

Effect of post harvest chemical treatments on shelf life and physico-chemical quality of banana cv. HARICHHAL

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ABSTRACT

Banana is tropical fruit having great demand all over the world. Yet fruit dealers find difficulties in marketing banana in good condition because of its very short post harvest life due to severe biochemical changes during ripening and storage difficulties under refrigerated conditions. The experiment was undertaken to study the post harvest change of banana cultivar Harichhal at Department of Horticulture, C.S. Azad University of Agriculture and Technology, Kanpur to study the effect of post harvest chemical treatments on shelf life and physico-chemical quality of banana cv. Harichhal. Banana bunches were dipped in aqueous solution of growth regulators viz. 2, 4, 5-T (25, 50, 125, 250 and 300 ppm), I.A.A. (25 and 50 ppm) and GA₃ (150 and 200 ppm) concentrations for 30 second, air dried and kept at ambient condition (25° to 30°C) at 13±1° (BOD) temperature condition. It has been inferred that at ambient storage condition maximum (8.3 days) green life can be obtained with GA₃ treatment at 200 ppm. Shelf life of banana can be extended up to 11 days at room temperature and 32 day at 13±1°C temperature condition by dipping the bunches in GA₃ solution of 150 ppm. Banana treated with I.A.A. 50 ppm showed an enhanced ripening compared to control (without treatment).

Key words : 2, 4, 5-T, NAA, GA₃, Quality, Shelf life, Banana.

Banana is gaining importance in fruit cultivation in subtropical zone at Central Plains of U.P. due to its higher productivity and throughout the year production. However, banana being a delicate and highly perishable fruit, the local production is subjected to serious post harvest losses, mainly due to poor handling and crude storage practices. Harichhal is a semi tall sport of Dwarf Cavendish. It is the important banana variety of this region. Appropriate post harvest handling of this variety for the agroclimatic region of Central Plains of Uttar Pradesh are yet to be standardized. The growth regulators such as 2,4,5-Trichlorophenoxy acetic acid and gibberellic acid when used at low concentration have been reported to control the ripening of fruits (Sadasiwam and Muthuswami, 1973). It has been observed that during refrigerated shipment of banana, changes in chamber temperature owing to variation in power supplies and cooling equipments efficiency lead to chilling damage and fruit losses. Hence, in order to reduce fruit losses information on the effect of storage temperature is crucial, especially when a new banana variety is to be transported over long distances. Studies were, therefore, carried out on the control of post harvest losses by extending shelf life with the help of plant growth regulators and temperature conditions.

MATERIALS AND METHODS

The experiment was undertaken at the Department

of Horticulture, C.S. Azad University of Agriculture and Technology, Kanpur during the year 2005-06 to study the post harvest life and biochemical changes occurring in banana cultivar Harichhal during storage. Fresh and healthy banana hands were deheaded and five banana hands from the banana bunches were treated under CRD design. The banana bunches were dipped in aqueous solutions of growth regulators viz. 2,4,5-T (25, 50, 125, 250 and 300 ppm), IAA (25 and 50 ppm) and GA₃ (150 and 200 ppm) concentrations for 30 seconds, air dried and kept at ambient condition (25° to 30°C) and at 13±1°C (BOD) temperature condition. The chemicals were first dissolved in 5 ml of ethyl alcohol and then diluted with distilled water. The data were recorded for green life, yellow life, TSS, total sugar and starch contents. The TSS was determined by titrating the aqueous extract of fruit tissue against 0.1 N NaOH using phenolphthalein indicator. Total sugar and starch were estimated as suggested by Ranganna (1979). The data were recorded at the end of green and yellow life. The green life was the duration in days from harvesting till it turned yellow, while yellow life was number of days from turning yellow till it started to rot.

RESULTS AND DISCUSSION

The results on ripening duration, shelf life and physico-chemical indices subject to growth regulators varied with their concentrations. The result (Table 1) indicated that