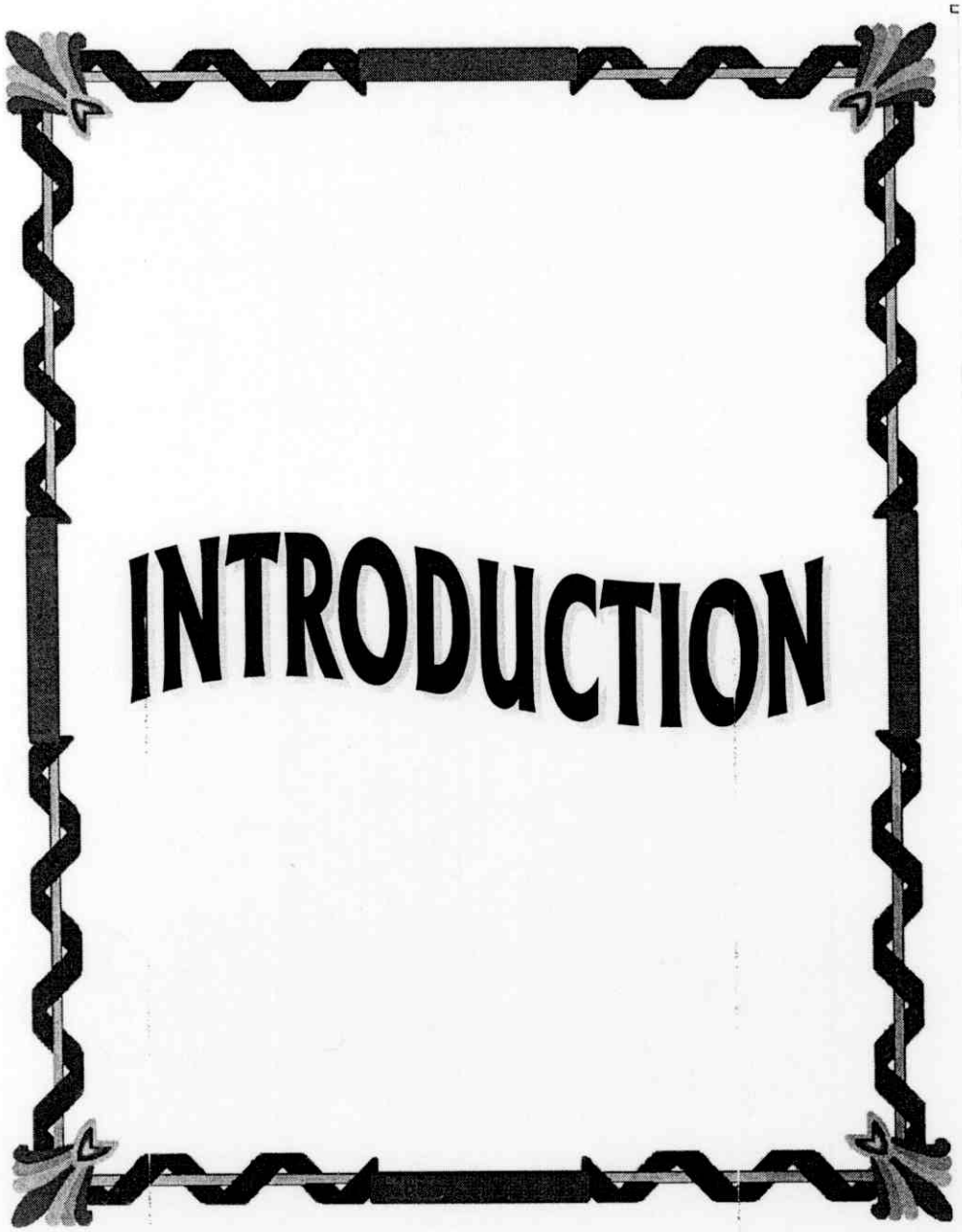
INTRODUCTION

1. INTRODUCTION

Pomegranate is one of the most useful fruit crops in the world. Most of attention must be given to enhance its cultivation by many horticulturists. The pomegranate is the only genus of its family (*punicaceae*) (Popenoe, 1974). Such family comprises only two species; *Punica granatum* (pomegranate) and *Punica protopunica* (Rendle, 1967). The productive pomegranate trees are occupying about 3369 feddans fruit area of the total area which amounted to about 4409 feddans according to the latest statistics of the Yearbook of Statistics and Agriculture Economics Dept., Ministry of Agriculture, Egypt (2004). The pomegranate fruits have several nutritive, food, industrial and medicinal values for human.

The fruit is widely used for decorative purposes, but is also eaten fresh or as cooling juice. The greatest commercial values of pomegranates are found in tanning properties of the fruit peel (20-27%) which is used in industry and consumed by leather tanners. A reddish dye is obtained from the petals of the flowers. A jet-black smooth writing ink is made from the fruit rind. The pomegranate has also some pharmaceutical properties. The bark of roots is well known as a stringent employed in therapeutics, in dysentery and diarrhea. The rind of the fruit is used as a remedy for tenia. Sharaf *et al.* (1967) found that extracts of different parts of pomegranate plants and fruits have hypotensive effect (causing low blood pressure), antispasmodic (having the power to prevent or relieve spasms or convulsion) and antihelmintic properties (expelling or destroying parasitic worms). The seed oil was also shown to possess estrogenic (var. of estrogen) activity but was devoid of any androgenic (male parthenogenesis).

Recently, there has been an increasing demand for this fruit to meet the needs of local as well as the foreign markets. The area under cultivation with pomegranate trees reached 4409 feddans in 2004 based on the Yearbook of Statistics and Agriculture Economics Dept., Ministry of Agriculture, Egypt (2004). Nutritional requirements and fertilization program must be studied specifically the source, rate and application method of fertilizers. Alternative to the hazardous effect of chemical fertilizers is the use of organic and biofertilizers. Organic manure fertilizers are better as they reduce pollution to soil, plant, animal and human beings. Also, manure improves the soil structure as it acts like a bulky diluent in compact soils. These structural improvements increase the amount of useful water that soil can hold. They also improve aeration and drainage and encourage good rooting by providing enough pores spaces of the right sizes. There are several sources of organic manure. The kinds used of this ever research are cattle, poultry and camel manures. Also, biofertilization with bacteria or fungi is safe, low cost, and reduces pollution. Different types of biofertilization are available and can be used at high efficiency. It increases the vegetative growth, leaf mineral contents and yield as well as fruit quality in many plants (Gendiah, 1987; Ahmed *et al.* 1997 and 2003).

The ultimate aim of this study was to study the effect of different sources of organic manure (cattle, poultry, and camel), in two application methods (superficial and trench), as well as N-bio-fertilization (N-fixing bacteria; Nitrobein and Rhizobacterien) on tree growth, leaf mineral contents and yield as well as fruit quality of pomegranates trees (*Punica granatum*).