

Abstract

Banana moth is a quarantine pest of potted foliage plants such as *Dracaena* and palms. It is also an occasional post-harvest pest on many different types of fruits and vegetables. Larvae typically feed on dead plant material, but living roots, stems and fruits can also be attacked. Both larvae and pupae of banana moth can be present in fruits or vegetables destined for export. Therefore, our objective is to determine the lowest irradiation dose sufficient for preventing reproduction by larvae or pupae. Using a discriminating dose bioassay, we discovered that tolerance to irradiation increased as function of insect age. At a dose level of ~ 150 Gray (absorbed dose), the percentage of insects dying prior to adult emergence was 94.8, 94.7, 72.6, 60.6, 7.9 and 4.4% for neonates, 1-wk old larvae, 2-wk old larvae, 3-wk old larvae, 1-wk old pupae and 2-wk old pupae, respectively. Based on these results and other considerations, 250 Gray was selected as a putative dose that would provide quarantine security for immature stages of banana moth. Using this dose level, 757 2-wk old pupae have been treated, 79.3% of which emerged as adults. These adults laid 3915 eggs, and apparently none of these hatched. In the control group of 760 2-wk old pupae, 5112 eggs were laid, 4518 of which hatched. Additional research will establish whether 250 Gray, or a different dose, possibly lower, is sufficient for preventing the production of viable eggs by insects treated as pupae.