THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Hardin County Extension News Release

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Weed Seeds and Zero Tolerance

Hardin County – Driving around the county it is not difficult to see weeds growing above many soybean canopies and a few corn fields as well. The most common species include marestail, giant ragweed, and waterhemp. Weed seed production is critical to the longevity of weeds in a population, however this causes future weed control problems. Some characteristics of weed seeds include large quantity of seed production, seeds that shatter, variable seed maturation, seed dormancy, seed viability, variable germination patterns, and seed dispersal mechanisms.

Weed seed production varies from hundreds of seeds to millions of seeds per plant. Giant ragweed can produce up to 10,300, velvetleaf 17,000, common ragweed 63,000, redroot pigweed 100,000, common lambsquarters 176,000, marestail 250,000, Palmer amaranth 1,000,000, and waterhemp 5,000,000 seeds per plant. Most weeds usually produce only 25 to 60% of maximum seed production when competing with corn and soybean. Weed seeds shatter allowing seeds to fall from plants at various times. Most weeds flower over a long period of time allowing weeds to maximize seed production during favorable conditions and spreading seed maturity over an extended period. Weed seed dormancy ensures that seeds will not germinate until favorable conditions are present.

Weed seed viability allows seeds to survive for many years. Giant ragweed seeds can remain viable for up to 4, marestail 4, Palmer amaranth 4 to 6, waterhemp 4 to 8, redroot pigweed 20, common ragweed 39, common lambsquarters 40, and velvetleaf 60 years. Germination of weed seeds is variable causing problems with weed control. Marestail can germinate nearly every month of the year now with greatest amount late summer and spring. Giant ragweed is one of the earliest emerging weeds in the spring and can continue to emerge into July. Waterhemp starts to emerge in early May and continues emerging into August. Weed seed dispersal includes birds and other animals, water especially with waterhemp, machinery, and wind especially with marestail moving greater than one mile.

With all of these characteristics of weed seeds one can quickly understand why we are always dealing with weeds and how they can be difficult to control. This is why the selection of herbicide resistant weeds is really a concern, because there is an added level of difficulty of control.

Some weeds are currently producing viable seeds, although the majority of weeds are not mature at this time. Most weed seeds have not shattered yet so removal of weeds in fields by hand is still a viable tool to reducing the addition of weed seeds to the seed bank thereby reducing future weed control

problems. Hand-removed plants need to be taken out of the field now due to production of viable seeds.

Removal of weeds by hand is critical to reducing weed resistance, especially waterhemp which is nearly as difficult to control as Palmer amaranth. Waterhemp and Palmer amaranth will drastically increase herbicide costs! In the southern United States in 2012, a crew of people hand weeded Palmer amaranth from a field of Roundup Ready cotton in 110 hours. The next season, Roundup Ready soybeans were planted and glyphosate was applied, but it took only 5 hours to hand remove surviving Palmer amaranth. This example shows the effectiveness of hand removal to achieve a zero tolerance policy. At this time most infested fields have few waterhemp plants that can be easily removed by hand. Stopping weed seed production is the only way to reduce herbicide usage. Please take the time to remove waterhemp or Palmer amaranth, especially if this is the first year you have seen it.

Waterhemp looks very similar to pigweeds and has been spreading throughout Hardin County. Waterhemp has no hair on the stem and petiole compared to redroot and smooth pigweed which have hair. Waterhemp has a longer, narrower and shinier leaf than redroot and smooth pigweed. Waterhemp seed branches are slenderer and more branched compared to redroot and smooth pigweed. Waterhemp is dioecious, meaning whole plants just have male flowers or female flowers. This leads to a huge amount of genetic variability producing stems that are red or green or various levels of the two colors.

Article written by Jeff Stachler, OSU Extension-Auglaize County and edited by Mark Badertscher, OSU Extension-Hardin County.