

Title Applying gamma irradiation as a quarantine treatment against mealy bug *Dysmicoccus neobrevipes* Beardsley (Homoptera: Pseudococcidae) for rambutan (*Nephelium lappaceum*)

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Citation Abstracts of 7th International Postharvest Symposium 2012 (IPS2012). 25-29 June, 2012. Putra World Trade Centre (PWTC), Kuala Lumpur, Malaysia. 238 pages.

Keywords mealy bug; gamma irradiation

Abstract

Studies on effects of gamma irradiation on the immature and adult stages of mealy bugs, *Dysmicoccus neobrevipes* was conducted in MINTEC Sinagama, Malaysian Nuclear Agency, Dengkil, Selangor using a Co-60 source. The main aims of the study were to determine whether the effects of the approved irradiation dose of 400Gy on tephritid fruit fly would also control the developmental stages of the mealy bugs. The results showed that the generic gamma radiation dose of 400Gy completely inhibits the development of immature (crawlers) and adults of annona mealybug. Fecundity and reproductive capacity of irradiated gravid adults was reduced greatly and any resulting offspring were not able to develop beyond the crawler stage. Development of nymphs to the adult stage was not arrested completely nor was development of immature stages eliminated, but all survivors were sterile. At 400Gy, the most tolerant adult stage survived 21 day after treatment before 100% mortality was achieved. Our results suggest that irradiation at 400Gy is appropriate for the inhibition of development and reproduction of mealybug on rambutan and provide quarantine security to the highest degree demand of a commercial phytosanitary treatment.