Comparative Analysis of Percentage Seed Germination In Maize And Soybean Varieties At Different Concentrations

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ABSTRACT
The aspect of pollution from industry is one of the greatest challenges of environmental health problems .In agriculture context the use of effluent for irrigation of crop land is a major concern since it may cause possible harmful effects on soil fertility .
In industrial sources and waste disposal is creating problems with the effluents of complexes as well as vegetation. Brooks and Seeghart 1977 reported intensive activity germination with effluent .There was decrease in percentage of germination of seed at high level salinity (George and William 1964).
KEYWORDS *Germination and effluent*

I.   INTRODUCTION

Change in the physico chemical characteristics Of water causes pollution. Standard methods of examination of water reposted by ALHA(1965) , Saxena also reported standard method for examination of polluted water low percentage at germination of seed might be due to high osmotic pressure [Haywood and Walleigh 1949] Oberoi 1954 reported the interesting observation on germination in wheat and lady figure in different dilution of polluted water.

II.   MATERIAL METHOD

Experiment on germination was carried out in petri dishes at room temperature . Each temperature was replaced five times and each replication countained 10 seeds.

1.Experimental area :
The experimental area is situated south of shivna river . The raja ram factory is situated upstream on north side of river shivana .The industrial waste water of starch factory is pumped across shivana river to south bank of shivana river to ody farm of factory .The area of ody farm had been selected for studies as a polluted environment.
To south of shivana river about 1.5 km away situated badhari research farm. This area had also been purposely selected for irrigation by tube well or well as a non polluted environment .
Both sites had medium black soil .the soil deep and free from water logging condition

2.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

3.Experimental details

a)Varieties   Maize H-405,Chandan-3,Soybean JS72-44, Soybean JS75-46
b)Symbols used V_1-   Maize H-405
                                          V_2 -Maize Chandan-3
                                          V_3 - Soybean JS72-44
                                          V_4 - Soybean JS75-46
c) Characteristics of varieties   Maize H-405
                                          The variety is medium in maturity .This variety is adopted
and suitable for cultivation, matures in 80-82 days. The
average yield is 35 kg/ha

Maize Chandan-3

The variety is medium in maturity .The variety is adopted and suitable for kharif but can grown in rabi season .The variety is suitable for cultivation

Soybean JS72-44

This variety is widely adopted and suitable for different agro-climatic zones of Madhya Pradesh . It matures in 100-105 days after sowing .Average yield is 24-26 q/ha

Soybean JS75-46

It is a semi determinate erect type variety.

This variety is widely adopted and suitable for different agro-climatic zones of Madhya Pradesh . It matures in 100-105 days after sowing .Average yield is 24-26 q/ha

CONCENTRATION

$C_1 = 100\%$ eff.

$C_2 = 75\%$eff + 25% water

$C_3 = 50\%$eff + 50% water

$C_4 = 25\%$eff + 75% water

$C_5 = 10\%$eff + 90% water

$C_6 = 100\%$eff control

III. OBSERVATION RECORDED

Observations were recorded on randomly selected plants .Mean of these was computed out in petri dishes at room temperature.Each treatment was appreciated five times and each replicate contained 10 seeds.

Seeds of maize and soybean varieties were sprinkled on disks of watchman number 44 filter paper, cept in petri dishes. The petri dishes were previously washed with distilled water and dried and sterilized at 110^0 C for 24 hour in the oven. Different dilution wastewater were taken as treatments. Simultaneously, a control was run with well water alone. Seeds of each variety were soaked in different dilutions for 1 hour. The soaked seeds were spread at the rate of 10 seeds per petri dish and 50 seeds were tested for each concentration. Number of germinated seeds was counted after 18 hours. Germination was recorded at an interval of 6 hours for at least 6 days. Total seeds germination were determined and mean germination percent was taken and calculated and reported as germination percentage.

S.No	Particulars	1989	1990	1991
1.	Raw water flow (m^3/d) (Average)	120	65	65
2.	Treated waste water flow(m^3/d)(Average)	100	55	55
3.	Color/Odor	Dirty white	Dirty alcoholic	Dirty alcoholic
4.	Ph	4.2	4.0	4.5
5.	Temperature(^{O}C)	28º	29º	31º
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 concen.	-----	------	------
10.	Toxic element	-----	------	-----

Table 1.1: Characteristics and nature of Industrial Waste water(effluent) M/S Rajaram Brothers ,Mandsaur

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

IV. RESULT AND DISCUSSION

The results obtained during the course of investigation depend upon the economic yield of a crop plant, depend upon a number of complex characteristics and are influenced by interaction between morphological , physiological and environmental conditions of the plants .

Table 1.2

Percentage seed germination of different varieties of maize and soybean at different concentrations of effluent.

Treatment	Maize		Soybean	
	V_1	V_2	V_3	V_4
C_1	8	6	6	5
C_2	12	11	10	9
C_3	51	49	35	32
C_4	76	74	56	51

C_5	84	88	78	77
C_6	89	86	79	78
Mean	53.2	52.3	44	42

High Effluent concentration at 100% has retared seed germination. At C_3(75 Eff+ 25 W) germination was slightly improved as water dilution increased. C_4 , C_5 recorded good germination in both the crops. In maize and soybean lowest germination percentage 7 and 6 was recorded at c_1 (Table 1.2). In maize and soybean practically the same germination was observed at the middle value of C_3 and C_4 . Mean germination percentage of varieties over concentration , recorded lower value of varieral means , simply due to very low value at C_1 and C_2. The germination percentage in all the varieties of maize and soybean were 80% and 77% at C_5. In general lower germination percentage was observed in soybean as compared to maize.

V.   CONCLUSIONS

seeds germination of different varieties of maize and soybean at six different concentrations were worked out. Germinated seed were counted after seven days and mean percentage germination was calculated and reported in percent investigation. It is Suggested that best dilution for crop production 100% effluent affect germination. The adverse effect on all the parameter continued upto 50% concentration effluent good germination percentage was observed at 10:90 effluent water concentration indicating that this dilution both crops could be germinated Successfully.

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