

**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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By
**UDALAMATHTHA GAMAGE LIMANSHA
MADHUSHANI**

**Export Agriculture Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University of Sri Lanka**

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ABSTRACT

Fruit flies cause considerably serious damages and losses 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*. Therefore this study was conducted to control eggs of *B. dorsalis* in fresh quality mango fruits with the use of gamma radiation. A laboratory trial was carried out to test the efficacy of Gamma Radiation, at 100 Gy, 200 Gy and 250 Gy on export quality Tom EJC mango fruits using with artificially inoculated *B. dorsalis* eggs. Irradiation treatments were initiated to determine whether these doses could be used to reduce the growth or mortality of *B. dorsalis* eggs and to test if any adverse effects are occurred on the export quality of the fruit. The experiment was carried out in Complete Randomized Design with four treatments including a control and three replicates and 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, color, moisture content, pH, and 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.

Key words –*Bactrocera dorsalis*, Irradiation, Mango, Quarantine