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UCT Journal of Research in Science, Engineering and Technology

UCT. J. Resea. Scien. Engineer.Techno. (UJRSET)

08-11 (2016)

Volume 4 ,Issue 2

ISSN 2382-977X

Relationships between yield and potato affected by different levels of bio-fertilizer "AL-ziest" Chemical Oral- Even

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Original Article:

Received 05 March. 2015 Accepted 08 May. 2016 Published 10 June. 2016

ABSTRACT

In order to evaluate yield and yield components of potato, affected by different levels of bio-fertilizer "AL-ziest" and chemical fertilizers Oral-Even factorial experiment in a randomized complete block design with two factors , the first factor of four level of bio-fertilizer "AL-ziest" (A1 = control, A2 = 100 ml, A3 = 150 ml, A4 = 200 ml), and the second factor in four levels of chemical fertilizer Oral-Even (B1 = control, B2 = 60 g; B3 = 80 g, B4 = 100 g) with three replications for foliar in Ardy village located in the city of Ardabil in 1393 was carried out. The results showed a correlation between: the number of main stems per plant and the number of tubers per plant, tuber weight per plant, total tuber yield and salable tuber yield and number of tubers per plant and the number of main stems per plant, tuber weight per plant and total and salable tuber yield was significant at probability level. Weight of tubers per plant and the number of main stems per plant, number of tubers per plant, tuber weight and total tuber yield and marketable had a significant positive relationship. As average tumor weight by weight of tubers per plant, total tuber yield and salable tuber yield significant at 1%. Total tuber yield and salable tuber yield with number of main stems per plant, number of tubers per plant, tuber weight per plant, tuber weight and a significant positive correlation indicates that the probability of a percent.

Keyword:
Potatoes, Yield and Yield components, bio-fertilizer, fertilizer, Correlation

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Peer review under responsibility of **UCT Journal of Research in Science, Engineering and Technology**

INTRODUCTION

Potato tuber is one of the products because of the high yield per unit area, an important role in feeding the world's people. The plant is due to compatibility with diverse environmental conditions, and is cultivated in various countries (Wolf, 2008). This product is particularly important for developing countries because of the high potential per unit area and per unit time, and more nutritional value in order to maintain the population is increasing and there have malnutrition and world hunger. After the first milk product that can be the perfect food (Rezaei and Soltani, 2001).

Since the early twentieth century with the formation of a system of farming that today is called conventional agriculture, various concerns were expressed about the implications of this system. This concerns, in the middle of the last century and the excessive use of off-farm items, especially synthetic fertilizers and chemical pesticides and increased and intensified efforts to find alternative solutions, which lead to the emergence of the concept of sustainable agriculture Led. Organic farming, sustainable agriculture is one of the branches, which in the past two decades have been welcomed by many around the world, and the main reason it can be public concern over health and food safety, and environmental health, he said. Now more than 31 million hectares of farmland in more than 633 thousand farms around the world are run under organic management 7/0% of the total agricultural land in the world (Anonymous, 2009). Of biofertilizers on new definitions generally refer to a fertile material that has a sufficient number of one or more species of beneficial soil organisms that are affordable on preservatives. Sometimes the term biofertilizers for items that only contain products that are being used. In this sense, biological applications, history is as old as the history of farming, including the use of green manure and fertilizers in agriculture is the traditional example of this type of application (Qushchi et al., 2006).

Thus the use of renewable resources and institutions, one of the principles of sustainable agriculture, which leads to maximum efficiency and minimum environmental hazards is arable, And requires the use of modern solutions from the field of bio-fertilizers can be noted (Hegde et al., 1999). Today, bio-fertilizers can in some cases as an alternative and in most cases as a complement to chemical fertilizers, sustainable agricultural production in order to ensure that (Vessy, 2003). Given the importance of bio-fertilizers in sustainable agriculture, and because the potato crop is of fundamental and strategic products, as well as considerable acreage is allocated in Ardabil, Optimize the use of chemical fertilizers in farming systems is essential.

The aim of this research is to study the impact of chemical fertilizer and bio-fertilizer Oral-Even "Al friendly" relations between Agria potato yield in Ardabil be examined.

Materials and Methods

The project under field conditions in April 1393 in the village area Pardy, from the city of Ardabil in 5 km from the city was preparing for planting. Wiki terms of geographic coordinates in latitude 38 degrees 14 minutes north and longitude 48 degrees 15 minutes East is located. Remember also very cold winter and mild spring and summer, and be at an elevation of 1,350 meters above sea level and an average annual rainfall of about 318 mm, has provided favorable conditions for the cultivation of this plant. This factorial design experiment in a randomized complete block design with two factors, the first factor of four levels of bio-fertilizers, AL-ziest (A1 = control, A2 = 100 ml, A3 = 150 ml, A4 = 200 ml), and the second factor chemical fertilizers Oral-Even at four levels (B1 = control, B2 = 60 g, B3 = 80 g, B4 = 100 g) with three replications for foliar application on Agria cultivated area was conducted. Each plot consists of three 4-meter line within two stacks of 75 cm, and the distance between plants 25 cm from each other. Agria is a growing variety seed of Agriculture and Natural Resources Research Center of Ardabil province was prepared. Agria crosses between varieties Semlo and * Quarta came into existence in 1997 in Canada received certificate No. 4577 (Shiri, 2006).

View fertilizers used

Chemical fertilizers Oral-Even

General Urals fertilizers Series family of fertilizers (N-P-K) with the same nutrients according to soil type and irrigation systems are provided.

Profile fertilizer

Combining elements of this code require most food products and a variety of methods can be used. The fertilizer contains 20 percent nitrogen, 20 percent phosphorus and 20 percent potassium, ppm300 iron, ppm205 on, ppm150 manganese as chelated (EDTA) is.

Bio-fertilizer AL-ziest

Is environmentally non-toxic and heavy metals including lead, cadmium and arsenic are. Containing nutrients nitrogen, phosphorus, potassium, humic acid, folic acid and amino acids, micronutrients and other elements, anti-fungal and bacteria protect the root and shoot growth of plants.

Table 1. The amounts of fertilizer elements "AL-ziest" used

Content	element	Content	element
Nitrogen	1.5-2.5%	Total Br	5-10ppm
Phosphorus	0.75-1.25%	Mo	3-6ppm
potassium	1.5-2%	Amino acids	1.5-2.5%
Zinc	200-250ppm	Humic acid	1.5-2%
Total iron	1000-3000ppm	folic acid	5-7%
Magnesium total	150-350ppm	Organic carbon O.C	6-9%
Total calcium	1500-2000ppm	Organic materials O.M	8-10%
Total manganese	200-300ppm	-	-

Traits

During the growing period and after physiological maturity tubers, number of days to tuber formation, the number of main stems per plant, plant height, total tuber yield, tuber weight, tuber yield and dry matter content were measured and notes.

Data analysis

To investigate the relationships between characters, simple correlation coefficients were calculated. Excel 2010 software was used to plot the curves.

Results and discussion

The results of the correlation between the traits affected by different apple varieties Agria AL-ziest bio-fertilizer, and chemical Oral- Even in Table 2 are provided. The results show significant differences in plant height with all the traits did not show up. While the number of main stems per plant and the number of tubers per plant, tuber weight per plant, total tuber yield and salable tuber yield and number of tubers per plant and the number of main stems per plant, tuber weight per plant and tuber yield and total sales are expected at the level of 1% was significant. Weight of tubers per plant and the number of main stems per plant, number of tubers per plant, tuber weight and total tuber yield and marketable significant positive relationship, as well as the average tumor weight by weight of tubers per plant, tuber yield and total Consumer tuber yield was significant at 1%.Total tuber yield and salable tuber yield with number of main stems per plant, number of tubers per plant, tuber weight per plant, tuber weight and a significant positive correlation indicates that the probability of a percent, and the percentage of dry matter with all traits showed no significant difference. Tishe (2013) says the correlation between the measured traits potato cultivars inoculated with bacteria by different levels of nitrogen and under "Azotobacter" shows that the number of stolones gland, the number of main stem, dry matter content, weight and number of tubers there was a significant positive correlation gland. But there is significant negative correlation between tuber yield and plant height. Hossein Zadeh (2013) showed the relationship between plant height and stem diameter, number of mini-tubers between 10.5 grams of weight per square meter mini-tubers, mini-tubers weight greater than 10 g, and mini-tubers weighing between 10-5 gram-positive and meaningful stem diameter and the number of mini-tubers and mini-tubers greater than 10 grams per square meter negative and significant, and the number of mini-tubers between 10.5 grams and the average weight of mini-tubers, mini-tubers with a large number of mini-tubers more than 10 grams and 10.5 grams between positive and significant number of mini-tubers and mini-tubers weighing greater than 10 grams per square meter and weight of mini-tubers negative and significant, the number of mini-tubers greater than 10 kg, with a number of mini between 10-5 gram-positive and meaningful tubers and mini-tubers weighing greater than 10 grams per square meter and weight of mini-tubers negative and significant number of mini-tubers weighing between 10.5 grams per square meter mini-tubers, mini-tubers great weight more than 10 grams, a weight of 10.5 g mini-tubers and mini-tubers average weight were positive and significant. Cakmakcı et al (2006) reported that the number for head components yield increase in tuber yield and tuber yield increases. In this experiment, the number of stolones correlated with tuber number and weight of tubers per plant there. The point to note is that most traits showed a negative correlation with plant height.

Table 2. The correlations between traits at different levels AL-ziest bio-fertilizers and chemical fertilizers Oral- Even

Characteristics	plant height	number of main stems per plant	number of tubers per plant	tuber weight per plant	Average tuber weight	total tuber yields	salable tuber yield
Number of main stems per plant	0.12	1					
The number of tubers per plant	0.04	0.78**	1				
tuber weight per plant	0.2	0.42**	0.6**	1			
Average tumor weight	0.26	-0.09	-0.04	0.75**	1		
total tuber yields	0.21	0.42**	0.6**	1**	0.75**	1	
salable tuber yield	0.23	0.37**	0.55**	0.99**	0.78**	0.99**	1
dry matter percentage	-0.21	-0.08	0.11	-0.007	-0.09	-0.007	-0.0004

** Significant at the 1% level, ns no significant difference

Reference

1. Anonymous. (2009). Farming, .www.berenge.com
2. Cakmakcı, R., Dönmez, F., Aydın, A and Sahin, F. (2006). Growth promotion of plants by plant growth promoting rhizobacteria under greenhouse and two different field soil conditions, Soil Biol. and Biochem, 38: 1482-1487.
3. Hegde, D.M., Dwived, B.S and Sudhakara, S.N. (1999). Biofertilizers for cereal production in India-a review, Indian Journal Agri Sci, 69: 73-83.
4. Hossein Zadeh, N. (2013). Evaluate the effects of chemical fertilizers, organic and bio-based mini-tuber potato yield and its components in a greenhouse, a graduate dissertation of Agriculture - Agriculture, Islamic Azad University of landlordism, Malakan.
5. Qushchi, F, Lake, Sh and Tohidi Moghadam, HR (2006). Principles of sustainable agriculture, University of Science and Research Branch of Khuzestan, p. 243.
6. Rezaei A and Soltani A (2001). Agriculture Potatoes (translator), The University of Mashhad, 179 p.

7. Shiri, M (2006). Evaluate the growth process and analysis of quantitative and qualitative characteristics of potatoes in different patterns of drip irrigation, a Master's thesis of Agriculture, Faculty of Agriculture, University City researcher, Ardabil.
8. Tishe, N (2013). Azetobacter effects of nitrogen fertilization on yield and yield components of potato varieties in Ardabil, a Master's thesis Department of Agriculture, Department of Agronomy and Plant Breeding, University of Central Asia.
9. Vessy, K. (2003). Plant growth promoting rhizobacteria as biofertilizars, Plant and Soil. 255: 571-586.
10. Woolef, J. (2008). Potato in the human diet, CIP Publication, PP 7-9.