Management of the Golden Apple Snail *Pomacea canaliculata* (Lamarck) in Irrigated Rice in Sabah

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Invasion of GAS in Sabah
- early 1990's
- sighted in Keningau
- current infested area > 8000 ha
Biology & Ecology of GAS

- GAS inhabits places with shallow and slow moving water
- polyphagous; vegetal, detrital & animal matter
- wet season → active
- limited water conditions – snails aestivate
- snail can aestivate underground > 10 months

Early Infestation

- numerous egg masses
- vegetation covered with pinkish coloration
Damage Potential of GAS

- younger seedling $\rightarrow$ more susceptible
- the deeper the water $\rightarrow$ the greater the damage

Damage potential: water depth $>$ seedling age $>$ pest density in the decreasing order
Management Strategy

- people dimension

- awareness campaign:
  Research ↔ Extension ↔ Farmers

GAS Control Measures (IPM)

a. Cultural control
b. Biological control
c. Chemical control

*user sensitive approach*
Cultural Control

- handpicking with herbage attractants
- transplanting 40-day-old seedlings
- field draining to ssmc for direct seeding planting method
Biological Control

- 5 – 10 ducks / ha

- William Siam > Taiwan > Mallard > Peking > Khaki Campbell

- transplanting – 4 weeks

- direct seeding – 6 weeks
Biological Control

- Common Carp (*Cyprinus carpio*)
- African Catfish (*Clarias gariepinus*)

Ref: *Crop Protection* 25 (2006) 1004 - 1012
Management of GAS Breeding Grounds

- drain off water to stop snail activities
- duck herding
- molluscicides should not be the priority
- conserve natural enemies e.g. fish, insects, spider, birds.
Chemical Control

a. Tea seed powder
   - 51 kg/ha under 5 – 7 cm of stagnant water

b. Pellets of metaldehyde 5%
   - 15 kg/ha

c. niclosamide
Problems & Constraint

- many farmers mistook GAS as the local snail *Pila* spp.
- man is the principle agent of dispersal
- difficult to stop GAS from spreading, floods, man activities
- farmers may not attend briefing / dialogue session
Conclusions

- GAS is now under control
- IPM Program is effective
- total infested area 8000 ha
- GAS invasion is an irreversible phenomenon
- should refrain from chemical control to conserve natural enemies
- continual monitoring of GAS is essential