

INTEGRATED MANAGEMENT OF SNAILS IN CITRUS NURSERY

Sandeep Singh, Rajwinder Kaur Sandhu, Sumanjit Kaur*
and Indira Devi**



Department of Fruit Science

*MS Randhawa Fruit Research Station,
Gangian, District Hoshiarpur

**Farm Advisory Service Centre, Hoshiarpur
Punjab Agricultural University, Ludhiana

Snails are not insects. They are soft bodied animals belonging to class Gastropoda of the phylum Mollusca. Their body is asymmetrical, spirally coiled and non-segmented. They have a large flat foot which is used for creeping and a coiled calcareous shell that is large enough for the animal to retract completely into. They love cool, moist weather and feed at night, so they usually go unseen when they are doing their damage. Snails avoid hot, dry weather and bright sunlight. They hide in damp places during the day to avoid predators. Often the only clues to their presence are their silvery slimy trails and plant damage. The common brown snail, *Machrochlamys indica* is a pest of citrus nursery (**Fig. 1 and 2**) in Punjab.

Damage: Snails are primarily the pests of seedlings and herbaceous plants. Snails feed on a variety of living plants and on decaying plant matter. They create irregular holes with smooth edges on leaves by scraping with their rasp-like tongues. Small succulent plant parts are easily clipped by snail feeding. Sometimes, they also cause damage to bark and fruits. Citrus nursery plants are especially susceptible to damage of snails. Damaged leaves have large chewed areas along the margins. The peak activity period in Punjab is during the rainy season.

3. Wear gloves and again mix jaggery and bran by squeezing. Sprinkle some water and mix it again. Sprinkle water once more and mix it properly.

4. Keep it overnight.

5. Next evening, mix the bran thoroughly with Metaldehyde (25 g) using gloves.

6. Broadcast in the screen house/shadenet house along the rows, near cracks and crevices.

Caution: Metaldehyde bait is highly toxic and should be stored out of the reach of children and pets.

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1. Clean up debris in/around nursery to remove breeding and hiding places for snails.

2. Spread papaya leaves in/around nursery area to attract snails. Then, collect the snails and put into a bucket containing common salt water to kill them.

3. Hand picking and manual killing.

4. Keep wet gunny bags in the nursery area as snails try to hide under gunny bags. Then, collect the snails and put into a bucket containing common salt water to kill them.

5. Do bait application of Metaldehyde (2.5% dust) bait when population of snails start appearing in nursery plants or nursery plots. Bait immediately following an irrigation or rainy period when the soil is wet and snails are active. Do not irrigate after bait application. For 1 kg bait, add Jaggery (250 grams) in Wheat bran 750 grams and Metaldehyde (2.5% dust) 25 grams.

PREPARATION OF METALDEHYDE BAIT (1 kg Bait)

1. A day before treatment, spread the wheat bran (750 gram) on a floor and just mix it manually by pressing and squeezing to ensure that the whole bran is properly mixed.

2. Powder 250 gram jaggery separately and mix it with bran.



Fig. 1: Snail on Kinnow nursery plant



Fig. 2: Snail damage on Jatti Khatti nursery plant