

Introducing Biological Control into Traditional Production



1 Title Page Wednesday, February 14, 18




2 gardens alive! farms - Sims NC Wednesday, February 14, 18




Employed January 1986 to March 1995

Pittman Nurseries - Kingston NJ Wednesday, February 14, 18

Harvest Moon Nurseries 1995-2010







4 Harvest Moon Nurseries - Lawrenceville NJ Wednesday, February 14, 18





5 Early experiences with BCAs - Circa 2000 Wednesday, February 14, 18

Medford Nurseries - Medford NJ Circa 2010 Wednesday, February 14, 18





7 NCN Circa 2016 Wednesday, February 14, 18





8 NCN Display Gardens and New House Wednesday, February 14, 18

REASONS TO USE BCAs IN YOUR IPM PROGRAM

It's just plain Cool!!!! Come on! Bugs hunting and eating other bugs?? Witness a Aphid Stampede from a Chrysopa release just once and you will hooked!

Everyone will have their own reasons, what will yours be?

Organic vegetable farmers and *cannabis* growers have obvious reasons to use BCAs.


North Creek was using them as part of their eco friendly marketing program.

Biggest Reason - Less chemical use equals a better planet...plain and simple. If you can treat a pest problem with a BCA, why wouldn't you?

9 Reasons Wednesday, February 14, 18

DETERMINING IF BCA'S ARE RIGHT FOR YOUR OPERATION

Crops under cover – Propagation Operations, Vegetable Growers using High Tunnels or Greenhouses, Annual and Perennial Growers



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Are BCA's right for you?
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DETERMINING IF BCA'S ARE RIGHT FOR YOUR OPERATION

Smaller Nurseries – NCN totaled 4 acres under cover; more economically feasible

Quick Crop Turnover – Quick crop turn around will mean your crops are getting the most out of your BCA applications ; staying with the crop for the life of the production cycle. The longer the crop cycle, the more of a chance they will disperse away from your intended target crops.


Can be used in larger operations...results to follow in 2019!!!

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COMMITMENT

Not something to go into half hearted, be calm and stay committed to your plan.

Don't panic during an outbreak and spray, spray, spray.



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Commitment
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COMMITMENT

Mistakes are going to occur, learn from them and move on. The same process occurred during your education using chemical controls.

Management and Production Teams need to be totally committed to the plan as well. These are usually the first to present kickback to BCA's in a program. Fight the good fight for your Army!!!

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Commitment continued...
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GAIN SOME KNOWLEDGE

Sales Reps – Great source for getting started. Will visit site and recommend how to get started. Usually will visit your operation for free.

IPM Consultants – Suzanne Wainwright , Buglady Consulting. Same as above, will visit site and make recommendations. But fees will be involved, but are well worth the investment.

Universities, Professional Organizations, other Growers, etc...


Internet – BCA Supplier Websites, Green Methods website is very good

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Knowledge
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KEYS TO GETTING STARTED

SCOUTING

- The most important part of any successful IPM Program and even more so when using BCA's.



- Should be a regular, consistent process. The more data you collect, the more accurate your forecasting will be.

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Scouting
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KEYS TO GETTING STARTED

SCOUTING continued...

Early detection of pest is crucial for good results when using BCA's.

Don't forget to scout incoming materials as well.



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Scouting continued...
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KEYS TO GETTING STARTED

continued...

SCOUTING continued - Look for signs of your Army at work, Aphid mummies, dead Mites or eggs, or even adult or immature stages of the BCA's themselves.



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Scouting continued...
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KEYS TO GETTING STARTED

continued

CHEMICAL USE

Very few operations are strictly biological and chemicals will be used in addition to BCA's to control insect pests.

BCA's are living organisms - How do these chemicals affect their eating, breeding, and reproduction? You are trying to build up a breeding population within your crops. Chemicals will affect this.



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Chemical use
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KEYS TO GETTING STARTED continued

CHEMICAL USE continued...

Chemical Label – Most now list any **known** adverse effects that the chemical will have on BCAs. It is the unknown effects that are a problem....most only address mortality.

BCA and Chemical Supplier Websites– Most will have some type of chart or information for you to reference regarding known effects

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Chemical use continued...

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KEYS TO GETTING STARTED continued

CHEMICAL USE continued...

Start soft and stay soft as long as possible, whether it be fungicide or insecticide. Try to use Biologicals whenever possible.

Spot sprays instead of farm wide sprays will protect your BCAs on other crops from chemical exposure and save you money.

If weekly scheduled sprays are SOP and disease and pest pressure is very low to non existent, consider skipping a week or two.

Pest pressure will dictate to you when to cry Uncle and resort to chemicals to get your issue under control before reintroducing BCAs back into the crop.

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Chemical use continued...

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KEYS TO GETTING STARTED continued

WEED AND DEBRIS CONTROL

Soil, algae, weeds, and trimming debris all serve as homes where insects can live, feed, and reproduce.

START CLEAN, WORK CLEAN, FINISH CLEAN!!!



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Weeds

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THINGS TO KEEP IN MIND WHEN USING BCAs

Proactive vs. Reactive

It is almost impossible for BCAs to get control of an outbreak once one has started in a crop.

Very important to try to get BCAs into the crops at 1st signs of a pest, if not sooner.

If you can spot sooty mold from Aphids, or webbing from Mites, you need to improve your Scouting and shouldn't expect BCAs to work.



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Proactive vs. Reactive

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THINGS TO KEEP IN MIND WHEN USING BCAs continued...

Proactive vs. Reactive continued...

Consider an application of BCAs as early in the Production cycle as possible as a preventative measure.

Two examples used at NCN : Breeder Sachets and Beneficial Nematode Applications



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Proactive vs. Reactive continued...

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THINGS TO KEEP IN MIND WHEN USING BCAs continued...

Proactive vs. Reactive continued...

Bulk BCA applications on newly planted crops : Neoseiulus cucumeris and Stratodolops mites (Hypoaspis) were applied to newly stuck or planted material.



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Proactive vs. reactive continued...

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THINGS TO KEEP IN MIND WHEN USING BCAs continued...

Ordering, Receiving, and Releasing BCAs

Data from Scouting Reports will help in determining weekly BCA needs.

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Ordering, receiving, releasing

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THINGS TO KEEP IN MIND WHEN USING BCAs continued...

Ordering, Receiving, and Releasing BCAs

Check weekly deliveries promptly and release as soon as possible. Many BCAs have very short shelf lives.

Releases should be timed for early or late in the day, or during overcast conditions.



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Scouting Report Data

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THINGS TO KEEP IN MIND WHEN USING BCAs continued

Ordering, Receiving, and Releasing BCAs continued...

Be judicious when applying BCAs, a little goes a long way! Use Scouting Report data to help with fine tuning your applications.

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Scouting Report Data

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THINGS TO KEEP IN MIND WHEN USING BCA's continued

Banker Plants

Banker plants are used to provide a food source and a place of safety for beneficial insects.

Need to be started early fall for late winter/early spring ready date. Plants should be flowering at the time of your BCA releases.

Examples : Mullein (Verbascum) – Dicyphus loved these!



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Banker plants

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THINGS TO KEEP IN MIND WHEN USING BCA's continued

Banker Plants continued...

Purple Flash and Alyssum Hanging Baskets – Fantastic; easy to maintain combination that will attract and maintain a healthy Orius and Hover Fly population.



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Banker plants continued...

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COSTS OF INCORPORATING BCA's IN A IPM PROGRAM

Initial Costs:

Initial cost are probably going to be more expensive than chemical solutions due to the fact that there is a learning curve to deal with.

Once a program is in place, costs should begin to decrease as a healthy predator population is maintained.

Long Term Savings and benefits:

Chemical use will decrease. IPM equipment use will decrease. Overtime will decrease. Insurance rates may decrease.

Risk of a chemical accident is decreased. No one has ever died from overexposure to Green Lace Wing Larvae.

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Costs

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COSTS OF INCORPORATING BCA's IN AN IPM PROGRAM continued...

Long Term Savings and Benefits continued...

DEP chemical violations will end, or at least the threat of them.

Continued chemical use will eventually lead to insecticide proof pests. There is no adaptability to predators that the predators can't keep up with.

Ultimately, you are going to have to decide whether the cost is too high.

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BCA EFFECTIVENESS vs. CHEMICAL CONTROLS

Acceptable Pest Levels – Is there really such a thing to a grower?

Predators need prey or an alternative food source for a healthy population, so some level of pest in a crop is needed.

To the end consumer in a retail setting, low pest levels are not an issue as long as the end product is showing no visible signs of damage.

To a grower in any situation, insects are not good to see on your incoming material.

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Effectiveness

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BCA EFFECTIVENESS vs. CHEMICAL CONTROLS

Customer complaints at NCN for insects or insect damage was minimal.

Most complaints turned out to be our BCA's on the crop, not insect pests.

100% control is possible, but is rare and short lived. The BCA's will not stay with a crop if it is devoid of a food source.

At NCN we were able to go for weeks without applying insecticides with very clean crops, so it is possible

Excellent control is possible when BCA's are used preventively, correctly, and consistently. If any one of these three criteria are not met, then success will be limited.

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Effectiveness

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SUMMARY

Know your reasons for going with BCA's

Determine if they are a good fit for your operation, or a phase of your operation.

Gain some knowledge.

Be committed to your plan, be consistent with your procedures.

Scout, scout, scout!!!!

Softer chemicals.

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Summary

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SUMMARY

Start clean, work clean, finish clean!!!

PROACTIVE vs. REACTIVE!!!!!!!!!!!!

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Summary

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