Internat. J. Plant Sci. Vol.2 No.2 July 2007 : 149-151

Influence of seed grading in china aster cv. POORNIMA

A.SELVAKUMARI*, A.VIJAYAKUMAR, P.BALAMURUGAN AND R.GEETHA
Department of Plant Breeding and Genetics, Agricultural College & Research Institute, MADURAI (T.N.) INDIA
(Accepted :May, 2007)

SUMMARY
Seed grading in china aster cv. POORNIMA improved the seed quality with superior seedling quality characters. In size grading, BSS 16 wire mesh sieve registered quality seeds while in density grading with specific gravity separator, the first three grades ($G_{1,}$ G_2, G_3) recorded better quality seeds.

Key words: Grading, Specific gravity separator, BSS sieve and germination.

In China aster the seeds are light in weight and records poor germination. In the post harvest operations, seed processing and grading plays a vital role in improving the quality of seeds. Seed upgrading based on size, weight and density in flower crops pays a way for rapid germination and vigorous seedling growth. Separation by physical properties resulted in improvement of seed quality as measured by germination and emergence (Arndt, 1945). Larger the seeds better the germination and subsequent rate of growth (Crocker and Barton, 1953). Importance of seed size in relation to seedling vigour is positively correlated to population density (Kalakannawar *et al.*, 1989).

MATERIALS AND METHODS

Genetically pure seeds of China aster cv. POORNIMA obtained from Indian Institute of Horticulture Research, Bangalore formed the basic material for the study. Bulk seeds of china aster were size graded using BSS wire mesh sieves viz., BSS 14, 16 and 18.

The bulk seeds after pre-cleaning were upgraded based on their density also using a laboratory specific gravity separator (Model Western type LA-K number 89036) with the deck oscillation speed of 490 – 500 rpm, inclination with vertical height (1), horizontal height (1) and airflow rate (3). In the above level the seeds were upgraded into five grades viz., G1, G_2, G_3, G_4 and G_5, respectively.

The graded seeds and ungraded bulk seeds were evaluated for the following parameters, Seed recovery, 100 seed weight, germination (ISTA, 1999), drymatter production and vigour index (Abdu-Baki and Anderson, 1973). The data were analyzed statistically as per methods of Panse and Sukhatme (1985).

* Author for correspondence.

RESULTS AND DISCUSSION

Size grading :

Seed recovery percentage differed significantly due to size grading with BSS wire mesh sieves (Table 1). The highest percentage of seed was retained by the BSS 16 sieve (91.2) followed by BSS 18 sieve (4.4%), while minimum in BSS 14 sieve (0.3%). The seeds retained in BSS 14 sieve recorded the maximum 100 seed weight (0.207 g) followed by BSS 16-sieve (0.171 g) and bulk (0.164 g). The 100 seed weight was minimum (0.108 g) in seeds passed through BSS 18 sieve. Balamurugan (1993) also reported a positive association between size and weight of seeds. Seeds retained by BSS 14 sieve recorded high germination (78%) associated with vigorous seedling length (4.6cm & 4.1cm) and dry matter content (12.1mg) followed by BSS 16 sieves. The seeds passed through BSS 18 sieve registered the lowest values for all the quality attributes compared to bulk or other grades. The results were in conformity with the findings of Sathiyanarayanan (2000) in phlox, and Vijayan (2002) in zinnia and gaillardia. The profound influence on size grading exhibited its superiority on values too where BSS 14 sieve register vigour index value of 635 followed by BSS 16 (571) compared to bulk. The vigour, which is the integral of seedling dry matter and germination, was more in large or heavy seeds. The relatively higher vigour associated with the large size seed could be ascribed to the more mature embryo containing adequate nutrient reserves both contributing its physiological stamina and vigour factor residing in it. (Pollack and Roos, 1972).

Specific Gravity Separation :

Seed grading with specific gravity separation registered significant differences with quality characters of seeds (Table 2). Among the grades, G_2 recorded the