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RESEARCH ARTICLE

Impact of distillery effluent on growth of (*Zea mays* L.)

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SUMMARY

Impact of distillery effluent of different concentrations on growth of two varieties *i.e.* hybrid 4640 and DMH– 849 of *Zea mays* was investigated. Variable behaviour on pattern of seed germination, shoot length, root length and root- shoot ratio was recorded on various concentrations of effluent. Maximum growth was observed in the plants irrigated with 60 per cent of the effluent and above that deleterious effect was recorded.

Key Words : Distillery effluent, Growth, *Zea mays*

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Due to explosion of population, change in attitude of life and development of high degree of scientific research have yielded rapid growth of industrialization to fulfill the human need in the last two decades of twentieth century. This phenomena has generated laterally most serious problem centered with human health and other welfare. Albeit water consumption in the industries has third rank, but industries are generating effluent not only high amount but they contain high level of organic components which acts as suitable media for growth and multiplication of virulent and a virulent microorganism. Besides this several industries are concerned with such type of products having high toxicity level in their effluent due to existence of chemical or heavy metal salts.

Even after proper treatment effluent should not be discharged in any aquatic system or nearby recreation point in order to control outbreak of any kind of epidemic. But as in our conditions where maximum number of cities and industries do not possess adequate treatment plants and it is customary to discharge untreated raw sewage either in aquatic reservoir or/and land surface. Since this raw sewage contains high amount of organic components and even treated effluent possesses certain amount of organic components. Both may serve the need of nutritional requirement to the plants as fertilizer. Therefore, in order to find out alternative means of safer sewage disposal as well as minimizing the investment in agricultural cost.

In the light of above and in the welfare of the society efforts have been made to utilize the effluent for irrigation in several agricultural crops all over the world based on the report made by several workers (Dutta and Boissya, 1999 and Kumar Prasanna *et al.*, 1997). But certain industrial effluent may contain toxic components, which may inhibit the germination of seed or retard the growth of crop plants (Rajannan and Oblisami, 1979; Sahai and Srivastava 1986; Swaminathan *et al.*, 1989; Arora *et al.*, 2005). In the present study an effort has been made to find out influence of distillery effluent on seed germination and seedling growth of *Zea mays* var. hybrid-4640 and DMH- 849.

MATERIALS AND METHODS

Composite sample were collected from distillery effluent of M/s Divans Breweries (Pvt.) Ltd. Talab Tillo Bohri, Jammu and brought to laboratory for analysis. The effluent samples were analysed for various physico-chemicals and was further used for the treatment of seeds. Various concentrations of effluent (20,40,60,80 and 100%) were prepared by using tap water separately.

The tested seeds of *Zea mays* varieties DMH-849 and Hybrid-4640 of NAFED company were procured from local

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