Laboratory experiments were 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” with sixty days of storage periods with a view,

1. To know the effect of different genotypes on seed dormancy and seed parameters of fresh sesame seeds.
2. To know the effect of different seed treatments on seed dormancy and seed parameters of fresh sesame seeds.
3. To study the effect of storage period on dormancy and seed parameters of fresh sesame seeds.
4. To study the interaction effect of the genotypes, storage period and seed treatments on seed dormancy and seed parameters of fresh sesame seeds.

The fresh seeds of sesame genotypes viz., G. Til- 3 and G. Til- 4 obtained from Krishigadh farm, Junagadh and from Agriculture Research Station, Amreli.

Seed comprises an essential component of agricultural strategy and quality seed would act as catalyst for realizing potential of all other inputs. Seed quality is influenced by several biotic and abiotic factors.

Storage condition also influenced the seed quality and play an important role in maintaining viability of seeds, seed treatment is claimed to play vital role in modern agriculture for precision planting and to supplement nutrition through seed for uniform and vigorous seedling growth and safe guarding the storage life of seed.

The results obtained and discussed in preceding chapter are summarized here:
The experiment consisted of ten treatments viz., T₁: Control T₂: water soaking T₃: GA₃ 100 ppm T₄: GA₃ 200 ppm T₅: GA₃ 300 ppm T₆: IAA 100 ppm T₇: IAA 200 ppm and T₈: IAA 300 ppm T₉: KNO₃ 0.10% T₁₀: KNO₃ 0.20%.
Seed samples were packed in polythene bag and stored in ambient condition for two months. The samples were drawn at 15 days intervals for assessing the seed quality parameters viz., seed moisture content (%), germination percentage (%), first count seed germination (%), speed of germination, root length of seedlings (cm), shoot length of seedlings (cm), seedlings length (cm), seedlings fresh weight (g), seedlings dry weight (g), strong seedlings, weak seedlings, vigour index (length) and vigour index (mass).

Among the genotypes, G. Til-4, (V₂) recorded significantly the highest moisture content (11.52%), germination percentage (77.39 %), first count of germination (55.67 %), speed of germination (19.72), shoot length of seedlings (4.81 cm), root length of seedlings (5.19 cm), seedling length (10.11 cm), seedlings fresh weight (0.25 g), seedlings dry weight (0.027 g), strong seedlings (78.54), seedling vigour index (782.41) seedling vigour index (2.09) and significantly the lowest weak seedlings (5.93) in comparison with G. Til-3.

Among the storage period, S₅ (after 60 days) recorded significantly 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), seedling vigour index (951.55), seedling vigour index (2.49), seedlings fresh weight(0.26 g), seedlings dry weight (0.029 g), strong seedlings (87.52) and significantly the lowest weak seedlings (5.77) throughout the storage period.

Among the seed treatments, (T₅) GA₃ 300 ppm recorded significantly the highest germination percentage (92.63 %), first count of 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), strong seedlings (91.23), seedling vigour index (1008.74) and significantly the lowest weak seedlings (4.10) throughout the storage period in comparison to control and (T₈) IAA 300 ppm recorded significantly the highest root length of seedlings (6.19 cm), seedlings dry weight (0.040 g), and seedling vigour index (3.17) throughout the storage period in comparison to control. Significantly lower values of these above quality parameters were found under the control except weak seedlings.
Interaction between variety and storage \((V_2S_5)\) recorded significantly the highest moisture content (11.42 %), first count of seed germination (75.80 %), speed of germination (21.92), root length of seedlings (6.06 %) and seed vigour index (2.61) for \(G.\) Til-4 after 60 days of storage period.

Interaction between varieties and seed treatment recorded significantly the highest first count of seed germination (82.07%), shoot length of seedlings (5.86 cm), seedling length (11.15 cm), vigour index (1047.32) treated with GA\(_3\) 300 ppm \((V_2T_5)\) and the highest seed vigour index (3.29) and root length of seedlings (6.33 cm) when treated with IAA 300 ppm \((V_2T_8)\) for \(G.\) Til 4.

Interaction between seed treatment and storage period recorded significantly the highest germination percentage (97.83 %), first count of seed germination (88.17 %), speed of germination (23.71), shoot length of seedlings (6.35 cm), seedling fresh weight (0.32 g), strong seedling (97.00) and the lowest weak seedling (4.00) treated with GA\(_3\) 300 ppm \((T_5S_5)\) and the highest seedling dry weight (0.043 g) and root length of seedlings (6.97 cm) when treated with IAA 300 ppm treatment \((T_8S_5)\) after 60 days of storage period.

Interaction between varieties, storage periods and seed treatments recorded significantly the highest first count of germination (89.00 %) \((V_2S_5T_5)\) when treated with GA\(_3\) 300 ppm and highest seed vigour index (3.95) \((V_2S_5T_8)\) treated with IAA 300 ppm for \(G.\) Til 4 after 60 days of storage period.

**CONCLUSION**

Sesame seed is a having fresh seed dormancy and require after ripening period to break seed dormancy. In order to break the dormancy of fresh sesame seeds and to increase qualitative characters of seed, several seed treatments are being adopted.

The results of present investigation indicated that among different genotypes of sesame, \(G.\) Til-4 maintained higher seed quality parameters. In the present study, all the seed treatments gave superior results in comparison with the control and it was also found GA\(_3\) to be more effective so sesame seeds should be treated with GA\(_3\) to enhance seed quality parameters and all other seed treatments.
From the results, it is suggested to use higher doses of seed treatments GA₃, IAA and KNO₃ to enhance seed quality parameters. More than two months of storage period is required for after-ripening in sesame to attain seed quality parameters as per seed certification standards.

So, it is concluded that treatment with growth regulators particularly GA₃ and IAA will be helpful to break the fresh seed dormancy and also enhance the seed quality parameters in sesame and more than two months of storage period was found helpful to break dormancy of fresh sesame seeds.