

Effect of Distillery Spentwash Application on Soil Properties and Yield of Maize (*Zea mays* L.) and Finger Millet (*Eleusine coracana* (L.) G)

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Abstract : Studies on spent wash utilization as a nutrient source through 'Effect of distillery spentwash application on soil properties and yield of maize (*Zea mays* L.) and finger millet (*Eleusine coracana* (L.) G)' was carried out in Malavalli Taluk, Mandya District, Karnataka State, India. The study was conducted in fourteen different locations of Malavalli (12) and Maddur taluk (2) involving maize and finger millet as a test crop. The spentwash was characterized for various parameters like pH, EC, total NPK, Na, Ca, Mg, SO₄, Fe, Zn, Cu, Mn and Cl content. It was observed from the results that the pH was slightly alkaline (7.45), EC was excess (23.3 dS m⁻¹), total NPK was 0.12, 0.02, and 1.31 percent respectively, Na, Ca, Mg and SO₄ concentration was 664, 1305, 745 and 618 (mg L⁻¹) respectively, total solid content was quite high (6.7%), Fe, Zn, Cu, Mn, values were 23.5, 5.70, 3.64, 4.0 mg L⁻¹, respectively. The crops were grown by adopting different crop management practices after application of spentwash at 100 m³ ha⁻¹ to the identified farmer fields. Soil samples were drawn at three stages i.e., before sowing of crop, during crop growth stage and after harvest of the crop at 2 depths (0-30 and 30-60 cm) and analyzed for pH, EC, available K and Na parameters by adopting standard procedures. The soil analysis showed slightly acidic reaction (5.93), normal EC (0.43 dS m⁻¹), medium available potassium (267 kg ha⁻¹) before application of spentwash. Application of spentwash has enhanced pH level of soil towards neutral (6.97), EC 0.25 dS m⁻¹, available K₂O to 376 kg ha⁻¹ and sodium content of 0.73 C mol (P⁺) kg⁻¹ during the crop growth stage. After harvest of the crops soil analysis data indicated a decrease in pH to 6.28, EC of 0.22 dS m⁻¹, available K₂O to 316 kg ha⁻¹ and Na 0.52 C mol (P⁺) kg⁻¹ compared with crop growth stage. The study showed that, there will be enhancement of potassium levels if the spentwash is applied once to dryland. The yields of both the crops were quantified and found to be in the range of 35.65 to 65.55 q ha⁻¹ and increased yield to the extent of 13.36-22.36 percent as compared to control field (11.36-22.33 q ha⁻¹) in maize crop. Also, finger millet yield was increased with the spentwash application to the extent of 14.21-20.49 percent (9.5-17.73 q ha⁻¹) higher over farmers practice (8.15-14.15 q ha⁻¹).

Keywords : distillery spentwash, finger millet, maize, waste water

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