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Agro-potentiality of dairy industry effluent on the characteristics of *Oryza sativa* L. (Paddy)

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Abstract

This research aimed at analyzing the agronomical characteristics of *Oryza sativa* L. under irrigation with different concentrations of dairy industry effluent such as 25%, 50%, 75%, and 100% along with control. The studies revealed that the effluent is rich in some nutrients and altered the agronomical characteristics of *Oryza sativa* L. and physio-chemical properties of the soil as well. On treatment of soil with various effluent concentrations up to 30 days of harvesting, there was a significant impact on the moisture content, porosity, water holding capacity, bulk density, organic carbon, humus, phosphorous, potassium, calcium, chloride and nitrogen and insignificant effect on temperature, pH, conductivity and salinity. The agronomical parameters such as seed germination, shoot length, root length, total growth of plant, total fresh weight and dry weight of paddy seedlings were recorded to be improved at lower concentrations of effluent i.e. till 50% as compared to control. Moreover, the seedlings irrigated with low concentrations of effluent increased nitrogen and chlorophyll content in plants. Interestingly, the use of dilution containing 50% effluent permitted the growth of superior quality plants during early seedling growth phase. The results suggest that dairy industry effluent can be reused to cultivate paddy, enabling a successful agriculture practice and reducing environmental effects of improper effluent disposal to open land or water resources.

Keywords

Dairy effluent Paddy growth Seed germination Seedling growth