

Title Postharvest rotting, quality and shelf life of apple as affected by chemicals, GA treatment and packaging

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Abstract

Postharvest infrastructure is inadequate in India and losses are high. Cold storage facilities are scarce and beyond the reach of most growers. Therefore, this study was undertaken to find a low cost solution for short term storage of apple in Uttarakhand state. Storage studies of apples harvested at optimum maturity were undertaken at ambient and zero energy cool chamber (ZECC, a low cost cold storage structure for short term storage of fruits and vegetables) conditions for 100 days. The effect of various postharvest treatments i.e. waxing, CaCl₂, fungicide (Bavistin) dip and GA₃ was also evaluated for control of postharvest diseases/ rotting and quality of fruits during storage. Results indicated that apple fruits treated with 10% Nipro fruit wax and stored under ZECC conditions were found to be the best in terms of shelf life and quality. The physiological loss in weight was lower under ZECC i.e. (2.28%) while, it was as high as 7.93% under ambient conditions. Storage of fruits under modified atmosphere also reduced physiological weight loss. The incidence of postharvest diseases occurring as rotting due to natural fruit surface pathogens were reduced with CaCl₂ and Bavistin application during storage. When we compared temperatures, it was found that there was a reduction of 7.1°C in mean minimum temperature and 12.2°C in mean maximum temperature in the ZECC as compared to the ambient conditions. Additionally, a humidity of 90% was maintained in the ZECC continuously during the fruit storage studies. So, apple fruits can be successfully stored under ZECC (temperature 3.10 to 19.80°C, RH~ 90%) for a period of about 100 days after treatment with 10 %wax and treatment with 2.5% CaCl₂ or Bavistin (200 ppm) after packing in micro perforated polythene bags, with minimum postharvest disease incidence, and quality changes. This technology along with the use of 1-MCP can prove successful for on-farm storage of apple by the resource poor farmers in India.