

1. INTRODUCTION

Tomato (Lycopersicon esculentum, Mill) is the most important vegetable crop grown in Egypt, not only for local consumption but also for the achievement of processing and exportation purposes. According to the agricultural statistics*, the cultivated area of tomato had increased from 331720 feddans produced 2467793 tons with an average of 7.44 ton/feddan in 1981 to 424963 feddans produced 3996844 tons with an average of 9.41 ton/feddan in 1989.

Fruit cracking is a common physiological disease often results in large losses. Generally, fruit cracking is greatly affected by many environment factors including irrigation (Abbott et al., 1985 & 1986 and Outer et al., 1987). Moreover, type of cracking could be referred to the cultivar itself (Mcferran et al., 1976 and Radwan et al., 1979). Cracking had two types, the radial type which starts from the stem end of tomato fruit towards the blossom end and the concentric type which looks like incomplete circles around the centre of the stem end. Both types of cracking detract from the appearance of the fruits and make them more susceptible to bacterial infection that cause fruit decay.

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This research work aimed to study the effect of some irrigation levels on tomato plant growth, fruit yield and quality in order to solve the problem of fruit cracking through the proper choice of both irrigation regime and tomato cultivar. Therefore, the relation of yield and fruit cracking was studied under field conditions by using three levels of irrigation within four tomato cultivars in both early summer and fall seasons in the two years of this reasearch.