

## Mid-storage treatment to prolong the shelf life of onion seeds [*Allium cepa* (L.)] cv. COON5

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### SUMMARY

The study with the standardized method of soaking-drying, the efficacy of different antioxidant chemicals *viz.*, monosodium hydrogen phosphate ( $10^{-4}$ M), disodium hydrogen phosphate ( $10^{-4}$ M), sodium thiosulphate ( $10^{-4}$ M), and oxalic acid ( $10^{-4}$ M) along with water were evaluated for their invigourative effect and the seeds were further stored in cloth bags as well as polyethylene bags along with untreated seeds for evaluation of storability of treated seeds. Among the treatments, monosodium hydrogen phosphate recorded 8 per cent higher germination than the control followed by disodium hydrogen phosphate at initial period. The vigour index estimated through seedling length and drymatter production were found to be maximum with monosodium hydrogen phosphate followed by disodium hydrogen phosphate. The electrical conductivity of seed leachate was lower in treated seeds compared to control. The seeds invigourated with monosodium hydrogen phosphate and stored in polyethylene bag maintained the germination of 72 per cent even after four months of storage which was 10.7 per cent higher than the control.

**Key words :** Antioxidants, Containers, Germination, Vigour index, Electrical conductivity.

The production of vegetable seeds is a costly venture and the possibility of carrying over the left over stock for more than one season possess a serious problem as the seeds deteriorate during storage. Wastage of seeds is highly regrettable because of their high economic value. Prolonging the shelf life of stored seeds is always a profitable proposition and can be adopted if the procedure is cheap and easy to follow. The hydration-dehydration treatment method, relatively a low cost technology has been successfully followed for the preservation of seeds for number of vegetables (Basu and Rudrapal, 1982).

Mid-storage correction is one of the physiological seed management techniques which implies on improvement in physiological status of seed, thereby achieving improved germinability, greater storability and better performance than the corresponding untreated seeds (Basu, 1994). This method is different from conventional pre-sowing treatments, where the short duration of soaking and drying treatments are given to store seeds with a sufficient time gap between treatments and sowing. The treatments are effective not only for viability maintenance but also for increasing the productivity of resultant crop (Mandal and Basu, 1986).

### MATERIALS AND METHODS

Eight month-old seeds of onion cv. COON5 having 8 per cent moisture content after thorough cleaning and grading were soaked in double the volume of dilute solutions of different chemicals at room temperature for 6hr. The various treatments *viz.*, water soaking, monosodium hydrogen phosphate ( $10^{-4}$ M), disodium hydrogen phosphate ( $10^{-4}$ M), sodium thiosulphate ( $10^{-4}$ M), oxalic acid ( $10^{-4}$ M) and control were imposed.

After the specified period of soaking, the solution was decanted and seeds were dried under shade along with the control to the moisture level of 6 per cent. Initially the seeds were treated with bavistin @ 2 g per kg or seeds and tested for initial seed quality parameters.

Then the seeds were packed in cloth bag and 700 gauge polyethylene bag and stored under ambient conditions ( $25^{\circ}\text{C}$  temperature and 75% RH) in two replications. The samples were drawn at four months after storage and evaluated for the following seed and seedling quality parameters *viz.*, moisture content, germination percentage, vigour index and electrical conductivity. The data from the experiments were analysed statistically adopting the procedure described by Gomez and Gomez (1984).

### RESULTS AND DISCUSSION

Basu (1994) highlighted that water itself could act as an antioxidant and heal the damages caused by age induced deterioration of seeds and inclusion of chemical antioxidant through invigouration treatment could further

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