

The Biology and Control of *Pomacea* sp., A Snail Pest of Rice*

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Introduction

Pomacea is a pest of rice and other aquatic plants. The snails are damaging the young plants causing substantial lost of yield in some countries in Asia. In Malaysia several steps had been taken to control this pest including mechanical, cultural, chemical and legislation procedures. The objectives of the project were to develop an effective and practical plant molluscicide that farmers could prepare and apply themselves, to use fish as biological control agent, and to utilize the mass collected snails as animal feed. The above control methods could be used in integration and in managing *Pomacea*.

Materials and Methods

Plant molluscicide: Several local plant species were screened for its molluscicidal activities by exposing their crude extracts to 2 week-old *Pomacea* hatchlings. Its LC₅₀10 values were determined by Probit Analyses. The most toxic plant to snails was then produced in bulk and tried in the rice field at Chenderong Balai, Perak. **Biological control by fish:** **Laboratory trial:** Several fish species especially of benthophagic type were given snails of various sizes. The rate of fish consumption on the snails was analysed. Potential fish of prey was then evaluated in the field. The fish of about 15 cm and 60 g were released into plots containing snails of varying population densities. Data on feeding behaviour, growth and its impact on the snail population were analysed. **Snail meal as animal feed:** Adult snails were crushed and dried in oven. The dry meat was ground to fine powder and used as protein sources of feeding ration for Japanese quail, *Coturnic coturnic japonica*. Bird growth performances were analysed and the meat quality was analysed by palatability test.

Results and Discussion

(Plant molluscicide: Leaf powder of yellow flame, *Peltophorum pterocarpum* was found to be quite potent molluscicide. Field trial had revealed the toxicity of yellow flame was about half strength of Tea Seed Cake (TSC) molluscicide, a plant molluscicide of choice in Malaysia. TSC is imported from China where its availability is sometimes unreliable. Thus yellow flame can be of alternative molluscicide. **Biological control:** Snail carp, *Mylopharyngodon piceus* was the most efficient snail predator. The fish was not used in rice field because it required deeper and cooler water, thus it was recommended that the fish be used in communal water such as canal, lake and ponds. Hybrid African catfish was also quite effective snail predator. Unfortunately the three trials in the field did not provide good data on the impact of catfish on the snail population. The trials were either damaged by the severe climate (El Nino spell) or destroyed by fish predators including otters. During the trials some data on the population dynamics of macrobenthic 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. **Snail as animal feed:** Proximate analysis revealed that *Pomacea* is high in protein (32%) and this is considered as good source of protein. Growth performances (Body weight, Average Daily Gain (ADG), of bird given rations containing 2.5 to 7.5% of snail meal were comparable to those fed with commercial feed. Sensory test on meat revealed that bird fed with snail protein ration did not differ in its juiciness, flavour, tenderness colour, general appearance and satisfaction as compared to birds fed with commercial feed. Thus *Pomacea* that was mass

collected can be used as protein source in animal feed, rather than being destroyed and wasted as is normally practiced.

Conclusions

Yellow flame, *Peltophorum pterocarpum* is toxic to *Pomacea* and can be used as plant molluscicide. Catfish is good snail predator. It could be used in controlling *Pomacea* in rice field provided that climate is not so severe and less fish predators especially otters are prevalent in the field. Instead of being wasted, the snails collected from the infested field can be turned into protein source in animal food ration.

Benefits from the study

Controlling *Pomacea* can be less harmful to environment by using plant molluscicide and by using fish as biological control agent. The production and application of the plant molluscicide was simple which farmers can do themselves. Fish used to control snails in rice fields can provide a supplementary income to the farmers. Snails can be put into good use as animal feed for quails, etc.

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None.

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