

## Effect of Biofertilization under Different Nitrogen Levels on Growth, Yield and Quality of Summer Squash

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**ABSTRACT:** Two field experiments were conducted during 2003 and 2004 summer seasons at the Agricultural Research and Experiment Station, King Saud University, to investigate the effects of Biofertilizer Halex2 (which contains a mixture of bacteria of genera *Azospirillum*, *Azotobacter* and *Klebsiella*, as a mixed Biofertilizer) and different levels of Nitrogen fertilizer (0, 72, 144 and 216 kg N/hectare) as well as their interaction on vegetative growth, yield and its quality of summer squash Mashaal F1 cultivar. The results revealed that increasing N level or seed inoculation with biofertilizer significantly stimulated all vegetative growth characters, and increased early and total yield as well as improved fruit quality of squash plant. Sex ratio was not significantly affected by different N levels. However, biofertilizer treatment, significantly, enhanced the induction of female flowers. Interaction between N levels and biofertilizer treatments exerted significant effects for most of the studied characters and revealed that the application of N at 216 kg/ hectare when combined with biofertilizer inoculation gave the best results. However, the interesting result was that the application of N at 72 kg/ hectare with biofertilizer inoculation had significantly higher total yield per hectare than that of 216 kg N/ hectare applied without biofertilizer inoculation. Both treatments did not significantly differ from each other for most of the studied characters. The use of biofertilizer (Halex2) for squash production can be recommended to reduce the mineral N-fertilizer and to increase the yield and its quality, in order to save the high cost of chemical fertilizers as well as to decrease the pollution of the agriculture environment and produce healthy food for human use.

**Key Words:** Summer Squash, Cucurbita, Biofertilizer, Nitrogen Fertilizer

### INTRODUCTION

Squash (*Cucurbita pepo* L) is one of the most popular and widely grown vegetable crops in the world. It is well known that fertilizers are important factors for higher yield of squash. Among the fertilizers, nitrogen is an indispensable factor in increasing yield and its components. In this respect, several workers revealed that application of nitrogen lead to significant increases in growth parameters; i.e. yield and its components (Swider *et al.*, 1994; Lau *et al.* 1995 and Abd El-Fattah and Sorial, 2000). Buwlda and Freeman (1987) applied five levels of nitrogen on squash plant and

reported that the treatment giving highest yields was that where nitrogen was provided when the relative growth rate of the crop was also highest. At least some of the total nitrogen dressing could be applied as late as two weeks after emergence for hybrid squash. The excessive use of nitrogen fertilizer represents the major cost in plant production and creates pollution of agroecosystem, as well as deterioration of soil fertilizer (Fisher and Richter, 1984). Under these circumstances, substitution of inorganic N fertilizers with organic sources, particularly those of microbial origins, is needed.