

Studies On Seed Size And Seedling Vigour In Amaranthus (Amaranthus Sp.)

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ABSTRACT

Investigations were carried out at the Department of Horticulture, Faculty of Agriculture, Annamalai University to assess the variability in seed size in 30 genotypes of amaranthus and its effect on germination and seedling vigour. The results revealed the existence of a wide variability in seed size and the seedling vigour studies revealed that very bold seeded types were superior which recorded higher initial and final germination percentages, higher speed of germination, root and shoot length, seedling length, vigour index, dry weight of seedling and better field emergence.

Key words: Seed size, Germination, Seedling vigour

INTRODUCTION

Amaranthus constitute a single major group of leafy vegetables, which has attained more wide spread in south India. Amaranthus is considered to be the cheapest leafy vegetable and it could be rightly described as "Poor mans vegetable". Nutritional experts recommend an average consumption of 50 – 100 g of green leafy vegetables everyday. Van Eijnatten (1970) is one of the opinions that a regular supply of few grams of leaf proteins to children may lead to substantial improvement of their health. Amaranthus leaves have nitrate and oxalate levels similar to other green – leafy vegetables but adverse nutritional effects are not to be feared with a consumption level of 100 to 200 g/day (Grubben and Vansloten, 1981). Amaranthus being a cross-pollinated species, wide variability exists in colour, shape and size of leaves, stem characters, seed yield and seed size in different types and cultivars. The variability in seed size even within the released varieties from TNAU as reported by Kadermohideen and Irulappan (1993) will testify this. The author report that Co-1 possesses the smallest seed size and that of Co-2 the biggest size and other varieties have seed size of medium magnitude. The present investigation was attempted to assess the seedling vigour in relation to days to emergence and growth.

MATERIALS AND METHODS

The experimental material consisted of 30 genotypes of amaranthus of leafy types comprising of 16 from NBPGR, 10 from Division of Vegetable crops, IIHR, Bangalore, four from Department of Olericulture, TNAU, Coimbatore (Table.1). To assess the seed size, 3

replication of one thousand seeds each of the accessions were counted and the genotypes were grouped as small, medium, bold and very bold seed as shown in the Table 2. Germination and vigour studies were carried out by petridish method and roll towel method under laboratory condition along with field emergence studies in the selected genotypes from each seed size group (Table.3). The observations recorded were Initial germination percentage, Final germination percentage, Speed of germination, root length, shoot length, Seedling length, Vigour index, Root: Shoot ratio and Seedling dry weight.

RESULTS AND DISCUSSION

All the characters under study were statistically significant. The very bold seeded group recorded maximum germination percentage, seedling vigour and seedling dry weight followed by the bold seeded types. The small seeded types recorded minimum germination percentage; seedling vigour and seedling dry weight. The seed size in thirty genotypes as adjudged by thousand seed weight revealed the existence of wide variability. The results of the present study revealed that different seed sizes had exerted profound effect on initial and final germination percentage irrespective of the germination methods adopted (Table.4 and Table.5). This may be attributed to the availability of the larger surface area of very bold seeded and bold seeded types that might have facilitated higher germination as compared to the small seeded genotypes. Wester (1964) in Lima bean reported the similar results. Borate *et al.*, (1995) found that seeds of higher 1000 seed weight were superior in germination capacity in the

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