

FNE 95-92

1995 FARMER/GROWER GRANT PROGRAM

NORTHEAST REGION SUSTAINABLE AGRICULTURE RESEARCH & EDUCATION
PROGRAM

FINAL REPORT, APRIL 15, 1996

PROJECT TITLE: Using pastured chickens for the control of
Colorado Potato Beetle.

PROJECT LEADER: Joseph Klein

ADDRESS: Littlewood Farm
RFD 1 Box 1400
Plainfield, VT 05667

TELEPHONE: 802-454-8466
BEST TIME TO CALL: 7-8AM

1. Goals

The control of Colorado Potato Beetles (CPB) using organic methods has been a problem on this farm. We use a biological spray (bT) on the larval stages, but usually have an adult population that survives to breed again and cause moderate to severe damage to the potato foliage. I use a liquid rotenone to control the latter outbreaks of CPB, but I have not been happy with the effectiveness of this spray as a control nor with its toxicity to people. Our yields are below average and the profit from all the other work that goes into this crop is reduced. The goal of this project was to seek an alternative to rotenone sprays that would increase the profitability of growing potatoes organically. The effectiveness of chickens in controlling the later population outbreaks of CPB was evaluated. I attempted to determine the right ratio between the number of chickens and the area of potato field.

2. Farm update

I have been farming organically since 1969, and have been on this farm since 1987. We have 12 acres of tillage, mostly sandy loams, and last season raised 5 acres of vegetables and 1 acre of strawberries. I have raised chickens for home egg and meat use for years, and am now ready to add them to our farming operation. I farm about 3/4 time and derive about 1/3 of our family income from farming. In 1996, I will be planting about the same acreage, raising fewer pullets and about 300 meat chickens.

3. Who cooperated in the project & what were there roles.

Joseph Klein, owner and operator of Littlewood Farm. I provided the barn for brooding the chickens, the site to grow the potatoes, and was responsible for the site preparation, planting,

cultivation, hilling, and spraying of the potatoes in this trial. I entered data from this trial into a computer database, and prepared a report on the project for publication.

Mark Howard assumed day to day responsibility for the raising of the chickens, and their management. He moved their fencing and house. He is the Poultry Manager at Littlewood Farm.

Paul Bales, who is responsible for maintenance at Littlewood Farm, built the mobile chicken house.

John Hagerty participated in the design of the scientific experiment and the interpretation of the results.

4. Detailed description of project

During the summer of 1995 we did a study of using pastured chickens for the control of Colorado Potato Beetle. Our potato planting at Littlewood Farm was about 1/2 acre. Half of this field was visited by pastured pullets, being moved along at about 150 feet every 7-8 days. The other half of the field was used for comparison.

We brooded 100 pullets of the Black Australop variety, obtained from Murray McMurray. We built a mobile pullet house to provide them with shelter, grain and water. The wagon was moved weekly on a strip of pasture parallel to the potato field (which had a preliminary treatment with bT), and the birds were allowed out into an area of the field to graze for CPB. They were fenced in with electric mesh fencing and a solar fence charger. About 3/4 of the pullets remained in the fenced area at first. This percentage increased as the birds grew. The effectiveness of chickens in controlling the later population outbreaks of CPB was evaluated by performing counts of adults and larvae before and after the chickens had spent one week fenced into an area. They were fenced into an area that had three rows of potatoes 5 feet apart, plus a strip of pasture 10 feet wide, with a total sq. footage of 3125. The fenced in area was 3/5 potato field and 2/5 pasture. We found this ratio to be right between the number of chickens and the area of potatoes and pasture, if the fence was moved every seven or eight days. If left longer, the chickens caused damage to the potato vines.

This study attempted to address the problem of the control of Colorado Potato Beetles (CPB) using organic methods. We used a biological spray (Foil bT, applied at the rate of 2 qt. per acre per week) on both the study rows and the control rows to control the early larval stages. The pastured pullets were released to manage the adult population that survives to breed again, usually leading to a build up of adults and larvae that cause significant defoliation.

5. What were the findings? Unexpected results?

We found that the pullets caused a very significant reduction in the number of adult CBP, reducing them by 75-85%. Reduction of the larvae was less dramatic, about 40%. This was still very helpful in keeping the foliage on the potatoes. I think this was because the movement of the adults attracted the attention of the pullets more. In the control rows, where bT was sprayed but the pullets did not graze, the adult and larvae populations built up to the point that I sprayed rotenone to prevent defoliation. The rows where the chickens were looked better overall, except the section where they were allowed to remain for 14 days later in the season. There was damage to the potato vines in this section. The pullets really needed to be moved every 7 days. Another potential problem was the fact that the pullets were small enough to walk through the fence for the first two weeks of the experiment. If the potatoes had been planted next to crops they could have damaged, it would have been a problem.

6. Is there any site specific information relevant to this project?

I believe the results of this experiment are not particularly site specific.

7. What were the economic findings?

The lack of defoliation of the potatoes certainly helped the crop yield.

Our potato yield and quality were not great this year, both in the pullet exposed area and the control area. I attribute this to the drought during the 1995 growing season. The money from the sale of the pullets in the fall covered the costs of the labor and feed to raise them.

8. Have the results from this project generated any new ideas about what is the next step ?

In the future I would get the pullets into the field earlier than we did this time. At the July 10th release date, the potato vines were too high for the pullets to reach the uppermost parts. The vines started to come down the following week, and the effectiveness of the pullets in finding and destroying the bugs was increased. If they had gotten there sooner, the birds would have been more effective on that first patch. I think I should have gotten the young birds two weeks earlier, and gotten them out at 6 weeks of age on the 15th of June.

9. Will you continue to use the practice ? Why or why not?

Overall, I think the practice is worth trying again. I think that I will use mature laying hens in the potatoes this season, after training them to the electric fencing. This will enable me to get poultry in the potato field earlier, and hopefully increase the effectiveness of the control. Older birds will be less likely to get out of the fence. This will be more important this season, as the potatoes will be planted next to carrots.

10. What did you tell other producers?

This system certainly takes management time, in the form of a daily trip with feed and water for the pullets and a once a week move of their house and fencing. I feel that this time was rewarded with much better CPB control than with BT alone, and this system spares the grower the hassle of repeated rotenone sprayings.

11. What was the out reach program? Send copies of articles.

I published a report of the findings of this study in NOFA NOTES, the news letter of the Northeast Organic Farming Association of Vermont, in the Winter, 1996 issue.

12. Photos or slides, with descriptions.

Some are enclosed. I have some more on an undeveloped roll, which I will send in soon.