EFFECT OF SEEDLING SURVIVAL OF *PISUM SATIVUM* IN SAREE PRINTING INDUSTRY EFFLUENT CONTAMINATED SOIL AMENDED WITH VARYING DOSES OF COMPOSTED RICE HUSK

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ABSTRACT

The present work is concerned with the analysis of germination percentage, root and shoot length and total biomass of Pisum sativum grown in saree printing industry effluent contaminated soil amended with different doses of composted rice husk. The germination was 100% in contaminated soil amended by composted rice husk concentration of 15%, 20% and 25% while it decreased a little (20%) in contaminated soil without any amendment. The root and shoot length were maximum in 25% amended soil. The maximum biomass observed was 0.65gm. in 25% rice husk amendment and minimum 0.45gm. in unamended soil. The result showed that the germination percentage and total biomass were improved by rice husk amendment but root and shoot length were only little indicating that fertility of polluted soil may be restored by rice husk amendment.

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INTRODUCTION:

Lot of work has been done with regards to effects of polluted water of different industries on agriculture farming (Karim *et.al.,* 1975, Khosla 1980 and Singh 1982) even than these results are still to be worked out for domestic and daily life. There are 325 saree printing industries in Mathura district located at different places . these industries release polluted coloured water which flows to the city and ultimately discharge into river Yamuna.

Water is also discharged in different small and large points situated near the industries. This polluted water of ponds is used by large numbers of animals, plants and human beings for various purposes. The present work has been undertaking to see the effect of saree printing industries effluents contaminated soil amended with different doses (5%, 10%, 15%, 20% and 25%) of composted rise husk, on germination percentage, root length and shoot length of *Pisum sativum*.

MATERIALS AND METHODS :

For the present research paper physico-chemical characteristics of the polluted soil were determined as per Jackson (1973) and Piper (1966).

For germination percentage the five seeds of *Pisum sativum* were placed in 10 X 2 cm. size sterilized petridishes filled with Saree printing industries effluent contaminated soil with rice husk amendment in the doses of 5%, 10%, 15%, 20% and 25%. In a separate set contaminated soil without any amendment was also kept as a control experiment. All the experiments were repeated in the set of 3-3. Germination percentage was measured daily. Root and shoot length was measured after 12 days and biomass was also calculated after 12 days for this purpose plants were dried at 45 °C. All the experimental results were calculated statistically.

RESULTS AND DISCUSSION :

The physico-chemical studies of the contaminated soils reveals that the soil is saline and electrical conductivity is quite high (Table 1).

The germination percentage data reveals that 5%, 10%, 15%, 20% and 25% rice husk amendment are most suitable and display 80 to 100 percent germination but 15% and 20% concentration is most suitable as the germination percentage is improved (Table-2).

Table 1. Physicochemical characteristics of saree printing industry effluent contaminated soil

S.No.	Parameters	Range	Mean + S.E.
1.	Temperature (°C)	24.0 – 32.0	28 ±1.3540
2.	pH	7.4 – 7.9	75 ±0.0588
3.	Moisture (%)	0.45 – 0.60	0.52 ±0.0274
4.	Water holding capacity (%)	28.0 – 39.0	34.8 ±1.8243
5.	Organic carbon (%)	0.30 – 0.45	0.37 ±0.0249
6.	E.C.	0.4 – 0.8	0.5 ±0.0662
7.	Organic matter (%)	0.50 – 0.75	0.60 ±0.0427
8.	Total Nitrogen (%)	0.04 – 0.06	0.04 ±0.0037
9.	C : N ratio (%)	11.00 – 12.50	11.52 ±0.2737
10.	Ex. Potassium (ppm)	11.0 – 15.0	12.3 ±0.6959
11.	Available phosphorus (ppm)	13.0 – 16.0	14.2 ±0.5820
12.	Carbonate (mg/100gm)	17.7 – 19.4	18.56 ±0.0037
13.	Bicarbonate (mg/100gm)	traces	Traces

Table 2.- Impact on seedling survival of *Pisum sativum* in saree printing industry effluent contaminated soil amended with varying doses of composted rise husk-

S.No.	Doses of amendment (W/W)	Germination %age	Root length (cm.)	Shoot length (cm.)	Total Biomass (gm.)
1.	5%	80	1.08	12.1	0.50
2.	10%	80	1.14	13.3	0.55
3.	15%	100	1.20	14.6	0.55
4.	20%	100	2.00	15.0	0.60
5.	25%	100	2.20	15.4	0.65
6.	control	75	1.07	12.0	0.45

The shoot length of seeds grown upto 12 days was found to be maximum (15.4 cm.) in 25% rice husk amended soil and root length was also maximum (2.2 cm.) in 25% amended soil indicating that different concentration are required for root and shoot length.

Total biomass studies reveals that maximum biomass production (0.60gm and 0.65gm) was observed in 20% and 25% conc. The minimum biomass production was seen (0.50gm.) in 5% composted rice husk.

These results are based on earlier studies done by APHA, AWWA and WPCF (1975), Mumbla and Singh (1968), Karle and Watson (1968), Singh *et.al.* (2005) and Kanti (1973).

Sahay *et.al.* (1979) have studied effect of polluted water released from fertilizer factories on *Phaseolus radiates*, They have concluded that polluted water of these industries was harmful to the life of the plant.

Kumari and Jain (1990) working on *Spinacea oleracea* (Spinach.) also concluded that germination was maximum in 5% concentration root and shoot length in 10% and biomass in 5% concentration.

In the present investigation it can be concluded that 5% to 25% doses of rice husk amendment in the Saree printing industry effluent contaminated soil are suitable for seedling survival and beyond this dose can be used for the improvement of the soil.

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