1. INTRODUCTION

Groundnut (Arachis hypogaea Linn) is an important oilseed crop of the world. It is one of the chief sources of vegetable oil and protein. Being a leguminous plant, it is well suited for rotation and mixed cropping. It is relatively a short duration crop and is easier to grow, because of a few serious diseases and pests. It is an exotic crop, introduced in India in sixteenth century. The area under groundnut has spread rapidly during the last 50 years. India, has the largest area in the world, with 7.2 million hectares accounting for about 42 per cent of the world acreage. The total production, however, is only about 33 per cent of the world production. Among the groundnut producing States in India, Karnataka ranks fourth in acreage. In Karnataka State, groundnut is grown on a large scale in Dharwar, Belgaum, Raichur, Gulbarga, Bijapur and Bellary districts.

Groundnut is grown both as a rainfed crop in kharif as well as an irrigated crop in summer. With more and more area coming under irrigation in the State, the area under groundnut is increasing rapidly. Groundnut has become an important crop in sandy loam soils, because of high yields obtained. The yield of groundnut varies considerably depending upon soil, climatic conditions, cultivation practices followed, and upon soil moisture status during flowering and peg forming stages.
There is a good scope to enhance the yield of groundnut with judicious application of water and fertilizer. Groundnut being a leguminous crop, it is often regarded that application of a large quantity of nitrogen may not be necessary but only a small quantity of nitrogen is required in the initial stage for the proper establishment of the crop. Application of adequate quantity of phosphorus, however, is considered essential, not only to increase the yield, but also to enhance the oil content in the kernel.

Water is a valuable resource. Efficient use of irrigation water is essential for increasing agricultural production. Some work on water requirement of groundnut has been done. Timely irrigations are more important than the total number of irrigations. Pre-flowering, flowering and pod-development are the critical stages of the crop. Shortage of soil moisture at these stages results in a reduction in yield.

In view of the importance of water and fertilizer in increasing the production of groundnut, investigations were undertaken on irrigated groundnut in sandy loam soil at the College of Agriculture, Dharwar, to study the effect of varying soil moisture regimes and varying levels of nitrogen and phosphorus on growth, yield and quality of the crop.

The results of these investigations are presented in this thesis.