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# *Levelled Ploughing Improves the Moisture Content than Unploughed!*

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## **ABSTRACT**

**Tillage was for most of recorded agriculture history, a concept of achieving a finely divided soil by fragmenting clods using cultivation tools. The plough was key from historic times. Ploughing improves the moisture content of the field and as well as the field needs a perfect levelling to avoid the uneven distribution of moisture content in the same field; as in the same field observed with a moisture content of 4.8% to 20.1%. Observation showed that ploughing has increased the moisture retention capacity. Ploughed field without slope has recorded a moisture percentage of 15% and almost the same as in the castor field. Summer ploughed fields with weeds has recorded an average moisture percentage of 12.5%. This showed that current ploughed field without weeds has the advantage in retaining good moisture content over summer ploughed fields with weeds. Pastures with a textural class of red sandy soil has recorded a moisture percentage of 8.3% which is also good and was 7% lesser moisture percentage.**

## **INTRODUCTION**

For thousands of years, agriculture and tillage were considered synonyms. It is hardy to take up sowing without first tillage and weed management. Tillage was for most of recorded agriculture history, a concept of achieving a finely divided soil by fragmenting clods using cultivation tools.

The plough was key from historic times. Here, soil moisture retention is being estimated in different conditions of fields; ploughed field, unploughed field, pastures and ploughed fields with mild slopes. From which we can suggest farmers to plough or not to plough and which soil holds more moisture whether with weeds or without weeds. The data on moisture content will be helpful to suggest a better agronomic measure.

**MOISTURE CONTENT IN FIELDS**

To study the influence of ploughing on moisture content; moisture percentage is being estimated in ploughed, un-ploughed and undisturbed permanent fields. Under ploughed field category moisture percentage was estimated in fields with slopes, without slopes and fields with weeds and without weeds were identified for observation. At Agricultural College and Research Institute, Madurai C block, Fields were chosen for the study with a textural class of sandy clay to sandy clay loam and estimated for moisture percentage at a depth of 0- 15cm using moisture meter (Ready Reader). After the receipt of cumulative rainfall of 62mm on two consecutive days; the observation is recorded on September' 2020.

Table 1. Moisture percentage observed in ploughed fields with or without slope and permanent fields

<b>Sl.No</b>	<b>Description of Test fields</b>	<b>Textural class</b>	<b>Moisture (%) at 15 cm depth</b>
A.	Castor	Sandy clay loam	12.3
			22.2
			18.6
			10.6
Mean			15.9
B.	Permanent Curry leaf field with slope and no ploughs/ plot	Sandy clay	1.3
			8.1
			0
			10.5
Mean			5.0
C.	Currently Ploughed field A with no slope	Sandy clay	11.1
			16.5
			15.3
			16.5
Mean			14.9
D.	Currently Ploughed field B with slope	Sandy clay	4.8
			18.2
			20.1
			15.2
Mean			14.6

E.	Ploughed field with no slope and with no weeds	Sandy clay	15
			15.8
			12.3
			11.1
	Mean		13.5
F.	Field Ploughed earlier (summer plough) now with weeds	Clayey	12.6
			9.9
			12
			15.4
	Mean		12.5
G.	In a pasture with grasses	Red sandy	7.9
			9.6
			7.1
			8.4
	Mean		8.3

Among the different ploughed and unploughed fields, Castor field with Sandy clayey loam has recorded higher percentage of moisture (15%). There was distinguishing difference in the moisture content in the fields with slopes. The permanent curry leaf field has recorded a moisture range of 0 -10.5% in accordance with the slope. Elevated portion of the slope has the lowest reading of 0 (zero) and low-lying of the slope with a moisture content of 15% and an average moisture percentage of 5.0%. Hence for better moisture content needs a perfect levelling. Moreover, ploughed field with slope has the moisture range of 4.8% to 20.1% of the same textural class; hence the observation showed that ploughing has increased the moisture retention capacity. Ploughed field without slope has recorded a moisture percentage of 15% and almost the same as in the castor field. This showed that vegetation difference on moisture percentage is lesser. Deep ploughing during the rainy and dry periods in highly compacted soils ( $BD > 1.5 \text{ g/cm}^3$  and  $SPR > 250 \text{ N/cm}^2$ ) greatly increased conserved soil water in the profile, while in less compacted soils ( $BD < 1.5 \text{ g/cm}^3$  and  $SPR < 250 \text{ N/cm}^2$ ) conserved water content was adversely affected (Arachchi, 2009). Tillage practices alter the soil structure and consequently their hydraulic properties. Tillage improves the soil infiltration (Strudley et al., 2008). Summer ploughed fields with weeds has recorded an average moisture percentage of 12.5%. This showed that current ploughed field without weeds has the advantage in retaining good moisture content over summer ploughed fields with weeds. Weeds may also remove the moisture from the soil by uptake. Pastures with a textural class of redsandy soil has recorded a moisture percentage of 8.3% which is also good and was 7% lesser moisture percentage. With respect to soil moisture, there was greater soil moisture removal at the sampling points near the rows of native trees under the silvopastoral system, mainly due to enhanced exploration by tree roots at greater depths in dry spells or early dry periods, when compared with the midpoints between the rows (Pezzopaneet al., 2015). Pollack et al. (2009) reported that silvopastoral

systems have greater potential to exploit water resources, particularly deep moisture capture by the trees.

### **CONCLUSION**

Ploughing improves the moisture content of the field and as well as the field needs a perfect levelling to avoid the uneven distribution of moisture content in the same field; as in the same field observed with a moisture content of 4.8% to 20.1%. observation showed that ploughing has increased the moisture retention capacity. Ploughed field without slope has recorded a moisture percentage of 15% and almost the same as in the castor field. Summer ploughed fields with weeds has recorded an average moisture percentage of 12.5%. This showed that current ploughed field without weeds has the advantage in retaining good moisture content over summer ploughed fields with weeds. Pastures with a textural class of red sandy soil has recorded a moisture percentage of 8.3% which is also good and was 7% lesser moisture percentage.

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