

Dynamics of Soil Moisture Regimes and Ground Water Under Saryu DIARA

Dr. R.K. Mehta¹, Er. Mahendra Rai² & Er. R.J. Singh³

Dean, MCAET, Ambedkar Nagar, Uttar Pradesh, India¹

Associate Professor (Dept. of SWCE), MCAET, Ambedkar Nagar, Uttar Pradesh, India²

Associate Professor (Dept. of FMPE), MCAET, Ambedkar Nagar, Uttar Pradesh, India³

Abstract: Diara land being itself a very typical hypsographic of its nature, engulfed with twin problems of drought during pre and post floods. To quantify the relationship between soil moisture regimes and water table fluctuation is therefore worth prime. The present study was therefore undertaken and a regression equation between moisture content and depth to water table in diara land a linear regression equation $Y = -12.606X + 58.829$ was established, where X and Y are depth to water table (m) and percentage of moisture content, respectively. The regression equation indicates the trend of increase in moisture content was related with decrease in depth to water table and vice-versa. This finding needs to utilise to reformat the strategies related to soil moisture conservation of Diara land ecosystem.

Keywords: Ground water, diara land, meandering, water table and moisture content of soil etc.

I. INTRODUCTION

Diara land being subjected to inundation for different periods, periodically eroded and formed by meandering, braiding and course changing of river engulfed with very less time for field preparation. Depth to water table in diara area plays important role to govern the moisture content of soil. In this experiment effort was made to find out the relationship between depth to water table and moisture content of soil with help of regression equation. The moisture content of soil on the basis of water table will provide the prediction of appropriate planting time so that maximum stored moisture could made available to plant for better yield. In diara area only rabi season is available as cultivation period because the area is under effect of flood from June to mid September. The crop is adversely affected due to water stress if proper stored moisture is not utilised. The present study was therefore, carried out at diara land Maheshpur Katra Gonda near Saryu river to establish the relationship between depth to water table and moisture content of soil.

II. MATERIALS AND METHOD

Peizometers were installed at research farm and data of depth to water table were recorded weekly. At the time of recording data on water table, the soil samples were also taken at the depth of 30 cm. Percentage of moisture content was found out by oven dry method and depth to water table in metres were recorded by peizometer. This experiment was conducted for two years.

III. RESULTS AND DISCUSSIONS

On the basis of two years data linear regression equation between depth to water table and moisture content of soil was derived by least square method as $Y = 58.829 - 12.606X$.

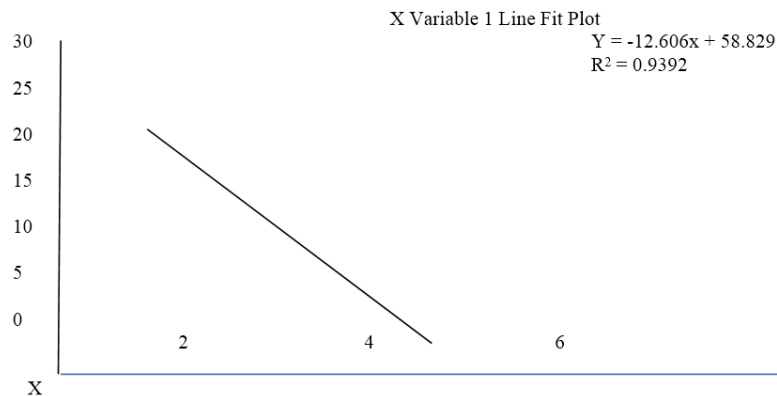


Fig 1. Relationship between depth to water table and percent of moisture content

Where, Y = moisture content of soil (%)

X = depth to water table (metre)

The coefficient of correlation between water table and moisture content was -0.9227 significant at 1% level. Negative value of regression coefficient indicates a trend of decrease in percentage of moisture content with increase in depth to water table and vice-versa in diara area, figure 1.

This empirical equation may be useful in prediction of percentage of moisture content of soil from depth to water table for timely sowing of crop under diara land.

IV. CONCLUSION

The regression coefficient of the equation was significant at 1% level and regression equation indicated a trend of decrease in percentage of moisture content of soil with increase in depth to water table in diara area. Water table and moisture content equation was found suitable for the purpose.

REFERENCES

1. Chow V.T. 1964. Handbook of applied hydrology McGraw Hill book company New York.
2. Doorenbos, J. and Pruitt W.D. 1977. Guideline for predicting requirements.
3. Food and Agriculture Organisation of United Nations Rome Publication 24: 73-74.