

THE GREEN PEACH APHID AND LEAF ROLL OF POTATOES

R. F. Harwood
Entomology Department, Washington State University

The green peach aphid, Myzus persicae (Sulzer) is the proven vector of leaf roll virus that affects potatoes. Control of this disease is a complicated problem that is best achieved by eliminating infective volunteer potatoes, planting virus-free seed, and controlling the aphid vector. Development of potato varieties less affected by leaf roll is another approach. Vector control alone can seldom be successful because brief feeding periods are sufficient to transmit the virus, and the aphid often shows restless feeding behavior, feeding for short periods before passing on to other plants and ultimately settling down.

Overwintering of the green peach aphid can occur on a variety of weeds if winter conditions are not too severe. However, normal cold weather survival occurs in a cold-resistant egg stage on peach and related fruit trees. In most cases peach trees provide the main source of aphids that invade potato fields in the spring. Insecticidal control of aphids concentrated on peach trees, as well as insecticides to control them as effectively as possible on potatoes, provide the best means possible for reducing populations of this vector. Because peaches and potatoes are involved, and aphids migrate some distance, to be effective a community-wide cooperative effort is required.

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A. L. Mattig, Supervisor
Plant Industry Division, State Department of Agriculture

The Legislative Council Agriculture Committee has presented, and had adopted by the Legislative Council itself, proposed legislation to enable counties to more effectively control and prevent the spread of horticultural pests and diseases.

The proposed legislation will set up, through the County Commissioners, a five-man board to deal exclusively with eradication of pests and diseases within the borders of the county. The committee will consist of the Inspector-at-Large of the horticultural district in which the county is located, one member shall have at least a practical knowledge of horticultural pests and diseases, and three members shall be residents of the county, shall own land within the county and shall be engaged in the primary and commercial production of a horticultural product or products. In addition, the chief county extension agent, or a county extension agent appointed by the chief agent, shall be a non-voting member of the board.

Each horticultural pest and disease board shall have the following powers and duties:

(1) Receive complaints concerning the infection of horticultural pests and diseases as provided by section 7 of this act.

(2) To inspect or cause to be inspected any parcel of land within the county for the purpose of ascertaining the presence of horticultural pests as provided by section 7 of this act.

(3) Order any landowner to control and prevent the spread of horticultural pests and diseases from his property, as provided by section 8 of this act.

(4) To control and prevent the spread of horticultural pests and diseases on any property within the county, and to charge the owner for the expense of such work in accordance with sections 8 and 9 of this act.

(5) To employ such persons and purchase such goods and machinery as the board of county commissions may provide.

(6) To adopt, following a hearing, such rules and regulations as may be necessary for the administration of this act.

Power of entry is given to the board to determine the extent of infestation.

Property owners will have the right to a hearing before the board on any charge or cost for which such person is alleged to be liable under subsection (2) of section 8.

Section 8, in part, provides that any amount charged to owners of land must be paid within sixty days from date billed, and if not paid within sixty days, a ten percent penalty surcharge will be charged, and together shall, for purposes of collection, become a tax lien on the property to be collected by the county treasurer.

Sufficient operating moneys shall be provided for pursuant to the provisions of RCW 15.08.260 and 15.08.270 which establishes pest control funds from county appropriations.

Upon receipt of a petition signed by one hundred landowners within the county or on its own motion, the board of county commissioners may abolish the pest and disease board following a hearing and a finding that the purposes of this chapter would not be sufficiently served by the continued existence of such board.

The reason for the adoption of a pest and disease board is to eliminate the need of involving the county commissioners with property infestations in addition to all the numerous duties that a county commissioner's board has. This legislation will also eliminate the need of constant prosecuting attorney approval for each action since county commissioner boards are very reluctant to act without specific legal assurance.

The board will only be entitled to disinfect. The need for removal of personal property will still be required to go through the courts and be accomplished through court order.

The board in each county will be comprised as presented. Counties who wish to consolidate for this purpose may do so by including each of the boards in a combined meeting, thus eliminating the restriction of county boundaries.

Enactment of this legislation should speed the process of pest control and/or eradication from any given area.

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Donnie M. Powell

The green peach aphid, Myzus persicae (Sulzer), is one of the most destructive insects of potatoes, sugarbeets, beans and cruciferous seed crops in the Columbia Basin. It causes direct feeding damage to the young leaves of peach trees in the spring, and to untreated potatoes in summer, but the most serious losses are caused by virus diseases that it transmits to various crops. This aphid is the principal vector of potato leaf roll, beet yellows, beet western yellows, and yellow bean mosaic diseases.

The peach tree is the principal overwintering host of the green peach aphid in the Columbia Basin. In the spring of 1966, 1967, and 1968, we sprayed all of the peach trees in an area of approximately 275 square miles before winged forms of the aphid migrated to their summer host plants. The spring sprays require critical timing in order to give maximum control of aphids without killing bees that pollinize the blossoms. Spraying was usually done from about March 20 to May 5 with an 18-day respite about April 4, when the bees started to visit the trees.

During each year, weekly aphid counts were made in more than 30 fields of potatoes, and twice-weekly collections of winged aphids were made from 60 trap pans. Aphid counts were also made in potato fields in 1964 and 1965, and a limited number of trap pan samples were taken in 1965.

Three years' data on the peach tree spraying experiment, as determined

from the numbers of aphids taken in trap pans and found in potato fields, showed that the winged population of the green peach aphid available for spring migration was reduced more than 75%. Some reduction in aphids may have been caused by weather conditions. However, results of the experiment show that area-wide spraying of peach trees is a practical and economical means of reducing the numbers of aphids that would otherwise migrate to potatoes and other crops. The suppressive effects of the peach tree sprays also made it possible to obtain much better insecticidal control of the smaller numbers of aphids that became established on potatoes and sugarbeets, thus reducing the spread of aphid transmitted virus diseases.

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Herschel Heilig
Potato Grower, Moses Lake

There is no question about the program being well worth the time and money spent on it. The past three years work carried on by your Potato Commission and W. S. U. have proven this. In fact, they have done such a good job that it cannot be considered experimental any more. That leaves us without funds and personnel to continue or expand the program. I feel that every peach tree in the growing area should be sprayed and sprayed on time. The individual farmer who has these trees in his back yard, whether he be a potato grower or not, just doesn't get them taken care of as he should. I know. I have two or three of them myself. Right at the time they need taking care of we are so busy trying to get our crops planted it is very easy to forget about the peach trees. They probably froze earlier so we won't get any peaches anyway.

As fast as aphids multiply, every one we can get early can count up to thousands during the growing season. They are also concentrated in known areas such as the peach tree where real good kills can be accomplished. I'm sure that this would be by far the cheapest way to good control, if we can just figure out the best method to do it.

It has been suggested that we try to establish aphid control districts such as we have with weeds and mosquitoes. I believe this is fine but should be set up as a basin wide district rather than counties or other smaller areas. It is easy to see the difference in control by just driving from one weed district to another and notice the Canada thistle.

Now nobody else is going to take care of the problem for us voluntarily. It is up to the growers to take the first steps. If we as growers just sit back and wait the aphids will keep right on multiplying. I'm sure if we can get the ball rolling we'll get help from all sides. There are a good many individuals who would be glad to assist, but have no way to initiate any type of program. Let's have all the ideas and suggestions you have, brought up at this meeting and maybe we can put together a workable program which will benefit all potato growers as well as the people with the peach trees in their back yards. At least I'm sure we can't do any harm by trying to better ourselves.