

**Title** Pre- and postharvest quality management of mango (*Mangifera indica* L. cv. carabao) fruits for greater market access

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### **Abstract**

The inherently short shelf life of 'Carabao' mango fruits limits its market to which it can be shipped in fresh form. Keeping fruits under low O<sub>2</sub> and high CO<sub>2</sub> called controlled atmosphere (CA) extended the storage life for one month. However, the major problems with long-term storage are quality deterioration and high incidence of disease. This study was conducted to develop a pre- and postharvest management protocol that will maintain the quality and control diseases of mangoes during the 29-day commercial CA storage and upon exposure to air. An integrated cultural and disease management program was implemented in an orchard in Pangasinan [Philippines] consisting of pruning, sanitation, fertilization, growth regulation and need-based fungicide spray. Mangoes produced following the farmers' practice of calendar-based spray program served as control. Postharvest management activities included maturity check, field grading, use of rigid plastic crates for transport, timely application of heat treatment and precooling. Mangoes (5.8 tons) were then packed in 5-kg cartons and stored in commercial CA van for 29 days at 13 deg C with O<sub>2</sub> and CO<sub>2</sub> maintained at 6 percent and 4 percent, respectively. Post-CA holding consisted of keeping fruits at different temperatures simulating the retail conditions of importing countries. The pre- and postharvest management strategies employed retarded the ripening, maintained the excellent fruit quality condition and significantly reduced anthracnose and stem end rot to 2 percent during the 29-day CA holding and 6-day simulated retail condition. The fruits ripened normally within three days after CA storage with extended shelf life. Shriveling, discoloration, chilling injury and internal breakdown were controlled. The treatments did not affect the physico-chemical as well as the sensory attributes of the fruits at the ripe stage. The study demonstrated that the Philippines can now access through less costly sea shipment the potential the potential but distant markets of Europe, North America and the Middle East.