

The Impact of Applying Micronutrients on the Yield and Empty Seeds Rate in Sugar Beet

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ABSTRACT: Yield of sugar beet seed influences by without using microelement fertilizers . In order to investigate the effect of solution-spraying micronutrient elements on the quantitative and qualitative seed of sugar beet an experiment based on randomized complete block design was conducted to using eight treatments at the Agricultural Research Station of Ardabil in 2004 and 2005. The treatments including of control (without application of micronutrient elements) and consumption of micronutrient elements at the ratio of 2 in 1000 of Iron, Manganese and Boron and all of them compounds. The results showed that application of micronutrients had significant difference on the 5% level of probability both seed yield and standard seed. The highest unkernel seed was obtained in application Iron with Manganese and Boron. The highest seed yield and seed standard and oversize was belonged to application of Iron with Boron.

Keywords: Sugar beet Seed, yield, Boron, Iron, Manganese, Micronutrient

INTRODUCTION

Today, fertilizers are used as a tool to increase the production in area unit. Optimal use of fertilizers and observing the appropriate ratio between nutrients in the soil and the plant has a significant role in the qualitative and quantitative increase of the yield. Increase in the yield and improving the sugar beet seed traits along with the use of micronutrients were reported by Sadoski and Jasem (1990). Alba (1979) reported that applying boron increases the yield of sugar beet seed. According to Katan (2002), the lack of micronutrients leads to an increase in the sugar beet empty seeds. One of the main barriers in accessing desirable yield in seed sugar beet farms in Ardabil County is the lack of using micronutrients. This research tries to study the impact of micronutrients on sugar beet seed yield.

Materials and Method:

In order to study the impact of solution spray of micronutrients of iron, manganese and boron on the quantitative yield and empty seed rate of sugar beet, a study was conducted at the Ardabil Agriculture Research Station in randomized complete block design in 4 replications. The studied treatments included the control, solution sprayed with iron, manganese, and boron micronutrients and all solutions were in ratios of 2 in one thousand. Each plot included six lines with 6-meter length, 65 cm distance in between, and seed stockling were planted with an array of 50x65 cm. Micronutrients were prepared with the required density and the solution was sprayed by backpack sprayers in any plot. At the end of the growth period, in order to determine the yield of any seed, the harvest was carried out considering the marginal effect from an area equal to 6 m². Measuring the raw yield and empty seed rate was carried out Laboratory for the Control and Certification of Seed Breeding and Seed Preparation for the sugar beet.

Results and Discussion:

The significance of the seed yield under the effect of micronutrients at 5 percent and comparing the means showed that the highest increase was related to the simultaneous use of iron and boron. However, there was no significant difference between the simultaneous of iron and boron, manganese and boron, iron and manganese and boron. (Figure 1) Berochelus and Bergman (1985) and Bandak (1996) report similar results on sugar beet. The significance of the impact of solution spray on empty seed rate at 5 percent and comparing the means showed that the lowest rate of empty seed was related to the simultaneous application of iron and boron. (Figure 2) Katan (2002) reported similar results on sugar beet. Comparing the figures related to the empty seed rate and seed yield shows that the lowest rate of empty seeds was related to the combination of iron and boron that led to the highest rate of seed yield. (Figure 1)

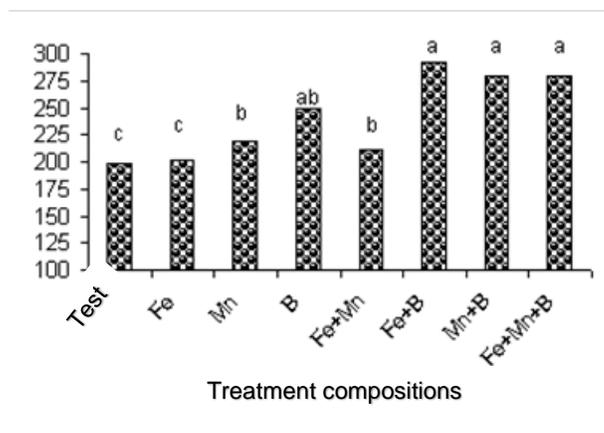


Figure 1. Comparison of the Mean of the Influence of Treatment Combinations on the Seed Yield in Surface Unit

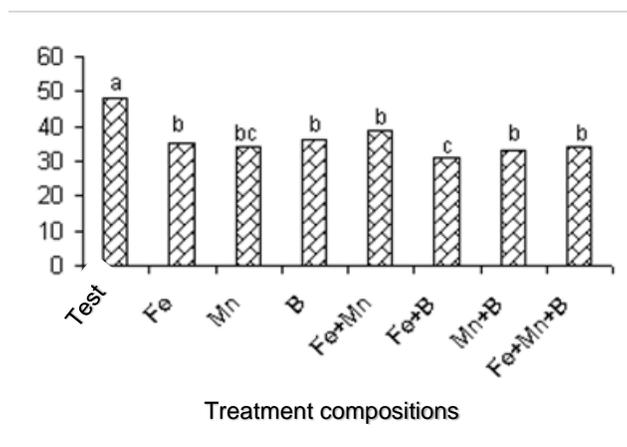


Figure 2. Comparison of the Mean of the Influence of Treatment Combinations on the Empty Seed Rate

REFERENCES

Alba , S.P.A.1979. Effect of fertilization with boron on the yield of sugar beet seed. Sementi Elette. 25:3 – 4, 71-2
 Bondok, M.A.1996. The role of boron in regulation growth . yield and homonal. Annals- of – Agricultural- Science – Cairo. 41(1): 15- 33 .
 Brouchlos, P. and W. Bergmann. 1975. A contribution on the effectiveness of fertilization with microelements on the German Democratic Republic Archiv – Fur- Acker and – Pflanzenbau – and Boden kunde 23:1,39 – 48 .
 Jassem, M. and H. Sadowski. 1990. Seed Improvement as a factor in increasing the efficiency of sugar beet production . Biulyn Instytutu Hodowli Aklimatyzacji Roslin. No. 173- 4:155-65.