CHAPTER V
DISCUSSION

Pomegranate is suitable for growing under semi arid condition and marginal lands. Much information is not available on pruning and crop load management in different agro climatic conditions. However based on the experience of farmers, the pruning and crop load recommendation were made. Not much attention was paid to standardize the pruning and crop load management in spite of the facts that pruning and crop loads has plays an important role in influencing the growth, yield and quality of fruits. The research work carried out in the previous year resulted in only general recommendation of pruning and crop load management. The studies carried out on pomegranate pruning and different crop load in the past have provided some guidelines for further studies on pruning and crop load management.

Pomegranate does not require pruning except for removal of suckers, dead and diseased branches and for developing frame work. Annual pruning during dormant period in winter should be confined to shortening of the previous season growth to encourage fruiting. It should be borne in mind that shortening of older wood is likely to reduce yield but not quality.

An experiment to study the standardization of severity of pruning and crop load on yield and quality in pomegranate var. Bhagwa was conducted with a view to decide the level of pruning and number of fruits to be left on plant till maturity. So as to get best fruit size, quality with better marketability without affecting the total yield.

5.1 Effect of severity of pruning and crop load on growth of pomegranate

5.2 Effect of severity of pruning and crop load on flowering of pomegranate

5.3 Effect of severity of pruning and crop load on quality of pomegranate

5.4 Effect of severity of pruning and crop load on physical of pomegranate
5.5 Effect of severity of pruning and crop load on yield of pomegranate

5.6 Effect of severity of pruning and crop load on bio-chemical of pomegranate

5.7 Effect of severity of pruning and crop load on economics of pomegranate

5.1 Effect of severity of pruning and crop load on growth of pomegranate

The maximum plant height 3.31, 3.64 and 3.47 m was recorded in treatment $T_2$ (15 cm pruning + 40 fruit retained per plant) during both the years as well as in pooled, respectively. The practice like pruning increases the vegetative growth, this factor probably due to an optimization of light environment inside the tree likely to promote photosynthesis rate. More ever the lower the fruit load could improve the distribution of available mineral elements within aerials part of trees. Similar results were also found by Nath (1994) and Lal and Mishra (2008).

The results indicated that the number of shoot per branch 3.75, 4.00 and 3.88 increased under treatment $T_2$ (15 cm pruning + 40 fruit retained per plant) during both the years as well as in pooled, respectively. Mohammad et al., (2006) reported that removing of apical bud of mango by pruning stimulated initiation of shoot from axillary bud. These similar results are in accordance with findings of Wansche and Palmer (1997), Kumar (2002) and Chandel et al. (2004).

The results indicated that the length of shoot per branch 27.05, 39.05 and 33.05 at 75 DAP and 47.05, 49.05 and 48.05 at 150 DAP increased in treatment $T_2$ (15 cm pruning + 40 fruit retained per plant) during both the years as well as in pooled, respectively. Similar results were also found by Shaban (2009), Sharma et al. (1997) and Mohammad et al. (2006).

The maximum leaf area 10.00, 11.00 and 10.50 cm$^2$ was recorded in treatment $T_6$ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Gopikrishna (1979) noted that by severe pruning of guava branches there was a marked increase in leaf area. Similarly, Gupta and Godra (1988) reported that in ber the maximum leaf area was recorded with severity of pruning.
**5.2 Effect of severity of pruning and crop load on flowering of pomegranate**

Maximum number of flowers per shoot 6.75, 7.00 and 6.88 was recorded in treatment T₆ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Pruning helps the induction of flowers. It was also effect on length and number of shoot. Similar results were found by Mohammad et al. (2006), Dhaliwal et al. (1998) and Arora and Yamdagni (1985).

Minimum number of male flowers per shoot 2.00, 2.75 and 2.38 was recorded in treatment T₆ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Similar results were found by Mohammad et al. (2006).

Maximum number of hermaphrodite flowers per shoot 4.75, 5.00 and 4.88 was recorded in treatment T₆ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Similar results were found by Mohammad et al. (2006).

**5.3 Effect of severity of pruning and crop load on quality of pomegranate**

The results indicated that the diameter of fruit 8.77, 9.13 and 8.95 cm was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled, respectively. Lakso (1994) reported that high crop densities during the early growth period of fruit cell division may cause a deficit in carbohydrate availability to the developing fruit that ultimately can lead to decreased fruit growth rate and reduces the final fruit size. Similar results were found by Cheema et al. (2003), Sheikh and Hulmani (1993) and Anon. (1982).

Maximum fruit weight 367.50, 417.50 and 392.50 was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled, respectively. The enlargement of fruit size is caused by drawing of photosynthates to the fruit as a consequence of intensification of the sink. It is in conformity with the observations of Brar et al. (2007). These findings are in agreement with Somkumar et al. (2006), (Sutton and Harty 1990) and Sheikh (1999).
Application of (30 cm pruning + 30 fruit retained per plant) T₄ treatment was gave maximum hundred aril weight 42.70, 46.25 and 44.28 g during both the years as well as in pooled, respectively. These findings are in agreement with Pareek and Godara (1993) and Sheikh and Rao (2002).

Minimum thickness of fruit rind (mm) 5.40, 5.38 and 5.39 was recorded in treatment T₂ (15 cm pruning + 40 fruit retained per plant) during both the years as well as in pooled, respectively. Similar results were found by Sheikh (1999), Sharma et al. (1997) and Hussein et al. (1994).

Minimum fruit rind percentage 5.22, 4.59 and 4.90 was recorded in treatment T₂ (15 cm pruning + 40 fruit retained per plant) during both the years as well as in pooled, respectively. Similar results were found by Sheikh (1999).

Maximum juice percentage 75.62, 80.63 and 78.13 was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the year as well as pooled, respectively. These findings are in agreement with Arora and Yamdagni (1985), Nath (1994), Sheikh (1999) and Sheikh and Rao (2002).

5.4 Effect of severity of pruning and crop load on physical of pomegranate

Maximum fruit set percentage 70.27, 71.22 and 70.75 was recorded in treatment T₆ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Mishra and Pathak (1998) conclude that the pruning treatment proved the significantly more number of flowers, fruit set percentage and fruit retention in Lucknow-49 guava. Similar results were found by Arora and Yamdagni (1985) and Shaban and Haseeb (2009).

In first and second year of experiment the result was found non-significant in fruits drop percentage/plant but in pooled treatment T₆ (30 cm pruning + 50 fruit retained per plant) was minimum fruit drop percentage per plant 1.92 (%).

The results on days to maturity of fruit during both the year of experiment as well as in pooled was found non-significant.
In first and second year of experiment the result was found non-significant but in pooled treatment T₄ (30 cm pruning + 30 fruit retained per plant) was minimum fruit cracking percentage per plant 2.36 (%).

In first and second year of experiment the result was found non-significant but in pooled treatment T₄ (30 cm pruning + 30 fruit retained per plant) was minimum damage fruit percentage by bacterial blight per plant 1.80 (%).

In first and second year of experiment the result was found non-significant but in pooled treatment T₄ (30 cm pruning + 30 fruit retained per plant) was minimum damage fruit percentage by annar caterpillar per plant 2.08 (%).

5.5 Effect of severity of pruning and crop load on fruit yield of pomegranate

Maximum fruit yield per plant 16.16, 17.71 and 16.93 was recorded in treatment T₆ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Metabolic activities have helped to increase the fruit size and fruit weight and thereby increase the fruit yield. Similar results are also found by Mohammed et al (2006), Myrium et al. (2005), Sheikh (1999), Mohammed et al. (2006) and Lal and Mishra (2007).

Maximum fruit yield (t/ha) 13.41, 14.75 and 14.10 was recorded in treatment T₆ (30 cm pruning + 50 fruit retained per plant) during both the years as well as in pooled, respectively. Similar results are also found by Mohammed et al. (2006).

5.6 Effect of severity of pruning and crop load on bio-chemical of pomegranate

Maximum total soluble solids 17.08, 17.93 and 17.50 (⁰Brix) was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled, respectively. This is due to its action on converting complex substances into simple ones, which enhances the metabolic activity in fruits and it results in increased TSS of fruit. The present result on total soluble solid is in conformity with the results achieved by Brar et al. (2007), Swaroop et al. (2001) and Feza ahmad (2008).
Minimum titrable acidity 0.39, 0.35 and 0.37 was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled, respectively. It is in conformity with the observations of Brar *et al.* (2007), Fanasca *et al.* (2007), Gopikrishana (1979) and Chougule *et al.* (2006).

Maximum TSS: acidity ratio 46.49, 52.52 and 49.51 was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled, respectively. Singh and Dutt (2002) concluded that the thinning treatment on kinnow fruit increased TSS: Acidity ratio as compared to control. This increased in ratio can be ascribed to reduce acid and solid level in thinned treated trees. It is in conformity with the observations of Sheikh (1999) and Sheikh and Rao (2002).

Maximum reducing sugar 9.90, 10.38 and 10.14 (%) was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled, respectively. These results are in close conformity with the findings of Brar *et al.* (2007), Chandal *et al.* (2004), Ibrahim *et al.* (1996) and Matsumot and Koroda (1982).

Maximum total sugar 17.66, 17.57, 17.62 (%) was recorded in treatment T₄ (30 cm pruning + 30 fruit retained per plant) during both the years as well as in pooled respectively. This is due to its action on converting complex substances into simple ones, which enhances the metabolic activity in fruits and it results in increased total sugar of fruit. The present result on total sugar is in conformity with the results achieved by Brar *et al.* (2007), Nath (1994), Gopikrishna (1979), Sheikh *et al.* (1996) and Sheikh and Rao (2002).

The data on effect of pruning and crop load on ascorbic acid showed non-significant difference with severity of pruning and crop load in both year as well as pooled.

Sheikh (1999) reported that there is no significant difference in ascorbic acid content with respect to pruning and crop load in pomegranate.
5.7 Effect of severity of pruning and crop load on economics

The economics of crop production is major consideration for the farmers while making a decision on adoption of new technology. Hence, the gross and net realization and CBR was computed for different treatments and control (Table 4.29).

The economics of crop production was worked out for each treatment separately. It was observed that the maximum net realization 6,63,410 and CBR value 3.94 were obtained in T6 (30 cm pruning + 50 fruit retained per plant).