FALLOW SYNDROME

For some farmers this year, their acres will likely not be planted in row crops and decisions will have to be made regarding how to manage them. Weed control will be a key management practice for those acres, however, simply killing the weeds and keeping the ground bare could lead to consequences in the following year due to a condition called fallow syndrome.

Fallow syndrome is a phenomenon that can occur in fields or in areas of fields that suffer a collapse of the biological community that requires plant material as a host due to flooding or lack of vegetative growth. Fallow syndrome revolves around the concept of mycorrhizae and their work in your soils.

MYCORRIZAE

The word mycorrhizae actually means “fungus root”. Mycorrhizae is a type of fungus that forms a symbiotic relationship with plant roots by “extending” the reach of the roots and increasing the plant’s ability to uptake nutrients. The smaller diameter hyphae of the fungus can enter pore spaces in the soil that are not accessible to the roots and use the nutrients found therein. Studies have shown that mycorrhizae can make up as much as 10% of the total root mass (20% in highly colonized roots).

They are an especially important component of phosphorus (P) uptake early in the spring when soils are cold and root growth is slowed. It is interesting to note that P uptake (rate per unit of root length) can be two to three times greater in plants that are colonized by mycorrhizae. Fallow syndrome will often manifest as a P deficiency in a corn crop the following year. The effects of fallow syndrome can be especially impactful if the following spring is cool/wet or the soils have low P levels and are coarsely textured (all situations where P availability can be limited).

LEFT: Purple corn leaves early in the season can be an indicator of reduced phosphorus availability, a prime factor in fallow syndrome.
FALLOW SYNDROME

IMPACT OF FALLOW SYNDROME

In 1998, a study was completed that documented the yield impact of fallow syndrome. VAM (A measure of mycorrhizal colonization) strongly correlates with yield. The table below shows VAM colonization and grain yield of corn in 1994 following flooding during 1993. Data are an average of four sites in Iowa and Missouri.

<table>
<thead>
<tr>
<th>TABLE 1: VAM COLONIZATION AND GRAIN YIELD FOLLOWING FLOODING</th>
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<tbody>
<tr>
<td>VAM COLONIZATION (%)</td>
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<tr>
<td>May</td>
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<td>FLOODED</td>
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<td>NON-FLOODED</td>
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PREVENTING FALLOW SYNDROME

The question becomes, what can we do to help reduce the likelihood of experiencing fallow syndrome. The easiest solution is to plant a cover crop to provide the mycorrhizae with a host crop to colonize and repopulate your fields. It’s important to note that the Brassicas, or the mustard family, are not a good host crop for mycorrhizae, so it’s best to avoid them in your cover crop mix. There are some newer biological products that claim to enhance mycorrhizal populations, although we do not have much experience with these products in our Practical Farm Research (PFR)® testing.

In those fields where you have suffered flooding and may not be able to grow a crop, it is important to continue to control weeds and support the biological community. Planting a cover crop that does not contain mustards would be a good idea to avoid problems the following year, especially in fields that may be prone to P limiting factors.

An excellent way to mitigate the effects of fallow syndrome on idle acres is to plant a diverse cover crop mix. This will help stimulate biological activity in the soil throughout the growing season. In most geographies, oats, radishes, turnips, crimson clover, and peas are excellent options to blend. However, with margins running tight, farmers may be hesitant to invest in a mix that will cost upwards of $25/A.

It’s important to remember that you need to have something growing on idle acres, especially if nutrients have already been applied for the intended crop. Cover crops will sequester and hold most of the nutrients that have already been put down. A simple mix such as oats and radishes can scavenge as much as 130 lb./A. of nitrogen, even as a fall-planted cover crop.

Contact your local Beck’s representative to learn more about the importance of cover crops to reduce fallow syndrome in your fields. Beck’s carries a full line of cover crops and you can blend almost any species available. Visit beckshybrids.com/Products/Cover-Crop to see the full lineup of products and instructions for ordering custom mixes.