

Effects of seed inoculation with plant growth promoting rhizobacteria and foliar application with nano-zinc oxide on yield and rate and period of grain filling of triticale

H. Kamari¹ and R. Seyed Sharifi^{1*}

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Abstract

In order to study the effects of seed inoculation with plant growth promoting *rhizobacteria* (PGPR) and foliar application of nano-zinc oxide (NZO) on yield and rate and period of grain filling of triticale, a factorial experiment was conducted based on randomized complete blocks design with three replications, in Research Greenhouse of Faculty of Agriculture, University of Mohaghegh Ardabili, Iran, in 2013. Treatments consisted of foliar application of NZO at five levels [0 (as control), 0.25, 0.5, 0.75 and 1 g/L] and seed inoculation with PGPR at four levels (no inoculation as control, seed inoculation with *Azotobacter chroococum* strain 5, *Azospirillum lipoferum* strain OF, and *Pseudomonas putida* strain 9). Comparison of means showed that maximum yield, yield components and rate and period of grain filling was obtained by application of 1 g/L NZO and seed inoculation with *Azotobacter*, and minimum of these parameters were recorded for application of no NZO and no seed inoculation with PGPR. It seems that utilizing biological fertilizers and zinc micronutrient is a proper and cheap method for increasing triticale yield. Therefore, it can be suggested that inoculation of triticale seeds with *Azotobacter* and foliar application of 1 g/L NZO be performed in order to increase its yield, yield components and grain filling period.

Keywords: PGPR, Grain filling rate.

1. Faculty of Agric., Univ. of Mohaghegh Ardabili, Ardabil, Iran.

*: Corresponding Author, Email: Raouf_ssharifi@yahoo.com