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Soil irrigation effect of sugarcane industrial effluent on changes of level of chlorophyll, growth and yield of *Triticum aestivum* cv.PBW-226

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SUMMARY

Effect of periodic watering with different concentration of sugarcane industrial effluent on different parameters such as length (root, shoot and spike), No. of leaves, no. of grain/ spike, leaf area and chlorophyll level of *Triticum aestivum* cv.PBW-226 had been assessed. The effluent reflected promotory effect of different concentration of sugarcane industrial effluent on chlorophyll level, growth and yield of plant.The experiment suggested that effluent can be used as fertilizer after dilution.

Key words : Sugarcane industrial effluent, Irriation, Chlorophyll level, Growth and yield, *Triticum aestivum*

Needless to say that the nature of soil is dependent on the quality of water entering into it.The physiochemical and biological studies of soil polluted with different industrial effluents revealed great change in the characteristics of soil and wild vegetation (Arora *et al*., 1973 and1974; Davis and Jaksnow, 1975; Tripathi, 1978; Bhattacharya and Das, 1980; Olademeaje *et al*., 1984). Sugar mill effluent have altered the physical and chemical composition of soil due to seepage absorption (Kumar, 1999).

Several workers suggested that industrial effluent might be used as a liquid fertilizer only for certain crops after proper dilution with water. The utilization of industrial effluents for irrigation of crop plants is one of the highly beneficial propositions of waste disposal (Day, 1973, Pound and Crites, 1973, Bauwer and Chaney, 1974).The sugar mill based distillery effluent has become a challenge for environment protection. It is necessary to deal with this effluent eco-friendly and cost-effectively. The sugar mill based distillery effluent was used to mix with other fertilizers to form liquid fertilizer, which was applied to sugarcane by Qi-zhan Tang *et al.* (2006).Kumar (1999) studied the effect of carbonaceous sugar mill effluent on root/shoot ratio of *Hordeum vulgare* IB-65.Patil *et.al*.(2001) noted the effect of sugar industry effluents on germination and growth of rabi monocotyledon crop *Triticum aestivum* as well as *Kharif* dicotyledon crop *Phaseolus vulgaris*.

Workers have studied the effects of industrial effluents on different plant parameters (Shantamurty, and Rangaswamy 1979, Shinde and Trivedy 1982, Sahai *et.al.* 1983, Banerjee and Ray *et.al*., 1983, Somasekhar 1985, Bhatnagar *et.al*. 1986).The present experiment has been planned to know the sensitivity level of the crop(*Triticum aestivum* cv.PBW-226) against different concentration of sugarcane industrial effluent on different parameters and and to know the nature of effluent wheather beneficial or harmful for the crop.

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MATERIALS AND METHODS

For the study of plant growth and yield development plant cv. (*Triticum aestivum* cvs.PBW-226) was grown in pots and irrigated with selected doses of sugarcane industrial effluent with control (*i.e.* from 10% to 100%) upto the development of yield. 20 seeds of selected plants were sown with proper space in polythene bags which bear appropriate weight of soil and irrigation of plants were carried out by 100 ml solution at regular intervals. Plants were subjected for detailed study of measurement of different plant parameters which are length, number, yield and leaf area of different plant parts.

Chlorophyll a,chlorophyll b and total chlorophyll:

For this fresh green leaves were plucked from the plants fornightly in morning hrs. Chlorophyll content was measured according to Arnon (1949). For this 50 mg of fresh leaves was homogenized with 80% acetone(80 ml acetone+20 ml distilled water) and a pinch of sodium bicarbonate.The homogenate was centrifused at 5000 rpm for 5 minute and make appropriate final volume with 80% acetone.The absorbance was recorded at 663nm and 645nm by spectrophotometer.The amount of chlorophyll a, b and total chlorophyll was calculated according to following formula-

Chlorophyll a = (12.7xA663)-(2.69xA645)