SUMMARY: In today's era of ecofriendly operation, it is necessary to overcome the pollution problems.

Recycling of industrial waste water in crop production is one of the ways of disposal of waste water alternatively

helped in attaining the high crop productivity goals. The effect of distillery industry wastes viz., spentwash,

biocompost and spentwash ash on soil biological properties was examined through a field experiment using

Cumbu Napier hybrid grass. The study revealed that spentwash at the rate of 50 kilo l ha⁻¹ at full dose with

recommended dose of nitrogen and phosphorus registered the highest microbial and enzyme activities. The

spentwash, being loaded with organic compounds could bring remarkable changes on the biological properties of

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soils and thus influences the soil fertility.

Research Article

Effect of distillery industry by-products on soil biological properties **P. LATHA, P. THANGAVEL, K. VELAYUDHAM AND A. ARULMOZHISELVAN**

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ecycling of industrial waste water in crop production is one of the ways of disposal of wastes alternatively helping in attaining the required crop productivity goals. Distilleries, one of the most important agro-based industries in India, produce alcohol from molasses. They generate large volume of foul smelling coloured wastewater known as spentwash. For production of each litre of alcohol, 12-15 litre of effluent is produced. Approximately 40 billion litres of wastewater is generated per annum from 319 distilleries in the country (Kanimozhi and Vasudevan, 2010). It is rich in nutrients and organic components with high Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). Therefore, upon field application, it increases the soil organic matter content, the nutrient content and mineral content. Also the high concentration of soluble carbon added from the spentwash might be responsible for the enhanced microbial and enzyme activities. This condition may be favourable for number of microbes and enzymes in soils. Indiscriminate disposal of the effluent in water and on land leads to serious pollution and changes the nutrient and biological statues of the soil where they are disposed off. The present study was undertaken with a view to studying the effect of distillery effluent on the microbial population dynamics and enzyme activities of soil in field experiment.

EXPERIMENTAL METHODOLOGY

Collection and characterization of distillery industry byproducts:

The BDS was collected from the distillery unit of M/s. Bannari Amman Sugars Ltd., Periyapuliyur, Erode district, Tamil Nadu and analyzed for its physico-chemical properties by standard methods (APHA, 1989). Biocompost is being prepared and marketed by M/s. Bannari Amman Sugars Ltd., Ealur and analyzed for its physico - chemical properties. Spentwash ash is being produced by M/s. Bannari Amman Sugars Ltd., Distillery division, Alakangi, Nanjangud, Karnataka and analyzed for its physico - chemical properties. BDS was dark brown colour and a neutral pH (7.42) with high EC (32.5 dS m⁻¹), BOD $(6,545 \text{ mg } \text{L}^{-1})$ and COD $(34,476 \text{ mg } \text{L}^{-1})$. It contains highest K (8,376 mg L⁻¹) followed by N (2,116 mg L^{-1}), Ca (2.072 mg L^{-1}), Mg (1.284 mg L^{-1}) and low P (52.8 mg L^{-1}) . The biocompost showed a neutral