

1- INTRODUCTION

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Tomato [*Lycopersicon esculentum* Mill] is the most important vegetable crop grown in Egypt, not only for local consumption but also for achievement for processing and exportation purposes. According to the Egyptian Agricultural statistics, the cultivated area of tomato had increased from 331720 fed produced 2467793 ton with an average of 7.44 ton/fed in 1981 to 361875 fed produced 4693985 ton with an average of 12.97 ton/fed. in 1992

The non proper application of nitrogen fertilizer at low or excess levels may decrease plant growth, yield and fruit quality. Last years showed that many Egyptian growers used to added excess levels of N-fertilizers to tomato; reached to 1.0 - 1.5 ton of ammonium nitrate or urea per fed in order to increase yield potential. Therefore, this research aimed to determine the highest N-level within the best source of N-fertilizer could be used in tomato nutrition under field condition of clay loam soil in order to get the highest yield with the best fruit quality with a minimum nitrate content .

Moreover, under conditions of high soil-pH, phosphorus fertilizers may be fixed or converted to unavailable form as commonly detected in Egypt. Sulphur application expected to increase the availability of phosphorus through its role on reducing soil -pH .Therefore, the second experiment was conducted to study the effect of sulphur within phosphorus application levels on increasing plant uptake of minerals and to improve plant growth ,yield and fruit quality .

This research also included the third experiment to study the effect of N within P at different levels on yield potential and fruit quality of tomato grown under field conditions of this research

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