**INTINTEGRATED PEST & DISEASE MANAGEMENT for Raspberries and Blackberries**

**Dormancy**
- Remove and destroy affected fruit. Minimise mummified fruit.
- Consider biennial cropping, where losses are consistently high, winter  virus to reduce grub numbers.
- Monitor maturing fruit for thrips damage.
- Reduce your grub spray to go on at 130DD after the first moth flight.

**Leaf Growth**
- Shake 25 trusses per block upside down onto white container
- Monitor weather for temperatures 15°C. Visible signs appear 4 weeks after infection.
- Prevent soft tip growth and when fully grown drop to the ground to pupate below soil surface.

**Flowering**
- Primocanes of infected plants wilt and die. Floricane laterals are stunted with small, chlorotic leaves with scorched margins.
- Maintain airflow and use drip irrigation to keep canopy dry. Slash or remove rotten fruit in blocks.
- Check pheromone traps weekly for moth flights. When a flight occurs calculate degree days (DD) to gauge timing of grub hatch. Use threshold of 20 flies per trap to begin bait spraying.

**Harvest**
- Rotate crops with other unrelated fruits.
- Minimise unharvested fruit left after picking.
- Consider raincovers or biennial cropping.

**Dormancy**
- Prune bushes to reduce summer growth.
- Winter prune bushes to remove any late-infected wood.
- Check 5 bushes per block

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**BUGS**
- **CENTRAL ARMYWORM (Lepidoptera: Noctuidae)**
  - Larvae tunnel into leaves and into stems. Feeding damage can be extensive and cause defoliation and plant death.
  - Control: Apply insecticide when larvae are in the 2nd through 4th instars.

**MOLDING**
- **Helicoverpa spp**
  - Adults migrate back to flowering grasses for oviposition.
  - Control: Apply insecticide treatments.

**CULTURAL ACTIVITIES**
- **Botrytis cinerea**
  - Spores remain viable but are active all year in northern regions.
  - Control: Water-logged prunings or ground-cover - no feeding occurs. Prohibit traffic in wet conditions.

**CHEMICAL CONTROLS**
- **Neonicotinoids**
  - Avoid synthetic pyrethroid insecticides for 8 weeks before introduction of predatory mites.

**MONITORING**
- **Carpophilus beetles**
  - TSM predators include green lacewings, lady beetles, lacewings, and beneficial nematodes. Check weekly for all mite stages on undersides of leaves. Target older leaves with bronzing appearance. Look for predatory mites in TSM colonies. Sample 10 older leaves from 5 bushes.

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**FUTURE PREDICTIVE GUIDES**

**POWDERY MILDEW**
- Biological Controls: Tetranychus mersyi, Phytoseiulus persimilis, and Amblyseius cucumeris.

**RUSTS**
- Biological Controls: Tetranychus mersyi, Phytoseiulus persimilis, and Amblyseius cucumeris.

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**Rasberries and Blackberries Australia**
- Designated and researched by P. Domeney & M. Buntain
- www.arga.com.au
- TIA is a joint venture between (Clockwise from left) Bottom right: A newly-hatched TIA larva. Female montdorensis lay 8 eggs at a time. Females mate clockwise from top right: Carpophasis montdorensis cabbage loopers. (2) Washington State University, (1) TIA. Caddi montdorensis cabbage loopers.