

Effects of mycorrhiza and nitrogen fertilizer on quantitative traits of wheat

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ABSTRACT: In this study, research crops planted in 2011, and Khash mountain stage carried the gem industry. This study is a factorial experiment in a randomized complete block design with three replicates and all experiments were performed with different levels. In this experiment, a variety of wheat called clear that improved cultivars were used. In this study, the use of mycorrhiza fungus causing wheat height was not significantly affected. Nitrogen at 5% caused no significant effect on wheat is high. Analysis of variance tests indicate that mycorrhiza nitrogen effects on maize plant height was significant. Mycorrhiza observed in this experiment has a significant effect on the level of 1 % of the seed weight. Different levels of nitrogen on wheat yield has increased , the analysis of variance shows that the effect of nitrogen fertilizer on grain yield of wheat plants was significantly more effective at the higher levels . The results show that the variance mycorrhiza result in any significant effect on number of grains per panicle is not. In this experiment, the number of grains per spike were not affected by nitrogen application had no significant effect on the number of seeds in a cluster is not.

Keywords: Plant height, seed weight per plant, number of grains per panicle.

INTRODUCTION

Since Iran is located in arid and semi-arid areas, soil organic carbon content is low and the result is one of the lower levels of nitrogen, respectively. Plants in these areas are often deficient in nitrogen, so the nitrogen supplied through chemical fertilizers and organic matter is essential (Malakooti and Homaei, 2004). Nitrogen for plants is a critical element in proteins, nucleic acids and chlorophyll are more susceptible to loss of nutrients and the amount recovered is less than half of the amount used (Boswell, 1985). The positive effects of increased nitrogen application on quantitative and qualitative properties of wheat grain yield and protein content of the grain in many cases have been reported (Ehdaie and Waines 2001). N application compared to the control treatment increased the number of tillers, grain yield and yield components of wheat (Golik, 2005) . Nitrogen by increasing the number of clusters, number of grains per panicle and grain weight increased wheat yield is generally yield components in wheat nitrogen are directly affected (Hatfield and Prue ger, 2004). The effect of phosphorus on sugar beet and sorghum harvest index and biological yield indicated a role of phosphorus product has a biological function (Alagawadi and Gaur 1992). A group of investigators reported that elevated phosphorus element is somewhat indirect and direct effects on the sorption of neutral land and water use efficiency and thus increases the drought tolerance in plants (Jones, 2003).

MATERIALS AND METHODS

In this study, research crops planted in 2011, and Khash mountain stage carried the gem industry. This study is a factorial experiment in a randomized complete block design with three replicates and all experiments were performed with different levels. In this experiment, a variety of wheat called clear that improved cultivars were used. Mycorrhiza arbuscular fungi (AM) in both the inoculated and non-inoculated with three levels of nitrogen and phosphorus fertilizer in three levels as other experimental treatments were used. Urea nitrogen is used by organizations of agricultural support services were provided. The farm has been in previous years under fallow land preparation including plowing, disk loader and fustigation is. The plowing by moldboard plow to a depth of 30 cm was used. The operation of the disc, the disc plow was perpendicular offset to a depth of 15 cm. To soil and plant nutrient land of the amount needed according to soil test results fustigation was done. To measure this trait after five plants were randomly selected and harvested from the middle two lines by removing the border took place clusters Koobideh of each of the plant to seed removed separately the for the plant out and counting were recorded. After data collection, by ANOVA statistical program SPSS, MASTATC took. And for drawing the figures and graphs from Excel software was used.

RESULTS AND DISCUSSION

Plant height

In this study, the application of mycorrhizal fungi causing wheat height was not significantly affected (Table 1). Probably not increase the height by mycorrhizal fungi could also be due to the extreme cold, or due to lack of proper split-plot experimental fungus is. The height of the plant is under environmental conditions (Smara 1997). Nitrogen at 5% caused no significant effect on wheat is high (Table 1). Reported higher rates of nitrogen fertilizer in spring wheat will increase the height (Simmons and moss 1948). By examining the different levels of nitrogen on wheat yield reported that nitrogen increased stem is length (Modhej and Fathi 2008). Analysis of Variance tests show that mycorrhizal nitrogen effects on maize plant height was significant so that the use of nitrogen mycorrhizal fungi increased plant height is also (Sainaz, 1998).

Table 1. ANOVA analysis of the wheat affected by interactions of mycorrhiza in nitrogen

S.O.V	df	Plant height	Seed weight per plant	Grain per panicle
R	2	18.66	0.6	21.63
Mycorrhizal	2	1.50	42.04**	16.66
N	2	38.50*	21.01*	58.09
N*M	2	94.30**	26.44*	24.88
C.V		10.5	7.84	22.06

*, **, ns :significant at $p < 0.05$ and $p < 0.01$ and non-significant, respectively.

M: Mycorrhizal, N: Nitrogen

Seed weight per plant

Mycorrhizal observed in this experiment has a significant effect on the level of 1% of the seed weight (Table 1). With research on plants inoculated with the fungus mycorrhizal declared mycorrhizal mushroom effect was significant on seed weight and seed weight most of the treatments inoculated with the fungus is mycorrhizal (Ardekani, 2006). Analysis of variance indicates that nitrogen significant effect on seed weight is 5% (Table 1). Different levels of nitrogen on wheat yield has increased, the analysis of variance shows that the effect of nitrogen fertilizer on grain yield of wheat plants was significantly more effective at the higher levels (Davis, 2002). The results of these experiments are consistent with the experiments conducted. Probably due to the effect of nitrogen is more accessible and sufficient for the effect of nitrogen fertilizer plant and the seed is formed. Analysis of variance indicates that P does not have any effect on seed weight (Table 1). The plants inoculated with bacteria at different levels of phosphorus were reported, which provide sufficient phosphorus increased seed weight is causing a significant effect on seed is weight (Beidokhti, 2009).

Table 2. Comparison of different traits affected by interactions of mycorrhiza in nitrogen

	Mean-square		
	Plant height	Seed weight per plant	Grain per panicle
inoculated			
0 kg	86.06d	13c	40.8
50 kg	97.07b	16.21b	44.2
100 kg	109.8a	24.54a	46.4
Non-inoculated			
0 kg	80.03d	11.85c	43.7
50 kg	93.3c	16.65b	44.8
100 kg	109.7a	24.01a	46.33

Any two means not sharing a common letter differ significantly from each other at 5% probability

Number of grains per panicle

The results show that the variance mycorrhizal result in any significant effect on number of grains per panicle is not (Table 1). Symbiosis accumulation has a significant effect on maize yield components that can be pointed to an increase in the number of grains per ear (Amir Abadi, 2010). In this experiment, the number of grains per spike were not affected by nitrogen application had no significant effect on the number of seeds in a cluster is not (Table 1). Significant increase in the use of nitrogen in wheat grain per is spike (Buah. 1998).

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