Abstract

Efficacy of hexanal application on the postharvest shelf life and quality of banana fruits *Musa acuminata* in Kenya

The study was conducted to determine the efficacy of hexanal applied either as pre-harvest spray or post-harvest dip in enhancing the shelf life of banana var. Grand Nain. The study was done in Meru County (high potential zone) and Machakos County (low potential zone) of Kenya. Two hexanal concentrations (2 % and 3 %) were sprayed either once (at 30 days) or twice (at 30 days and 15 days) before harvest. Observations of how long the fruits stayed on the tree between the treated and untreated ones, was based on the duration taken for 20% of the fruits per bunch to ripen. Once ripe, the fruits were harvested and analysed. For the post-harvest dip treatment, fruits harvested at the mature green stage were dipped in 2 % hexanal, 3 % hexanal, or water (control) for 2.5 minutes or 5 minutes. The fruits were allowed to ripen at ambient room conditions (25 ± 1°C and RH 60 ± 5%). Physiological and physico-chemical parameters associated with fruit ripening were evaluated at 3-day intervals. An interaction between zone of production and mode of application had a significant effect (p <0.05) on fruit retention. Hexanal applied twice as a spray significantly (p < 0.05) improved fruit retention by 12 days and 18 days in Machakos and Meru Counties, respectively. Post-harvest dip treatments enhanced fruit shelf life by 9 days (5-minute dip) and 6 days (2.5-minute dip) compared to 6 days for bananas sprayed twice. Respiration rate, ethylene production, and fruit softening were significantly (p < 0.05) delayed by hexanal treatment. Progression of other ripening-related changes including increases in total titratable acidity, 0Brix, and vitamin C were slower in fruits treated with hexanal. Overall, these findings indicate that hexanal applied either as a pre-harvest spray (30 days and 15 days before harvest) or a post-harvest dip (5 minutes) has the potential to enhance banana shelf life besides improving fruit retention on the tree by 12-18 days when applied as pre-harves