

**Abstract**

Millet is one of the most important agricultural products that is resistant to drought and inadequate weather conditions. Zinc is one of the essential elements for plant growth that interferes with the formation of indole acetic acid and can reduce the effect of drought stress on plant growth. An experiment was conducted to investigate the effects of drought stress and zinc spraying on yield and yield components of pearl millet, as randomized complete block design with three replications at Zabol University Research Farm. The results showed that the interaction of drought stress and spraying of zinc was significant on plant height, number of seeds per plant, 1000 seed weight, biological yield, grain yield, harvest index, catalase enzyme, carbohydrate, phosphorus, potassium, nitrogen, proline, zinc, chlorophyll, carotenoids, nitrogen content in leaves, leaf protein, phosphorus, zinc and ash in leaf content. Comparison of the means showed that the highest biological yield (1534.59 kg ha<sup>-1</sup>) was obtained at plants irrigated after 10% moisture depletion along with spraying with spraying 1 ‰ of zinc, which is 14.8% more than irrigation after depletion of 70% moisture along with no spraying. The highest (208.58 kg ha<sup>-1</sup>) and the lowest (57.94 kg ha<sup>-1</sup>) grain yield was observed in irrigation after depletion of 10% moisture along with spraying 1 ‰ of zinc and irrigation after depletion of 70% moisture along with no spraying. The greatest harvest index (34.11%) was observed at plants irrigated after depletion of 30% moisture along with spraying 2 ‰ of zinc. The results suggested that spraying with 2 ‰ of zinc along with depletion of 10% moisture content is suitable for the Sistan area.

**Key words:** Water stress, Proline, Zinc, Nano fertilizer



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The Thesis Submitted for the Degree of Master of Science  
(In the Field of Agronomy)

## **Effect of Zinc Spray on Yield and Yield Components of Pearl Millet under Drought Stress in Sistan**

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September 2017