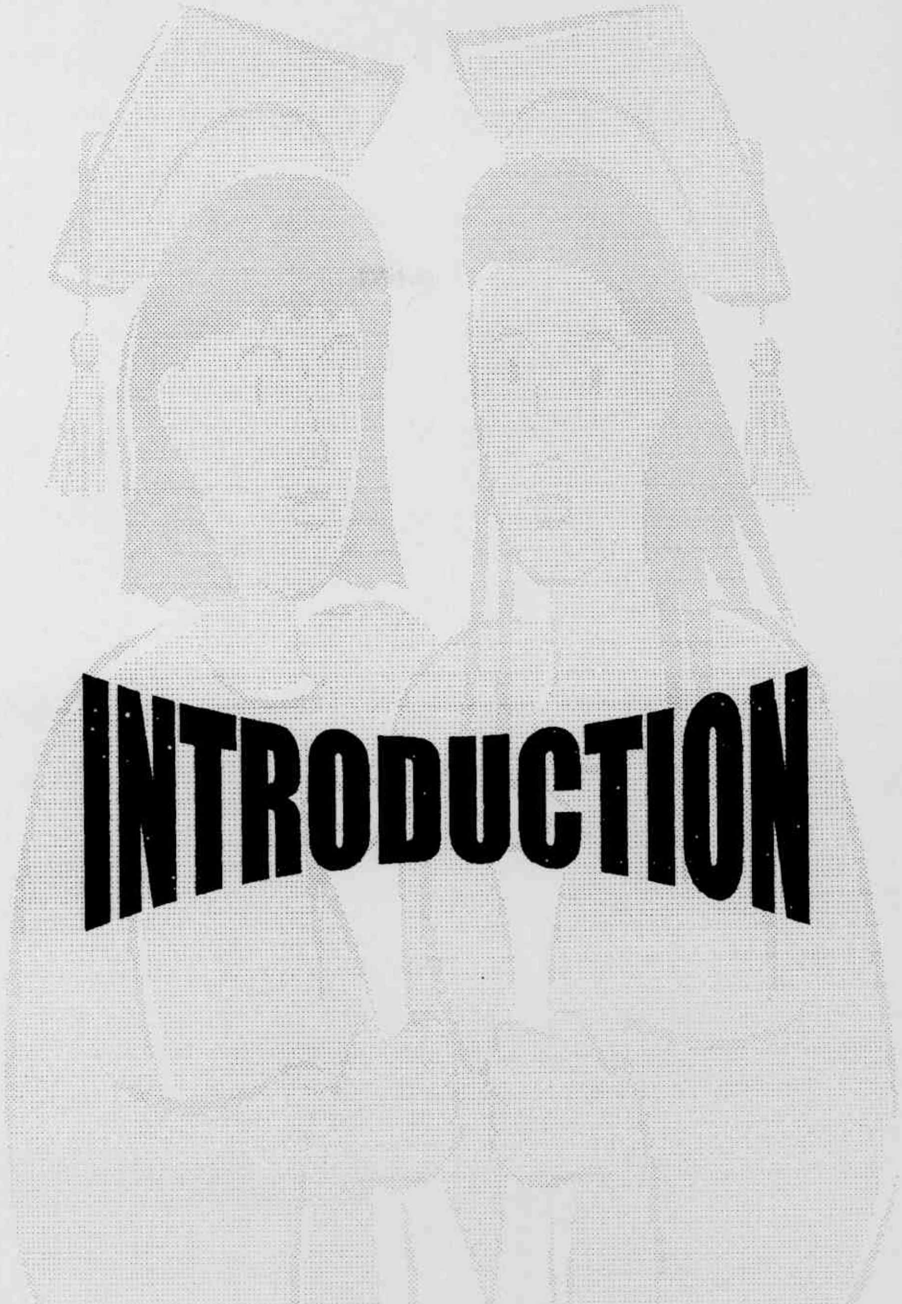
INTRODUCTION



1-INTRODUCTION

Olive (*Olea europea, L.*), belongs to family Oleaceae, comparatively resists drought and salinity conditions to a great extent. Therefore, it is a widely distributed tree and grown successfully under the prevailing conditions of the northern west region of Alexandria, north Saini and most Egyptian oases, where soil is poor and water resources are limited with relatively high salinity. In the meantime, wide arid deserts cover the greatest part of Egypt and the cultivated area represents about 3% of the total area. In addition, olive offers a great economic potential compared with other fruits grown under the same conditions. Olives, also have good nutritional and medical uses as pickled fruits or for oil production. Olive production plays an important role in the economy of many Mediterranean countries.

In Egypt, olive cultivation increased considerably during the last two decades due to the horizontal extension in new reclaimed soils,the introduction of new cultivars and the wide scale propagation of olive cultivars by leafy stem cuttings under mist. Olive acreage reached (113080) feddans and fruiting area recorded (77342) feddans with total fruit production of (293903) metric tons, according to statistics of the Ministry of Agriculture, Egypt (2001).

Macronutrients especially N play a key role in the nutrition of olive trees. Nitrogen has many important functions particularly in the synthesis of proteins, carbohydrates and chlorophyll as well as improving the activity of enzymes responsible for plant metabolism. It has great action in stimulating both cell division and cell enlargement and plays a definite role in flowering and fruiting processes (Yagodin,1984; Devlin and Withdam 1985; Nijjar, 1985; Mengel and Kirkby 1987; Wilde, 1988 and Miller et al 1990).

Olive trees still need additional studies for adjusting and optimizing the amount of N that is needed by the trees at different and specific stages of growth and fruit development. Continuous providing of the trees with their N requirements can be achieved by using fertilizer formulations released their own N at longer period.

The internal cycling of N has been shown to be a major source of N for early growth stages, flowering and fruit set. The internal N cycling comprises seasonal N storage followed by remobilization during spring or leaf senescence. Fruit tree fertilization should include the following strategies: -

1. Increasing the N reserves in perennial tree organs.
2. Provision of adequate N to flower buds for strong fruit set.
3. Avoidance of N accumulation in fruits and prevention of excessive shoot growth.

Enhancing the internal N cycling efficiency and reducing spring application of N through the soil may be achieved by fertilizing the trees with small amount of N. Besides reducing the risk of nitrate pollution in the soil is considered an another merit.

Fruit trees recoveries of N seldom exceed 60 to 70% of that added in the traditional nitrogen fertilizer. Although, there are some losses from volatilization of N and ammonia and from the fixation of ammonia by clay mineral entrapment and immobilization by bacteria , the principal loss results from the leaching of nitrates (Yangodin, 1984 and Miller, et al 1990). These losses have promoted the investigations for fertilizer materials that release their own N over a long period of time so that the nitrates will be absorbed by the expanding root system during the entire growing period of the plant. During the last few years several controlled-release fertilizers such as phosphorous coated urea (PCU), urea formaldehyde (UF), sulphur coated urea(SCU), bentonite coated urea (BCU) and others were developed mainly to improve the efficiency of N used by plants (Hamdallah, *et al* 1988).

Fertilizer efficiency can be defined in terms of crop quality, fertilizer nutrient recovery and economic of fertilizer use(Yagodin, 1984).

From the point of view, enhancing nutrient recovery by the plants, three main advantages are cited for slow release fertilizers: -

1. Minimizing the nutrient loss via leaching.
2. Reducing chemical reactions and biological immobilization in the soil.
3. Decreasing rapid nitrification and N loss through ammonia volatilization and denitrifications (Yagodin, 1984 and Miller, *et al*, 1990).

Other advantages include reduction of tree damage from high local concentrations of salts, reduction of leaf burn from heavy rates of foliar applied fertilizers, increase residual value and better economical and improvement of storage and handling properties of fertilizers (Travis, 1971).

Thereupon, this study was initiated to evaluate and compare the effect of nitrogen fertilizer sources i.e fast release nitrogen fertilizers (ammonium nitrate, ammonium sulphate and urea) and slow release nitrogen fertilizers (phosphorus coated urea, urea formaldehyde and bentonite coated urea) and rates of nitrogen fertilizers (200&300g actual N/tree in "Off" years) and (400&600 g actual N/tree in "On" year) as well as their interaction on growth, leaf nutrient content, blooming, fruiting and fruit quality of Manzanillo olive trees.