CHAPTER - V
DISCUSSION

The quality of planting material determines the ultimate returns from arable crops, particularly from tree crops like coconut. The seedling vigour is highly correlated with adult palm characters such as less juvenile period, nut yield and coconut water and copra production (Liyanage and Abeywardena. 1957). In the absence of a viable technology for vegetative method of propagation, coconut is propagated through seeds. Due to hard husk (mesocarp), shell (endocarp) and kernel (endosperm) germination is quite interrupt and growth of seedling is somewhat poor. With objective to improve germination, growth and survival percentage of coconut seedlings, various pre-sowing treatments were taken in the present experiment under South Saurashtra Agro Climatic condition of Gujarat. The experiment was conducted in Complete Randomized Design concept, consisting of nine treatments, during the year 2016-2017 at Fruit Research Station, Mangrol, Junagadh Agricultural University, Junagadh.

During the course of presenting the results of this experiment in preceding chapter many significant variations among the different treatments were reported. So, an attempt has been made to discuss the findings of the present study, in terms of effect and cause of relationship in the light of available evidences and relevant literature. The results, obtained in present investigation have been discussed in this chapter under the following major heads.

5.1 Effect of pre-sowing treatments on the germination of coconut seed nut.
5.2 Effect of pre-sowing treatment on the seedling growth of coconut seed nut.
5.3 Effect effect of pre-sowing treatment on success and survival percentage of coconut seedling.
5.4 Economics detail.

5.1. Effect of pre-sowing treatments on the germination of coconut seed nut.

The results of the present investigation revealed that, water soaking for 20 days with punching, significantly gave the most promising results in minimum days (98.67), for nut germination and maximum germination per cent (80.00), at 150 days after sowing of seed nut. The superiority of this treatment with respect to increase the germination percentage, might be due to cause for softening of husk and leached out
inhibitors from husk (mesocarp), shell (endocarp) and testa, evolving the mature kernel (endosperm) for germination. Furthermore, punching may helpful for enter water from thick husk, which is responsible for rapid germination. Similar results were noted by Nagar et al. (2013), in coconut and Singh et al. (2005) in Pongamia glabra. The next best pre-sowing treatment was soaking of seed nut in 12000 ppm solution of thiourea for 24 hours after punching on seed nuts, may leads early and better germination. Thiourea also affects the respiration in direction of energy generation and also lower down by changing the amount of germination regulators present in the seed. These results are in agreement with the finding of Hore and Sen (1989) in ber, Patel et al. (1996) in Khirnee and Hossain et al. (2005) in Terminalia chebula.

5.2. Effect of pre-sowing treatment on the seedling growth of coconut seed nut.

The healthy and robust vegetative growth is an essential prerequisite for better establishment in the field and production. Growth attributes like viz., leaf growth, stem growth and root growth were the important parameters to access the vigour of the coconut seedling. Results obtained for seedling growth affected under various pre-sowing treatments.

5.2.1. Seedling height

In this observation significant difference in plant height 51.09 cm, 109.56 cm, 141.29 cm and 166.92 cm, were recorded at 150, 210, 270 and 330 days after sowing of seed nut under soaking of seed nut in 12000 ppm solution of thiourea for 24 hours after punching, as compared to rest of the treatments, which was at par with seed nut soaking in water for 20 days after punching. Significant increase in seedling height at various interval might be due to stimulatory effect of thiourea for the better performance. This might be the most plausible reason for stimulate an immediate cell progeny through cell division and elongation of stem portion and greater leaf length, which ultimately resulting in increase in plant height. These results are inconsonance with the finding of Mayer and Poljakoff-mayer (1958) in lettuce seeds, Hore and Sen (1989) in ber and Rashmi et al. (2007) in aonla.

5.2.2. Leaf growth

It is evident from the results that, leaf area and leaf number were significantly maximum in seed nut soaking in 12000 ppm solution of thiourea for 24 hours after punching treatment, which was at par with nut soaking in water for 20 days.
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with punching. This treatment helped in invigoration of physiological process of plants and stimulating effect of thiourea and punching treatment helps to form a new leaf at faster rate. Which may produces maximum leaf area and number of leaf. Similar kind of trends, was recorded by Ratan and Reddy (2004) in custard apple, Gholap et al. (2004) in aonla and Sharma et al. (1999) in kagzi lime.

5.2.3. Stem growth

It is clear from the results data of collar girth, fresh weight and dry weight of stem, as well as total dry weight (root + stem), was noted significantly maximum in nut treated with 12000 ppm solution of thiourea for 24 hours after punching. The increased in results might be due to stimulatory effect of pre sowing treatment, which may trigger cell division and elongation of stem and leaf portion. Moreover, enhancement in leaf number and leaf area may helps to generate higher photosynthesis area (source), which is responsible for augment stem growth. These findings are in agreement with the results obtained by Mayer and Poljakoff-mayer (1958) in lettuce seeds, Dhankar (1993) in aonla, Krishnan and kulsekar (1984) in ber and Ohler (1984) in coconut.

5.2.4. Root growth

It is clearly manifest from the results that, the water soaking for 20 days with punching in seed nut gave maximum root growth (root number, root length, root fresh weight and root dry weight), while the least root growth, was recorded in control without any treatment. Generally, mesocarps (husk) of coconut were very hard and quite difficult to permeable or penetrate the entry, thus delayed germination and suppressed the root growth in control treatment. Punching of seed nut and water soaking for 20 days found promising for better root growth (root number, length, fresh weight and dry weight), due to soften the mesocarp, endocarp and endosperm which facilitate quicker germination and better number of roots, root length as, well as root fresh and dry weight. Similar findings were reported by Ohler (1984) and Nagar et al. (2013) in coconut.

5.3. Effect effect of pre-sowing treatment on success and survival percentage of coconut seedling.

The results of the present investigation revealed that, water soaking for 20 days with punching, significantly gave the most promising results by 76.67 survival
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percentage might be due to increased germination percentage as compared to control without any treatment. While the treatment water soaking for 10 days with punching and soaking of seed nut in 12000 ppm solution of thiourea for 24 hours after punching were at par with it. The superiority of this treatment, with respect to increase germination percentage might be due to cause for softening of husk and leached out germination inhibitors present in hard seed coat or might be due to softening of seed coat and making it permeable to water. Similar results were noted by Singh, et al. (2005) in *Pongamia glabra* and Nagar *et al.* (2013) in coconut. This might have lessened the days taken to germination and increase germination percentage. Hadas and Russor (1974) reported that, in general the water soaking which enhances the germination of nuts, may be due to the higher quantum of water intake required for the initial imbibitions of water by a bigger nut like that palmyrah and coconut. These results are in agreement with the findings of Fremond and Brinin (1966), Srivastava (1975), Yaklich and Orzolak (1977) and Harries (1981 b) in coconut, Ratan *et al.* (1993) in *Annona squamosa*, Shukla *et al.* (2008) in *Terminalia arjuna*.

5.4 Economics detail.

Economics is the need of the hour for the farmers while taking a decision regarding the adoption of a new technique. Hence, the gross realization, net realization and cost benefit ratio was computed for combinations different pre-sowing treatment of coconut seed nut.

In the present experiment, the highest net realization Rs. 1070/Treat was recorded with by water soaking for 20 days with punching, followed by Water soaking for 10 days with punching (Rs. 950/Treat). Similarly, the highest CBR (1:1.24) was obtained under the water soaking for 20 days with punching, followed by water soaking for 20 days without punching (1:1.23). It leads to maximum survival percentage of coconut seedlings and no use of any chemical.