Evaluation of Sanitation Practices for BBTV suppression

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Best Management Practices for BBTV

- Aphids transmit the BBTV
- Sick plants have more aphids
- Can’t stop the spread of the virus by aphid control alone
- Develop best management practices for disease suppression
  - Focus on timely knockdown of diseased plants
Best Management Practices

BBTV Best Management Practices

1) **Disease Identification:** Bunchy top disease is diagnosed by symptom identification or by a lab test for the virus. If you suspect BBTV in your banana orchards, please contact the Hawai‘i Department of Agriculture or your local Cooperative Extension office for more information. For a nominal fee, the UH-CTAHR Agricultural Diagnostic Service Center can test banana leaves for the banana bunchy top virus.

2) **Insect Control:** Controlling aphids is essential to reducing the spread of BBTV. Aphid populations may increase during the spring or during warm, dry weather, and they can often be found on suckers. Homeowners can apply insecticidal oils or soapy water to kill banana aphids. Growers with a pesticide applicator’s license from the Hawai‘i Department of Agriculture can apply **Prentox Diazinon AG500** under a 24(c) special local needs label (expiration September 2005). It is a violation to apply this diazinon product on fruit bunches or plants bearing fruit.

3) **Disease Prevention:** To minimize the spread of BBTV, all infected plants and their mats must be destroyed with an approved herbicide. Destroying infected plants with Roundup Ultra Max can help reduce the spread of BBTV. Fruits must be removed before treatment. Please read and follow the label instructions. Aphids on infected plants should be killed with soapy water, insecticidal oils, or an approved insecticide before injecting Roundup Ultra Max into a hole made at the base of the stem. Do not immediately cut the plants—the foliage is needed to move the herbicide throughout the plant. Allow injected plants to dry completely before moving them off your property.

4) **Routine Monitoring:** Commercial and neighborhood banana plantings should be monitored for BBTV symptoms.

5) **Alternative Host Management:** Control banana aphids on all known alternate hosts such as ginger, heliconia, and taro.

6) **Fresh Start:** Backyard and new growers should avoid planting bananas until they can verify that their planting material is free of BBTV. Only BBTV-free plants should be used for planting.

7) **Prevent Contamination:** Prevent the spread of BBTV by not transporting banana plants around your island or to other islands in the state.
Aphid Control

- Aphids needs to be controlled BEFORE destroying the plant
- Untreated plants often results in heavy aphid infestations
- Heavy infestations can lead to the spread of BBTV
- Evaluate alternatives to Diazinon
  - Phase out
  - Growers with no license
Use of Oils/Soaps for Banana Aphid Suppression

![Bar graph showing the effectiveness of different treatments for banana aphid suppression. The x-axis represents the treatments (Ultra Fine, Volck, Dawn, Crystal White, Control) and the y-axis represents the severity of aphid presence (Heavy, Moderate, Few, No Aphids). The graph indicates that Ultra Fine and Volck show fewer aphids compared to the other treatments.](image-url)
Use of Oils/Soaps for Banana Aphid Suppression

![Bar graph showing the suppression of banana aphids with different treatments. The x-axis represents the treatments, and the y-axis represents the severity of aphid suppression. The treatments include Ultra Fine, Volck, Dawn, Crystal White, Neem, and Control. The graph indicates that the Control treatment has the highest suppression, while Ultra Fine has no suppression.]
Use of Oils/ Soaps for Banana Aphid Suppression
Disease Management: Evaluate application of the Bananacide
Application of Roundup Injections

Treatment (May 2005)

- Low application
- Correct Application

Change Levels:
- Advanced Change
- Moderate Change
- Slight Change
- No Change
Applicaton of Roundup on Plants Cut at Different Heights

Treatments (3/05-6/05)

# Suckers

Top | 3-4 feet | Base
---|---|---
5 | 20 | 40

Application of Roundup on Plants Cut at Different Heights
Bananacide Application

- Inject an approved bananacide at least 1 foot above the ground (1ml/ 2-3 in plant diameter)
- Leave the foliage on the plant to aid in translocation
- Use 100% Roundup, 30-50% dilutions sometimes don’t result in effective kill
- Go back and treat emerging suckers
Lesson Learned from OBGA meetings

- Sick plants attract more aphids
- Faster takedown of plants = less possibility for BBTV to spread
Application of Roundup with Different Translocation Materials (2005)
Different Translocation Materials (2006)

Graph showing the comparison of translocation materials with advanced change and no change after 3 weeks and 4+ weeks. The treatments include MillerPlex, Round Up, and Roundup + Ammonium Sulfate.
Advantages of Chopping or Removing Infected Trees

- Removal of disease reservoir
- Dieback of foliage 1 week faster
- Disadvantages: Regrowth of suckers, labor
Chop vs. Tops on

- Cut, chop, Roundup and damage growing area:
  - Foliage dies in about 2 weeks
  - Re growth of suckers
  - Labor intensive

- Tops left on:
  - Foliage dies in about 3 weeks
  - No re growth
Future area of work: Organic Knockdown

80% Re-Growth

20% Dieback
Treatments: Chopped suckers in half, used screwdriver to destroy growing center, and then spread ammonium sulfate into the center of the plant.
Summary

- Follow label instruction
- Avoid short cuts
- Timely removal of infected plants = minimized spread of BBTV