EFFECT OF SOME CULTURAL PRACTICES ON YIELD, QUALITY AND NUTRITIONAL VALUE OF TOMATO

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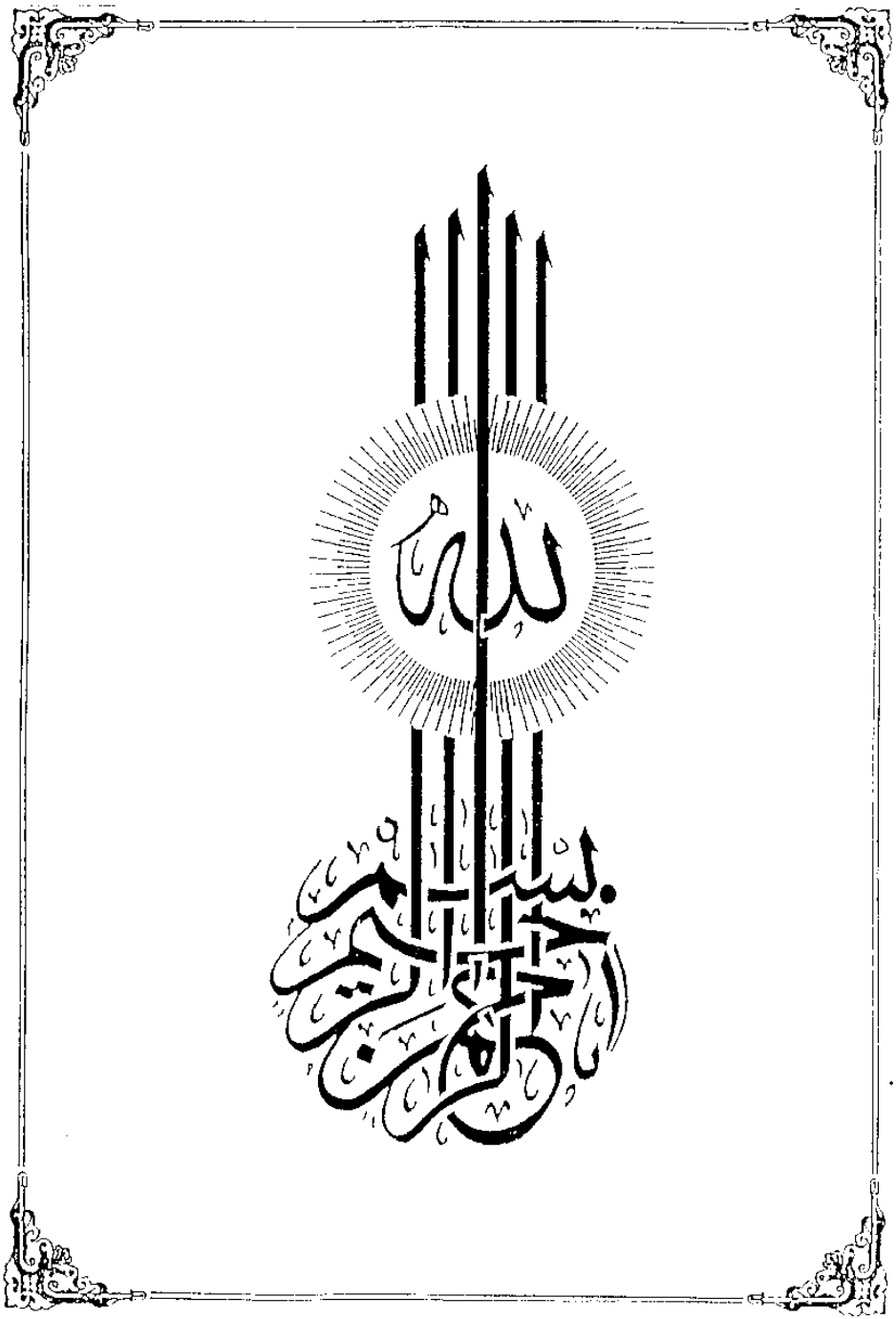

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ABSTRACT

Tomato plants of Super Marmand and Peto 86 cultivars were grown in field with 3 N levels (50, 100 and 200 kg N/fed.) and 3 N Sources ($(NH_4)_2SO_4$, NH_4NO_3 and $Ca(NO_3)_2$), using the split - split plot design. The experiments were carried out in 1989 and 1990 early summer seasons, to study these factors on yield, quality and nutritional value of tomato. The obtained results indicated that Super Marmand plants had more vegetative growth, number of clusters, fruit set ratio, total yield, fruit size and fruit physiological disorders compared to Peto 86 cv. which produced fruit having the higher firmness, T.S.S., titratable acidity and ascorbic acid contents. Whereas, the cultivar had no significant effects on number of branches, stem diameter, N,P,K,carbohydrates (in plant tissues), NO_3 and chlorophyll (in leaves), N,P,K,Mg, Ca and NO_3 (in fruits).

Increasing N level increased plant growth, mineral and carbohydrates content (in plant tissues), leaf chlorophyll and yield, but decreased textural and appearance fruit quality, ascorbic acid content and fruit shelf life. The application of $(NH_4)_2SO_4$ gave more plant growth, N content of plant organs, yield, fruit T.S.S., titratable acidity, ascorbic acid content and shelf life period. As for NH_4NO_3 influence, it increased fruit set ratio per cluster and plant, fruit size and K content in plant and fruit. The addition of calcium nitrate raised plant P and carbohydrates as well as fruit Mg, Ca and NO_3^- contents.

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INTRODUCTION

1. INTRODUCTION

Tomatoes are Egypt's most important vegetable crop in value and acreage. The annual cultivated areas is estimated to be more than 400,000 feddans* amounting to about 40% of the total vegetable area. Egypt tomato soils do not contain enough of most nutrients needed for tomato production, especially nitrogen, phosphorus and potassium which must be added. Plant vigour generally increases with the supply of nitrogen, but the yield usually increases with the moderate dressings of this element.

The response to applied nitrogen depends not only on the initial nitrogen content of the soil but also on immobilization or mineralization of nitrogen,or denitrification, during cropping. Realizing these facts, investigations have been focused on the study of influence of nitrogen form, nitrogen level and cultivars on yield, quality and nutritional value of tomato.

In recent years, many farmers and tomato producers have got accustumed to supply heavy nitrogen fertilizers to obtain high tomato yield. But, the influence of such heavy

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* Ministry of Agriculture, 1987-1989.

N fertilization on the quality and (or) chemical composition of fruit should be investigated.

Bearing in mind all the above points, the present study was conducted to evaluate the effectiveness of nitrogen level and form, along with cutlivars, on tomato yield and fruit quality.