Crop Solutions that Work

Carroll Service Co.

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Determine harvest loss by checking behind the combine using a one-foot square and counting the number of grains on the ground within that one-foot area. Two kernels of corn or four to five soybeans per square foot is equal to a loss of one bushel per acre. Determine where the loss of grain is coming from—grain loss from the header will be evenly distributed over the entire width, although losses from the separator will be concentrated directly behind the combine.

If you plan to fall-apply anhydrous ammonia for corn, wait until the soil temperature is 50ºF at the four-inch depth and is expected to continue a downward trend. Anhydrous ammonia applied when the soils are still warm may be converted to nitrate-N by the activity of soil bacteria (warm soils promote microbial activity). Nitrate-N is not lost, however, once applied nitrogen is in the nitrate form, it can be leached by percolating water or denitrified by a saturated soil environment. The use of a nitrification inhibitor slows the conversion of ammonium-N to nitrate-N, keeping the applied nitrogen in a more stable form for a longer period of time.

Fall tillage and anhydrous ammonia applications. Fields with adequate moisture can be tilled within three or four days following an anhydrous ammonia application. Anhydrous ammonia reacts with soil water soon after application to become the stable ammonium form (NH_4^+). The ammonium ion is considered a stable form of nitrogen, because it can occupy a site on the soil exchange complex. Applications of anhydrous ammonia to extremely dry soils, especially if applied less than five to six inches deep, may result in excessive ammonia losses.

Think safety first, especially when working with anhydrous ammonia. Make safety an essential part of your daily work plan. Check ALL anhydrous nurse tanks for a fresh supply of water. Know where the water hose is located and how to pull it down. Generally, when you need water in an emergency, you will not be able to see it. Check ALL hoses for weather cracks and damage. Make sure the system is COMPLETELY empty before changing hoses. Liquid anhydrous ammonia can puddle in lines, allowing pressure to buildup between the time of shutting off the bleed-off valve and disconnecting the hose. Wear nonvented goggles and rubber gloves at all times when working with anhydrous ammonia. Teach safety to those helping you with harvest and anhydrous ammonia applications.

Heed your instincts—if something "feels" wrong, but you think you can finish the job without stopping to check or look for the problem, don't do it. That is what we call "accidents waiting to happen" . . . and many times that's what they turn into.

A nitrification inhibitor (N-Serve™) stabilizes inorganic nitrogen by disrupting the activity of Nitrosomonas bacteria. The activity of Nitrosomonas is impaired in the application zone of stabilized nitrogen, slowing the conversion of ammonium-N to nitrate-N. Keeping nitrogen in the ammonium form helps minimize nitrogen loss by leaching and denitrification.

Fall applications of N are not recommended on coarse-textured soils (sandy soils), soils with a low Cation Exchange Capacity (CEC), or in areas that tend to cool late in the fall and warm early in the spring. Visit with your local FS Crop Specialist about whether or not there are N limitations in your area.

If possible, avoid tillage after applying stabilized nitrogen. Tilling the field following the application may compromise the

(continued, back page)

Fall Urea Applications. Urea should not be applied in the fall for the 2007 corn crop. Data from several research trials show an economic disadvantage to fall-applied urea in comparison to fall-applied anhydrous ammonia. A three-year study at the University of Minnesota showed a 30-bushel per acre yield disadvantage to fall-applied versus spring-applied knifed-in urea (see Table 1). Similar yield losses with fall-applied urea applications have been reported by the University of Illinois.

Table 1. Corn yield response to time and source of N application (1997–99 average).

Time	Source	Source 3-Year Average (bu./A)
------	Control	113
Fall	Urea	155
Fall	Anhydrous Ammonia	170
Preplant	Urea	185
Preplant	Anhydrous Ammonia	-----

Source: *Fall vs. Spring Applications of Anhydrous Ammonia and Deep Band Placed Urea*; Randall, Gyles, and J. Vetsch, 1999; Southern Research and Outreach Center, Waseca, MN. http://sroc.coafes.umn.edu/Soils/Recent%20Completed%20Project%20Summaries/fall_vs_spring_applications_of_a.htm

Now is a good time to evaluate soybean fields for soybean cyst nematodes (SCN). Mark the field into five-acre areas, and collect a representative sample from each by taking 20 to 25 probes at about a six-inch depth while walking in a zigzag pattern. Thoroughly mix the soil and place three to four handfuls into a sample bag for analysis. Do not just collect soil probes from areas exhibiting limited growth or crop injury. Soybean cyst nematode populations are often higher in the healthier soybeans surrounding such areas. Place the samples in sturdy plastic bags and seal them to minimize moisture loss (samples should be kept moist). Drying out the soil before analysis can alter the count of viable cysts or eggs. Deliver or ship the samples to a testing laboratory in a timely manner.

When sampling for SCN from harvested soybean fields, take the samples from within the soybean row, kicking away the upper inch of residue or debris before collecting the sample. The upper inch of soil is normally dry throughout most of the growing season, which is unfavorable for SCN growth and development. Visit with your local FS Crop Specialist about the threshold for SCN in your fields and the best control options.

Soil testing remains an important management tool when budgeting input costs for 2007. Information from properly collected soil tests can help find those areas of a field that may provide the best response to applied phosphorus and potassium fertilizers. Areas in need of limestone are also best identified with a soil test collected to the proper depth. Work closely with your local FS Crop Specialist for the best way to collect your soil samples and the most accurate interpretation of the results.

Do not cut alfalfa until it goes dormant. Alfalfa needs three consecutive nights of 26ºF or less to go dormant. If a postfrost cutting is made, leave good stubble to catch snow and to help protect the plants from the winter weather.

Watch for gulley erosion with harvest and hauling equipment. Fast, excessive rains in some areas may have left deep ruts hidden by lodged corn or soybean plants. Travel at a safe speed and be alert for ruts.

Rootworm resistance technology from Monsanto may be redefining how corn plants respond to adopting practices. Corn roots

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Corn Plant Root Samples. Photo provided by Monsanto Co.

that penetrated deeper into the soil profile may change the way corn plants respond to strip-applied fertilizers. More extensive root systems as a result of minimal rootworm feeding, may explore the upper 6 to 12 inches of soil more extensively (see photo, above), increasing nutrient uptake efficiency. Older, longer roots may improve the plant's water-use efficiency. Do we know for certain if rootworm technology has improved nutrient utilization and water efficiency? . . . no, but you can search for the answers on your farm.

Now is the time to consider On-Farm Discovery as part of your farming practices. Work with your local FS Crop Specialist to identify new benefits from the rootworm technology. Utilize the On-Farm Discovery Tool Box to collect and geo-reference application data to simplify evaluation of treatment response. Utilize your investment in a yield monitor and GPS by allowing us to overlay the application map with the harvest data map to "mine the data" for you. Visit with your local FS Crop Specialist to learn how On-Farm Discovery could help address your questions about your operation. On-Farm Discovery, addressing producer questions on producer fields with producer data—what better approach is there?

Sprouted kernels on the ear may cause storage problems. The cylinder, concaves, and sieves will knock many of the sprouts off, but plenty will still make it through. Drying by air will not be a satisfactory way of drying corn with this problem. Corn can be safely stored only if dried with heated air to make sure the sprout is killed.

Selecting corn hybrids and soybean varieties for 2007 continues to be the most important management decision that a producer makes. Performance of a hybrid and variety should be evaluated across many different environments as well as your local environment. There is plenty of seed company information, but third-party information, such as independent research trials, should be considered as well. Your FS Crop Specialist knows your fields, as well as the characteristics of leading hybrids from several leading seed companies. Let him help you identify a portfolio of hybrids and varieties that meet your specific field-by-field needs. He is familiar with your fields. He knows the genetics of several leading seed companies, and he is aware of the various seed technologies that will help improve the profitability of your farming enterprise. He is the professional to help you select the genetics for your fields.

Your local FS Crop Specialist has your profitability in mind when it comes to field-by-field seed recommendations. His "tool box" is loaded with leading genetics from leading seed companies.

A sincere thank you is extended to the producers that are receiving this newsletter. You are receiving it because you are a good customer to work with. We appreciate the business you do with us, and we look forward to a continuing professional relationship with you in 2007. That is why we were formed in the first place: to improve the profitability of farming. We look forward to helping you in that manner in 2007.

Crop Solutions that Work

Inside this issue...

Determine Harvest Loss

Fall Anhydrous Ammonia Applications

Fall Nitrogen Applications

Fall Urea Applications

Evaluate Soybean Fields for Soybean Cyst Nematodes

Soil Testing: An Important Management Tool

Cut Alfalfa After It Goes Dormant

Watch for Gulley Erosion

Rootworm Resistance Technology: Redefining Corn Plant Response

Consider On-Farm Discovery

Sprouted Kernels May Cause Storage Problems

Selecting Corn Hybrids and Soybean Varieties for 2007

Your Local FS Crop Specialist Has Your Profitability in Mind

A Sincere Thank You

(continued from front page)

stabilizing effect of N-Serve™. Once applied, a protective zone is established around the anhydrous ammonia, minimizing microbial activity. Tillage may destroy this "protective zone" exposing the applied N to new, healthy populations of microbes.

Adding nitrogen to specifically help breakdown corn residues in the fall is not recommended, especially in no-till farming systems. Degradation of corn residue is driven by many factors, such as exposure of the residues to the soil microorganisms, soil moisture, and soil temperature. Residue not exposed to soil microbes will break down much slower, regardless of how much nitrogen is applied. Any applied N is likely meant to "feed" soil microorganisms. If the residue is not exposed to the microbes with tillage, there is no reason to add supplemental N. Temperature drives biological activity—as soil temperatures start to fall, so does microbial activity. Adding supplemental N to feed a less active or inactive population of microbes is like sitting down to a Christmas dinner following a Thanksgiving lunch . . . there is little need to eat.

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