

# Organic control and management of tarnished plant bug.

## Final Report for FNE00-304

Project Type: Farmer

Funds awarded in 2000: \$2,285.00

Projected End Date: 12/31/2000

Matching Non-Federal Funds: \$1,100.00

Region: Northeast

State: New York

Project Leader:

[Michael Glos](#)

Cornell University

## Project Information

### Summary:

Results from one year were very mixed. Some week's one spray seemed to depress populations" while the next it would not. None of the sprays appeared to be, effective' at controlling TPB. But as in all research this left us with new questions and ways that we could potentially use and evaluate the sprays better. Each spray has a different mode of action and it wasn't until we were well into the experiment that we fully understood how each one works. Beauveria bassiana is an insect specific fungus. It is important to apply it well in advance of the presence or at, least outbreak of the pest. It would best be applied two weeks prior to flowering. Neem is an insect growth regulator and repellent. It is not designed to kill the insect but rather restrict its growth and repel it. This also needs to be used before, an outbreak. Nettle tea, as we also found out. 1-atte.r is mi:linly a deterrent but its whole mode of action is not known. Spraying weekly starting very early has anecdotally found to be effective with lettuce. Sabadilla is the only pesticide we used that is designed to actually kill TPB., But as we found it is not always very effective. Its effectiveness is also limited because TPB is highly mobile and your crop can be recolonized in a matter of days by other TPB. Sabadilla' is also no longer or legally registered. .

After a thorough examination' of a Season's worth of data we came to several conclusions.

- Diverse un-managed areas had high populations of TPB but also the most diverse community of insects including beneficial.
- Plant species were more important than the height in mowed areas. Areas of clover had high TPB populations while the

population was low in pure grass stands.

- TPB counts were highest in crops during and just following flowering. .

Mowing appears to reduce TPB but to, have an effect on the crop it is suspected that a very large area (300' + to the crop) would have to be mowed because: T.PB is so mobile

- [Final Report](#)

## Introduction:

We are a diverse farm that raises a mixture of crops and meat. With free range poultry we raise, process and direct-market 800 broiler chickens and 50 turkeys. We also raise 250 layers (for eggs) on pasture. We pasture pigs for meat and aiding in our production of high quality compost for field and greenhouse use. . In . addition . we also raise a small number of young beef cattle. We intensively cultivate about an acre of vegetable, herbs, and flowers. These are sold fresh, dried~ and as valued added products on farm, at a local farmers market; and at select seasonal festivals. All fieldwork is done by hand and our team of draft' horses and ponies. Karina is on the farm full time• .. and I additionally work in 'Agricultural Research and Extension at Cornell University • . We own. • 100 acres of open land" pasture,. • and woods. This includes• approximately 20 acres of pasture, an acre of cultivated land, and 75+ acres of managed woodland.

## Project Objectives:

The goal of the project was to learn about Tarnished Plant Bug and evaluate organic management and control of it.

## Research

### Materials and methods:

Our first approach involved using commercially available•' and homemade preparations. Historically Sabadilla has been the most common organic control but we had heard conflicting reports on its effectiveness . and availability. From researching .what was available and what had been used we came up with four different sprays: Beauveria bassiana (Naturalis L),' Neem (Neemix 4.5), Nettle Tea. (homemade), and Sabadilla (Necessary Organics Sabadilla Dust). In a plot of potatoes we sprayed each spray four times on one-week intervals. We began before flowering when, we started noticing TPB and finished three weeks following flowering. We did insect counts just prior to spraying and the following day.

Our second approach was through habitat modification. We monitored TPB (with traps, visual counts, and sweep nets) over the season to learn how the population changed in response to mowing of headlands, mowing of cover crops, cultivation of

weeds and cultivation of cover crops. We monitored populations in the crop and in the modified areas. We attempted to see if habitat modification could "have a significant effect on controlling TPB. We were interested in whether disturbing TPB would depress the population or just cause it to move to the crop and thus be a worse problem. It was our hypothesis that we could manage headlands and weeds so as to provide a "sink" for TPB rather than a source. We didn't want to actively breed TPB but at the same time we needed to provide an alternative place (other than our crop) for TPB to go.

#### Research results and discussion:

Results from one year were very mixed. Some week's one spray seemed to depress populations" while the next it would not. None of the sprays appeared to be, 'effective' at controlling TPB. But as in all research this left us with new questions and ways that we could potentially use and evaluate the sprays better. Each spray has a different mode of action and it wasn't until we were well into the experiment that we fully understood how each one works. Beauveria bassiana is an insect specific fungus. It is important to apply it well in advance of the presence or at, least outbreak of the pest. It would best be applied two weeks prior to flowering. Neem is an insect growth regulator and repellent. It is not designed to kill the insect but rather restrict its growth and repel it. This also needs to be used before, " an outbreak. Nettle tea, as we also found out, is mainly a deterrent but its whole mode of action is not known. Spraying weekly starting very early has anecdotally been found to be effective with lettuce. Sabadilla is the only pesticide we used that is designed to actually kill TPB., But as we found it is not always very effective. Its effectiveness is also limited because TPB is highly mobile and your crop can be recolonized in a matter of days by other TPB. Sabadilla is also no longer or legally registered. .

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#### Research conclusions:

Concerning the sprays, we plan to try the sprays again but by themselves, on larger areas, and timed to correspond with their particular mode of action. Because Sabadilla is no

longer produced and very broad spectrum we are discontinuing its use. We encourage other growers to experiment with commercial and homemade sprays defining how to use them and what crops they are effective on. Concerning habitat modification we will focus on not providing unnecessary hosts or habitats. This past year we tried to keep in field weed hosts to a minimum. We also used more succession planting and mowed down plantings before they went to flower. This worked well for dill and cilantro- both crops we had had severe damage with in previous years. Despite very high population this past year we were able to have weekly harvests through the season.

## **Participation Summary**

# Education & Outreach Activities and Participation Summary

## **PARTICIPATION SUMMARY:**

Education/outreach description:

I spoke at the NQFA-NY winter" conference, the regional NOFA summer conference, in Included is an article published in Extension vegetable newsletter. in Syracuse, NY and at Amherst, MA in August. the local cooperative

## Project Outcomes

Assessment of Project Approach and Areas of Further Study:

### Potential Contributions

Brian Caldwell, local vegetable extension specialist provided us with information and helped us plan and carry on the project. Michael' Hoffman, researcher and professor at Cornell University provided us with information concerning the lifecycle of TPB and proper design of our experiments.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



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