increase in milk yields. This has largely come from genetic improvements, better management, and superior-quality feed. The number of dairy cows has continued to grow, although the average size of holdings (9 to 10 cows) has changed little.

4. Poultry

(a) Eggs

Per capita consumption of eggs has reached a high level (124 eggs per capita in 1983). Further rises are expected, but the projected 169 eggs per person by 1991 is considered somewhat high, 140 eggs being thought to be a more likely level. Increases in egg production (see table 6.1) have resulted chiefly from improved breeding, selection and management practices. The production of layer feed has changed little in volume since 1980.

(b) Poultry meat

Consumption of poultry meat has risen relatively slowly over recent years. Consumption was 3.9 kg per capita in 1983 and is expected to reach 4 kg by 1991. This would imply a rise in poultry-meat output from 120,000 tons in 1983 to 180,000 tons by 1991, that is an annual average growth rate of about 6%.

C. Supply of, and demand for, feeds

1. General

Almost 70% of the country is classified geographically as mountainous, 11% as upland, and 15% as cropland which is mainly planted to rice. Consequently, there are severe constraints to its ability to supply its own feed ingredients, especially as rice continues to be the staple food item. As a result, the Republic of Korea will remain heavily dependent on imported feed ingredients to support its growing livestock sector in the foreseeable future. Imports now meet some 85% of the total demand for feed ingredients. Exports are negligible. Stock changes in feed ingredients and mixed feeds from year to year are relatively unimportant. A recent exception is barley, changing consumer preferences for which have led to an oversupply and government intervention in its disposal.

Consumption of compound feeds has risen rapidly in recent years (see table 6.2). Future supplies of feed ingredients will have to come largely from imports as only limited quantities will be available from domestically grown crops.

Table 6.2

Republic of Korea: consumption of compound feeds, 1979, 1983-1984
(in thousands of tons)

Compound feeds	1979	1983	1984 (Estimates)
Total	5,996	7,373	7,512
of which from:			
Industrial production	4,272	5,852	5,922
On-farm mixing	1,724	1,521	1,590

Source: Ministry of Agriculture and Fishery.

2. Domestic feed ingredients

(a) Grains

Only a small proportion of the domestic harvest of crops is used for animal feeding. Of the grain crops, maize is the largest source of feed supplies, but production tends to remain at about 100,000 tons a year. Under a government price support programme, maize is purchased from farmers at price levels that are considered too low, pushing the volume of sales in recent years to less than half the output. The balance, i.e. more than half, is used directly on the farms.

The Government sets targets for crop production and in 1983 froze purchase price levels. Production of maize for silage seems to be increasing and the 1984 plan calls for a 50% increase in production of the green crop over 1983. Most domestically produced maize, except for that purchased by the Government, is used on the farm. Government-purchased domestic maize is sold to feed mills at a price up to three times higher than the landed cost of imported maize.

The area grown to barley has been shrinking continually in recent years, largely because of uneconomic returns to producers and, more recently, a purchase price freeze by the Government. In 1984, barley stocks were released for the first time in several years for feed use. This followed a build up in government stocks as a result of lower consumption of this grain as a traditional food item.

Only a very small amount of domestically produced wheat is used for feed purposes (about 5,000-7,000 tons on the farms). As wheat brings even poorer returns to producers than does barley and as the climate is unsuitable to wheat growing, the Government has decided not to encourage production.

Sorghum is one of the least profitable crops for domestic farmers, and a very small amount (about 3,000 tons) is used on farm.

(b) Oilseeds

Soyabeans are by far the largest oilseed crop grown in the Republic of Korea, the area planted to rape and groundnuts being comparatively small. Domestically grown soyabeans are used almost entirely on the farm for food purposes. Only about 15% of the crop is sold to the Government.

Rapeseed is cultivated only in the southern part of the country and production continues to decline. This has been due to the lack of suitable new growing areas, the switching of traditional producers to more profitable crops, and conversion of land to other uses. The volume of production will probably remain largely unchanged over the coming years.

(c) Fish-meal

Fish-meal production has been adversely affected by inefficient facilities and imports have had to make up for the shortfall. The expected modernization of existing plants would push production up to match the growth forecast for the compound-feed industry. In 1983, some 100,000 tons of fish-meal were produced in the country.

3. Imports of feed ingredients

(a) Overview

Trends indicate that feed grains and soyabean meal will continue to be the leading imported feed ingredients. Ingredients of United States origin, feed grains and soyabeans in particular as well as other items such as tallow, will benefit from credit guarantees of the United States

Commodity Credit Corporation (CCC). Ingredients from other origins will compete on the basis of price on the world market. Details on imports are given in table 6.3.

Although the Republic of Korea imports most of the raw materials for its compound-feed industry, it is worth mentioning that the number of ingredients used is rather limited. Of the grains, maize continues to be the most important. Soyabean meal is the primary source of protein.

(b) Grains and grain by-products

Recent government policy calls for a reduction of maize imports for feed purposes to no more than one half of total feed-grain usage by 1985. In 1983, 4 million tons of grain were imported for feed purposes, of which 3.4 million tons consisted of maize (yellow corn), largely from the United States. Thailand and Argentina were the other suppliers. The lower prices of other feed grains indicate that part of the government objective of reducing maize imports might be achieved by end 1984.

Almost all imported sorghum is used for feed purposes, the volume reflecting its price relationship with maize and other grains on the world market. The United States is the main supplier of sorghum, Argentina and Australia being occasional though large suppliers. High sorghum prices in 1983 limited the quantity bought in that year.

Since November 1983, there has been a considerable rise in the use of imported wheat (mainly Australian) as a feed ingredient. Favourable price relationships with maize and the availability of large quantities of feed-grade wheat from Australia have made this a more interesting ingredient in recent years. However, quality problems with some shipments have had a restraining influence. In 1983, about 200,000 tons were imported for feed use.

In addition to feed wheat, Canadian rye has recently been bought in comparatively large quantities. Imports of this item in 1983 from Canada amounted to 75,000 tons.

Although most grain brans are supplied by domestic cereal processers, an additional amount is imported, principally wheat bran from Indonesia. The volume of imports (including a small amount of bran pellets from Canada) for 1984 was planned at 133,000 tons.

Until recently, the Government has opposed importing barley for feed purposes. However, as prices favouring other feed grains have been leading to their use as maize substitutes, the Government has been reconsidering its policy. Nevertheless, no further action is expected until the Government disposes of its currently large surplus stock of barley. In July 1984, the Ministry of Agriculture and Fishery supplied 161,000 tons of barley to the feed industry.

Table 6.3

Republic of Korea: imports of feed ingredients, 1975 and 1980-1984
(in thousands of tons)

Ingredient \ Year	1970	1975	1980	1981	1982	1983	1984 a/
Total	310.5	436.3	2,263.5	2,467.7	3,472.3	4,943.9	5,001.0
of which:							
Grains	259.4	405.9	1,881.1	2,060.5	2,853.8	4,002.9	3,913.0
Fish-meal	19.4	-	-	4.0	-	9.6	
Soyabean meal	28.9	-	-	52.3	136.1	329.9	) 398.0
Rapeseed meal	-	-	6.2	5.8	5.0	52.9	)
Soyabean	-	29.6	374.1	344.5	474.3	536.1	600.0
Others	2.8	.8	2.1	.6	3.1	12.5	90.0
of which:							
Sunflower		)			-	1.0	)
Meat and bone meal		)			.2	6.4	)
Feed flavour		) n.a.			.2	.2	) n.a.
Skim milk		)			1.5	2.2	)
Whey powder		)			1.3	2.0	)

Source: Korea Feed Association.

a/ Planned.

(c) Oilseeds and oilseed meals

The volume of imports of soyabean meal depends partly on demand of the feed industry and partly on how much of this demand is met by domestic soyabean crushers, the latter in turn being subject to domestic requirements for vegetable oil. In 1983, soyabean meal imports rose substantially over the previous year's levels, as demand for domestic vegetable oil did not expand as much as the feed industry's demand for soyabean meal. The Government Plan calls for a decline in meal imports in 1984 from the high 1983 levels as well as in imports of soyabeans for crushing purposes.

The tariff rate of 10% on soyabean imports, compared with 15% on imported oilseed meals, should favour domestically produced meal. The United States has been the principal source of soyabean; with Brazil it has also been a principal supplier of soyabean meal.

In 1984, soyabean meal requirements are expected to fall below the peak level of the previous year. The three major soyabean crushers are planning to expand their facilities from 3,000 tons/day to 4,200 tons/day which will lead to a reduction of soyabean meal imports.

Rapeseed meal imports increased towards the end of 1983 and continued to rise in early 1984 because of the meal's favourable price relationship with soyabean meal. Most imports come from Canada. Imports of rapeseed have virtually ceased, as the country's only processing company terminated operations in 1983.

(d) Other products

Imports of other feed ingredients are currently low. Apart from bran pellets from Canada, usage of which is increasing, and fish, meat, and bone meals, the only other imported ingredient of any significance is feed tallow. Small amounts of whey powder and skim milk powder are also imported.

D. The compound-feed industry

1. Overview

There are 78 feed mills in the country, 62 belonging to 55 members of the Korea Feed Association (KFA) and 16 operated by the National Livestock Co-operatives Federation (NLCF) (see annex I for the addresses of these associations). Total production capacity in early 1984 was 15,410 tons daily (or 4.6 million tons annually) on the basis of an eight-hour shift. KFA members account for 80% of total capacity and NLCF members for the remainder.

A comparison of industrial capacity and production can be seen in table 6.4. Since 1975, capacity has risen 3.5 times; production as a percentage of this is expected to climb from 62% in 1975 to 128% in 1984 and 187% in 1985.

Table 6.4

Republic of Korea: compound-feed industry, capacity and production, 1975 and 1980-1985

Year	No. of mills	Daily capacity (tons)	Annual capacity ('000 tons)	Annual production ('000 tons)	Production as percentage of capacity[a/]
1975	73	4,823	1,447	901	62
1980	78	13,500	4,050	3,462	85
1981	78	15,543	4,678	3,490	75
1982	78	16,343	4,903	4,420	90
1983	78	15,410	4,619	5,852[b/]	127[b/]
1984[c/]	78	15,410	4,619	n.a.	n.a.
1985[c/]	80	16,010	4,799	n.a.	n.a.

Source: Based on industrial data.

a/ Based on an eight-hour shift.
b/ Based on more than one shift daily.
c/ Planned.

In 1985, two additional mills are to be constructed under NLCF, which will raise capacity by another 600 tons/day, bringing the country's total capacity to some 4.8 million tons a year. Thus the industry should be able to produce about 9 million tons of compound feed in 1991, assuming operations of slightly less than two shifts a day.

KFA was established in 1961 to: undertake joint procurement of feed ingredients; arrange for the financing of feed-grain imports; conduct research work on feed resources; publish material on feed quality, manufacturing technology and management; and implement projects together with the Government. The association established a research institute in July 1984, whose objective is to assist feed millers in improving quality control, productivity and management. Member companies are individually responsible for such matters as production, distribution and sales.

NLCF was incorporated in 1981 with 100 member co-operatives. Its objectives are to: secure a sounder basis for livestock production, for example by instructing farmers on proper feeding techniques; develop new feed resources such as hilly grasslands and fodder crops; and utilize by-products as feeds. Like KFA, NLCF is authorized to import feed ingredients on behalf of its members. As stated above it has 16 mills under its responsibility, five of which it operates itself; the rest are run by its member co-operatives. An additional two mills under its care are due to be completed by 1985.

2. Production

As can be seen from table 6.5, production of industrial compound feeds has expanded in keeping with the rapid growth in livestock production in recent years. Feed production rose rapidly from 900,000 tons in 1975 to nearly 6 million tons in 1983, pig and beef cattle feeds registering the most spectacular increases.

Most compound feeds are produced as mash although some pig and poultry feeds are pelletized. No information is available on the amount of pelletized feeds.

About 30 different types of compound feeds are produced in the Republic of Korea. In terms of quantity the most important are pig growers (15% protein), broiler finishers (19% protein) and beef cattle developer and finisher feeds.

3. Feed ingredients

Table 6.6 shows the general categories of feed ingredients used in the manufacture of compound feed, by quantity and as percentage of the total, in 1975 and during 1980-1983. The figures given for 1984 are taken from government plans.

Grain, until recently largely maize, now accounts for about two thirds of all compound-feed ingredients. The proportion of bran used, comprising mainly wheat bran, has declined since 1975. Although the use of soyabean meal has grown slowly, it now represents some 15% of the total as a result of improved feed formulation.

Generally speaking, as the number of ingredients used in compound feeds is small, variability in feed formulation also tends to be limited. Changes occur, as in the case of grains, only when definite price movements give substitute ingredients a distinct advantage.

4. Feed prices

Feed formulations are normally changed monthly in accordance with a least-cost formulation system. The Government maintains strict control over prices as part of its anti-inflation measures and normally sets price levels for feeds. Feed millers must obtain government approval to alter their prices.

5. Quality standards and control

Feed norms used are based on standards of the National Research Council of the United States (NRC) and on national standards. The technical requirements for finished feeds are similar to those in Japan (see Chapter 5) particularly as regards nutrient contents.

Table 6.5

Republic of Korea: industrial production[a/] of compound feeds, by type and by quantity, 1975 and 1980-1983
(in tons)

Type of feed / Year	Poultry				Pigs	Dairy cattle	Beef cattle	Other	Total
	Breeding	Laying	Broilers	Subtotal					
1973	104,202	371,370	92,994	568,566	135,505	150,671	33,495	12,758	900,995
1980	295,790	1,126,469	449,593	1,871,862	769,357	513,541	306,333	1,335	3,462,418
1981	248,385	1,055,516	538,171	1,842,072	761,204	470,831	414,699	1,650	3,490,456
1982	248,065	1,084,684	647,092	1,979,841	1,150,528	592,346	672,739	4,347	4,419,801
1983	265,789	1,182,352	797,480	2,245,621	2,013,007	709,936	870,595	12,427	5,851,586

Source: Ministry of Agriculture and Fishery.

a/ See table 6.2 for statistics on on-farm mixing.

Table 6.6

Republic of Korea: ingredients in the manufacture of industrial compound feed, by quantity, 1975 and 1980-1984

Quantity (Q): tons

Type	1975		1980		1981		1982		1983		1984 a/	
	Q	%	Q	%	Q	%	Q	%	Q	%	Q	%
Total of which:	913,709	100.0	3,485,507	100.0	3,510,448	100.0	4,439,180	100.0	5,871,334	100.0	5,922,000	100.0
Grains	441,706	48.3	2,077,076	59.6	2,077,654	59.2	2,830,791	65.8	3,894,958	66.3	3,849,000	65.0
Brans	262,295	28.7	685,411	19.7	688,526	19.6	661,082	13.0	666,562	11.3	716,000	12.1
Vegetable protein	97,756	10.7	394,824	11.3	447,275	12.7	568,892	13.2	832,081	14.2	876,000	14.8
Animal protein	50,029	5.5	122,444	3.5	93,698	2.7	118,573	2.1	127,280	2.2	149,000	2.5
Inorganic matter	52,774	5.8	183,872	5.3	179,143	5.1	217,364	4.9	280,205	4.8	332,000	5.6
Others	9,149	1.0	21,880	0.6	24,152	0.7	42,478	1.0	70,248	1.2	-	-

Source: Ministry of Agriculture and Fishery.

a/ Planned.

Some of the quality requirements of the feed industry are given in annex II. The Feed Management Law of March 1981 regulates the production of formula feeds, and the trade in feed ingredients. Samples of feed ingredients are taken from imported cargoes at ports by either government or KFA authorities for testing before import clearance is given. In addition, samples of compound feeds are obtained from feed mills every 4 to 6 weeks for testing at government laboratories.

6. On-farm mixing

As most feed ingredients are imported, a large proportion of the compound feeds used in livestock production is purchased from feed mills. The level of on-farm mixing during 1983-1984 tended to be around 25% of industrial compound-feed production; in 1979 this proportion reached 40% (see table 6.2).

E. Trade infrastructure, transport and storage

The completion of the construction of grain unloading and storage facilities at the port of Ulsan, on the east coast north of Pusan, currently being undertaken, will enable the country to handle expanded imports of feed ingredients. Three firms have established Ulsan Silo Co. Ltd., which will have a storage capacity of 240,000 tons; the first segment of 80,000 tons will be operational by 1985 and the second and third segments by 1986 and 1987 respectively. This facility will be equipped with two 150 ton/hour unloaders.

At Pusan, grain silos have a capacity of 83,000 tons with conveyors for 400 tons/hour. Annual handling capacity is about 2 million tons and around 80,000 tons of feed ingredients are discharged monthly.

The other port, Inchon, has a two-silo system operating as a joint venture and handling 300,000 tons of feed ingredients a month. Korea Silo Co. Ltd operates two unloading systems, each able to discharge 100 tons/hour of grain, and has a total storage capacity of 150,000 tons. Taikan Bulk Terminal Co. Ltd also operates two unloading systems, each capable of discharging 1,500 tons/hour of grain; it has an overall storage capacity of 130,000 tons.

Processed compound feeds are transported from the mills to wholesalers or direct to co-operatives and farmers in five-ton trucks, principally in standard bags of 25 kg. Bulk deliveries of feed to larger farms are just beginning, generally in 10-ton trucks.

F. Trading practices, procurement systems and contracts

As stated earlier, KFA and NLCF are authorized to import all feed ingredients, the latter having obtained this authorization in early 1984. Although the Government now allows direct imports by individual feed mills, these mills will in the short term probably continue to rely on KFA and NLCF for their import needs, thereby taking advantage of the experience and the facilities of these associations.

The Government normally issues import licences automatically to KFA and NLCF. Access to foreign exchange (United States dollars) and credit does not appear to present any problems to importers.

Most feed ingredients are imported on c. & f. terms, but f.o.b. terms, particularly for feed grains, are occasionally accepted. A substantial volume is obtained by tender, maize, sorghum, rye, soyabean meal and sometimes rapeseed meal being purchased in this manner. Agents or branches of international shippers in Seoul submit bids to KFA and NLCF on the basis of public invitations to tender.

F.o.b. and c.i.f. purchases are made on the basis of NAEGA and GAFTA contracts respectively, the importing associations being responsible for chartering shipping vessels under NAEGA contracts. Individual buyers and sellers vary the basic contracts as they see fit. Interested exporters can obtain copies of general provisions on bidding and of invitations to tender from the Korea Feed Association, Business Department (see annex I for the address).

After the import vessel arrives and clearance is given by government inspectors, the cargo is allocated to the feed mills. The mills pay the customs duties and other charges.

Each feed mill participating in a shipment provides the bank concerned with a promissory note or guarantee in order to obtain a letter of credit. In every case, the guarantee must come from the importing KFA members.

G. Tariff and non-tariff barriers

In view of the importance given to the development of the livestock industry, import licences for feed ingredients are normally issued automatically and dollar allocations are given fairly easily. However, the Government carefully monitors the volume of imports for conformity with annual import plans.

Most feed ingredients are subject to customs duties, which change fairly frequently. Information on current customs duties and levies on feed ingredients can be obtained from the institutions listed in annex I.

The Ministry of Agriculture and Fishery has been studying the viability of a variable levy system for grain and soyabean imports with a view to raising import prices (delivered to the mill) to the price level of government farm purchases. The levies collected would be used to promote domestic production of those crops. As has been mentioned, import costs inclusive of duties tend to be well below the price levels of domestic crops.

H. Prospects for imports from developing countries

The feed industry is growing rapidly and has already reached high levels of output by Asian standards. However, it has a tendency to limit the number of feed ingredients used and to concentrate on a few major suppliers. This, nevertheless, does not preclude imports of

non-traditional ingredients in small quantities (say above 1,000 tons per annum) from developing countries. Factors such as quality, supply reliability and price competitiveness are crucial to entering this market. Price competitiveness is particularly important in relation to United States products, which are covered by credit guarantees. Prospective exporters are advised to contact the institutions listed in annex I.

I. Conclusions and recommendations

The compound-feed industry of the Republic of Korea is a buoyant one, and given the continued growth in personal incomes and the consequent rise in demand for livestock products expected over the next five to ten years, the industry should expand steadily. On the basis of current trends, compound-feed output is likely to rise to some 9 million tons by 1991 from its expected 1984 level of about 6 million tons. Much of this vitality will depend on government policies supporting crop and livestock development and the import trade in raw materials for the compound-feed industry.

The steady growth in requirements for imported feed ingredients is likely to make buyers more flexible as regards alternative feed ingredients provided these are competitively priced. Market opportunities therefore exist for exporters or potential exporters of feed ingredients from developing countries who can offer a reliable flow of competitively priced supplies of sound quality.

Annex I

Republic of Korea: selected addresses

Korea Feed Association (KFA)
KFA Building, No. 120-3, Seocho-Dong
Kangnam-ku
Seoul
Tel: 581 5721/5
Telex: K22835

National Livestock Co-operatives Federation (NLCF)
17-9 Yeoeuido-Dong
Youngdeungpo-ku
Seoul
Tel: 783 1668/9
Telex: K23517

Annex II

Some quality requirements of the Korea Feed Association

Fish-meal (anti-oxidant treated)

Contents	Acceptable percentages
Protein	65 minimum
Fat	10 maximum
Crude ash	20 maximum
Moisture	10 maximum
Salt/sand	6 maximum (not over 2% sand)

Rapeseed meal (canola)

Contents	Acceptable percentages
Protein	36 minimum
Moisture	11 maximum
Fibre	13 maximum
Fat	0.5 minimum

Yellow corn (maize)

U.S. No. 3 or better yellow corn
Moisture contents not to exceed 15%; aflatoxin: negative.

Yellow sorghum

U.S. No. 2 or better yellow sorghum
Moisture contents not to exceed 14%.

Thai maize (Grade A)

Contents	Acceptable levels
Moisture	14.5 % maximum
Aflatoxin	50 parts per billion maximum

Soyabean meal

Contents	Acceptable percentages
Protein	44 minimum
Moisture	12.5 maximum
Fibre	7 maximum
Fat	0.5 minimum

Rye

Canadian No. 2 or better equivalent

Feeding wheat

Canadian feed wheat or equivalent.

Canadian ground and pelleted screenings

Contents	Acceptable percentages
Profat	16 minimum
Ash	10 maximum
Moisture	12 maximum

Meat- and bone-meal	Acceptable percentages
Crude protein	50 minimum
Fat	9 maximum
Total phosphorus	4.5 minimum
Ash	35 maximum
Moisture	9 maximum

Chapter 7

PHILIPPINES

A. Economic and social indicators

1. General country data[1/]

Population (mid-1983, estimate):	51.96 million
Gross domestic product (1983):	34,211 million
Agriculture as percentage of GDP:	23
Total exports (1983):	$5,097 million
Total imports (1983):	$7,844 million
GDP per capita (1983):	$660
Foreign debt outstanding (end 1983):	$25.6 billion
Active labour force (fourth quarter, 1983):	19,671,000
of which:	
In agriculture	50%

2. Agriculture

Agriculture is the main economic activity in the Philippines, accounting for 30% of the net domestic product and about 40% of export earnings. It provides employment to about one half of the labour force. Agricultural production grew at a rate of about 3.5% in 1982 but because of a prolonged drought it fell to around 1% in 1983, less than the population growth rate of 2.5%.

The feed-livestock economy, which had been slowly developing during the 1970s and early 1980s, reached a plateau in 1983. That year was also characterized by domestic supply shortages, poor economic performance, rising prices of raw materials and severe constraints on foreign currency availability. The World Bank announced in September 1984 that a loan of $150 million would be provided to support agricultural production in 1984/85. The Asian Development Bank also approved a loan of $130 million for this purpose and the United States, Japan, Australia and the United Kingdom are expected to provide credits or grants. Part of the World Bank loan ($50 million) will be used for essential imports such as feed grains; $5 million will be spent on pig and poultry breeding stock. The loan will also be used to support specific policy measures and institutional reforms, for instance to phase out government control which is reported to have restricted agricultural production and discouraged investment.

1/ Source: national statistics.

The programme known as "Agenda for Action in Agriculture: 1984-1988" sets out policy measures covering such items as agricultural credit and rice, maize, animal feeds, coconut, pigs and poultry. The proposed institutional reforms are directed toward the liberalization of foreign and domestic trade in agricultural products and rely on market forces to stimulate production and determine prices. The prices of animal feeds, pigmeat, poultry and eggs will be adjusted to reflect increases in production costs, and gradually decontrolled. The import and export trade in rice and animal feeds will be opened to the private sector and appropriate measures will be taken to help private firms to enter the trade. Interest rates on agricultural credit will be aligned more closely with the rates applicable to other sectors. Furthermore, the Agenda puts more emphasis on rain-fed cropping systems and on raising production of yellow maize, increased support prices being one production incentive.

B. The livestock sector

1. General

Table 7.1 gives a summary of the available statistics on livestock population and production for 1978 and 1981-1983. As can be seen from the table, livestock numbers and production of livestock products have not had any strong or continuous upward movement in recent years. The exception is poultry (broiler) meat, production of which has risen as a result of increased integrated operations by the large feed mill companies.

Livestock holdings tend to be very small. In view of this, the Government has initiated many livestock credit programmes for small to medium-size producers, particularly those raising carabaos, the native buffalo, and those involved in cow-calf operations. In 1983 and early 1984, however, small and medium-scale producers of poultry and pigs suffered from a severe cost-price squeeze (see paragraphs below).

2. Pigs

Backyard (or small-scale) producers accounted for about 80% of pig inventories in 1982, commercial producers being responsible for the remainder. The high slaughter rates of 1983 and early 1984 resulted from the sharp rise in operating costs that followed successive devaluations of the Philippine peso and attempts by the Price Stabilization Council (PSC) to maintain price ceilings on the wholesale and farmgate prices of pigs. The slaughtering of sows and below-weight deliveries of pigs to markets led to a depletion of inventories, followed by a slight drop in pork consumption. In addition, currency devaluations put considerable stress on consumer budgets, resulting in a food-consumption switch to fish and vegetables.

3. Cattle

As mentioned, cattle inventories have grown only very slowly. Persistent production and management problems, a limited breeding base, lack of improved pasture lands, rising operating costs and financial constraints have been some of the restricting factors. Cattle operations

Table 7.1

Philippines: livestock numbers and output of livestock products, 1978, 1981-1983

Livestock	Population ('000 head)				Livestock products	Production ('000 tons)			
	1978	1981	1982	1983		1978	1979	1980	1981[a/]
Buffaloes	2,959	2,850	2,908	2,946	Meat	130	139	172	135
Cattle	1,820	1,940	1,942	1,937	Meat	95	94	80	99
					Milk	10	10	10	11
Pigs	6,910	7,758	7,745	7,980	Meat	510	637	561	603
Goats	n.a.	1,696	1,783	1,850	Meat	n.a.	n.a.	n.a.	n.a.
Chicken	58,892	57,724	59,710	62,254	Meat	128	199	220	243
					Eggs	286	249	264	261
Ducks	5,365	4,783	4,905	6,419	n.a.	n.a.	n.a.	n.a.	n.a.
Other	-	-	-	-	Meat[b/]	175	203	191	196
		TOTAL			Meat	1,038	1,272	1,224	1,276
					Milk	10	10	10	11
					Eggs	286	249	264	261

Source: Various government publications.

a/ Preliminary data.
b/ Including edible offals.

are also small in scale, commercial farms accounting for only 10% of cattle inventories. High beef prices and weakened consumer purchasing power have meant lower consumption of beef. Short-term import prospects for beef are severely limited.

4. Poultry

Although backyard farms still account for about two thirds of poultry holdings in the Philippines, rising feed costs have tended to push the subsector towards integrated commercial operations, such as those run by the large feed mills. Production of poultry meat is believed to have declined in 1983 and is expected to continue its downward trend in 1984 owing to import restrictions on breeding stock and high-quality vaccines. The upward movement of retail prices for this meat, despite government efforts to control them, has dampened consumer buying.

C. Supply of, and demand for, feeds

1. General

As adequate data on feed supply and usage were unavailable during the investigations for this study, it is difficult to assess the supply and demand situation. Some generalization in the following paragraphs is therefore unavoidable although, where possible, supporting statistical data are provided.

Using the volume of production of mixed feed as an indicator, feed demand may be said to have expanded steadily during the 1970s and early 1980s. This was largely due to the development of integrated commercial poultry operations and to the promotion of commercial mixed feeds and the associated techniques of husbandry in other livestock subsectors, the latter improving feeding rates which were heretofore suboptimum.

The domestic supply of feeds over the last 10 to 15 years has often been inadequate, irregular, and therefore a constraint to the steady development of the livestock sector. A contributory factor has been the unreliable domestic supply of ingredients, particularly for processing in feed mills. Imports have therefore been necessary, in addition, the feed industry's growing sophistication in the use of ingredients, and its concern with obtaining nutritionally balanced compound feeds, have tended to favour the import trade. However, foreign exchange and other constraints have not always made such imports possible.

2. Domestic feed ingredients

(a) Grains

Maize is by far the most widely used feed ingredient and a variety of crop programmes have been implemented to promote production. These efforts, however, have been troubled by many problems, e.g. small-scale farming, limited availability and high cost of hybrid seeds, lack of fertilizers, and unfavourable climatic conditions. Recent adverse factors included the drought of 1983, a tight credit situation and successive

devaluations of the peso which affected the prices of fertilizers and other inputs. There were upward adjustments in farm support prices, however, and higher market prices to the farmgate in 1983/84 following the drought, which eased the producer's cost/price situation substantially.

Approximately 60% of the maize crop is used for food, industrial (other than feed) and seed purposes. The remainder is used either directly as feed by the producer or is processed by the compound-feed industry. Maize is a major ingredient in feed milling, constituting up to one half of the total volume of ingredients used.

Production of maize varied from 3.1 million to 3.3 million tons/year in the 1981-1983 period.

(b) Industrial by-products

Of the many by-products processed in the Philippines, rice bran is the most widely used. Known locally as darak, it has a fairly high fibrous content (12-15%) and a high fat content (13%). Three types of rice bran are produced depending on how the paddy is milled. Annual production of rice bran is estimated at around 600,000 tons. The rice milling by-products middlings (binlid), meal and polishings are also used as feed ingredients.

Wheat bran and wheat pollard, by-products of the wheat milling process, together amount to around 200,000 tons a year and are important ingredients in sow rations. A small amount of wheat middlings is also produced, principally as a poultry-feed ingredient.

Corn bran (tahup sa mais), corn or hominy grits, and corn gluten are by-products of the maize milling industries. They are widely used as ingredients, grits in particular.

Cane molasses, a by-product of the manufacture of cane-sugar, is a popular feedstuff for pigs because of its widespread availability and its relatively low cost. Quality variability, due mainly to differences in the age, type and condition of the cane, is a major problem, however. Molasses is also an important binding agent in compound feed and increases the palatability of rations.

It is estimated that about 6% (about 150,000 tons) of the manioc crop (cassava) in the Philippines is dried, ground into meal and used as animal feed. Efforts are being made to promote its use as an energy-substitute for feed grains.

Sweet potatoes (camote) are grown mainly for human consumption. About 50,000 tons annually are channelled to the production of meal, which is used as pig feed.

Coconut meal is a popular feed for "backyard" pigs. It has a high energy value and, when added to rice bran, is considered a good pig fattener. Coconut oil has a high energy content but is an expensive feed ingredient; it is therefore used only occasionally in compound feeds.

About 35,000 tons of domestically produced copra meal pellets are consumed each year in the country as feed. The bulk of production is exported.

Only about 8,000 tons a year of soyabean meal is produced from locally grown soyabeans. This is partly due to the lack of varieties suited to Philippine climatic conditions and to a lack of know-how.

The consumption of ipil-ipil (Leucaena leucocephala) (described in the following subsection on exports) as animal feed in the Philippines is fairly widespread. It is used either for direct browsing by cattle or is dried and ground for inclusion in poultry and pig rations. It has a relatively high protein content and is a source of xanthophyll, the colouring substance in egg yolks and broiler skins. Farmers in the province of Batangas use the leaf together with simple feed concentrates to fatten their cattle, buffaloes and goats.

A small quantity of fish-meal (about 10,000 tons/year) is produced in the Philippines. A fish-meal manufacturers' association of 22 members has been established with a view to improving the marketability of the locally produced meal. Processers mix different kinds of fish to obtain the required crude protein content, according to which the meal is graded 55%, 50%, or 45%. Many problems beset the industry, including the lack of storage facilities, rejection of at least 20% of the total fish catch, the limited fishing season and high fuel costs.

Shrimp-meal consists mainly of the dried and ground heads, legs and shells of shrimp. Although small in volume, the meal has grown in interest as an ingredient in poultry and pig feeds because of its high protein content. The most commonly used species are the small varieties obtained in Mindoro and nearby provinces.

(c) Other ingredients

In 1983, the Philippine Government launched a development programme for non-conventional feed production from indigenous raw materials to improve domestic feed supplies. Pilot work and research on different potential feeds have been carried out and results have been periodically published and discussed. A group comprising the Bureau of Animal Industry (BAI) and other institutions was set up in the early 1980s to work out a national programme for the development of indigenous feed resources in co-operation with the private sector, initially to supply the needs of small and medium-scale livestock farmers. For the long-term non-conventional feed programme, the Government and the private sector have agreed to establish a national feed technology centre to develop technology for the production of feedstuffs for large-scale livestock producers.

Different types of plant protein sources have already been studied, such as mung bean, winged bean, analong leaf (already being used as cattle feed in the country) and pongapong corn (elephant yam). In terms of available quantity, banana rejects and banana-leaf meal are thought to have feeding potential of commercial value; the same is true of watermelon

seeds, water ferns belonging to the genus azolla, and water hyacinth. All these ingredients have been tested for feeding values by different experimental stations in the Philippines. The Bureau of Animal Industry itself has conducted feeding trials on pineapple pulp and yeast. Synthetic amino acids are used on a limited scale and are imported mainly from Japan and the United States.

The development of the commercial viability of alternative ingredients over the short term will depend on the implementation of the 1984-1988 Development Plan.

(d) Government support policies

Continuing the previous government policy of support to producers of maize and rice, which are critical food crops, the Agenda for Action plans to improve support prices and stimulate production of these and other essential crops. However, the effectiveness of the proposed structural and institutional changes remains to be seen.

3. Exports

The Philippines is a major exporter of coconut products, with coconut oil being its most important single export commodity. Copra meal is also an export product of significance. Over the five years to 1983, exports of copra expeller and solvent pellets attained a value of between $70 million and $80 million a year, equivalent to the value of maize imports. The volume of copra meal exports reached 550,000 tons in 1983. EEC has always been the Philippines' most important buyer of this product, taking almost all of its export shipments. Recent problems, however, have arisen over aflatoxin levels as well as variability in protein and fat contents.

The United Coconut Oil Mills (UNICOM) is the largest exporter of copra meal and accounts for about 80% of total exports of this item. The other exporters of significance are the International Copra Export Corporation and Interco Manufacturing Corporation, all oil crushers. A quarter of the pellets exported are shipped from the port of Iligan City on the island of Mindanao, where the most important producing plants are located. Another important exit point is Davao City.

There are published minimum standards for copra meal covering moisture and oil contents. Other specifications are established between buyer and seller.

Sugar-cane tops are a straw-like, highly fibrous ingredient with a crude fibre content of about 29% and a crude protein content of around 10%. Between 5,000 and 10,000 tons are exported each year to Japan where the product is used as roughage. As shipments are made on liner terms, freight costs are high, making up 40-50% of f.o.b. values.

Production centres are mostly located near the main cane producing areas, especially in the province of Negros Occidental which has one half of the country's sugar-cane plantations. Generally speaking, the fodder-making capacity of existing plants substantially exceeds their output, mainly because of a shortfall in the supply of raw materials.

Insufficient facilities for collecting and hauling tops from the fields and transport costs are contributory factors. Inadequate quality-control facilities are an additional problem.

Ipil-ipil leaf meal is a feed ingredient widely used in the Philippines and is exported, primarily to Japan. The ipil-ipil (leucaena) has a highly palatable foliage and regenerates itself rapidly after browsing by cattle. It competes with alfalfa as a high-protein forage. For export, the leaf is cut, dried and packed. Exports average about 10,000 tons a year. Freight costs tend to be rather high, as the monthly cargoes from processing plants in the southern Visayas are shipped on liner terms. In 1983, freight costs represented an average 40% of the f.o.b. value of shipments. Supply irregularity has been a problem as have quality control and mould. The two principal exporters of ipil-ipil leaf meal ship mainly from Cebu.

Although molasses and bagasse are also potentially large export items, they are currently shipped only in small quantities. Transportation and storage problems at ports are partly responsible for this situation.

4. Imports

Imports (see table 7.2) have been a substantial source of feed ingredients despite the Philippines' abundant natural resources. Various structural, husbandry and climatic constraints have contributed to this dependence. Under the Agenda for Action, measures have been instituted to help correct the imbalance and stimulate domestic production of feed ingredients.

Table 7.2

Philippines: imports of feed ingredients, by type, and by quantity, 1978-1983
(tons)

	1978	1979	1980	1981	1982	1983
Total of which:	308,570	224,681	567,335	327,535	822,451	869,453
Maize	105,482	34,693	249,937	28,011	340,905	528,437
Soyabean meal	116,263	113,743	226,958	243,917	373,500	274,704
Coconut meal	3,619	10,860	4,833	-	909	-
Rapeseed meal	1,517	7,991	4,950	4,017	3,620	4,571
Meat- and bone-meal	62,580	33,386	55,058	33,332	59,403	42,245
Fish-meal	18,134	23,360	24,621	16,499	41,052	14,096
Prepared feeds	975	648	978	1,759	3,062	5,400

Source: National Census and Statistics Office.

Maize and soyabean meal are the principal imported feed ingredients, in 1983 making up 90% of the total of $160 million c.i.f. The other imports of significance are fish-meal, meat- and bone-meal; small quantities of other oilseed meals and micro-ingredients are also obtained from abroad.

Because of the severe local drought in 1983, imports of maize amounted to over 500,000 tons in that year. The principal source is the United States (63% of supplies); Thailand is the only other source. The availability of export credit and Export-Import Bank guarantees has up to now been an important reason for the large volume of maize imports from the United States.

Brazil is the principal supplier (about 75% of the total) of soyabean meal, the remainder coming mainly from the United States. A small volume of soyabeans, largely of United States origin, is processed into meal in the Philippines. Export guarantees, although fairly limited compared with total needs, have helped to finance imports. In 1983/84, the United States Government raised its guarantees from $25 million to $35 million, helping to increase that country's share of the market. Phil-Asia, the Philippines' only soyabean crusher, has continued to operate well below capacity because of import finance limitations.

A diversion into soyabean meal of United States credit guarantees for meat- and bone-meal was made in 1983/84.

Imports of meat- and bone-meal from all origins have been fairly constant over recent years, the major suppliers being Australia, New Zealand and the United States. Imported fish-meal is preferred to domestic fish-meal for quality reasons; in any case, domestic supplies are inadequate. The major suppliers are Thailand, Chile and Peru.

D. The compound-feed industry

1. Overview

Expansion of the domestic compound-feed industry, which had until recently occurred in response to a growing livestock sector, has been curtailed by the country's growing economic problems. The outlook in the medium term does not appear to be particularly favourable for the industry as a whole. However, if the measures currently being implemented lead to the easing of currency constraints on imports, improvement of domestic supplies of feed ingredients, and the stabilization of market prices for both ingredients inputs and finished products, the feed industry could operate under less adverse conditions. In early 1984, mixed feed production was expected to rise from its level of 1.1 million tons in 1983 to 1.6 million tons by the end of the year, 70% of these being poultry feed.

As of 31 January 1983, 368 mills were registered with the Bureau of Animal Industry, 285 being compound-feed manufacturers and the remainder feed-ingredient manufacturers. Of the compound-feed mills, 136 operated on a commercial scale, while the other 149 produced for their own consumption.

In 1982, 80% of the national feed milling capacity was concentrated on the island of Luzon, over one half being located around the Metro-Manila area. This applies particularly to the large feed mills. The other important industrial area is Central Visayas.

Feed mills tend to be small to medium-sized, i.e. producing between 1,500 and 15,000 tons yearly. The largest mills have capacities of 100,000 to 150,000 tons a year, but these mills are few in number.

2. Production

There are currently five feed mill associations, viz., the Philippine Association of Feed Millers, Inc. or PAFMI (comprising 10 firms, 16 feed mills); Central Luzon Feed Millers Association or CELUFMA (12 firms); Metro-Manila Feed Millers Association, Inc., MMFMA (13 firms); Small and Medium-Scale Feed Millers Association, SAMEFA (19 firms); and Independent Feed Millers, IFM, an informal grouping of small millers. Their milling capacities and production volumes are shown in tables 7.3 and 7.4.

Table 7.3

Philippines: production of compound feeds, by feed mill association, 1977-1981
(in thousands of tons)

Year	Feed mill association					
	PAFMI	CELUFMA	MMFMA	SAMEFA	IFM	Total
1977	646	38	31	-	115	830
1978	711	41	30	-	178	960
1979	740	41	29	-	184	994
1980	773	52	34	56	146	1,061
1981	823	52	40	64	168	1,147

Source: Animal Feed Control Division, Bureau of Animal Industry.

Table 7.4

Philippines: compound-feed production capacity[a/] of major feed mill associations, as of 31 March 1980
(tons)

Capacity	PAFMI	CELUFMA	MMFMA
Rated daily capacity	2,151	294	402
Average daily capacity	239	27	31
Maximum mill capacity	750	70	100
Minimum mill capacity	40	4	5

Source: Animal Feed Control Division, Bureau of Animal Industry.

a/ Based on an eight-hour day.

Poultry feed is by far the most important type of compound feed produced (see table 7.5), representing about 75% of total output. The integrated broiler operations of the large feed millers are an important outlet for broiler feed. Pig feed makes up 20-25% of total production; the output of cattle feed although small has some potential for growth. A breakdown of production by subtype is given in table 7.6.

Table 7.5

Philippines: production of compound feeds, by type, 1977-1983
(in thousands of tons)

	Poultry feeds	Pig feeds	Other feeds	Total
1977	658	172	-	830
1978	754	196	10	960
1979	772	212	10	994
1980	819	230	12	1,061
1981	879	257	11	1,147
1982	884	265	12	1,161
1983	812	240	9	1,061

Source: Animal Feed Control Division, Bureau of Animal Industry.

Table 7.6

Philippines: estimated production of compound feeds, by subtypes, 1980
(as percentage of total)

Poultry feeds	%	Pig feeds	%
	100		100
Broiler starter	23	Pre-starter	6
Broiler finisher	18	Starter	7
Chick starter	17	Grower	22
Chick grower	12	Fatter/finisher	21
Layer	23	Breeding herd	27
Other[a/]	7	Other[b/]	17

Source: Animal Feed Control Division, Bureau of Animal Industry.

a/ Feed for ducks, pigeons and fighting cocks.
b/ Pig creep pellets, protein/mineral concentrates, piglet booster and baby pig mixes.

The most important ingredients in compound-feed production are maize, cereal by-products and soyabean meal. The trade estimates that about one half of the total costs of feed ingredients arises from imports. Most soyabean meal is imported, while cereal by-products (especially rice bran) are produced domestically. Fish-meal is largely imported as are most supplements (minerals, vitamins, synthetic amino acids).

It is estimated that about 70% of the compound feeds used in the Philippines are commercially mixed feeds. The remainder is farm-mixed, frequently in large farms, most of the ingredients being grown on the farm. There has been a tendency towards increased on-farm mixing in order to save costs, a factor that has recently become even more critical for medium-sized livestock producers.

3. Quality standards and control

The Government maintains a comprehensive system of control over the compound-feed industry under the Livestock and Poultry Feeds Act. The Act is administered by the Minister of Agriculture through the Director of Animal Industry. The Bureau of Animal Industry (BAI), through its Animal Feed Control Division, supervises the import, manufacture, distribution, advertising and sale of mixed feeds, feed ingredients and additives. Annex I gives a list of government agencies concerned with feed manufacture and trade.

For monitoring purposes, the Act requires all feed producers and traders to register with BAI, either annually or semi-annually, which means that they can manufacture or sell compound feeds or ingredients before registration. To implement feed control regulations, BAI inspectors are empowered to enter the premises of any registered feed producer to inspect feeds, equipment, etc., and to take samples of feeds for analysis. About 70% of the samples are collected from feed manufacturers, the remainder from dealers (suppliers, distributors, importers and retailers); they are analyzed in the Central Feed Analysis Laboratory. Feeds falling below the standards specified in Animal Industry General Memorandum Order No. 1 (see annex II for the complete title) and containing injurious substances may be condemned and impounded. The names of violators, together with test results, are published in a BAI Feed Industry Circular. BAI conducts inspection tours twice a month and deals with some 100 samples a day. In case of willful or repeated violations of the law, registration can be suspended or cancelled, or manufacture is suspended. The premises of consistent violators are padlocked (this has occurred 22 times since 1976). Detailed regulatory requirements are given in Animal Industry Administrative Order No. 35 (see annex II for complete title).

There are a small number of private feed laboratories in addition to those operated by the large feed companies. Furthermore, BAI plans to establish six regional feed quality control laboratories. Special tests have been developed to detect aflatoxin and urease activity in imported feed ingredients.

All commercial feed mills are required to retain the services of a licensed chemist, a veterinarian and an animal nutritionist. Small feed millers are allowed to maintain a common quality-control laboratory.

The Animal Feed Control Advisory Committee was created to study matters affecting the implementation of the law, conduct formal hearings in cases of violations and suspension of registration, make recommendations to the Director of Animal Industry on these and other matters related to the Feeds Act. The Committee comprises representatives of all sectors of the feed industry, including university specialists.

E. Trade channels and practices

1. General

The National Food Authority (NFA) handles the bulk of imports of feed ingredients on behalf of, and for resale at set price levels to, feed millers. It also buys rice, maize, sorghum and soyabeans from the farmers at established price levels. These activities fall under its Procurement and Distribution Programme. The marketing and distribution of feed ingredients of domestic origin involves many agents other than NFA. The marketing agents for domestic maize, for example, are the farmers, local "assemblers", local maize millers, wholesale grain dealers, wholesale millers, feed millers and retailers. It is often difficult to distinguish one agent from the other.

Maize farmers sell about one half of their produce and retain the remainder for food, seed and feed use. Local "assemblers" absorb a large proportion of farmers' sales for distribution principally to wholesale millers; only about 10% goes to local millers. Wholesale millers retain around 30% of their purchases for local markets; the remainder goes to markets farther away.

The larger mills usually market their produce through salesmen, the other mills distributing their goods directly in response to orders made by telephone or telegram. Salesmen schedule deliveries by area on specific days, normally once or twice a week. The large feed mills sometimes employ staff in certain important market areas to provide customers technical assistance, veterinary services and advice on feeding.

2. Handling, distribution and storage

For inland distribution of compound feeds, the large feed millers use trucks. Almost all deliveries are in bags.

For inter-island deliveries of compound feeds, local shipping facilities are used. In Mindanao, continuous availability of feeds is assured through storage in warehouses, from where supplies are passed on to retailers and then to livestock producers.

Some feed mills delegate responsibility for storage of feed ingredients to dealers in order to avoid expensive maintenance of year-round storage facilities. Other feed mills have their own storage facilities in order to forestall discontinuity in the flow of supplies.

In the Metro-Manila area, many of the large feed mills are located near the port. Imported ingredients are off-loaded into small lighters for direct delivery to feed mills.

3. Trade practices

Imports of maize and soyabean meal, the principal feed ingredients, are handled by the National Food Authority (NFA), generally on the basis of c. & f. bids submitted by agents or shippers for positions and origins. The purchases are made on behalf of feed mills which supply NFA with details of their requirements. NFA found it increasingly difficult to open letters of credit for imported ingredients during 1983/84 because of government attempts to cut back on import expenditures. As stated earlier, NFA sells imported ingredients to feed mills at set price levels.

4. Prices

The prices of domestic ingredients generally rise as they go through distribution channels. Although NFA sells domestic maize at a set price, the laws of supply and demand determine prices when other agents, e.g. farmers, wholesalers, or retailers, are involved.

Feed ingredients are imported at prices largely reflecting world prices. Redistribution to feed millers of some imports, i.e., maize, soyabean meal, molasses and wheat pollard, currently takes place at fixed levels; the mills in turn sell compound feeds at prices agreed with the Government. However, it appears that the above controls are to be phased out to allow prices freely to reflect the state of the market. Least-cost formulation systems are possible only to a small number of large feed mills.

5. Tariff and non-tariff barriers

The Philippines applies no quotas on imports of feed ingredients. However, stringent restrictions on foreign exchange allocations for imported raw materials have automatically curtailed imports of feed ingredients.

Despite credit allowances from the United States for imports of certain ingredients up to a particular level, open dollar spending has been greatly restricted. As a result it has been difficult, even for the National Food Authority, to obtain letters of credit.

All feed ingredients imported into the country are subject to import tariffs, a list of which is given in annex III. They vary from 10% for such ingredients as oilseed meals to 50% for grains.

All imported feed ingredients are subject to a 10% advance sales tax plus a 25% mark-up. As stated earlier, imports fall under strict quality regulations.

F. Prospects for imports from developing countries

The objective of the Government in recent years, now supported by the Agenda for Action covering 1984-1988, has been to attain self-sufficiency in feed ingredients. If the proposed agricultural reforms have the desired effect, imports are likely to decline over the long term. Import prospects will also be influenced by implementation of the proposal to allow private firms to import directly rather than through NFA. Drastic changes in buying practices, preferences and contractual arrangements will likewise result. Although the types of ingredients imported are unlikely to alter greatly, more flexibility in import sources may also result from a freer trade.

In the very short term, credit extensions for purchases of feed ingredients having been made for 1984/85, the feed industry's supply requirements will largely be met. Thus, opportunities for exporting developing countries of particular types of ingredients (cf. section C.4) will remain stable.

G. Conclusions and recommendations

In September 1984, with the announcement of the five-year agenda for agricultural development, the Philippines entered a period of possible radical transformations to its agricultural sector. If the desired changes take place, import requirements for feed ingredients will decrease over time. In any case, it appears that the Philippines will continue to find itself under comparatively tight financial constraints in the next few years and loans and credit for imports of feed ingredients will therefore remain limited.

The country's import patterns as regards types of feed ingredients will remain similar to those in the past, although changes in purchasing agents may result in new sources of supply. Opportunities may thus develop for exporters able to provide regular quantities of reasonably priced, acceptable feed ingredients of good quality. However, as foreign currency availability will remain a constraint, actual opportunities will not only be limited, but may actually decline.

Annex I

Philippines: selected addresses

Agency	Functions/type of assistance
Bureau of Animal Industry Ramon Magsaysay Boulevard Sta. Mesa, Manila	Regulation and implementation of feed laws; technical training, quality control, testing of feed products for the livestock and feed milling industries; registration of feed entities and products; technological research and consultancy assistance, basic and applied researches on improved animal nutrition and feed milling technology.
Animal Feed Control Division Visayas Avenue, Diliman Quezon City, Metro Manila Tel: 951 764	
Bureau of Domestic Trade Dona Venancia Building E. Rodriguez Street cor. Araneta Avenue Quezon City, Metro Manila Tel: 609 345, 618 922	Registration of business names or styles.
Bureau of Internal Revenue BIR Building, East Triangle Diliman, Quezon City Tel: 982 511	Registration of business records and regulation of national business taxes.
Development Bank of the Philippines Buendia Avenue Ext. Makati, Metro Manila Tel: 881 422, 896 558	Financing small and medium-sized industries.
Food Terminal, Inc. Taguig, Metro Manila Tel: 837 551	Marketing assistance for agro-based projects.
National Food Authority Matimyas Building E. Rodriguez Avenue Quezon City Tel: 606 866	Allocation of feed grains and protein sources (corn, sorghum and soyabean meal)
Ministry of Agriculture Elliptical Road Diliman, Quezon City Tel: 998 741	Formulation of policies and programmes affecting the livestock and feed milling industries; information and other technical assistance.

National Food and Agriculture Council MA Building Elliptical Road, Diliman Quezon City, Metro Manila Tel: 988 608	Production of feed grains (Masagana and Masagana 99)
Philippine Patent Office 378 Quezon Boulevard Ext. Quezon City Tel: 998 916, 996 715	Issue of patents and registration of trade marks, trade names and service marks.
Securities and Exchange Commission Epifanio de los Santos Avenue San Juan, Metro Manila Tel: 772 011	Registration and regulation of partnership corporations.

Annex II

Feed regulations and rules

Animal Industry General Memorandum Order No. 1, Series of 1975.
Subject: Nutrient standards for poultry and livestock feeds, 13 October 1975.

Department of Agriculture, Office of the Secretary, Diliman, Quezon City

Animal Industry Administrative Order No. 35, 23 September 1975: Livestock and poultry feeds regulations.
Subject: Rules and regulations governing the manufacture, importation, labelling, advertising, distribution and sale of livestock and poultry feeds and feedstuffs.

Ministry of Agriculture, Bureau of Animal Husbandry, Sta. Mesa, Manila.

Annex III

Philippines: duties on imported feed ingredients

Certification code	Division 04. Cereals and cereal preparation and Division 05.	Rate of duty 1984/85
041.10-00	Durum wheat, unmilled	10%
041.20.00	Other wheat (including spelt) and meslin, unmilled	10%
043.00-00	Barley, unmilled	20%
044.01-00	Maize, unmilled	50%
044.02-00	Corn seed (of all varieties for propagation)	50%
045.10.00	Rye, unmilled	20%
045.20-00	Oats, unmilled	20%
045.91-00	Millet, unmilled	50%
045.92-00	Sorghum, unmilled	50%
045.99-00	Other cereals, unmilled, n.e.s.	50%
054.27-00	Dry pulses, for animal feeds	30%
054.29-00	Lentils, pulses and other leguminous vegetables dried, n.e.s.	30%
	Division 08. Feedstuff for animals, excluding unmilled cereals	
081.11-00	Cereal straw and husks, unprepared, or chopped but not otherwise prepared	50%
081.12-00	Mangolds, swedes, fodder roots; hay, lucerne, clover, sainfoin, forage, kale, lupins, vetches and similar forage products	50%
081.19-01	Pelletized ipil-ipil (Leucaena glauca)	30%
081.19-02	Tops of beets and carrots	0%
081.19-03	Bran as by-product from the crushing of mustard seed	30%

Source: Provided by the Philippine Association of Feed Millers, Inc.

Certification code	Division 08. Feedstuff for animals, excluding unmilled cereals	Rates of duty 1984/85
081.19-04	Citrus fruit molasses (by-products from the concentration of residual waters from citrus fruit juice manufacture)	30%
081.19-05	Corn cobs after removal of the grain; corn stalks and leaves; hydrolized ground corn cobs (residues from the hydrolysis of corn cobs to obtain furfural)	30%
081.19-06	Peelings of vegetables (pea and bean pods, etc.)	30%
081.19-07	Residues from the preparation of coffee substitutes (or extracts thereof) from cereal grains or other vegetable materials)	30%
081.19-08	Waste of fruit (peel and cores) and fruit pomace or marc	30%
081.19-09	Other products of vegetable origin of a kind used for animal food, n.e.s.	30%
081.21-00	Bran, sharps and other residues from the sifting, milling or working of rice or maize	10%
081.22-00	Bran, sharps and other residues from the sifting, milling or working of other cereals	10%
081.23-00	Residues from the working of leguminous vegetables	10%
081.31-00	Oilcake and other residues of soya beans	10%
081-32-00	Oilcake and other residues of groundnuts (peanuts)	10%
081.33-00	Oilcake and other residues of cotton seeds	10%
081.34-00	Oilcake and other residues of linseed	50%
081.35-00	Oilcake and other residues of sunflower seeds	10%

Certification code	Division 08. Feedstuff for animals, excluding unmilled cereals	Rates of duty 1984/85
081.36-00	Oilcake and other residues of rape or colza seeds	10%
081-37-00	Oilcake and other residues of coconut (copra)	50%
081.38-00	Oilcake and meal of palm nuts and kernels	50%
081.39-01	Oilcake and meal of safflower seeds	10%
081.39.09	Oilcake and meal of oilseeds and oleaginous fruits, n.e.s	50%
081.41-00	Flours and meals of meat or offals (including tankage) unfit for human consumption; greaves	5%
081.42-00	Flours and meals of fish, crustaceans or molluscs, unfit for human consumption	10%
081.92-00	Cocoa shells, husks, skins and waste	40%
081.93-01	Beet pulp, wet or dry	10%
081.93-02	Bagasse and other waste of sugar manufacture	10%
081.93-03	Brewing and distilling dregs and waste, wet or dry (dregs of cereals and potatoes, malt sprouts, spent hops, beet pulp wash)	10%
081.93-04	Corn gluten feed and other residues from the manufacture of starch (from maize, rice, potatoes, etc.)	10%
081.94-00	Wine lees; argol	30%
081.99-01	Poultry feed concentrates and mixtures	30%
081.99-02	Sweetened forage	30%
081.99-09	Prepared animal feeds, n.e.s. (e.g. feeding preparations for cats, dogs, birds, fish, etc.)	10%

Chapter 8

SAUDI ARABIA

A. Economic and social background[1/]

1. General country data

Area: 2,149,690 km^2

Population (1982):

Total: 9.7 million of which 45% in rural, and 55% in urban, areas

Annual growth rate: 3.8%

Crop area:

Total cultivated	350,000 ha
Irrigated area	160,000 ha
Pastures	85 million ha
Forests and woodlands	1.6 million ha

2. Economic indicators

(a) Gross domestic product, fiscal year 1981/82

Sector	Million riyals	%
Total	524,733	100[a/]
of which:		
Agriculture, forestry and fishing	5,891	1.1
Mining and quarrying	325,297	62.0
Manufacturing	22,351	4.3
Electricity, gas and water	468	0.1
Construction	58,181	11.1
Transport, storage and communications	19,871	3.8
Commerce	25,064	4.8
Services	67,610	12.9

a/ Figures do not add up due to rounding.

1/ Central Department of Statistics, Ministry of Finance and National Economy, Statistical Yearbook (Riyadh).

(b) Major trading partners, 1982

Country	Percentage share in Saudi Arabian trade	
	Exports	Imports
United States	21.0	26.6
Germany, Fed. Rep.	11.0	14.0
United Kingdom	6.6	8.3
Italy	6.1	7.8
France	5.3	6.8
Japan	4.2	24.4

The oil sector continues to be mainstay of the economy, generating one third of the gross domestic product, two thirds of government revenue and practically all export earnings. In 1982, Saudi Arabia imported $5 billion worth of agricultural and food products, equivalent to 13% of all its imports.

B. Livestock sector

Table 8.1 summarizes data on livestock population and supplies of livestock products in 1982.

Table 8.1

Saudi Arabia: livestock numbers and production of livestock products, 1982

Livestock	Numbers ('000 head)	Livestock products	Production (tons)
Cattle	450	Beef	22,000
		Fresh milk	277,100
Sheep	3,500	Mutton	102,000
Goats	2,300	Meat	10,000
Camels	165	Meat	20,000
Poultry	13	Meat	82,000
		Eggs	75,000
Total meat supplies			236,000

Sources: Central Department of Statistics, Ministry of Finance and National Economy, Statistical Yearbook (Riyadh); FAO, Production Yearbook (Rome); Department of Economic Studies and Statistics, Ministry of Agriculture (Riyadh).

Despite rapid increases, agricultural output still falls short of domestic requirements for most crops and livestock products. The import of vegetable and animal products has been one of the fastest growing components of trade over the past 10 years. Higher per capita incomes have also changed the structure of demand for food and consumption of eggs, poultry, fresh meat, milk and fish has risen.

In 1985, Saudi Arabia is expected to attain self-sufficiency in wheat and eggs. It is about half-way to self-sufficiency in milk and poultry and the Government is encouraging further production. Wheat farmers receive more than five times the world price for wheat.

C. Supply of, and demand for, compound feeds

1. Overview

The compound-feed industry comprises two main sectors:

- Integrated poultry and dairy enterprises processing feeds for their own consumption and marketing the surplus;
- Publicly and privately owned feed mills supplying farmers and integrated enterprises.

It can be seen from table 8.2 that poultry feeds account for about 75% and dairy feeds for about 20% of the total output of the commercial feed mills.

Table 8.2

Saudi Arabia: compound-feed production by feed mills, by feed types, 1976, 1980 and 1982-1983
(in thousands of tons)

Feed types	1976	1980	1982	1983
Poultry	105	190	360	580
of which:				
Layer	65	110	220	360
Broiler	40	80	140	220
Cattle	25	60	100	140
of which:				
Dairy	15	40	60	80
Fattener	10	20	40	60
Other[a/]	5	10	15	20
Total	135	260	475	740

Source: ITC estimates based on information on animal requirements and other information obtained from field interviews.

a/ Sheep, goats, camels and small animals (rabbit, fish, laboratory animals).

The total output of the feed mills is expected to reach around 800,000 tons in 1984/85. As more than two thirds of the country's feed mills have been established in recent years, i.e. from 1980 onwards, and as the compound-feed industry expects its output to grow by 10% to 15% in the near future, imports will decline.

2. Supply of feed ingredients

(a) Grains

Saudi Arabian production of maize and barley is low, although output of the latter doubled between 1982 and 1983 because of favourable rainfall. The national herd, particularly animals reared in integrated commercial farms, is therefore fed essentially from imports.

Imports of barley and maize averaged 3.7 million tons during 1981-1983 with a peak of 4.8 million tons in 1982.

Table 8.3

Saudi Arabia: grain supplies for feed purposes, 1981-1983
(in thousands of tons)

Items	Sorghum			Maize				Barley	
	1981	1982	1983	1981	1982	1983	1981	1982	1983
Domestic production	91	85	87	2	4	4	6	6	12
Imports	4.2	3	17	685	942	704	2,275	3,860	2,858
Exports	-	-	-	-	-	-	-	-	-
Total supply/apparent consumption	95.2	88	104	687	946	708	2,281	3,866	2,870

Sources: Central Department of Statistics, Ministry of Finance and National Economy, Statistical Yearbook and Foreign Trade Statistics (Riyadh); FAO, Trade Yearbook, Production Yearbook (Rome); Department of Economic Studies and Statistics, Ministry of Agriculture (Riyadh).

Production of maize and barley will remain marginal during the coming years as the main efforts in the agricultural sector are being directed to developing the area planted to wheat through the installation of modern irrigation systems. The purchase price for domestic wheat is fixed by the Government at about SRls 3.50 or around $1 per kg.

(b) Crop by-products

Table 8.4 gives a summary of data on supplies of grain by-products and oilseed meals available for compound-feed manufacture.

Table 8.4

Saudi Arabia: supplies of crop by-products, 1980-1983
(in thousands of tons)

Items	1980	1981	1982	1983
Grain by-products of which:	102	163	211	251
Wheat bran (15% of wheat supplies)	48	99	141	177
Rice bran (15% of paddy supplies)	54	64	70	74
Oilseed meals	18	25	32	31

Sources: Central Department of Statistics, Ministry of Finance and National Economy, Statistical Yearbook and Foreign Trade Statistics (Riyadh); Industrial Affairs Agency, Statistics Section, Ministry of Industry and Electricity (Riyadh).

Almost all crop by-products are obtained from imported products, with the exception of wheat bran. Local wheat production has increased sharply from 187,000 tons in 1981 to 695,000 tons in 1983.

Soyabeans are crushed locally by a private company established in 1981 in Jeddah. This company has an annual production capacity of 53,000 tons of soyabean meal and 11,500 tons of soyabean oil.

(c) Other feed ingredients

Several other raw materials for compound-feed processing are imported, but in comparatively small quantities. Imports of fish- and meat-meals have increased sharply during recent years, doubling from 758 tons in 1982 to 1,546 tons in 1983.

3. Government policy

Feed ingredients and oilseeds are imported without licence by private companies and the public sector. Commercial feed manufacturers and integrated livestock breeders import feed ingredients to cover their own needs. The Grain Silos and Flour Mills Organization imports ingredients for its feed mills and barley for direct use as a feed grain.

No customs duties and taxes are applied to feed products.

The Government actively supports agricultural and food production by providing incentives such as loans and subsidies. Poultry and dairy farmers are entitled to subsidies for production equipment and for the transportation of cattle. Imported feed ingredients and compound feeds are subsidized at 50% of their costs.

The subsidies are currently granted to end-users through the Saudi Agricultural Bank. As this system imposes a heavy administrative burden on the Bank, a change is envisaged under which the subsidies will be paid to manufacturers.

4. Imports

Table 8.5 shows imports of feed ingredients during the period 1981-1983.

Table 8.5

Saudi Arabia: imports of feed ingredients, 1981-1983
(in thousands of tons)

Items	Average/year 1981-1983	1981	1982	1983
Total of which:	3,951.8	3,094.0	4,951.7	3,808.4
Barley	2,998.0	2,275.0	3,860.0	2,858.0
Maize	777.0	685.0	942.0	704.0
Concentrates	128.0	93.0	104.0	187.0
Soyabeans	36.7	31.1	39.5	39.3
Sorghum	8.1	4.2	3.0	17.0
Oilseed meals	2.6	3.9	2.4	1.6
Fish- and meat-meal	1.4	1.8	0.8	1.5

Sources: Central Department of Statistics, Ministry of Finance and National Economy, Statistical Yearbook (Riyadh); FAO, Production Yearbook (Rome).

Livestock feeding is essentially based on imports. In 1982, about 98% or 5 million tons of the feed ingredients required were imported; local supplies, mainly sorghum, amounted to 85,000 tons.

Part of the imported grains (maize and sorghum) is used in the manufacture of compound feed; barley is used largely as direct feed for cattle, camels, sheep and goats.

In 1983, 187,000 tons of concentrates were imported for incorporation into compound feeds. They represent a little more than 25% of the volume of compound feeds processed in the country. Around 80% of the concentrates are poultry-feed preparations obtained mainly from the Netherlands and Belgium.

Maize is imported from the United States and barley from Australia, France and Belgium.

Imported feed ingredients are shipped to Saudi Arabia by sea. The two main seaports, all equipped with adequate handling and storage facilities, are Dammam and Jeddah.

The country's feed mills are located mainly in the regions of Riyadh and Jeddah, with Riyadh taking two thirds of the total. Riyadh is supplied via the seaport of Dammam with which it is linked by the main railway line. The feed ingredients transported by road from the port of Jeddah to Riyadh are more expensive, costing an additional SRls 7 (around $2.00) per ton for transport. Supplies for Jeddah and Taif are largely offloaded in Jeddah port.

5. Exports

Exports of feed ingredients are nil.

6. Prices

The State-owned Grain Silos and Flour Mills Organization sets the basic prices for compound feeds. Private manufacturers offer their feeds at discounted prices; the public sector does not. In late 1984 the basic prices per ton were as follows:

Poultry feed:	Layers: SRls 970 ($270.00); broilers: SRls 1,200 ($330.00).
Dairy feed:	SRls 870 ($240.00).
Livestock feed (for fattening sheep, goats and camels):	SRls 560 ($150.00)

Livestock farmers actually pay only about half of the above prices because of subsidies.

D. The compound-feed industry

1. General

As mentioned earlier, compound-feed production has increased sharply in recent years and is expected to reach 800,000 tons in 1984/85.

Animal-feed production is fairly recent in Saudi Arabia, the first units being established in the beginning of the 1970s. Today, the country has 42 large privately owned feed mills. The Grain Silos and Flour Mills Organization, a State-owned company, has 5 mills in operation.

Most of the mills produce poultry feed and are integrated with livestock farms. The only company to market its produce is the Grain Silos and Flour Mills Organization, the privately owned companies limiting their marketing to seasonal surpluses.

A private feed mill established in 1970 in Jeddah has a yearly capacity of 250,000 tons. A second mill with similar capacity will start operations in January 1985. The 37 other private feed mills were set up as follows: 6 mills before 1975; 5 mills between 1976 and 1980; 1 mill in 1981; 8 mills in 1982; 4 mills in 1983; and 13 mills in 1984.

Before 1980, private firms in Saudi Arabia had an installed annual capacity of 450,000 tons; this rose by 280,000 tons during the period 1981-1983 and by another 570,000 tons in 1984. With the additional capacity for 250,000 tons installed in early 1985, this means a total capacity of 1.55 million tons. The installed capacity of the public sector is around 150,000 tons.

2. Processing of feed ingredients

Table 8.6 shows the volume of raw materials processed by commercial mills during 1982-1983.

Table 8.6

Saudi Arabia: volume of feed ingredients used in commercial processing, 1982-1983
(in thousands of tons)

Ingredients	1982	1983
Total	470.8	741.5
of which:		
Maize/sorghum	200.0	300.0
Wheat bran	70.0	110.0
Barley	40.0	80.0
Rice bran	30.0	40.0
Soyabean meal	30.0	30.0
Fish- and meat-meal	0.8	1.5
Concentrates	100.0	180.0

Source: ITC estimates based on field interviews.

As the table shows, the main ingredients used in commercial compound-feed processing are imported maize and local sorghum (40%), wheat and rice bran (20%) milled locally from imported cereals, and oilseed meals and concentrates (30%). Some bran is obtained from local wheat.

In 1982, the compound-feed industry processed only about 10% of the country's imports of feed ingredients; the rest went to on-farm mixing.

3. Quality standards and controls

The Saudi Arabian Standards Organization (SASO), founded in 1972 as a standards and materials testing institute, also exercises control over import shipments.

The quality of the feed produced in the country is generally good. Manufacturers enlist the technical assistance of foreign firms such as Spillers, Lohmann, and Provimi.

E. Trade channels and practices

1. Overview

All Saudi Arabian firms permitted to conduct foreign trade by virtue of being entered in the Commercial Register are, in principle, free to import feed ingredients without a licence.

Pre-packed feeds must bear a label in Arabic stating the contents, net weight and the country of origin. The importation of feeds from, or originating from, Israel and South Africa is prohibited.

As stipulated in the Commercial Agencies Regulation, the trade is limited to Saudi Arabians or to companies financed solely with Saudi Arabian capital. In practice, almost every important transaction today is channelled through a Saudi Arabian commercial agency or a firm owned and managed by Saudi Arabians, even though the participation of a local commercial agent is not strictly necessary.

Feed ingredients are imported free of tax. The subsidy of 50% of the value of the goods, currently accorded to the end-user, will in the near future be awarded to manufacturers.

Grains are imported and distributed by the main Saudi Arabian shipping companies. Feed manufacturers import ingredients almost entirely for their own use.

2. Import barriers and prospects for developing countries

The importation of feed ingredients from developing countries could be increased. However, this would call for intensive market promotion by potential suppliers. In 1983, Saudi Arabia imported feed ingredients from:

Brazil:	90 tons of oilseed meals and 5,127 tons of concentrates for poultry feed;
India:	1,500 tons of milling by-products and 1,905 tons of concentrates for poultry feed;
Sudan:	305 tons of oilseed meals
Lebanon:	1,267 tons of concentrates for poultry feed.

Annex

Saudi Arabia: feed manufacturers in the private sector

Name	Address	Products	Production capacity (Tons/year)
Al-Kasem Factory for Feed	Riyadh PO Box 2479 Tel: 403 3358	Poultry feed Cattle feed	12,000 1,500
As-Subay'ee Feed Factory	Riyadh PO Box 1124 Tel: 464 2444, 464 1938 465 2530	Poultry feed	30,000
Ali Saleh Al-Thunayan Feeds Factory	Riyadh PO Box 2984 Tel: 421 2051, 521 0114	Poultry and cattle feed	30,000
Al-Shwairekh Feed Factory	Buraidah c/o Riyadh PO Box 4188 Tel: 465 9493	Poultry feed Other animal feed	15,000 1,200
Agricultural Development Est. Jeddah Feed Plant	Jeddah PO Box 1039 Tel: 642 8277	Broiler and other poultry feed	12,000
Fakieh Poultry Feed Factory	Jeddah Industrial Estate Tel: 642 9529	Poultry and other animal feed	242,000
Al-Qadi Fodder Factory	Taif PO Box 88 Tel: 732 2194, 732 1161	Poultry and cattle feed	12,000
Arabian Poultry Co.	Taif c/o Jeddah PO Box 1039	Poultry feed	3,500
Rahima Factory for Poultry Feed	Qatif Rastanourah PO Box 41 Abdul Aziz Aba Hussain	Poultry feed	7,200
Saudi Arabian Fodder Company	Dammam Industrial Estate PO Box 173	Poultry feed	60,000
Tanhat Feed Factory	Dammam c/o Riyadh PO Box 870. Tel: 476 1933	Poultry feed for layers Poultry feed for broilers	28,224 28,224
Al-Ghadeer Feed Factory	Al-Hassa PO Box 80 Tel: 586 1093	Poultry feed	28,800
Animal Protein Factory	Jeddah PO Box 1195 Tel: 20 496	Poultry and cattle feed	720

Name	Address	Products	Production capacity (Tons/year)
Al-Sharkiyah Feed Factory	Al-Hasa Mubaraz PO Box 485 Tel: 582 4231	Poultry feed	24,000
Al-Naser Feed Factory	Tabouk PO Box 152 Tel: 21 444	Poultry and cattle feed	14,400
Al-Malouhi Feed Factory	Riyadh PO Box 87 Tel: 421 2344, 421 2340	Poultry and other livestock feed	22,000
Ghars Limited Company	Riyadh PO Box 10625 Tel: 477 8008	Animal feed	8,200
Riyadh Factory for Poultry Feed	Riyadh Omar Ibn Al-Khattab Street PO Box 372	Poultry feed	7,200
Saudi Complex Factory for Poultry Feed	Riyadh PO Box 352 Tel: 476 8804	Feed for broilers Feed for laying hens Other animal feed	18,000 4,800 1,200
Al-Shallalat Factory	Riyadh PO Box 17934 Tel: 435 8077	Poultry feed Poultry concentrates	18,240 17,400
Al-Amal Poultry Feed Production Factory	Medina PO Box 159 Tel: 08 223 033	Poultry feed	10,000
Al-Thoqan Feed Factory	Jouf c/o Riyadh PO Box 7302 Tel: 746 4450	Poultry feed	10,000
National Feed Factory	Al-Aflaj c/o Riyadh PO Box 22340 Tel: 464 1573	Feeds	40,000
Al-Abraq Feed Factory	Riyadh PO Box 3982 Tel: 435 5687	Feeds	30,000
Al-Uliya Ready Feeds Factory	Derma c/o Riyadh PO Box 8638 Tel: 465 4497, 464 6920	Feeds	24,000
Bakhashwein Feed Factory	Al-Mezahmiya c/o Riyadh PO Box 3479 Tel: 448 2027	Feeds	36,000
Hani Animal Feed Manufacturing Factory	Riyadh PO Box 41699 Tel: 465 4378	Mixed additives (premix) Concentrates (of high concentration) Regular concentrates	1,150 9,170 54,260

Name	Address	Products	Production capacity (Tons/year)
Al-Qadi Feed Concentrates Factory	Hajla-Aseer c/o Taif PO Box 88 Tel: 746 5471	Poultry feed concentrates	1,000
Derab Poultry Feed Factory	Riyadh PO Box 6672 Tel: 458 1158	Poultry feed	19,200
Al-Rajhi and Al-Sudais National Feed Co.	Buraidah Qaseem PO Box 1181 Tel: 324 351	Poultry feed	250,000
Rudwi Feed Factory	Jeddah Thahban PO Box 1178, Jeddah Tel: 653 3779	Poultry and other animal feed	25,000
Al-Wadi Feed Factory	Riyadh PO Box 40938 Tel: 476 4339	Feeds	40,000
Al-Malky Feed Factory	Riyadh PO Box 3988 Tel: 464 6239	Poultry feed	40,000
Al-Akhwain Feed Factory	Riyadh PO Box 1639 Tel: 402 3528	Feeds for broilers and layers	34,000
Golden Chicken Farms Factory for Animal Protein Production	Tabuk c/o Riyadh PO Box 307 Tel: 435 0206	Animal protein	900
Al-Shallalat Factory for Production of Animal Protein	Riyadh PO Box 17934 Tel: 401 2550	Animal protein	1,000
Al-Akhawein Feed Protein Factory	Riyadh PO Box 1396 Tel: 402 3528 Sahba, Kharj	Feed protein	5,100

Chapter 9

ALGERIA

A. Economic and social background[1/]

1. General country data

Area:	2,381,741 km^2
of which:	
Agricultural:	16.5%
Population, 1982:	20.23 million
Annual growth rate:	3.2%
Rural/urban ratio:	56:44

2. Economic indicators

(a) Annual gross domestic product, 1980-1982: $44.9 billion
of which:

	%
Agriculture and mines	7.4
Oil and gas	34.0
Building and public works	11.4
Industry	10.4
Transport, trade and services	36.8

Gross domestic product per capita, 1982: $2,212

(b) Imports, 1982: $10.8 billion
of which from:

	%
France	20.9
Germany, Fed. Rep.	13.9
Spain	7.6
Japan	7.3
United States	7.0
Italy	6.8
Others	36.5

1/ Sources: International Monetary Fund, International Financial Statistics (Washington, D.C.); Central Bank of Algeria.

B. Livestock sector

Table 9.1 summarizes data on livestock numbers as well as production of meat, milk and eggs in 1979 and 1982.

Table 9.1

Algeria: livestock numbers and output of livestock products, 1979 and 1982

Livestock	Numbers ('000 head)		Livestock products	Production (tons)	
	1979	1982		1979	1982
Cattle	1,363	1,501	Meat	61,700	77,300
			Milk	518,000	645,200
Sheep	13,370	15,499	Meat	60,200	75,600
			Milk	160,000	201,600
Goats	2,723	2,857	Meat	14,900	17,500
			Milk	135,000	161,400
Pigs	5	5	Meat	180	200
Horses	175	180	Meat	1,900	2,300
Poultry	18,000	19,000	Meat	95,000	118,000
			Eggs	19,140	25,000
Total			Meat	233,880	290,900
			Milk	813,000	1,008,200
			Eggs	19,140	25,000

Source: Ministère de l'agriculture et de la réforme agraire (MARA).

About 90% of all cattle is raised by traditional farmers under extensive husbandry systems. The performance of local breeds is low as they are basically fed with primary feedstuffs.

Slaughtering is government controlled. The percentages that come under this supervision are as follows: 100% for horses, 90% for cattle, 50% for sheep and 20% for goats.

In 1982, production of red meat reached 172,700 tons and imports averaged 30,300 tons yearly during the period 1980-1983. Annual apparent per capita consumption reached 10.5 kg in 1982 and 1983, of which 8.5 kg were of domestic origin and 2.0 kg imported.

The public sector, which accounts for over 90% of all poultry meat produced, employs industrial farming methods, including the use of compound feeds. Domestic production of poultry meat (118,000 tons in

1982, equivalent to a per capita consumption of 5.8 kg) entirely satisfies demand. Traditional poultry farms are the predominant egg producers, their output being equivalent to about 60% of the total. Domestic production amounted to about 19,000 tons in 1979 and 25,000 in 1982, sufficient for around 40% of demand.

Consumption of milk and milk products exceeds domestic production. Most dairying operations currently reconstitute milk from imported powder.

The objective of the Algerian Development Plan for 1985-1989 is to reach a higher degree of self-sufficiency in livestock products. The goals are 88% for red meat, 100% for poultry meat, 50% for milk, and 57% for eggs. The development of the compound-feed industry is envisaged in order to match the growth of the livestock sector.

C. Supply of, and demand for, compound feeds

1. Production

The Algerian feed industry has an installed capacity of 400 tons of compound feeds per hour or 960,000 tons yearly on a one-shift basis, divided equally between the public and private sectors. The rate of utilization of capacity was stated to be 67% in 1983. The public sector operates 15 mills with capacities of 15 to 30 tons per hour, while the private sector comprises about 350 small mills and on-farm feed producers.

Total production capacity is expected to double by 1986/87 when the number of State-owned mills would reach about 25.

Table 9.2 shows the evolution of production, imports and apparent consumption of compound feeds in recent years.

Table 9.2

Algeria: supply and apparent consumption of compound feed, 1980-1984
(in tons)

Item	1980	1981	1982	1983	1984 a/
Production	278,000	445,000	408,000	640,000	980,000
Imports	-	20,000	110,000	58,000	30,000
Apparent consumption	278,000	465,000	518,000	698,000	1,010,000
Growth rate of apparent consumption, from previous year, %		+ 67.3	+ 11.4	+ 34.7	+ 44.7

Source: Office national des aliments pour le bétail (ONAB); Ministère de l'agriculture et de la réforme agraire.

a/ ONAB estimate (September 1984).

The volume of imports of compound feeds was equivalent to 8% of average annual production during the period 1980-1984. Imports consisted entirely of poultry feeds.

Over 1 million tons of compound feeds are expected to be consumed in 1984. Of these, 980,000 tons will be domestically produced, comprising poultry feed (80%) and feed for cattle, goats, sheep, horses and other animals (20%).

Over 85% of all compound feeds are packed and transported in bags. Less than 15% are delivered in bulk.

In order to attain its objectives for the livestock sector, the Development Plan for 1985-1989 sets production targets at 2.13 million tons of compound feeds by 1989, comprising 1.6 million tons of poultry feeds, 450,000 tons of cattle feed and 80,000 tons of feed for other animals.

2. Feed processing and formulation of compound feed

Table 9.3 shows the ingredients currently used in the preparation of compound feeds and the likely demand in 1989. As can be seen from the table, grains and grain by-products account for 65%, oilseed meals and cakes for 17%, meat- and fish-meals for 7% and other products for 11% of all ingredients processed by the Algerian compound-feed industry.

Table 9.3

Algeria: demand for compound-feed ingredients, 1984 and 1989
(in tons)

Ingredients	1984 (Estimate)	1989 (Forecast)
Grains and grain by-products	699,400	1,478,000
of which:		
Maize	450,000	952,000
Barley	90,000	190,000
Bran and other grain by-products	158,400	335,000
Other	1,000	1,000
Other ingredients	310,600	651,600
of which:		
Oilseed meals and cakes[a/]	172,400	355,300
Meat- and fish-meals	28,400	58,600
Phosphate and calcium sources	90,600	195,100
Additives	19,200	42,600
Total	1,010,000	2,129,600

Source: Office national des aliments pour le bétail (ONAB); Ministère de l'agriculture et de la réforme agraire (MARA).

a/ 95% soyabean meal.

The formulations for compound feeds depend on the type of animal and its growth phase and are similar to those used in France. The regulations concerning maximum and minimum tolerances and quality specifications resemble those of the European Economic Community.

3. Quality standards and control

The standards of quality for some ingredients and for compound feeds are determined by the Directorate General of Animal Production, Ministry of Agriculture and Agrarian Reform. These standards correspond to those of EEC.

The control of sanitation and quality is the responsibility of the National Institute of Animal Health (INSA). It is carried out by veterinary inspectors at entry points for imported ingredients and in mills and at distribution points for feeds.

D. Feed ingredients

1. Domestic supplies

Domestic production of grains is insufficient for human and animal requirements. Most grains used for compound-feed manufacture are obtained from abroad, the shares of imported maize, barley and other grains and grain by-products being 100%, 90%, and 50% respectively.

Domestic production of oilseed meals and cakes is limited to meals and cakes of rape, sunflower and cotton, which are exported. Thus over 95% of the oilseed meals and cakes used by the feed industry are imported.

There are plans for the development of domestic production of meat- and fish-meals but these have yet to be implemented. The needs of the feed industry are still covered by imports.

There is growing interest in increasing the use of local, industrial by-products for feed compounding. Over 90,000 tons of carob flour, 4,000-6,000 tons of brewery by-products, up to 50,000 tons of grape by-products, and over 50,000 tons of legumes, are already available annually for this purpose. Studies and tests are under way for the utilization of citrus and tomato pulps from the four fruit juice plants in operation as well as of slaughter-house by-products.

2. Imports

(a) Quantities and suppliers

(i) Grains

An average of 550,000 tons of barley are imported annually from Canada, the United States, Belgium, the United Kingdom, France and the Federal Republic of Germany. The first two supplying countries provided over 40% of the total during the period 1980-1983. About 15% to 20% of these imports go into the manufacture of compound feed.

Imports of maize average 400,000 tons yearly, mainly from the United States, Argentina and Canada. All imports are absorbed by the compound-feed industry.

(ii) Oilseed meals and cakes

Imports of oilseed meals and cakes averaged 170,000 tons a year during 1981-1983. Of these, 165,000 tons were soyabean meal from Belgium, the United States and France. About 5,000 tons consisted of other oilseed meals and cakes (from rapeseed, cottonseed, sunflower seed, linseed and, occasionally, groundnut) from EEC countries, Belgium being the main supplier.

(iii) Other ingredients

An annual average of 20,000 tons of fish- and meat-meals has been imported since 1980. Roughly 70% (14,000 tons) is fish-meal from Belgium, France and Italy; 30% consists of meat- and blood-meals, chiefly from France and Belgium. In addition, Algeria is a regular importer of molasses and milk preparations for calves; it also imports 2,000 tons of vitamin premixes and 15,000 tons of calcium phosphates yearly.

(b) Prices

Rising prices on the international market for feed ingredients and high exchange rates have pushed up the costs of producing compound feeds in Algeria. Imported barley accounts for 30-35%, bran for about 10% and soyabean meal for 10-20% of the costs of compounding cattle and sheep feeds. In various types of poultry feeds, maize makes up 35-45% and soyabean meal 14-23% of production costs, fish- and meat-meals accounting for 4-5%.

The use of compound feeds is subsidized at 20-30% by the Government, through a compensation arrangement that takes into consideration the difference between feed manufacturing costs and their selling prices.

(c) Import channels, trade regulations and payment terms

All trade is based on the legislation of 11 February 1978, stipulating two basic conditions:

- The Algerian Government, through nationalized companies, has the monopoly of all imports and exports;
- Intermediaries are excluded from all trade negotiations and operations.

Global import authorizations are issued to ONAB for the import of fish- and meat-meals, oilseed cakes and meals, vitamin concentrates, calcium diphosphate and finished compound feeds, and to OAIC for imports of all grains and grain by-products. All imports are subject to international tendering.

The following import documents are required:

- Three copies of the commercial invoice, in French;
- Detailed list of the contents of each parcel/shipment and its dimensions, gross and net weights, and c.i.f. value.

Imports are paid through an authorized bank, generally in Algerian dinars. It is recommended that exporters negotiate payment by irrevocable and confirmed letters of credit.

(d) Transport and storage

Although storage capacities for feed ingredients expanded by almost a quarter between 1982 and mid 1984, inadequate unloading and storage facilities in the main harbours continue to cause some deterioration of grains and oilseed meals and cakes. Storage costs are high. This situation particularly penalizes feed mills located far from the main storage centres, obliging them either to maintain large stocks or to suffer shortages of raw materials.

E. Tariff and non-tariff barriers

All grains and grain by-products are imported free of tax. The tariffs applicable to other feed ingredients are listed in table 9.4.

Table 9.4

Algeria: tariffs on imported feed ingredients

Products	Customs duty: % of c.i.f. value	GSPT a/ (%)	Aggregate rate (%)
Manioc	40	42.85	99.99
Meat-meal	3	25	28.75
Fish-meal	3	25	28.75
Bran	25	Free	25
Beet pulp, bagasse	10	11.11	22.22
Maize cake	10	25	37.50
Olive cake	3	25	28.75
Groundnut, linseed, rapeseed meals and cakes	3	25	28.75
Soyabean meal	Free	25	25
Fruit pulps	3	Free	3
Compound feeds	10	Free	10

Source: Service des douanes (Customs authorities).

a/ Global Sole Production Tax (on c.i.f. value plus customs duty).

Prospective exporters will find a very competitive environment in the Algerian market for feed ingredients. The main reason is the market's traditional relationship with EEC supply sources which offer the advantages of low freight rates, quality guarantees and short delivery times.

Centralization poses additional barriers to flexibility in the choice of feed ingredients. End-users have no direct access to the international market and are dependent on a government decision and the initiation of import procedures by the State monopolies.

F. Prospects for imports from developing countries

It is estimated that over 950,000 tons of maize, 180,000 tons of barley, 50,000 tons of other grains and grain by-products, over 350,000 tons of oilseed meals and cakes, and 58,000 tons of fish- and meat-meals will need to be imported by 1989 for the manufacture of 2.13 million tons of compound feeds. Market access for manioc will remain difficult if the high duties and taxes on this product are maintained.

The use of some of the other feed ingredients is indirectly favoured by the current tariff system. For example, import taxes of only 25% are levied on soyabean meal and 28.75% on other oilmeals and cakes, including meat- and fish-meals.

It is recommended that potential exporters should contact ONAB for information on business promotion opportunities, as the company is a leading producer of compound feeds and holds the monopoly for imports of oilseed meals and cakes. (See the annex for the address.)

Prices competitive with those offered by well-established Western European suppliers, promptness of delivery and adherence to quality standards would be the principal conditions for entry into this market.

G. Summary

Algerian production of compound feeds has increased rapidly in recent years, i.e. from 278,000 tons in 1980 to the 980,000 tons expected for 1984, and covers 92% of the local demand. Yearly imports of compound feeds have averaged 54,000 tons over the last four years. Compound-feed production is about equally divided between State-owned feedmills on the one hand, and private companies and on-farm mixers on the other. Poultry feeds account for 80% of total compound-feed output.

The main ingredients in feed formulations are maize (45%), brans and other grain by-products (16%), barley (9%), soyabean meal (16%). An estimated 95% of the grains and 50% of the oilseed cakes (such as soyabean cake) are imported. Canada, the United States and Argentina are the principal suppliers of grains, while EEC countries (particularly Belgium and France) are the leading suppliers of soyabean meal.

Import contracts for feed ingredients are based on EEC quality standards and norms. All imports are handled by State monopoly institutions, and orders are based on international tenders. The same institutions deal with the distribution of domestically produced ingredients.

There are no import duties on grains and grain by-products. The duties and taxes on manioc are equivalent to 100% of its c.i.f. value. For the other ingredients they vary between 25% and 37.50%. Negotiations for preferential rates and lower tariffs on manioc and groundnut cake should be undertaken in order to render these ingredients competitive on the Algerian market.

Annex

Algeria: selected addresses

Office algérien des importations de céréales (OAIC)
(Algerian bureau of grain imports)
5, rue Ferhat Boussad
Algiers
Tel: 658 984

Office national des aliments pour le bétail (ONAB)
(National feedstuffs bureau)
23, boulevard Zirout Youcef
Algiers
Tel: 637 305
Telex: 52913 onab alger

Ministère de l'agriculture et de la réforme agraire (MARA)
(Ministry of agriculture and agrarian reform)
12, boulevard Colonel Amirouche
Algiers
Tel: 638 950, 632 783

Chapter 10

MOROCCO

A. Economic and social background[1/]

1. General country data

Area:	447,000 km^2
Population (1980):	20.1 million
of which:	
Rural	58%
Urban	42%
Annual growth rate:	3.1%

2. Economic indicators

(a) Gross national product (million dirhams)

	1982	1983
	90,088	94,589
of which:		
Agriculture, forestry and fisheries	18%	16.9%

(b) Main trading partners, 1983

	Percentage share	
	In Morocco's imports	In Morocco's exports
Total	100.0	100.0
of which:		
France	20.1	23.0
Saudi Arabia	14.3	2.0
United States	9.7	1.3
Spain	7.3	7.1
Soviet Union	5.5	1.7
Germany, Fed. Rep.	4.8	7.7
Italy	4.8	6.1
Iraq	4.5	n.a.
United Kingdom	3.7	4.1
Belgium	2.0	4.3
Netherlands	1.9	5.3
Japan	1.7	3.4
Others	19.7	34.0

1/ Source: Banque marocaine du commerce extérieur.

B. Livestock sector

Table 10.1 summarizes data on Morocco's livestock population and output of livestock products in 1980 and 1982. It also shows estimates of demand for livestock products for 1985.

Morocco is self-sufficient in meat and eggs; only small quantities of these livestock products are occasionally imported in order to regulate the domestic market. In 1982 per capita consumption of eggs and meat was 22 eggs and 14.7 kg respectively.

Poultry accounted for 38% of all meat consumed in 1982, and red meat 62% (of which 57% beef, 26% mutton and lamb, 16.5% goat meat and 0.5% pork).

Table 10.1

Morocco: livestock numbers and products, 1980, 1982, 1985

Type	Livestock ('000 head)		Products	Production (tons)		
	1980	1982		1980	1982	1985
Cattle	3,174	2,900	Meat	107,000	120,000	160,000
			Milk	730,000	810,000	n.a.
Sheep	14,200	14,900	Meat	52,000	55,000	73,000
			Milk	20,000	21,000	
Goats	6,100	6,250	Meat	30,000	35,000	46,000
			Milk	26,000	29,000	
Pigs	10	11	Meat	1,000	1,000	1,000
Chicken	24,000	24,000	Meat	134,000	130,000	170,000
			Eggs	78,000	80,000	86,000
Asses	1,400	1,500				
Mules	390	400				
Horses	300	310				
Total			Meat	324,000	341,000	450,000
			Milk	776,000	860,000	1,200,000
			Eggs	78,000	80,000	86,000
			Butter, ghee	11,735	12,960	n.a.
			Cheese	4,426	4,980	n.a.

Sources: Ministère de l'agriculture et de la réforme agraire; FAO, Production Yearbook 1983 (Rome).

Much of the red meat is obtained from cattle raised under extensive husbandry methods. Since the animals are moved from pasture to pasture, compound feeds are used only marginally and as a dietary supplement.

Modern intensive poultry farming currently yields over 70% of the domestic supply of poultry meat and 40% of the eggs, the traditional extensive farms providing the remainder.

Government efforts are being directed towards the development of livestock production to the extent of being able to provide 20 grams of protein of animal origin per inhabitant/day by 1985. About 50% would be protein from red meat. In terms of total demand, this would mean 280,000 tons of red meat and 170,000 tons of poultry meat annually.

C. Supply of, and demand for, compound feeds

1. Compound-feed industry

The Moroccan compound-feed industry was established in 1949 but it did not develop significantly until 1972-1973 when intensive poultry farming methods were put into use. The industry's current 31 compound-feed mills have a total production capacity of over 1.2 million tons a year. Over 56% of this capacity is in the hands of eight companies. The rate of utilization is estimated at only 30%. Table 10.2 shows the evolution of compound-feed production over the period 1976-1983.

As the table shows, poultry feeds make up over 90% of production, cattle and other feeds accounting for the remainder. Some 75% of the poultry feed is for broilers and 25% for laying hens and breeding stock.

Table 10.2

Morocco: compound-feed production, by quantity, 1976-1981 and 1983

Quantity (Q): tons

Feed type / Year	Broilers		Laying hens and breeding stock		Cattle and other animals		Total
	Q	% of total	Q	% of total	Q	% of total	Q
1976	64,600	66.8	21,500	22.2	10,700	11.0	96,800
1977	111,750	69.8	37,250	23.3	11,000	6.9	160,000
1978	162,750	70.8	54,250	23.6	13,000	5.6	230,000
1979	187,500	67.0	62,500	22.3	30,000	10.7	280,000
1980	240,000	68.6	60,000	17.1	50,000	14.3	350,000
1981	150,000	66.7	60,000	28.6	15,000	6.7	225,000
1983	231,200	67.0	113,800	23.0	15,000	4.2	360,000

Source: Compound-Feed Manufacturers Association.

The industrial mills handle over 90% of production. The share of small producers mixing feed for their own use drops to below 10% under difficult economic conditions as they do not have sufficient financial resources to overcome adverse circumstances.

The compound-feed industry is concentrated in the Casablanca and Rabat regions. CICALIM and PROVIMI SA, both in the Casablanca area, accounted for 12% and 21% respectively of the national total in 1983. Two companies in the Rabat region, SINA and SNV, had shares of 17% and 9% respectively.

The annex gives the names and addresses of Morocco's leading manufacturers of compound feeds.

In order to achieve government production targets for meat, milk and eggs by 1985-1986, an estimated 629,000 tons[2/] of compound feeds would be required. These would consist of 425,000 tons of broiler feeds, 144,000 tons of feed for laying hens, 57,000 tons of cattle feed, and 3,000 tons of other feeds (for pigs, horses, etc.). The figures in table 10.2 indicate that these supplies would be available. No substantial additional growth in demand for compound feeds is envisaged.

2. Feed ingredients

For cattle feeding, Moroccan farmers use mainly roughage and such products as bran, barley, pulp, straw and hay. Supplies are made available at fixed prices. In 1984, for example, the Government set the price of one feed unit (unité fouragère) of bran at 1.5 United States cents and the price of compound feeds at 14 United States cents per feed unit.

Intensive poultry farms use compound feeds based on grains (largely imported maize) and oilseed meals and by-products of agro-industries (mostly of domestic origin). The shares of ingredients in a typical compound-feed formulation are as follows: grains and grain by-products 70%; oilseed meals 15%; fish-meal 9%; and others (mainly mineral and vitamin premixes) 5%.

Morocco exports some feed ingredients, such as fish-meal and oilseed meals.

The quality norms for feeds follow those prevalent in Western Europe. Most of the large manufacturers have technical experts and nutritionists to advise farmers on how to utilize the different types of feeds offered.

2/ Based on 2.5 kg of feed per kg of poultry meat and 60 kg of feed for 200 eggs. The volume of cattle feed required is estimated at 10% of the volume of poultry feeds.

D. Domestic supplies of, and foreign trade in, feed ingredients

1. Domestic supplies and imports

(a) Grains and grain by-products

Grains (barley, rye and sorghum) are produced in the country in sufficient quantities to meet domestic demand, while maize and wheat have to be imported. Between 1979 and 1983, annual imports averaged 1.6 million tons of wheat and 120,000 tons of maize. Most of the wheat and all the maize were obtained from the United States at international prices. In 1980 and 1983, the compound-feed industry processed 196,000 and 160,000 tons respectively of imported maize.

The local grain milling industry provides some 40,000 to 50,000 tons of bran a year for the use of the compound-feed industry.

(b) Oilseed meals

Table 10.3 shows data on oilseed-meal production during 1981-1983 and provides estimates for 1985.

The livestock sector's demand for oilseed meals with the exception of soyabean meal is met by the domestic crushing industry. Soyabean meal and seeds are, and will continue to be, imported, as domestic production of soyabeans covers only 7% of the country's total demand.

Average annual imports of oilseeds and meals amounted to 13,300 tons of rapeseed, 23,000 tons of soyabeans and 3,000 tons of soyabean meal during the period 1979-1982. The main suppliers were Canada for rapeseed, and Brazil, the United States and Argentina for soyabean seeds and meal.

Table 10.3

Morocco: domestic production of oilseed meals, 1981-1983, and estimate for 1985
(in tons)

Oilseed meals	1981	1982	1983	Average 1981/1983	1985
Total of which:	6,967	7,729	11,731	8,626	28,725
Sunflower	1,814	2,329	4,800	2,981	11,600
Cottonseed	5,062	5,265	6,291	5,339	9,600
Soyabean	91	86	589	255	3,750
Rapeseed	-	45	42	44	3,375
Safflower	-	4	9	7	400

Source: Ministry of Agriculture and Agrarian Reform.

Reversing a previous ban on imports of groundnut, Morocco imported 1,000 tons of groundnut meal from SONACOS in Senegal in mid 1984 for experimental use in compound-feed formulations.

(c) Other ingredients

The utilization of production capacity in the fish processing industry is only 40%. Morocco produced an average of 40,000 tons of fish-meal annually between 1980 and 1983. Between 20,000 and 30,000 tons yearly are used by manufacturers of poultry feeds; the surplus is exported.

The Moroccan sugar industry produced an average of 100,000 tons of molasses annually during the period 1980-1983, of which 2,000 to 2,500 tons were used by feed-compounders. In addition, some 38,000 tons were used for the enrichment of simple cattle feeds, and 60,000 tons were exported.

The compound-feed industry also uses some 10,000 tons yearly of brewery by-products as well as dry sugar-beet pulp produced in the country. Around 63,000 tons of dry sugar-beet pulp were imported in 1982 from Spain, and were thought to have been partly destined for the manufacture of compound feeds. Other feed ingredients imported between 1979 and 1983 were:

- Starch-based products, averaging 810 tons a year, of which about 60% were supplied by the Netherlands;
- Milk-based products, amounting to 470 tons a year, from France and the Netherlands; and
- Various cattle feed preparations, about 820 tons a year, mainly from France, the Netherlands, the United Kingdom, Italy, Belgium, Spain and the Federal Republic of Germany.

(d) Prices

The prices at which oilseed meals and soyabeans are sold to the compound-feed industry are fixed by the Government, but those of all other ingredients (with the exceptions described below) are determined by supply and demand. The price of maize delivered to the feed mill, which makes up over 60% of the ingredients used in average formulations, increased sharply from 0.16 United States cents per kg in 1982 to 0.22 cents per kg in mid 1984.

In the same period, the prices of other ingredients delivered to the feed mill were as follows (in United States cents per kg): 0.16 for barley, 0.10 for bran, 0.19 for wheat, 0.40 for fish-meal (65% protein), 0.34 for soyabean meal and 0.18 for sunflower meal.

As has been mentioned, the current pricing policy favours the use of simple cattle feeds, which are subsidised and supplied to farmers at prices lower than those of compound formulations. Wheat and bran are subsidized by the Government and are distributed by public services at very low prices to producers of milk, but at practically double the price to compound-feed manufacturers.

In order to take into account the high cost of transporting oilseed meals, a compensation system was established in 1981 to adjust the price "delivered to the mill" to the distance between the mill and the harbour. The system does not apply to maize.

As meat pricing is based on demand and not on actual production costs, it is difficult for compound-feed producers to adjust their selling prices to real costs without triggering off a decline in consumption of compound feeds. For example, while the average price of poultry feed increased by 17.1% from 1,750 dirhams per ton in 1983 to 2,050 dirhams in mid 1984, the price of maize rose by 79.6% during that period (from 1,030 dirhams to 1,850 dirhams per ton). No adjustment of the same magnitude in the price of compound feeds could be made.

(e) Trade channels and procedures

The import trade in grains has been under the control of the Office national interprofessionnel des céréales et légumineuses (ONICL) since 1981. Imports are handled by registered specialized importers, mostly representatives of well-known international grain traders and shippers. Almost all trading is carried out on the basis of tenders.

As its name implies, the Société de commercialisation des produits du maïs (SOCOPROM) specialises in maize imports. The Association des fabricants d'aliments composés (AFAC) distributes imported grains to its members according to quotas authorized by ONICL at prices set by the importers.

Imports of soyabeans and soyabean meal are organized and handled by the Agro-Industry Division of the Ministry of Commerce on the basis of international tenders. Oilseed meals are supplied to end-users by the Société d'extraction des produits oléagineux (SEPO), the only crushing company commissioned to work for the Government and to fix the selling prices of these products.

The annex lists the companies and institutions concerned with the import trade in feed ingredients.

The following import documents are required:

- Commercial invoice in French, in 3 copies, giving the number of the import licence, the certified price and the origin of the goods;

- Pro forma invoice in 2 copies.

An import licence automatically authorizes the importer to acquire the requisite foreign currency from either his bank or from the Central Bank. The currency is blocked in a special account and is released when the dispatch of the goods to Morocco and the name of the transporting vessel are certified. Payment is made against documents.

(f) Transport, storage and handling

Regular shipping lines link Casablanca with the main Western European and United States ports. Handling and port charges amount to 120 dirhams ($14.50) per ton, and inland road transport charges average $0.15 per ton per kilometre.

Storage capacity for feed ingredients is insufficient and needs upgrading. Grains are stored either in silos in the Casablanca and Safi harbours, which are under the control of SOSIPO (a subsidiary of ONICL), or in silos inland, which belong to importers and grain processers. Storage costs are high, contributing for example around 29% to the price of maize paid by compound-feed manufacturers.

Manufacturers of fish-meal do not keep stocks; this is done by compound-feed manufacturers.

(g) Tariff and non-tariff barriers to imports

Maize, wheat, and sorghum are among the products listed in the ONICL List A, which are imported duty free. The other feed ingredients are included in List B and require an import licence. This licence is valid for six months after the approval of the Ministry of Commerce and the agreement of the Foreign Exchange Office are obtained.

Customs duties and other charges on imports of feed ingredients make up 29% to 35% of the value of imports. They are as follows:

- Customs duty, calculated on the c.i.f. value of imports: 10% for oilseed meals and 15% for manioc, minerals and premixes;
- Special tax: 15% of the c.i.f. value;
- Stamp tax: 16% of the total value of the customs duty plus the special tax.

Morocco has a preferential trade agreement with EEC.

The State monopoly on imports of grains and soyabean meal, and delays of up to three months in the issue of import licences for the other ingredients constitute barriers to the import trade. So do the high costs of storage, transport and distribution which cannot be recovered by means of a rise in the selling prices of finished compound feeds. The availability of subsidized bran has led to the growth of an artificial cattle-feed market and the consequent reduction in the use of compound cattle feeds. There are also restrictions or prohibitions on the import of grain substitutes. The import of manioc, for instance, was authorized for the first time only in 1984.

(h) Prospects for imports from developing countries

In order to attain the production levels for compound feed envisaged for 1985-1986, Morocco will need to import some 390,000 to 395,000 tons of grains, 30,000 tons of soyabean meal or the corresponding quantity of soyabeans. If the output of the domestic fish-processing industry does not expand, some 5,000 to 10,000 tons of fish-meal will also need to be obtained from abroad.

About 70% (275,000 tons) of the imported grains is likely to be maize. Subject to the success of recent experiments with this feed ingredient, some 25,000 tons of manioc could likewise be used as a grain substitute. Furthermore, some 4,000-5,000 tons a year of groundnut meal could be imported by 1985-1986, also provided it performs satisfactorily in the trials currently being undertaken.

2. Exports

Morocco exports its surplus fish-meal, molasses and oilseed meals. Table 10.4 gives data on the export trade in these ingredients.

Table 10.4

Morocco: exports of feed ingredients, by quantity, 1979-1983
(in tons)

Feed ingredient	1979	1980	1981	1982	1983
Total	115,731	62,678	62,563	66,769	115,826
of which:					
Fish-meal	12,313	10,453	14,236	-	6,746
Molasses	92,307	46,543	45,536	62,909	108,180
Oilseed meals	821	703	650	603	900
Others	10,290	4,979	2,141	3,257	-

Source: Ministère des finances, Statistiques du commerce extérieur (Casablanca).

Fish-meal is not subject to export quotas and taxes. Producers sell the meal directly on the international market, mainly to France, Italy, the Federal Republic of Germany, the Netherlands, the United Kingdom and Portugal.

The principal customers for oilseed meals are France, Spain and the Federal Republic of Germany.

E. Summary

Government policy envisages self-sufficiency by 1985-1986 in basic food products as well as a rise in meat consumption. In view of the accelerated growth of the urban population, the only possible way of attaining these objectives is to increase intensive livestock farming, in the poultry industry in particular. Such a development can only be based on a sustained upswing in the production of compound feeds.

There are 31 feed mills in Morocco, with a total production capacity of over 1.2 million tons a year; current utilization of capacity is estimated at only 30%. Production of compound feeds amounted to 360,000 tons in 1983, of which 90% were poultry feeds and 10% cattle and other feeds. This production mix is not expected to change substantially in the near future. Based on the targets set for livestock production, compound-feed requirements will reach an estimated 630,000 tons by 1985-1986.

Since the domestic supply of feed ingredients is insufficient, an estimated 275,000 tons of maize, 30,000 tons of soyabean meal or an equivalent quantity of soyabeans, as well as up to 25,000 tons of manioc and 4,000 to 5,000 tons of groundnut meal will need to be imported by 1985-1986.

Imports of grains, oilseeds and oilseed meals are controlled by State companies. The international c.i.f. prices of imported ingredients are high, owing to freight, inland transport and storage costs, so that the prices finally paid by feed manufacturers are considerably higher than the corresponding European prices. Because of the current pricing system for meat, feed market prices do not reflect real production costs.

Imports of feed ingredients, with the exception of grains, are subject to licensing. Delays in obtaining the licences, periodic shortages of foreign currency, and insufficient storage facilities are additional constraints to the import trade.

It is recommended that potential exporters of feed ingredients should make available detailed information on the quantities and qualities of ingredients they can provide. The offer of credit arrangements would facilitate sales.

The possibilities of barter trade with Morocco should be explored. Fish-meal, some types of oilseed meals, and molasses can be exchanged for imported feed ingredients.

Annex

Morocco: selected addresses

A. Main manufacturers of compound feed

Inara Provimi Maroc
49, route Culed Ziame
Casablanca
Tel: 242 808, 243 661
Telex: 25618

Sina
Route Principale No. 1
Temara
Tel: (07) 41 315
Telex: 32905

Somalim
Route de Tetwan
Tangiers
Tel: (09) 40 843
Telex: 33787

Cicalim
Route de Taouima
Mador
Tel: (060) 2387, 3470
Telex: 25942

Codesa
9 route de Rabat
Ainsebaa, Kru
Tel: (05) 350274
Telex: 26036

El Alf
Nouveau secteur industriel
Sidi Brahim, Fes
Tel: (06) 41 007
Telex: 51961

Seriaa
7, rue Pillot
Casablanca
Tel: 306 950
Telex: 21040

Sotalab
187, Route de Mediouma
Casablanca
Tel: 246 340
Telex: 26702

Calimab
Km 9, Ancienne route de Rabat
Aim Sebaa
Tel: 250 290
Telex: 25082

SNU
Zone industrielle
BP 8
Temara
Tel: (07) 41 169
Telex: 32927

Eddik
8, Avenue Khalid Bnou
Loualid, Aim Sebaa
Tel: 300 846
Telex: 21039

Selima
Km 6600, Route d'Ez Hazeb
Meknes
Tel: (05) 21 845

Orgal
71 Bd. Mohammed Derfoufi
Ouzda
Tel: (068) 4479
Telex: 61631

B. Importers of, and traders in, feed ingredients; associations of feed manufacturers

Office national interprofessionnel des céréales et légumineuses (ONICL)
13, rue Anmaba
Rabat
Tel: 61 367, 61 084

Société de commercialisation des produits du maïs (SOCOPROM)
7, rue Pillot
Casablanca
Tel: 300 241, 300 844
Telex: 21040
Cable: TEXTIGRAIN

Société d'extraction des produits oléagineux (SEPO)
2, rue Caporal Carbi
Casablanca 05
Tel: 241 096
Telex: 25076
Cable: SEPOLEO

Association des fabricants d'aliments composés (AFAC)
c/o Inam-Provimi
149 route des Ouled Ziame
Casablanca
Tel: 242 808
Telex: 25618

Société marocaine des grains (SOMAGRAIN)
53, boulevard Moulay Ismael
Casablanca 05
Tel: 244 313
Telex: 25823
Cable: SOMAGRAIN

TRADAFRIC
349, boulevard Mohamed V
Casablanca 01
Tel: 302 153
Telex: 21043

INTRAGRO
30, avenue de l'armée royale
Casablanca 01
Tel: 311 925

SEMAGRO
106, boulevard Abdullah Ben Yacine
Casablanca 05
Tel: 304 004
Telex: 25616
Cable: SUDEX

OMNIUM marocain de pêche
Tour des Habous
Avenue de l'armée royale
Casablanca 01
Tel: 311 819
Telex: 23904/23976

Société nationale des farines de poisson (SOMAFAP)
Agadir, Quartier Anza
BP 10
Tel: (08) 21 906
Telex: 81851
Cable: SONAFAP

Société industrielle des graines oléagineuses du Gharb (SICOGHARB)
Quartier industriel
BP 168
Kenitra
Tel: (016) 5955
Telex: 91020

Chapter 11

NIGERIA

A. Economic and social background[1/]

1. General country data

Area: 924,000 km^2
Population: Estimated at 94 million in 1984/85
Income per capita, 1981: $870

Gross domestic product (1981): $78.2 billion
of which:

	%
Agriculture, forestry and fishing	23
Manufacturing, construction, transport	21
Trade, restaurants, hotels	24
Government services	5
Mining	21
Other	6

2. Economic indicators

(a) Exports, 1983 $11,654 million
of which:

Petroleum $10,768 million

(b) Imports, 1981 $12,142 million (c.i.f.)
of which from:

	%
United Kingdom	17
Germany, Fed. Rep.	12
Japan	10
France	10
United States	10

B. Livestock sector

Until petroleum became the most important single economic item of Nigeria, agriculture had been the mainstay of the country's economy. It contributed over 60% of the gross domestic product in 1970 and employed 70% of the labour force. Since 1970, the performance of the agricultural sector has decreased sharply, partly because of prolonged drought periods, but mainly as a consequence of neglect of the sector. The growth rate has fallen below 2.6% a year during the last six years, and the sector is no longer able to meet the food needs of a population expanding at 2.8% annually. From being a net exporter of agricultural products, Nigeria has become an importer of grains, live animals, livestock products, oilseeds and oilseed meals.

1/ Sources: national statistics; Central Bank of Nigeria.

The share of domestic supplies of meat in total demand is expected to fall from 66% in 1980 to 57% in 1985, and that of milk from 95% in 1980 to 61% in 1985 (see table 11.1). Smaller drops in domestic supplies are expected with regard to eggs, butter and cheese.

The situation is aggravated by the scarcity of foreign currency, which limits imports to a minimum.

Livestock production is based on traditional, extensive farming systems. These account for 98% of the current output of beef, mutton and milk and 90% of the supply of poultry meat.

Table 11.1 provides an estimate of the Nigerian livestock population and supplies of livestock products in recent years. The livestock population is characterized by the high proportion (over 90%) of indigenous breeds raised on traditional farms. Less than 10% of the poultry and cattle populations taken together are raised on industrial or commercial farms, the only units in the country that utilize compound feeds.

Meat production is thought to have risen at an annual average of 4% in recent years and is expected to continue to do so. Although demand for feed should rise accordingly, the structure of this demand will reflect the types and quantities of feed ingredients that can be supplied to feed manufacturers under prevailing national economic conditions.

C. Supply of, and demand for, compound feeds

1. The compound-feed industry

(a) General

Feed is the major cost item of commercial livestock enterprises. It accounts for 70% to 80% of the total costs of raising pigs and poultry under intensive conditions.

It is reported that the nutrient intake of all types of livestock in Nigeria is below the levels required for optimum performance and that this has become the most important constraint to livestock development. Feed inadequacy in quantity and quality has led to a decline in productivity and feed conversion ratios.

(b) Feed mills

Over 350 feed mills with an annual production capacity of over 1.5 million tons of compound feeds were registered in Nigeria in 1983. In mid 1984 the Federal Livestock Department reported that only 185 feed mills were operating, their production capacity on the basis of one shift being 1.2 million tons a year (see table 11.2).

Table 11.1

Nigeria: estimated livestock numbers, 1974, 1980 and 1982; domestic output of, and demand for, livestock products, 1980 and 1985

Livestock	Population ('000 head)			Livestock products	Domestic output				Domestic demand	
	1974	1980	1982		1980		1985		1980	1985
					Tons	% of demand	Tons	% of demand		
Cattle	14,043	9,300	12,500	Meat	160,600	64	187,500	51	252,500	370,700
				Milk	805,300	95	867,600	61	847,700	1,415,400
Poultry	130,000	139,780	145,590[a/]	Meat	107,500	71	141,500	66	151,400	214,350
				Eggs	252,900	90	266,600	87	281,000	304,900
Goats	44,829	20,300	25,600	Meat	72,150	65	85,200	58	111,000	146,900
Sheep	16,269	9,200	12,400	Meat	44,600	59	51,600	51	74,900	900,700
Pigs	2,242	1,050	1,220	Meat	15,400	70	19,000	65	22,000	29,150
Other	600	714	745[b/]	Meat	4,750	95	6,800	89	5,000	7,600
				Eggs	22,000	90	23,200	88	24,400	26,500
Total				Meat	405,000	66	491,600	57	616,800	869,400
				Eggs	274,900	90	289,800	87	305,400	331,400
				Milk	805,300	95	867,600	61	847,700	1,415,400
				Butter	1,600	40	2,500	38	4,000	6,600
				Cheese	100	50	160	45	200	350

Sources: Federal Livestock Department, Lagos; FAO, Production Yearbook 1983 (Rome); Department of Agricultural Economics, University of Ibadan.

a/ 93% indigenous and 7% exotic.
b/ Guinea fowls (95%), ducks and turkeys.

Table 11.2

Nigeria: number and capacity of feed mills, mid 1984

State	Production capacity		Feed mills	
	Tons/hour	% of total	Number	% of total
Bendel	114.0	15.5	24	13.0
Lagos	111.9	15.3	17	9.2
Oyo	84.0	11.4	21	11.3
Ogun	69.0	9.4	16	8.6
Imo	62.5	8.5	14	7.5
Anambra	62.0	8.4	15	8.1
Kwara	46.5	6.3	16	8.6
Cross River	26.5	3.6	5	2.7
Others (11)	156.1	21.6	57	31.0
Total	732.5	100.0	185	100.0

Source: Federal Livestock Department, Annual Report (Lagos).

Some 90% of the feed mills are privately owned, the balance bein government owned or controlled. There are three types of private fee mills in Nigeria:

- Large manufacturers of compound feeds such as Pfizers, whic accounts for over 30% of the country's total compound-fee production, and Top Feeds and Sanders, each producing about 10 of the total.

- Large and medium-sized integrated feed mills running poultr farms and producing for their own use; these account for som 20% of the national total.

- Small feed processers with capacities of below 2.5 tons an hour accounting for about 30% of the total.

The feed mills are concentrated in the southern part of the country following the distribution pattern of the large industrial poultry farms.

Production of compound feeds is estimated as follows: betwee 800,000 and 850,000 tons in 1981, 600,000 tons in 1982, and around 400,00 tons in 1983. Poultry feeds accounted for 90% of feed production in 198 or 360,000 tons, of which 60% were layer feeds, 35% were broiler starter and finishers, and 5% were pullet feeds. Cattle and pig feeds made up 7 (28,000 tons) and 3% (12,000 tons) respectively of the overall total.

In 1984, production of compound feeds is expected to reach an estimated 450,000-480,000 tons, or about 35% of the one-shift capacity of the industry. The principal compound-feed manufacturers are listed in the annex to this chapter.

2. Demand for compound feed and main industrial problems

No attempt has yet been made to estimate the feed requirements of indigenous and exotic livestock breeds as no livestock census has been carried out. It is generally agreed that up to 1986, the normal requirements for compound feed for poultry, pigs and cattle would amount to a yearly minimum of 600,000, 900,000, and 210,000 tons respectively or a total of 1.7 million tons.

The compound-feed industry faces three main types of problems:

- Shortage of raw materials, particularly of imported grains, vitamin and mineral premixes, as well as of locally produced protein concentrates. Another aspect of this problem is the inadequacy of the local distribution network and high transport costs.

- Poor feed quality, which is reflected in poor livestock performance. This is due to the absence of statutory quality standards and control measures.

- Managerial and technical deficiencies in some mills.

The feed deficit which has existed since 1982 is not likely to be remedied before 1988. Expected production levels of compound feeds, estimated at 500,000-550,000 tons in 1985 and 650,000 tons in 1986, can only be attained if supplies of imported grains and oilseed meals and cakes are made available.

Some 200,000 tons of maize, 60,000 tons of wheat, 10,000 tons of cottonseed meal, 20,000 tons of groundnut meal, 10,000 tons of soyabean meal and fish-meal, 20,000 tons of bone-meal, 16,000 tons of brewery by-products, 60,000 tons of limestone and oyster shells, and 7,000 tons of mineral and vitamin premixes were used for the manufacture of about 400,000 tons of compound feeds in 1983.

D. Feed ingredients

1. Domestic supplies

Until 1973, 90% of all ingredients were locally produced. Among these were maize, groundnut cake, bone-meal, oyster shells and wheat offals. Imports consisted only of fish-meal, mineral and vitamin premixes. Since 1974, following the Sahelian drought and domestic production shortfalls, 90% of the feed ingredients, including maize and groundnut meal, have been imported at prices lower than those of locally produced ingredients.

Nigeria produces grains like maize (about 1.6 million tons in 1981), sorghum and millet, but at low yields and high post-harvest losses. Domestic production is hardly sufficient to cover demand for human consumption.

Output of groundnut and cotton has dropped, the prices offered by the respective Commodity Boards being no longer of interest to farmers. Nigeria is now an importer of cotton and groundnut meals for feed manufacture.

Local manioc could be an ingredient for compound-feed production, but supplies are irregular and prices too high.

The Government has programmes aiming at increasing the country's palm-oil output to 130,000 tons yearly by 1990 and at launching deep-sea fishing and fish processing operations. If these are implemented successfully, palm-meal and fish-meal would be locally available for the feed industry.

Some 13 million hectolitres of beer are produced annually in Nigeria. Some by-products are used by the feed mills.

2. Imports

(a) Grains

Grain imports have amounted to 600,000-800,000 tons a year during the last five years. All wheat consumed in Nigeria is imported, the main suppliers being the United States (70-90% of the total), France and the United Kingdom.

Maize is imported in order to cover the difference between domestic production and demand. An average of 270,000 tons of maize has been imported yearly since 1981; over 50% comes from the United States, 20% from Asia, 10% from Argentina and 20% mainly from Europe. Less than 10% of the maize used for compound-feed manufacture is of local origin.

(b) Oilseed meals

The main domestic oilseed crop is groundnut, produced mostly in the north. Up to the early 1970s, Nigeria was one of the world's largest producers and its leading exporter of groundnut and derived products. In 1973, however, exports were discontinued and today local production no longer satisfies domestic demand. Industrial production of oil and oilcake/meal has virtually ceased because of the high price of domestic oilseeds compared with the price of imported edible oils and oilseed meals.

Table 11.3 summarizes the data on developments in the Nigerian oilmeal sector.

Table 11.3

Nigerian oilseed meals: production and foreign trade, 1965, 1975 and 1979-1981

(in tons[a/])

	1965	1975	1979	1980	1981
Domestic production	349	85	88	94	96
Imports	-	-	13	21	22
Exports	264	27	28[b/]	21[b/]	17[b/]

Sources: FAO, Production Yearbook and Trade Yearbook (Rome).

a/ Protein equivalent.
b/ Palm kernel meal only.

Production of oilseed meals in 1983 is estimated to have been around the 1981 level. The composition of production in 1983 was as follows: 60% groundnut, 19% palm kernel, 8% soyabean, 7% sesame and 6% cottonseed.

As local production does not match demand, the oilseed meals required for compound-feed manufacturing, with the exception of cottonseed, are supplied from imports. The main suppliers of groundnut meal are Senegal, Brazil and Argentina, together providing between 15,000 and 20,000 tons a year. The United States and Europe are the suppliers of soyabean meal (4,000-6,000 tons yearly).

(c) Other products

Some 4,000 - 6,000 tons of fish-meal are imported yearly from Denmark, Senegal and Mauritania for feed compounding. Imports of other feedstuffs during 1979-1982 varied between 26,400 tons in 1979 and 30,000 tons in 1982. The principal sources in 1979 were Israel, the Federal Republic of Germany, the United Kingdom, Norway and Iceland.

3. Prices

(a) Grains

Grains are imported exclusively by the Nigerian Grain Board, a governmental body under the Federal Ministry of Agricultural and Rural Development. Its other functions include collection of the domestic harvest, storage and distribution of grains.

The Board fixes the guaranteed minimum prices for all grains as well as their selling prices. In 1983-1984, the Board set maize prices (in naira per ton) as follows:

	1983	1984
Minimum purchase price at collection and storage centres	290	800-900 for local maize; 190 for imported maize
Selling price	249	410*

* The "unauthorized" market price per ton reached N 1,000.

(b) Oilseed meals

Guaranteed prices are fixed each year for the oilseeds (groundnut, soyabean and sesame) as well as for palm kernel, palm oil and cottonseed.

Farmers have the option of selling their produce either directly to consumers and private traders at prevailing market prices, or to government Commodity Boards[2/] at fixed guaranteed prices. The Boards are statutorily obliged to purchase at guaranteed prices commodities that are offered to them and that conform to established grades and standards. Although they monopolize the export trade, they do not have exclusive marketing rights in the domestic market.

Guaranteed prices for soyabean, groundnut and palm oil have risen at a faster rate than inflation. However, open market prices have increased in recent years by 70-90% above guaranteed prices.

Guaranteed cottonseed meal prices decreased as follows, in naira per ton:

	1983	mid 1984
Minimum purchase price	228	114
Selling price	275	138

The production cost of groundnut meal increased dramatically, attaining 650 naira per ton in 1982-1983, three times the production cost in Senegal and over five times the production cost in Mali during the same period. The corresponding selling price was 1,000 naira per ton.

(c) Other products

The market price of fish-meal amounted to 900 naira per ton in mid 1984. Soyabean meal prices reflected internationally quoted prices plus customs duties of 50%.

2/ The Nigerian Groundnut Marketing Board for groundnut and soyabean, the Nigerian Palm Produce Board for palm kernel and oil, and the Nigerian Cotton Board for cotton.

4. Import procedures

(a) Import channels

The annex lists major importers of feed ingredients. Grain imports are the monopoly of the Nigerian Grain Board and are obtained by international tender. Imports of all other feed ingredients are not a State monopoly and are not subject to any quantitative restrictions; however, import licences are required. These items are imported by the large feed milling companies, obtaining their supplies by authorized tender, through agents established in Nigeria and overseas.

(b) Inspection and payment

Imports of feed ingredients are subject to inspection by COTECNA Inspection. In this function, the Geneva-based Swiss firm operates on behalf of the Nigerian Government.

Importers must fill form M for approval of foreign currency allocation and submit it, through their bank, to the Central Bank of Nigeria, which designates the consignment concerned as subject to inspection. The form is sent to the consignor. Processing and approval of the form can take up to one month.

Only international companies or Nigerian importers of excellent repute can obtain imported goods on the terms cash against documents or acceptance bill. In general, payments are made by irrevocable, confirmed letters of credit. For these, an importer must present to his bank the form M approved by the Central Bank, a copy of his tax clearance certificate for the previous three years, an insurance certificate, a legalized pro forma invoice and a copy of his import licence.

Import deposits must be made either before the opening of the letter of credit or 10 days at the latest before the arrival of the cargo at the port of entry. The deposit, which yields no interest, is made at the commercial bank of the importer and amounts to 20% of the c. & f. value of the consignment.

The Central Bank can refuse to allocate foreign currency if the deposit is not made within the required deadline. Exporters are therefore strongly advised to obtain a confirmation of the deposit from the bank concerned as a condition for delivering the goods.

To release the allocation, the Central Bank requires the following documents:

- Approved, original form M;
- Tax clearance certificate;
- Copy of letter of credit or bill history sheet as applicable;
- Certified true copy of import licence;

- Attested invoice;

- Non-negotiable copy of bill of lading or airway bill;

- Copy of certificate of insurance (only Nigerian insurance companies are accepted);

- Exchange control copy of customs bill of entry;

- Clean report of findings from the inspection company;

- Tally sheet;

- Evidence of deposit.

The rate of exchange is fixed only when the allocation is released.

(c) Letter of credit

Applications from importers to establish letters of credit can be approved by authorized dealers who may demand a deposit in naira. The following documents are required:

- Exchange control form D (application to establish a letter of credit);

- A pro forma invoice;

- A photocopy of the specific import licence if the goods are not imported under open general licence.

If the payment period exceeds nine months, or if instalment payment terms are agreed between the exporter and the importer, approval of the Central Bank must be obtained before the credit can be established. In the case of instalment credits, each payment must be approved by the Central Bank before foreign exchange can be released.

(d) Bills for collection

Authorized dealers handle documentary bills for collection in Nigeria. Exporters must usually supply the following documents:

- Bill of exchange;

- One original and one non-negotiable copy of the bill of lading or two original copies of the airway bill;

- One original and five copies of the customs invoice bearing original signatures;

- The original and five copies of the packing lists unless packing details are shown on the invoices.

Payment of interest on usance drawings is allowed only when such terms are clearly indicated on the bill of exchange and when the claim does not exceed the period of usance plus five days. In all cases, the rate of interest is expected by the Central Bank to be reasonable. This is interpreted to be no more than 2% over the prime rate ruling for the currency in the appropriate centre.

5. Infrastructure

(a) Transport

The Central Government apportions ingredients to feed mills at set prices that take no account of internal transport costs. This means that producers situated outside the harbour areas are subsidized.

Open market prices reflect transport costs. Average road transport costs are 50 naira ($65) per ton from Lagos to Kano (about 1,500 km away) and 10 naira ($13) per ton within the Lagos area.

(b) Storage

Storage facilities are limited. This is of particular importance in the case of feed ingredients that are prone to develop aflatoxin.

Grains are stored in silos belonging to the Nigerian Grain Board and the large flour mills. The volumes of reserve stocks are fixed by the Government. There is no explicit policy regarding the volume of stocks of oil-bearing materials. The exceptions are cottonseed and cottonseed meal of which certain quantities are stored by the Nigerian Cotton Board for distribution to feed mills.

E. Tariff and non-tariff barriers

As mentioned, import licences are required for all feed ingredients with the exception of cereal grains, which are imported under State monopoly. Restrictive measures such as compulsory advance deposits and high duties have been adopted since 1982 under a general package aiming at improving the country's balance of payments.

Customs duties on imports of maize, soyabeans, soyabean meal and fish-meal amount to 55% ad valorem. A tax of 5 naira per ton is also applied to these imports. Imports of groundnut meal are duty free.

F. Prospects for imports from developing countries

Most manufacturers of compound feeds are conservative and are frequently unaware of alternative or substitute ingredients. In any case, it is difficult to obtain government approval for a shift from one ingredient to another. The lack of foreign currency and the obligatory deposit of up to 20% of the value of imports constitute other barriers to expanding the import trade.

The Nigerian import market for feed ingredients is comparatively large but is subject to time-consuming import and payment formalities which require an intimate knowledge of local administrative procedures. Suppliers able to offer credit facilities would have easier access to this market. Prospective exporters are advised to contact the principal Nigerian import trading and feed manufacturing companies listed in the annex.

G. Conclusions and recommendations

The depressed general economic and agricultural situation and the shortage of foreign currency have led to a decline in livestock production and to a sharp drop in compound-feed usage and manufacture.

In 1983, traditional or extensive husbandry accounted for 90% of the total livestock population. Intensive farming was responsible for the balance of 10% or about 1.2 million head of cattle, 0.8 million sheep, 2.5 million goats, 1 million pigs and 12 million head of poultry. Traditional farms have low yields and basically rely on natural feed, making little or no use of compound feeds.

The share of domestic supplies in the internal market for meat and other livestock products in 1985 is likely to drop below the 1983 level. Hence, imports of such products can be expected to rise.

Domestic production capacity for compound feeds is estimated on the basis of one daily shift at around 1.2 million tons yearly; utilization is about 30%. Over 90% of the country's mills are privately owned, with three of these mills accounting for more than 50% of the current production of 450,000 - 480,000 tons annually.

Annual demand for compound feeds is expected to reach 900,000 tons by 1986. About 90% of this would be for poultry feed, 7% for cattle feed and 3% for pig feed.

The industry is facing critical operational problems. Local supplies are insufficient and a yearly output of 900,000 tons can only be attained if imported ingredients are made available. Annual import requirements are estimated at 350,000 tons of grains (over 80% maize), 50,000 tons of oilseed meals, 13,000 tons of fish- and meat-meals and 10,000 tons of vitamin and mineral premixes.

The import of grain is a State monopoly; all other feed ingredients are handled by the trade but are subject to licensing. Licensing procedures are complicated and often excessively time consuming. The scarcity of foreign currency and the government policy of protecting the agricultural sector have led to high duties and taxes and other measures to limit imports of feed ingredients to the minimum.

Despite these constraints, the Nigerian import market for feed ingredients might represent an interesting outlet for developing country suppliers.

Annex

Nigeria: main manufacturers of compound feeds and importers of ingredients

Pfizer/Livestock Feeds
1 Henry Carr Street
PMB 21097
Ikega, Lagos

Top Feeds Ltd
PMB 4098
Sapele, Bendez State
Tel: 054 42628

Kano State Oil Mill
123 Maganda Road
Kano

Amo-Sanders Ltd (SEEPC)
1 Abimbola Awoniyi
PO Box 9911
Victoria Island
Lagos

Oredola Okeya - Animal Feeds Ltd
PO Box 98
Igbaja, Kwara State

Good Luck Feed Mills
PO Box 2100
Aba, Imo State

Sotinoye Aderupoko Farm
Ikoto, Ayegunle Odeda
Ogun State

Peco Feeds Ltd
PO Box 8341
Enugu, Anambra

Ayayi Farming Enterprise Ltd
Km 19, Agege Motor Road
PO Box 26
Lagos

Sam Rose Agro Industries Ltd
10 Alimosho Road
Off-Agege By-pass
PO Box 5915
Agege, Lagos

Ladokum Livestock Feeds Ltd
C2/172 Oritamerin Mapo Hill
Ibadan

Federal Livestock Department
Ministry of Agriculture and
Natural Resources
8 Strachan Street
Victoria Island
PMB 12613, Lagos

Nigerian Palm Produce Board
73 Campbell Street
Lagos

Nigerian Cotton Board
Liaison Office
72 Campbell Street
Lagos

Nigerian Grains Board
73 Campbell Street
Lagos

Nigerian Groundnut Board
Civic Centre
1 Bida Road
PMB 3067, Kano

Eurotrade
7a Oduduwa Road
Apapa, Lagos

Chapter 12

TUNISIA

A. Economic and social background[1/]

1. General country data

Area: 164,150 km^2
Population (mid-year estimate, 1982): 6.73 million

Annual growth rate: 2.2%
About 35% of the economically active population is in the agricultural sector.

2. Economic indicators

(a) Gross domestic product, 1982: $7,906 million

Share of the agricultural sector: 17%

(b) Foreign trade ($ million f.o.b.)

	1979	1980	1981	1982
Exports	1,538	1,805	2,102	1,625
Imports	2,467	2,877	3,139	2,917
Trade balance	- 929	- 1,072	- 1,037	- 1,292

Main trading partners:

	Percentage share	
	In Tunisia's imports	In Tunisia's exports
France	26	19
Italy	15	16
Germany, Fed. Rep.	12	10
United States	8	23
Netherlands	5	2
Spain	4	1
Greece	3	3

B. Livestock sector

Livestock products account for about 34% of Tunisia's agricultural revenue and domestic demand for these products is rapidly increasing. However, livestock production in recent years has been affected by adverse climatic conditions. For example, the drought of 1977-1982 has reduced the available forage and resulted in low yields of livestock products and the diminution of the livestock population.

1/ Source: national statistics.

To make up for the shortfall in natural fodders, farmers have used increasing quantities of compound feeds. This has been facilitated by government subsidies, which render their cost per net-energy unit lower than that of natural forage.

It is estimated that over 62% of the cattle, 52% of the sheep and 64% of the goat populations were raised on compound feeds in 1982. The share of traditional extensive farming in poultry production declined from 13% in 1980 to 11% in 1982 and is expected to drop further to 8% by 1986.

Total meat production on a per capita basis stagnated at around 18.2 kg during 1980-1982. It was possible to maintain production at that level only because of the rise in the output of industrial poultry farms.

Consumption of milk was down from 38.5 kg per capita in 1980 to 36.5 kg in 1982. However, the egg intake increased from 114 to 125 eggs per capita over the same period.

An average of 6,600 tons of meat, 36,000 tons of milk (powdered, concentrated and fresh) and 1,000 tons of eggs were imported annually during the 1980-1983 period in order to cover demand for livestock products. Table 12.1 shows livestock numbers and output of livestock products in 1980 and 1982 and provides forecasts for 1986.

By 1986, the output of livestock products is expected to reach 151,200 tons of meat, 410,000 tons of milk, and 1,120 million eggs.

It is important to note that the compound-feed industry was substantially responsible for keeping the loss of livestock at a minimum during the earlier-described drought period.

C. Supply of, and demand for, compound feeds

1. Production

The development of the compound-feed industry has, since 1977, been encouraged by various government measures aiming at supporting the livestock sector. The main factors in the rapid growth of the industry were:

- Subsidy to farmers of over 56% of the price of compound feeds. This encouraged the development of intensive cattle farming.
- Liberalization of selling prices of meat in order to enable farmers to recover feed costs.
- Government financing facilities for new investments in feed mills, resulting in an increase in the number of mills from 21 in 1976 to 140 in 1982. Total annual capacity on a one-shift basis for compound-feed production rose from 140,000 tons to 1,250,000 tons during this period.
- Legislative measures regulating the quality and commercialization of compound feeds since 1981.

Table 12.1

Tunisia: livestock numbers and output of livestock products, 1980, 1982, and 1986

Livestock	Numbers ('000 head)			Product	Unit	Output		
	1980	1982	1986 (Forecast)			1980	1982	1986 (Forecast)
Cattle	589	569		Meat	Ton	33,600	32,700	46,000
of which:								
Compound-feed raised	326	355	365	Milk	Ton	211,800	212,000	357,000
Sheep	4,967	5,105		Meat	Ton	32,800	29,900	35,000
of which:								
Compound-feed raised	2,512	2,650	2,975	Milk	Ton	16,200	17,000	28,500
Goats	922	917		Meat	Ton	4,700	4,400	5,200
of which:								
Compound-feed raised	595	590	600	Milk	Ton	17,000	14,000	24,500
Poultry	30,000	37,000	47,000	Meat	Ton	41,500	50,300	62,000
of which:								
Broilers	26,000	30,000	41,500					
Laying hens	4,000	3,000	6,000	Eggs	Million	726	832	1,120
Other				Meat	Ton	3,100	3,000	3,000
Total				Meat	Ton	115,700	120,300	151,200
				Milk	Ton	245,000	243,000	410,000
				Eggs	Million	726	832	1,120

Sources: Ministry of Agriculture, Statistical Yearbook 1984 (Tunis), and Service of Animal Nutrition.

Table 12.2 summarizes the data available on the compound-feed industry.

Table 12.2

Tunisia: compound-feed industry: production and facilities, 1976, 1981-1982, 1986
(in tons)

Item	1976	1981	1982	1986 (Forecast)
Compound-feed production of which for:	155,820	473,040	515,000	786,000
Poultry	104,495	227,370	262,700	472,000
Cattle, sheep and goats	51,325	245,670	252,300	314,000
Number of feed mills	21	138	140	140
Production capacity, tons[a/]	139,860	1,205,000	1,250,000	1,250,000
Rate of utilization, %	111.4[b/]	39	41	63

Source: Ministry of Agriculture, Livestock Department.

a/ One shift/day.
b/ Including occasional two-shift operations.

Production of compound feeds has tended to shift from State-owned mills to private mills. In 1973, State-owned companies had 96% of the total; by 1982 this share had dropped to 25%. The share of poultry feeds in total compound-feed production fell from 58% in 1973 to 49% in 1982.

As shown in table 12.2, the industrial output is expected to reach 786,000 tons by 1986. The development of the sector is being planned in accordance with the objectives of the VIth Tunisian Development Plan. Poultry feeds are expected to account for 60% of total production by 1986.

2. Quality standards and control

The manufacture of compound feeds is subject to authorization by the Directorate of Animal Production, Ministry of Agriculture. Manufacturers are checked for compliance with legal norms and quality standards.

The law of 20 July 1981, issued with the co-operation of the Ministries of National Economy, of Agriculture, and of Public Health, stipulates the maximum content of various substances in compound feeds as well as technical standards and norms by type of feed.

D. Feed ingredients

1. Overview

Most of the ingredients used in feed compounding are imported. Hence the industry is vulnerable to international market fluctuations in price and supply availability. Table 12.3 gives an indication of current and future demand for feed ingredients.

The value of imports of ingredients was equivalent to about 30% of the total value of livestock products in 1982. In order to limit expenditures of foreign currency, the Government is studying the possibility of increasing the use of domestic products and by-products. The feed industry is thus orienting itself towards more flexible feed formulations utilizing the most cost-effective ingredients on the market.

2. Domestic supplies

Grains are grown extensively in Tunisia, but yields are low and highly dependent on rainfall. For this reason, despite relatively large areas under cultivation, outputs of barley and maize are insufficient for the needs of feed mills, over 90% of whose requirements must be imported. During 1982 and 1983, annual production, mainly destined for human consumption, averaged 321,000 tons of barley, 2,900 tons of maize and 767,000 tons of wheat. Grain mills produced 215,000 tons of bran, almost entirely used for animal feeding.

The substitution of imported grains by domestically grown crops is given special attention in the VIth Tunisian Development Plan. For example, tritical[2/], a substitute for grains, can be cultivated satisfactorily in Tunisia. Although an estimated 140,000 tons of this grain can be used in feed compounding by 1986, domestic production will attain only 15,000 tons in that year. Domestic production of sorghum in irrigated areas could be increased for use as a substitute for imported maize. Although domestic production of maize could be raised to 55,000 tons a year, 46% in irrigated areas, by 1986 the volume will reach only 9,000 tons. Annual production of barley could likewise rise to 550,000 tons to cover a substantial part of demand for animal feeding.

Field beans could be used to replace soyabean meal in cattle feeds and as a partial substitute in poultry feeds. It is estimated that by 1986-1987, under favourable weather conditions, 83,000 tons of field beans grown in Tunisia could be used instead of about 40,000 tons of imported soyabean meal.

Tunisia has an annual production capacity of about 4,000 tons/year of fish-meal, which could replace 4,000 tons of imported soyabean meal. However, owing to unfavourable fishing conditions during the last few years, only 1,000 to 1,500 tons of fish-meal have been produced annually.

2/ Hybrid of wheat and soya.

Table 12.3

Tunisia: demand for feed ingredients, 1982, 1984 and forecast for 1986
(in tons)

Ingredients	1982	1984	1986 (Forecast)
Total	515,000	643,000	786,000
of which:			
Barley	115,000	145,000	175,000
Maize	199,000	241,000	288,000
Bran	82,000	105,000	138,000
Soyabean meal	88,000	111,000	136,000
Vitamin/mineral premixes	22,000	30,000	36,000
Calcium and other mineral sources	9,000	11,000	13,000

Source: Ministry of Agriculture, Livestock Department.

Table 12.4 shows the shares of various feed ingredients in the average formula for compound feed in Tunisia.

Table 12.4

Tunisia: average formulation of compound feeds: ingredients as percentage of total

Feed types / Ingredients	Poultry			Cattle			Sheep
	Starter	Finisher	Layer	Fattener	Dairy cow	Young calf	
Maize	61	63.5	58-70	-	-	-	-
Barley	-	-	-	55	55	45	54
Bran	-	4.5	10.5-11	34	30	30	36
Soyabean meal	34	27	14.5-20.5	6	8	20	6
Limestone	-	-	0-5.5	2	1	-	2
Salt	-	-	-	2	1	-	2
Calcium diphosphate	-	-	-	1	-	-	-
Vitamin/mineral premix	5	5	5	-	5	5	-
Energy: Kcal a/ /kg	2,823	2,803	2,500-2,850	-	-	-	-
UF/kg b/	-	-	-	0.85	0.84	0.89	0.89
Crude protein, %	20.2	18.3	14.2 - 15.8	13.24	13.37	13.37	13.25

Source: National Grain Bureau.

a/ Kilogram calorie.
b/ Unité fourragère (Scandinavian feed unit).

Other potential ingredients of domestic origin are olive kernel cakes (current production: 200,000 tons a year, untreated), tomato pulp (production: 22,000 tons yearly of wet pulp although this is difficult to store and to transport), sugar molasses (2,000-2,500 tons yearly, already being used as a compound-feed ingredient), and grape residues (current production: 11,000 tons yearly). Further processing of these by-products, with the exception of molasses, could yield valuable energy supplements, especially in compound feeds for ruminants.

3. Imports

(a) Overview

Table 12.5 gives a summary of average annual imports of feed ingredients during the period 1980-1982.

Table 12.5

Tunisia: imports of feed ingredients, by quantity and by origin, 1980-1982

Ingredients	Tons/year	Principal suppliers
Grains		
Maize	255,000 a/	United States
Barley	66,000 b/	United Kingdom
Oilseed meals		
Soyabean meal	83,000	Brazil (49%) Argentina (33%) Paraguay (17%)
Other		
Grain by-products	3,000	n.a.
Miscellaneous	2,500	n.a.

Source: Ministry of Agriculture.

a/ 79% of which for compound-feed manufacturing.
b/ 90% of which for compound-feed manufacturing.

(b) Prices

According to the Tunisian Ministry of Agriculture, the import price indices (c.i.f.) of the main feed ingredients, using 1980 as the base year, varied as follows:

	1981	1982	1983
Barley	113	108	115
Maize	132	124	135
Other feed grains	134	169	180
Oilseed meals	120	164	185
Animal feeds	106	112	118

Most feeds are sold at prices set by the National Grain Bureau. However, some private producers offering better-quality poultry feed sell their products at prices 5% to 10% higher.

(c) Import channels and procedures

Grains, oilseeds and oilseed meals are imported under authorization. For State enterprises, this comes in the form of an external trade and foreign exchange certificate called "annual import authorization".

Import applications are initially submitted to the Ministry of Agriculture for a technical review and subsequently to the Directorate of External Economic Relations of the Ministry of Commerce for approval. The Central Bank of Tunisia must authorize payment, which is made through the commercial banks. Although all methods of payment are acceptable in Tunisia, the irrevocable letter of credit is the means most used for imports of feed ingredients.

The National Grain Bureau has the import monopoly for grains, grain derivatives, seeds, beans, and animal feeds. This government agency was established in 1962.

The semi-public National Fishery Bureau (Office national des pêches) is the leading fishing company and producer of fish-meal. It is also an occasional importer of this feed ingredient.

Commercial invoices and certificates of origin are required for all imports. Unless the Tunisian importer states that English will be acceptable, shipping documents as well as labels and marks on packages must be in French. These documents must be legalized by a Tunisian consulate prior to shipment of the goods.

4. Exports

Exports of feed grains, oilseeds, oilseed meals and other feed ingredients are negligible.

E. Tariff and non-tariff barriers

Grains are generally imported duty free. The exception is sorghum, on which a tax of 30% of the c.i.f. value is levied.

Manioc, which previous to 1984 had not been imported, is subject to a customs duty of 40% of its c.i.f. value. The following are the customs duties levied on the c.i.f. values of other feed ingredients: 13% on oilseeds, and 6% on fish- and meat-meals, grain by-products, oilseed meals, brewery by-products and molasses.

As soyabean is not cultivated in Tunisia, soyabean meal will continue to be imported. Sustained efforts are, however, being undertaken to reduce foreign currency expenditure on imported feed ingredients through the production of potential substitutes.

Manioc and groundnut meal are currently not used by the Tunisian compound-feed industry; meat- and fish-meals are utilized in limited quantities only. A reduction in the duty on manioc could stimulate imports.

Prospective exporters will have to cope with the competitive environment resulting from the well-established business relations between the Tunisian import market and suppliers in the United States and Argentina. Competition will be particularly keen as regards maize and soyabean meal since suppliers from these sources offer guaranteed quality levels and delivery schedules, and low freight rates.

F. Prospects for imports from developing countries

Table 12.6 gives estimates of potential import requirements for feed ingredients by 1986, based on opposing hypotheses.

- Hypothesis 1: No increased substitution of imports by domestically produced ingredients;
- Hypothesis 2: Increased substitution of imports by domestically produced ingredients.

Imports by 1986 could reach between 311,000 and 601,000 tons of grains and 112,000 to 136,000 tons of soyabean meal or its equivalent, depending on the extent of import substitution achieved. Imports of other oilseed meals and cakes, fish- and meat-meals or other grains could be envisaged if end-users are made aware of their technical and economic advantages.

Table 12.6

Tunisia: estimated import requirements, by feed ingredient, 1986
(in tons)

Ingredients	Hypothesis 1 Imports	Hypothesis 2	
		Imports	Domestic substitutes
Grains, total of which:	601,000	311,000	Tritical 15,000 Sorghum 5,000
Maize	288,000	259,000	Maize 9,000
Barley	175,000	52,000	Barley 123,000
Soyabean meal or equivalent	136,000	112,000	Field beans 20,000 Fish-meal 4,000

Source: ITC estimates.

G. Summary

The rapid development of the Tunisian feed industry provided strong support to the livestock sector during the recent prolonged period of drought. Total installed capacity increased nearly fivefold during the 1976-1984 period and production in 1984 will be an estimated 643,000 tons of equal amounts of cattle and poultry feeds. Around 75% of production is handled by the private sector and 25% by the public sector and co-operatives.

Most ingredients used in feed compounding are imported and subject to fluctuations in price and availability on the world market. In order to cope with this situation, the Government is encouraging the substitution of imported ingredients by products of domestic origin. Annual imports during 1980-1982 averaged 255,000 tons of maize (supplier: the United States), 83,000 tons of soyabean meal (suppliers: Brazil, Argentina, Paraguay) and 66,000 tons of barley (supplier: the United Kingdom). State-owned companies have a monopoly of the import trade.

Grains are imported duty free; levies of 6% to 13% are applied on the c.i.f. values of other feed ingredients.

No manioc and groundnut meal are imported while imports of fish- and meat-meals are minimal. A reduction in the duty on manioc should be negotiated.

Prospective exporters should actively promote the technical advantages of their products, which should be price competitive with maize and soyabean meal, the principal ingredients of the Tunisian compound-feed industry. Efficient local representatives and personal contacts with feed millers are prerequisites for successful business in Tunisia.

Although Arabic is the national language, French is widely used in correspondence and trade. English is not generally understood nor accepted.

Sales are generally made by contact and reputation rather than by publicity. The institutions listed in the annex should be contacted for information on potential business opportunities.

Annex

Tunisia: selected addresses

National Grain Bureau
(Office national des céréales)
30, rue Alain Savary
Tunis
Tel: 28232
Telex: 13449

National Fishery Bureau
(Office national des pêches)
Avenue Habib Bourguiba
Tunis
Tel: 258 922
Telex: 12388

Chapter 13

MEXICO

A. Economic and social background[1/]

1. General country data

Area:	1,967,283 km^2
Population (1982):	71.5 million
of which:	
Economically active	46.5 million, 18.9 million of which in the primary sector
Population growth rate:	2.9% a year
Crop area (in millions of ha):	
Total harvested:	16.4
Irrigated area:	5.0
Pastures:	75.5
Woodland, forests:	19.9

2. Economic indicators

(a) Gross domestic product, 1982

	$ million	%
Total	168,300	100.0
of which:		
Agriculture, forestry, fishing	14,800	8.8
Mining and manufacturing	47,000	27.9
Construction	9,300	5.5
Electricity	2,700	1.6
Transportation and communications	12,400	7.4
Commerce	42,900	25.5
Services	39,200	23.3

1/ Sources: Secretaría de Agricultura y Recursos Hidráulicos (SARH) Dirección General de Agricultura (DGEA), Información Agropecuaria, 1982 (Mexico, D.F., 1984); Handelsbank N.W., Mexico 1983 (Zurich, Switzerland); and extracts from a publication of the National Westminster Bank (London, June 1984).

(b) Major trading partners, 1982

Country	Percentage share	
	In Mexico's exports	In Mexico's imports
United States	56.2	58.0
Spain	8.9	n.a.
Japan	5.9	4.4
Germany, Fed. Rep.	n.a.	4.3
Canada	n.a.	2.1
France	4.2	n.a.
United Kingdom	3.6	1.4

In 1983, exports of crude oil and derivatives accounted for 75% of the total value of Mexico's exports. Agricultural imports in that year amounted to $1,600 million or 21% of all imports.

B. Livestock sector

Table 13.1 summarizes data on Mexico's livestock population and supplies of livestock products in 1982.

Table 13.1

Mexico: livestock numbers and output of livestock products, 1982

Livestock	Numbers ('000 head)	Livestock products	
		Items	Million tons
Cattle	36,874	Beef	1.20
		Fresh milk	6,923.60 a/
Pigs	18,373	Pork	1.37
Sheep	6,657	Mutton	0.02
Goats	10,290	Meat	0.03
Poultry	201,258	Meat	0.48
		Eggs	0.69
Others b/	Not known	Meat	0.04
		Total meat	3.10

Source: Estimated on the basis of field investigations.

a/ Million litres.
b/ Rabbits, turkeys and other animals.

According to the Compañía Nacional de Subsistencias Populares (CONASUPO), the State organization for food and other essential supplies, about 100,000 tons of powdered milk were imported in 1982.

C. Supply of, and demand for, compound feeds

1. Overview

The Mexican compound-feed production sector comprises two subsectors of about equal importance, namely:

- Commercial feed mills;
- On-farm mixers, largely poultry and pig enterprises and, to a lesser extent, dairy and beef cattle farms.

Table 13.2 shows that poultry feeds generally account for about 50% and pig feeds for slightly less than 30% of the total output of commercial feed mills.

Table 13.2

Mexico: compound-feed production by commercial mills, 1978-1982
(in thousands of tons)

Feed type	1978	1979	1980	1981	1982
Poultry of which:	2,655	2,173	2,236	2,463	2,320
Layer	1,525	949	970	1,069	864
Broiler	1,130	1,224	1,266	1,394	1,456
Pig	780	1,141	1,182	1,301	1,320
Cattle of which:	425	700	718	789	819
Dairy	350	583	591	650	682
Fattener	75	117	127	139	137
Other a/	70	62	84	94	91
Total	3,930	4,076	4,220	4,647	4,550

Source: Cámara Nacional de la Industria de Transformación (CANACINTRA), La Industria Alimenticia Animal en México (Mexico, 1982).

a/ Horse, rabbit, dog, cat, rat and other special feeds.

Total compound-feed production, including on-farm mixing, was about 9 million tons yearly in 1981 and 1982. Although production is likely to have declined to 8 million - 8.5 million tons in 1983, CANACINTRA expects the compound-feed industry to grow by about 10% annually during the period 1984-1986. Imports and exports of compound feeds are said to be nil or negligible.

2. Supply of feed ingredients

(a) Grains

Sorghum predominates among the grains used for compound-feed preparation, followed by maize and barley. Imported feed-grade wheat is used occasionally.

Table 13.3

Mexico: grain supplies for compound-feed production, 1981-1983
(in thousands of tons)

Item	Sorghum			Maize No. 3			Barley		
	1981	1982	1983	1981	1982	1983	1981	1982	1983
Domestic production	4,875	3,925	6,307	-	-	-	559	396	533
Imports	2,062	1,371	3,409	239	-	879	-	-	548[a/]
Exports	-	-	-	-	-	-	-	-	-
Total[b/c/]	6,937	5,296	9,716	239	-	879	559	396	1,081[a/]

Sources: SARH, DGEA, Información Agropecuaria, 1982 (Mexico, D.F. 1984); CONASUPO, Comercialización de Productos Agropecuarios - Compras - Ventas - Existencias, enero - diciembre 1983 (Mexico, D.F.); CANACINTRA, La Industria Alimenticia Animal en México (Mexico, 1982); FAO, Production Yearbook (Rome, 1981); and SARH, Economic Analysis No. 9 (Mexico, D.F., September 1983).

a/ Including 463,000 tons of imported feed-grade wheat.
b/ Apparent consumption by commercial feed mills and on-farm mixing plants.
c/ Stock changes: n.a., hence assumed to be nil.

(b) Crop by-products

Table 13.4 summarizes data on supplies of grain by-products and oilseed meals for compound-feed manufacture.

Table 13.4

Mexico: supplies of crop by-products[a/], 1980-1983
(in thousands of tons)

Item	1980	1981	1982	1983
Grain by-products of which:	960	1,190	1,320	1,130
Wheat bran (25% of wheat supplies)[b/]	890	1,090	1,240	1,030
Rice bran (15% of paddy supplies)[c/]	70	100	80	100
Oilseed meals of which:	1,726	1,261	1,574	1,312
Soyabean meal, total	1,143	787	930	1,312
Domestic production[d/]	905	757	891	1,170
Imports	238	30	39	142
Cottonseed meal[c/]	231	244	160	n.a.
Safflower meal[c/]	267	138	192	n.a.
Sesame meal[c/]	55	67	62	n.a.
Sunflower meal[b/e/]	30	25	230	n.a.

Sources: SARH, DGEA, Información Agropecuaria, 1982 (Mexico, D.F. 1984); CONASUPO, Comercialización de Productos Agropecuarios - Compras - Ventas - Existencias, enero - diciembre 1983 (Mexico, D.F.); FAO, Production Yearbook (Rome, 1981); and SARH, Economic Analysis No. 9 (Mexico, D.F., September 1983).

a/ Including by-products used for straight feeding.
b/ From domestic and imported grains and seeds.
c/ Entirely of domestic origin. Imports are nil.
d/ From imported and domestic soyabeans (see table 13.5 for data on soyabean imports).
e/ ITC estimate based on information on sunflower seed supplies (see table 13.5 for data on imports).

(c) Other feed ingredients

According to CANACINTRA, several other raw materials are used for compound-feed preparation. However, quantitative data, summarized below, are available only on fish-meal.

		in tons	
Domestic production	88,000	85,000	95,000
Imports	60,000	65,000	65,000
Exports	-	-	-
Apparent consumption	148,000	150,000	160,000

3. Government policy

Feed ingredients and oilseeds are imported at the preferential exchange rate, which varies daily. On 14 August 1984, this rate was Pesos 173.30 to the United States dollar; the free-market rate was Pesos 190 to $1. No customs duties and taxes are applied on imports of feed ingredients.

Import operations are controlled by CONASUPO. This government institution is responsible for market regulation and has the import monopoly of basic commodities for human consumption and animal feeding. In addition, it buys domestically produced feedstuffs from farmers at fixed minimum prices. Farmers direct their sales to CONASUPO when the prices offered by private buyers (merchants, middlemen, etc.) are below this minimum.

The Government determines import needs by type of product and by quantity on the basis of domestic production. The Ministry of Agriculture then authorizes CONASUPO to import the goods concerned and the latter obtains the required foreign currency allocation from the Secretariat of Programming and Budgeting. CONASUPO subsequently issues invitations to tender to registered Mexican firms and representatives of foreign brokers. Feed millers buy imported ingredients from CONASUPO.

4. Imports

(a) Quantities and origins

Table 13.5 shows imports of feed ingredients during the period 1981-1984.

According to CONASUPO, 90-95% of the products listed in table 13.5 were imported from the United States owing to the proximity of this supply source, quick delivery, quality standards and well-established trade relations. Other supplying countries are Argentina (for sorghum, feed-grade wheat, soyabeans, sunflower seeds), Brazil (soyabeans), Canada (barley, rapeseed) and Australia (feed-grade wheat). Quantities from these countries range from about 50,000 tons/year to about 400,000 tons/year per product.

Table 13.5

Mexico: imports of feed ingredients, 1981-1984
(in thousands of tons)

	Average/year 1981-1983	1981	1982	1983	1984[a/] (half-year)
Grains and oilseeds					
Sorghum	2,300	2,062	1,371	3,409	412
Maize No. 3	370	239	-	879	n.a.
Barley	30	-	-	85	100
Wheat, feed-grade	150	-	-	463	220
Soyabeans	700	495	573	1,056	60
Sunflower seed	330	29	499	444	112
Rapeseed	n.a.	n.a.	n.a.	n.a.	80
Oilseed meals					
Soyabean	70	30	39	142	n.a.
Other	-	-	-	-	n.a.
Fish-meal	60	60	65	65	n.a.

Sources: Tables 13.3 - 13.4.

a/ CONASUPO and ITC estimates based on import contracts issued during the first half of the year.

(b) Import channels

Imported feed ingredients are generally shipped to Mexico by sea, those from the United States are also transported by rail. The main seaports, all equipped with adequate handling and storage facilities, are listed below.

Port	Location (Coast)	Remarks
Veracruz	Atlantic	-
Tampico	Atlantic	-
Coatzacualcos	Atlantic	-
Guaima	Atlantic	Most modern port
Manzanillo	Pacific	-
Mazatlán	Pacific	-
Tuxpan	Atlantic	For lighters of up to 5,000 tons

Transportation to the feed mills is by rail and road.

5. Exports

Exports of feed grains, oilseeds, oilseed meals, and other feed ingredients are nil or negligible.

D. The compound-feed industry

1. General

As mentioned earlier, compound-feed production in recent years amounted to about 9 million tons annually. The shares of on-farm mixing and commercial feed mills are about equal.

CANACINTRA provides a list of some 90 feed manufacturing companies, of which 17 belong to two multinational firms (Anderson Clayton and Purina) and five to Alimentos Balanceados de México (ALBAMEX), a State-owned company. Since imports are handled exclusively by CONASUPO, a list of addresses would be of little interest to prospective exporters.

2. Processing of feed ingredients

Table 13.6 gives the raw materials processed into compound feeds by commercial mills and on-farm mixing plants.

Table 13.6

Mexico: estimated consumption of feed ingredients[a/], 1981-1983
(in thousands of tons)

Ingredients	1981	1982	1983	Rounded yearly averages 1981-1983
Total of which:	9,574	7,866	14,115	10,500
Sorghum	6,937	5,296	9,716	7,300
Maize No. 3	239	-	876	370
Barley	559	396	618	520
Feed-grade wheat	-	-	463	150
Wheat bran[b/]	330	370	310	340
Rice bran	100	80	100	90
Soyabean meal	787	930	1,312	1,010
Cottonseed meal	244	160	202[c/]	200
Safflower meal	138	192	165[c/]	160
Sesame meal	67	62	65[c/]	60
Sunflower meal	25	230	128[c/]	130
Fish-meal	148	150	160	150

Sources: Tables 13.3 - 13.5.

a/ Excluding "other" ingredients.
b/ About 30% of the total supplies shown in table 13.4 is used in the production of compound feeds (about 70% is used for straight feeding).
c/ 1981-1982 average.

The total average shown in table 13.6 is higher than total compound-feed production (see section C.1). This can be explained by:

- The use of certain ingredients, in addition to wheat bran, for straight feeding;
- Stock changes, on which no statistical data are available;
- Lack of statistical data on on-farm mixing, which might have been underestimated.

In conclusion, the figures given in table 13.6 should be regarded as merely indicative of the actual situation.

Sorghum is the leading feed ingredient, followed by soyabean meal. These two items account for about 80% of all materials used for compound-feed processing. It can be seen from tables 13.5 and 13.6 that imported sorghum accounted for 25-35% of the sorghum used for processing during the period 1981-1983.

3. Quality standards and control

Import contracts for feedstuffs specify United States quality standards, which is a logical consequence of the dominant position of this supply source. Import shipments are controlled for quantity and quality by specialized firms in the seaports and border railway stations. Feed manufacturing companies have their own laboratories and other quality control services for feed ingredients and compound feeds.

4. Trade channels and procedures

Mexico's trade procedures for feed ingredients are direct consequences of government policy and of the fact that the Mexican import market is almost wholly in the hands of United States suppliers. For information on various aspects, the reader is referred to the following sections in this chapter.

Section	Subject
C.3	Exchange rates applicable to imports. Customs duties, taxes.
	CONASUPO, its monopoly of the import trade and its function as domestic-market regulator.
	Import procedures.
C.4 (a)	Supplying countries other than the United States.
C.4 (b)	Seaports, transport systems.

E. Import barriers and prospects for imports from developing countries

Imports of feed ingredients are authorized in accordance with the volume of domestic production. Prospective exporters would have to cope with a very competitive environment owing to the proximity of United States supply sources and their ability to offer short delivery times, low shipping costs, and quality guarantees. Imports of feed ingredients from developing countries are currently rather small and the extent to which Mexican feed producers and on-farm processers might be willing to switch from sorghum and other grains to grain substitutes (such as dried manioc), and from soyabean meal to other protein sources remains to be seen. Prospective suppliers must undertake intensive market promotion to have any chance of penetrating the market. According to discussions with the trade, such efforts have been minimal in recent years.

F. Conclusions and recommendations

In recent years, compound feed production amounted to about 9 million tons annually, divided equally between commercial feed mills and on-farm mixers. There are some 90 feed milling companies, of which 17 belong to two multinational firms and 5 to a State organization. The main ingredients used were sorghum (about 70% of the total), soyabean meal (10%), and other oilseed meals (5%). Sorghum imports averaged 2.3 million tons/year during 1981-1983, covering 25% of demand for this grain . The volumes of other feed-grain imports, i.e. maize No. 3, barley, and feed-grade wheat, varied widely from year to year. Except for soyabean meal, there were no noteworthy imports of oilseed meals. About 9% of oilseed meals used are produced in the country from imported and domestic soyabeans and sunflower seeds. Total oilseed imports in 1981-1983 ranged between 0.5 million and 1.5 million tons/year.

Imports are authorized in relation to domestic production, and are monopolized by a government institution (CONASUPO) which works on the basis of bids from registered Mexican suppliers and representatives of international brokers. Feed manufacturers buy domestically produced ingredients from the private sector and imported products from CONASUPO. There are no import duties on feed ingredients and such imports enjoy the lower (preferential) exchange rate.

Imports of feed ingredients from the United States account for 90-95% of total. Other supplying countries are Argentina, Australia, Brazil and Canada. Imports arrive mainly by sea; some consignments from the United States are transported by rail. There are no exports of feed ingredients and of oilseeds.

Import contracts are drawn up on the basis of United States quality standards and norms. Owing to the fact that the import trade is firmly in the hands of United States suppliers, with their comparative advantages of distance, delivery time, shipping costs, and quality guarantees, new suppliers would find it difficult to penetrate the Mexican market. Mexican feed manufacturers currently do not use grain substitutes such as manioc.

The willingness of Mexican feed manufacturers to diversify their raw materials needs to be tested through export promotion activities by suppliers of grain substitutes. Interested parties are advised to contact the institutions listed in the annex.

Annex

Mexico: selected addresses

Detailed information on the Mexican compound feed industry, imports and other matters can be obtained from the institutions listed below. Inquiries should be made preferably in Spanish or in English.

Cámara Nacional de la Industria de Transformación (CANACINTRA)
Sección de Fabricantes de Alimentos Balanceados para Animales

Street address:	Av. San Antonio 256 Col. Ampliación Nápoles Delegación Benito Juarez 03849 México, D.F.
Mailing address:	Apartado Postal No. 60-468 03849 México, D.F.
Telephones:	563 2962, 563 3400
Telex:	177 7468 CONAME

Compañía Nacional de Subsistencias Populares (CONASUPO)

Address	Departamento Comercial Centro Cuauhtemoc 06049 México, D.F.
Telephones:	518 6676 (Grains) 585 1820 (Import/export operations) 566 5061 (Information, documentation)
Telex:	017 72552 CONAME

Instituto Mexicano de Comercio Exterior (IMCE)

Street address:	Av. Alfonso Reyes 30, piso 13 Col. Condesa 06140 México, D.F.
Telephone:	286 0844
Telex:	017 74532) 74833) IMCEME

Secretaría de Agricultura y Recursos Hidráulicos (SARH)
Dirección General de Alimentación Animal

Street address: Campeche 285
México, D.F.

Telephones: 584 1934, 584 6020

The Agricultural Attachés at United States Embassies, for information on United States standards for agricultural products.

The Superintendent of Documents
United States Government Printing Office
Washington, D.C. 20402
United States of America
(for copies of official standards for agricultural products)

Chapter 14

VENEZUELA

A. Economic and social background

1. General country data[1/]

Area:	912,000 km^2
Population (1980):	13.8 million
of which:	
In urban areas	10.5 million (76%)
In rural areas	3.3 million (24%)
Economically active	4.4 million (100%)
of which in:	
Agriculture:	638,000 (14.5%)

2. Economic indicators[2/]

(a) Gross domestic product, 1980

At current prices:	Bolívares (Bs) 257,672 million ($59,924 million)
Per capita:	Bs 18,600 ($4,326)
Share of the agricultural sector:	6.0%

(b) Major trading partners

	Percentage share	
	In Venezuela's exports	In Venezuela's imports
United States	26.4	44.5
Netherlands Antilles	25.3	-
Japan	-	10.0
Canada	8.6	4.7
Italy	5.1	-

Imports of foodstuffs amounted to $1,100 million in 1982, representing about 50% of the country's food requirements.

1/ Source: Ministerio de Agricultura y Cría, Ministerio del Ambiente y los Recursos Naturales Renovables, and Oficina de Coordinación y Planificación de la Presidencia de la República: Plan de Desarrollo Agrícola a Largo Plazo, Primera Versión (Caracas, 1983).

2/ Banco Mercantil y Agrícola C.A., Venezuela in Figures (Caracas, 1981); Handelsbank N.W., Venezuela 1983 (Zurich, Switzerland); extracts from a publication of the National Westminster Bank (London, January 1984).

B. Livestock sector[3/]

1. Cattle

Data on the country's cattle population and supply of beef and dairy products during 1980-1982 are shown in table 14.1. Venezuela exports no live cattle and beef; it exports negligible quantities of dairy products.

Table 14.1

Venezuela: cattle numbers and slaughterings; supply of beef and dairy products, 1980-1982

Item	1980	1981	1982
Cattle population[a/] ('000 head)	10,791	11,486	11,756
of which:			
Calves (male and female)	2,115	n.a.	2,334
Steers	2,125	n.a.	2,428
Heifers	2,346	n.a.	2,485
Breeding bulls	244	n.a.	269
Cows[b/]	3,981	n.a.	4,240
Slaughterings[c/] ('000 head)	1,767	1,765	1,734
Beef supply/apparent consumption ('000 tons)	351	356	360
of which:			
Domestic production	346	344	337
Imports	5	12	23
Dairy products (million litres)			
Production of fresh milk	n.a.	1,699	1,864
of which for:			
Processing[d/]	n.a.	1,201	1,364
Fresh-milk consumption	n.a.	498	500
Imports, fresh-milk equivalent	620	1,196	926
of which:			
Powdered milk	582	1,103	825
Cheese	38	93	101
Total supply/apparent consumption of dairy products, fresh-milk equivalent	n.a.	2,895	2,790

Sources: Ministerio de Agricultura y Cría, Estadísticas Pecuarias (Caracas, July 1983) and Anuario Estadístico Agropecuario 1980 (Caracas, June 1984).

a/ Including about 14,000 head of buffaloes.
b/ Of which dairy cows about 40%, others (beef cattle) about 60%.
c/ Of which industrial slaughtering 70%, slaughtering in farms and villages 30%.
d/ Into pasteurized milk, cheese, powdered milk, and butter.

3/ Sources: Ministerio de Agricultura y Cría, Anuario Estadístico Agropecuario 1980 (Caracas, June 1984) and Estadísticas Pecuarias (Caracas, July 1983).

2. Pigs

The total number of pigs is about 2.5 million. Around 1.3 million are raised under intensive farming conditions, and the remainder under extensive systems.

The figures below summarize data on domestic production and imports of pork and pork products. Exports of fresh and processed pork are negligible.

	1980	1981	1982
Slaughterings ('000 head)	1,524	1,676	1,869
Pork production ('000 tons)	82.3	90.5	101.5
Imports of pork and pork products ('000 tons)	11.3	14.1	4.1
Total supply/apparent consumption ('000 tons)	94	105	106

3. Sheep, goats and rabbits

Sheep and goats number about 300,000 and 1 million head respectively. Data on slaughterings and meat supplies are shown in table 14.2.

Table 14.2

Venezuela: supplies of mutton, goat meat, and rabbit meat, 1980-1982

Supplies	1980	1981	1982
Sheep slaughterings ('000 head)	106.4	109.7	106.9
Mutton production ('000 tons)	1.2	1.3	1.4
Goat slaughterings ('000 head)	258.3	269.1	287.3
Goat meat production ('000 tons)	2.8	2.9	3.2
Rabbit slaughterings ('000 head)	n.a.	431.4	487.5
Rabbit meat production ('000 tons)	n.a.	0.7	0.8
Total production ('000 tons)	n.a.	4.9	5.4
Imports (mutton and goat meat) ('000 tons)[a/]	0.1	0.2	0.5
Total supply: apparent consumption of mutton, goat meat and rabbit meat ('000 tons)	n.a.	5.1	5.9

Sources: Ministerio de Agricultura y Cría, Estadísticas Pecuarias (Caracas, July 1983) and Anuario Estadístico Agropecuario 1980 (Caracas, June 1984).

a/ Exports: negligible.

4. Poultry

The total broiler population at a certain point in 1982 was 37.2 million. Production during the year amounted to 183.4 million, representing a fivefold turnover. Data on production of poultry meat during 1981-1982 are shown in table 14.3. According to the Ministry of Agriculture, the difference between production and slaughterings represent the broilers remaining at the end of the year.

Table 14.3

Venezuela: supply of poultry products, 1981-1982

Item	1981	1982
Poultry meat		
Broilers slaughtered (millions)	156.3	176.3
Dressed broilers ('000 tons)	234.4	264.4
Hens slaughtered (millions)	13.1	13.5
Dressed hens ('000 tons)	30.7	33.6
Imported poultry meat ('000 tons)[a/]	20.2	7.1
Total supply/apparent consumption of poultry meat ('000 tons)	285	305
Eggs (millions)[a/]		
Domestic production	2,697	2,939
of which for:		
Breeding	300	333
Consumption	2,397	2,606
Imports for consumption	15	-
Total supply/apparent consumption[b/]	2,412	2,606

Source: Ministerio de Agricultura y Cría, Estadísticas Pecuarias (Caracas, July 1983).

a/ Exports: negligible.
b/ Taking stock changes into account.

C. Supply of, and demand for, compound feeds

1. Overview

The Asociación Venezolana de Fabricantes de Alimentos Concentrados para Animales (AFACA), the Venezuelan feed-milling association, estimates domestic production and consumption of compound feeds inclusive of protein and mineral concentrates as follows:

	Average 1981-1983 ('000 tons)	% of total
Total	2,500	100
of which:		
Poultry feeds	1,625	65
Pig feeds	625	25
Cattle feeds	150	6
Other	100	4

Exports and imports of compound feeds are negligible. On-farm mixing is reported to be small compared to industrial feed milling.

2. Supply of feed ingredients

(a) Grains

Of the grains, Venezuela's compound-feed industry uses maize and sorghum almost exclusively. A few thousand tons a year of other grains such as oats and barley are used for special purposes.

Data for the period 1981-1983 on supplies of maize and sorghum are shown in table 14.4.

Table 14.4

Venezuela: supplies of maize and sorghum, 1981-1983
(in thousands of tons)

Item	Maize			Sorghum		
	1981	1982	1983	1981	1982	1983
Domestic production	452	501	449	347	377	364
Imports	1,008	1,393	1,030	767	579	276
Exports	-	-	-	-	-	-
Total supplies[a/]	1,460	1,894	1,479	1,114	956	640
Use						
Human consumption	750[b/]	750[b/]	750[b/]	-	-	-
Compound-feed manufacture	700	1,144	729	1,114	956	640

Sources: Ministerio de Agricultura y Cría; ITC estimates.

a/ Assuming no stock changes.
b/ Of which about 650,000 tons/year are processed industrially into maize flour for human consumption.

(b) Agro-industrial by-products and other ingredients

An estimated 30,000 - 50,000 tons a year of by-products of animal origin - such as meals of meat, bone, and blood - are produced, according to information obtained during the field investigations for this study. In addition, a few thousand tons of fish-meal are said to be produced annually.

Data on supplies of crop by-products are shown in table 14.5.

Table 14.5

Venezuela: supplies of crop by-products, 1981-1983
(in thousands of tons)

Item	1981	1982	1983
Grain by-products of which:	552	514	506
Wheat bran (25% of wheat supplies[a/])	220	193	209
Rice bran (15% of domestic paddy[b/])	102	91	67
Maize by-products[c/]	230	230	230
Oilseed meals of which:	191	218	143
Domestic production[d/] of which:	75	71	75
Soyabean meal	35	35	39
Cottonseed meal	5	4	7
Sesame	35	32	29
Imports[e/]	116	147	68

Sources: Ministerio de Agricultura y Cría; ITC estimates.

a/ Largely imported; domestic production is negligible.
b/ Imports and exports: nil.
c/ 35% of the volume of maize processed into flour (see table 14.4).
d/ Estimated on the basis of oilseed supplies and average yields of meal. All soyabeans are imported; all supplies of cottonseed and sesame are of domestic origin.
e/ Soyabean, groundnut, copra and sesame meals; soyabean meal accounts for an estimated 80-90% of the total.

No evidence could be obtained of significant use of other crop and/or industrial by-products.

3. Government policy

Tables 14.4 - 14.6 indicate that Venezuela's feed industry is heavily dependent on imported ingredients.

Imported grains, oilseed meals and other feedstuffs are in the category of essential products, which include foodstuffs and raw materials for food production. Hence, feed ingredients are imported at the preferential exchange rate, which in August 1984 was Bs 4.30 to the United States dollar. An intermediate exchange rate (Bs 7.50 = $1) is applied to semi-essential imports such as machinery and chemicals. The free-market exchange rate in August 1984 was Bs 12 = $1.

The compound-feed industry is obliged to purchase domestically produced feed ingredients before it can obtain import licences. The following is typical of the situation: if a feed manufacturing company needs 100,000 tons of grain in a given year and domestic production covers 40% of total demand in that year, it will have to buy 40,000 tons of maize and sorghum of domestic origin as a precondition for obtaining an import licence for the remaining 60,000 tons. The percentages are fixed annually on the basis of domestic production.

4. Imports

Imports of feed ingredients during 1981-1983 are shown in table 14.6.

Table 14.6

Venezuela: imports of feed ingredients, by quantity, 1981-1983

Type	'000 tons			% of total supplies		
	1981	1982	1983	1981	1982	1983
Maize a/	1,008	1,393	1,030	70	74	70
Sorghum	767	579	276	69	61	43
Oilseed meals b/	116	147	68	61	67	48
Other	-	-	-	-	-	-

Sources: Tables 14.4 and 14.5.

a/ Including maize for human consumption.
b/ Soyabean meal: 80-90% of total.

The import market is dominated by the United States which supplies almost all imported maize (yellow corn No. 3), sorghum (No. 2), soyabeans and soyabean meal at United States export prices. This dominance is attributed to the supplier's proximity and the resulting transport periods of only 4-5 days. In contrast, shipments from former suppliers, i.e.

Argentina (chiefly of sorghum) and Brazil (soyabean meal), took 20-25 days, this being one reason for the cessation of the flow of supplies from these countries. The trade reports that failure to guarantee conformity with Venezuelan quality requirements, for a crude protein content of 48% in soyabean meal for example, has also led to a drop in supplies from certain origins.

5. Exports

Venezuela exported virtually no feed ingredients and compound feeds during the period 1981-1983. The exception was maize, which it traded in small quantities of 100-400 tons yearly.

D. The compound-feed industry

1. General

There are 30 compound-feed manufacturing companies, of which 27 are members of AFACA, the feed-milling association. AFACA represents the interests of the industry vis-à-vis government ministries and other institutions. Five large feed manufacturing companies account for about 2 million tons/year or 80% of the country's total output of compound feeds. These are: Grandes Molinos de Venezuela, S.A. (Gramoven); Productos de Maíz, S.A. (Promasa); Protinal, C.A.; Purina de Venezuela, C.A.; and Super "S", C.A.

A list of addresses is given in the annex to this chapter.

Most feed mills, and hence most compound-feed production, are concentrated in the central region of the country, i.e. near Caracas, the coastal area and adjacent states.

2. Processing

Table 14.7 shows the quantities of raw materials processed into compound feeds.

The figures in the table are assumed to be equal to total supplies (see tables 14.4 - 14.6). The annual average of 2.58 million tons of feed ingredients processed is close to the AFACA estimate of annual production of compound feeds (see section C.1).

Maize and sorghum are to a certain extent exchangeable in feed formulae. The quantities processed and imported of both grains depend on two factors:

- Domestic production and, specifically, its impact on imports (see section C.3);
- The relation between the United States prices of maize (yellow corn No. 3) and sorghum (No. 2), c. & f. Venezuela, which in turn depends on the supply and demand situation in that supplying country.

Table 14.7

Venezuela: raw materials for compound-feed manufacture, by quantity, 1981-1983
(in thousands of tons)

Ingredient	1981	1982	1983	Rounded average/year 1981-1983
Total of which:	2,657	2,932	2,118	2,580
Maize	700	1,144	729	860
Sorghum	1,114	956	640	900
Grain by-products[a/]	552	514	506	520
Oilseed meals	191	218	143	200
Other[b/]	100	100	100	100

Sources: Tables 14.4 - 14.5; ITC estimates.

a/ Wheat bran, rice bran, and maize by-products.
b/ Fish-meal, slaughterhouse by-products, mineral salts and micro-ingredients (ITC estimates).

3. Quality standards and control

The government agency in charge of quality standards for feed ingredients and compound feeds is COVENIN, the bureau of industrial norms and standards. These standards were under review in August 1984; parties interested in obtaining copies are advised to write, preferably in Spanish (although English is also acceptable), to COVENIN, whose address is as follows:

Comisión Venezolana de Normas Industriales (COVENIN)
Ministerio de Fomento
Torre Sur, Centro Simón Bolivar
Caracas, Venezuela

Quantity and quality controls of imported feed ingredients are carried out on behalf of importers by specialized firms in the ports of entry. In addition, most feed manufacturing companies have their own laboratories and other quality control services for raw materials and finished products.

E. Trade channels and practices

1. Trade infrastructure

There are four ports of entry for imported feedstuffs, namely:

Port	Approximate percentage share in total imports of feed ingredients
Puerto Cabello	70
Maracaibo	15
La Guaira	10
Guanda	5

With the exception of Guanda port, all have silos. Handling facilities are adequate and are efficiently operated and managed. Transport from the ports to the feed mills is exclusively by road and is undertaken by specialized firms operating bulk-load trucks of up to 30-35 tons.

2. Trading systems and regulations

The purchase of domestic sorghum and feed-grade maize is a precondition for obtaining an import licence for feed ingredients. The larger compound-feed producers have procurement departments; medium-sized and small companies (i.e. those whose annual outputs range between a few thousand and 20,000 tons) usually form pools for joint-import operations in order to attain economies of scale. These joint operations are generally organized and handled by AFACA.

Import contracts are issued on the basis of public bids and negotiations with Venezuelan representatives of foreign brokers. The import market is in the hands of exporters domiciled in the United States.

3. Trade barriers

There are comparatively few import restrictions. Among them are the quantitative restrictions and the import licensing system discussed in section C.3 of this chapter. A customs duty is imposed, which in August 1984 was equivalent to 3.5% of the c. & f. value of consignments. Furthermore, there are quality regulations, which as stated in section D.3, are undergoing review.

4. Prospects for imports from developing countries

As mentioned, the Venezuelan import market for feed ingredients is almost completely dominated by suppliers from the United States, although it is open in principle to other suppliers. Prospective suppliers would have to compete with these suppliers on the basis of quality, delivery terms, size of consignments, and efficiency in export operations.

F. Summary and recommendations

In recent years, the Venezuelan compound feed industry produced about 2.5 million tons of compound feeds a year. Total imports of feed ingredients amounted to about 1.8 million tons/year, chiefly from the United States. Imported ingredients are maize (1.15 million tons/year inclusive of maize for human consumption), sorghum (550,000 tons/year), oilseed meals (110,000 tons/year, chiefly soyabean meal) and small quantities of other products. Imports and exports of compound feeds, as well as exports of feed ingredients, are nil or negligible.

The compound-feed industry consists of 30 companies, of which 27 are members of AFACA, the Venezuelan feed milling association. Five large companies account for about 80% of total production of industrial compound feeds. These large companies handle their own import operations. AFACA offers an import service to the smaller companies which usually form pools in order to obtain large-sized import contracts at more advantageous terms.

Shipments of imported feed ingredients are handled by four seaports, with Puerto Cabello taking about 70% of the total. Port facilities are adequate and are efficiently managed and operated. Transport to the feed mills is exclusively by road.

The Venezuelan import market for feed ingredients is characterized by comparatively few restrictions and trade barriers. Furthermore, the lowest (or preferential) currency exchange rate is applied to imported feed ingredients.

Import contracts are drawn up on the basis of public bidding and subsequent negotiations with international brokers. Any supplier is entitled to participate in these bids. New suppliers would have to compete with the predominant United States supply sources.

Prospective exporters should contact AFACA, the feed milling association whose address is given in the annex.

Annex

Venezuela: selected addresses

Asociación Venezolana de Fabricantes de Alimentos Concentrados para Animales (AFACA)
Centro Comercial Ciudad Tamanaco
Torre A, Piso 5, Oficina 502
Chuao, Caracas
Tel: 921 512, 922 045
Telex: 21873 afaca

Some member companies

Grandes Molinos de Venezuela, S.A. (GRAMOVEN)
Torre La Previsora
Piso 8 - Sábana Grande
Caracas - Distrito Federal
Tel: 782 2211 (Central)
Telex: 21158 GRAMP
61239 GRAMP (Maracaibo)

Productos de Maíz, S.A. (PROMASA)
Av. Francisco de Miranda
Cruce con Calle A
Los Ruices Norte, Frente a la Renault
Caracas
Tel: 239 6078, 239 3378
340 930
Telex: 25284 PROMA

Planta en Chivacoa
Encrucijada Chivacoa
Apartado 115
San Felipe, Edo. Yaracuy
Tel: (051) 83 201-206
83 201-211
Telex: 59176 PROMA

Protinal C.A.
Calle Chicago
Con Autopista del Este
Edf. Empacadora Avícola
La California Sur
Caracas
Tel: 221 011 Central
Telex: 25235

Protinal Valencia, C.A.
Redoma San Blas, El Morro
Edo. Carabobo
Apartado Correo 83
Código Postal 2001
Valencia
Telex: 45129

Protinal Zulia, C.A.
Av. 17 Los Hatillos 121-151
Código Postal 4001
Maracaibo-Edo. Zulia
Tel: (061) 229 735, 229 744
Telex: 61146

Purina de Venezuela, C.A.
Av. Gloria No. 15, El Bosque
Sábana Grande-Caracas
Apartado Correo 51030
Caracas
Tel: 722 834, 722 837 Central
Telex: 21585

Super 'S' C.A.
Centro Colgate
Torre Sur, Piso 4
Los Ruices, Caracas
Tel: 239 6211, 239 6810
239 6621, 239 3902
Telex: 25126 MONAC

Super 'S' C.A. (Valencia)
Tel: (041) 301 311-16 Central
331 775, 334 647
336 971-72
Telex: 45356