

Title Design and Development of a Hot Water Treatment Plant for Postharvest Loss Reduction of Mango

Author K C. Roy, M. N. Amin

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Abstract

Postharvest loss of mango in Bangladesh ranges from 20 to 30 percent. This high loss mainly occurs due to improper postharvest practices. Anthracnose and stem-end rot disease are responsible for a significant loss. Hot water treatment is a very effective method of controlling this loss. In view of this, a Hot Water Treatment Plant has been designed and fabricated, which has four main parts, namely a rectangular water tank, a roller-type conveyer, immersion heaters and a power transmission system. The overall dimension of the plant is 3030 X 1000 X 814 mm. A 0.75 kW, 1400 rpm electric motor operates the power transmission system. The cost of the plant was Tk 75,000. at (1 US \$ = 70 Tk). A temperature controller has been set to maintain a uniform temperature, usually $55\pm 1^{\circ}$ C for hot water treatment of mangoes. When plastic crates containing mangoes are put on the roller at the bottom of a water tank at one end, they travel to the other end in 5 minutes. The plant was tested and demonstrated with matured mangoes in Chapainwabganj, the largest mango growing area of the country, to mango traders, farmers, extension personnel and journalists. The capacity of the plant is 1000 kg/h and the cost of hot water treatment is only Tk 0.17/kg. Appropriate postharvest handling like sorting, washing, wrapping, packaging and transporting were performed along with this treatment. The shelf-life of mangoes has increased to two weeks and the postharvest loss was less than one percent. Similar plants would be delivered to mango traders of the area next year so that they can treat mangoes before transporting to different parts of the country including the capital city.