


**IMPACT OF LOCALLY AVAILABLE MULCHING
MATERIALS ON MOISTURE EVAPORATION AND
RETENTION IN SOIL**



BY

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FTC 130

Project Report
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SRI LANKA

2023

ABSTRACT

Mulching is a common practice used to conserve soil moisture in dry areas of Sri Lanka, because it reduces soil evaporation by breaking. Mulching is the practice of covering the soil or ground with a layer of material to improve growing conditions for plants, facilitate their development, and increase crop yield. Particularly in dry areas in Sri Lanka face higher soil evaporation loss which causes a decline in yield production. This present study aimed to investigate the effect of mulched materials on soil evaporation and water retention. Coir dust, banana leaf residue and *Gliricidia* leaves were used in two different ways as treatments. T1(control), T2 (surface coir dust mulch), T3 (incorporated coir dust mulch), T4 (surface banana leaf residue mulch), T5 (incorporated banana leaf residue mulch), T6 (surface *Gliricidia* leaves mulch), and T7 (incorporated *Gliricidia* leaves mulch).

Evaporation loss and moisture retention experiments were analyzed at continuous 25 days in both laboratory and field conditions. Physico – chemical parameters such as bulk density, moisture content, porosity, pH, and EC were analyzed on the final day of the experiment. According to the evaporation and water retention analysis, T7 which involved incorporated mulched *Gliricidia* leaves performed the best in both laboratory and field conditions. This treatment significantly reduced soil water loss and increased water retention compared to the T1 control.

Analysis of physicochemical parameters such as bulk density, moisture content, porosity, pH, and EC shown that all the values were significantly varied with treatments. T7 and T4 had the best performance. T1 and T4 had the least performance. According to the moisture evaporation, water retention, and physicochemical analysis, it could be concluded that the T7 which involved incorporated *Gliricidia* leaves mulch

on the soil surface was performed best and it can be used as mulch material for mulching to eradicate the soil evaporation and improve the water retention thereby to promote their use amongst cultivators.

According to the moisture evaporation and water retention analysis, incorporated mulched with *Gliricidia* leaves performed best compared with surface mulched treatments.

TABLE OF CONTENTS

ABSTRACT.....	i
ACKNOWLEDGMENT.....	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES	viii
LIST OF TABLES.....	ix
ABBREVIATIONS.....	x
CHAPTER 01	1
1.0 INTRODUCTION	1
CHAPTER 02	4
2.0 LITERATURE REVIEW	4
2.1 Sri Lanka Dry Zone.....	4
2.2 Dry zone agriculture.....	4
2.3 Soil surface evaporation.....	4
2.4 Mulching	6
2.4.1 What is mulching	6
2.4.2 Types of Mulching.....	7
2.4.3 Characteristics of different mulch materials	7
2.4.3.1 Straw	7
2.4.3.2 <i>Gliricidia</i> leaves.....	8
2.4.3.3. Coir dust.....	8
2.4.3.4 Sawdust.....	9

CHAPTER 03	18
3.0 MATERIALS AND METHODS.....	18
3.1 Experimental site.....	18
3.1.1 Soil Evaporation Estimation	18
3.1.2 Soil Moisture Retention Estimation:.....	18
3.2 Experimental Design.....	19
3.2.1 Experimental materials.....	20
3.2.2 Methodology	21
3.2.2.1 Material preparation.....	21
3.2.2.2 Poly bag preparation	21
3.2.2.3 PVC column preparation.....	23
3.2.3 Experimental Analysis	24
3.2.3.1 Estimation of Surface Soil Evaporation.....	24
3.2.3.2 Estimation of Soil Moisture Retention.....	26
3.2.3.3 Determination of soil moisture content.....	27
3.2.3.4 Determination of Bulk Density	28
3.2.3.5 Determination of organic content.....	29
3.2.3.6 Determination of pH	31
3.2.3.7 Determination of Electrical Conductivity	32
3.2.4 Statistical Analysis.....	32
CHAPTER 04	33
4.0 RESULTS AND DISCUSSION	33

4.1 Quality characteristics effect on mulched soil	33
4.1.1 Effect of mulch materials on soil evaporation in lab condition	33
4.1.2 Effect of soil evaporation on mulched soil in field condition...	35
4.1.3 Effect of soil water leaching on mulched soil in lab condition.	37
4.1.4 Effect of moisture content on mulched soil at lab condition	38
4.1.5 Effect of moisture content on mulched soil at field condition ..	39
4.1.6 Effect of bulk density on mulched soil in lab condition	40
4.1.7 Effect of bulk density on mulched soil in field condition.....	41
4.1.8 Effect of soil porosity on mulched soil in lab condition	42
4.1.9 Effect of soil porosity on mulched soil in field condition.....	43
4.1.10 Effect of pH on mulched soil in lab condition	44
4.1.11 Effect of pH value on mulched soil in field condition.....	45
4.1.12 Effect of Electrical Conductivity on mulched soil in lab condition.....	46
4.1.13 Effect of EC value on mulched soil in field condition.....	47
CHAPTER 05	50
5.0 CONCLUSION.....	50
REFERENCES.....	53
APPENDIX.....	i

LIST OF FIGURES

Figure 2.1: Schematic representation of the soil surface evaporation in mulched soil	6
Figure 3.1: Experimental Design	9
Figure 3.2 : Types of mulch materials used for this study	20
Figure 3.3: Experimental setup	22
Figure 3.4: Weighing moisture can with soil	27
Figure 4.1: Changes in soil evaporation on mulched soil at lab condition	34
Figure 4.2: Changes in soil evaporation on mulched soil at field condition	36
Figure 4.3: Changes in soil water leaching on mulched soil at lab condition.....	38
Figure 4.4: Effect of moisture content on mulched soil at lab condition.....	39
Figure 4.5 : Effect of moisture content on mulched soil in field condition	40
Figure 4.6: Effect of bulk density on mulched soil in lab condition.....	41
Figure 4.7: Effect of bulk density on mulched soil in field condition	42
Figure 4.8: Effect of porosity on mulched soil at lab condition.....	43
Figure 4.9: Effect of porosity on mulched soil at field condition.....	44
Figure 4.10: Effect of pH on mulched soil at lab condition.....	45
Figure 4.11: Effect of pH on mulched soil in field condition.....	46
Figure 4.12 : Effect of EC value on mulched soil at lab condition.....	47
Figure 4.13: Effect of EC value on mulched soil at field condition.....	48

LIST OF TABLES

Table 3.1: Treatments of the experiment.....	19
Table 3.2: Poly bag preparation details.....	21
Table 3.3 : PVC column preparation details.....	22
Table 4.1: Analysis of soil evaporation rates of mulched samples at different treatments in lab condition.....	34
Table 4.2: Analysis of soil evaporation rates of mulched samples at different treatments in field condition.....	36
lab condition.....	38
Table 4.3: Analysis of soil water leaching on mulched samples at different treatments in lab condition.....	
Table 4.4: Analysis of physicochemical properties of mulched soil samples at different treatments in lab condition	48
Table 4.5: Analysis of physico-chemical properties of mulched soil samples at different treatment in field condition.....	49

2.4.3.5 Banana leaves.....	9
2.4.3.6 Plastic mulch.....	9
2.4.3.7 Polythene film.....	10
2.4.3.8 Newspaper.....	10
2.4.4 Criteria for Selection of mulch materials.....	10
2.4.5 Benefits of Mulching.....	11
2.4.5.1 Moisture conservation.....	11
2.4.5.2 Prevent evaporation loss.....	11
2.4.5.3 Nutrient conservation.....	11
2.4.5.4 Weed control.....	12
2.4.5.5 Minimizing soil compaction and Erosion.....	12
2.4.5.6 Regulation of soil temperature.....	12
2.4.5.7 Improve soil structure.....	13
2.4.6 Analysis of the Effects of Mulches on soil parameters.....	13
2.4.6.1 Soil moisture content.....	13
2.4.6.2 Soil pH.....	13
2.4.6.4 Soil temperature.....	14
2.4.6.5 Soil EC.....	15
2.4.6.6 Soil bulk density.....	15
2.4.6.7 Soil porosity.....	16
2.4.6.8 Soil organic content.....	17
2.4.6.9 Mulch thickness.....	17