

D-21: Relative susceptibility of two varieties of sweet potato to *Cylas formicarius* and deterrent effect of neem leaf powder on feeding and oviposition of the weevil

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The 2 varieties of *Ipomoea batatas* (sweet potato) "Sinchi" and "Wariyapola" are widely grown in Sri Lanka. The major constraint to post harvest storage of sweet potato is infestation by the sweet potato weevil, *Cylas formicarius* (Coleoptera; Curculionidae). For storage, tubers must be free from insect pest. However even though the tubers may be free of *Cylas formicarius* at the time of harvesting, during storage it is possible for the tubers to be infested. As a result of such infestation weevils can build up to very high population resulting in the spoilage of tubers.

Chemical methods are not suitable for the management of this weevil during storage. The development of resistant varieties is receiving high priority in research aimed at reducing yield losses due to the weevil.

Azadirachtin is a chemical present in neem tree. *Azadirachta indica* which causes feeding inhibition and growth disruption in insects belonging to several insect orders. Therefore use of neem leaves and seeds seems to be a suitable method for protecting sweet potato from weevil.

The objectives of this study were: (1) To compare the level of susceptibility to weevil attack of 2 varieties of sweet potato "Sinchi" and "Wariyapola". (2) To evaluate the deterrent effect of neem leaf powder on feeding oviposition by weevil.

The adult weevils were introduced into sweet potato tubers in 22.9 cm tall kilner jars for egg laying. the larvae were reared under laboratory conditions.

Two varieties of sweet potato "Wariyapola" and "Sinchi" were used for this study. 20 tubers of each variety were placed separately in glass jars and 2 pairs of weevils were introduced into each of them. They were kept under laboratory conditions for a period of 3 weeks. Then each tuber was removed and cut into slices about 2 mm in thickness. The immature stages in each tuber were counted. The results were analysed using the t-test.

Dried neem leaves were powdered and used for this study. 42 unblemished tubers of "Wariyapola" variety were divided into 2 groups of 21. One group was treated with neem leaf powder by shaking the tubers inside a polyethylene bag containing 150 g of neem leaf powder. The 2 groups of tubers were separately placed inside a glass fish tank (60 x 30 x 30 cm) at the 2 ends. The neem powder was also sprinkled on the treated group. Then 48 weevils were introduced between the 2 groups of tubers and the tank was covered with a perforated polyethylene sheet. After 4 days feeding punctures were counted and after 12 days number of larvae present in 2 groups were also counted. The results were analysed statistically using the t-test.

Relatively a higher number of immature stages were found in the Sinchi variety. Means were compared using t-test and the difference was found to be statistically significant. ($t_{obs.} = 2.0507$, $df = 38$, $p < 0.05$)

Mean number of feeding punctures and larval stages found in the control group exceeded that of the treated group. This difference was found to be statistically significant. (for feeding punctures t_{obs} : 4.7111, $df=40$, $P = 1.479E-05$; for larval stages t_{obs} : 2.8053, $df=40$, $P = 3.862E - 03$).

Since *Ipomoea batatas* is attacked by *Cylas formicarius* during post harvest storage, search for weevil resistant varieties is useful for providing good quality sweet potato to consumers. According to the present study it was found that both varieties "Sinchi" and Wariyapola are susceptible to weevil attack with a higher susceptibility of "Sinchi" than "Wariyapola". The study also showed that neem leaf powder had a significant repellent effect on the weevil. As such cultivation of varieties resistant to the sweet potato weevil and use of neem leaf powder during post harvest storage might prevent post harvest losses due to the attack by *C. formicarius*.