

Short Communication

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Zinc biofortification of fodder oat (*Avena sativa* L.) through bioinoculant and synthetic fertilizers

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Abstract

The present experiment was conducted in pots during *Rabi* season of 2015-16 in net house of ICAR-Indian Grassland and Fodder Research Institute, Jhansi to evaluate the agronomic zinc biofortification of fodder oat for fodder yield sustainability, improvement of zinc bioavailability in plant and enhancement of soil zinc. Nine treatments of the experiments replicated thrice comprising nutrient sources of ZnSO₄, EDTA-Zinc and Zn solubilizing bacteria. The studies showed that significantly higher plant height (108.4 cm), leaf width (1.93 cm), green fodder (351.65 g/pot) and dry fodder (92.08 g/pot) yields were found with soil application of 5 kg chelated Zn ha⁻¹ + foliar application (0.1% chelated Zn) + Zn solubilising bacteria over rest of the treatments. The maximum leaf length (35.3 cm) was found with the application of 5 kg chelated Zn ha⁻¹ + Zn solubilising bacteria, but number of tillers was statistically not significant and varied from 6.67 to 7.33. Among the treatments, the highest available zinc (1.31mg/kg) was observed in 5 kg chelated Zn ha⁻¹ + foliar application (0.1% chelated Zn) + Zn solubilising bacteria treated pots and lowest in control pots (0.62 mg/kg). The maximum plant zinc content (34.81mg/kg) and uptake (3.29 mg/pot) were recorded in application of 5 kg chelated Zn ha⁻¹ + foliar application (0.1% Chelated Zn) + Zn solubilising bacteria over other treatment combinations. Hence agronomic biofortification with use of diverse zinc fertilizer sources (foliar and soil application) and microbial strain was found significant in fodder oat production.

Keywords: Biofortification, Fodder oat, Yield, Zinc solubilising bacteria, Zinc uptake