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# Checking the Back Forty

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## Pokeweed Management Update

### Research conclusions for pokeweed control in corn and soybean

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*William Curran , Professor of Weed Science and Kelly Patches , Penn State Extension*
*Penn State University*

*Editors Note: This weed pops up more and more as an issue especially in notill and reduced tillage and with longer corn rotations.*

Some of you have seen and heard Kelly Patches present on her research over the last 2+ years. She recently successfully defended her MS Thesis titled "Common Pokeweed (Phytolacca americana L.) Management in Pennsylvania Field Crops". Kelly's research was supported in part by our Pennsylvania soybean growers through the checkoff program working with the PA Soybean Board. We greatly appreciate the support. Kelly will soon be starting her next challenge as a new member of the Penn State Extension Field and Forage Crops team based in Franklin County, PA so you can continue to direct your pokeweed question to her.
In her research, Kelly focused in several areas that included herbicide evaluation as well as trying to learn more about the biology of common pokeweed. The Penn State weed science group all learned a great deal more about this weed through Kelly's research.

Here are just a few take home points from her work:
Common pokeweed is called a simple herbaceous perennial, which means that each plant establishes a taproot from which it can emerge each growing season. This is similar to dandelion. It does not creep like Canada thistle, so each plant is an individual that originally germinated from seed. Individuals may live a year or two or for several years depending on their environment. A

cold winter like this last one can greatly reduce the persistence of these perennial plants (one positive thing about cold winters). One thing we observed from Kelly's work was how important seed production and dispersal are for pokeweed success. A single pokeweed berry contains 9 or 10 seeds. If plant's do not successfully flower and set seed, the population will not grow. Birds and other animals help disperse seeds into new locations. In one of Kelly's studies, she monitored the effect of the date of seedling emergence on pokeweed flowering and seed production. A single pokeweed seed that emerged in May or June grew into a perennial plant that first season that produced up to about 2500 seeds per plant at the end of the season. So, preventing berry/seed production is an important management tactic for this weed, much like for annual species.

Kelly examined a number of herbicide programs for pokeweed control in corn and soybean. Most of this work was conducted in Centre County PA. She discovered that a number of systemic post corn herbicides (glyphosate, 2,4-D, Banvel, Status, Callisto+ atrazine, etc.) can provide at least 80% control by the end of the season, but none of the herbicides provided complete control indicating the potential for recovery and regrowth the following year. Similar results were seen with soybean herbicides but effective options were fewer. Her soybean research showed the value of Roundup Ready and glyphosate as a foundation herbicide for managing common pokeweed in soybean; the non-glyphosate treatments (Classic, Harmony, Synchrony, FirstRate, and Raptor) only provided 39 to 62% control. Finally, although soil residual herbicides for seedling control were not compared in this work, our research does indicate that residual herbicides will help control seedlings and reduce pokeweed populations over time.

In a separate glyphosate application timing experiment, application in late June through the rest of the summer provided good control of pokeweed, while late spring timings' were less effective. At least 90% control was achieved when glyphosate was applied at 600 to 800 GDD (48 F base temperature) or later. The late June and beyond applications coincide with pokeweed flowering, so we believe that herbicide translocation to below ground vegetative structures is much greater with these later applications helping to kill perennial plants. This timing research confirmed effective control will be difficult in corn and that planting a shorter statured crop like soybean that allows for later glyphosate application times or crops that are harvested earlier in the summer that present a late summer management window can potentially improve control options for common pokeweed.

Kelly conducted a number of other experiments looking at nozzles, spray volumes, mowing, and seed bank persistence. She plans to distill her results into a Penn State Extension Fact Sheet that will be available in the not too distant future.

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## Lepto Leaf Spot on Alfalfa

*Kevin Ganoe*

I started seeing Lepto Leaf Spot on alfalfa over the past week on second cutting. The cool conditions with free moisture on the leaves we have had this spring are ideal for the development of this disease. The disease is caused by the fungus *Leptosphaerulina briosiana* and is spread by air borne spores. The disease can cause yield and quality loss in the cutting it develops in but does not cause death to the plant and is usually gone after that cutting. Fungicide applications have not been proven to be effective. Harvest, removing infected leaves and opening up the canopy, is really the most effective control.

First lesions are small dark spots that look like black pepper. As the lesions grow they become a dark circle with a tan spot in the center with usually a yellow halo around the lesions. Under the right conditions the fungus will develop quickly and lesions will grow to the point the merge and the leaf may fall off the plant. These dead leaves are the source of new infections.

*References*

*http://www.nysipm.cornell.edu/publications/alf_lf_spots_mgmt/files/alf_lfspots.pdf*
*http://ohioline.osu.edu/ac-fact/0023.html*
*https://ipm.illinois.edu/diseases/rpds/301.pdf*

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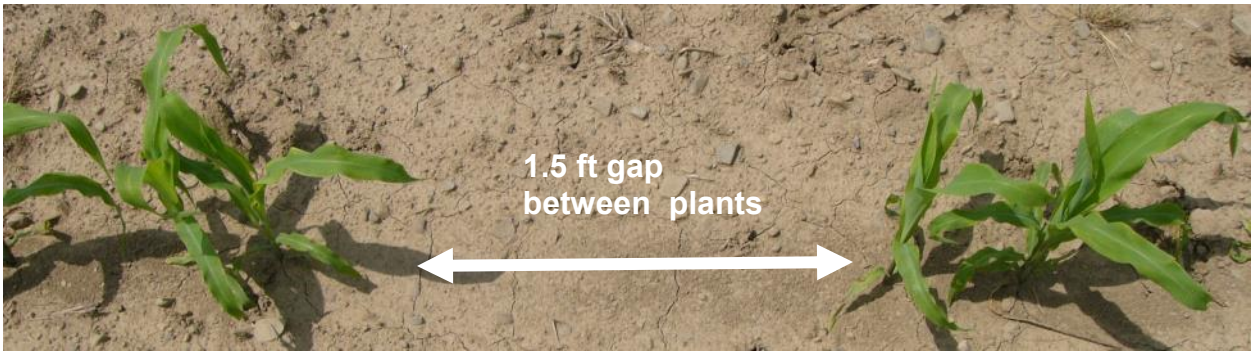
## Crusted soils lead to lower plant populations

*Kevin Ganoe*

Over the past week I have been in a number of corn fields that were crusted due to earlier heavy rains. This crusting resulted in plants being missing as in Figure 1 or plants that were delayed and had a hard time making through as in Figure 2. Gaps like this results in lower plant populations and yield reduction.

Figure 1



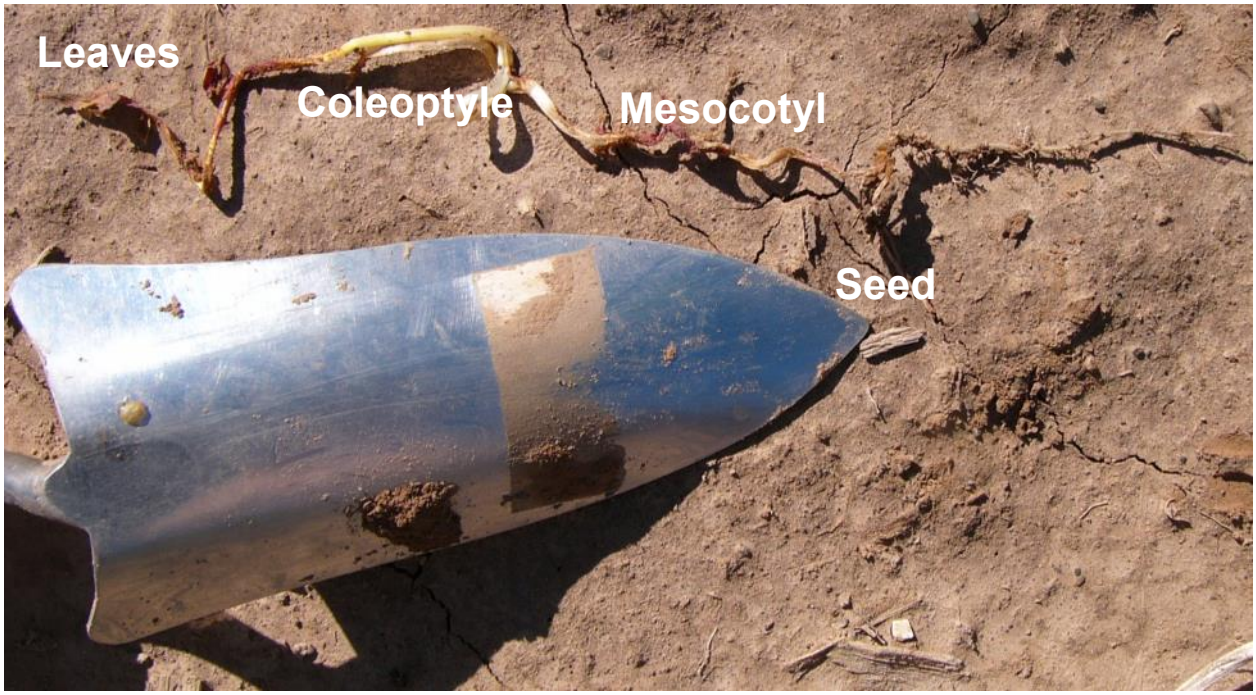

In Figure 2 there is a plant that the leaves got twisted as they tried to emerge through the crust and another that is significantly short than the rest of the field. Plants that are delayed in maturity in the field will yield lower as they have competition from their taller neighbors

Figure 2


Continued…..

In Figures 3 you can see a plant that germinated but never emerged. The tip of the hand trowel is in line with the seed. The leaves emerged out of the coleoptile but never made it out of the ground. The mesocotyl, the plant part that extends the coleoptile is quite long as you can see by using the hand trowel for comparison. So this seedling kept growing but just ran out of gas! If you are looking for comparison to a good seedling check out the pictures in the last What's Cropping Up.

Figure 3




There are some things you can do to prevent crusting or the compaction that leads to crusting. Often compaction, the loss of soil poor space and reduction of soil structure, is thought of as too much weight compressing soil deeper in the soil profile. But soil compaction can take place at the surface. So reducing tillage and traffic over the field, increasing crop residue and using cover crops can all help minimize compaction by increasing soil structure and organic matter. The term soil health has been used of late to describe soil condition and soils that are more prone to this crusting are not as "healthy" as those with that good soil structure.