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“EFFECT OF DIFFERENT SEED TREATMENTS ON DORMANCY AND SEED PARAMETERS OF FRESH SESAME (Sesamum indicum L.) SEEDS”

ABSTRACT

Key words: Dormancy breaking treatments, genotypes, seed parameters, sesame seeds and storability.

Laboratory experiment was conducted using completely randomized design (factorial) with three repetitions in the Laboratory of Department of Seed Science and Technology, College of Agriculture, Junagadh Agricultural University, Junagadh from June 22, 2016 to August 20, 2016 to study the “Effect of different seed treatments on dormancy and seed parameters of fresh sesame [Sesamum indicum (L.)] seeds.”

The seeds of two sesame genotypes viz., G. Til- 3 and G. Til- 4 were obtained from Agriculture Research Station, Amreli and were sown at Instructional farm, Krishigadh, junagadh for fresh seeds and those fresh seeds were treated with normal water, GA₃ (100, 200, 300 ppm), IAA (100, 200, 300 ppm) and KNO₃ (0.10, 0.20%) and were stored in polythene bag under ambient conditions for a period of 60 days. At different days of storage periods (0, 15, 30, 45, 60 days) seed moisture content (%), germination percentage (%), first count of seed germination (%), speed of germination, shoot length of seedlings (cm), root length of seedlings (cm), seedlings length (cm), seedlings fresh weight (g), seedlings dry weight (g), strong seedlings, weak seedlings, seed vigour index (length) and seed vigour index (mass) were determined.

This analysis of variance revealed highly significant differences for effect of genotypes, storage periods and seed treatments for all characters taken under study. The interactions effect of genotype x storage period and genotype x seed treatments were found significant for characters viz. first count of seed germination (%), speed of germination, root and shoot length of seedlings (cm), seed vigour index (length and mass) except only for moisture content (%) for genotype x storage period, while interaction effect of seed treatments x storage periods was found significant for all characters. The interaction effect of genotype x storage periods x seed treatments was found to be non
significant results for all the characters except first count of seed germination (%) and seed vigour index (mass).

The results revealed that the genetic make-up of G. Til- 4 was found to be significantly superior to that of G. Til- 3 in respect of seed quality parameters and for release fresh seed dormancy. G. Til- 4 recorded significantly the highest moisture content (11.51 %), germination percentage (77.39 %), first count of seed germination (55.67 %), speed of germination (19.72), shoot length of seedlings (4.8 cm), root length of seedlings (5.19 cm), seedlings length (10.11 cm), seedlings fresh weight (0.25 g), seedlings dry weight (0.027 g), strong seedlings (78.54), seed vigour index (782.41), seed vigour index (2.09) and the lowest weak seedlings (5.92).

The results of present investigation for GA$_3$ treatment revealed that the treatment of GA$_3$ 300 ppm (T$_5$) was recorded the highest germination percentage (92.63 %), first count of seed germination (80.00 %), speed of germination (22.20), shoot length of seedlings (5.73 cm), seedlings length (10.89 cm), seedlings fresh weight (0.30 g), seed vigour index (1008.74), strong seedlings (91.23) and the lowest weak seedlings (4.10) and the treatment of IAA 300 ppm (T$_8$) was recorded the highest root length of seedlings (6.19 cm), seedlings dry weight (0.040 g) and seed vigour index (3.17).

In case of the storage study, it was observed that 60 days of storage (S$_5$) recorded the highest germination percentage (85.88 %), first count of seed germination (74.42 %), speed of germination (21.49), shoot length of seedlings (5.22 cm), root length of seedlings (5.86 cm), seedlings length (11.08 cm), seedlings fresh weight (0.26 g), seedlings dry weight (0.029 g), seed vigour index (859.67), seed vigour index (2.49) and strong seedlings (87.52) while for weak seedlings (5.77) and moisture content (9.56 %) recorded the lowest value.

Thus from the results of the present study, it was found that fresh seed dormancy can be broken by presoaking treatment of growth regulators viz., GA$_3$ and IAA with 300 ppm concentration and also seeds should be stored for more than two months to release dormancy of fresh sesame seeds.