

# Yield and Yield Parameters in Zea Mays (H405, Chandan -3) in NPE and PE

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**Abstract** - India is a land of agriculture; the production of the crop depends upon the use of agro-technique for crop production, yield is a cumulative characteristic of a crop. The factors which govern the production of the crop are quality of seed, fertilizers, irrigation, and soil fertility.

**Keywords** - Yield, Yield Parameters, Non-Polluted Environment(NPE), Polluted Environment (PE)

## I. INTRODUCTION

The basic problem of Indian agriculture is low productivity. To increase productivity, modern techniques should be used. Industrial Development is essential for providing basic human needs, food, shelter, and health for human beings. Technologically and economically, in advanced countries, the biological effect of various forms of physical and chemical pollution of the environment is apparent. The effect on health due to the environmental factors are relatively well known in occupational exposure or accidental contamination, the aspects of pollution from industry is one of the greatest challenges of environmental health problem.

Among pulses, Water is an elixir of life, as a direct result of industrial activities, the number of pollutants which are highly toxic entered into the natural water system, the water pollution will be limiting factors in days to come to mankind (1969), the studies of water pollution are initially provided by Hynes (1960), Hawkes (1963) and Warren (1971). Water pollution can be of four major types Seth (1976). Several workers like Davidson and Clymer (1966), Parker (1968), Willis et al (1975), Trivedi (1979) have made significant studies on consumption and conservation of oxygen and the effect of industrial waste on the river.

## 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 deep and free from water logging condition

### 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 at Badhari research farm. Two varieties of maize were sown with uniform conditions in two sites, the differential behavior of crop responses growth parameters are evaluated in these two environments.

### C. Experimental details

a) Plot Size :	2.4*6m <sup>2</sup>
b) Spacing between two plots	50 cm
c) Spacing between rows	30 cm
d) No. of rows	8
e) Varieties	Zea Mays
f) Symbols used	V <sub>1</sub> - H405 - V <sub>2</sub> . Chandan
g) Field operation	The experimental field at both sites were prepared with the help of bullock drawn equipment
h) Seed treatment	The seed of maize varieties are treated with fungicide thirum 3gm per kg
i) Observation	Ten random plants were tagged for observation in each plot, only tagged plants were harvested for recording yield parameter .



### III. RESULT AND DISCUSSION

**Table 1.1: Characteristics and nature of Industrial Wastewater(effluent) M/S Rajaram Brothers, Mandasaur**

S.No	Particulars	1989	1990	1991
1.	Raw water flow (m <sup>3</sup> /d) (Average)	120	65	65
2.	Treated waste water flow(m <sup>3</sup> /d)(Average)	100	55	55
3.	Color/Odor	Dirty white	Dirty alcoholic	Dirty alcoholic
4.	Ph	4.2	4.0	4.5
5.	Temperature(°C)	28°	29°	31°
6.	B.O.D(mg/l)	1095 mg/l	1542 mg/l	1456 mg/l
7.	C.O.D	2310 mg/l	2605 mg/l	2127 mg/l
8.	Suspended solids	8325mg/l	8718 mg/l	9968mg/l
9.	Chloride concern.	-----	-----	-----
10.	Toxic element	-----	-----	-----

Note: Data obtained M.P. Pradushan Niweran Mandal. Discharge monitoring report

The results obtained during the course of the investigation depend upon the economic yield of a crop plant depend upon the number of complex characteristics and are influenced by the interaction between the morphological, physiological, and environmental conditions of the plants. The responses of characteristics as influenced by effluents irrigation with advancement in age with comparatively at a faster rate in early growth period as compared to later growth period.

**Table 1.2: Yield and Yield components of different varieties of Zea Mays in NPE and PE**

Treatment		Seed Index (gm)	No. of seeds/plant	Grains weight / Plant (gm)	Kernal weight (gm)
NPE	V <sub>1</sub>	21.70	240	52.10	16.26
	V <sub>2</sub>	21.84	244	53.30	18.13
MEAN		21.77	242	52.70	17.19
PE	V <sub>1</sub>	19.91	224	44.60	14.28
	V <sub>2</sub>	20.30	228	46.30	16.78
MEAN		20.10	226	45.45	15.53
SE ±		0.33	3.20	1.47	0.55
CD 5%		0.94	9.2	4.14	1.54

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. Significantly better seed yield was recorded in NPE as compared to PE.

#### IV. CONCLUSIONS

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. Yield is a complex characteristic governed by external and internal factors. In the experiment, the varietal responses were significantly marked by effluent. Yield and yield parameters are the most important factor for judging the superiority decreased kernel weight in maize contribute to total biomass varietal Responses were significant H-405 recorded lower kernel weight in field condition It has been reported that seed size and seed index are important characters for yield parameter black 1957 Gelmon 1972.

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