

EFFECT OF PAPER MILL EFFLUENT ON GROWTH, GERMINATION AND YIELD OF *GLYCINE MAX* COLLECTED FROM PAPER MILL NEAR DATALA, DISTRICT BULDANA

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Abstract: *Glycine max* treated with various concentrations of paper mill effluent (20, 40, 60, 80 and 100 %), yield and biochemical content were decreases at all concentration. the biochemical parameters were seen decreased. Oil content was slightly increased only at 20% concentration level. Seed germination also seen decreased.

INTRODUCTION:

Paper mill is situated near Datala, Dist, Buldana and it produces the polluted effluent, If such polluted water is used for agricultural purposes then problem of pollution can be decrease and yield of crops can be increased. The paper mill effluent contain many chemicals so here the attempt was made to detect weather the effluent is beneficial or harmful to crops. Earlier researchers (Jabeen & Sussan Abraham 1997; Radha & Panigrahi 1998; Gupta Asha 1997) reported harmful effects of paper mill effluent on some plants.

MATERIAL AND METHODS:

For this investigation paper mill effluent collected & treated with *Glycine max* at various concentrations ie, 20, 40, 60, 80 and 100 percent. Each concentration was given to plants in a triplicate manner. For each plant the effluent is given at the interval of fifteen days for a period of 90 days. Free amino acid content, Oil content estimated by the methods of Sadashivam and Manikan (1990). Protein contents of the sample were determined by the methods of Lowry *et al* (1951).

RESULT AND DISCUSSION:

Yield/plant, Free amino acids, protein, total chl, chl-a, chl-b is increased at 80% concentration level. Oil content is increased only at 10% concentration level but decreased at all concentration levels. The result showed that various growth parameters adversely affected at the highest concentration of effluent.

Neelam and Sahai (1985) observed that 10% effluent of Fertiliser factory were effective for seed germination, seeding growth, pigment contents and biomass of rice plant and hence suitable for irrigational purposes. Present observations on paper mill effluent on the plant *Brassica juncea* indicates that 10 and 20% concentrations increase chlorophyll content, oil content and yield per plant. These results are similar to those of Neelam and Sahai (1985). Jabeen and Sussan Abraham (1997) treated *Cassia tora*, *C. oxidentalis*, *Vicia faba*, *Vigna sinensis* with Hindustan news print factory effluent and noticed adverse effect on germination but stimulatory effects in other parameters. Iqbal sanjeeda and Mehta (1998) reported that the total chlorophyll and dry matter production in wheat and gram adversely affected with treatment of industrial effluent. Radha and Panigrahi (1998) worked on biochemical changes of rice plant treated with cholar alkali factory effluent. They observed the D.N.A and R.N.A contents decreased as the concentrations of effluent increased, but 5% concentration level showed good stimulation over controll.

Table 1 :Yield & Biochemical content of *Glycine max* grown on paper mill effluent.

Parameters	C	20%	40%	60%	80%	100%
% of germination	92	90	87	76	62	59
Yield/plant	0.26±0.05	0.23±0.04	0.20±0.04	0.21±0.01	0.22±0.01	0.19±0.02
Free amino acid	2.15±0.19	2.0±0.12	2.10 ±0.16	2.10±0.12	1.91±0.21	1.96±0.12

content (mg/g.)		(-13.09)	(-2.55)	(+4.47)	(+20.12)	(-6.70)
Oil content (%)	13.2±0.51	14.3±0.15 (-16.21)	11.12±0.21 (-9.36)	12.34±0.22 (-10.81)	12.78±0.15 (-2.70)	11.23±0.21 (-1.80)
Protein content (mg/g)	30.1±0.18	27.3±0.22 (-4.98)	28.1±0.42 (-3.32)	22.4±0.32 (-5.64)	21.2±0.23 (+3.65)	22.5±0.26 (-18.60)

Values are mean ± SE of 20 observation & + stimulation, - inhibition. , values in parenthesis is the percentage over control.

Gautam Bishnoi (1992) and Shukla and moitra 1995) stated that paper mill effluent contains high quantity of heavy metals, chlorides, phenol, phosphates and bicarbonates. It appears that inhibition of growth and other parameters might be due to the toxic elements present in the Duskheda paper mill effluent.

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