

# **INTRODUCTION**

## Introduction

The problem of soil acidity is becoming acute in the world. According to Magnovaea (1998), about 43% of world's tropical land is classified as an acidic soil which covers about 1660 million hector of the soil. According to Foy (1984) in acidic soil the major problem is aluminium (Al) toxicity. About 30% of cultivated land in our country has acidic soils. Soil Al increases rapidly below pH 5, which adversely affects root development of crops Broomfield/(1984). Soil acidification is likely to have both on site and of site effects associated with crop production and effects of reduced plant water use respectively (Cregman and Scott, 1998). According to Foy (1984) aluminium toxicity is manifested in many ways such as drought stress, deficiency in O<sub>2</sub>, Ca, P, in soil, water logging, high bulk density as well as disturbance in mineral nutrition in different plants. Recently Kochian *et al.*/(2004) reported that about 60% of the tropic and subtropics soil is acidic and it shows negative impact on staple food crops including rice and maize. Many workers like Carver and Ownby, (1995), and Jayasundara *et al.*, (1998), reported reduction in plant growth by aluminium toxicity mainly of plants that grown in acidic soil. Root and shoot are targets of aluminium toxicity but exact mechanism of Al toxicity is not clear. (Horst, 1995; Rengel, 1996; Kochian and Jone, 1997). There are only few attempts to study influence of Al on germination. The reduction in germination due to aluminium noticed in pigeon pea (Narayanan and Syamala, 1989). However the responses of oil seed crops under this acidic soil is not clear.

Groundnut is important oil seed legume crop of India. Hence in the present investigation it is thought worth while to study the effect of aluminium toxicity on germination performance, seedling growth and some physiological changes during germination of groundnut seeds. Seed germination represents a dynamic period in the life cycle of crop plants that makes the transition from a metabolically quiescent to an active and growing entity. Thus the present investigation will throw light on biochemical responses of germinating groundnut seeds to aluminium toxicity. It is the most important but complex process. There is a variation among different seeds in their germination pattern where as some biochemical reactions are common in all germinating seeds.

The increasing population is the most severe problem and thus to fulfill the demand of food within limited land has become task. By keeping above view in mind,

number of agriculturalist and physiologist are engaged to solve this problem by increasing yield of crops by using various techniques. In this regard this work will give us idea about the effect of aluminium toxicity on germination performance and seedling growth and physiological changes during germination of groundnut seeds.

The organization of present dissertation consist of four chapters –

In chapter – I

Review of Literature:-

It has been taken with greater emphasis with Literature on acidic soil, aluminium toxicity due to acidic soils, causes, phytotoxicity, symptoms, beneficial effects, physiological effects under Al toxicity as well as Al tolerance mechanisms.

In chapter – II

Materials and Methods:-

The methodology, which consists the information about the cultivar selected for present investigation followed by detail description of different methods employed in the present investigation.

In chapter – III

Results and Discussion:-

Results of the investigation and discussion on the recent and relevant literature based on the results.

In chapter – IV

Summary and Conclusion:-

The significant findings are briefly summarized in this chapter.

Bibliography is the last part of the dissertation in which references cited in this dissertation are listed alphabetically.