

ABSTRACT

The increasing pressure of more and more food production to feed the geometrically growing population throughout the world can be met only through the intensification of agriculture, which requires high yielding varieties with high input of water and fertilizer. Fertilizer industry is one of the major water consuming industries, responsible for water and soil pollution of considerable magnitude. Since most of the waste water is being discharged into the surrounding water bodies, which disturbs the ecological balance and deteriorates the water quality. The evaluation of toxicity of waste water by biological testing is therefore extremely important.

The present work has been carried out to study the impact of a fertilizer factory effluent being discharged into the river *Periyar* at *Udyogamandal* near *Aluva* in Kerala. The test materials selected for the phytotoxic study were the three varieties of *Capsicum annuum* L. viz. Ujwala, Jwalamukhi, Jwalasakhi and the Wild.

The test materials were treated with different concentrations of the effluent. The parameters like percentage of seed germination, growth, morphology, yield, net primary productivity, cytotoxicity, contents of photosynthetic pigments, carbohydrate and protein were studied and compared with those of control. Moreover the investigation was extended to stereomicroscopic as well as scanning electronmicroscopic observation.

The result of the present study is governed by the concentration of the effluent and is crop specific. The order of tolerance among plants studied was

Wild > Ujwala > Jwalamukhi > Jwalasakhi. The utilization of fertilizer effluent after proper treatment and suitable dilution as liquid fertilizer was recommended to *Capsicum annuum* L.

KEY WORDS : Fertilizer factory effluent, Physico-chemical characteristics, Seed germination, Growth, Food Adjunct, *Capsicum annuum* L., Chromosomal abnormalities.