

# Evaluation of the effect of Growth Multiplier Bacteria's on Qualitative Function of Sunflower Oil in the Area of Sistan

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**ABSTRACT:** For Evaluation of the effect of Growth Multiplier bacteria's on qualitative function of sunflower oil in order to decrease the usage of chemical muck, repair the soil and reform the condition of plant nutrition, and experiment in 1392 in the area of Sistan had been done. This experiment portrayed by factorial as random blocks with 4 repetition. Treatment in three levels (Vaccination, lack of pollination and azospirillum bacteria) and kinds of sunflower (Azargol, Chernianka and Record), in three levels have been considered. Growth multiplier bacteria, golden nitro bacterias have been inseminated with aforementioned kinds for evaluation and analyzing the results. And we also had a comparison between inseminated and non-inseminated bacterias effect on sunflowers. Studies show that Growth Multiplier bacterias, had increased morphological growth indicators, which was high for some of them and low for some others. Evaluation of variance analysis show that bacterias have a meaningful effect on characteristics such as height, seed function and percentage of oil.

**Keywords:** bacterial growth enhancers, sunflower pollination, oil percent, figures

## INTRODUCTION

Due to the increase in world population growth rate of 80 million per year and also Predicted population and 1.87 million people to our country in 2015 and Due to the food shortage crisis in this century, we should seek for a functioning method for providing food needs, which is an important factors for stable development. Along with supplying food, due to declining per capita share of agricultural land, either on a national or global scale, there would be no strategy, but increasing production per unit area, which would not meet but using new technology which Promotes increased plant fertility and finally, the increase in agricultural output will not be achieved. These bacterias are biological source and a good tool for colonization of growth and increase the fuction of a broad kind of plants. Some rhizobacterias which have direct and indirect effect on plants are called Plant growth promoting rhizobacteria. And some yield increasing bacteria are other kinds of these bacteria. ( University Sustainable National Conference of Agricultural Tehran , 2008 ). Today the term PGPR is used in a broader meaning and is used for other rhizobacterias such as Azospiriloum, Aztobacter, potasiom bacteria, phospobacteria, sodomonas, agrobacterium and seratia. ( Rodriguez, H. and Fraga, R.1999). Now a variety of different PGPR mechanisms such as: biological promoting, Ethylene decreasing in plant, systematic resistance, producing phitohormunes, cycle of food and making it available, increasing the reach of phosphor, enzymes functions such as deaminize and etc. are proven. ( Antoun, H.and Kloepper, J. 2002 ). Growth promoting bacteria containing eztobacter, azosperriloum and raizobioum are of nitrogen stabilizers which make the growth to increase and provide food sources. (Roesty, D., Gaur, R. and Johri, B.N 2006 ). Sunflower is one of the most important plants for Iran's climate which the high-quality oil and relatively high tolerance to drought and water stress has a meaningful rule in our country's

agriculture. (Karimzadeh, 2003). *Helianthus annuus* is the fifth important plant in producing oil in the world and is 8.2 of the world oil seed in the world which is about 107 billion tones ( FAS . Foreign Agriculture Service . 2005). Investigations show there is an opposite relationship between sunflower's oil and protein and the most important factor for determining oil percentage is the heat. Optimal temperature for the synthesis of sunflower oil is in the range of 22-18 ° C. lower and higher temperature will make less amount of oil. Temperatures during aggregation also strongly affects the composition of fatty acids in sunflower oil. Protein formation increased with increasing temperature from 14 to 20 degrees. About 70% of all oil produced in the fat is extracted from oilseeds. ( Koocheki,A. Khajea hosseini , M . 2006). Nutrition point of view, sunflower oil is important for having high amount of Polyunsaturated fatty acids like Anolik and Oleic. Sunflower seeds contain 26 to 50 percent depending on the goal varieties. So these acids make the oil better. Vegetable oils due to large amounts of polyunsaturated fatty acids than animal fats are better. Studies on fats and vegetable oils on blood cholesterol levels show that in similar condition, intensity of lipid for using saturated fatty acids is far more than unsaturated. On the other hand, liquid oils contain significant amounts of linoleic fatty acids which decreases blood cholesterol (Siler , G.J .2007 ).

## MATERIALS AND METHODS

Evaluation of the effect of growth promoting on qualitative function of sunflower oil in the area of Sistan in 2013 has been researched. It was 61 degree and 29 minutes east length and 31 degree and 2 minutes north width and 487 meter height. The temperature average is 21.7. Experiment had portrayed factorial as random blocks with 4 repetition. Treatments consisted of three levels (Vaccination, lack of pollination and Bactra Azauspraleom) as main agent and kinds of sunflower (Azargol, cherniaka and record) are considered. Growth promoting bacteria called nitro golden bacter which consists of *aztobacter*, *azosperilioum* and *raizobioum* are treated for evaluation and analyzing results. *Azosperilioum* has also been added as before plantation treat. We had a comparison between treating and not treating growth promoting bacteria on characteristics of sunflower. For determining physical and chemical characteristics of sand before preparation of the ground in depth of 0-30cm we made sampling. We made physical and chemical experiment on samples so we determined the soil texture and structure. The results are in the following chart. PH was 8.09.( Table 1 ) Sunflower is a plant which' growth period according to conditions 90 up to 150 days. This plant has a limited growth and can't stand weeds. So it should be protected against weeds completely. ( Khajepoor, M. R. 2006). Growth promoting bacteria portrayed by vaccination (1 liter per 30 kg) and a combination of nitrogen stabilizers consisting of *aztobacter*, *azosperilium* and *rizobioum*. We had 108 living bacterias in every gram of vaccination liquid. We added growth promoting bacteria to sunflower seed before plantation. We used SAS to analyze the data and the average was compared with the level of 1% and 5%.

## RESULTS AND DISCUSSION

Palmitic acid and stearic acid, typically including saturated fatty acids which is about 20 percent of all the plants. While unsaturated fatty acids such as oleic acid and linoleic acid are often more than 70% of the fatty acids. (Shata , S.M. , 2007 ). Results show that inoculated treatments increased the growth of bacteria, oil percent, compared to control (non-inoculated). Shhata and Khvaz (2003), reported a significant increase of oil with the use of bio-fertilizer. (Diagram1 ) Presence of bacteria can increase via nitrogen absorbed by plants and its continued growth and late exposure to cooler temperatures by reducing the level of saturated fatty acids and unsaturated fatty acids. According to the results in Australia (Haris, 1978 ) there is an opposite relation between the minimum temperature and the harvest and there is a significant importance that the night's temperature should be high. With decrease in temperature during 74% - Growth, linoleic acid increased by about 49 and the rate of oleic acid increased with decreasing temperature. Treatment of seeds with growth promoting bacteria decreased saturated fatty acids to a certain amount and increased unsaturated fatty acids comparing to not to vaccinate Bactria (Table 3 ). The use of bacteria grown had an increasing effect on saturated fatty acid composition and some polyunsaturated fatty acids of sunflower. Similar results by Shhata and Alkhavz (2003) reported. In fact, the amount of saturated fatty acids decreased with increasing nitrogen content of unsaturated fatty acids increases. The correlation coefficients between fatty acids show The Association of exile between saturated fatty acids and unsaturated fatty acids which is similar with the surveys of other researchers (Fernandez-Martinez, 1993).

Table 1. The mean percentage and fatty acid composition of sunflower oil by increasing bacteria growth Tlfyh

Rashydyk acid	Linolenic acid	Lynvayyk acid	Oleic acid	Palmitic acid	Stearic acid	Oil content	Bio-fertilizer
0.9	0.31	49.1	38.1	6.3	3.9	46.6	I0
.8	0.31	51.1	39.2	5.6	3.5	47.7	I1
0.8	0.30	50.12	40.3	6.2	3.6	48.3	I2

Non-inoculated bacteria growth enhancers	(I0)
seeds inoculation with bacterial growth enhancers	(I1)
Seed inoculation with Azospirillum bacteria	(I2)

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