

How to Begin a Successful Biocontrol Program

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Reasons for using biocontrols are numerous...

- Protect the environment
- Stricter environmental regulations
- Loss of traditional pest control options
- Staff safety
- Sustainability
- Customer demand
- Image



10 steps for success

1. Education
2. Transition Plan
3. Identify Top Pests
4. Start Small
5. Train
6. Distribution
7. Consult
8. Schedule
9. Record
10. Continual Improvement

Terms to know:

- BCA - Biological Control Agent
- Beneficials
- Biologicals
- Predators

- Biopesticides
 - biochemicals
 - microbials

1. Study, research, and network with others. Get buy in from decision makers about cost/benefit



Collaboration and teamwork are critical



Getting buy in from decision makers and bill payers is essential for success

2. Make a plan for transitioning from conventional pest control to Biological pest control



- Reactive versus Proactive
- What biocontrol will replace which pesticide?
- What will you do if a biocontrol is not as effective as you need?

3. Identify your top pests and make prevention/control plan for each

- Aphids
- Mites
- Thrips
- White flies
- Fungus gnats
- Mealybugs



Aphidoletes



Aphid mummy





Phytoseilius persimilis





Amblyseius cucumeris





Amblyseius swirskii



Steinernema feltiae



Cryptolaemus montrouzieri



- Out of the box or coop in this case.....
- Many biocontrols are very small but some can be a bit larger.
- Guinea hens are excellent grasshopper control





Compost Tea Brewer

Disease

- Foliar disease prevention is first achieved by right plant right place
- Bio fungicides can also be helpful preventing foliar disease, Rhapsody and Milstop are some examples
- Root disease prevention is achieved by inoculating media with beneficials, such as RootShield, Vermaplex, or Compost tea

4. Start small, set aside one area to begin and trial, expand as you learn/gain confidence



5. Train staff: scouting, distribution, methods, evaluation, and tools





- Scouting
- Pest insect identification
- Biocontrol identification
- Evaluation



6. Effective distribution of biocontrols with blowers and saches



sache

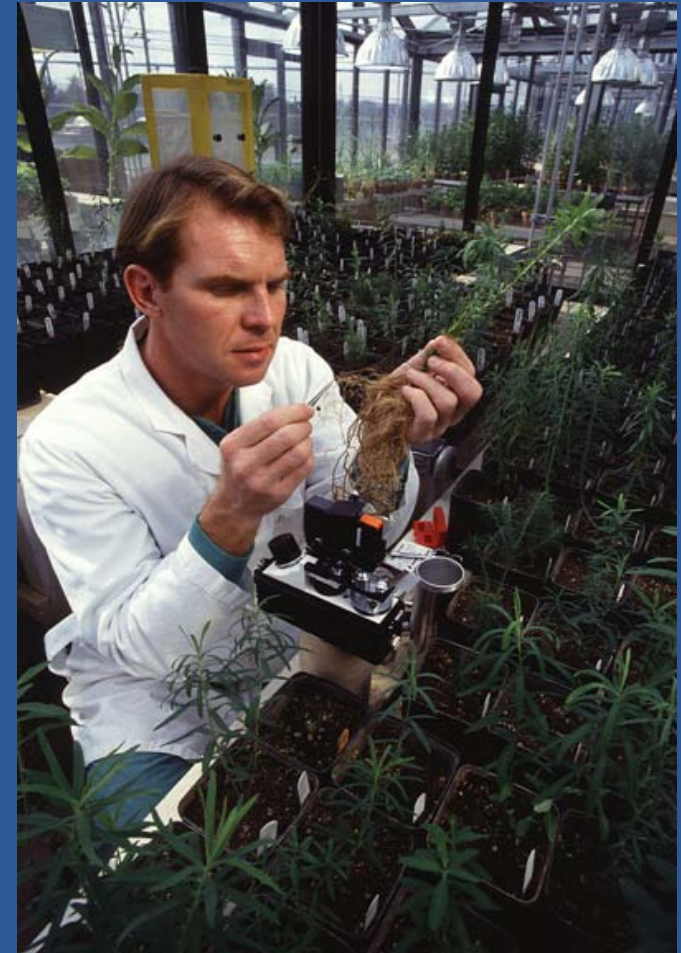


Biocontrol blower available from Koppert



Modified leaf blower

7. Consult often with biocontrol product reps for recommendations



8. Set a regular delivery schedule

The screenshot shows a Microsoft Excel spreadsheet titled "BIOCONTROL RFQ - Microsoft Excel". The spreadsheet is organized into two main sections, one for "Neosienus californicus" and one for "P. persimilis".

Neosienus californicus Section:

Week	Quantity	Price Quote	Shipping Method	Total Cost	Notes
16	150,000/wk				
18	150,000/wk				
20	150,000/wk				
22	150,000/wk				
24	25,000/wk				
26	25,000/wk				
27	25,000/wk				
28	25,000/wk				
30	25,000/wk				
32	25,000/wk				
34	25,000/wk				

P. persimilis Section:

Week	Quantity	Price Quote	Shipping Method	Total Cost	Notes
16	12,000/wk				
18	12,000/wk				
20	12,000/wk				
22	12,000/wk				
24	2,000/wk				
26	2,000/wk				
28	2,000/wk				
30	2,000/wk				
32	2,000/wk				
34	2,000/wk				

The spreadsheet is currently showing row 47, which is empty. The status bar at the bottom indicates "Ready" and the date/time is "9:10 AM 9/20/2017".

- 9. Record keeping, quantities, locations, timing, methods, successes, failures, etc

BIOCONTROL RFQ - Microsoft Excel

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C47

	A	B	C	D	E	F	G	H	I	J	K	L
19	Neosleulus californicus											
20	Week	Quantity	Price Quote	Shipping Method	Total Cost	Notes:						
21	16	150,000/wk										
22	18	150,000/wk										
23	20	150,000/wk										
24	22	150,000/wk										
25	24	25,000/wk										
26	26	25,000/wk										
27	28	25,000/wk										
28	30	25,000/wk										
29	32	25,000/wk										
30	34	25,000/wk										
31												
32	P. persimilis											
33	Week	Quantity	Price Quote	Shipping Method	Total Cost	Notes:						
34	16	12,000/wk										
35	18	12,000/wk										
36	20	12,000/wk										
37	22	12,000/wk										
38	24	2,000/wk										
39	26	2,000/wk										
40	28	2,000/wk										
41	30	2,000/wk										
42	32	2,000/wk										
43	34	2,000/wk										
44												
45												
46												
47												
48												

Sheet1 Sheet2 Sheet3

Ready 9:10 AM 9/20/2017

10. Continual Improvement. Reevaluate and adjust program often

The screenshot shows an Excel spreadsheet with the following data:

Neosienlus californicus					
<u>Week</u>	<u>Quantity</u>	<u>Price Quote</u>	<u>Shipping Method</u>	<u>Total Cost</u>	<u>Notes</u>
16	150,000/wk				
18	150,000/wk				
20	150,000/wk				
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P. persimilis					
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34	2,000/wk				

Final thoughts.....

- Realize that your program isn't a 'copy and paste' proposition, ultimately it's a program customized by you, your staff, and your unique pest challenges.
- Front load biocontrols
- Use biopesticides for population spikes, those deemed to be soft on beneficials

Some sources for biocontrols and information

- Koppert
- IPM Labs
- Biobest
- Plant Products
- Beneficial Insectary
- Vineland Research Center
Greenhouseipm.org



Beneficial Insectary
PROVIDING A NATURAL BALANCE IN PEST MANAGEMENT



vineland
RESEARCH & INNOVATION CENTRE

Recommended Reading....

- [Greenhouse IPM with an Emphasis on Biocontrols Free Download](#). helps greenhouse growers implement biological control (biocontrol) and Integrated Pest Management (IPM).
- [Knowing and Recognizing: The Biology of Glasshouse Pests and Their Natural Enemies, Second Edition](#) - IPM for greenhouse crops, both vegetable and ornamental. Monitoring, sanitation, biological controls, biorational pesticides, insect growth regulators, and disease control methods.
- [Ball Identification Guide to Greenhouse Pests and Beneficials](#)
Comprehensive guide to identifying arthropod pests and their natural enemies on crops grown in U.S. greenhouses
- [Biocontrol in Protected Culture](#) - Reference for biological control measures in greenhouses, shadehouses, and other protected environments.

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