### White stem borer of coffee

*Xylotrechus quadripes*

#### Prevention
- Maintain optimum shade and soil moisture in the coffee orchard. It is better to plant shade trees 1-2 years before the coffee plantation.
- Use borer free saplings. Get sapling from screen house nursery.
- Remove the loose scaly bark of the main stem and thick primaries using a jute sack, coir glove or rough cloth in March and September to reduce the cracks and crevices in which the eggs are deposited. Then, paste a mixture of red soil and fresh cow dung on the stem.
- Spray 10% lime (i.e. spray lime at 10kg in 100 litres of water along with 100ml of a binder e.g. Fevicol DDL) on the main stem and thick primaries before the flight periods.
- Use a coffee white stem borer pheromone trap, i.e. cross-vane pheromone trap, to catch female beetle during flight periods.
- The traps should be spaced out in the form of a grid of 25 traps each with a spacing of 20 m between traps.

#### Monitoring
- Monitor for optimum shade and soil moisture in the coffee orchard.
- Monitor the para-pheromone traps for beetles throughout the year especially in March-April and September-October.
- Look for infested plants showing yellowing and wilting of leaves, presence of ridges on the stem, wilted branches and drying plants. *(Note: Young plants succumb completely to the attack and older plants may get damaged only).*
- Monitor for eggs laid in cracks and crevices of the bark of the main stem or the primary branches particularly to the plants exposed to sunlight.
- Every year look for ridges on the main stem for thick primaries and the level of infestation.
- Look for zigzag tunnels in the woody tissue by splitting branch/trunk, and excreta tightly filled by grubs.

#### Direct Control
- Identify, remove and destroy (burn) borer infested plants in March and September (before the beetles emerge - flight time) to reduce pest infestation.
- Apply paste of neem or chinaberry leaves, garlic, and marigold flower in equal proportion mixed with linsed seed oil on the stem twice a year (September and March).
- Use of chemicals are strictly prohibited in organic farming.
- Spray azadirachtin 0.15% (NSKE based) at 5 ml/ litre or chlorpyrifos 20% EC at 1.5 ml/litre water in April-May and another spray at the end of October. Alternatively, stems may be swabbed with carbaryl 50%WP @ 20g/ litre of water.

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#### Restrictions
- Chemical application should coincide with the peak emergence period (before March and September) of the beetle to achieve effective control. Use PPE while using chemical pesticides. chlorpyrifos & carbaryl: WHO classification II. PHI of Chlorpyrifos 30-60 days (see label) or Carbaryl 21-30 days.