

Golden Apple Snail

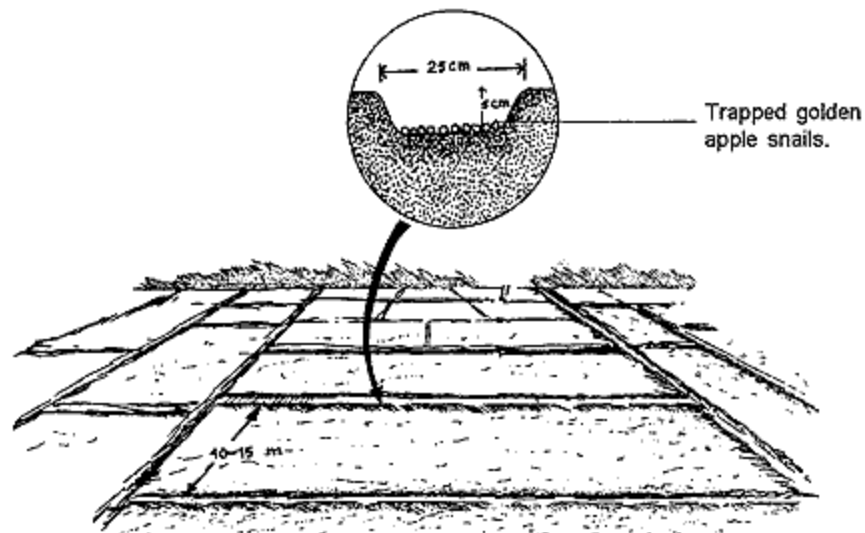
Management options

During land preparation

- Before the final harrowing, handpick golden apple snails from rice paddies in the morning and afternoon when they are most active and easy to find.
- Use plants that contain toxic substances against golden apple snails. Examples are gugo (bark) [*Entada phaseikaudes* K Meer], tubangkamisa (leaves), sambong (leaves) [*Blumea balsamifera*], tuba-tuba (leaves), gabihan (leaves) [*Monochoria vaginalis*], tobacco (leaves) [*Nicotiana tabacum* L], calamansi (leaves) [*Citrus microcarpa* Bunge], tubli (roots), makabuhay (leaves) [*Tinospora rumphii* Boerl], and red pepper (fruit).

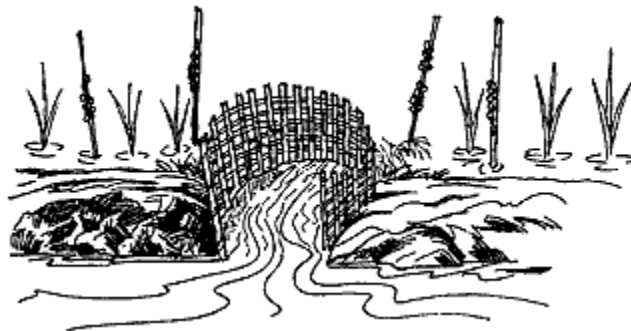


- Other reported plants include starflower (leaves) [*Calatropis giganta*], neem tree (leaves) [*Azadirachta indica*], and asyang [*Mikania cordata*] contain substances that can kill golden apple snails. These are highly recommended before transplanting rice. Simply construct small canals to confine the golden apple snails and right there place the leaves of the said plants.
- Use attractants such as leaves of gabi [*Colocasia esculenta*], banana [*Musa paradisiaca* L.], papaya [*Carica papaya* L.], trumpet flower, and old newspapers for easy collection of golden apple snails.
- During the last harrowing, construct deep strips (at least 25 cm wide and 5 cm deep) in the paddies by pulling a sack containing a heavy object. Provide 10- 15 m distance between strips. Likewise, construct small canals (25 cm wide and 5 cm deep) along the edges of rice paddies.



Small canals, where the golden apple snails will seek refuge if water level is critical, make collection easier.

- Place a wire or woven bamboo screen on the main irrigation water inlet and outlet to prevent the entry of hatchlings and adults. This also facilitates collection of trapped golden apple snails.



Screens on the water inlet reduce entry of golden snails to the paddy.

During transplanting

- Follow the standard seeding rate and distance so that the plants will have sturdy stems.
- If golden apple snail is a big problem, transplant 25-30-day-old seedlings of early-maturing varieties. In the rice areas of the Cordillera highlands, use 30-35-day-old seedlings of late-maturing varieties.

- Put bamboo stakes on water-logged areas in the paddies or near canals to attract adults for egg laying. This makes collection and crushing of the egg masses easy.
- Maintain shallow paddy water level (2-3 cm shallow) starting 3 days after transplanting.
- Drain the field occasionally to limit snail mobility and feeding activity.



Draining the field occasionally will limit snail mobility and feeding activity.

- Collect, cook, then eat the golden apple snails, or crush and feed them to ducks and pigs. Collection is easier by using attractants such as leaves of gabi, papaya, and trumpet flower.
- Use varieties that are high-tittering and least preferred by the golden apple snails such as PSB Rc36, Rc38, Rc40, and Rc68.

After harvesting

- Herd ducks in rice paddies immediately after harvest up to the last harrowing for the succeeding crop. Herd them again 30-35 days after transplanting (DAT) early-maturing varieties and 40-45 DAT late-maturing varieties.



Handpicking is recommended for large adult golden snails as these are not fed upon by ducks.

Integrated management scheme based on rice growth stages

Pre-establishment	Crop establishment	Post production
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Land Preparation	Vegetative	Reproductive	Maturity	After harvesting
A	B and C		D	E

A = Duck pasturing, handpicking, constructing canalets, use of plant attractants and destruction of egg masses

B = Handpicking, duck pasturing, screen trapping, staking, and destruction of egg masses

C = Water management, handpicking, use of plant attractants, and destruction of egg masses

D = Sustain handpicking and destruction of adults and eggs

E = Duck pasturing, dry Land preparation

New information

A study conducted by researchers MS Dela Cruz, RC Joshi, and AR Martin from 1999 to 2000 at PhilRice Maligaya found the following:

- Varieties that are least preferred by the golden apple snails are PSB Rc36, Rc38, Rc40, and Rc68.
- Basal application of complete fertilizer and urea incorporated with the soil at recommended rate during the last harrowing reduced golden apple snail population up to 54%.
- Commercial molluscicides (nicosamide and metaldehyde) were effective against golden apple snails that are directly hit. Their efficacy lasted 2-3 days. Molluscicides may no longer kill golden apple snails that will emerge to the soil surface after aestivating and those that would reenter the treated fields. Nicosamide 250EC at half the label recommendation (0.5 li/ha) killed about 80% of the golden apple snails that were sprayed on. Nictosamide kills more native snails than metaldehyde formulations.