Vegetable IPM Field Walk, Wards Berry Farm, Sharon, MA June 28, 2016

MAJOR INSECT PESTS OF POTATO


R.Hazzard, UMass


R.Hazzard, UMass


J. Boucher, UConn


S.Scheufele, UMass

Colorado potato beetles (CPB) are ½ " long by 3/8" wide, oval with a rounded back; each forewing is yellow with five black stripes. Eggs are bright yellow, elongated, laid in groups of up to 20-35 on the undersides of leaves. They may grow darker as they approach hatch. The larva is humpbacked, rusty-red with two rows of black dots along each side of its body, reaching about 5/8" long. There are four larval instars. CPB overwinters in the adult stage in wooded or brushy areas around fields. Beetles walk, or sometimes fly, into host crops to feed, mate, and lay eggs. There may be one or two generations per year. Both adults and larvae feed on foliage of solanaceous crops – primarily potato, eggplant, and tomato – and large populations can completely defoliate plants. Begin monitoring potato fields when foliage emerges, late May to early June, and control when levels reach 0.5 adults, 4 small larvae, or 1.5 large larvae per plant.

Potato leafhoppers (PLH) are about ¼" long, light yellow-green, and can be difficult to detect until their numbers reach high levels, as they fly up when foliage is disturbed or shaken. Nymphs are light green, wedge-shaped and very fast moving, Nymphs can be found on the undersides of leaves, and tend to move sideways, crab-like, on the leaf surface. Adults and nymphs feed by inserting a needle-like beak into the plant and sucking out sap. They also inject a toxin into the plant, which causes yellowing, browning, and curling of leaves. In potato, leaf veins turn yellow, then leaf margins turn brown and brittle, followed by death of entire leaves – a condition known as hopperburn. PLH overwinter in the Gulf Coast states and move north in spring, arriving in New England around mid-June. Monitor by first gently shaking plants and estimating the number of adults flying up. Inspect undersides of leaves and count nymphs. Treat when there is 1 adult per plant or 1 nymph per 3 leaves.

OTHER INSECT PESTS YOU MIGHT SEE


Green peach aphid


Potato aphid


3-lined potato beetle, adult & larva


wireworm

MAJOR DISEASES OF POTATO

Early blight (*Alternaria solani*) affects the foliage and stem of potato. It first appears as small brown to black lesions on older foliage. The tissue surrounding the initial lesion may become yellow, and when lesions are numerous entire leaves may become chlorotic. As the lesions enlarge, they often develop concentric rings giving them a 'bull's eye' or 'target-spot' appearance. Left uncontrolled, the disease can cause severe defoliation and may infect tubers. *A. solani* survives between crops on infected plant debris, soil, other solanaceous host weeds and can be carried on tomato seed and infected tubers. The fungus enters the leaves directly or through wounds. Primary infection can occur on older foliage early in the season, but most secondary spread occurs as the plants age. Actively growing, young tissue and vigorous plants with adequate nitrogen generally do not express symptoms. Infection is favored by mild, rainy weather.

Late Blight (*Phytophthora infestans*) affects potato foliage, stems, and tubers. The pathogen is a fungus-like oomycete that spreads easily via sporangia on wind and rain and is capable of destroying entire fields in a few days. Classic symptoms are large (at least nickel-sized) olive-green to brown spots on leaves with slightly fuzzy white fungal growth on the underside when conditions have been humid (early morning or after rain). Sometimes the lesion border is yellow or has a water-soaked appearance. Brown to blackish lesions also develop on upper stems. *P.infestans* requires a living host to survive, which can include potato tubers. New infections may occur when cool, wet weather conditions favor the disease and when infected inoculum is present. Sources of new infections may be infected tubers that survived the winter in storage or cull piles, volunteers from infected tubers in the ground, or sporangia that are driven northward from the southern areas where the pathogen can overwinter. Using disease-resistant cultivars and taking steps to prevent infections are key to managing this disease.

Rob Wick, UMass

Common scab of potato is caused by three species of Streptomyces: S. scabies, S. acidiscabies, and S. turgidiscabies. These bacteria are present in most potato production areas and generally don't affect yield, but significantly reduce tuber quality. Symptoms are limited to tubers and in some cases stolons and consist of tan to dark brown, circular or irregular lesions which are rough in texture. Scab may be superficial (russet scab), slightly raised (erumpent scab), or sunken (pitted scab). The type of lesion is dependent on potato cultivar, tuber maturity at infection, organic matter content of soil, strain of the pathogen, and the environment. Disease severity is greatest in warm, dry seasons and in light, sandy or gravelly soils.