CHAPTER V
SUMMARY AND CONCLUSIONS

Agriculture has been the prominent occupation to provide food and fiber to the growing population of India. Irrigation has been considered essential for the fast growth in agriculture and it will continue to be a major factor in future too. Today water scarcity is alarming and there is every reason to be worried about. In many regions water use has exceeded water availability.

Muskmelon is important summer crop in the Saurashtra region of Gujarat state mainly because if it's high yield and returns. Muskmelon has high nutritive value. Muskmelon is low in Sugar and Calories because of high percent of water percent in it which are useful for those who want to reduce body weight. The rainfall in Saurashtra region is very scanty and erratic. So there is the problem of availability of irrigation water for summer season crop cultivation.

Drip irrigation with mulching is one of the best and latest technology for efficient utilization of irrigation water. Drip irrigation with mulching provides higher water use efficiency, higher crop yield, less labor requirement and relatively low operating cost, less weed growth, less insect/pest attacks, shorter growing season and earlier harvest of the crop. More automation, easy adjustment & control and more area under irrigation is possible in drip irrigation with mulching as compared to conventional methods. However, the higher initial cost, lack of sufficient technical knowledge among the farming community and high maintenance of drip system are the main constrain for its wide scale adoption.

The experiment was carried out in summer season of 2017 at Instructional Farm, College of Agricultural Engineering and Technology, JAU, Junagadh. Experiment was undertaken with three irrigation levels viz; 1.0 ETc (I1), 0.8 ETc (I2), & 0.6 ETc (I3) and three mulching material; silver black plastic mulch (M1), black plastic mulch (M2) & no mulch (M3). Split plot design was adopted with three replications of each treatment. The impact of irrigation levels on mulched muskmelon was evaluated in terms of plant morphological parameters and yield attributes. Irrigation level and mulch was taken as a main and sub factor respectively. The effect of these factors on soil moisture, soil temperature, weed intensity, dry weight of weed...
per m², days to germinate, germination percentage, days to 50% flowering, days to 50% fruiting, main vine length periodically, no. of nodes per vine at harvest, no. of branches per main vine at harvest, no. of fruits per plant, yield per plant (kg), yield per hectare (t) and water use efficiency were analyzed. Economics was considered in present study, cost of cultivation, cost of irrigation, gross return, net return and benefit cost ration was calculated.

Based on the result analysis, the following conclusions could be drawn.

1. Maximum soil temperature (27.86 °C to 30.60 °C) was found in 0.6 ETc with black plastic mulch and minimum (22.5 °C to 24.9 °C) was in 1.0 ETc with silver black plastic mulch.
2. Maximum soil moisture (34.15 % to 37.20 %) was observed in 1.0 ETc with silver black plastic and minimum (26.99 % to 27.93 %) was in 0.6 ETc with no mulch.
3. Lowest weed intensity (nos/m²) at 30 DAS (8.16), 60 DAS (8.37) and at harvesting (7) was recorded in 0.6 ETc with black plastic mulch whereas highest weed intensity at 30 DAS (210), 60 DAS (218) and at harvesting (208) was recorded in 1.0 ETc with no mulch.
4. Less dry weight of weed intensity (g/m²) at 30 DAS (12), 60 DAS (14.22) and at harvesting (12.25) was recorded in 0.6 ETc with black plastic mulch whereas highest weed intensity at 30 DAS (357.20), 60 DAS (372.32) and at harvesting (363.99) was recorded in 1.0 ETc with no mulch.
5. There was not found significance effect of combination of irrigation level and mulch on days to germinate. Early (5.11) germination shown in silver black mulch and late germination (7.89) was found in no mulch.
6. There was no noticeable influenced of combination of different irrigation levels and mulching on germination percentage. Treatment of silver black plastic mulch was recorded higher (88.87) germination percentage. Lower germination percentage (79.09) was observed in treatment no mulch.
7. No significance effect was shown of combination of irrigation level and mulch on days to 50% flowering. 1.0 ETc with silver black plastic mulch treatment combination was recorded lesser (30.67) days of flowering. 0.6 ETc with no mulch treatment combination was found higher (36.67) days of flowering.
8. Days to 50 % fruiting was not significantly affected by combination of irrigation level and mulch. Treatment combination of 1.0 ETc with silver black plastic mulch recorded minimum (43) days of fruiting. Maximum days of fruiting (51) was noticed in I3M3 (0.6 ETc with no mulch).

9. Longest vine length at 30 DAS (29.05 cm), 45 DAS (78.79 cm), 60 DAS (127.69 cm) and at harvesting (183.40 cm) was measured in 1.0 ETc with silver black plastic mulch whereas shortest vine length at 30 DAS (16.34 cm), 45 DAS (27.61 cm), 60 DAS (47.34 cm) and at harvesting (86.38 cm) was measured in 0.6 ETc with no mulch.

10. Non-significant effect of irrigation and mulch was shown on no. of nodes per main vine and no. of branches per main. Maximum no. of nodes (25.45) and no. of branches (30.07) were noticed in 1.0 ETc with silver black plastic mulch. Minimum no. of nodes (16.62) and no. of branches (21.65) were recorded in 0.6 ETc with no mulch.

11. Greater no. of fruits per plant (2.27) was counted in 0.8 ETc with silver black plastic mulch and less no. of fruits (1.40) was counted in 0.6 ETc with no mulch.

12. Higher yield per hectare (36.14 t) was observed in 0.8 ETc with silver black plastic mulch. Lower yield per hectare (12.02 t) was recorded in 0.6 ETc with no mulch.

13. Fruits weight 663.80 g, fruits diameter 118.04 mm and fruit height 92.21 mm were found highest in 1.0 ETc with silver black plastic mulch. 0.6 ETc with no mulch treatment combination was noticed lowest fruits weight 391.90 g, fruits diameter 92.01 mm and fruit height 66.62 mm.

14. Maximum water use efficiency (kg/ha-mm) (105.33) was reported in treatment combination 0.8 ETc with silver black plastic mulch. Minimum (39.03) water use efficiency was reported in treatment combination 0.6 ETc with no mulch.

15. Highest gross return and net return was found as ₹6,50,453.40 and ₹5,83,020.55 respectively per hectare in 0.8 ETc with silver black plastic mulch. It was minimum ₹2,16,402.30 and ₹1,59,366.41 in 0.6 ETc with no mulch.

16. The Maximum and minimum benefit cost ratio as 9.65 and 3.79 respectively under 0.8 ETc with silver black plastic mulch and 0.6 ETc with no mulch.
Silver black plastic mulch with 0.8 ETc irrigation level found effective for achieving higher muskmelon yield, water use efficiency and net return.