For Immediate Release

January 6, 2020

James J. Hoorman
Hoorman Soil Health Services
Website: HoormanSoilHealth.com
419-421-7255

When Weeds Talk

A weed is any plant out of place, but what is the real purpose of weeds? Weeds, ecologically, are the first plants to inhabit nutrient deficient or disturbed soils. Most weeds grow in soils that are high in nitrates and are bacteria dominated. By studying the type of weeds that grow on your farm, you can start to figure out what conditions are limiting. The real purpose of weeds (believe it or not) is to improve the soil. Many weeds act as collectors of deficient soil minerals. Mother Nature does not like bare soils, so she finds something to grow (weeds) that improve soil so that other plants can grow.

Each plant is an indicator of the conditions that exist in that field and indicates why some agronomic crops (corn, soybeans, wheat, hay) growth may suffer. Weeds give us a clue to what factors are either limiting or in excess. For example, the common dandelion seems to thrive in bringing calcium (Ca) back to the soil surface. It has a deep taproot, 3-4 feet deep and when the crop decays, it releases Ca and into the soil for other plants and adds soil organic matter (SOM). Dandelions often grow in soils that may be poorly drained, lacking or low in Ca, and high in potassium (K). As the soil starts to heal, different plants start to dominate. Weeds turn to grasses, turn to shrubs, turn to woodland and then forests and this is called natural succession.

Here are some common weeds and what they may or may not tell us. Foxtail species predominate in fields that are worked a little too wet in the spring. Phosphorus (P) and Ca may be low but may be higher in K and some micronutrients. Calcium allows soil to move apart while magnesium tends to bind soils tightly together. These poorly frained soil starts to crust and crack and there is a lack of soil air movement in the soil, creating anaerobic (lack of oxygen) conditions. Foxtail become a problem and with ponding water, fall panicum starts growing. Most farmers would attempt to solve this problem by tilling the soil, but excessive tillage makes matters worse. Foxtail have tiny fibrous roots that are adding SOM and are attempting to aerate the soil naturally. Adding lime, avoid working wet soils, and growing a good cover crop after the main crop may improve foxtail weed issues over time.

Other weeds: Common Ragweed fields tend to be low in Ca and K but high in P and many micronutrients. The soils tend to have better drainage but are low in SOM. Adding lime and K fertilizer may help control this weed. Giant Ragweed loves highly fertile fields with low SOM, poor drainage, and generally a hard pan. Use a multi-species cover crop to breakup the hard pan to add SOM. For Canada thistle, fields tend to be low in Ca, P, Manganese (Mn), and Copper (Cu) but high in K and iron (Fe) with low SOM, low porosity, poor drainage, and anerobic (low oxygen) soils. Like foxtail, tillage may not help especially when soils are wet in the spring. Adding the nutrients that are missing and increasing SOM with manure or cover crops may help.

Hard to control weeds like pigweed (Palmer Amaranthus), water hemp, and marestail also thrive in low Ca and P fields with high K and low humus. Palmer does better on highly porous soils with high sulfur (S), iron (Fe), and copper (Cu) and lower moisture (sandier soils) while water hemp loves poorly drained (high clay) soils. While Palmer has many seeds (250-500K) per plant, the seeds have a low survival rate. Marestail like high Mn but does well on compacted soils with anerobic (low oxygen) field conditions. Palmer and marestail like bare disturbed soils without competition, so planting a cereal rye crop early with radish can generally help reduce the population of these weeds.

Many of my statements are based on general observations and individual field situations may vary greatly. Cereal rye, radish, and sorghum or Sudan or multi-species cover crops can out compete many weeds and have an allelophathic (natural herbicide) effect on most weeds. Keeping soils healthy generally results in better soil nutrient status, less weeds over time, and healthier crops. Source: When Weeds Talk by Jay L. McCaman