

Influence of Different Ripening Agents on the Shelf-Life and Microbial Load of Organic and Inorganic Musaceae, during the Ripening Process, and the Health Implication for Food Security

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Abstract : Local farmers and fruit processors in developing countries of West Africa use different ripening agents to accelerate the ripening process of plantain and banana. This study reports on the influence of different ripening agents on the shelf-life and microbial load of organic and inorganic plantain (*Musa paradisiaca*) and banana (*Musa sapientum*) during ripening process and the health implication for food security in Nigeria. The experiment consisted of four treatments, namely: Calcium carbide, *Irvingia gabonensis* fruits, *Newbouldia laevis* leaves and a control, where no ripening agent was applied to the fingers of plantain and banana. The unripe and ripened plantain and banana were subjected to microbial analysis by isolating their micro flora (Bacteria, Yeast and Mould) using pour plate method. Microbes present in the samples were enumerated, characterized and classified to genera and species. The result indicated that the microbial load of inorganic plantain from (Urban day) open market in Ile-Ife increased from 8.00 for unripe to 12.11 cfu/g for ripened; and the microbial load of organic plantain from Obafemi Awolowo University Teaching and Research Farm (OAUTRF) increased from 6.00 for unripe to 11.60 cfu/g for ripened. Also, the microbial load of inorganic banana from (Urban day) open market in Ile-Ife increased from 8.00 for unripe to 11.50 cfu/g for ripened; while the microbial load of organic banana from OAUTRF increased from 6.50 for unripe to 9.40 cfu/g for ripened. The microbial effects of the ripening agents increased from 10.00 for control to 16.00 cfu/g for treated (ripened) organic and inorganic plantain; while that of organic and inorganic banana increased from 7.50 for control to 14.50 cfu/g for ripened. Visual observation for the presence of fungal colonies and deterioration rates were monitored till seven days after the plantain and banana fingers have fully ripened. Inorganic plantain and banana from (Urban day) open market in Ile-Ife are more contaminated than organic plantain and banana fingers from OAUTRF. The ripening accelerators reduced the shelf life, increased senescence, and microbial load of plantain and banana. This study concluded that organic Agriculture is better and microbial friendlier than inorganic farming.

Keywords : organic agriculture, food security, Musaceae, calcium carbide, *Irvingia gabonensis*, *Newbouldia laevis*

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