

Seed production of onion as influenced by the application of growth regulators and nutrients

P. GEETHARANI, M.I. MANIVANNAN AND A.S. PONNUSWAMY

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See end of the article for authors' affiliations

Correspondence to:

P. GEETHARANI
Department of Floriculture
and Medicinal Crops,
Horticulture College and
Research Institute,
PERIYAKULAM (E.) (T.N.)
INDIA

ABSTRACT

Field experiment was carried out to study the effect of growth regulators and nutrients on onion seed production. Among the sprays, spraying of NAA (100 ppm) at first flower stalk emergence and second spray at 10 per cent flowering stage (*i.e.* 35 and 45 DAP) enhanced seed recovery and yield by 22.7 per cent. The improvement of seed germination and vigour index due to NAA over control was 16 and 55 per cent, respectively. The performance of GA₃ (100 ppm) as foliar spray was found to be the next best. The seed protein content was also 7 per cent higher in NAA (100 ppm) and GA₃ (100 ppm) spray treatments compared to the unsprayed plots. Panchagavya (3 %) spray caused scorching of flower stalk which reduced the formation of new umbellets.

Key words : Onion, Growth regulators, Nutrients, Seed yield.

Onion (*Allium cepa* var. *aggregatum*) is a common vegetable crop grown in India. Its seed yield unit⁻¹ area is comparatively low. To achieve higher productivity, the mother plants could be supplemented with nutrients through foliar sprays which will reduce the loss through absorption, leaching and other processes associated with soil application (Vasilas *et al.*, 1980). It could also bring manifold changes in seed composition and its viability and vigour. The response of onion seed crop to various growth substances has been well documented by many workers. Use of plant growth regulators to the onion crop alters the physiology of crop growth and influences the storage life of bulbs and seeds besides affecting seed quality. The role played by different plant growth regulators differs from each other. In this context, foliar application of growth substances assumes paramount importance for better productivity of the seed crop.

MATERIALS AND METHODS

The field trial was conducted during *rabi* 2003 with COOn5 onion seeds adopting Randomized Block Design and replicated thrice. The crop was raised with recommended package of practices in a plot size 3 x 2.5 m² under irrigated condition. Foliar spray of growth regulators and nutrients were given during first flower stalk emergence and 10 per cent flowering stage.

The present study was undertaken with 9 treatments: Control, IAA 100 ppm solution, NAA 100 ppm solution, GA₃ 100 ppm solution, Ethrel 100 ppm solution, Boric acid 100 ppm solution, TIBA 50 ppm solution, Cytokinin 100 ppm solution, Panchagavya (3%) solution.

The following observations such as days to 50 per cent flowering, number of umbels plant⁻¹, seedset per cent, number of seeds umbel⁻¹, seed yield umbel⁻¹, seed yield plant⁻¹, germination percentage, seedling length, drymatter production, vigour index and protein content were recorded.

RESULTS AND DISCUSSION

Flowering in onion was mainly induced by low atmospheric temperature ranging from 4 to 15°C further, higher temperature after floral initiation some times prevent normal development of flower stalks due to abortion of flower initials (Brewster, 1994). Attempts have been made to induce flowering in onion through foliar spray with chemicals and growth regulators (Nehra *et al.*, 1992). The greater potentialities of growth regulators for maximizing the yield of vegetable crops have been reported by Maurya and Lal (1987) and Sinha and Pal (1983).

In the present study, the growth regulators and nutrients *viz.* IAA, NAA, GA₃, ethrel, boric acid, cytokinin each at 100 ppm, TIBA 50 ppm and panchagavya 3 per cent spray were evaluated for their efficacy in seed set of *aggregatum* onion cv. COOn5. The number of days required for flowering varied significantly with respect to the growth regulators and nutrients sprays over control. The minimum days to 50 per cent flowering were exhibited in plants sprayed with NAA at 100 ppm, while maximum days were taken for flowering in control. This might be due to the effect of NAA on auxin production, which changes the meristem from vegetative to reproductive