CORN TALK NEWS
PENNSYLVANIA MASTER CORN GROWERS ASSOC., INC.

Fertilize Your Crop, Not Weeds

NORCROSS, Ga. — It doesn't take many weeds in a grain crop to reduce yields. Weeds decrease crop yield because they compete with the crop for water, light, and nutrients.

We can't do much about the water and light, but we can manage the nutrients to give the crop a competitive edge.

Weeds respond to nutrients like most crops — but they can also be more responsive and more adaptable. Weeds show similar growth patterns and have similar nutrient requirements as crops.

Perennials can easily get ahead of annual crops because they have an early and greedy appetite for nutrients because of their already well-developed root systems. Aggressive weeds, such as lambsquarter or wild oats, have a faster developing and more extensive root system than crops.

Many weeds have a special ability to utilize high nutrient levels by luxuriant growth; others show the ability to grow better on soils with low levels of nutrients.

As a generalization, weeds are better able to withstand adverse environmental conditions, including nutrient stress, than crops. Weeds have a competitive advantage under such conditions.

Fertilization can be used as a weed management tool, especially if it's adopted with an integrated pest management approach.

The key is to fertilize the crop and not the weed and placement is critical. Alberta researchers have shown that banding nitrogen can have dramatic effects on week populations and biomass production. In zero-till barley they found banding nitrogen, at increasing rates, decreased green foxtail populations by more than 95 percent and stinkweed populations by 80 percent.

In wheat, nitrogen increased both wheat seed yield and foxtail barley biomass. However, banding the nitrogen produced less foxtail barley and more wheat yield than broadcasting the nitrogen.

Fertilizer placement for weed suppression is just as critical for immobile nutrients such as phosphorus. Alberta studies have shown that phosphorus placement can have a pronounced effect on the competitive ability of wild oats in barley.

In one experiment, seed-placed phosphorus decreased wild oat production by more than 50 percent compared to broadcast phosphorus applications. When more available to the barley, phosphorus enhanced its growth, thus preventing wild oat seed production. However, when broadcast application increased phosphorus availability to the wild oats, their production increased at the expense of the barley.

Phosphorus helps roots and seedlings develop more rapidly, getting the crop off to a good start.

A fast start is essential to make the crop competitive, especially against aggressive weeds. Canadian researchers have reported that each day of emergence of wild oats before wheat or barley increased yield losses by about three percent. And, yield losses declined by the same amount for each day wild oats emerged after the crop. Any practice that will encourage the crop to emerge before weeds will likely increase yield.

Put your fertilizer where it will do the most good — next to the crop. Don't give weeds any extra help — they don't need it.

Soil 'Detective' Helps Farmers

GREENBELT, Md. — Smearing the soil in farm fields during planting can make it tough for young corn plant roots to push their way through the soil.

But a fiber optic sensor developed by scientists with USDA's Agricultural Research Service could warn growers that smearing is happening.

This would give the grower an opportunity to adjust equipment or change planting attachments.

The sensor was developed in studies led by Donald C. Erbach at ARS' National Soil Dynamic Laboratory, Auburn, Ala.

Soil smearing is just what the name implies. As planting equipment sows crop seeds, the machinery rubs against the soil. This rubbing may smear the soil, forming a smooth, compact layer in the seed furrow.

This slick layer of soil slows air and water flow through the soil and restricts shoot and root growth. More pressure from the planter can mean more smearing. Since there's no effective way to detect how much soil smearing the planter causes, it's difficult to estimate crop losses.

The fiberoptic sensor would serve as an alarm attached to the planter. The sensor projects a light beam onto the sidewall of the seed furrow and analyzes the reflected light for characteristics that indicates smearing. When the sensor detects soil smearing, it sends a signal to the grower.

ARS scientists are looking for partners to develop the fiberoptic sensor technology for the marketplace. Their work on the sensor at Auburn, Ala., and Ames, Iowa, is part of the merging high-tech field of precision agriculture — using new technology to help farmers conserve resources while improving their production efficiency.