

Application of Gamma Irradiation as a Quarantine Treatment to Control Fruit Fly (*Bactrocera dorsalis*) Prevailing on Export Potential Mango Fruits in Sri Lanka

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Fruit flies cause considerably serious damage to mango fruits by reducing quality and nutritional suffering. Among all the quarantine treatments, irradiation is unique as it is the only treatment used which does not cause acute mortality; instead, insects are prevented from maturing or are sterilized. Currently there are no any approved irradiation quarantine treatment doses for eggs of *Bactrocera dorsalis*. The objective this study was to determine the effective irradiation dose to control eggs of *B. dorsalis*. Export quality Tom EJC mango fruits which were artificially inoculated with *B.dorsalis* eggs were treated with 100 Gy, 200 Gy and 250 Gy Gamma radiation. The experiment was carried out in Complete Randomized Design with four treatments and a control with three replicates. Each replicate included three fruits where approximately 50 eggs were introduced to each fruit. After exposing to gamma irradiation, there was no any adult emergence but some of eggs were developed into larvae and pupae. No significant difference was observed in titratable acidity, brix, colour, moisture content, pH, texture and water activity of irradiated fruits compared to untreated fruits. Therefore, selected three gamma radiation dosages can be declared suitable for reducing the development of *B. dorsalis* eggs and it does not cause any quality defects to the fruit.

Keywords: *Bactrocera dorsalis*, Gamma Irradiation, Mango, Quarantine