

## A Simple Packing Method for Large-Scale Shipment of Water Hyacinth Weevils

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Water hyacinth (*Eichhornia crassipes*), which was introduced as an ornamental plant about 1890, is the most serious aquatic weed in India (Gopal and Sharma, 1981). Two species of weevils, viz., *Neochetina eichhorniae* Warner. and *N. bruchi* Hustache (Coleoptera: Curculionidae) of South American origin, have proved to be promising for the biological control of this weed under field conditions in Bangalore (Jayanth, 1988 a,b). Consequently, there has been much demand for supply of these beneficial insects for releases in different parts of the country. The major limitation in this, however, was the non-availability of a simple, inexpensive and efficient method of packing the weevils. The present note describes such a technique, developed for despatching large number of weevils for direct field releases.

The method consists essentially of smaller insect packing units placed inside a larger outer carton for despatch. The insect packing units (Fig.1) were



Fig.1. A packing unit for *Neochetina* spp. which can accommodate upto 1000 adults.

prepared from thick polythene covers (32 x 32 cm) which were punctured all over with a dissection needle. Two bouquets of water hyacinth leaves were provided inside each cover for adult feeding. The bouquets were prepared by collecting 15 leaves with 10 cm long petioles and wrapping the bunched

cut ends with a thick wad of cotton wool. This portion was then dipped in water and enclosed within a small polythene cover (10 x 8 cm), the mouth of which was tightly secured to the petioles with rubber bands to prevent leakage of water. The bouquets were attached to the inner bottom corners of the packing units with stapler pins. The adult weevils were then released inside and the open end of the cover was tightly closed with rubber bands.

The shipment box (Fig.2) was prepared from a thick and sturdy corrugated cardboard carton

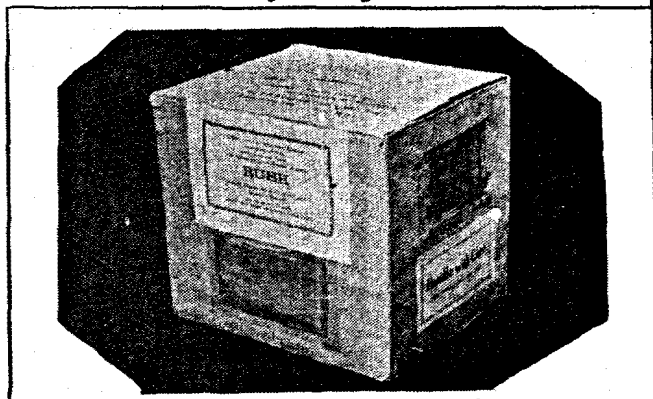


Fig.2. Shipment box for packing five units of 1000 adults each of *Neochetina* spp. measuring 30 x 26 x 30 cm. Four windows, each measuring 12 x 10 cm were cut out on each face of the carton and fine brass wire-mesh sheets attached with stapler pins and cello tape, to facilitate aeration. Five packets of 1000 adults each of *N. eichhorniae* and *N. bruchi* can be accommodated in each box. The box was sealed with cello tape to prevent entry of ants.

It was observed that leaves of water hyacinth remained green and turgid for upto a week inside the packing units. Mortality of adults was negligible upto the 5th day (1 to 2%) and showed a marginal increase (around 5%) by the seventh day. By using this method about 45,000 adults of *N. eichhorniae* and *N. bruchi* were despatched from Indian Institute of Horticultural Research, Bangalore by air-freight or through couriers travelling by

train to locations in different parts of the country such as Assam, Kerala, Maharashtra, Manipur and Rajasthan.

The development of this method has made it possible to make direct field releases of sufficient numbers of weevils in different parts of the country for biological control of water hyacinth. This has been based on the observation that releases of around 2000 adults are sufficient to get a good breeding population of the weevils established on water hyacinth, irrespective of the area of weed coverage (Jayanth, 1987). It was also noticed that adequate numbers of the weevils became available for collection and redistribution within 2 years after releases. Therefore, if the weevils can be released on infested water bodies at one or two central points within each state, they can be collected and despatched for direct field releases in all affected districts. By following this method, a lot of funds required for setting up infrastructure facilities such as insect breeding tanks, as also technical manpower required for maintaining cultures, etc. can be saved.

## ACKNOWLEDGEMENTS

The author is grateful to Dr. R.M. Pandey, Director and Dr. P.L. Tandon, Head, Division of Entomology and Nematology, I.I.H.R., Bangalore for encouragement given.

**KEY WORDS** : *Neochetina eichhorniae*, *N. bruchi*, water hyacinth, packing method

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