Study the Effects of Kadostim Organic Fertilizer on Yield and Harvest Index Maize Cultivars in Ardabil

Article · January 2013

5 authors, including:

seyed sajjad Moosavi
Science and Research ,Tehran Branch
22 PUBLICATIONS **2** CITATIONS
SEE PROFILE

Ali mohammadpour khanghah
Islamic Azad University, Ardabil Branch
31 PUBLICATIONS **10** CITATIONS
SEE PROFILE

Yousef Alaei
Islamic Azad University, Ardabil Branch
34 PUBLICATIONS **27** CITATIONS
SEE PROFILE

Maryam Jafari
Islamic Azad University, Ardabil Branch
13 PUBLICATIONS **1** CITATION
SEE PROFILE

International Journal of Basic Sciences & Applied Research. Vol., 2 (1), 143-145, 2013
Available online at http://www.isicenter.org
ISSN 2147-3749 ©2013 VictorQuest Publications

VICTORQUEST

Study the Effects of Kadostim Organic Fertilizer on Yield and Harvest Index Maize Cultivars in Ardabil

Seyed sajjad Moosavi*[1], Seyed Mohammad Javad Mirhadi[2], Ali Mohammadpour Khanghah[1], Yousef Alaei[1], Maryam Jafari[1]

[1]Department of Agronomy , Science and Research branch, Islamic Azad university, Ardabil, Iran
[2]Department of Agronomy, Science and Research Branch, Islamic Azad University, Tehran, Iran

*_Corresponding Author Email:_ moosavi_sajjad@yahoo.com

Abstract

In order to study Kadostim fertilizer on maize cultivars, experimental form of split plot randomized based complete block design with three replications in agricultural land khanghah sofla was located in the Namin city in 2011. The main factor included two conditions (kadostim fertilizer; without the application of kadostim fertilizer) and the sub factor included 3 maize genotypes (ZP677, Golden west, OS499). Considering the ANOVA results in studied traits, it was observed that there is a significant difference between harvest index and grain yield at probability level of 1% and between 1000 grain weight at probability level of 5% in experimental conditions. Results to data mean comparison on studied genotypes indicated that based on grain yield among the studied genotypes, Golden West with a mean of 6.77 ton per hectare was the best genotype and OS 499 genotype with a mean of 5.29 ton per hectare was the lowest studied genotype. Also Results to data mean comparison in experimental conditions suggested that applying kadostim fertilizer had good effects on studied traits.

Keyword: Maize, Kadostim, Seed yield.

Introduction

Maize (Zea mays L) is one of the most highly consumed crops, and the most important foodstuff after wheat and rice around the world. The global production of maize is 604 million tons, with a planting area of up to 140 million hectares. Iran produces 2 million tons of maize on 350000 hectares of land. However, the production from hybrid maize seeds in Iran is highly limited (FAO, 2002).

Organic agriculture is an integrated system of agriculture based on ecological principles (Wallace, 2001). Chemical fertilizers, pesticides and growth regulators are not applied in this system and crop rotation with legume family of plants, plant debris, manure, rocks containing mineral nutrients, organic fertilizers and biological pest control are applied, instead, so that along with biodiversity development in farms (Wallace, 2001 & Elsen, 2000), the nutrients in the soil are deposited, the soil fertility is increased and weeds, insects and pests are controlled (FAO, 2002). Compost and organic fertilizers are applied for improving soil fertility and also prevention and control of plant pests and diseases, in many agricultural systems (Barker and Bryson, 2006 & Ghorbani, 2006).

Some of biological stimuli, such as humiforte have been introduced to the market in order to deal with environmental stresses. Kadostim, as a plant motive, is used as a formulated liquid and contains free amino acids and we use it in blossoming and fruit forming time. Products like the biological growth regulators or bio fertilizer has many benefits and effects on plants growth, for example; in bud acculturation of seed: motivating the system of root forming and food saving, also accelerating the growth of leaves. kadostim my setting in the openings of leaves, control the moisture, light, temperature and salinity and gases and it helps food making in leaves, so reduces the displacement and bad condition of weather and negative effects of some dangerous stresses like freezing, drought and etc. in addition; it (kadostim) keeps away the chemical factors and increases the residency of plants and helps plants to grow enough and makes the quality and size of the fruit acceptable and increases the residency (of fruits) after picking up (Hassanpanah et al., 2008).

Biological products used for feed crops, is one of the useful solutions toward achieving the goals of sustainable agriculture .Therefore, we tested the effect of bio-fertilizer on corn hybrids was Kadostim.

Methodology

In order to study the response of maize genotypes against the application of kadostim fertilizer an experiment was conducted at the agricultural land khanghah sofla was located in Namin the city in 2011. The Experiment was conducted as Split Plot in the form of randomized complete block design with three replications. The main factor included two conditions (kadostim fertilizer; without the application of kadostim fertilizer) and the sub factor included 3 maize genotypes (ZP677, Golden west, OS499). Each experimental plot included 3,320 cm long rows recurring 80 cm from each other containing plants recurring at 20 cm distance. Pretreatment of seeds were done on the basis of 2.5 mL per 1 L of water to be applied. Weed-fighting was done both mechanically and manually during all growth stages. The prepared solution was sprayed upon the aerial part of the plants during 4-5th leaf stage, appearance of reproductive organs, flowering and grain filling stages. All the samples were taken randomly from competitive plants at middle rows. Studied traits included harvest index, 1000 grain weight and grain yield. Subsequently, all seeds were harvested; straws and grains were collected in paper pockets and put in oven of 70 °C for 48 hours so they are dried. Afterwards, dry weight and biological yield per unit was calculated. After determining the biologic and economic yields, the harvesting indices for each of experimental units were calculated from the following equation:

Equation: Index harvest = Economic Yield (gr/m2) / Biologic Yield (gr/m2) × 100

Analysis of variance of data and mean comparison of them was done using SAS program. Mean comparison was done using Duncan's Multiple Range Test, at 5% probability level.

Results

Considering the ANOVA results (Table 1) in studied traits, it was observed that there is a significant difference between harvest index and grain yield at probability level of 1% and between 1000 grain weight at probability level of 5% in experimental conditions. Also, there was a significant difference between studied genotypes based on harvest index and grain yield at probability level of 5%. This indicates the genetic diversity between genotypes to choose the desired traits. Furthermore, there was no difference observed between the interaction of genotype and experimental conditions for any trait being studied.

Table 1. Analysis of variance of evaluated traits under various experimental conditions for 3 maize genotypes.

Source of variations	df	Mean square		
		Harvest index	1000 grain weight	Grain yield
Replication	2	4.62	395.53	3.43
experimental conditions (E.C.)	1	768.71**	1369.56*	27.31**
Error 1	2	7.01	54.59	0.78
Genotype (G)	2	74.28*	96.84 ^{ns}	3.78*
G × E. C.	2	3.43 ^{ns}	138.97 ^{ns}	0.07 ^{ns}
Error 2	8	10.68	125.52	0.63
CV (%)		10.55	10.36	13.55

* and **: Significant at $p < 0.05$ and < 0.01, respectively.

Table 2. Mean comparison of traits being studied for maize genotypes.

Genotypes	Characters	
	Harvest index (%)	Grain yield (ton\h)
OS 499	35.02 a	5.29 b
ZP 677	29.08 b	5.53 b
Golden west	28.78 b	6.77 a

Differences between averages of each column which have common characters are not significant at probability level of 5%.

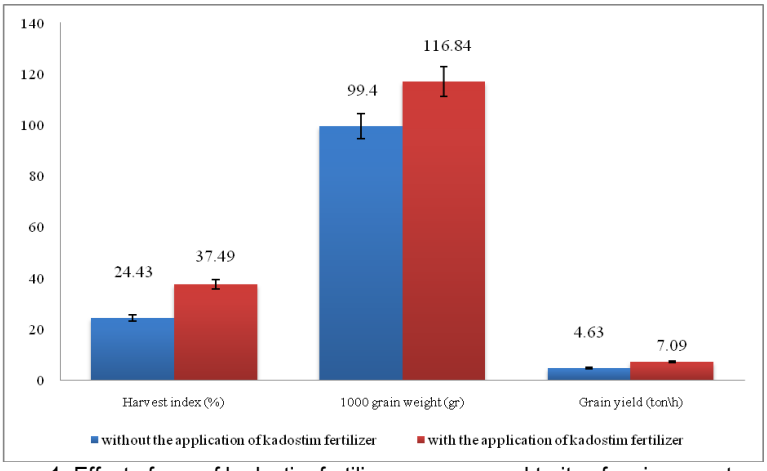

Figure 1. Effect of use of kadostim fertilizer on measured traits of maize genotypes.

Discussion and Conclusion

Alaei in (2011) reported that it was observed that there is a significant difference between grain yield and 1000 grain weight at probability level of 1% in experimental conditions.

Results to data mean comparison (Table 2) on studied genotypes indicated that OS 499 genotype with a mean of 35.02 percent had the highest harvest index while Golden West and ZP 677 genotypes to Order with a mean of 28.78 and 29.08 percent had the lowest harvest index. ZP 677 and Golden West genotypes formed one group and showed no differences in the studied traits. Based on grain yield among the studied genotypes, Golden West with a mean of 6.77 ton per hectare was the best genotype and OS 499 genotype with a mean of 5.29 ton per hectare was the lowest studied genotype. OS 499 ad ZP 677 genotypes formed a groups and showed no differences in the studied traits.

Mohammadpour khaneghah (2012) reported that genotype OS499 (110.70 g) had the highest 1000 grain weight, whereas genotype Single Cross (81.20 g) had the lowest 1000 grain weight on average.

Results to data mean comparison (Figure 1) in experimental conditions suggested that applying kadostim fertilizer had good effects on studied traits.

Alaei in (2011) reported, by using of kadostim increased the production of seed in the season end drought condition with good irrigation+ kadostim. Kadostim increased seed production about 165 gr in plat

The results showed that the use of kadostim fertilizers as organic fertilizers, can have a positive impact on maize grain yield. Organic fertilizers can reduce the use of chemical fertilizers has been reduced environmental pollution.

References

Alaei Y, Shahriari R, Khayatnezhad M, Alaei M, 2011. The Effect of Kadostim on Sabalan Wheat in the Season end Draught Condition. Advances in Environmental Biology. 5(3): 535-537.

Barker AV, Bryson GM, 2006. Comparisons of compost with low or high nutrient status for growth of plants in containers. Communic. Soil. Sci. plant Anal. 37:1303-1319.

Elsen TV, 2000. Species diversity as a task for organic agriculture in Europe. Agriculture, Ecosystems and Environment. 77:101-109.

FAO, Production year book, 2002. Food and Agricultural Organization of United Nation, Rome, Italy, 51:209P.

Ghorbani R, Wilcockson S, Leifert C, 2006. Alternative treatments for late blight control in organic potato: Antagonistic micro-organism and compost extract for activity against Phytophtora infestans. Potato Research. 48:171-179.

Hassanpanah D, Gurbanov E, Gadimov A, Shahryari A, 2008. Shortening Transplantation Periods of Potato Plantlets by Use of Potassium Humate and Kadostim and Their Effects on Mini-tuber Production.Pak. J. Biol. Sci. 11(10): 1370-1374.

Mohammadpour khanghah A, Shahryari R, Alaei Y, Shahmoradmoghanlou B, 2012. Comparison of the effect of liquid humic fertilizers on yield of maize genotypes in Ardabil region. African Journal of Biotechnology. 11(21): 4810-4814.

Wallace J, 2001. Organic field crop hand book. Pub. Canadian Organic Growers. Ottawa, Ontario.