

6. SUMMARY AND CONCLUSION

The present investigations entitled, "Effect of post-harvest treatments on shelf life of mango (Mangifera indica L.) fruits cv. Dashehari were conducted in the Department of Horticulture, Ch. Charan Singh Haryana Agricultural University, Hisar, during 1990-91. The results obtained are summarized and concluded below :

1. Post-harvest application of calcium nitrate, calcium chloride, calcium oxide and gibberellic acid reduced the PLW significantly as compared to control. The minimum weight loss was obtained with calcium nitrate (1%). Irrespective of treatments, the PLW increased gradually and progressively with prolonged storage.
2. The decay loss of mango fruits increased with the duration of storage. Rotting of fruits was considerably reduced by application of bavistin (500 and 250 ppm) followed by calcium nitrate (1%).
3. Minimum total spoilage was observed in fruits treated with

bavistin (500 ppm) followed by calcium nitrate (1%).

4. Firmness was found to decrease with prolongation of storage period. Fruits treated with calcium nitrate (1%) and gibberellic acid (200 ppm) retained the maximum firmness.
5. Specific gravity decreased with the increase in storage period. None of the treatments was found to be effective significantly in retaining high level specific gravity.
6. Total soluble solids were observed to increase significantly with advancement in storage period. Calcium nitrate (1%) and calcium chloride (2%) were found to retain the highest T.S.S. during storage.
7. The acid content of the fruits decreased continuously during storage at room temperature in all the treatments. Calcium nitrate (1%) and gibberellic acid (200 ppm) were found most effective in retention of acidity in the fruits.
8. All treatments except bavistin were found to retain significantly lower value of T.S.S./acidity ratio as compared to control. However, calcium nitrate (1 and 2%) and gibberellic acid (200 ppm) were found most effective.
9. Ascorbic acid content of the fruits decreased during storage. Both concentrations of calcium nitrate, calcium chloride and gibberellic acid retained higher ascorbic acid content as compared to control. Gibberellic acid 200 ppm was found most effective.

10. Total carotenoids increased with the prolonged storage. Maximum retardation in the synthesis of carotenoids was observed in fruits treated with gibberellic acid (200 ppm) and calcium nitrate (1%).
11. Ripening was delayed significantly by all the chemicals except bavistin (250 ppm) and calcium oxide (2%). Slow ripening was observed in the fruits treated with gibberellic acid (200 ppm) and calcium nitrate (1%).
12. Marketability increased with all the treatments considerably as compared to control. Maximum marketability was observed with gibberellic acid (200 ppm) followed by calcium nitrate (1%).
13. PLW was found considerably lower in A grade as compared to B and C grade fruits.
14. Decay loss increased with the increase in storage period in all the grades. Maximum decay loss was noted in C grade fruits while minimum in A grade fruits.
15. Total spoilage was found to reduce considerably in A grade fruits followed by B and C grade fruits.
16. Firmness of fruits decreased significantly during storage in all the grades. A grade fruits were observed to retain significantly higher firmness as compared to B and C grade fruits.
17. Specific gravity was found to increase significantly in A grade fruits during early period of storage, thereafter, it declined. In C grade fruits it declined throughout the storage period.

18. T.S.S. content was found to increase significantly throughout storage period in A grade fruits. While in B and C grade fruits it increased up to 5 and 7 days, respectively, thereafter it decreased significantly.
19. A significant decrease in acidity was found with the prolongation of storage period in all the grades. However, maximum acidity was observed in A grade fruits.
20. A significant increase in T.S.S.:acid ratio was observed with advancement of storage period in all the grades. A grade fruits attained significantly lower value of T.S.S.:acid ratio as compared to B and C grade fruits throughout the storage period.
21. Ascorbic acid content was found to decrease significantly on prolonged storage in all the grades. No significant variation was observed among different grades.
22. Carotenoids development was much slower in A grade fruits. Maximum carotenoids content was found in C grade fruits. Total carotenoids content was found to increase significantly in all grades with prolongation of storage period.
23. Minimum ripening percentage was observed in A grade fruits followed by B grade while maximum in C grade fruits.
24. A grade fruits consistently tend to retain maximum marketability followed by B grade while minimum in C grade fruits which were found to be unmarketable on 11th day of storage.

It can be concluded from the above summarized results that post-harvest application of calcium nitrate, calcium chloride and gibberellic acid have a potential for increasing shelf life of mango fruits. Among various post-harvest dip treatments, *calcium nitrate (1%) and gibberellic acid (200 ppm)* were found most effective in prolonging shelf life and improving quality by influencing various physical and biochemical changes associated with ripening. However, total spoilage, T.S.S., T.S.S./acidity ratio and carotenoids synthesis were found to increase with the prolongation of storage period irrespective of treatments, whereas acidity, ascorbic acid, specific gravity and firmness decreased with the increase in storage period.

Grading of the fruits indicated that total spoilage was lower in A grade fruits. There were not many differences in T.S.S. or ascorbic acid but carotenoids development was much slower in A grade fruits. On the whole, A grade fruits retained firmness and acidity, ripened gradually, had bigger size, better appearance and marketability.