

EVALUATION OF THE COMMERCIAL APPLICABILITY OF ORGANIC RIPENING AGENT

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Use of chemicals on artificial ripening of fresh fruits has become a debated issue and alternatives are being investigated. Previous studies have reported, leaf powder of Bilin (*Averrhoa bilimbi* L.) and Keppetiyā (*Croton lacciferus* L.) 1:1 ratio induce ripening of banana. Based on the results of the previous study, this study was focused on determining the optimum amount of leaf powder mix (LPM - 1:1 ratio of Bilin: Keppetiyā) per fruit weight to induce ripening of banana and to investigate its commercial applicability in small scale condition. Emanations of LPM were analyzed by gas chromatography (GC). Banana variety *Embul* was harvested at mature green stage (Total soluble solids (TSS) 7.10 ± 0.05° Brix) and exposed to four levels of LPM, namely 0% (control), 1%, 2% and 3% per fruit weight and kept for 24 h in airtight condition. Data on peel color, firmness, TSS, Titratable Acidity (TA), pH and physiological weight loss (PWL) were measured daily until it reached to the table ripening stage. Further, banana hands were packed as small scale commercial condition and four packs of 3% LPM (w/w) were kept inside with non-treated control. After 24 h, fruits were removed and visual quality rating (VQR) and ripening index (RI) were observed daily for a week. The results revealed that ethylene gas was not detected by the GC. Further, 3% (w/w) LPM had significantly ($p < 0.05$) different peel colour ($L^* = 74.45 \pm 0.38$, $a^* = -1.63 \pm 0.24$, $b^* = 74.45 \pm 0.38$), firmness (3.63 ± 0.13), TSS (24.67 ± 0.15), TA (0.7 ± 0.01), pH (4.3 ± 0.01) and PWL (0.11 ± 0.04) than the control. However, VQR and RI of treated samples were similar to the control ($p > 0.05$). Hence, it is recommended 3% (w/w) leaf powder mix for the ripening of banana and further investigations are required at commercial scale.

keywords: *Averrhoa bilimbi*, Banana, *Croton lacciferus*, Ripening