

# The Biology, Ecology and Control of the Yam Weevil, *Palaeopus costicollis* Marshall, (Coleoptera; Curculionidae)

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## [Abstract]

An Integrated Pest Management programme has been recommended as an alternative to methyl bromide for control of *Palaeopus costicollis* Mshl (Coleoptera; Curculionidae; yam weevil), on yams (*Dioscorea* spp.) exported to the United States of America (USA) from Jamaica. Laboratory and field studies were done to determine aspects of the weevil's biology, ecology and insecticidal efficacy, to identify the components of a pre-harvest programme.

Descriptions and illustrations of stages of *P. costicollis* are presented. The biology of the weevil revealed that the lifecycle was completed in 6-10 weeks on three yam species. The sex ratio, fecundity and various aspects of the weevil's behaviour were recorded. There was no significant relationship ( $P>0.05$ ) between the level of rainfall and the stages of *P. costicollis* in the population dynamics and crop/pest phenology studies. There was a significant ( $P<0.05$ ) relationship between the number of larvae and damage to a crop of *D. cayennensis*.

An island wide survey was conducted in the major yam growing areas involving 157 farmers. The cultivation practices employed by the yam farmers were recorded. The adult stage was not recognized by a significant ( $P<0.05$ ) number of the farmers. However, the weevil was distributed island wide infesting nine species of yam and two alternative hosts. The incidence of *P. costicollis* larvae and adults between yam varieties were not significantly different ( $P>0.05$ ).

Pirimiphos methyl and malathion effected significant ( $P<0.05$ ) mortality. The plant extract effected mortality similar to the control ( $P>0.05$ ). Both Malathion and pirimiphos methyl significantly ( $P<0.05$ ) reduced oviposition and feeding of *P. costicollis* adults on yam tubers of *D. cayennensis*. A number of cultural and chemical strategies such as application of the minisett technology, hot water treatment and chemical treatment of yam setts at planting, fallowing, intercropping, crop rotation and harvesting on time were identified for the preharvest aspect of an IPM programme for *P. costicollis*.