

FINAL REPORT – SARE GRANT

FNE 99-258

Non-Chemical Methods

for Control of Tarnished Plant Bug in Strawberries

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2. The Goals Of This Project.

Tarnished Plant Bug (TPB) is an active feeder on flowers of every sort, and has a devastating impact on strawberries. When the nymph of TPB feeds on the just opened strawberry blossom, it interferes with the pollination of that fruit. TPB damaged fruit are button shaped and seedy, sometimes suitable for jam but frequently of no value at all. It is common for the early fruit to be fine, but the later 1/3 to 1/2 of the crop to be ruined. The hot spring and early summer weather this year exacerbated TPB damage.

The standard control for TPB is Malathion, an organophosphate and a potent inhibitor of the nervous system. Many farmers would like to learn of a method to control TPB without having to work with this compound, or as a part of an effort to grow strawberries organically.

3. Update the information on your farm since your project started.

I continue to grow organic strawberries, as of spring, 2003. I will harvest from a 1/2 acre field that is in a part of the farm where I have never grown strawberries. TPB has varied in severity of attack on my crop but never has been adequately controlled to give economic justification to the use of organic methods for this crop. I have not replanted strawberries this spring.

4. Describe your cooperators and their roles in the project.

My cooperators in this research have been David Marchant of Riverberry Farm in Farifax and Gerald Croziet of Berry Creek Farm in Westfield. Both David and Gerald tried varied methods of non-chemical controls and shared their TPB counts with me to report. David had discontinued organic strawberry production at his farm, while Gerald continues to grow 1 acre or so.

5. Tell us what you actually did in your project and how it was done.

We tested four different methods. We tried floating row covers, garlic sprays, vacuuming, and releases of the predator wasp *Anaphes iola*.

6. Describe your results and accomplishments.

The floating row cover encouraged earliness, which in itself is a good technique to limit TPB damage. On later varieties, though, there seemed to be enough TPB emerging from the mulched ground under the row cover to mess up the fruit badly.

Garlic barrier spray, although labeled for TPB, had no effect of the TPB population. Perhaps it needs to be applied more frequently, beginning very early in the season, and at higher rates. But in our trials it was ineffectual.

Vacuuuming showed promise. Using a backpack gas powered vacuum over the row, TPB counts would drop to an acceptable level. The problem was that it would rise back up again quickly. Perhaps daily usage would make a difference.

The release of the predatory wasp *Anaphes iola* brought TPB counts down, but not low enough to prevent major economic damage to the crop. Yields certainly would have been worse without their release, but this partial control comes at a high cost, and makes this a questionable option.

As of Spring 2003, this option is no longer available as the lab producing this beneficial insect has quit.

7. Describe any site conditions or conditions specific to your farm and this growing season that may have affected your results.

Most farms that grow strawberries wish to grow them year after year. Very common is for an organic grower to have a great year or two before TPB becomes a limiting factor. Other crops and weeds on a diversified organic vegetable farm provide breeding feeding sites for TPB.

8. Describe your economic findings, if any. This would include changes in expenses or net farm income triggered by the project.

Organic strawberries have some inherent challenges economically, not the least being TPB. Current organic methods have yet to control this insect by killing the nymphs at the time that the blossoms are susceptible to feeding damage. The latest strategies, as of Spring, 2003, are the use of row covers to push the earliness of the bloom ahead of the crest of the TPB nymph population, and the use of *Beuravia bossiana* as a biocide against the nymphs. Neither of these techniques are consistently successful. Organic strawberry production is a valuable crop in a mix on a farm that needs early summer income, wants to build a reputation, or has a CSA to satisfy. The higher prices for OG strawberries are not quite high enough to compensate for the loss of production to TPB.

9. Say whether the results from your project generated new ideas about what is needed to solve the problem you were working on. What do you think is the next step?

We both have concluded that the best options for TPB control in organic strawberry production are cultural. Very thorough weed control, and very careful mowing of the field edges help limit TPB food sources before blossoming, and help suppress their numbers. Crop rotation, including moving the crop as far as possible on the farm, is essential. Also to consider is going in and out of strawberries over a period of years rather than cropping them every year. TPB remains the biggest stumbling block to being able to crop strawberries continuously as do our chemical using neighbors.

10. Explain why you plan to continue to use the practice you investigated, or conversely why you are not going to. If you plan to revise your approach in light of what you learned, describe those revisions.

None of the methods we tested during the 2000 growing season were adequate to repeat. I have move on to the use of b.b. in the form of Naturalis L an OMRI approved fungal spray. I will also continue with soil building and weed control practices as a deterrent to TPB.

11. Explain what you did in your outreach program.

I spoke at a Twilight meeting on Strawberries sponsored by the Vermont Vegetable and Berry Growers Assn. and hosted by Jake Guest of Killdeer Farm in Norwich in the Summer of 2000. I GAVE AN UPDATE OF THIS RESEARCH AND RECEIVED SOME IDEAS AND FEEDBACK FROM OTHER ORGANIC AND CHEMICAL USING GROWERS. I PUBLISHED ARTICLES IN THE NOFA-VT NEWSLETTER AND IN THE NATURAL FARMER THAT INCLUDED REPORTS OF THIS RESEARCH. I AM FREQUENTLY CONTACTED BY OTHER ORGANIC STRAWBERRY GROWERS STILL AS A RESULT OF THIS WORK, AND CONTINUE TO PROVIDE CONSULTATION TO THEM.