

Noxious weeds: Palmer, Spiny, and Waterhemp

Last week, we thought we had one new major weed in Putnam County, now we know we have three major noxious weeds: Palmer, Spiny, and Waterhemp. Steve Prochaska, Area Agronomist for OSU Extension and I found Palmer Amaranth on one farm near Continental, Spiny Amaranth on two farms in the Sugar Creek flood plains near Kalida, and Waterhemp at one site near Continental along the road and near a corn field.

Even worse, upon further inspection, all the plants now have viable black seeds which are extremely small (tip of a pen). Pigweed has both male and female plants, so the plants can cross pollinate with our native pigweed and they have a lot of hybrid vigor. They are highly adaptable and can be extremely hard to control. Yield losses as high as 80-90% may be common on fields where the weeds are not controlled. Farmers should be on the lookout for strange patches of weeds or even single weeds. Contact the Putnam County Extension office if you have a strange weed you want identified at (419)523-6294 or my cell phone (419) 421-7255.

The Palmer Amaranth was discovered first in a 100 acre soybean field on the edge of the field. However, several plants have been found in patches and scattered throughout the field. Palmer was also found in a sweet corn patch that had solid manure (6 years old) that was infested with Palmer seed. So far, these are the only two sites we have found. The local dairy stopped using cotton seed meal six years ago. If you are using dairy manure from a neighbor, check to make sure they are not using cotton seed meal imported from Southern States. Humans easily transport the small seeds through grain, seed, or feed contamination; or on equipment such as combines.

Used equipment bought from the South like combines, harvesters, and even tires can hold thousands of seeds and easily infest nearby fields. The 100 acre field was likely infested by a sprayer or mower used to spray the sweet corn patch because they were separated by several buildings, a windbreak, and away from prevailing winds. Farmers should avoid buying Southern used equipment because it is almost impossible to clean the machine adequately.

It is easy to misidentify Palmer amaranth because it looks similar to three other common amaranth species: redroot pigweed (*Amaranthus retroflexus*), smooth pigweed (*Amaranthus hybridus*), and common waterhemp (*Amaranthus rudis*). The resemblance is especially strong during the seedling stages of growth. Palmer amaranth looks like many pigweed species and can reach a height of 6-8 feet tall and is extremely competitive and aggressive. Palmer amaranth has a rapid growth rate (up to 2.5 inches per day), high drought tolerance, and high seed production (100,000-500,000 seeds per plant) and it has developed herbicide resistance (Glyphosate or Roundup and/or ALS). Palmer amaranth has smooth stems and leaves with no hairs that help to distinguish it from redroot pigweed, smooth pigweed, and Powell amaranth. The male plant has a smooth long tail while the females tend to be extremely prickly. Unfortunately, Palmer plants appear to mature quicker than we first thought, with seed heads appearing on plants only 6 inches tall.

Since the seed heads are so small, Palmer amaranth germinates from very shallow depths (less than .25 inches). If a severe infestation occurs, plowing the soil to a depth of 6 inches will prevent germination as long as the seed is completely buried. The seed only lasts 3-4 years. The

field needs to be no-tilled and soil disturbance minimized for the next 5-6 years for this strategy to work. Cereal rye, radish, and cover crops can be utilized in the fall to compete with the weeds for sunlight and nutrients. Cereal rye and radish both have natural herbicides or allelopathic effects on that prevent weeds from germinating in the fall and early spring. Regular crop rotation is also beneficial, especially away from soybeans. Harvest fields with known Palmer, Spiny, or Water hemp last to prevent weed seed spread. However, birds, deer, and the wind are known to disperse the seed.

Herbicides that control Palmer Amaranth include Liberty Linked Soybeans, atrazine, 2-4D, banvel, metribuzin, metachlor and several other herbicides. One strategy is to use a pre-emergence herbicide with residual control followed by another herbicide treatment at a later date with both a pre-emergence and a post-emergence herbicide to give longer weed control. For more information, see the Purdue fact sheet on Palmer Amaranth Biology, Identification, and Management: <https://www.extension.purdue.edu/extmedia/WS/WS-51-W.pdf>



<http://www.google.com/imgres?imgurl=https://news.uns.purdue.edu/images/2013/palmer-amaranth.jpg>.