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# کنگره ملی نان کامل و فرآورده های غلات

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### Study the effect of seed priming, zinc sulfate application and Cycocel spraying on the concentration of some nutrients in wheat grain

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**Background and Aims:** The importance of Wheat for Iranians is high because wheat bread is the main part of the community's nutrition pattern. The aim of this study was to investigate the response of biochemical characteristics of wheat grain to the application of Cycocel, zinc sulfate and Nitroxin.

**Materials and Methods:** This investigation was conducted as two factorial experiments using a RCB design with three replications at two sites in Ilam and Bushehr during 2013-2014 cropping seasons. The experimental factors were including two levels of Cycocel (0, 2.5g.lit<sup>-1</sup>), zinc sulfate at 0, 25, 50 kg.ha<sup>-1</sup>, and Nitroxin (seed inoculated and non- inoculated). After harvesting, concentration of Fe, Zn, P, K and N elements were measured. The results were analyzed by SAS software and the average data were compared using the LSD test.

**Results:** The application of 50 kg.ha<sup>-1</sup> of zinc sulfate increased the concentration of Zn and K elements in the seeds compared to the control by 47.9% and 34.5%, respectively. The highest concentration of Zn element (53.1mg.kg<sup>-1</sup>), K (4943mg.kg<sup>-1</sup>) and grain nitrogen content (2.43%) was obtained from the 2.5g.lit<sup>-1</sup> Cycocel spraying, application of kg.ha<sup>-1</sup> zinc sulfate and seed inoculation with Nitroxin. The highest concentration of Fe element (58.6mg.kg<sup>-1</sup>) and P (4438mg.kg<sup>-1</sup>) was obtained from the interaction of 2.5g.lit<sup>-1</sup> of Cycocel, 25 kg.ha<sup>-1</sup> of zinc sulfate and seed priming with Nitroxin.

**Conclusion:** Pre-treatment of wheat seeds with Nitroxin at the rate of 1.5 liters per hectare and application of 50 kg.ha<sup>-1</sup> of zinc sulfate and foliar spraying of Cycocel have a significant effect on the concentration of nutrients in seeds.

**References:** Cakmak, I., W. H. Pfeiffer and B. Clafferty. 2010. Biofortification of durum wheat with zinc and iron. *Cereal Chemistry*. 87 (1): 10- 20.

Haji Nia, S., M. J. Zarea, F. Rejala and A. Varma. 2012. Yield and yield components of wheat as affected by salinity and inoculation with *Azospirillum* strains for saline or non-saline soil. *J. Sau. Agric. Sci.* 11: 113-121.

Karimian, N. 1995. Effect of nitrogen and phosphorus on zinc nutrition of corn in a calcareous soil. *J. Plant and soil*. 18: 2261- 2271.