

Plant Height At Successive Crop Growth Stages Of Maize Varieties (H 405 and Chandan – 3) in NPE and PE

Dr. Smita Shrivastava

Assistant Professor of Botany, P.M.B Gujarati Science College, Indore, Madhya Pradesh

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Abstract - Crop Production depends upon the number of factors that causes direct or indirect harm to natural resources; industrial waste cause hazardous to the environment.

Keywords - Water Pollution, Non-Polluted Environment(NPE), Polluted Environment (PE)

I. INTRODUCTION

Industries exert demand on environmental resources causing migrant labor and other problems to resources. Industrial Pollution comes from many sources harmful to soil and microflora.

In the agriculture context, the use of effluent sewage for irrigation of cropland is a major concern since it may cause possible harmful effects on micro soil flora and soil fertility. Paliwal and Yadav have given their extensive work over the field of effluent irrigation.

Among cereals, Maize(*Zea Mays*) is one of the important crops of the world. This crop species is most efficient in the utilization of solar energy by virtue of having a C₄ carbon cycle. India stands only next to the USA, Brazil, China, and Mexico in terms of average but placed eleventh in production.

In M.P., Maize is grown in 8.89 thousand hectares with a total production of 125 thousand tonnes with a mean average yield of 1.14 tons per hectare. It is very sensitive to the environment, also known as an "Indicator for nutrient deficiency".

Oswald observed that industrial waste after the treatment could be used for irrigation purposes. Harmen(1968)

suggested that industrial waste returning to land had a new role in agriculture.

II. MATERIAL METHODS

To understand a research study accurately and the material used in a study, and detailed description of the method used is most essential.

A. Experimental area

The experimental area is situated south of the shivana river. The raja ram factory is situated upstream on the north side of the river shivana. The industrial wastewater of the starch factory is pumped across the shivana river to the south bank of the shivana river to the ody farm of the factory. The area of ody farm had been selected for studies as a polluted environment.

To the south of the shivana river, about 1.5 km away, situated a badhari research farm. This area had also been purposely selected for irrigation by tubewell or well as a non-polluted environment.

Both sites had medium black soil. The soil was deep and free from water logging conditions.

B. Study of crop growth in polluted and non-polluted environments

A field experiment was conducted during 1989-90, 1990-1991,1991-1992 at ody farm and corresponding set a badhari research farm. Two varieties of maize were sown with uniform conditions in two sites, the differential behavior of crop responses growth parameters are evacuated in these two environments

C. Experimental details

- | | |
|------------------------------|---|
| a) PlotSize: | 2.4*6m ² |
| b) Spacing between two plots | 50 cm |
| c)Spacing between rows | 30 cm |
| d)No. of rows | 8 |
| e) Varieties | Maze |
| f) Symbols used | V ₁ - H-405
V ₂ . Chandan -3 |
| g) Field operation | The experimental field at both sites were prepared with |



Table 1.3: Plant Height at successive crop growth stages of maize in polluted and non-polluted environments

Treatment	30 days	45 days	60 days	Harvest
NPE V ₁	70.57	119.97	170.65	227.05
V ₂	38.96	116.60	174.02	242.93
Mean	54.77	118.29	172.34	234.99
PE V ₁	65.19	78.42	167.47	221.40
V ₂	38.06	100.19	171.60	243.75
Mean	51.63	89.31	169.54	232.58

Table 1.4: Crop growth rate of different varieties of maize NPE and PE.

Treatment		30-45	45-60	60-Harvest
NPE	V ₁	0.0022	0.00072	0.00025
	V ₂	0.0025	0.00067	0.00023
	Mean	0.0034	0.0010	0.0003
PE	V ₁	0.0011	0.00087	0.00050
	V ₂	0.0010	0.00092	0.00047
	Mean	0.0016	0.0013	0.0007

Table 1.4 shows Plant height increased with the advancement in age at a steady rate in maize. V₂ recorded the lowest plant height in all growth stages

V. CONCLUSIONS

Plant height increased at a faster rate in early growth stages and slowed down in later growth stages. Better plant height was observed in NPE as compared to PE in maize. The concentration of effluent adversely affects the plant height in maize varieties.

The effluent was highly acidic, with a PH ranging from 4.0 to 4.5 with high BOD and COD. Effect of different concentrations of effluent as well as varietal responses found evident for growth characteristics.

To summarize the result of the investigation, it is concluded that there was no practically no significant difference observed except plant height and relative growth rate. Maize variety H-405 was found to be the best suitable variety; therefore, in future studies, it may be conducted on a group of crops.

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