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AG FACTS

Potato Insect Pests

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White grubs (fig. 1)(1/2 - 1 1/2 inches long) and **wireworms** (fig. 2)(1/2 to 1 1/4 inches long) can severely damage potatoes (figs. 3 & 4). June beetles (adult white grubs) and click beetles (wireworm adults) are attracted to grasses to lay eggs. Larvae feed on plant roots for 2 or more years before maturing into adult beetles. Surface injury or tunneling in potato tubers is most common in potatoes grown following grassy weeds, hay or pasture. Insecticides often do not give the high level of control required to protect potato tubers. Control of large white grubs is especially difficult.

Colorado potato beetles (fig. 5) overwinter in the soil in fields and field borders. They emerge in the spring and begin feeding on the potato foliage, mating and laying eggs (fig. 6). Tomatoes, eggplant, nightshade and horse nettle are also hosts. Larvae (fig. 7) feed on foliage for 10 days to 2 weeks and pupate in the soil. There may be 1 - 3 generations per year in Michigan, depending on the length of the season. In mid August, most egg laying ceases and adults begin to enter the soil for overwintering. Some adults may be active through October.

Colorado potato beetles have become extremely resistant to insecticides in many parts of Michigan. Consult your local MSU Extension agent for the latest information on resistance problems.

Potato leafhoppers (fig. 8) migrate into Michigan from overwintering sites in the south, usually arriving in May. The potato leafhopper feeds on a wide range of plants, including alfalfa and beans, and may migrate into potatoes from these hosts. There may be 4 - 6 generations per year. Adults and nymphs feed on plant sap and cause "hopper burn" (fig. 9). Foliage turns yellow, then brown, and plants may be stunted and yield reduced. Leafhoppers can be monitored visually or by using a sweep net.

Flea beetles (fig. 10) chew numerous small holes in foliage (fig. 10) and can be especially damaging to young plants. Flea beetles have large hind legs and jump when disturbed. They overwinter in the soil and emerge early in the spring to feed and lay eggs. Larvae feed on plant roots and sometimes injure potato tubers. Summer adults emerge in late July or August and again feed on foliage. Flea beetles can be monitored by direct visual observation of the beetles or their injury.

Green peach aphids (fig. 11) (1/16-inch long, light green) can cause severe foliar injury and transmit virus diseases (fig. 12). **Potato aphids** (1/8-inch long, green or pink) can sometimes also cause foliar injury. Green peach aphids overwinter as eggs on peaches and other stone fruit or perhaps in greenhouses. Potato aphids overwinter as eggs on wild roses and their relatives. The eggs hatch in the spring. After one or more generations on the overwintering host, winged aphids are produced that migrate to a variety of other hosts, including vegetable crops. Winged forms appear throughout the season, especially when the host plant is dying or aphids become crowded. The mother does not lay eggs but gives birth to baby aphids. All of these aphids will be females. Each aphid can give birth to 50 to 100 young and there may be 5 to 10 generations or more per year. In the fall, a generation with winged males and females is produced. These migrate back to overwintering hosts, mate and lay eggs.

Aphids have an extremely high reproductive rate, but are usually held in check by natural enemies (lady beetles, hover fly larvae, lacewing larvae, fungal diseases and tiny wasps: fig. 11). These wasps are harmless to humans but lay eggs in aphids. The wasp larvae develop inside the aphid and eventually kill it. Unfortunately, insecticide or fungicide treatment can sometimes disrupt this natural control and result in aphid outbreaks.

Aphids can be monitored by direct visual observation of plant foliage. Yellow sticky cards or water traps can also be used, but identification is difficult because many harmless aphids and other insects are trapped along with the pest aphids. Insecticides can be used to control aphids, but may not be effective in preventing the transmission of virus diseases. Green peach aphids can rapidly build up insecticide resistance because females reproduce without mating and offspring are genetically identical to the mother.

Cabbage loopers (fig. 13) feed on potato foliage. Larvae move in an inch-worm fashion. Adults (brown and black moths) migrate into Michigan in July or August and lay eggs on a variety of crops, including potatoes. Cabbage loopers should not be confused with imported cabbageworms and the adult, the common white cabbage butterfly. Imported cabbageworms attack only plants in the cabbage family and are not pests of potatoes.

Variegated cutworms (fig. 14) and **spotted cutworms** feed on foliage of many crops and occasionally require treatment to reduce injury. **Black cutworms** can cause both foliar and tuber injury to potatoes. Small larvae tend to feed on foliage; larger larvae burrow into the soil and feed on tubers. Cutworms can be monitored by careful visual observation of foliage and the soil surface under the plants. Pheromone lures and traps are also available for monitoring adult activity. **European corn borers** can attack potatoes, especially early in the season. Larvae tunnel in the stems, causing the terminal leaves to wilt and providing an entrance for infection by a disease called black leg. This injury is not known to cause yield loss.

For insecticide recommendations, commercial growers should consult MSU Extension bulletin E-312, *Control of Insects, Diseases and Nematodes on Commercial Vegetables*. Home gardeners consult bulletin HYG-001, *Home Insect Pest Management Guide*.

10M - 7:93 - TCM - HP - major revision, destroy previous editions. Price 25¢, single copy free to Michigan residents. File 27.325 (Pests).

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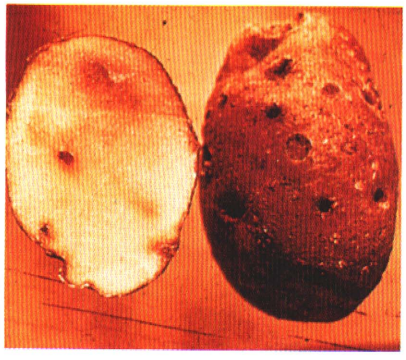
1. White grub larva

2. Wireworm larva

3. White grub damage to potatoes



4. Wireworm damage to potatoes

5. Colorado potato beetle adult

6. Colorado potato beetle eggs

7. Colorado potato beetle larva

8. Potato leafhoppers—adult (left); immatures (right)

9. Potato leafhoppers damage (note yellowish color in 2 rows)

10. Potato flea beetle (inset) and damage

11. Green peach aphids (left): nymphs and wasp parasitoid (right)

12. Potato leafroll disease

13. Cabbage looper

14. Variegated cutworm