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EFFECT OF GAMMA IRRADIATION, GROWTH RETARDANTS AND COATINGS ON STOREABILITY OF LIME FRUITS

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ABSTRACT

In post harvest management of lime fruits, generally chemicals are used for treating fruits. The comparative use of irradiation, growth retardants and organic oils coating were standardized under room temperature (21 to 30.3^{0}C). Among the various post harvest treatments, pure coconut oil coating was found the most effective treatment. Pure coconut oil coating delayed the ripening and prolonged the storeability of lime fruits up to 24 days without adversely affecting their physical condition. As far as chemical composition is concerned T.S.S. increased up to 18 days (10.6%). Similarly acidity and vitamin C increased up to 18 days which was at maximum level (7.39 and 36.92%) under coconut oil coating. Gradually weight loss was observed in all treatment, but it was slower in coconut oil coatings followed by liquid paraffin. In case of coconut oil coating cent percent marketable fruits were retained up to 18 days of storage period.

Key words : Kagzi lime, Coconut oil, Parameters, Retention, Storage.

Kagzi lime being a non-climacteric fruit, harvested at ripening. The post harvest deterioration of fruit occurs as a result of endogenous biochemical, physiological changes, microbiological, insect spoilage, dehydration and mechanical injury. This is the critical stage for transportation in the distinct market due to more chances of spoilage. Therefore, the major part of production is lost due to improper handling. These losses can be minimized by adopting improved and modern practices like use of anti-transpirants, edible oil, wax coating, growth retardants and gamma irradiation as post harvest treatments.

The application of skin coatings material and growth retardants to freshly harvested healthy and mature fruits protects them against excessive moisture loss by forming clear, glossy and protective film as a result, texture and quality of fresh produce is maintained as near the fresh condition for along time. More recently the use of gamma irradiation on fruits has been found to be promising alternative as post harvest treatment. Thus, present study was undertaken to see the effect of these post harvest treatments on shelf life of kagzi lime.

MATERIALS AND METHODS

The fresh, good looking and uniform size of lime fruits were procured from the Fruit Research Station, Imalia, Department of Horticulture, J.N.K.V.V., Jabalpur. The fruits were washed and graded by density gradation method to select fruits having uniform maturity and only water sinker fruits were used for storage studies. The fruits were treated with gamma radiation (50Gy, 100Gy, 200Gy, 300Gy, 400Gy), growth retardants (CCC- 250, 500, 750 ppm, MH- 250, 500, 750 ppm) and coatings (mustard oil 100% pure, coconut oil 100% pure, liquid paraffin 100% pure). The experiment was undertaken in fruit preservation laboratory at the Department of Horticulture, JNKVV, Jabalpur during 2005 to 2006. Treated fruits were kept at 21 to 30.3^{0}C room temperature. There were fifteen treatments with three replication and thirty fruits of lime were taken for each treatment in each replication. The data was analysed statistically in Completely Randomized Design. The physical and chemical parameters of lime fruits were taken after 6,12,18 and 24 days of storage. The physiological loss in weight (PLW) of fruits during storage under each treatment were calculated by using the following formula:

$$\text{PLW \%} = \frac{\text{Initial weight} - \text{final weight}}{\text{Initial weight}} \times 100$$

Retention of marketable fruit with the help of following formula

$$\text{Retention of marketable fruits (\%)} = \frac{\text{Number of marketable fruits retained up to 6,14, 18 and 24 days of storage}}{\text{Total number of fruits kept for storage}} \times 100$$