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

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ABSTRACT

Banana is a 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°C (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.
the treatments of banana with growth regulators influenced ripening of fruits significantly. Indole acetic acid treatments considerably increased the total sugar followed by ripening of fruits. Lower concentration of 2, 4, 5-T (25 and 50 ppm) retarded the ripening appreciably and such fruits could be held in firm condition even after 9 to 10 days of storage at ambient storage condition.

At ambient condition significantly greater green life was obtained with GA3 200 ppm (8.3 days) followed by GA3 150 ppm (8.1 days), 2, 4, 5-T 25 ppm (7.5 days), 2, 4, 5-T 50 ppm (7.1 days) as compared to control (5.2 days). Whereas, Indol acetic acid 25 ppm lowered green as well as yellow life significantly (4.8 and 4.7 days, respectively) as compared to control at ambient temperature. The maximum self life (32.1 days) was found with GA3 at 150 ppm kept under cold temperature (13±1°C) condition.

The TSS content was noted maximum (24.36°B) under 2, 4, 5-T at 250 ppm as compared to 24.1° Brix under control in ambient conditions. It was found lower in all the treatments at low temperature (13±1°C) condition as compared to ambient condition. Total sugar was found maximum IAA 50 ppm (23.75%) being significantly higher than other treatments and control (20.21%) at ambient condition. In all the treatments total sugar was higher at ambient storage as compared to 13±1°C storage condition. The maximum self life (32.1 days) was obtained with GA3 150 ppm kept under cold temperature (13±1°C) at room temperature and 32 days at 13±1°C temperature condition by dipping banana bunches in GA3 150 ppm solution. Desai and Deshpande (1978) observed that the relative activities of alpha amylase, starch, phosphorylase, acid phosphate peroxidase and catalase were decreased markedly in banana cv. DWARF Canvendish fruits treated with GA3 50 ppm. However, banana treated with IAA 25 ppm showed an enhanced ripening compared to control. The appreciably higher values of total sugars, glowing fruit colour, acidity and ascorbic acid obtained under indole acetic acid treatment are probably the results of enhanced ripening through increased production of ethylene in response to the hormone treatment. The results obtained suggest that self life of banana can be controlled chemically which is in agreement with the reports of Shivshankar (2003).

Post harvest dipping of three quarter ripe Harichhal banana hands in 25 or 50 ppm 2, 4, 5-T hastened ripening at room temperature by 4-6 days. GA3 200 ppm reatment also hastened it by 5-6 days. The shelf life was extended up to 11 days at room temperature and 32 days at 13±1°C temperature condition by dipping banana bunches in GA3 150 ppm solution. Desai and Deshpande (1978) observed that the relative activities of alpha amylase, starch, phosphorylase, acid phosphate peroxidase and catalase were decreased markedly in banana cv. DWARF Canvendish fruits treated with GA3 50 ppm. However, banana treated with IAA 25 ppm showed an enhanced ripening compared to control. The appreciably higher values of total sugars, glowing fruit colour, acidity and ascorbic acid obtained under indole acetic acid treatment are probably the results of enhanced ripening through increased production of ethylene in response to the hormone treatment. The results obtained suggest that self life of banana can be controlled chemically which is in agreement with the reports of Shivshankar (2003).

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