THE BIOLOGY AND MANAGEMENT OF *POMACEA* SP.— A SNAIL PEST OF RICE

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Introduction

Pomacea is a pest of rice and other aquatic plants; recently it has been introduced into this region from its native land in South America. The snails are damaging the newly transplanted rice causing substantial lost in some countries in Asia. In Malaysia several steps have been taken to control this pest including mechanical, cultural, chemical and legislation procedures. The objectives of the project were: (1) To develop an effective and practical plant molluscide that farmers could prepare and apply themselves; and (2) to devise a biological control method by using fish as predator. Fish has long been known as an integral part of rice farming in Malaysia, however the activities and the yield had significantly dropped, due to the double cropping and overuse of pesticides.

Materials and Methods

Plant molluscicide: Several local plant species were screened for molluscicidal activities by exposing their crude extracts to 2-week-old *Pomacea* hatchlings. Its'LC_{50} values were determined by Probit Analysis. As a result of the screening tests, leaf powder of *Peltophorum pterocarpum* (yellow flame tree) was used in the rice field at Chenderong Balai, Perak. Biological control by fish: In laboratory, several fish species especially of benthophagic type were given hatchlings of *Pomacea* and the rates of the fish consumption on this snail were analysed. Potential fish of prey was also evaluated in the field. The size of the fish was slightly larger (about 15 cm and 60 g) than the normally released for pond rearing. The fishes were released into plots containing snails of varying population density. The impact of this fish on the population of snails was analysed. Other data on fish feeding behaviour in the rice fields were also recorded. Data on the macrobenthic population throughout the rice growing period were monitored weekly.

Results and Discussion

Plant molluscicides: Leaf powder of yellow flame tree was found to be quite potent towards *Pomacea*. Field trials of this plant material had demonstrated that the potency of yellow flame tree against *Pomacea* was about half that of the Tea Seed Cake powder. The Tea Seed Cake is a commercial plant molluscicide of choice in Malaysia and it is imported mainly from China. The supply and availability of this pesticide is sometimes quite unreliable, thus yellow flame tree could be used as an alternative molluscicide. Biological control by fish: Black carp or snail carp, *Mylopharyngodon piceus* was the most efficient snail predator. The fish was not used in rice field trial since it needs deeper water. Therefore this carp is recommended for use to control *Pomacea* in communal waters such as canal and pond in the rice field ecosystem. The 100 black carps that were released into Tronoh Mines reservoir had successfully eliminated *Pomacea* in it. Hybrid catfish was twice tried in the fields. Unfortunately not enough data could be gathered from these experiments because of the damage inflicted by the adverse climatic condition during the El Nino spell recently. A third trial is now being carried out. During the trials some data on the population dynamics of macrobenthics organisms that constituted the important diet of catfish were recorded. This information is vital in understanding the feeding pattern and feeding behaviour of fish in rice field.

Conclusions

A plant, *Peltophorum pterocarpum* is toxic to *Pomacea*. More studies should be carried out to further investigate the full potential of this plant as molluscicide. Screening of the other potential plants for better molluscicides should also be continued. There are many facets of rice-fish farming which are not yet understood. This required thorough studies before the full impact of fish in the rice field can be elucidated.

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