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Written by Wally Richards.

ABOUT THE POTATO/TOMATO PSYLLID

In the season just gone, I have received a number of inquiries from gardeners in regards to their crop failures of potatoes.

In general the first early crops produced well with average to good size tubers but the later main crops, grown through the summer months, did not produce much except for very small pea or marble size tubers. Generally the tops grew well and could be fairly tall, some may have yellowed off and died.

Unfortunately when maturity time came there was little if any tubers worth harvesting. Initially I assumed that the plants had been given too much nitrogen and lacked the balance of potash and phosphate. I also considered the higher level of CO₂ in the atmosphere which does increase vegetation growth.

After talking to potato experts I found that another problem had occurred, an insect called the potato psyllid. This pest has affected many commercial crops to such an extent that in some cases only about 25% to half of the expected yield per acre has resulted, even after extensive spray programs.

Home gardeners in many areas have also ended up with nil returns as they have not been aware of the pest and had not taken any remedial actions.

From a USA University, off the Internet, I have obtained the following information about the pest.

If we know what we are dealing with then maybe we are better able to solve the problem. To start with the potato/tomato psyllid secretes a toxic saliva during feeding that can severely damage potatoes and tomatoes.

Life Cycle

Potato/tomato psyllids pass through three life stages: egg, nymph (immature stage) and adult. The adult psyllid is about the size of a typical aphid and is a member of the insect family known as "jumping plant lice." Adult psyllids are rarely found in Gardens unless collected with a sweep net or knocked onto a cloth placed around the base of the plants. If seen, adult psyllids are striped with alternating dark and light bands.

Eggs are small, 1/32 inch long. They are orange-yellow and supported by small stalks. They are much smaller than the stalked, white egg produced by lacewings, which also are common in Gardens. Psyllid eggs are frequently deposited along leaf margins but may occur on either leaf surface. Eggs hatch in six to 10 days.

Newly hatched nymphs are yellowish but become progressively greener as they develop, undergoing four molts. When almost mature, nymphs are nearly the same color as leaves. Nymphs are flat, elliptical and scale-like.

Nymphs are most numerous on the undersides of leaves but can occur on shaded upper leaf surfaces. They are inactive and seldom can be seen to move about. While feeding, psyllid nymphs excrete small, waxy beads of "psyllid sugar," which resembles granulated sugar. This material may cover leaves during heavy psyllid infestations. The nymph stage usually lasts from 14 to 22 days. Newly emerged adults remain green for a day or so before turning darker.

Psyllids usually are found first on early potatoes or pepper transplants. Throughout the season, adult psyllids move to new plants, becoming most numerous late in the season on

tomatoes. The number of psyllid generations produced during a year is thought to vary from four to seven. However, there is much overlap of the generations after the original infestations become established.

Adults and nymphs feed by sucking plant juices. Feeding by nymphs is especially serious because it brings about an abnormal condition known as "psyllid yellows," a result of toxic saliva injected by the insect. The symptoms on potato and tomato plants are generally similar. Usually the first abnormal condition is a slight discoloration (yellowing or purpling) along the midribs and the edges of the top leaves. The basal portions of these leaves tend to curl upward.

As the condition progresses, the entire plant top changes to yellowish-green or purple-red, and foliar growth is checked. The leaves remain small and narrow and tend to stand upright, giving the top of the plant a feathery appearance.

When the attack comes early in the development of the tomato plant, effects from psyllid feeding may be so severe that little or no fruit is set. Late attack on tomato plants is inclined to cause production of an abnormal number of fruits that never attain a desirable size or quality.

If the attack on potato plants occurs before tuber set, a likely result is the formation of numerous tubers on each stolon. An attack after tubers are partially developed usually results in greatly retarded growth and irregularly shaped potatoes. Potatoes from infested plants may sprout prematurely, even underground before harvest.

Psyllids also occur on other plants in the potato family, such as eggplant and pepper. Damage to these Crops is insignificant.

Because these Insects are so small, damage to tomatoes or potatoes frequently occurs before the problem is detected. It is important to be able to identify potato/tomato psyllids so developing problems can be detected and treated in time. One of the most important means of identification is the psyllid sugar that is excreted by the insect and collects on leaves. Psyllid problems do not occur every season. In some areas of the state, Extension pest alerts provide warnings of psyllid outbreaks.

Homeowners not able to properly identify psyllids may wish to routinely treat susceptible plants. Protectant treatments may be needed from when plants are 6 inches tall until midsummer. Well-established plants with abundant foliage usually can tolerate late season infestations with little yield loss.

Among insecticides available to homeowners, products containing permethrin or esfenvalerate are most effective when used at rates labeled for other potato/tomato insects. Alternately dusts of sulfur can provide control. Regardless, application must be thorough, covering the underside of lower leaves where the insects tend to concentrate. Insecticidal soaps (two percent concentration) may also be useful, although control is more erratic.

Some tomato varieties appear to be partially resistant to potato/tomato psyllids. Increased hairiness of the leaves is reported to make plants less favored by psyllids.

My personal thoughts on this is to try placing about a tablespoon of **Neem Tree Granules** under each seed potato at planting time. When the tops are allowed to grow without further mounding up, then side dress the plants with more **Neem Granules**. You may like to take a further precaution by spraying the foliage, under and over with **Neem Tree Oil** or alternatively **Liquid Sulphur**. The two cannot be used in conjunction as they will cause burning to the foliage.

I was caught out with my later crop and noted that the small tubers that formed did re-sprout in the soil, which according to the above information is a strong indication the psyllids got me too.

Problems ring me at 0800 466464 (Palmerston North 3570606)