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Effect of pre-sowing seed treatment on seed and seedling quality characters in china aster (*Callistephus chinensis* L. Nees) cv. POORNIMA

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SUMMARY

An experiment was conducted to study Seed fortification with growth regulators and inorganic nutrients on seed and seedling characters in china aster cv. Poornima. The results revealed that the germination of china aster could be improved by seeds fortification with $ZnSO_4$ @ 0.25 per cent for 2hrs.

Key words: Seed fortification, $ZnSO_4$, GA_3, germination.

Pre-sowing seed management practices have drawn the attention of seeds men from time immemorial (Gregg, 1967) for boosting the potentially of seed at store and field including nursery. This pre-treatment not only improves the germination but also the economic yield especially, flower and the seed in several instants. Identification of suitable pre-sowing treatment will have favourable impact on flower crops due to their indeterminate growth pattern. Nutrients are the alternative to growth regulators as they are cost effective and possess reduced lethality rate at supra optimal conditions. In addition they are also easily available than growth regulator.

MATERIALS AND METHODS

Genetically pure seeds of china aster cv. Poornima obtained from Indian Institute of Horticulture Research, Bangalore was used for the study. The studies were carried out in Dept. of Seed Science and Technology during July 2004 at Tamil Nadu Agricultural University, Coimbatore.

The seeds were soaked in equal volume of different concentrations of the following growth regulators and inorganic nutrients for 2 hours.

T_0 - Control
T_1 - Water
T_2 - GA_3 50 ppm
T_3 - GA_3 100 ppm
T_4 - $FeSO_4$ 0.25%
T_5 - $ZnSO_4$ 0.25%

The soaked seeds were surface dried and evaluated for the following seed and seedling characters, *viz*., germination (ISTA, 1999), root length, shoot length, dry matter production, vigour index (Abdul-Baki and Anderson, 1973). The data were analyzed statistically as per methods of Panse and Sukhatme (1978).

RESULTS AND DISCUSSION

The germination percentage was influenced by all the seed fortification treatment with growth regulators and organic nutrients (Table 1). Among different treatments tried, T_5 registered maximum germination of 83 per cent, followed by T_3 (70%) with concomitant germination per cent over the control was 28%. The germination percent was minimum in T_0 (65%). while treatments T_1, T_2 and T_4 were at par.

Significant differences were observed for root and shoot length due to seed fortification with growth regulators and organic nutrients also (Table 1). Seeds of T_5 and T_3 produced longest roots (4.2 cm) followed by of T_2 (4.1 cm). The shortest root (3.5 cm) was produced by seeds of T_1. The seeds of T_3 and T_5 produced longest shoot (3.9 cm) followed by the seeds of T_2 (3.8 cm). Seeds of T_0 and T_1 recorded shortest shoot length of 3.3 cm. Dry matter production showed significant difference due to seed fortification with growth regulators and organic nutrients (Table 1) and was maximum for T_5 (15.2 mg) followed by the seeds of T_3 (13.0 mg). The minimum dry matter was produced by the seeds of T_0 (8.3 mg). Vigour index value varied significantly with seed fortification using growth regulators coupled with organic nutrients (Table 1). The highest vigour index was registered by the seeds of T_5 (672) followed by seeds of T_3 (567) while T_0 recorded the minimum value (456).

Micronutrients act as co- factor for most enzyme and serve as an economically viable alternative to costly growth

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