International Journal of Plant Sciences, Vol. 3 No. 2 : 582-586 (July, 2008)

Effect of pre-sowing seed treatment in aggregatum onion

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(Accepted : June, 2008)

SUMMARY

Pre-sowing seed management techniques revealed that the seeds fortified for 6hr. with panchagavya (3%) or micronutrients mixture ($ZnSO_4$, $MnSO_4$ and Na_2 Mo O_4 each at 0.5 g kg^{-1} of seed) or pyridoxine (100 ppm) could be stored upto two months with higher germination and vigour. However, pelleting with or without seed fortification was not suitable for improving seedling quality characters of onion cv. COON5.

Key words : Onion, Panchagavya, $ZnSO_4$, $MnSO_4$, Pyridoxine, Pre-sowing seed treatment.

Adoption of suitable seed management practice before sowing is necessary to trigger the seedling emergence and establishment and these pre-sowing treatments shorten the period from sowing to first fruiting and reduce the initial investment cost besides causing early germination and enhanced growth rate of seedling (Nickeu, 1983). Austin *et al*. (1973) reported that seed treatment before sowing conferred the crop a good start when exposed to the complex and uncontrollable field condition. Recently, pre-sowing treatments *viz.*, seed fortification and pelleting have drawn attention of the agricultural scientists particularly in vegetables. It is possible to increase seed germination and subsequently enhance the yield of cultivated crops by pre-sowing seed treatments with growth substances and nutrients (Sundaralingam *et al.*, 2001). The stimulating effects due to these treatments are related to increased conversion of reserve nutritional material into mobile compounds (Ovcharov, 1969). It is therefore increasingly important to standardize techniques of fortification and pelleting with vitamin, organic and inorganic nutrients to improve the field emergence of onion.

MATERIALS AND METHODS

The graded seeds were soaked in equal volume of vitamin (pyridoxine 100 ppm), nutrient (combination of $ZnSO_4$, $MnSO_4$ and Na_2MoO_4 each at 0.5 g kg^{-1} of seed) and panchagavya (3%) solution and allowed to imbibe for overnight. The imbibed seeds were dried under shade to bring back the original weight.

Fortified seeds were pelleted using the following materials.

Nutrient : DAP @ 5 g kg^{-1} seed
Adhesives : 10 per cent maida gruel
Filler : Arappu leaf (*Albizzia amara*) powder @ 400 g kg^{-1} seed

Initially thin coating of filler was given, followed by the nutrient and again the filler. Adhesive was added as and when necessary. The seeds were given a centrifugal rotation in a locally devised hand operated pelletizer. This facilitated an even coating of the filler material on the seeds.

Treatments:

T_0 : Control (untreated)
T_1 : Fortified with pyridoxine
T_2 : Fortified with micronutrients ($ZnSO_4$ + $MnSO_4$ + Na_2MoO_4)
T_3 : Fortified with panchagavya
T_4 : Pelleted with DAP
T_5 : Pelleted with DAP + micronutrients
T_6 : Fortified with pyridoxine + pelleted with DAP
T_7 : Fortified with micronutrients ($ZnSO_4$ + $MnSO_4$ + Na_2MoO_4) + pelleted with DAP
T_8 : Fortified with panchagavya + pelleted with DAP

Design : Completely Randomized Block Design
Replications : Four

The pelleted seeds were evaluated initially and at fortnightly interval after storage designated as P_0, P_1, P_2, P_3 and P_4 for the following parameters such as germination percentage, seedling length, drymatter production, vigour index, chlorophyll content field emergence per cent, and imbibition rate were recorded.

RESULTS AND DISCUSSION

In the present investigation seeds were imposed with fortification and fortification cum pelleting treatments with DAP (5g kg^{-1} seed) and micronutrients mixture ($ZnSO_4$ +$MnSO_4$+Na_2MoO_4 each at 5 g kg^{-1} seed), pyridoxine (100 ppm) and panchagavya (3%). Treated seeds dried to 8 per cent moisture content and packed in cloth bag and evaluated for seed quality characters upto 2 months

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