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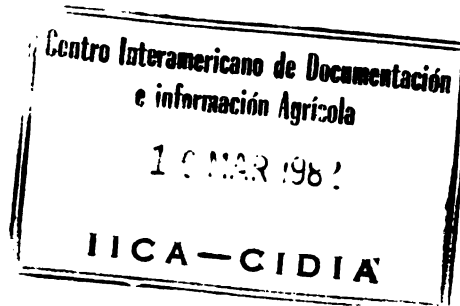
OLIVE RIVER RUN-OFF PLOTS DESCRIPTION OF THE EXPERIMENT

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DESCRIPTION OF THE FAUNA
OF THE ISLAND OF JAMAICA

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OLIVE RIVER RUN-OFF PLOTS
DESCRIPTION OF THE EXPERIMENT

by

DR. BO-MYEONG NOO
SOIL CONSERVATION SPECIALIST
IICA/JAMAICA

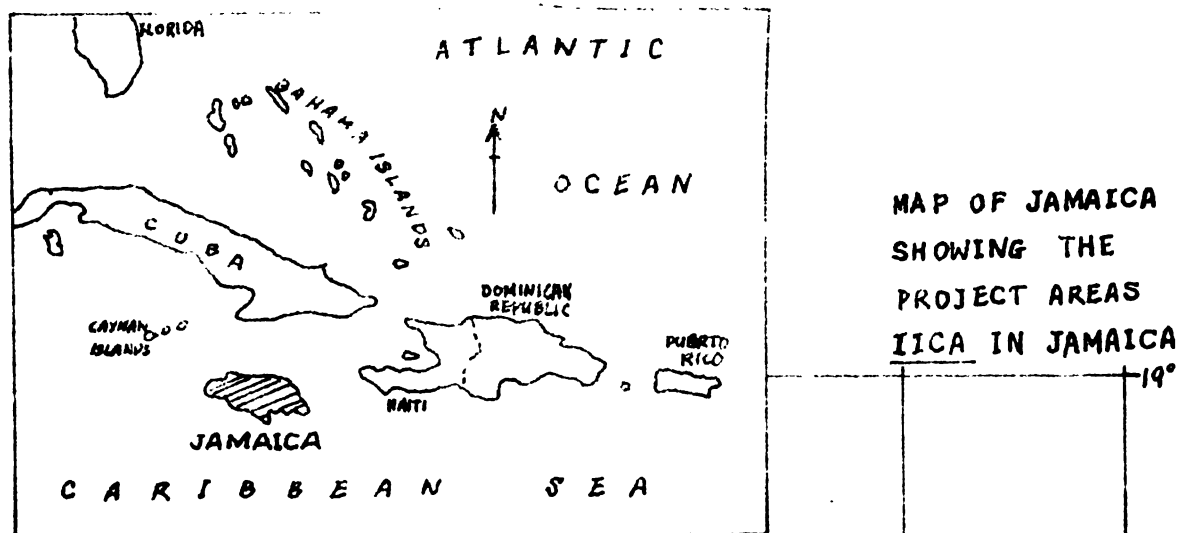
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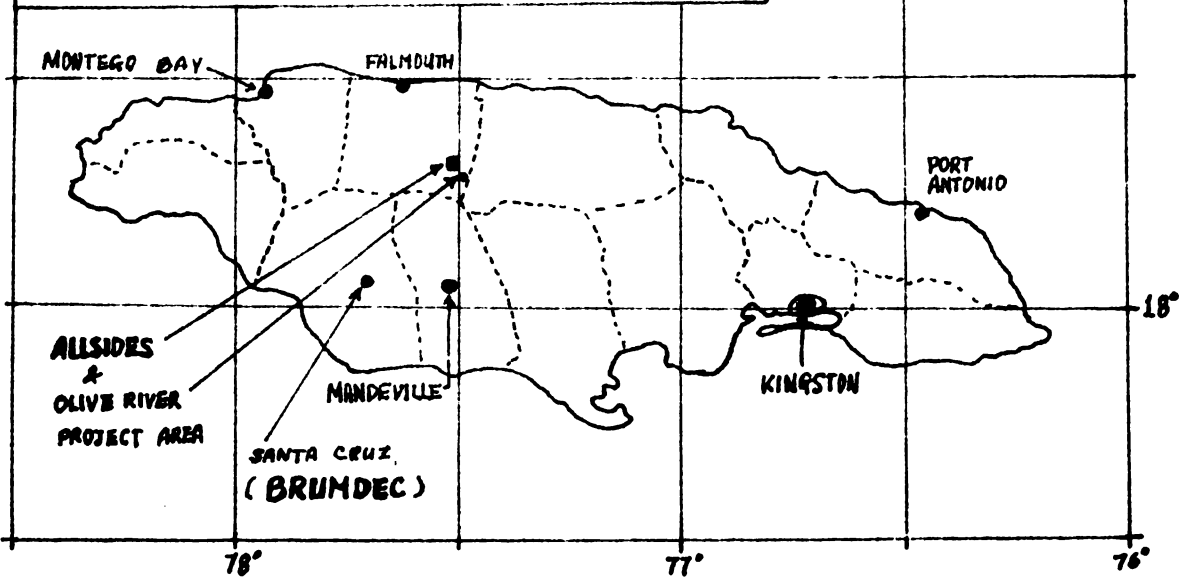
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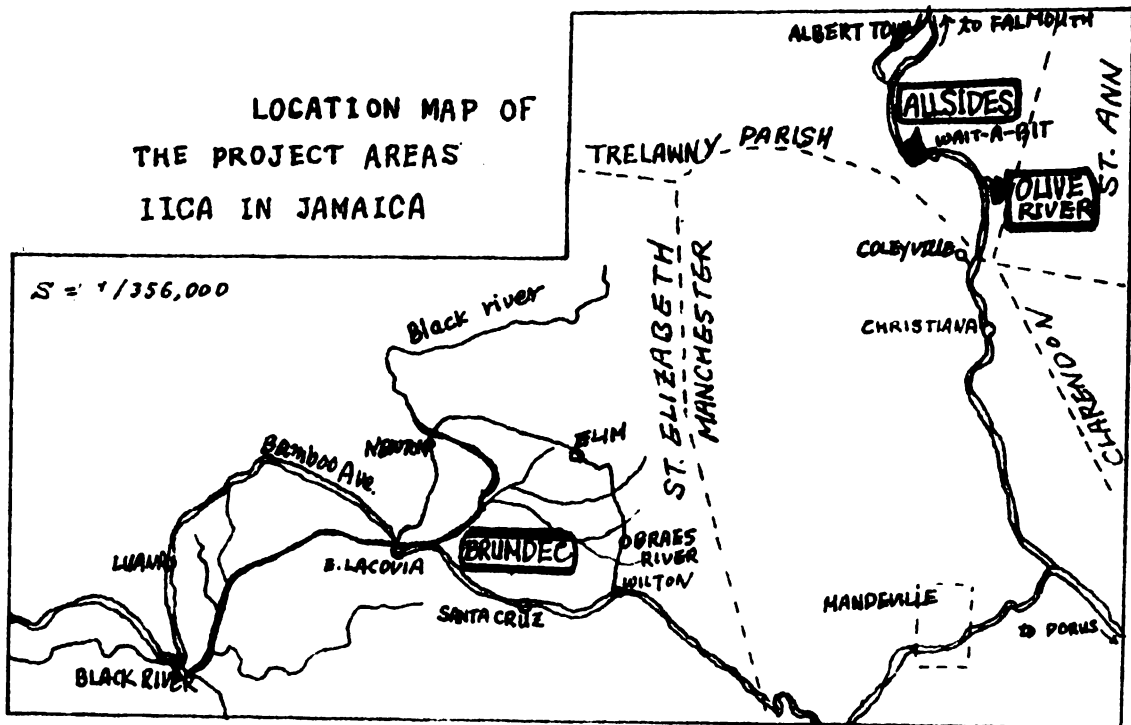
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MAP OF JAMAICA
SHOWING THE
PROJECT AREAS
IICA IN JAMAICA



LOCATION MAP OF
THE PROJECT AREAS
IICA IN JAMAICA



Dr. Woo

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is essential for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for a systematic approach to data collection and the importance of using reliable and valid measurement instruments.

3. The third part of the document describes the process of data analysis and interpretation. It discusses the various statistical techniques used to analyze the data and the importance of interpreting the results in the context of the research objectives.

4. The fourth part of the document discusses the importance of reporting the results of the research. It emphasizes that the results should be presented in a clear and concise manner, using appropriate visual aids to enhance the understanding of the findings.

5. The fifth part of the document discusses the importance of evaluating the research process. It highlights the need for a critical and reflective approach to the research process, recognizing the limitations and strengths of the study.

6. The sixth part of the document discusses the importance of ethical considerations in research. It emphasizes that researchers must adhere to ethical principles and standards to ensure the integrity and credibility of their work.

7. The seventh part of the document discusses the importance of disseminating the results of the research. It highlights the need for researchers to share their findings with the academic community and the public, contributing to the advancement of knowledge and practice.

8. The eighth part of the document discusses the importance of ongoing research and evaluation. It emphasizes that research is an ongoing process, and researchers must continue to evaluate and refine their work to ensure its relevance and effectiveness.

FOREWORD

As a result of conversations initiated by the IICA Office Director with the Ambassador of Korea, Dr. Woonsong Choi, a tripartite agreement between the Government of Jamaica, the Government of Korea and IICA was signed in August of 1979.

Based on the above agreement, Dr. Bo Myeong-Woo was brought to work with IICA, and he was asked by IICA to monitor the Olive River/Jamaica Experimental Station.

Dr. Woo is Professor of Forestry and Soil Conservation at the Seoul National University. He finishes his contract with IICA in February 1982 and returns to teaching.

Dr. Woo has demonstrated ability, capacity and resilience in dealing with the day to day problems. All the staff of IICA/Jamaica have great personal and professional regard for him.

IICA/Jamaica welcomes this paper to the IICA/Jamaica collection "Agriculture in Jamaica", and wishes Dr. Woo continued success in his work in Korea.

Percy Aitken-Soux
Director

1947

THE UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

OFFICE OF THE ASSISTANT SECRETARY FOR
GENERAL INVESTIGATIONS

MEMORANDUM FOR THE ASSISTANT SECRETARY FOR
GENERAL INVESTIGATIONS

DATE: 10/15/47

TO: ASSISTANT SECRETARY FOR GENERAL INVESTIGATIONS

FROM: [Name]

SUBJECT: [Subject]

Very truly yours,
[Signature]

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the organization's finances and for ensuring compliance with applicable laws and regulations.

2. The second part of the document outlines the specific procedures that should be followed when recording transactions. It details the steps from the initial receipt of a document to the final entry in the accounting system, highlighting the need for consistency and attention to detail throughout the process.

3. The third part of the document addresses the issue of internal controls. It explains how a robust system of internal controls can help to prevent errors and fraud, and how these controls should be designed and implemented to ensure the integrity of the financial reporting process.

4. The fourth part of the document discusses the role of technology in modern accounting. It explores how the use of accounting software and other digital tools can improve the efficiency and accuracy of financial record-keeping, while also noting the importance of maintaining appropriate security measures to protect sensitive financial data.

5. The fifth part of the document provides a summary of the key points discussed and offers some final thoughts on the importance of a strong financial reporting system for the long-term success of any organization.

I. BACKGROUND - SOIL CONSERVATION

Soil erosion and sedimentation are the most important factors affecting the production of food crops in the hillsides of Jamaica.

Technology for the control of erosion and sedimentation has been underway for many years in the developed countries. Originally, the research efforts focused primarily on agricultural land.

The first scientific investigation of soil erosion was carried out by the German, Wollay (1877-1895). Small plots were used to measure a wide range of effects such as:

- vegetation and surface mulches on the interception of rainfall;
- deterioration of soil structures;
- effects of soil type;
- slope on run-off plot; and
- erosion.

Since then, the bulk of activities relating to soil erosion research has been centered mainly in the United States of America. The first quantitative experiments were laid down by the Forest Service in 1915 in Utah. They were followed by those of Miller in Missouri in 1917. As a result of long-term research work, the main features of the erosion process were identified and mathematically enumerated. The former initiated today's quantitative scientific investigation.

In the West Indies, some experiments on rates of soil erosion have been conducted in Puerto Rico and Trinidad and Tobago, by the University of the West Indies in 1973 and in Barbados by the IICA Office in 1978.

In Jamaica, a soil loss experiment on the Wait-A-Bit Clay loam (Map No. 95) was conducted by Mitchel, USAID soil adviser, at James Hill, Central Clarendon. This experiment indicated that a bare escarpment lost an average of 1.4 inches annually in a three-year period (1962-1965). The method involved the placement of metal spikes in the ground.

In cultivated watersheds (Yallahs), the rate of erosion was measured by Champion (1966). Estimated soil loss from the Upper Yallahs Valley was 40 tons per acre per year, or 14 acre-feet per square mile per year.

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Run-off experiment plot studies have been conducted at the Smithfield Demonstration Centre in Hanover since 1969 by the UNDP/FAO JAM 505 Project. A site with a slope of 17° was selected and subjected to four treatments, using yam as the sole crop. The average soil loss from the check plot was 54 tons of oven dry soil per acre per year. The bench terraced plots' loss was 7 tons per acre per year. For other types of soil conservation treatments, soil losses varied from 7 to 16 tons per acre per year. No significant difference was found in annual run-off water among all the plots. The run-off water percentage was approximately one-third of the annual rainfall received by the plot in a cropping year.

In 1977, the Government of Jamaica requested IICA's assistance in developing viable systems of production for newly terraced lands. After the experiments were completed, and recognizing the high cost required to build bench terraces, IICA began in 1980 to test the viability of farming systems using systems of soil conservation other than terraces.

The Olive River Soil Conservation Demonstration Centre is located within the Lowe River area of Trelawny. The Project is aimed at the establishment of demonstration plots for farming systems with soil conservation methods other than bench terracing, observing the variables of:

- productivity
- cost of soil conservation
- soil loss

The soil at the Olive River Demonstration Centre is classified locally as the Wait-A-Bit clay (Map No. 95) and the slope of the run-off plots is 20° .

The size of a run-off plot is 2.7 metres wide by 15.8 metres along the slope producing 40 square metres of rectangular run-off area, which is equivalent to 1/100th of an acre on 20° slope.

Inquiries in the field as well as at the IICA Office in Kingston are often received concerning procedures for initiating run-off plots and

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This not only helps in tracking expenses but also ensures compliance with tax regulations. The second part of the document provides a detailed breakdown of the company's financial performance over the last quarter. It includes a comparison of actual results against budgeted figures, highlighting areas of both strength and weakness. The third part of the document outlines the company's strategic goals for the upcoming year. It focuses on increasing operational efficiency, expanding market reach, and improving customer satisfaction. The final part of the document provides a summary of the key findings and recommendations. It suggests that the company should continue to invest in research and development to stay ahead of the competition. Additionally, it recommends that the company should focus on strengthening its financial position by reducing unnecessary expenses and improving cash flow management.

criteria for the design of the plots. This publication is a follow-up to the IICA/Jamaica publication "Crop Production on Hillsides using Non-Bench Terracing Alternative Measures for Soil Conservation." This publication will present step-by-step procedures for establishing run-off plots. It will follow the installation and construction methods used at the Olive River Soil Conservation Demonstration Centre.

II. CONSIDERATIONS AND DETERMINATIONS FOR THE RUN-OFF PLOT CONSTRUCTION

The main components of a run-off experiment plot are: (1) site selection (2) size of plot (3) slope (4) boundary walls (5) earth wall (6) side-pavement (7) collection trough and conveyance pipe (8) storage tanks and outlet pipes, and (9) rain gauge installation.

The principal considerations for determining the appropriate specifications of each component of the run-off plot design are described. Additionally, the main procedures and reasons for adoption of the specifications are given.

1. Site Selection for the Construction of the Run-off Plot

In general, the most suitable site for installation of the run-off plot is where the slope is sufficient to place the tanks close to the low border of the run-off plot, and to use side ditches to drain away run-off water. The slope topography will dictate the excavation required for the installation of equipment.

The extreme situation can be reached where the slope flattens out below the plots. In this situation, it is necessary that the tank site be dry, and drainage ditches must be used to ensure this. In allocating the plots, the run-off experimental plots should be laid out in blocks so that plots are separated only by the boundary walls. Also, enough space should be provided for appropriate replications of the treatments, at the same site.

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2. Size of Plots

The ideal size plot for measuring surface run-off and soil sediment should be a miniature of the natural watershed. Size of a plot affects significantly the process of soil erosion and carrying of run-off materials from the plot.

In general, the run-off experimental plot could be built in a square or rectangular shape. Square plots have the advantage that the ratio of plot border to plot area is less than for rectangular plots. The main advantage of a rectangular plot is that a larger slope is provided for a given area.

The run-off experiment facilities consist of eight (8) sets of run-off plots and receiving tanks. Under the consideration of the maximum utilization of the given topography in the site where the land surface slope is nearly 20° within the land of the Olive River Centre, the size of one plot was determined as 2.7 metres (8.9 ft) wide by 15.8 metres (52.5 ft) long, along the slope (14.8 metres horizontally) making 40 square metres (435 ft^2) of run-off producing area which is 1/100th of an acre and/or 1/250th of a hectare on 20° degree sloping land.

The relationship between the slope and horizontal area are shown in Figure 1.

3. Boundary Walls

In general, various devices such as (a) shallow drains (b) earth mounds (c) metal sheet strips, and (d) wooden planks, have been used on the run-off experimental plots elsewhere to isolate the actual plot from its border area.

The following disadvantages, among others, are generally recognized in relation to the following types of boundary walls:

- (a) drain boundaries: plot run-off water may be diverted into them;
- (b) earth mound boundaries: heaping up the earth leaves a channel which concentrates run-off

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and tanks to scour, or alternatively to avoid forming the channel, extra soil may be carted onto the plots, but this is a laborious process when several cultivations are required during the season.

- (c) metal sheet boundaries: it is sometimes expensive and dangerous to the operators of the run-off plots; and
- (d) wooden plank boundaries: wood is very susceptible to termite infestation and damage.

At Olive River a set of eight (8) contiguous run-off plots (as shown in Figure 2) was originally designed and constructed along the slope to accommodate four soil conservation and cropping system treatments. Each plot was delineated by concrete block boundary walls. The height of the boundary wall is 35 cm from the soil surface and the width, including the cement mortar lining work is 15 cm.

At the lower end of the plot boundary, the concrete block (lower end wall) is keyed into the collection trough (a metal sheet tongue) and a small heap of earth packed round to prevent leaks.

The concrete block boundary walls are rather long-life structures for conducting the run-off studies in the same conditions of land slope (20°). These walls are permanent and also immovable when ploughing, cultivating and other operations are carried out. Land preparation operations within the plots are carried out manually.

The material used in the boundary walls was hollow concrete blocks 40 cm long, 14 cm wide, and 18 cm high, which are commonly used in general engineering works in Jamaica (locally called $5\frac{1}{2}$ inch blocks).

The main specifications for the boundary wall construction are as follows:

- (a) Purpose: for separating and protecting each run-off plot;
- (b) Dimension: Height - 35 cm above the ground surface, and 5 cm under ground..
Width - 15 cm wide (14 cm + 1 cm of cement mortar lining).

The following information was obtained from a review of the records of the United States Forest Service, Department of Agriculture, for the year ending December 31, 1919, concerning the management and sale of timber lands within the National Forests of the State of California.

The total area of National Forests in California is approximately 44,000,000 acres. During the year ending December 31, 1919, the total area of National Forests which were sold or disposed of was approximately 1,200,000 acres. The total amount of money received from the sale of these lands was approximately \$1,500,000.

The following table shows the amount of money received from the sale of timber lands in California for each year from 1914 to 1919:

Year	Amount Received
1914	\$2,500,000
1915	\$3,000,000
1916	\$4,000,000
1917	\$5,000,000
1918	\$6,000,000
1919	\$1,500,000

- (c) Shape of top crest: U-shaped cross section which serves to drain the rainfall water from the crest of the up-and-down wall.
- (d) Materials: concrete block (5½ inch block)
- (e) Masonry method: stand on-end method.
- (f) Lining works: After the masonry work with the concrete blocks, lining with cement mortar on the portion above the ground is completed. Thickness of the lining is about 0.5 cm at each side of the wall.

4. Earth Wall

In addition to the concrete boundary wall, a one-foot wide earth embankment wall along the perimeter outside of the boundary wall (both side-walls and top wall) was constructed to support the boundary wall, and to protect again against seepage. After the embankment construction, carpet grass (Axonopus compressus) was transplanted to protect the earth s surface. A cross section of an earth wall is shown as "ew" in Figure 3.1.

The purpose and specifications of the earth wall are as follows:

- (a) Purpose: for supporting the concrete block boundary wall of the perimeter of the plot.
- (b) Specifications:
 - dimensions: height - 30 cm above the ground surface; width - 30 cm attached to the wall.
 - materials: earth embankment, and protected by planting of carpet grass.

5. Side Pavement

Narrow concrete pavements at only one side of the boundary wall of each plot having a width of 20 cm and a depth of 11 cm underground, were constructed as foundation work for the boundary walls. The construction of the side pavements has practical advantages such as:

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- (a) for retaining the plot boundary wall;
- (b) for preventing scouring erosion along the boundary wall;
- (c) for use as a cultivating operation path, and
- (d) for separating the neighbouring plots.

A cross-section of a side pavement is shown in Figure 3.2.

The purpose and specifications of the side pavement are as follows:

- (a) Purpose: for preventing scouring erosion along the boundary wall.
- (b) Specifications:
 - dimensions: thickness - 11 cm under surface of ground.
width - 20 cm on only one side of the boundary side wall.
 - materials: concrete, mixed at the field.

6. Run-Off Collection Trough and Conveyance Pipe

The collection trough for run-off materials serves as a collection area across the bottom of the plot, and as a conduit for run-off material to the storing and sampling unit tanks.

The galvanized sheet has a distinct advantage of being malleable. This makes it possible to adjust its height to the level of the lower-end boundary of the plot as soil subsides during erosion.

The collection trough acts, therefore, as a leading channel for the run-off materials. This trough was designed to reach across the entire width of the plot, and the major elements of this design are depth, width and bottom slope.

Design slope can be determined in two ways, depending on whether a measuring flume is used or whether run-off is conducted directly to the sediment tank. If a flume is used, depth of the trough is controlled by the size of the approach channel required by the flume. The design is, therefore, started by choosing the type and size of the flume necessary to handle maximum run-off. This would be the depth of the

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4. The fourth part of the document discusses the importance of communicating the results of the analysis to the relevant stakeholders. It emphasizes that clear and concise communication is essential for ensuring that the findings are understood and acted upon.

5. The fifth part of the document discusses the various challenges and limitations associated with data collection and analysis. It highlights the need for a careful and thoughtful approach to data collection and analysis to ensure that the results are accurate and reliable.

6. The sixth part of the document discusses the various applications of data collection and analysis in different fields and industries. It highlights the wide range of uses for data and the importance of tailoring the approach to the specific needs of the organization.

7. The seventh part of the document discusses the various ethical considerations associated with data collection and analysis. It emphasizes the need for transparency and accountability in the use of data and the importance of protecting the privacy and confidentiality of the data.

8. The eighth part of the document discusses the various future trends and developments in data collection and analysis. It highlights the increasing importance of data and the need for organizations to stay up-to-date on the latest developments in the field.

9. The ninth part of the document discusses the various best practices for data collection and analysis. It highlights the importance of using a systematic approach to data collection and analysis and the need for clear communication and documentation.

10. The tenth part of the document discusses the various resources and tools available for data collection and analysis. It highlights the importance of using reliable and accurate sources of information and the need for a careful and thoughtful approach to data collection and analysis.

flume plus about 10 per cent free board. When a conveyance pipe alone is used (no rate measurement), the depth of the collection trough is based on the size of the outlet pipe needed to carry the run-off load.

After the depth of the collection trough is calculated as discussed above, a free board of approximately 5 to 10 cm is added to the collection trough depth. This free board is needed primarily to form a notch across the plot and may be changed to suit local design requirements. (width of trough, within limits, is largely a matter of preference). It should be narrow enough to form an efficient channel, but wide enough to allow a worker to clean it easily, about 20 or 30 cm or about equal to the depth of the flume.

Bottom slope is usually pre-determined by the over all length of the trough and the required depth. However, a good figure to use is a 5% minimum slope. Screens on the outlet conveyance mouth of the trough could be used to keep trash out of the outlet system. A screen of about 2 cm mesh works well and can be attached to the trough wall towards the outlet pipe. Under these considerations, the collection trough designed has dimensions of 270 cm in length, 30 cm in width, and 25 cm in depth, with a rectangular shaped box made of the galvanized sheets.

A collection trough set consists of the main body of the trough and attachments such as an outlet conveyance pipe, supporting bars, insertion tongue and cover. For preventing the undesirable entry of rainfall water and debris into the collection trough, an adequate cover (271 cm in length, 31 cm in width) made of galvanized sheet was provided for each trough.

Each collection trough set has five (5) supporting iron bars (about 1.5 cm in width and 30 cm in length) across the width of the trough so as to maintain the strength of the trough and also to protect it from damage.

1. The first part of the text discusses the importance of maintaining accurate records in a laboratory setting. It emphasizes the need for clear labeling and organization of samples and reagents.

2. The second part of the text describes the various methods used for data collection and analysis. It mentions the use of specialized software and the importance of regular calibration of equipment.

3. The third part of the text focuses on the safety protocols that must be followed in a laboratory. It highlights the importance of wearing personal protective equipment and the proper disposal of hazardous waste.

4. The fourth part of the text discusses the role of the laboratory in research and development. It mentions the importance of collaboration and the sharing of knowledge and resources.

5. The fifth part of the text describes the various applications of laboratory techniques in different fields. It mentions the use of these techniques in medicine, agriculture, and environmental science.

6. The sixth part of the text discusses the challenges faced by laboratory workers. It mentions the importance of continuous education and the need for a strong support system.

7. The seventh part of the text describes the future of laboratory science. It mentions the potential of new technologies and the importance of innovation in the field.

8. The eighth part of the text discusses the ethical considerations of laboratory research. It mentions the importance of transparency and the need for a strong ethical framework.

9. The final part of the text provides a conclusion and summarizes the key points discussed. It emphasizes the importance of the laboratory in advancing our understanding of the world.

The upper edge of the trough is extended to make an insertion tongue, about 30 cm wide, so as to insert it into the compacted soil of the lower end of the plot. The insertion tongue blocks off the plot and furnishes a stable attachment for the collection trough. The insertion tongue of the trough therefore assists in leading away run-off materials as well as in the protection of the lower end of the plot boundary from leakages and from seepage.

Each collection trough set also has an outlet conveyance pipe for the run-off materials, running from the collection trough body to the sediment tank (A). This outlet pipe is made of the same material (galvanized sheet) as the collection trough body and has a rectangular shape. The dimensions of the outlet conveyance pipe is 100 cm long, 20 cm wide, and 15 cm high. The edge of the upper end is welded to the middle part of the trough.

The eight (8) sets of collection troughs and their attachments were all painted for protection from rust. The front and top view of a collection trough is shown in Figures 4-1 and 4-2.

The purpose and specifications of the collection trough and outlet conveyance pipe are as follows:

- (a) Purpose: for collection and conveyance of the run-off materials from the plot above to the tanks below.
- (b) Specifications:
 - dimensions: length - 270 cm
width - 30 cm
height - 25 cm
 - shape: rectangular, box-like
 - cover for the trough: for preventing the entry of excessive rainfall and other residue into the trough.
 - dimensions of the cover: slightly bigger than the trough, so as to fit over the trough.
 - materials: galvanized sheet for trough and cover.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved. The text outlines various methods for recording transactions, including the use of journals, ledgers, and spreadsheets. It also discusses the importance of regular audits and the role of accountants in ensuring the accuracy of the records.

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- attachments: supporting bars, 5 flat iron bars per trough, having 1.5 cm width and 30 cm length. Insertion tongue, for inserting into the plot soil portion, actually an extended portion of the trough into the plot above, with a width of 20 cm.
- conveyance pipe: located between the collection trough and Tank A, and having the following dimensions---length 100 cm, shape rectangular, width 20 cm, height 15 cm, material galvanized sheet, and attached to the trough by welding.

7. Run-Off Soil and Water Storage Tanks

Two 55 gallon (220 litres) capacity metal drums of 85 cm height and 57.5 cm diameter were installed for each run-off plot for the collection of run-off soil-water material. These tanks designated A and B are referred to as sediment tank (A) and suspension tank (B).

The sediment tank unit (A) has two major functions: (1) to retain all the heavy soil material and pass only a suspended sediment mixture to the next tank unit (B), and (2) to store sediment which will make up the bulk of the soil loss from the run-off plot.

Turbulence in the sediment tank (A) due to high entrance velocities from the run-off plot is reduced by placing appropriate wood sticks along the flow direction, or screens across the flow through the sediment tank. In case of screens, the screens also keep trash from clogging up the tank. Over-flow material from tank (A) is conveyed to the suspension tank (B) by means of metal outlet pipes. Two metal pipes of 60 cm length (one is a 2" pipe of 5 cm inner diameter, the other a 4" pipe of 10 cm inner diameter) were welded to the upper end of the tank (A). These pipes are supported by means of the iron bars welded to the bottom side of tank (A). Each tank has a short drain pipe with plug cap of 20 cm length and 5 cm inner diameter for using the final drain from the bottom of the tank after appropriate measurements were recorded.

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In the case of suspension tank (B), it has only one outlet metal pipe (2" pipe) of 60 cm length at the top level of the tank for safe drainage of the excess run-off water from tank (B) to the outside drain, and also supported with iron bars like tank (A). Tank (B) also has a final drain pipe of 20 cm length which is welded on as in tank (A).

To service the eight (8) run-off plots, a total of 16 tanks (Tank A - 8 and B - 8) were installed, each resting on a concrete base having a thickness of 10 cm. The drums may either be disconnected and overturned or emptied with small sized rubber hoses.

To facilitate the sampling of soil run-off measurements from the collection troughs, a continuous 80 cm wide concrete pavement was constructed across the lower end (around the trough area) of the eight plots. This pavement also serves to reinforce the plots against possible slippage down-hill.

Sometimes, the multislot division could be adopted for the proper conveyance of over-flow run-off from sediment tank (A) to suspension tank (B). In the experiment at the Olive River Centre, however, the experiment was principally to get the soil losses rather than the run-off water. The run-off collecting system in this experiment was, therefore, not considered in the multislot division system. The side and top view of both the sediment and suspension tanks are shown in Figures 5-1 and 5-2.

The purpose and specifications of the tanks and outlet pipes are as follows:

- (a) Purpose: for storage of run-off soil and water transported from the collection trough above, through the conveyance pipe.
- (b) Specifications:
 - material: metal drum (commonly used drum, 55 gallon size)
 - dimensions: height - 85 cm
diameter - 57.5 cm
capacity - 220 litres (approx. 55 gallons)

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

Furthermore, it is noted that the records should be kept for a minimum of five years. This is a legal requirement in many jurisdictions and helps in the event of an audit or a dispute. The document also mentions that the records should be stored in a secure and accessible location, such as a cloud-based system or a physical filing cabinet.

In addition, the document highlights the need for regular backups of the data. This is crucial to prevent data loss in the event of a system crash or a natural disaster. It is recommended that backups be performed at least once a week and stored in a separate location from the original data.

Finally, the document stresses the importance of confidentiality. All information contained in the records should be treated as sensitive and should not be shared with unauthorized personnel. This helps to protect the company's financial information and maintain the trust of its stakeholders.

The second part of the document provides a detailed overview of the company's financial performance over the past year. It includes a summary of the revenue generated, the expenses incurred, and the resulting profit. The data is presented in a clear and concise manner, making it easy to understand the company's financial health.

The revenue section shows a steady increase in sales throughout the year, with a significant boost in the fourth quarter. This is attributed to the company's successful marketing campaigns and the launch of new products. The expense section, on the other hand, shows a slight increase in operating costs, primarily due to higher fuel prices and increased salaries.

Overall, the company has achieved a net profit of \$1.2 million for the year, which is a 15% increase compared to the previous year. This is a testament to the company's strong financial management and the dedication of its employees. The document also includes a breakdown of the profit by department, showing that the sales department is the primary contributor to the company's success.

In conclusion, the document provides a comprehensive overview of the company's financial performance and offers valuable insights into its strengths and areas for improvement. It is a key tool for management and investors alike, providing a clear picture of the company's financial future.

The third part of the document discusses the company's strategic goals for the next year. It outlines the key areas of focus, such as increasing market share, improving operational efficiency, and investing in research and development. The document also provides a detailed budget for the next year, showing the expected revenue and expenses for each department.

The strategic goals are based on a thorough analysis of the market and the company's competitive advantage. The primary goal is to increase market share by 10% over the next year, which will be achieved through targeted marketing and sales efforts. Another key goal is to improve operational efficiency by 5%, which will be done by streamlining processes and reducing waste.

Finally, the document emphasizes the importance of investing in research and development. This is crucial for the company to stay ahead of the competition and develop new products that meet the needs of its customers. The budget for R&D is set at \$500,000 for the next year, which is a 20% increase from the current year.

In summary, the document provides a clear and actionable plan for the company's future. It outlines the key areas of focus and provides a detailed budget to support these goals. This is a key tool for management and investors alike, providing a clear picture of the company's financial future.

- outlet pipe (b): for conveying the excess overflow water from tank (A) to tank (B). There are two round steel pipes per each tank (A), of 60 cm length and 5 cm inner diameter. They are attached to tank (A) by welding, are also supported by two bars welded to tank (A), and are made of steel.
- outlet pipe (c): for conveying the excess overflow from tank (B) to the drainage ditch outside. There are two outlet pipes per tank (B), of the same length and shape as those for outlet pipe (b). They are attached to tank (B) by welding and are also supported by two bars.
- outlet pipes (d) and (e): outlet pipe (d) is for the final drainage from the bottom of tank (A) to the outside. Outlet pipe (e) is for the final drainage from the bottom of tank (B) to the outside. Outlet pipes (d) and (e) are attached to tank (A) and (B) respectively, by welding to the bottom of the tanks.

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8. Rain Gauge

A standard rain gauge was installed on the concrete-made platform at the front side of the middle part of the receiving tank area. Daily rainfall is measured at 8:00 a.m. in the morning.

The Clear VU rain gauge in the metric system (mm) is constructed of tough, clear tenite butyrate plastic, and is virtually unbreakable and will not crack or become brittle with age. Graduations are

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is essential for ensuring transparency and accountability in the organization's operations.

2. The second part outlines the various methods and tools used to collect and analyze data. This includes both traditional manual methods and modern digital technologies, highlighting the benefits of each approach.

3. The third section focuses on the challenges associated with data management, such as data security, privacy concerns, and the need for robust backup systems. It provides strategies to mitigate these risks and ensure the integrity of the information.

4. The fourth part discusses the role of data in decision-making and strategic planning. It explains how data-driven insights can help identify trends, forecast future performance, and optimize resource allocation.

5. The final section concludes by summarizing the key points and emphasizing the ongoing nature of data management. It encourages a culture of continuous improvement and innovation in how data is handled and utilized.

raised and darkened for easy reading. The gauge stands 35 cm (14 inches) high, and 10.6 cm (4 inches) in diameter, and is designed with a rust-proof mounting bracket for attachment to post or stake. By the metric system, the gauge measures each 0.2 mm to a maximum of 279 mm. No measuring stick is required.

III. IMPORTANT POINTS IN CONSTRUCTION PRACTICES FOR THE RUN-OFF PLOTS

The essential features of a run-off plot installation include those necessary for acquiring accurate data, and those for accomodating the operations which are to be performed.

The following are important points which were considered in the installation and construction of the run-off plots at the Olive River Demonstration Centre.

1. In Construction of the Boundary Walls

The boundary walls, as described earlier, consisted of the top-wall, lower-end wall, and the side-walls which run up and down the run-off plot, and these walls form eight rectangular plots at the same site.

These walls were constructed with concrete blocks. During the construction period, attention had been given particularly to the small drainage way of the V-shaped section on the top crest of the side walls. This V-shaped drain serves to remove the rainfall safely from the crest of the side walls to the top of the plot below. Careful attention was paid to the concrete base and the side-pavement (20 cm wide) attached to the concrete block side-wall, and also to the lining of the walls, using cement mortar to prevent cracks and leakages in the future.

To ensure against leakage or seepage resulting from burrowing by animals such as rodents, it is imperative that periodic checks be conducted on all the boundary walls.

The first part of the document discusses the general situation of the company and the results of the audit. It states that the company has been operating for several years and that the audit was conducted in accordance with the applicable standards. The audit found that the company's financial statements are true and fair, and that the company is in compliance with the relevant laws and regulations.

The second part of the document provides a detailed analysis of the company's financial performance. It examines the company's revenue, expenses, and profit over the period covered by the audit. The analysis shows that the company has achieved a steady increase in revenue and profit, and that its expenses are well controlled. The company's financial position is strong, and it is well positioned to meet its future obligations.

The third part of the document discusses the company's internal controls and risk management. It identifies the key areas of risk and the controls in place to mitigate these risks. The audit found that the company has a robust system of internal controls, and that the risks are well managed. The company's management is committed to maintaining high standards of integrity and transparency.

The fourth part of the document provides a summary of the audit findings and recommendations. It concludes that the company's financial statements are true and fair, and that the company is in compliance with the relevant laws and regulations. The audit also identified some areas for improvement, and the auditor provides recommendations to address these areas. The company's management is expected to take prompt action to implement these recommendations.

The fifth part of the document is a declaration of the auditor's independence and objectivity. It states that the auditor has no conflict of interest with the company, and that the audit was conducted in an unbiased and objective manner. The auditor's findings and conclusions are based on the evidence obtained during the audit.

The sixth part of the document is a declaration of the auditor's liability. It states that the auditor is liable for any negligence or breach of duty that may occur during the audit. The auditor's liability is limited to the amount of the audit fee.

The seventh part of the document is a declaration of the auditor's confidentiality. It states that the auditor will keep all information obtained during the audit confidential, except where disclosure is required by law. The auditor will not disclose any information to third parties without the prior written consent of the company.

The eighth part of the document is a declaration of the auditor's acceptance of the terms of the engagement. It states that the auditor has read and understands the terms of the engagement, and that the auditor agrees to provide the services outlined in the engagement letter. The auditor also agrees to be bound by the terms and conditions of the engagement letter.

The ninth part of the document is a declaration of the auditor's signature. It states that the auditor has signed the audit report and the engagement letter, and that the signature is true and correct. The auditor's signature is a declaration of the auditor's responsibility for the audit.

The tenth part of the document is a declaration of the auditor's date of signature. It states that the auditor has signed the audit report and the engagement letter on the date specified in the declaration. The date of signature is the date on which the auditor completed the audit.

2. In Construction of the Collection Trough

The eight (8) sets of collection troughs were made of galvanized steel (gauge No. 30, 3 feet wide by 8 feet long), forming a rectangular box-like trough by welding. Carefull attention was given particularly to the welding works for preventing damage due to cracking. Care was exercised in the installation of the insertion tongue for providing a satisfactory run-off channel for water through the portion of the lower-end wall. Asphalt-cement mortar was used to seal any seams when nailing it to the lower-end wall.

A concrete base for the troughs was provided for their safe and proper installation.

Finally, a retaining wall was constructed with concrete blocks to protect the cut-slope from excavating between the collection troughs and the receiving tanks. The retaining wall was constructed to a height of 90 cm above ground and 20 cm underground, respectively. This wall was reinforced with steel bars and a lining with cement mortar.

3. Construction of the Run-Off Storage Tanks

Operating the run-off plots is always a wet and muddy job, since it occurs after rainfall. The tanks should therefore be placed on a platform to facilitate the sampling of run-off soil, and the cleaning of the equipment without wading around in mud. A concrete platform (80 cm x 80 cm) was thus provided for each tank and a mettle-ballasted pavement was provided to prevent mud from collecting around the tank area.

Careful attention was paid particularly to the welding works between the drum (thin metal sheet) and the outlet pipes (heavy steel pipe). The outlet pipes were adequately supported by small-sized steel bars attached to the lower part of the drum.

4. Construction of the Lateral Facilities

The run-off experiment plots at the Olive River Demonstration Centre were laid out in blocks so that plots were separated only by the side-boundary walls. Hence, excavation for the sediment receiving tanks

(A & B) and drains could be in the form of one large ditch-like platform to accommodate the drums for all the plots. A service road was built to run along the line of sediment receiving tanks (A & B).

A drain ditch was constructed with the pre-fabricated concrete blocks (60 cm x 90 cm with parabolic cross section) along the end line of the outlet pipes of the suspension tank (B). A diversion ditch planted with carpet grass was also constructed at the upper boundary wall of the experiment plots for safe disposal of excess run-off water from the up-slope land above the plots.

Finally, for protecting the experiment plot, the entire perimeter of the plot was closed with barbed-wire fencing.

IV. SOIL CONSERVATION TREATMENTS AND CROPPING SYSTEMS

1. Soil Conservation Treatment

In designing the treatments for the system or systems to be recommended, much importance was given to simplicity and ease of adoption by the farmer. These considerations also took into account the cropping systems which the farmer is traditionally accustomed to, and possible ways of enhancing farm productivity with a modicum of technological change.

Viewed in toto, the soil conservation treatments were evaluated together with cropping patterns that are relevant to the area and the farming community.

Consequently, the following four basic soil conservation treatments and cropping systems were selected for evaluation during the first cropping cycle (March 1980 to February 1981). Arrangement of the soil conservation treatments and cropping systems is shown in Figure 6.

In cases where individual hills were constructed, (Treatment I & II) they were spaced at a distance of 1.5 m along the contour horizontally and 1.4 m along the slope (1.3 m horizontally). The height of hills from the soil surface was approximately 60 cm.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This not only helps in tracking expenses but also ensures compliance with tax regulations. The second part of the document provides a detailed breakdown of the company's financial performance over the last quarter. It includes a comparison of actual results against the budget and identifies areas where costs were higher than expected. The third part of the document outlines the company's strategy for the upcoming year. It focuses on reducing operational costs and increasing revenue through new market expansion. The fourth part of the document discusses the company's commitment to environmental sustainability. It details the various initiatives taken to reduce carbon footprint and improve energy efficiency. The fifth part of the document provides a summary of the company's overall financial health and outlook for the future. It concludes with a statement of confidence in the company's ability to achieve its long-term goals.

Table 1 Treatments for Soil Conservation and Cropping Systems

Treatment No.	Soil Conservation Treatment	Cropping System
I	Check, i.e. individual hills or "traditional system"	Yellow yam only as a monocrop
II	Individual hills with a hillside ditch	Yellow yam intercropped with Irish potatoes followed by radish and peanut.
III	Contour mounds with a hillside ditch	Yellow yam intercropped with Irish potato followed by radish and peanut
IV	Contour mounds with a grass buffer strip	Yellow yam intercropped with Irish potato followed by radish and peanut

Table 2 Distance between the Hills and Mounds, and between Yam Heads

Distances (unit: cm)	Treatment I	Treatment II	Treatment III	Treatment IV
(i) Between the hills and mounds up-and-down	150	150	150	150
(ii) Between the yam "heads" horizontally	130	130	62	62
(iii) Number of hills or mounds	20 hills	16 hills	8 mounds	9 mounds
(iv) Number of yam heads planted	32	32	32	32

Yam "heads" = individual yam plants

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The contour mounds (Treatment III & IV) extended across the plots and were spaced 1.5 m apart with a height of 45 cm.

A hillside ditch having a width of 2.0 m (2.5 m along the slope) was constructed approximately midway down the plots (7.6 m and 8.0 m along the slope from the top-wall, and 4.9 m and/or 5.3 m along the slope from the lower wall) for Treatments II and III. This is a triangular type of hillside ditch which is effective to keep the run-off materials from the above slope-land and also is used for the farm path. Napier grass (Pennisetum purpureum) was transplanted for stabilization. A cross-section of the hillside ditch is shown in Figure 7.

Specifications for the hillside ditch on the 20° land slope are as follows:

- (i) total width: 2.3 metres
- (ii) reverse slope: 10%
- (iii) riser slope:
- 1 (iv) height of riser: 57 cm
- (v) reverse height: 18 cm

A grass buffer strip having a width of 1.3 m was established about mid-way down the plot (7.6 m and/or 8.0 m along the slope from the top-wall) and 5.9 m and/or 6.4 m along the slope from the lower-wall for Treatment IV only, by planting Napier grass at a spacing of 30 cm. A plane view of the grass buffer strip is shown in Figure 8. Napier grass is one of the most promising species of grass for the hillsides of Jamaica. It establishes with relative ease and serves as a good source of fodder for cattle.

2. Cropping Systems

Since the amount of run-off sediment for a given slope is also related closely to crop cover, it was decided to introduce the concept of intercropping whereby more than one crop is grown simultaneously on the same plot of land, i.e. multicropping.

This system is ideally suited to small farm operations on hillsides in Jamaica, in terms of (i) employment generation; (ii) increased farm income; (iii) increased productivity per unit area; and (iv) enhancing nutritional profiles of farm families. An ideal cropping pattern for rainfed agriculture is one which makes maximum use of rainfall water, available soil moisture, and crop nutrients, plot space and incoming solar radiation energy.

The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and the plans for the future.

The second part of the report deals with the financial statement of the organization. It shows the income and expenditure for the year and the balance sheet at the end of the year. The report also includes a statement of the assets and liabilities of the organization.

The third part of the report deals with the administrative matters of the organization. It includes a list of the members of the organization and a list of the committees and sub-committees. It also includes a list of the officers and staff of the organization.

The fourth part of the report deals with the general remarks of the organization. It includes a list of the resolutions passed by the organization and a list of the recommendations made by the organization.

The fifth part of the report deals with the general remarks of the organization. It includes a list of the resolutions passed by the organization and a list of the recommendations made by the organization.

Based on these considerations and on experiences gained from the "Allsides Hillside Farming Development Project", yam was intercropped in sequence with Irish potatoes, radish and peanut as shown in Figure 6.

Irrespective of soil conservation treatments and cropping systems, each plot received the same number of yam heads (plants), 32, to produce an expected population of 8,000 yam plants per hectare, equivalent to 3,200 per acre.

As presented in the field layout diagram (Fig. 2 and Fig. 6) 20 individual hills were constructed per plot where the traditional individual hill method was employed for growing yam (Treatment I plot) with each of 12 hills receiving two "heads", and each of the remaining eight hills receiving one "head". Again, using the traditional system each hill was provided with one bamboo stake of 5 m long, a total of 20 stakes to accommodate the twining yam vine.

For Treatment II which had 16 individual hills with a hillside ditch, each hill received two yam heads comprising 32 yam heads. One 5 m long bamboo stake was erected for each hill, totalling 16 stakes.

For Treatment III which had 8 continuous contour mounds, each mound received four yam heads, totalling 32 yam heads at 62 cm intervals along the mound, with mounds spaced 1.5 m apart. One 5 m long bamboo stake was also placed between each pair of contiguous mounds to carry four yam vines, two from each mound.

For Treatment IV which had 9 continuous contour mounds, four yam heads per mound for five mounds were planted, and three heads per mound for the other four mounds were planted so making a total of 32 heads per plot. The bamboo stakes were erected in a similar manner as for the Treatment III method.

For the intercropping, Irish potato was planted in rows spaced 40 cm apart at intervals of 30 cm within the row, giving a density of 50,000 plants per hectare. Following harvesting of the Irish potato crop, radish was sown in rows spaced 30 cm apart at intervals of 10 cm

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within the row. This resulted in a plant population of approximately 125,000 per hectare. After the harvesting of the radish crop, peanuts were sown in rows spaced 40 cm apart, and at an interval of 20 cm within the row. This gave an expected density of approximately 63,000 plants per hectare.

V. PROCEDURES FOR MEASURING & CALCULATING SOIL LOSS FROM THE RUN-OFF EXPERIMENT PLOT

1. Measurement of Rainfall

The amount of daily rainfall is measured using a standard rain guage located next to the run-off plots. At 8:00 a.m. measurements were taken and recorded on the "Rainfall Recording File."

2. Measurement of Soil-Loss

2.1 Duration for Measuring and Sampling Soil-Loss Determination

Measurements are taken after every storm, or after several periods of rainfall. The volume and wet weight of the soil sediment in the tanks (run-off receiving tanks) and troughs are measured and recorded on the "Data Sheet for Measurement of Soil-loss."

2.2 Measuring and Sampling of the Soil Sediment from the Sediment Tanks

A. Field Measurement and Sampling Procedures

- (1) The run-off water of tanks A (main sediment storage tank) and B (mostly water storage tank, in case of overflow from tank A above, is drained after the suspended soil-particles have settled.
- (2) At times of frequent storms, it is difficult to carry out this exercise after every storm, because one storm may be followed by another before solid materials can settle down. In this case, a coagulant such as alum or lime can be used to facilitate quick settling down of soil-sediment suspension within the tanks.

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- (3) Drainage of the run-off water is then achieved by siphoning, with a plastic hose of about 10-15 mm in diameter, and about 2-2.5 m in length. The hose for siphoning should reach a depth of about half the height of the water in each tank. This operation is begun by sucking the hose with the mouth. In case there is a need to drain some more from a tank, due to the settling of sediment, the mouth of the hose should be made to reach carefully down to the estimated level. This draining operation should be continued carefully until the soil sediments have the minimum content of free water, and each tank has approximately the same water content.
- (4) Total net amounts of wet sediment in volume as well as in weight are then measured simultaneously by using the graduated buckets (or bottles) in litres (or cc) units for volume and in kg (or gm) units for weight. Each measurement is recorded in the appropriate column of Form 1 (net wet-sediment in row "a", and net wet-weight in row "b". The plastic buckets (or bottles) should be precisely graduated by using the graduated glass cylinder. The weight of the buckets is also measured.
- (5) If the total volume of sediment in tank A is more than one bucket, it is necessary to use two or more buckets so as to put the entire amount of sediment into the buckets at the same time. In this case, each bucket should be filled with the same amount of sediment, and the volume and weight measured and recorded as above. Then one bucket should be selected out of them for further sampling.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the organization's finances and for ensuring compliance with applicable laws and regulations.

2. The second part of the document outlines the specific procedures that should be followed when recording transactions. This includes the use of standardized forms and the requirement that all entries be supported by appropriate documentation.

3. The third part of the document discusses the role of the accounting department in the overall management of the organization. It highlights the importance of providing timely and accurate financial information to management for decision-making purposes.

4. The fourth part of the document discusses the importance of internal controls in the accounting process. It emphasizes that these controls are essential for preventing and detecting errors and fraud, and for ensuring the integrity of the financial statements.

5. The fifth part of the document discusses the importance of regular audits of the accounting system. It emphasizes that these audits are essential for identifying areas of weakness and for ensuring that the system is operating effectively and efficiently.

6. The sixth part of the document discusses the importance of maintaining the confidentiality of financial information. It emphasizes that this information is often sensitive and that its disclosure could have significant negative consequences for the organization.

7. The seventh part of the document discusses the importance of staying up-to-date on changes in accounting standards and regulations. It emphasizes that this is essential for ensuring that the organization's accounting practices remain current and compliant.

8. The eighth part of the document discusses the importance of effective communication between the accounting department and other departments in the organization. It emphasizes that this is essential for ensuring that all transactions are properly recorded and that the financial statements are accurate.

9. The ninth part of the document discusses the importance of providing training and support to staff in the accounting department. It emphasizes that this is essential for ensuring that staff are equipped with the skills and knowledge necessary to perform their duties effectively.

10. The tenth part of the document discusses the importance of maintaining a strong ethical culture in the accounting department. It emphasizes that this is essential for ensuring that staff act in the best interests of the organization and its stakeholders.

11. The eleventh part of the document discusses the importance of using technology to improve the efficiency and accuracy of the accounting process. It emphasizes that this is essential for staying competitive in a rapidly changing business environment.

12. The twelfth part of the document discusses the importance of having a clear and concise accounting policy manual. It emphasizes that this is essential for ensuring that all staff understand the organization's accounting practices and procedures.

13. The thirteenth part of the document discusses the importance of having a strong internal control system. It emphasizes that this is essential for preventing and detecting errors and fraud, and for ensuring the integrity of the financial statements.

14. The fourteenth part of the document discusses the importance of having a strong audit trail. It emphasizes that this is essential for providing evidence to support the financial statements and for identifying the source of any errors or discrepancies.

15. The fifteenth part of the document discusses the importance of having a strong relationship with external auditors. It emphasizes that this is essential for ensuring that the organization's financial statements are audited by a reputable and independent firm.

(6) To obtain the dry-weight of the sediment from the wet-sample bucket, three can-samples are taken after thoroughly mixing the bed-load sediment. The sediment samples are collected in aluminium cans (250 - 300 cc capacity). The cans are numbered with the lids tightly screwed on and matching numbers written on both parts with a water-proof marker. The can number for three samples (sample x, y, and z) are recorded in the appropriate rows (c, d, e) of Form 1. These cans are transported to the laboratory for oven-drying procedures. (Usually, about 200-250 gm of wet-sediment including the can's weight are sampled in this experiment).

(7) It is sometimes observed that the sediment is not removed completely to the tanks below, and some sediment remains in the collection troughs. In the case of sediment deposition within the trough, these sediments are also to be weighed and sampled with the aluminium cans and treated as the samples from the sediment tanks.

Total net wet-sediment volume is recorded in row (a') in Form 1, and total net weight is recorded in row (b') in Form 1. The three samples are recorded in rows (c') for (x'), (d') for (y'), and (e') for (z'), respectively.

B. Laboratory Work and Calculation

(1) The net weight of sediment including the cans is measured by weighing the sediment-filled cans transported from the field plots, and the values are recorded in column (Wwt) of Form 2. The total number of sediment-sample cans is 48: 24 cans from the eight troughs and 24 cans from the eight tanks (A).

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The document also highlights the need for transparency and accountability in all financial activities.

In addition, the document outlines the various methods used to collect and analyze financial data. It describes the role of different departments in the process and the importance of using reliable data sources. The document also discusses the challenges of data collection and analysis and provides suggestions for overcoming these challenges.

The document also addresses the issue of data security and the need to protect sensitive financial information. It discusses the various risks associated with data security and provides recommendations for minimizing these risks. The document also emphasizes the importance of regular security audits and updates to security protocols.

CONCLUSION

In conclusion, the document stresses the importance of maintaining accurate records and ensuring the integrity of the financial system. It also highlights the need for transparency and accountability in all financial activities. The document provides a comprehensive overview of the various methods used to collect and analyze financial data and discusses the challenges of data collection and analysis. Finally, the document addresses the issue of data security and the need to protect sensitive financial information.

- (2) The weight of the cans including lids should always be measured prior to the sediment sampling works, and recorded in column (Cwt) of Form 2.
- (3) Drying of the wet-samples is carried out by placing them in an oven until constant weight is obtained. Drying times are also dependent on the capacity of the oven and quantity of samples. (It has been fixed for 72 hours oven-drying at 105°C in the experiment).
- (4) After 72 hours oven-drying, the sediment-filled cans are weighed to get the oven-dried weight of sediment samples including the can weight (Dwt), and recorded in column (Dwt) of Form 2.
- (5) The net weight of wet-sediment samples (WSwt) is obtained by subtracting the can weight (Cwt) from the wet-weight of sediment.
- (6) To get the net weight of oven-dried sediment samples (DSwt), it is necessary to subtract the can weight from the corresponding (Dwt).
- (7) The rate of dry to wet-weight of the sediment samples is obtained by dividing the net dry-weight of the sample by the net wet-weight of the corresponding samples. The total dry-sediment weight of the tanks and/or troughs could then be computed by multiplying the total net-weight of sediment within the tanks and/or troughs by the average rate of dry to wet-weight. In this computation, however, the "per cent moisture" method was adopted by Dr. Wahab.
- (8) The per cent moisture is then obtained by the formula:
$$\% \text{ moisture} = \frac{\text{wet weight (WSwt)} - \text{dry weight (DSwt)}}{\text{dry weight (DSwt)}} \times 100 (\%)$$

1. The first step in the process of identifying a problem is to define the problem clearly. This involves identifying the symptoms of the problem and determining the scope of the problem. It is important to identify the problem as early as possible in order to avoid further complications.

2. The second step is to gather information about the problem. This involves conducting research and consulting with experts in the field. It is important to gather as much information as possible in order to understand the problem fully and to identify the causes of the problem.

3. The third step is to analyze the information that has been gathered. This involves identifying the key factors that are contributing to the problem and determining the relationships between these factors. It is important to analyze the information carefully in order to identify the root causes of the problem.

4. The fourth step is to develop a plan of action. This involves identifying the specific steps that need to be taken in order to solve the problem. It is important to develop a plan that is realistic and achievable, and that takes into account the resources available.

5. The fifth step is to implement the plan of action. This involves carrying out the steps that have been identified in the plan. It is important to monitor the progress of the implementation and to make adjustments as needed.

6. The sixth step is to evaluate the results of the implementation. This involves comparing the actual results with the expected results and determining the effectiveness of the plan. It is important to evaluate the results carefully in order to identify any areas for improvement and to ensure that the problem has been solved.

7. The seventh step is to document the results of the process. This involves recording the information that has been gathered and the steps that have been taken. It is important to document the results in order to provide a record of the process and to share the information with others.

8. The eighth step is to communicate the results of the process. This involves sharing the information that has been gathered and the steps that have been taken with others. It is important to communicate the results in order to ensure that everyone is aware of the problem and the steps that have been taken.

The % moisture calculated by the formula is recorded in column (%M) of Form 2. By this step, Form 2 is completely filled up.

- (9) The values of % moisture are transferred to the corresponding column (%c, %d, %e, %c', %d', and %e' respectively) of Form 1.
- (10) The mean % moisture (M%) is computed by averaging the % moisture of three sediment samples (%c, %d, and %e, or %c', %d', and %e'). The total dry-sediment weight of a tank (SWta) is then obtained by multiplying the total net wet-weight of sediment of a tank (b) by the mean % moisture (M%) of its corresponding sample cans. The total dry-sediment weight of a trough (SWtr) is also obtained as for the tank A (namely (b') x M% trough).
- (11) Finally, the total dry-sediment weight (TDS) of a run-off plot is computed by adding the total dry-sediment weight of the tank (SWta) and its corresponding trough (SWtr).
- (12) The soil-loss per run-off plot in dry-weight is then estimated as the total dry-sediment (TDS') weight.

3.

Equipment needed for Measurement of Soil Loss

- (1) Graduated plastic bucket (or bottle) about 10-12 litres capacity: 5 buckets
- (2) Aluminium cans about 200-300 cc capacity: 48 cans (at least as one set).
- (3) Weighing scale for field uses with maximum capacity about 25 kg with 50 gm unit: 1 scale
- (4) Weighing balance for laboratory uses (weighing 0.01 gm to 500 gm)

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- (5) Electric oven: one
- (6) Draining hoses about 10 mm in diameter, and 2.5 metres in length: 2 hoses
- (7) Plastic basin for field use about 4,000 cc capacity: 4 basins
- (8) Graduated metric steel tape in mm unit: 1 ruler
- (9) Trestle for laboratory use: 1 trestle
- (10) Rain gauge: one

VI. COMPUTATIONS OF THE MATERIALS REQUIRED FOR CONSTRUCTION OF A RUN-OFF PLOT

1.	Concrete blocks (6" blocks)	2,000 blocks
2.	Drums (55 gallon) and caps:	16 drums
3.	Collection troughs and caps:	8 troughs
4.	Mixed concrete (volume):	6.41 m ³
5.	Cement mortar (volume)	1.40 m ³
6.	Steel bars (for retaining wall)	25 bars
7.	Mettles for ballasted pavement:	9 m ³
8.	Fence:	
	(i) barbed-wire	440 m
	(ii) fence posts	60 posts
	(iii) entrance gate	2 gates
	(iv) nails (2 inch)	330 nails
9.	Other:	
	(i) nylon-made strings	300 metres
	(ii) surveying pegs (wood stake)	100 stakes

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity of the financial statements and for providing a clear audit trail. The text notes that any discrepancies or errors in the records can lead to significant complications during an audit and may result in the disallowance of certain expenses.

2. The second part of the document outlines the specific procedures for recording transactions. It details the requirements for receipts, invoices, and other supporting documents. It states that all receipts must be dated, itemized, and signed by the person receiving the goods or services. Invoices must be properly filed and cross-referenced with the corresponding receipts. The document also mentions that all transactions should be recorded in a timely manner and that any corrections or adjustments should be clearly documented.

3. The third part of the document discusses the importance of maintaining separate accounts for different types of transactions. It notes that this helps in identifying and tracking specific areas of the business and ensures that each type of transaction is properly categorized and recorded. The text also mentions that this practice is essential for preparing accurate financial statements and for identifying trends and patterns in the data.

4. The fourth part of the document discusses the importance of maintaining a clear and organized filing system for all supporting documents. It notes that this is essential for ensuring that all documents are easily accessible and can be quickly located when needed. The text also mentions that a clear filing system is important for maintaining the integrity of the records and for providing a clear audit trail.

5. The fifth part of the document discusses the importance of maintaining accurate records of all assets and liabilities. It notes that this is crucial for ensuring the accuracy of the balance sheet and for providing a clear picture of the organization's financial position. The text also mentions that this practice is essential for identifying and tracking changes in the organization's assets and liabilities over time.

6. The sixth part of the document discusses the importance of maintaining accurate records of all income and expenses. It notes that this is crucial for ensuring the accuracy of the income statement and for providing a clear picture of the organization's financial performance. The text also mentions that this practice is essential for identifying and tracking trends and patterns in the data and for making informed decisions about the organization's financial future.

7. The seventh part of the document discusses the importance of maintaining accurate records of all tax-related information. It notes that this is crucial for ensuring the accuracy of the tax returns and for providing a clear picture of the organization's tax liability. The text also mentions that this practice is essential for identifying and tracking changes in the organization's tax liability over time and for ensuring compliance with all applicable tax laws and regulations.

8. The eighth part of the document discusses the importance of maintaining accurate records of all other financial information. It notes that this is crucial for ensuring the accuracy of the financial statements and for providing a clear picture of the organization's overall financial health. The text also mentions that this practice is essential for identifying and tracking trends and patterns in the data and for making informed decisions about the organization's financial future.

LIST OF FIGURES

1. Relationship between the slope area and horizontal area of the experimental plots
2. Top-view of layout of the run-off experimental plots
- 3.1 Cross section of a plot and boundaries (unit: cm)
- 3.2 Cross section of boundary wall and pavement (unit: cm)
- 4.1 Front view of collection trough (unit: cm)
- 4.2 Top view of collection trough (unit: cm)
- 5.1 Side view of tank A & B, outlet pipe a, b, c, d, e, trough, retaining wall, and concrete base (unit: cm)
- 5.2 Top-view of tank A & B, outlet pipe a, b, c, d, e, trough, retaining wall, and concrete base (unit: cm)
6. Soil conservation measures and cropping systems in the run-off plots
7. Cross section of hillside ditch
8. Plane view of grass buffer strip

LIST OF FORMS

1. Data sheet for measurement of soil-loss
2. Soil moisture data sheet

Handwritten Title

Main body of handwritten text, consisting of several paragraphs of cursive script.

LITERATURE CITED

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- (15) Woo-Bo-Myeong. 1976. Studies on the effects of major factors on soil erosion. Journal of Korean Forestry Society. No. 29: 1-48.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures that the financial statements are reliable and can be audited without any discrepancies.

In addition, it is crucial to review the records regularly to identify any potential errors or irregularities. This proactive approach helps in detecting fraud or mismanagement early on, allowing for timely corrective actions. The document also mentions the importance of keeping records for a sufficient period as required by law.

The second part of the document outlines the specific steps for recording transactions. It starts with identifying the nature of the transaction, whether it is a sale, purchase, or expense. Each transaction should be recorded in a clear and concise manner, including the date, amount, and the parties involved. This systematic approach ensures that all financial activities are properly documented.

Furthermore, the document highlights the need for consistency in the recording process. Using the same accounting method throughout the period is essential for accurate financial reporting. It also advises on the proper handling of receipts and invoices, ensuring they are filed and indexed for easy access and reference.

The document also addresses the issue of reconciling the records with bank statements. Regular reconciliation helps in identifying any differences between the recorded transactions and the actual bank activity. This process is vital for maintaining the integrity of the financial records and ensuring that the books are balanced.

Finally, the document concludes by stressing the importance of transparency and accountability in financial management. By following the guidelines provided, individuals and organizations can ensure that their financial records are accurate, complete, and compliant with all relevant regulations. This not only protects their financial interests but also builds trust with stakeholders.

In summary, maintaining accurate and up-to-date financial records is a fundamental aspect of sound financial management. It provides a clear picture of the financial health of an organization and is essential for making informed decisions and ensuring long-term success.

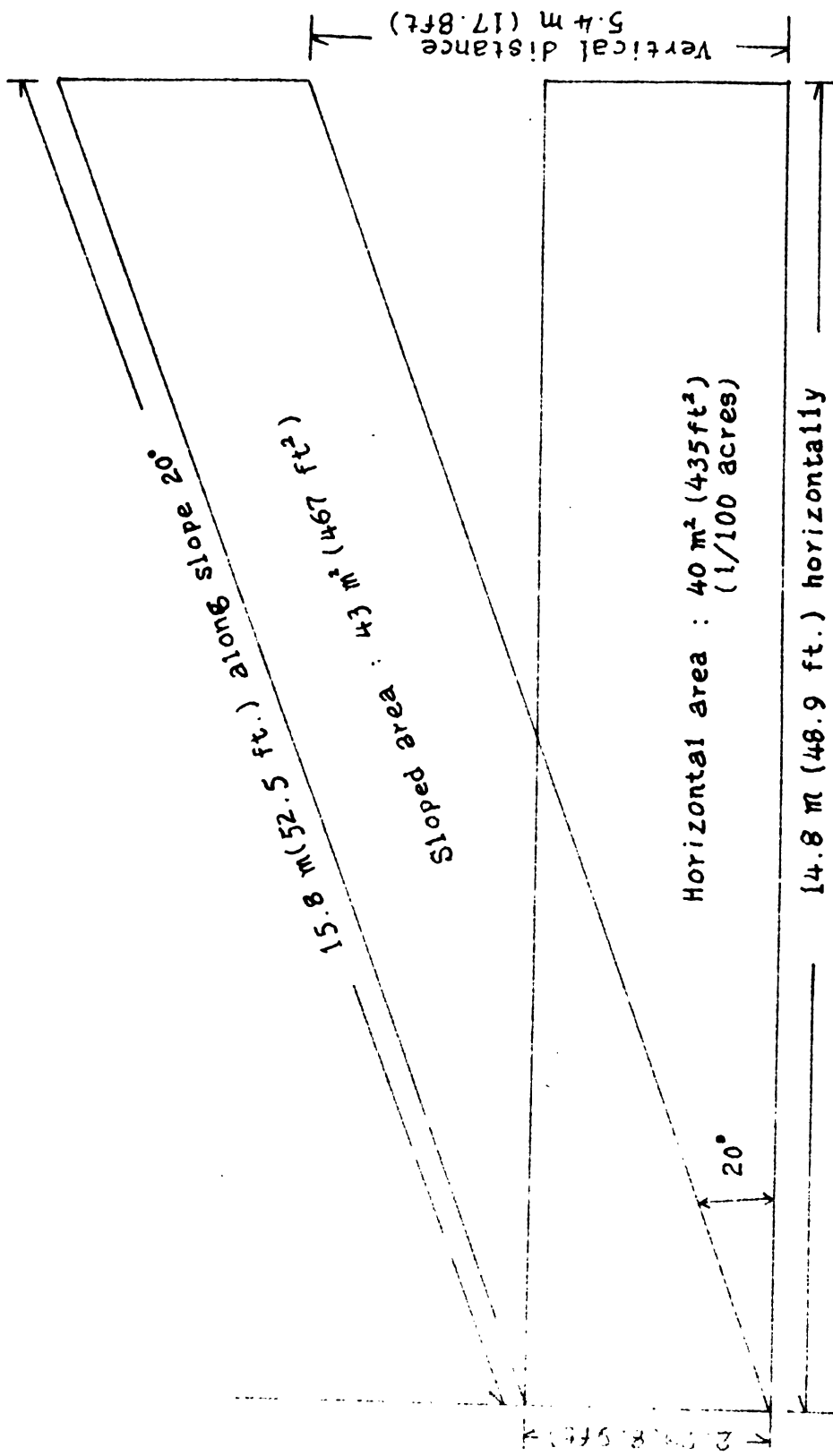


Fig.1 Relationship between the slope area and horizontal area of the experimental plots

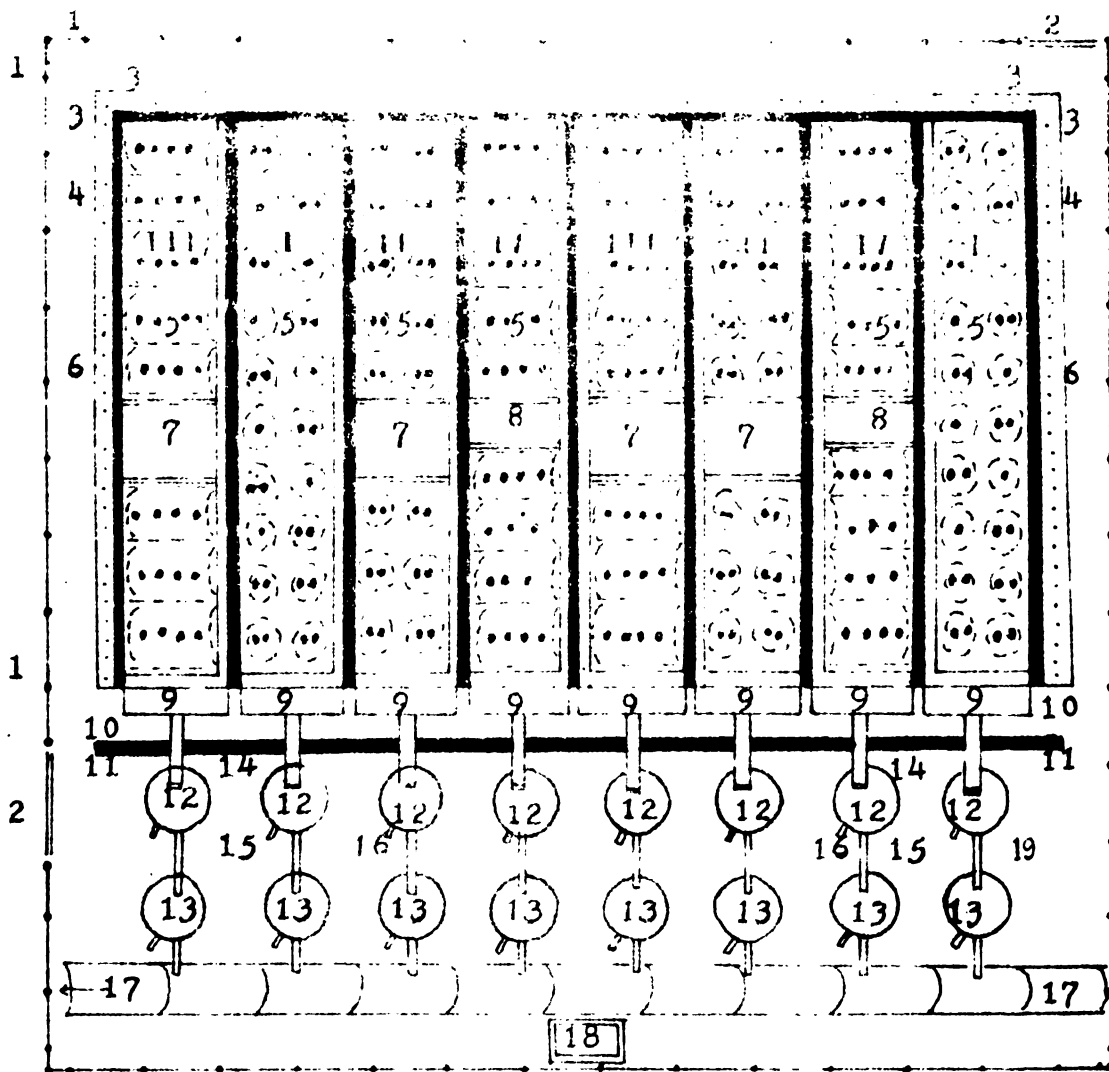
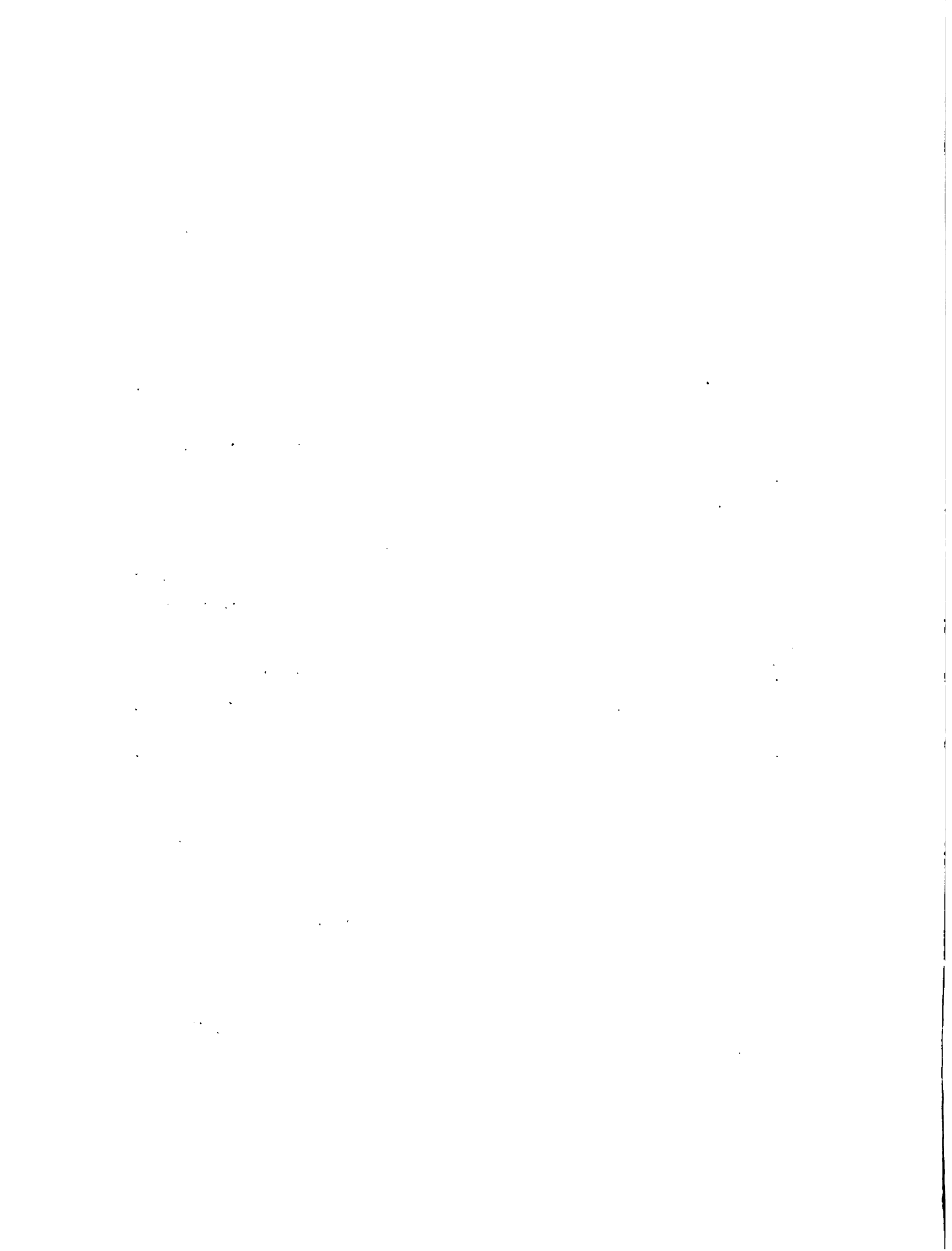


Fig. 2 Top-view of layout of the run-off experiment plots

Legends

- | | | | |
|----|--------------------|----------------|-------------------------|
| 1 | Barb-wire fence | 14 | Outlet pipe (a) |
| 2 | Entrance gate | 15 | Outlet pipe (b) |
| 3 | Earth wall | 16 | Drainage pipe |
| 4 | Plot boundary wall | 17 | Drainage way |
| 5 | Plot area | 18 | Rain gauge |
| 6 | Plot pavement | 19 | Mettle pavement |
| 7 | Hillside ditch | I, II, III, IV | Treatment No. |
| 8 | Grass buffer strip | ⊙ | Yams on individual hill |
| 9 | Collection trough | ⊙ | Yams on contour mound |
| 10 | Concrete base | | |
| 11 | Retaining wall | | |
| 12 | Storage tank (A) | | |
| 13 | Storage tank (B) | | |



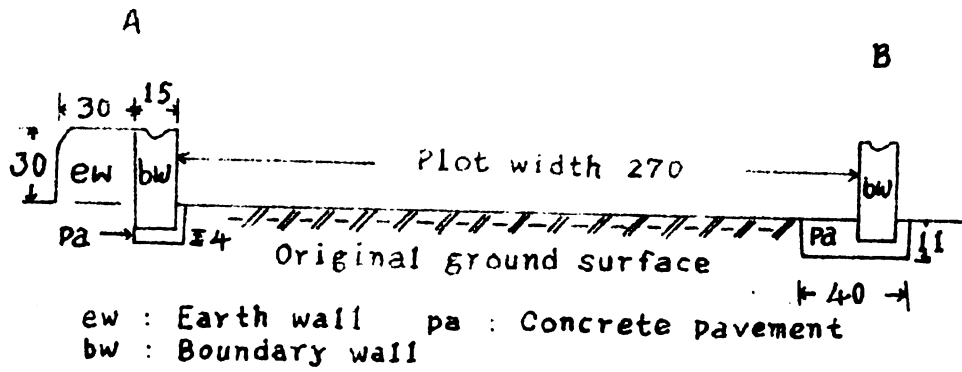


Fig.3-1 Cross section of a plot and boundaries
(unit : cm)

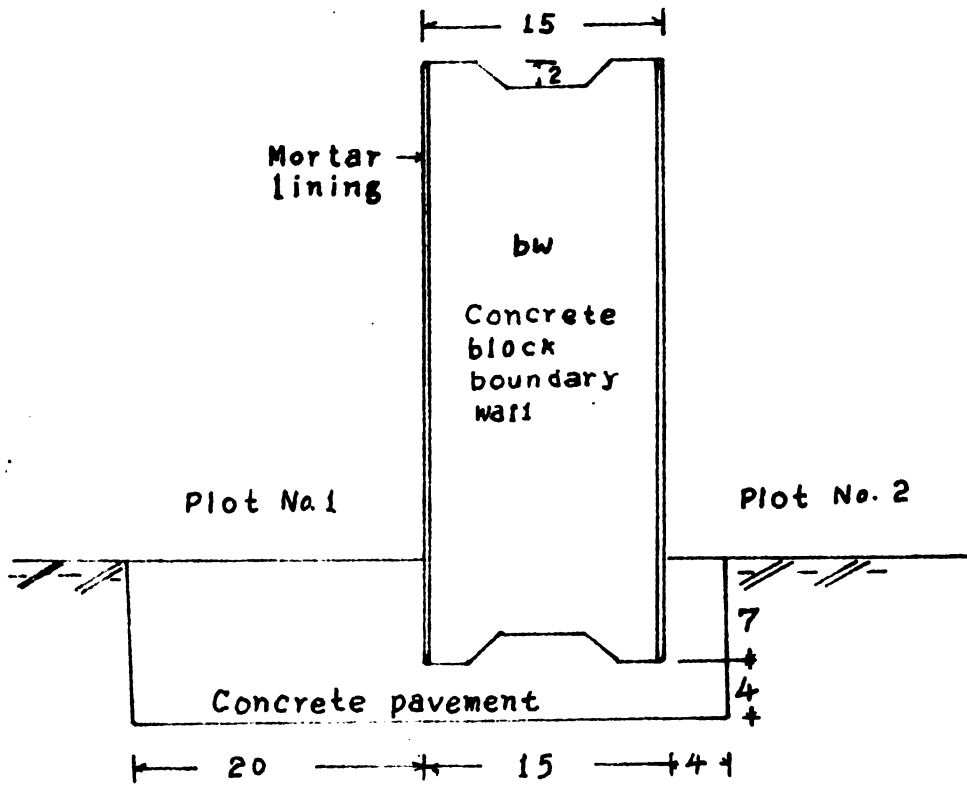


Fig.3-2 Cross section of boundary wall and pavement
(unit : cm)



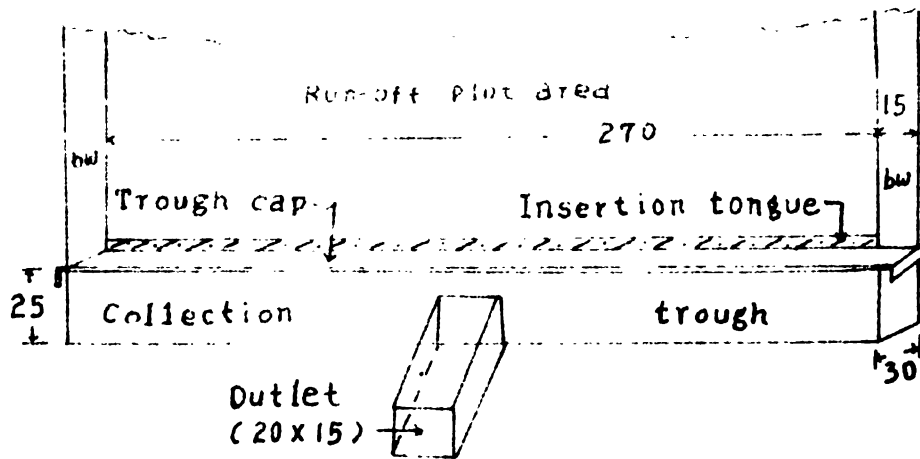


Fig.4-1 Front view of collection trough (Unit:cm)

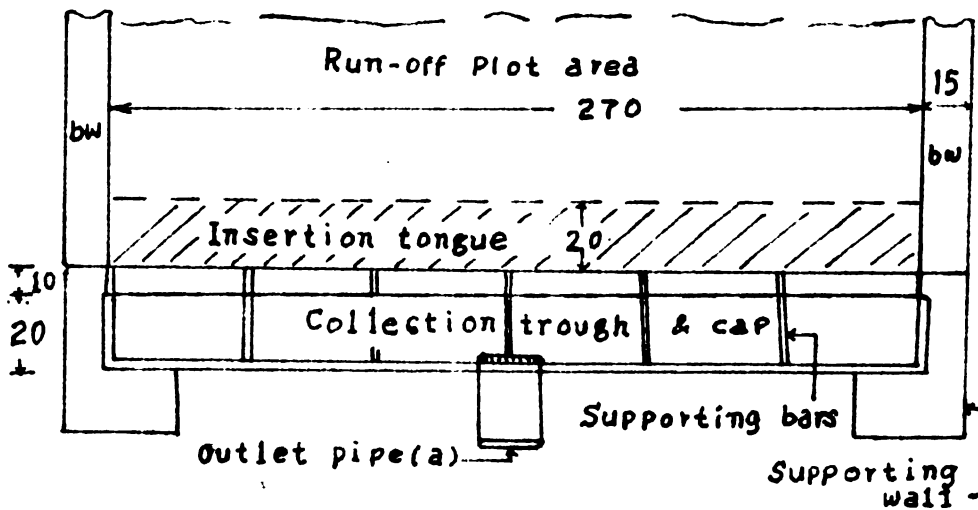


Fig.4-2 Top view of collection trough (unit: cm)

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

2. The second part of the document outlines the various methods and tools used to collect and analyze data. It highlights the need for a systematic approach to data collection and the importance of using reliable sources of information.

3. The third part of the document discusses the challenges and limitations of data collection and analysis. It notes that while data is essential for decision-making, it is not always easy to obtain or interpret, and there are often significant costs associated with data collection and analysis.

4. The final part of the document provides a summary of the key points discussed and offers some recommendations for improving the data collection and analysis process. It suggests that organizations should invest in training and resources to ensure that their data collection and analysis efforts are effective and efficient.

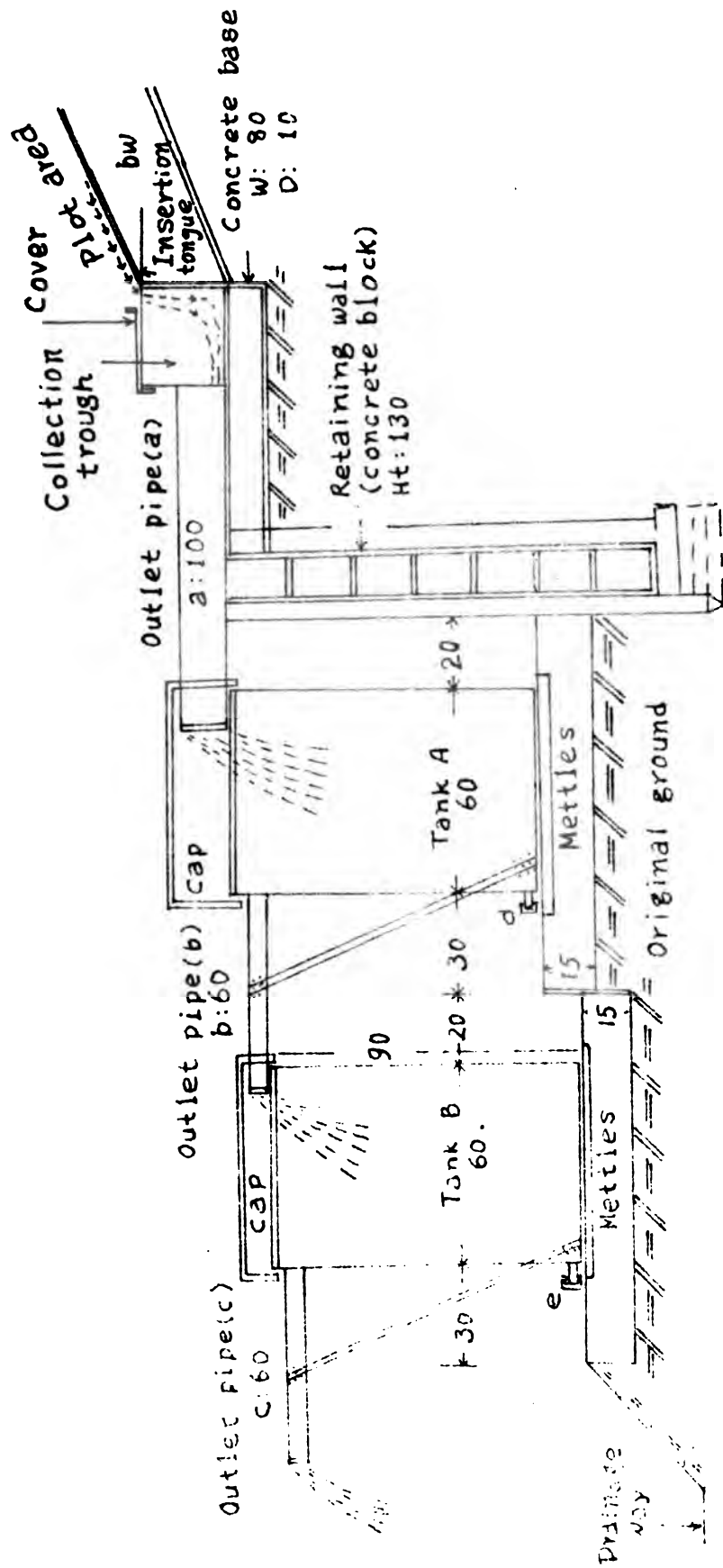


Fig.5-1 Side view of tank A & B, outlet pipe a, b, c, d, e, trough, retaining wall, and concrete base (Unit : cm)

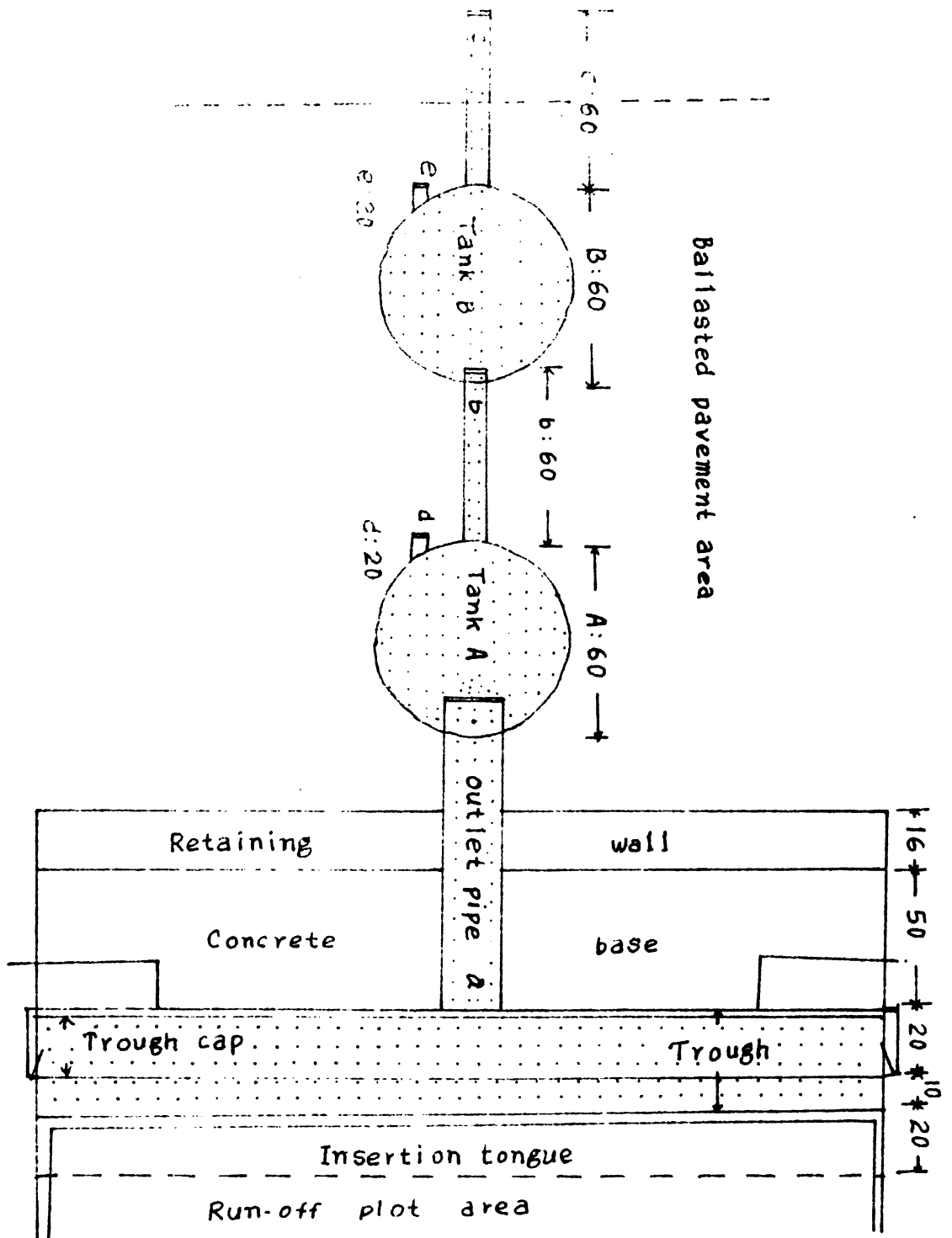
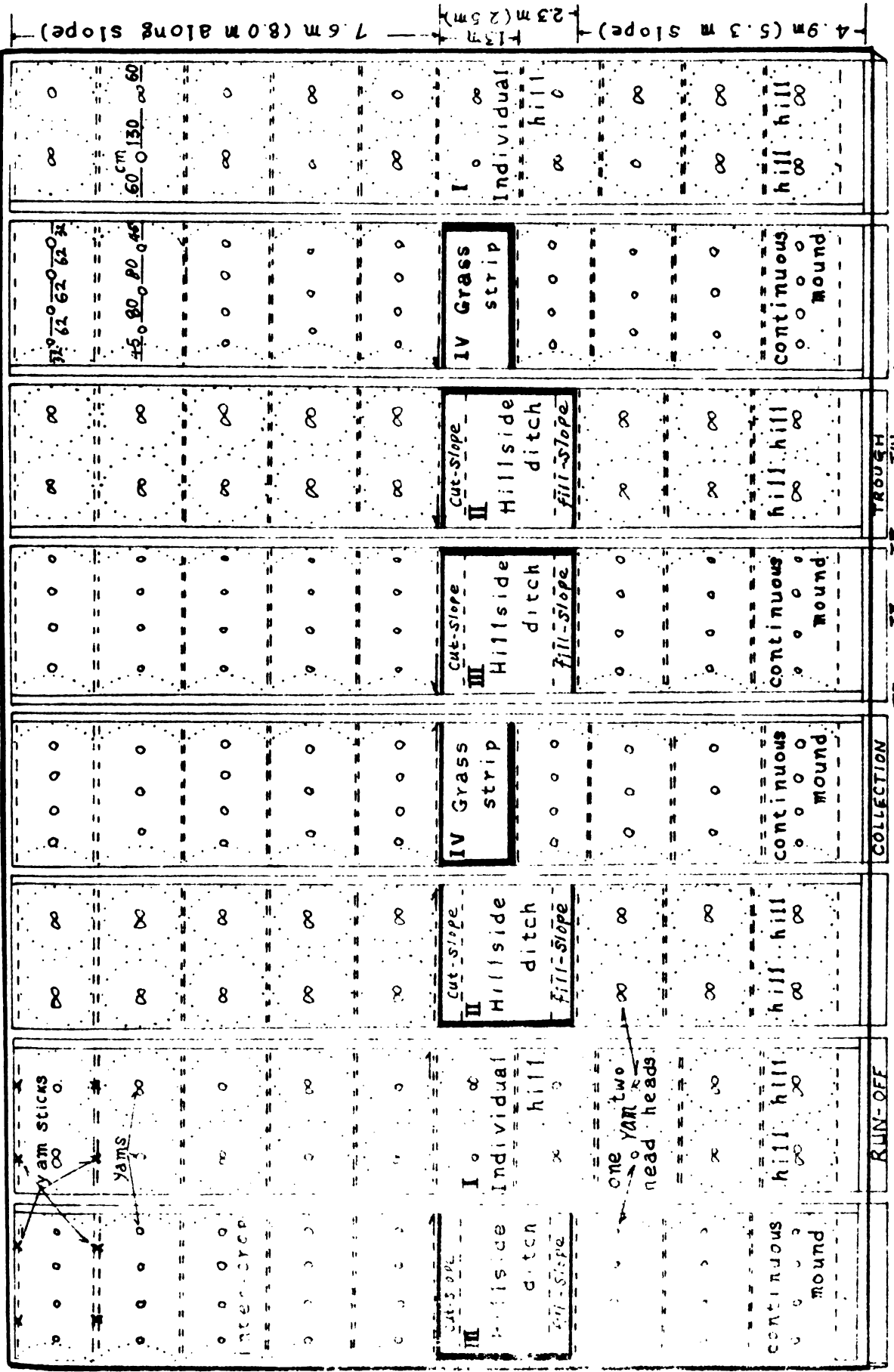


Fig.5-2 Top-view of tank A & B, outlet a,b,c,d,e, trough, retaining wall and concrete base (unit: cm)



FIG. 6 SOIL CONSERVATION MEASURES AND CROPPING SYSTEMS IN THE RUN-OFF PLOTS (S - 1/100)



Distance between mounds & hills up & down :
 Distance between yam heads horizontally (cm):

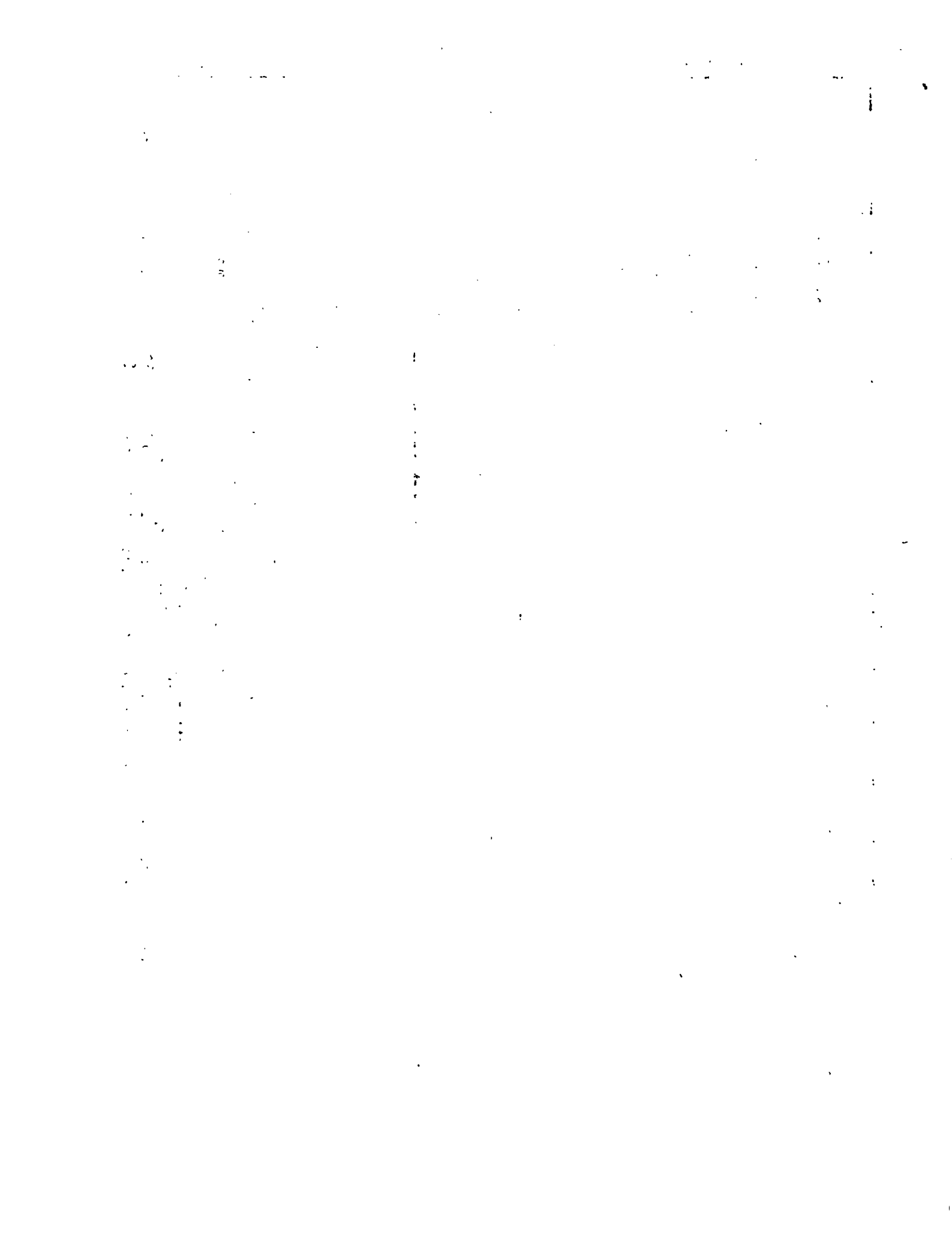
COLLECTION

RUN-OFF

TROUGH

TX 150 150 150
 TY 130 130 130
 TV 150 150 150
 62 62 62
 80 80 80

32 yam-heads planted per PLOT.



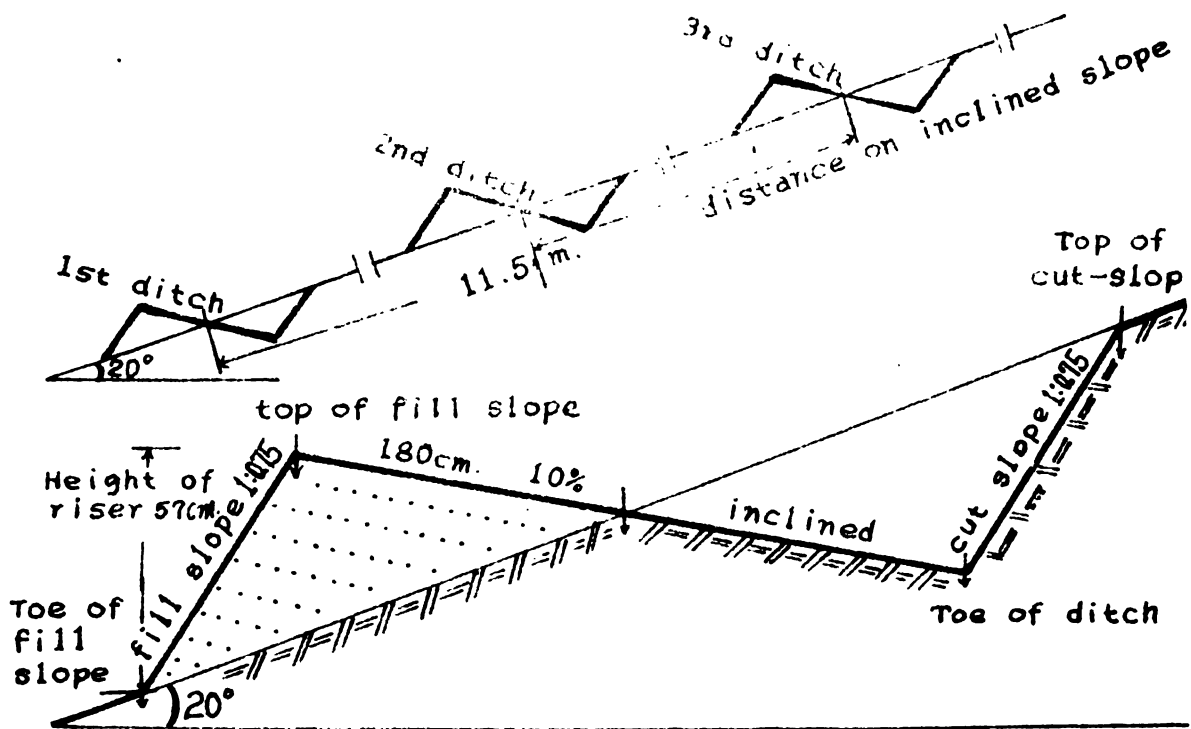


Fig. 7 Cross Section of Hillside Ditch

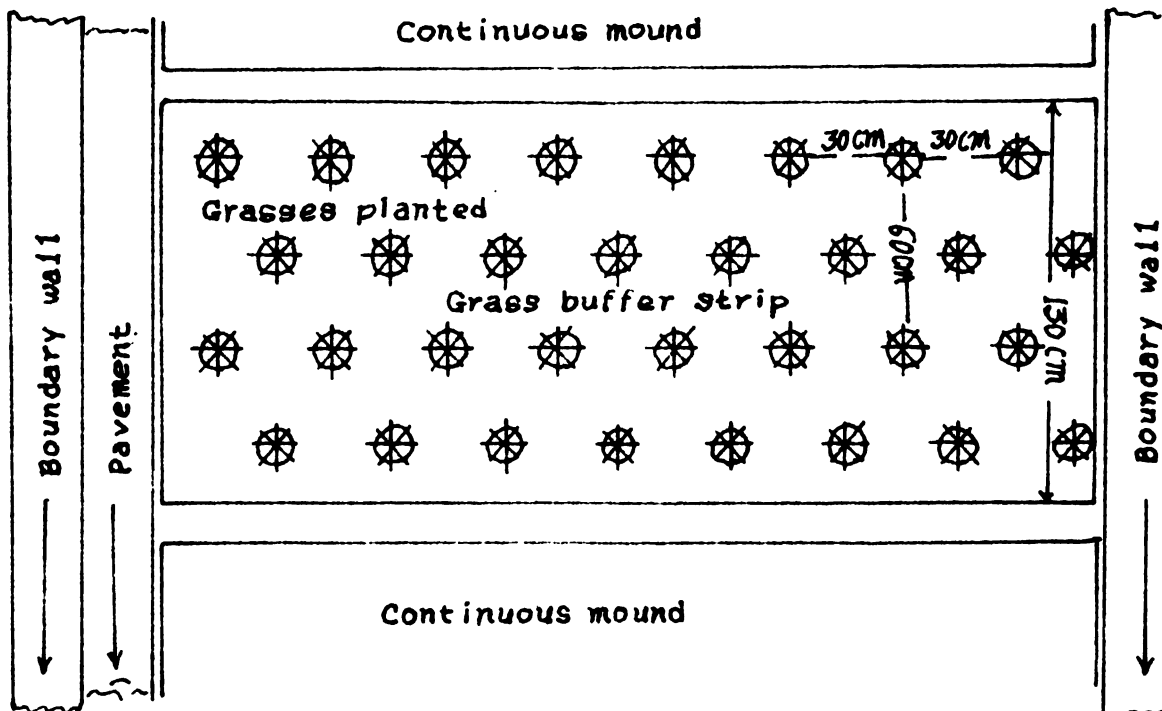


Fig. 8 Plane View of Grass Buffer Strip

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and government operations. This section outlines the various methods and systems used to collect, store, and analyze data, ensuring that information is readily accessible and reliable.

2. The second part of the document focuses on the implementation of these record-keeping practices. It details the specific steps involved in setting up a robust system, including the selection of appropriate software, the training of staff, and the establishment of clear protocols and procedures. This section also addresses the challenges that may arise during the implementation process and provides strategies to overcome them, such as regular communication and collaboration with all stakeholders.

3. The third part of the document discusses the ongoing maintenance and review of the record-keeping system. It highlights the need for continuous improvement and adaptation to changing requirements and technologies. This section includes a discussion on the importance of regular audits and evaluations to ensure that the system remains effective and efficient. It also provides guidance on how to handle any issues or discrepancies that may be identified during the review process.

4. The final part of the document concludes with a summary of the key findings and recommendations. It reiterates the importance of a well-maintained and accurate record-keeping system for the success of any organization. The document also provides a list of resources and references for further information and support. It is hoped that this document will serve as a valuable guide for anyone looking to improve their record-keeping practices and enhance their organizational efficiency.

Duration of rainfall received: _____

Date of field sample measurement: _____ Field measurement by: _____

Total rainfall for the period: _____ (mm) Lab. and calculation by: _____

Sediment sample No.	Plot No. _____ →	1	2	3	4	5	6	7	8	Remarks
	Treatment No. _____ →	CONTROL	T	U	Z	R	T	T	T	
Net wet sediment volume of trough (litres): (a')										
Total net wet-weight of sediment of trough (kg) (b')										
Sediment sample (x')	Can No. (c')									
	% moisture (%c')									
Sediment sample (y')	Can No. (d')									
	% moisture (%d')									
Sediment sample (z')	Can No. (e')									
	% Moisture (% e')									
Mean % moisture (m%)										
Dry-sediment weight of trough (kg): (S ^{tr})										
TANK (A)	Net wet sediment volume of tank (A) Litres: (a)									
	Total net wet weight of sediment of tank (Kg) (A)									
	Sediment sample (x)	Can No. (c)								
		%moisture (%c)								
	Sediment sample (y)	Can No. (d)								
		%moisture (%d)								
	Sediment sample (z)	Can No. (e)								
		% moisture (%e)								
	Mean % moisture (m%)									
	Dry-sediment weight of tank (A) (Kg): (S ^{Wta})									
Total dry-sediment weight of Plot (kg): (TDS)										

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial reporting and compliance with regulatory requirements. The text notes that incomplete or inconsistent records can lead to significant legal and financial consequences for the organization.

2. The second section addresses the challenges associated with data management and storage. It highlights the need for robust security measures to protect sensitive information from unauthorized access, loss, or theft. The document suggests implementing a multi-layered security approach, including encryption, access controls, and regular security audits, to ensure the integrity and confidentiality of the data.

3. The third part of the document focuses on the importance of clear communication and collaboration among all stakeholders. It stresses that effective communication is key to ensuring that everyone is on the same page and working towards common goals. The text encourages the use of clear, concise language and the establishment of regular communication channels to facilitate the exchange of information and ideas.

4. The final section discusses the role of technology in modern business operations. It notes that while technology offers numerous benefits, such as increased efficiency and productivity, it also presents new challenges and risks. The document advises organizations to carefully evaluate the risks associated with new technologies and to implement appropriate safeguards to mitigate potential threats to their data and operations.

Form 1: SOIL MOISTURE DATA SHEET

ITCA/GOJ Olive River Soil Run-off Studies

Sample No. _____

Sampled Date: _____

Sampled By : _____

Can No.	Wt. of Can + Lid (gram) : (C wt)	Wt. of Can + Lid + Wet Soil Sample (W wt)	Wt. of Can + Lid + Dry Soil Sample (D wt)	Wt. of Wet Sample : (W wt)	Wt. of Dry Sample : (D wt)	% Moisture : (% M)
1.	49.3					
2.	49.1					
3.	49.1					
4.	50.0					
5.	49.6					
6.	49.3					
7.	49.1					
8.	49.3					
9.	49.8					
10.	49.0					
11.	49.3					
12.	49.2					
13.	49.4					
14.	49.8					
15.	48.8					
16.	49.1					
17.	49.7					
18.	49.2					
19.	49.4					
20.	48.8					
21.	49.5					
22.	49.5					
23.	49.0					
24.	49.6					



FORM 2:

SOIL PHYSICAL DATA SHEET

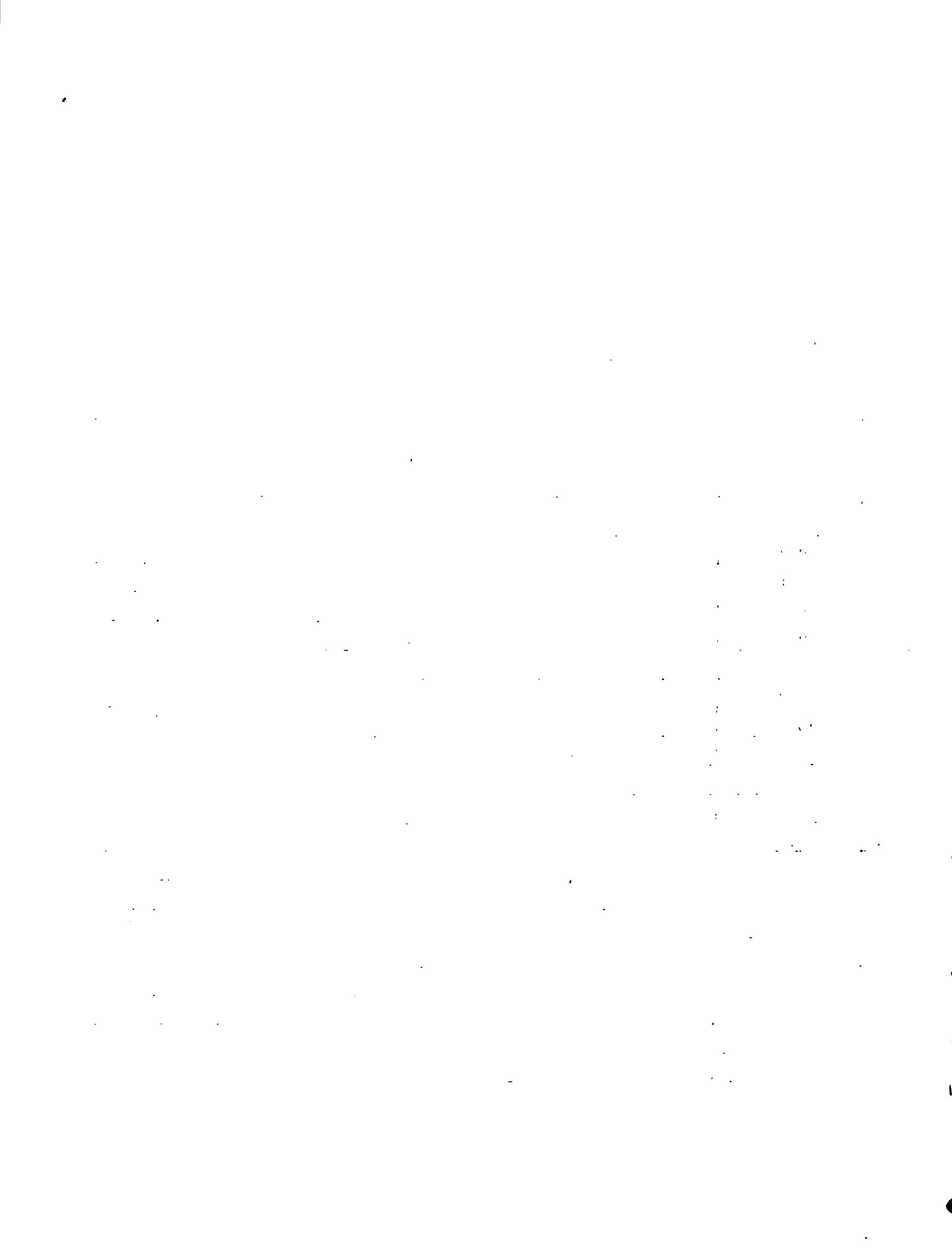
LIQUID LIMIT / SOIL PLASTICITY / SOIL SHRINKAGE STUDIES

Sample No. _____

Sampled Date: _____

Sampled by: _____

Can No.	wt. of Can + Lid (gram) : (Cwt)	wt. of Can + Lid + Wet Soil sample : (Wwt)	wt. of can + Lid + Dry Soil sample: (Dwt)	wt. of wet sample: (WSwt)	wt of Dry Sample : (DSwt)	% Moisture: (%M)
25.	49.8					
26.	49.0					
27.	49.6					
28.	49.0					
29.	49.2					
30.	49.1					
31.	49.7					
32.	49.0					
33.	49.3					
34.	48.9					
35.	48.9					
36.	49.6					
37.	49.7					
38.	49.4					
39.	49.2					
40.	49.6					
41.	49.8					
42.	49.5					
43.	49.2					
44.	49.4					
45.	49.0					
46.	49.5					
47.	49.5					
48.	49.6					



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MEMORANDUM FOR THE RECORD

DATE: 10/15/54

NO.	DESCRIPTION	DATE
101-1-101	...	10/15/54
101-1-102	...	10/15/54
101-1-103	...	10/15/54
101-1-104	...	10/15/54
101-1-105	...	10/15/54
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101-1-118	...	10/15/54
101-1-119	...	10/15/54
101-1-120	...	10/15/54

(ii)

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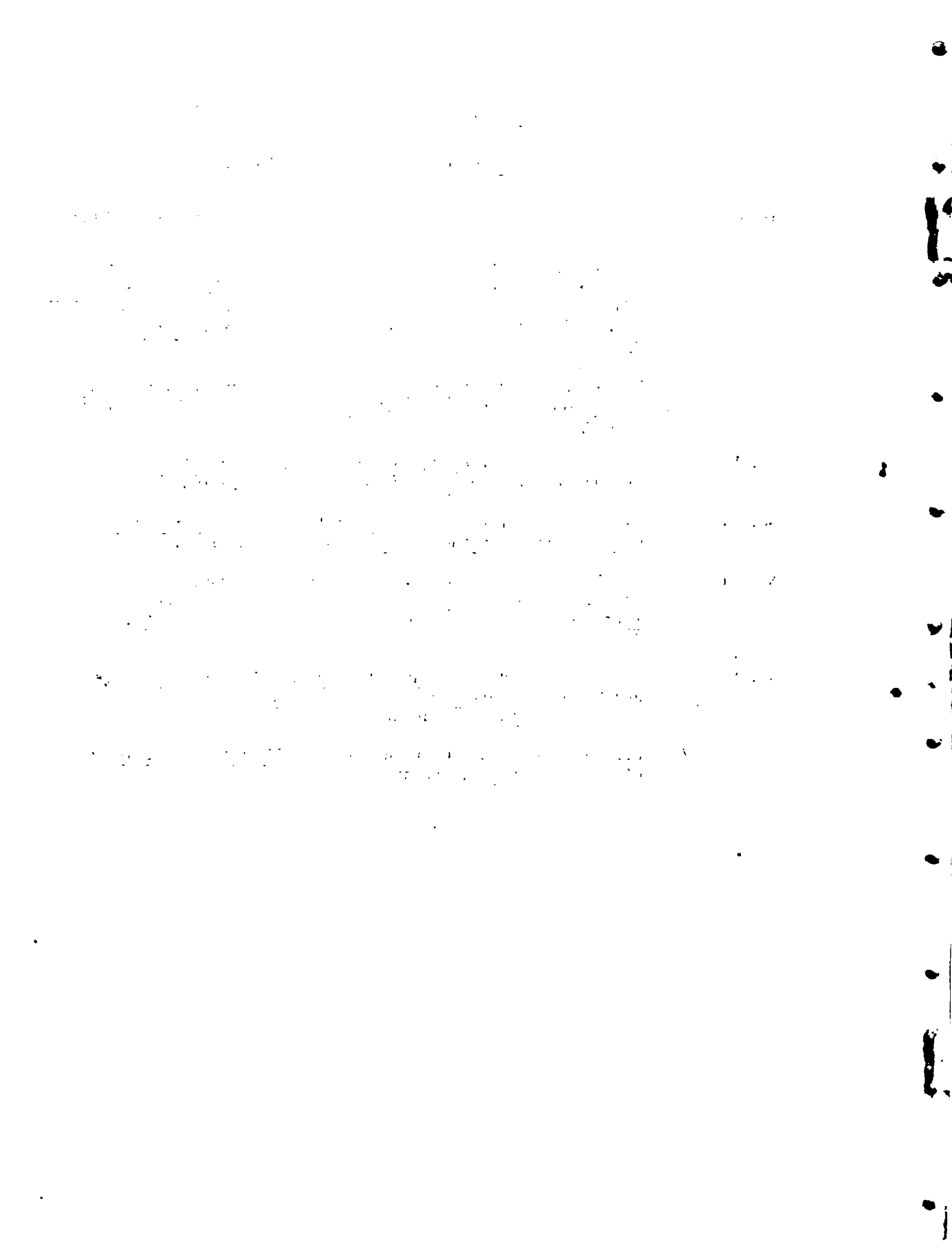
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