

## EVALUATION OF SEED AND SEEDLING QUALITY OF *AZADIRACHTA INDICA* A. JUSS. (NEEM) SEEDS COLLECTED FROM VARIOUS AGRO-ECOLOGICAL REGIONS OF GUJARAT STATE

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### ABSTRACT

Neem (*Azadirachta indica* A. Juss) seeds were collected for evaluation of seeds and seedling qualities of grown in various agro-ecological regions (AERs) which is extensively planted in AER-1, AER-4 and AER-5 in state of Gujarat, India. Collected seeds were tested in lab for 100 seed weight, germination percentage (G%) and in nursery for G%, speed of germination in terms of mean germination time (MGT), germination value (GV) and seedling performance viz. seedling height, number of leaves, total biomass, root shoot ratio, sturdiness quotient (SQ) and vigour index. Results indicated that seed may be collected from AER 1 followed by AER 5 for significantly better seed seedling qualities.

**Key words:** Agro-ecological regions (AERs), Germination, Mean germination time (MGT), Germination value (GV), Sturdiness quotient (SQ), Vigour index (VI) Quality index (QI).

### Introduction

Neem (*Azadirachta indica* A. Juss) is an attractive, valuable and suitable multipurpose and evergreen (deciduous in drier areas) tree native to the Indian sub-continent but cultivated throughout South-East-Asia, Australia, Africa, Central and South America. It can grow on all type of soils. In India it is considered to be very useful and valuable tree species. Neem has been claimed to be a leading plant resources for solving problems of global levels. The tree is highly efficient in restoring productivity and improving the ecology of the area. Almost all parts of the tree have several uses (Anon., 1987).

Extracts of neem oil and chemicals for industrial uses are gaining more and more attention worldwide. In view of the versatile uses and industrial demands, there is a need to identify areas producing quality seeds. Studies conducted on some of the seeds have shown that the chemical contents are constantly influenced by agro climatic situations (Tripathi and Kumar, 1995; Tripathi *et al.*, 1997a, 1997b and 1997c; Gupta *et al.*, 1998; Kaura *et al.*, 1998; Kundu *et al.*, 1998; Kumar and Arrawatia, 1999). Gujarat state of India has five agro-ecological zones. Besides morphological traits, chemical traits of seeds are also of immense importance in determining adaptability and productivity of the plant. Therefore, present studies had been taken to assess the variability of neem seed collected from various agro-ecological zones (AERs) of Gujarat state, India so as to identify best zone for quality seed production.

### Material and Methods

The state of Gujarat, India is situated between the latitude of 20° 1' N to 24° 7' N and longitude of 68° 4'E to 74° 4'E. The climate of the state is tropical; however, the same is considerably moderated due to the long coastline. The temperature ranges between 1 to 46°C, the variations are less in south Gujarat, and in coastal zones but high in Northern Gujarat and Saurashtra region. The rainfall received in the state varies from region to region, and on the basis of moisture adequacy superimposed on the soil map of India. Gujarat has been divided into five agro-ecological zones (AER) (Fig. 1). Neem (*Azadirachta indica* A. Juss.) has been extensively planted in AER-1, AER-4 and AER-5 as per the record of State Forest Department, Gujarat, India. The annual rainfall in AER-1 was 250-500mm and slightly higher (400-700mm) in AER-4 and AER-5.

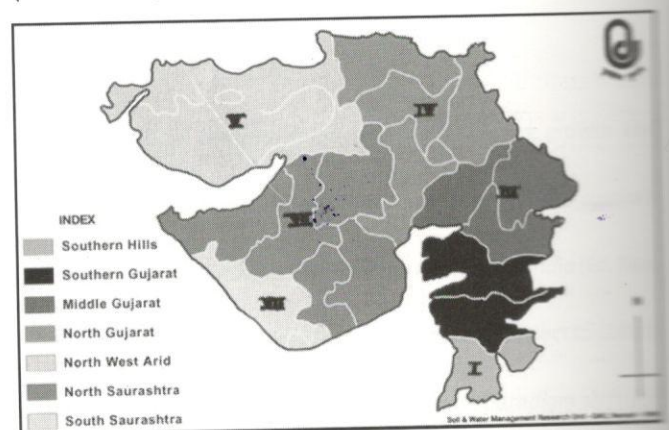


Fig. 1: Various agro ecological regions of Gujarat state of India.  
Source: www.mapsofindia.com

Seed parameters were assessed of the Neem seeds collected from different agro-ecological regions (AER) in Gujarat and seeds from AER-1 was found most suitable.

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