1999 Banana IPM Protocol
Insect Monitoring and Management Decisions

INSECT MANAGEMENT

Banana Rust Thrips (BRT) Management

Do you consider rust thrips to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for BRT damage?	☐ Y	☐ N	CULTURAL	5	
Do you have an established BRT action threshold?	☐ Y	☐ N	CULTURAL	7	

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

* Install un-treated bags over the bunches as soon as it is allowed by label restrictions.	CULTURAL	5	
* Apply insecticidal spray 1-3 times during flowering.	CHEMICAL	3	
Broad spectrum compound	CHEMICAL	1	
Narrow spectrum compound	CHEMICAL	3	
Reduced risk or biological compound	CHEMICAL	4	

Rind and Green House (R&G) Thrips Management

Do you consider R&G thrips to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for R&G thrips damage?	☐ Y	☐ N	CULTURAL	5	
Do you have an established R&G thrips action threshold?	☐ Y	☐ N	CULTURAL	7	

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

* Installation of un-treated bunch covers will prevent establishment of R&G thrips.	CULTURAL CHEMICAL	5	
Treatment			
Broad spectrum compound	CHEMICAL	1	
Narrow spectrum compound	CHEMICAL	3	
Reduced risk or biological compound	CHEMICAL	4	

Flower Thrips Management

Do you consider flower thrips to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for flower thrips damage?	☐ Y	☐ N	CULTURAL	5	
Do you have an established flower thrips action threshold?	☐ Y	☐ N	CULTURAL	7	

1999 Banana IPM Protocol
Insect Monitoring and Management Decisions

INSECT MANAGEMENT

Flower Thrips Management (continued)

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

Treatments are under investigation at this time. There are no recommendations at this time for flower thrips.

Banana Root Borer (BRB) Management

Do you consider BRB to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor/trap for BRB damage?	☐ Y	☐ N	CULTURAL	5	
Do you have an established BRB action threshold?	☐ Y	☐ N	CULTURAL	7	
Use un-infested keiki in re-planted fields. Examples: trimmed, HWT plants, tissue cultured plants, etc.			CULTURAL	7	

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

* Cut and remove all harvested stumps to prevent borer breeding.	CULTURAL	3	
* Minimize plant debris around planting mats.	CULTURAL	3	
* Cover newly cut wounds to avoid borer egg laying and breeding.	CHEMICAL	3	
* Apply insecticides when environmental conditions permit.	CHEMICAL	3	
Broad spectrum compound	CHEMICAL	1	
Narrow spectrum compound	CHEMICAL	3	
Reduced risk or biological compound	CHEMICAL	4	

Banana Skipper (BS) Management

Do you consider BS to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for BS damage?	☐ Y	☐ N	CULTURAL	5	
Do you have an established BS action threshold?	☐ Y	☐ N	CULTURAL	7	

1999 Banana IPM Protocol
Insect Monitoring and Management Decisions

INSECT MANAGEMENT

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

*Conservation of bio-control organisms that control the banana skipper.	BIOLOGICAL	7	_____

Sugarcane Budmoth (SBM) Management

Do you consider SBM to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for SBM damage?	☐ Y	☐ N	CULTURAL	5	_____
Do you have an established SBM action threshold?	☐ Y	☐ N	CULTURAL	7	_____

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

* Remove all flowers prior to bagging to reduce budmoth damage.	CULTURAL	5	_____
Bunch Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____

Banana Moth(BM) Management

Do you consider BM to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for BM damage?	☐ Y	☐ N	CULTURAL	5	_____
Do you have an established BM action threshold?	☐ Y	☐ N	CULTURAL	7	_____

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

* Remove all flowers prior to bagging to reduce banana moth damage.	CULTURAL	5	_____
Bunch Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____

1999 Banana IPM Protocol
Insect, Nematode and Disease Monitoring and Management Decisions

INSECT MANAGEMENT

Insect Management (for all insect pests)

* Insecticide resistance management strategy i.e. rotation.	CULTURAL	5	_____

NEMATODE MANAGEMENT

Nematode Management

Do you consider nematodes to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for nematodes?	☐ Y	☐ N	CULTURAL	5	_____
Do you have an established nematode action threshold?	☐ Y	☐ N	CULTURAL	7	_____
Use uninfested keiki in replanted fields. Examples: trimmed, HWT plants, tissue cultured plants, etc.			CULTURAL	7	_____

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO ☐ NO-ACTION ☐ ACTION

Pre or Post Plant Treatment: (Choose One)	CULTURAL	3	_____
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____
* Removal of plants, nematicide treatment and replant.	CULTURAL	3 (b)	_____
Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____
* Use a bare or non-host fallow period before replanting.	CULTURAL	5 (b)	_____
Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____

DISEASE MANAGEMENT

Banana Bunchy Top Virus (BBTV) Management

Do you consider BBTV to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE			DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for BBTV?	☐ Y	☐ N	CULTURAL	5	_____
Do you monitor for aphid populations?	☐ Y	☐ N	CULTURAL	5	_____
Do you have an established aphid action threshold?	☐ Y	☐ N	CULTURAL	7	_____

(b) Bonus IPM Points

1999 Banana IPM Protocol
Disease Monitoring and Management Decisions

DISEASE MANAGEMENT

Banana Bunchy Top Virus (BBTV) Management (continued)

DID POPULATION LEVELS SURPASS THE ACTION THRESHOLD? ☐ YES ☐ NO

☐ PREVENTION ☐ NO-ACTION ☐ ACTION

Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____
Use non-infested planting material clean of BBTV. Examples: tissue cultured plants, seed from clean field, etc.)	CULTURAL	7	_____

IF BBTV PRESENT:

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
* Destroy BBTV infected plants.	CULTURAL	3	_____
* Insecticidal eradication of aphids on plants (and mats) within a 5 meter radius of BBTV infected tree to prevent spread of the vector. Follow with complete plant eradication (within 5 meter radius).	CHEMICAL	7 (b)	_____
Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____
* Eradication of all plants (and mats) within a 5 meter radius from BBTV infected tree.	CHEMICAL	5 (b)	_____
Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____
* Insecticidal treatment of all plants (and mats) within a 5 meter radius of BBTV infected tree.	CHEMICAL	3 (b)	_____
Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	_____
Narrow spectrum compound	CHEMICAL	3	_____
Reduced risk or biological compound	CHEMICAL	4	_____

Black Leaf Streak (BLS) Management

Do you consider BLS to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for BLS? ☐ Y ☐ N	CULTURAL	5	_____

(b) Bonus IPM Points

1999 Banana IPM Protocol
Disease & Weed Monitoring and Management Decisions

DISEASE MANAGEMENT

Black Leaf Streak (BLS) Management (continued)

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
Do you monitor for BLS? ☐ Y ☐ N	CULTURAL	5	
Use non-infested planting material clean of BLS. Example: tissue cultured plants, seed from clean field, etc.	CULTURAL	7	
Preventative BLS Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	
Narrow spectrum compound	CHEMICAL	3	
Reduced risk or biological compound	CHEMICAL	4	
* Utilize weather forecasting information to time management strategies.	CULTURAL	3 (b)	
* Removal of unwanted or unnecessary plants to encourage better air circulation and lower relative humidity in canopy (quarterly).	CULTURAL	3 (b)	
* Removal of plant debris to minimize disease inoculum.	CULTURAL	3	
* De-trashing of severely diseased leaves.	CULTURAL	5	
* Selection of large pseudostem keikis for higher BLS tolerance.	CULTURAL	3 (b)	
* Promote good drainage.	CULTURAL	5	
* Fungicide resistance management strategy i.e. rotation, etc.	CULTURAL	5	

New Pest and Disease

Did you encounter unknown pest or diseases (check yes or no)?	☐ YES	☐ NO	
* Submit samples for identification.	CULTURAL	5 (b)	

WEED MANAGEMENT

Do you consider weeds to be a pest (check yes or no)? ☐ YES ☐ NO

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
* Apply preemergence herbicides prior to canopy closure.	CHEMICAL	3	
Treatment: (Choose One)			
Broad spectrum compound	CHEMICAL	1	
Narrow spectrum compound	CHEMICAL	3	
Reduced risk or biological compound	CHEMICAL	4	
* Non-chemical weed management techniques (mowing, cover crops, cultivation, mulching, etc.).	CULTURAL	5 (b)	
* Establish weed maps for use in determining herbicide types and rates.	CULTURAL	3	

(b) Bonus IPM Points

1999 Banana IPM Protocol
Weed & Crop Monitoring and Management Decisions

WEED MANAGEMENT

Weed Management (continued)

* Establish and maintain a weed free boarder.	CULTURAL	3	_____
* Herbicide resistance management strategy i.e. rotation, etc.	CULTURAL	5	_____
* Non-chemical weed management techniques (mowing, cover crops, cultivation, mulching, etc.).	CULTURAL	5 (b)	_____
* Establish weed maps for use in determining herbicide types and rates.	CULTURAL	3	_____
* Establish and maintain a weed free boarder.	CULTURAL	3	_____
* Herbicide resistance management strategy i.e. rotation, etc.	CULTURAL	5	_____

SPRAYER CALIBRATION

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
* Maintain spray records and calibrate all sprayers once a year.	MECHANICAL	3	_____

PLANTING DECISIONS

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
* Selection of tolerant or resistance commercial cultivars to Panama Wilt, nematode, and other pest.	CULTURAL	5	_____
* Use adequate plant spacing and density.	CULTURAL	3	_____
* Use single row or double rows when planting to optimize spray penetration and coverage.	CULTURAL	3	_____
* Installation of wind breaks at planting.	CULTURAL	3 (b)	_____

NUTRIENT MANAGEMENT

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
* Leaf tissue analysis conducted twice a year.	CULTURAL	4	_____
* Maintain records and fertilizer according to test results.	CULTURAL	2	_____
* Annual soil analysis to determine pH regulation and pre-plant fertilizer requirements.	CULTURAL	4	_____
* Calibrate and service fertilizer spreader annually.	MECHANICAL	3	_____

(b) Bonus IPM Points

1999 Banana IPM Point Sheet

Banana Rust Thrips	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total BRT Points Received	

Rind & Greenhouse Thrips	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total R& G Points Received	

Flower Thrips	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total Flower Thrips Points Received	

Banana Root Borer	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total BRB Points Received	

Banana Skipper/Sugarcane Budmoth	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total BS & SBM Points Received	

Nematodes	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total Nematode Points Received	

Banana Bunchy Top Virus	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total BBTV Points Received	

Black Leaf Streak	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total BLS Points Received	

Weeds	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total Weed Points Received	

Sprayer Calibration	POINTS
Total Possible Points	
Total IPM Points Received	

Planting/ Nutrient	POINTS
Total Possible Points	
IPM Points Received	
Advanced Points Received	
Total Points Received	

TOTAL IPM POINTS	POINTS
Total Possible Points	
Total IPM Points Received	
Total Advanced Points Received	
Final IPM Points Received	

Level of IPM	

EVALUATION DATE: _____

EVALUATOR: _____

(b) Bonus IPM Points