

1999 Banana IPM Protocol

Insect Pest Monitoring and Management Decisions

INSECT MANAGEMENT

Banana Rust Thrips (BRT) Management

Do you consider rust thrips to be a pest (check yes or no)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>		<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
Do you monitor for BRT damage?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
Do you have an established BRT economic action threshold?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____
<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
		<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> 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	_____
<i>Broad spectrum compound</i>		CHEMICAL	1	_____
<i>Narrow spectrum compound</i>		CHEMICAL	3	_____
<i>Reduced risk or biological compound</i>		CHEMICAL	4	_____

Rind and Green House (R&G) Thrips Management

Do you consider R&G thrips to be a pest (check yes or no)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>		<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
Do you monitor for R&G thrips damage?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
Do you have an established R&G thrips economic action threshold?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____
<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
		<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION	
* Installation of un-treated bunch covers will prevent establishment of R&G thrips.		CULTURAL	5	_____

Flower Thrips Management

Do you consider flower thrips to be a pest (check yes or no)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>		<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
Do you monitor for flower thrip damage?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
Do you have an established BRT economic action threshold?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____
<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
		<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION	

* Treatments are under investigation at this time. There are no recommendations at this time.

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Banana Root Borer (BRB) Management

Do you consider BRB to be a pest (check yes or no)?	<input type="checkbox"/> YES	<input type="checkbox"/> NO							
IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED						
Do you monitor/trap for BRB damage? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____						
Do you have an established BRB economic action threshold? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____						
<table border="0" style="width: 100%;"> <tr> <td style="width: 60%;"><u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u></td> <td style="width: 20%; text-align: center;"><input type="checkbox"/> YES</td> <td style="width: 20%; text-align: center;"><input type="checkbox"/> NO</td> </tr> <tr> <td></td> <td style="text-align: center;"><input type="checkbox"/> NO-ACTION</td> <td style="text-align: center;"><input type="checkbox"/> ACTION</td> </tr> </table>				<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>	<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION
<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>	<input type="checkbox"/> YES	<input type="checkbox"/> NO							
	<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION							
* Cut and remove all harvested stumps to prevent borer breeding.	CULTURAL	3	_____						
* Minimize plant debris around planting mats.	CULTURAL	3	_____						
* Apply insecticides when environmental conditions permit.	CHEMICAL	3	_____						
<i>Broad spectrum compound</i>	CHEMICAL	1	_____						
<i>Narrow spectrum compound</i>	CHEMICAL	3	_____						
<i>Reduced risk or biological compound</i>	CHEMICAL	4	_____						

Banana Skipper (BS) Management

Do you consider BS to be a pest (check yes or no)?	<input type="checkbox"/> YES	<input type="checkbox"/> NO							
IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED						
Do you monitor for BS damage? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____						
Do you have an established BS economic action threshold? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____						
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<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>	<input type="checkbox"/> YES	<input type="checkbox"/> NO							
	<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION							
*Encourage biological insects that control the banana leaf roller, spiraling whitefly, and banana skipper.	BIOLOGICAL	7	_____						

Sugarcane Budmoth (SBM) Management

Do you consider SBM to be a pest (check yes or no)?	<input type="checkbox"/> YES	<input type="checkbox"/> NO							
IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED						
Do you monitor for SBM damage? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____						
Do you have an established SBM economic action threshold? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____						
<table border="0" style="width: 100%;"> <tr> <td style="width: 60%;"><u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u></td> <td style="width: 20%; text-align: center;"><input type="checkbox"/> YES</td> <td style="width: 20%; text-align: center;"><input type="checkbox"/> NO</td> </tr> <tr> <td></td> <td style="text-align: center;"><input type="checkbox"/> NO-ACTION</td> <td style="text-align: center;"><input type="checkbox"/> ACTION</td> </tr> </table>				<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>	<input type="checkbox"/> YES	<input type="checkbox"/> NO		<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION
<u>DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD?</u>	<input type="checkbox"/> YES	<input type="checkbox"/> NO							
	<input type="checkbox"/> NO-ACTION	<input type="checkbox"/> ACTION							

1999 Banana IPM Protocol

Insect, Nematode and Disease Monitoring and Management Decisions

INSECT MANAGEMENT

Sugarcane Budmoth (SBM) Management (continued)

* Remove all flowers prior to bagging to reduce budmoth damage.	CULTURAL	5 (b)	_____
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NEMATODE MANAGEMENT

Nematode Management

Do you consider nematodes to be a pest (check yes or no)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>		<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
Do you monitor for nematodes?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
Do you have an established nematode economic action threshold?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____

DID DAMAGE LEVELS SURPASS THE ACTION THRESHOLD? YES NO

NO-ACTION ACTION

Treatment: (Choose One)

<i>Broad spectrum compound</i>	CHEMICAL	1	_____
<i>Narrow spectrum compound</i>	CHEMICAL	3	_____
<i>Reduced risk or biological compound</i>	CHEMICAL	4	_____

DISEASE MANAGEMENT

Banana Bunchy Top Virus (BBTV) Management

Do you consider BBTV to be a pest (check yes or no)?		<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>		<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
Do you monitor for BBTV?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
Do you monitor for aphid populations?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
Do you have an established aphid economic action threshold?	<input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	7	_____

DID POPULATION LEVELS SURPASS THE ACTION THRESHOLD? YES NO

PREVENTION NO-ACTION ACTION

Treatment: (Choose One)

<i>Broad spectrum compound</i>	CHEMICAL	1	_____
<i>Narrow spectrum compound</i>	CHEMICAL	3	_____
<i>Reduced risk or biological compound</i>	CHEMICAL	4	_____

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Insect Pest Monitoring and Management Decisions

DISEASE MANAGEMENT

Banana Bunchy Top Virus (BBTV) Management (continued)

IF BBTV PRESENT:

* Destroy BBTV infected plants and kill aphid populations.	CULTURAL	3	_____
<u>Treatment: (Choose One)</u>			
<i>Broad spectrum compound</i>	CHEMICAL	1	_____
<i>Narrow spectrum compound</i>	CHEMICAL	3	_____
<i>Reduced risk or biological compound</i>	CHEMICAL	4	_____

Black Leaf Streak (BLS) Management

Do you consider BLS to be a pest (check yes or no)?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>	<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
Do you monitor for BLS? <input type="checkbox"/> Y <input type="checkbox"/> N	CULTURAL	5	_____
<u>Preventative BLS Treatment: (Choose One)</u>			
<i>Broad spectrum compound</i>	CHEMICAL	1	_____
<i>Narrow spectrum compound</i>	CHEMICAL	3	_____
<i>Reduced risk or biological compound</i>	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)	_____
* Fungicide resistance management strategy i.e. rotation, etc.	CULTURAL	5	_____

WEED MANAGEMENT

Do you consider weeds to be a pest (check yes or no)?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	
<u>IPM PRACTICE</u>	<u>DESIGNATION</u>	<u>POINTS</u>	<u>POINTS RECEIVED</u>
* Apply preemergence herbicides prior to canopy closure.	CHEMICAL	3	_____
<u>Treatment: (Choose One)</u>			
<i>Broad spectrum compound</i>	CHEMICAL	1	_____
<i>Narrow spectrum compound</i>	CHEMICAL	3	_____
<i>Reduced risk or biological compound</i>	CHEMICAL	4	_____

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Weed & Crop Monitoring and Management Decisions

WEED MANAGEMENT

IPM PRACTICE	DESIGNATION	POINTS	POINTS RECEIVED
* Non-chemical weed management techniques (mowing, cover crops, cultivation, 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	_____

SPRAYER CALIBRATION

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

PLANTING DECISIONS

* Selection of tolerant or resistance commercial cultivars to Panama Wilt, nematode, and other pest.	CULTURAL	5	_____
* Use sterile planting material, clean of diseases, nematodes, banana root borer, and other insect pest. Examples: HWT, trim, tissue culture, etc.)	CULTURAL	7	_____
* 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	_____

TOTAL IPM POINTS	POINTS
Total Possible Points	_____
Total Bonus IPM Points	_____

(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	
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EVALUATION DATE: _____

EVALUATOR: _____