Effect of gama radiation and some growth regulators on ripening and senescence in mango frouits

Saleh Mohamed Awad El-Kady

The present investigation was undertaken during the seasons of 1979 and 1980 to study the effect of gamma irradiation, some growth regulators, Benlate and ”Vapor-Gard ” on ripeLing and senescence of ” Hindi Be-Sinnara ” mango fruits during storage under room conditions and also to determine the optimum treatment for maximum estension in shelf-life.The mangoes collected for study were obtained from trees planted in commercial orchard in Abo-Rawash, Giza, A.R.E. The treatments used in this study were as follows:1.Irradiation with 15 Krad.2.Irradiation with 30 Krad.3.Fruit dipping in 10 p.p.m. 214-D.4.Fruit dipping in 20 p.p.’. 2,4-D.5.Fruit dippilig in 100 p.p.11. GA3.6.Fruit dipping in 200 p.p.m. GA3.7.Fruit dipping in 10 p.p.m. 214-D + 200 p.p.m. GA3.8.Fruit dipping in Benlate9.Fruit dipping in ” Vapor-Gard ” 2.5%. 1G .Fruit dipping in Benlate 1% +”Vapor-Gard” 2.5%.11.Fruit dipping in ” Vapor-Gard ” 1%12.Fruit dipping in ” Vapor-Gard” 1% + 10 p.p.m. 2,4-D.13 .Fruit dipping in”Vapor-Gard” + 200 p.p.m. GA3.14. Fruit dipping in ” Vapar-Gard 1% + 10 p.p.m. 2,4-D + 200 p.p.m. GA3.Fruits of all treatments were subjected to the determination of various physical and chemical properties directly after treatment, then at regular intervals during storage every 7 days. Determination of quality and exten-sion of shelf-life were tested were tested every 5 days.The results obtained could be summerized as follows:1.All treatments of ” Vapor-Gard ” exhibited the highest values of fruit firmness and retarded softening of fruits at the different storage periods.2.Generally irradiation and growth regulators treatments as well as ” Vapor-Gard ” diminished the weight loss percentage of fruits during the different storage periods in both experimental seasons, while the treatments of Benlate at 3 did’nt show any significant effect on weight loss percentage of fruits.3.In all cases, the percentage of decay of fruits was in-creased with the length of storage period and was higher in control fruits than that of other treatments. On the other hand, treatment of ” Vapor-Gard ” were more effective in alnimizing decay percentage of fruits.4.Fruits treated by 30 Krad gamma rays or growth regula-tors, reached the fair quality after 15 days of storage while the control fruits reached the fair quality after 10 days, so the shelf -life was extended by 5 days over that of the control, while the shelf-life of the fruits treated by ” Vapor-Gard ” alone or with growth regula-tors was extended by 10 days over that of the control.5.Total soluble solids content of manoes treated by ” Vapor-Gard ” was much lower than control and other treatments.6.Total acidity of mangoes treated by ” Vapor-Gard ” 2.5% alone or combined with Benlate 1% was significantly increased through the different storage periods over that of the control and other treatments.7.Total carotenoids content of mangoes had increased signi-ficantly during the storage periods in all treatments and control. Mangoes treated by huilate 1% gave higher value , while treatments of ” Vapor-Gard ” gave lower values of total carotenoids.8.Total phenolic compounds of fruits in all treatments and control showed a marked decrease during the storage periods, the decrease reached about 50% than of the values of theat the beginning of storage .9. Reducing sugars content of mangoes of all treatments and control increased throughout the first week of storage followed by a gradual decrease till the end of storage period . Treatments of ” Vapor-Gard ” exhibited the highest values of reducing sugars content of mangoes..Generally, there was a gradual increase in total sugars content after 1 and 2 weeks of storage for all treatments and

control followed by a gradual decrease in the 3 rd week. On the other hand, total sugars content of mangoes in treatment of ” Vapour - Gard ” were significantly lower than the control and other treatments during the differentstorage periods.11. Climactric peaks of respiration for control fruits after10 + 1 days of storage, while fruits treated by ” Vapor-Gard” at 1% either alone or combined with growth regulators(2,4-D or GA3) reached climactric peaks after 16 or 17 days of storage. Mangoes treated by 30 Krad, 10 or 20 p.p.m.2,4-D and 200 p.p.m. GA3 reached climactric peaks after 15 days of storage.