

Effect of Pre-sowing Invigoration Seed Treatments in Onion (*Allium cepa* L.)

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Abstract—Seed priming has been successful in improving seed vigour of many vegetable crops, leading to rapid and uniform germination and seedling emergence. Seed of fresh and aged seed lots of onion cv. Agrifound Dark Red having initial germination of 92 per cent (high vigour) and 70 per cent (low vigour) was used to study the effect of seed priming on germination and seedling characteristics in onion. The experiment was carried out with six different seed priming treatments at different durations. Hydro priming with distilled water for 24 hrs (T_1), halo priming with 3% KNO_3 for 12hrs (T_2), osmo priming with PEG 6000 (-1.0 MPa) for 24 hrs (T_3), sand matrix priming with 80% WHC for 24 hrs (T_4), GA_3 priming @ 100ppm for 6 hrs (T_5) and control (T_6). Primed seeds by different methods recorded significant variation over the unprimed seeds with respect to germination percentage, speed of germination, mean germination time, seedling vigour indices I and II in both the fresh and aged seed lots. The response of aged seed lots to GA_3 priming was more pronounced than the fresh seed lot, with an expression of 21% increased germination, 13.34% improvement in speed of germination, with a decrease of 12.32 % in mean germination time resulting in 3.82% increased seedling vigour I and 69.74% increased seedling vigour II compared to control. This indicates that the aged or low vigour seed could be benefited more than the fresh seed lot with the priming treatment. It can be concluded that seed priming with GA_3 @100ppm for 6 hrs has showed better effect in improving all the seedling characters studied in both the fresh and aged seed lots over the control.