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Determination of lethal doses of gamma radiation for pupa of *Plutella xylostella* (Linnaeus, 1758) (Lepidoptera: Plutellidae) diamondback moth for phytosanitary treatment.

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Tropical and subtropical countries such as Brazil are the ones that suffer most under the attack of insects, due to the ecological conditions of high temperature and relative humidity. The diamondback moth, *Plutella xylostella* is one of the most serious pests of cultivated Brassicaceae. It is cited as being the first crop insect to become resistant to dichloro-diphenyl-trichloroethane (DDT), and it has been found to have developed resistance to many other field insecticides, it is also reported to be the first insect to develop resistance to the bacterial insecticide *Bacillus thuringiensis*. The objective was determine the lethal doses of gamma radiation for pupa of *Plutella xylostella* and establish an appropriate phytosanitary irradiation treatment against this pest. Pupa irradiation: for each treatment were used 5 repetitions with 10 pupa each, in total of 50 pupa of 6 days old per treatment. They were irradiated in a Petri dish with measuring 2.5 cm in height and 10.0 cm in diameter. The doses of gamma radiation used were: 0 (control), 25, 50, 75, 100, 125, 150, 200, 250, 300, 350, 400 e 500 Gy. Were irradiated in a Cobalt-60 source, type Gammacell 220, with dose rate of 0,876 kGy/hour. After irradiation they were in a climatized chamber with temperature around 28 ± 2 °C, relative humidity $70\pm 5\%$ and a photoperiod of 12 hours. By the results we can conclude that the sterilizing and lethal doses to pupae were 300 and 500 Gy. Therefore, the recommended dose for phytosanitary treatment of pupae of *P. xylostella* is 500 Gy.