Major Pest of Banana in Hawaii

- Banana aphid
- Banana Bunchy Top Virus
- Banana rust thrips
- Hawaiian flower thrips
- Banded greenhouse thrips
- Banana root borer
- Coconut scale
- Banana skipper
- Black leaf streak
- Panama wilt
Minor Pest of Banana in Hawaii

- Ants
- Chinese rose beetle
- Banana moth
- Spiraling whitefly
- Banana fruit piercing moth
- Nematodes
- Mites
- Mealybugs
- Freckle
- Banana mosaic virus
Banana Aphid
Pentalonia nigromervosa

- Vector of BBTV
- Live birth (all females)
- Alates (winged)
- Protected by ants
- Peak season: dry, warm conditions, February to April.
- Host range includes: ginger, heliconia, taro, etc.
- Control: Insecticides, oils, soapy water, ant control
Banana Aphid
Pentalonia nigromervosa (cont)

• Aphid takes time to acquire virus (hours)
• Virus circulates inside the insect
• Virus is phloem limited
• Transmit clean plants in minutes of feeding
• Does not transmit virus to offspring
Banana Bunchy Top Virus

- Most significant disease of banana
- Symptoms: Stacked leaves, Morse coding, erect narrow leaves, marginal chlorosis, distorted fruits
- Insect vector: Banana aphid
- Control: Aphid management, rouging, ant management, weed control, eradication of infected plants
Banana rust thrips 
*(Chaetanoplothrips signipennis)*

- Piercing and sucking mouthparts
- Feed on the pseudostem and fruit.
- Peak season: dry periods or in low rainfall areas.
- Symptoms: dark, v-shaped marks on the outer surfaces of leaf petioles
- Fruit damage: water-soaked appearance, oval shaped reddish “stains” where fingers touch
- Control: Insecticides, bagging, oils, soapy water
Banded greenhouse thrips (Hercinothrips femoralis)

- **Symptoms:** Silver and bronze scars, reddish discoloration on fruit
- **Control:** Insecticides, bagging, oils, soapy water
Hawaiian flower thrips (Thrips hawaiiensis)

- Feeds only on flowers.
- Prefers wet and shady areas.
- Symptoms: Flecked, spotted, or deformed flowers, pimple like bumps on fruit
- Difficult to control, damage done inside flower bell
- Control: Bunch injections with insecticides, oils, soapy water, improved sanitation
Banana weevil  
(Cosmopolites sordidus)

• Bore through the corm, suckers and roots of living and decaying planting material.
• Symptoms: root destruction, slowed plant growth, reduced fruit production, and toppled plants

• Young banana plants at risk
• Feeds and breeds at night.
• Controls: Hot water, trapping, sanitation, minimizing root exposure
Coconut scale (Aspidiotus destructor)

- Quarantine pest
- Armored scale
- Found on under side of leaves, petioles, peduncles, and fruits
- Piercing and sucking mouthparts
- Symptoms: Discoloration and yellowing of plant tissue.
- Peak season: February through April
- Control: Fungicidal oils (Applaud), hot water treatments
Banana skipper (Erionota thrax)

- Symptoms: Rolled leaves originating from the midrib of plants
- Control: Natural enemies, Bt, Mechanical control
Black leaf streak
(Mycosphaerella fijiensis)

• Fungal disease of banana
• Conditions: warm, wet and humid conditions
• Symptoms: Necrotic lesions / streaks, defoliation of leaves,
• Control: Fungicides, oils, canopy management, de-trashing, improve air movement
Panama wilt
(Fusarium oxysporum)

- Symptoms include internal stem necrosis, root and rhizome rot, discolored leaves, plant wilting, plant death
- Disease can survive almost indefinitely in soils
- The fungus then penetrates into the vascular system of the pseudostem, causing
- Control: Fumigation, water management, residue management, eradication of infected plants
Long-legged ant (Anoplolepis longipes)

- Moves and protects aphids
- Releases a toxic chemical causing dry necrotic lesions on the fruit surface
- Prefers wet, high rainfall areas
- Peak season: June through October
- Long-legged ants are sugar lovers
- Control: Boric acid mixture, Terro
Big headed ant (Pheidole megacephala)

- Moves and protects banana aphids.
- Also protects other honeydew producing insects such as scales and whiteflies.
- Peak season: May through October.
- Big headed ants are great.
- Control: Amdro ant bait (Hydramethylnon)
Chinese rose beetle (Adoretus sinicus)

- Damage due to feeding by the adult beetle
- Nocturnal feeder of leaf and inter-veinal tissue
- Peak season: May through November (dry)
- Control: Daytime harvest
Banana moth  
*(Opogona sacchari)*

- Lays eggs on senescing flowers, decaying leaves, pseudostems or fruit.
- Feed on decaying plant material
- Control: Removal of flowers, application of insecticides prior to bagging, Bt
Spiraling whitefly (Aleurodicus disperses)

- Sap-sucking insects that damage and discolor plant leaves and tissue.
- Excrete honeydew that may lead to black sooty mold.
- Protected by ants
- Control: Natural enemies
Banana fruit piercing moth (Othreis fullonia)

- Adult moth punctures and feeds on ripening fruit (not larvae stage)
- Symptoms: Premature ripening and fruit drop, secondary infections due to fungal and bacterial infections
- Control: Natural enemies, removal of alternative host such as willi willi
Mites (Various species)

- Minor pests of banana
- Piercing and sucking mouthparts of mites damage plant tissue and fruit
- Control: Sulfur, natural enemies
Nematodes

- Attack the root system of plants and impair water and nutrient uptake
  - Rootknot (*Meloidogyne* spp.)
  - Burrowing (*Radopholus similis*)
  - Reniform (*Rotylenchulus reniformis*)

- Symptoms: stunting, poor plant growth, narrow and weak stems, foliar chlorosis, root rotting and galling, and plant toppling.

- Apple bananas slightly more tolerant than Cavendish

- Control: Hot water, fallow, nematicides, drainage, crop rotation
Crown rot complex

- Post-harvest disease problem of banana
- Fungal disease enters wounded tissue after harvest
- Symptoms: Dark discoloration to fruit skin and pulp, brown soft rot
- Control: Minimize bruising, increase air movement, minimize humidity, fungicides
Freckle (Phyllostica musarum)

- Freckle is a fungal disease of bananas that affects fruit quality and appearance
- **Symptoms:** Spots on fruit
- **Control:** Fungicides, oils, canopy management, detrashing, fruit bagging, improve air circulation
Banana Mosaic Virus

- Also known as cucumber mosaic virus
- Numerous alternate hosts for the disease (including weeds)
- Symptoms: Chlorosis of leaves, mosaic symptoms, and heart rot
- Control: Virus free planting material, alternative host management, aphid control, eradication of infected plants
Pest Management

- Cultural practices
- Biological controls
- Chemical pesticides