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CORN

Volunteer Corn in Soybeans and Corn Insect Management

By Ric Bessin

Maybe it was the weather, or possibly the increasing level of herbicide tolerant corn, but last year the amount of volunteer corn in soybeans fields across our state was notable. While there are reasons to eliminate the volunteer corn in soybeans from a soybean agronomic point of view, there are also some compelling reasons to eliminate the volunteer corn from the soybeans from a corn agronomic point of view, particularly in Kentucky. Our typical corn-wheat-soybean or corn-soybean rotations have done a very effective job of managing western and northern corn rootworms at tolerable levels. Substantial amounts of volunteer corn in soybean in our rotations can undermine that management strategy in a few different ways.

First let's review the biology of western and northern corn rootworms in Kentucky. With both of these pests, the female beetles lay their eggs in midsummer at the bases of corn plants (to date we don't have evidence of the soybean variant in Kentucky!), the eggs hatch in mid to late spring the following year. The larvae can only move a short distance in the soil after hatching, generally less than one meter or so, to find a corn root on which to feed. We don't have the 'delayed diapause' in Kentucky, so in the past rotation has been a very effective control. If and when the soybean variant of the western corn rootworm reaches Kentucky, a corn-soybean rotation as a means of controlling western corn rootworm will begin to fail.

Volunteer corn in soybeans begins to wreck havoc on our management as it provides food for the newly hatched rootworm larvae that would normally starve in field that would otherwise have only soybeans. While in itself, this would not cause harm to the soybeans and not directly hurt the corn that would be planted the following year, it would allow for an increasing populations of rootworm beetles. However, later in the summer, those same volunteer corn plants in the soybean field may attract emerging corn rootworm adults for egg laying. This would serve to help to negate the corn-soybean rotation as a management tool for corn rootworms. Eggs would be laid at the bases of the volunteer corn which would hatch the following year when the field would be planted to corn.

The other effect that the volunteer corn could affect insect management would have to do with resistance management and Bt corn. If the volunteer corn is the result of Bt corn parentage, there could possibly be a mixture Bt and non-Bt expressing volunteers which could potentially lead to subleathal exposure of primary or secondary pests to the Bt toxins. This could thwart resistance management efforts with our structured refuge strategies.

So, from a corn pest management perspective, it makes sense to eliminate the volunteer corn from soybeans in a timely manner.

FRUIT CROPS

Peach Leaf Curl Control Program Begins Now

By John Hartman

Peach leaf curl disease, caused by the fungus *Taphrina deformans* occurs on peaches, apricots, and nectarines in Kentucky commercial orchards as well as in home landscapes. This disease has frequently been observed in Kentucky peach orchards during the past two growing seasons. A similar, but less common disease, plum pockets, caused by the fungus *Taphrina communis*, occurs on plums. These two diseases are easy to control with a single fungicide application, but a spray needs to be applied now or sometime this winter, while there are no leaves on the trees. In most Kentucky peach orchards, leaves have already fallen or will soon fall.

Symptoms. Peach leaf curl is easily recognized in late spring by the thickened, folded, puckered, and curled leaf blades (Figure 1). These symptoms may be present on the entire leaf or just on parts of the leaf. Infected leaves or parts of leaves soon acquire a red or purplish coloration, making them especially conspicuous. In some cases, nearly every leaf on a tree may be infected. The diseased areas develop a powdery gray coating (fungal spores) and leaves may then turn brown (Figure 2), wither, and drop from the tree. Less commonly, peach leaf curl can cause fruit symptoms resulting in irregular, raised areas on the fruit surface (Figure 3). Yearly defoliation resulting from peach leaf curl can seriously weaken the trees.

Figure 1. Curled, wrinkled diseased peach leaves.

Figure 2. Peach leaf curl with necrotic leaves.

Figure 3. Peach leaf curl fruit symptoms.

Trees free of disease will bear better crops and withstand other diseases and environmental stresses more successfully.

Plum pockets disease symptoms are very obvious; infected fruit become distorted and much enlarged (Figure 4). With spongy or hollow centers, these malformed fruits are sometimes referred to as "bladder plums," "mock plums," or "plum pockets." Deformed fruits eventually turn brown or black and fall from the tree. Leaves and tips of plum pockets-infected shoots appear swollen and are often twisted and curled.

Figure 4. Plum pockets; note healthy fruit on right (C. Kaiser photo).

Disease spread. Spores produced on infected leaves in the spring and summer are spread to all parts of the tree by wind and rain and spores of the fungus, in a different form, become lodged under the bud scales and rough bark. The fungus remains there throughout the summer and winter months until the next spring infection period. In spring, when peach buds begin to swell, germinating spores of the fungus penetrate the developing leaves, causing leaf curl infection. Twig and fruit infection, which is less conspicuous, can also occur. Leaf curl is more severe when early spring weather is cool and wet. Rain is essential for disease to occur; good control can be obtained on a small scale by erecting a plastic umbrella over the tree from late winter to spring. The plum pockets disease cycle is similar to that for peach leaf curl. Infected wild plums may serve as a source of inoculum.

Disease management. To control peach leaf curl and plum pockets, a single fungicide application needs to be made between now and when the buds swell in early spring. However, as soon as the buds swell in spring, it is too late to apply the fungicide, so depending on the weather, now is a god time to take action to control these diseases. Fall and early winter is usually a good time to spray for leaf curl or plum pockets because the weather may be dry and it is easier to move equipment through the orchard. In addition, peach and plum buds sometimes begin to swell during a mid-winter thaw

leaving the grower no chance to control the disease in early spring. Fungicides will not control peach leaf curl or plum pockets once buds begin to swell in spring and infection has occurred.

The choice of fungicides for dormant sprays include chlorothalonil (Bravo); ferbam (Carbamate); Ziram; or fixed copper fungicides such as copper hydroxide (Kocide), copper oxychloride (COCS), or Bordeaux mixture. Thorough coverage of the twigs and branches is essential. For further information on stone fruit disease management, consult U.K. Cooperative Extension publication ID-92, *2010 Commercial Tree Fruit Spray Guide*, available from County Extension Offices statewide.

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