

"Final Project Report to the NYS IPM Program, Agricultural IPM 2003-2004."

1. Title:

Evaluation of Potato Varieties for Resistance to Potato Leaf Hopper in Eastern New York

**2. Project Leader(s):**

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**3. Cooperator(s):**

Dave Hambleton, Sister Hill Farm, Dutchess County and Sandy and Paul Arnold, Pleasant View Farm, Washington County, Prof. Donald Halseth, Cornell University

**4. Type of grant:**

Non Funded - Cultural methods

**5. Project location(s):**

This work occurred in Washington and Dutchess counties. Findings may be applied throughout the Northeast.

**6. Abstract:**

Potato leafhopper is one of the insects organic vegetable growers have a difficult time controlling. During the summer of 2002 potato leafhoppers were devastating to organic potato production in eastern New York. Interest in evaluating potato varieties for leafhopper resistance was at its "teachable moment". Seed was obtained from Prof. Don Halseth at Cornell and trials were set up in Washington and Dutchess counties. The trials took place on organic farms and employed normal organic production techniques. The varieties were evaluated in late August. Results showed consistency in most cases although there were a few location differences. Yield and quality evaluations were carried out at the Washington County location. Twilight meetings were held for interested growers to look at and discuss the results.

**7. Background and justification:**

Organic growers have a difficult time controlling potato leafhopper. Growers generally hope the leafhopper populations are not too high which will enable them to have a decent yield. Some years, leafhopper does not arrive till late in the summer and yields are unaffected. On the years when leafhopper arrives early, growers have a serious problem. During the summer of 2002, the leafhopper invasion was especially heavy. Populations were high beginning in June and continued throughout the summer. Leafhopper is one of the insects where there is no good "organic" control. Stinging nettle tea is one of the methods organic growers use to combat this pest but results are sometimes not satisfactory.

**8. Objectives:**

1 - To increase the potato grower's ability to make sound cultural and economic crop decisions.

2 - To evaluate sixteen potato varieties for susceptibility or resistance to leafhopper damage.

## 9. Procedures:

Professor Don Halseth at Cornell was contacted to see if it would be possible to put together a trial to evaluate any varieties differences to leafhopper damage. This would enable growers to make better management decisions on which varieties to grow.

Seed for sixteen varieties, ranging from standards to numbered and unreleased varieties were chosen. Two locations were found, one at Sisters Hill Farm in Dutchess county and the second at Pleasant View Farm in Washington county. The potatoes were planted in early May and evaluated for leafhopper damage in mid to late August.

At the Washington county location, the varieties were evaluated for yield, marketable and taste. The results are listed below.

## 10. Results and discussion:

### Rating Key

1 = little damage

2 = some damage

3 = acceptable

4 = heavy damage

5 = vines dead

Variety	Dutchess Co.	Washington Co	Lbs. Yield/15' row
Salem - Late	4	2.5	8
Rosa - Med	4	4	13
A.D. Blue (S45-5) Med. Early	5	4	16.5
Katahdin - Late	3	3	13
V-18-5 - Med. Late	2	3	2
Red Lasoda - Med	4	3.5	9.5
Reba - Med	5	4	7.5
NY 126 - (T2-2) - Med	2	2.5	6.5
Marcy - Late	2	1	21
NY 121 - Mid-late	5	5	8.5
Prince Harry - Late	1	2	9.5
Keuka Gold - Med. Late	1	3	13
Genesse (NY 72) - Late	3	2	9
Elba - V. Late	2	5	16
Eva - Med	3	3	7.5
Allegany - Late	5	4	5.5

Marcy had the best yield and the most significant resistance to leafhopper damage. AD Blue and Elba had reasonably good yield despite a high degree of leafhopper damage. The top five varieties, evaluated by the Washington county grower were Elba, Eva, NY 126, AD Blue and Katahdin. At the twilight meeting, several people liked individual varieties like Rosa because of the way it looked or tasted, but the choices of the top 5 were surprisingly consistent. AD Blue seemed to hold its blue color when cooked in a microwave - this is an important characteristic since many blue potatoes appear gray when cooked.

Potato scab was a problem particularly at the Washington county location. Talking to Prof. Halseth, he said because of environmental conditions potato scab was a problem

throughout the state, not just on organic farms. According to Prof. Halseth, cropping history and or a dry window when potatoes are setting can influence the amount of scab found on the tubers. He warned a snapshot of one year can be misleading.

Hopefully, this trial can be repeated again in 2004. It is felt, this information can greatly aid organic growers make better management decisions to improve both infield production and economic returns.