July - September Edition

Management Solutions

Agronomic Solutions, LLC

Summer 2013 Issue

Cover Crops: Time to plan...

Now is the time to plan for cover crops to be planted in late summer or early fall. Cover crops offer many benefits that increase farm profitability, environmental sustainability and should be considered an integral part of any farming system that wants to efficiently utilize nutrients and improve soil quality. Target cover crops on fields you spread manure on during the summer fall and winter. This will help to "capture" some of the nitrogen and keep it around for the upcoming corn crop.

Choose the cover crop which creates the greatest benefit to you. Each cover crop has a special purpose. **Legume cover crops** are typically used to produce homegrown nitrogen. **Ryegrass cover crops (cereal rye or winter rye)** are used to increase soil organic matter, recycle excess nutrients, and reduce soil compaction. **Brassica cover crops (oilseed radish)** are grown to loosen the soil, recycle nutrients, and suppress weeds.

Cover Crops should be planted as early as possible in most cases—end of August or first of September. The seeding rates for annual ryegrass are:

Drilled = 15 lbs. per A *Broadcast = 20 lbs. per A* *Aerial = 25 lbs. per A*

Soybeans and later applications should be drilled, increasing rates for later seeding. For more growth, increase the rate of seeding because competition makes taller plants. If aerial seeding, watch for drifting. Drifting onto neighbor's wheat = problems! Consider drilling the outsides of your field to reduce drift. Now is the time to schedule your cover crop applications by air.

Cereal rye is good if planted late in the season, mid to late October and can easily be applied with a dry spreader. Ryegrass is also great to pasture. For pasturing it is best if seeded early (July) after the wheat harvest, but may need to be sprayed in November to kill because it might get too big.

Select winter hardy varieties of grass for our area. Bounty is outstanding in winter hardiness, rust resistance and strong forage yields. It has the ability to root down to 5 feet after 3 years of use. Extensive rooting increases the soils organic matter, water infiltration, erosion control and will capture any available N and P left in the soil and hold for following crops. The benefits multiply from multiple years of application of cover crops. Three to four years of use will break up more compaction, especially good for fields with drainage problems. With Ryegrass soil nutrition can be managed much deeper than the normal 8". Continual use of annual ryegrass has shown dramatic yield increases, especially in drought years.

Deeper roots = deeper nodules = more soybean bushels

Radish must be planted early. It needs at least two months of growth before winter kill. Winter peas can produce 100 lbs. N if you plant in August (early).

Again, cover crops are very important to your over all crop production. They improve the physical status of the soil, create more oxygen, and eliminate soil compaction.

This is a seasonal publication produced by Agronomic Solutions, LLC for the confined feeding operators. Issues and information addressed in the newsletter will be geared towards animal feeding operation owners and managers. Hopefully you will find its contents useful in your operations. (260) 593-2092

Inside this issue:

Value of Manure Current Book Values …

The charts below show the average manure value per acre.

Current Fertilizer Prices

28% Semi- prepay	560# N/ton	$385.00/ ton	$0.688/ # N
18-46-0	920# P_2O_5 /ton	$625.00 / ton	$ 0.679/ # P_2O_5
0-0-60 Semi	1200# K_2O/ton	$547.00 / ton	$0.456/ # K_2O

Swine Grower Pit				Dairy Lagoon		
N	33	$22.70		N	2.1	$1.44
P	33	$22.41		P	9	$6.11
K	27	$12.31		K	9.3	$4.24
	Per 1000 gal	**$57.42**			Per 1000 gal	**$11.79**

4000 gal/A = $229.68/acre 12,000 gal/ A = $141.48/acre

Beef – Manure Pack				Litter - Broilers		
N	5.3	$3.65		N	23.4	$16.10
P	5.0	$3.40		P	30.9	$20.98
K	7.6	$3.47		K	24.3	$11.08
	Per ton	**$10.52**			Per ton	**$48.16**

25 ton/A = $263.00/acre 5.0 ton/A = $240.80/acre

…now worth an average $218.74/ acre

IDEM New Rule Recap . . .

You have now been subject to the new IDEM Rule since July 1st, 2012. That's a whole year… How is that going for you?

- Has a professional engineer certified the construction of your liquid manure storages?
- Are you keeping up with your weekly manure storage inspections?
- Are you following through with the mandatory annual manure testing?
- If you were using the 10% rule of overstocking animals, have you submitted an amendment to reflect the actual number of animals in your IDEM permit? With the new rule, the 10% overstocking is no longer allowed. (A note of encouragement: notifications will be sent out by IDEM to commissioners and neighbors <u>after</u> the amendment has been approved, <u>not before</u>. This blocks any opportunity for someone to stop your operation.)

If these questions are news to you, perhaps you need to give us a call and find out what the new rules require. We will be glad to explain things and serve you in any way we can to keep you in compliance.

Evolution of Manure Injection . . .

Taken from Manure Magazine, May 2013

It wasn't too long ago that manure was just a waste that nobody wanted. Manure injection and manure in general has come a long way in the last 10 years.

Making the best use of manure means making the best use of a natural resource. Manure is becoming more recognized as a natural fertilizer that *adds micronutrients and contributes to the biological control of diseases in the soil.*

Dennis Nuhn, president of Nuhn Industries Ltd., has watched manure become more appreciated. He recalls. "Injection was a hard sell ... because nobody really appreciated the value of manure so it never really caught on."

The biggest change in acceptance for injection came three or four years ago when fertilizer prices spiked. Suddenly manure didn't just smell anymore. Everybody started looking to get more value out of it.

Probably the simplest and easiest way to get more value from your manure is to inject it, The trouble with injectors is that no one injector is good for every application.

Nuhn sells a lot of double disc injectors that put manure on the ground and throw dirt on top of it. The custom haulers like it – it's fast and easy and can go through anything.

When regulations came in that said you couldn't spread it around the barn, farmers needed more efficient tools to take large volumes five miles down the road.

That's where the capacity of the Nuhn Quad came in. The Quad is an integrated system, not just two tanks in line. It was a hard sell in the beginning because it was different, said Nuhn, but the train concept is growing in popularity as custom haulers get bigger and drivers realize the handling advantage of having two tanks versus one larger tank.

With in-tank mixing, the Quad provides a consistent spread too. "What I say is if you spread manure, the key is you want to get the right amount and put it on properly," said Nuhn "If the first half is different from the last half you're not going to get the results you want."

A triple experimental unit is in the works. While Nuhn's standard double Quad is very maneuverable, able to turn in tight spaces and easy to back up, he admits this one is harder to back up and its use may be limited to larger, flat acreage.

Weather Woes . . .

This afternoon sitting at my desk I witnessed what has become a rather common occurrence in the past weeks. The sun was shining and it was beautiful; but, what seemed like only seconds later, it was dark and pouring. Though we are all thankful for rain instead of drought, it does bring its own set of challenges.

Nitrogen Losses

Heavy rains are usually accompanied by Nitrogen Losses. Your fields may have lost part of your nitrogen to water through de-nitrification or had nitrates move below the root zone following heavy rainfall, or it may be that the crop just grew so fast that you missed the side dress window. Either way, some fields may need additional nitrogen to reach yield goals.

Losses depend on many factors such as when the N was applied, the forms of N applied or expected to provide N for the crop, soil characteristics, and how wet the soil is/was. In general, leaching losses are more likely on sandy soils where water can move through the profile quickly. De-nitrification is more likely on medium and fine textured soils that are not well drained. These soils tend to become saturated with water and/or retain flooded areas for several days following excess rain.

One of the best ways to determine the need for supplemental N is by having a *Presidedress soil nitrate test (PSNT)*. However, the soil samples should have been collected when the corn plant was between 6 to 12 inches tall. It's a little late for that. Under N deficient conditions, corn will respond to supplemental N applications through the tassel stage of development.

If your field is irrigated, you continue to have options. Irrigated production has the advantage of fertigation as an option in nitrogen management. Fertigation is the process of applying fertilizer through irrigation water. Liquid 28 percent nitrogen is the most common product for fertigation, but urea and micro-nutrient solutions are also available to meet crop nutrient needs, with proper equipment. For efficient use, Nitrogen applications need to be made prior to tasseling to ensure that the nitrogen applied is in an available form for the plant to uptake and use during early grain formation.

Knowing the actual amount of fertilizer the equipment will inject is essential. It is also important to know that the system applies water uniformly across the field. Center-pivot systems of good design and repair will have uniformity co-efficient of greater than 85 percent. Many systems have uniformity co-efficient in the 70 to 75 percent range allowing the misapplication of a quarter of the water and fertilizer going through them. Information on evaluating irrigation system uniformity (along with training opportunities) is available through the irrigation section of the St. Joseph County Michigan State University Extension web page.

In some situations producers may choose to dribble or broadcast nitrogen on the field by air or Hi- tractor and use the irrigation to incorporate the nitrogen if dry weather follows. This technique is quick, requiring no irrigation equipment modification, but is dependent on the availability of aerial applicators or in row high clearance application equipment. Detailed information on injection pumps, backflow protection, safety interlocks, and procedures for calibrating an injection system is available in bulletin E-2099 available from the Michigan State University Extension bulletin system or electronically at the irrigation section of the St. Joseph County MSU Extension web page.

Emergency Strategies

Emergency strategies should be in place in the event that your lagoon fills up. If manure levels in storage ponds or tanks approach full capacity producers should make plans to remove manure from these structures. The over-topping of bermed earthen storage ponds and lagoons could result in breaching of earthen berms and loss of the structures.

Although concrete and steel structures are not in danger of breach failures, they should also have manure removed if they are in danger of overtopping.

Producers should transfer manure from full storage structures to alternative storages if available, as land application of manures during saturated conditions is likely to result in movement of manure nutrient and organic matter into surface waters. If no alternative manure storage is available producers should contact IDEM (Steven Howell, the IDEM Ag Liaison) or DEQ (the Kalamazoo office) to discuss emergency wet-weather land application before allowing a storage tank or pond to overflow. If manure levels reach one foot below the top of a concrete or steel structure, or within two feet of the top of an earthen bermed structures producers should contact the above IDEM or DEQ offices.

Managing Silage Leachate . . .

Good water quality is a high priority for all rural residents. Since drinking water is usually obtained from ground water sources, every effort should be made to protect these ground water sources from contamination.

Silage is made by storing cut green forage in an oxygen-free environment. Silage leachate is the liquid that seeps from freshly ensiled forage that is more than 70 percent moisture. This leachate is rich in soluble sugars and proteins. It is corrosive to concrete and steel and can be extremely polluting to waterways. Silage leachate has a polluting potential 20 times greater than animal waste.

Given weather conditions this spring and summer, we stand a good chance of having problems this year. With late planting a lot of immature high moisture corn could be chopped and put into storage.

Silage leachate has an extremely high biochemical oxygen demand (BOD). This means that leachate has a very high potential for oxygen consumption and when discharged into surface water, it can remove so much oxygen that fish and other aquatic creatures die. As little as 1 gallon of silage leachate can lower the oxygen content of 10,000 gallons of river water to a critical level for fish survival.

Effluent production for corn silage

Percent Moisture	Gal. of effluent per ton
Greater than 85 percent	100 to 50
85 percent to 80 percent	50 to 30
80 percent to 75 percent	30 to 5
Less than 75 percent	less than 5

Source: Peter Wright, "Silage Leachate Control," Silage Production: From Seed to Animal, 1997.

Silage leachate contains nutrients that can harm groundwater, the most critical being nitrate-nitrogen. In addition, the acidic nature of silage leachate can burn or kill vegetation in the area where it drains. It may also cause health problems for humans and animals.

TO PREVENT LEACHATE—Harvest and store at proper moisture content

When silage is properly harvested and stored, it poses little to no pollution threat. Farmers can capture silage leachate by constructing lined ponds or collection basins. Such structures must meet prescribed setbacks from existing wells and surface water and are generally costly to construct.

As an alternative to costly structures, farmers can and should make efforts to minimize silage leachate production. Practices such as harvesting at optimal moisture content, firm packing of silage materials, immediate sealing, and maintaining proper feedout can enhance the nutrient content of silages and decrease the potential for silage leachate formation and runoff.

Covering the silage is an important management practice. Not only do covers preserve forage quality by minimizing airflow into the pile, covers also reduce leachate production by preventing rainfall from penetrating the silage and solubilizing nutrients. Research at Kansas State University shows that covering a bunker silo with plastic can return $8 in reduced forage losses for every $1 spent. Additionally, from an animal performance standpoint, covering a bunker preserves feed value and improves palatability and feed intake.

Divert rainwater away from silage storage whenever possible. Plastic covers should be applied so that rainwater and snowmelt is channeled *off* of the forage pile. Maintenance of plastic also needs consideration; any holes in the covering of a silo or bag should be repaired immediately.

Leachate can be diverted to well-ventilated manure storage facilities or treated through the use of filter areas, absorption systems, constructed wetlands or vegetated leachate treatment areas. **CAUTION:** *Never mix silage effluent in enclosed tanks, especially tanks with barns because silage effluent mixed with manure slurry will accelerate the release of hydrogen sulphide gas. Add seepage only to uncovered outdoor storages.*

WHAT TO DO IF LEACHATE HAPPENS

An emergency backup plan should be developed for those years when high moisture silage is unavoidable. Temporary runoff containment measures could be used, such as using sawdust to absorb and stop silage leachate runoff. The sawdust could then be collected and applied to fields.

Don't let this come out of your silo.

Keep Livestock Manure Out of Floodwaters . . .

Producers need to protect their manure storage facilities during a flood. Accumulated leakage can eventually end up in the nearly surface water.

Surface water contamination from manure spills may pose a significant threat to aquatic ecosystems, and excessive nutrients may cause eutrophication in freshwater ecosystems.

Eutrophication is an increase in aquatic plant growth due to an increase in nutrients such as nitrogen and phosphorus. As this increased aquatic plant mass dies, microorganisms use the organic matter as a food source. The microorganisms also use the dissolved oxygen in the water, which can cause fish to suffocate. Research shows that 1 extra pound of phosphorus in a lake can produce hundreds of pounds of weeds and algae.

EQIP 590 and 595 Plans . . .

If you have a 590 Nutrient Management Plan, let us know just as soon as you have completed your nutrient applications so we can get your checklists signed and you can get your money.

If you have a 595 Integrated Pest Control Plan, let us know as soon as you have all your pest control applications completed.

Kevin Erb, conservation professional development and training coordinator with Univ. of Wisconsin Cooperative Extension, recommends the following ways to alleviate potential pollution problems if or when floodwaters overtake manure storage facilities:

Manure storage facilities such as this containment pond need to be protected during a flood.

Stockpile

- Build a 1- to 2-foot berm around a short-term or permanent manure stockpile storage area. This berm is not designed to keep floodwaters out, but it will help contain the highly concentrated leachate as floodwaters begin to recede. However, the berm around dry manure storage stacks has the potential to erode when the water rises, so compact the berm with a tractor tire as much as possible.
- The water left around the pile (due to the berm) two to three weeks after the floodwaters recede will be heavily concentrated with nitrogen, phosphorus, potassium and bacteria. Pump that highly concentrated leachate into your water containment pond to help dilute the nutrients to safe levels and eliminate the potential for pollution.
- If your containment pond is full or you are unable to pump the water in the berm away from the stockpile, make sure the berm is maintained to lessen the potential for nutrient pollution due to runoff.

Containment Pond

- Fill the containment pond with water to within 1 foot of the top to maintain the integrity of the containment pond structure and avoid bank erosion.
- Use a liquid manure spreader, rather than traveling gun and sprinkler irrigation systems, to help draw down the pond levels once floodwaters recede. A liquid manure spreader will move greater quantities of water in a shorter amount of time.
- Draw down the containment pond to a safe level as soon as possible to prepare for possible rain throughout the summer season.

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Agricultural Facts & Statistics ...

Women Farmers

Women are increasingly starting new farming enterprises and represent one of the fastest growing segments of the new farmer demographic. The USDA Economic Research Service (ERS) released a report on the characteristics of women farmers and their farms. Women represent a large number of new small, specialized farms and also are becoming very active in grazing animal production.

2012 Number of Farms and Land in Farms

The number of farms in the United States in 2012 is estimated at 2.2 million, down 11,630 farms from 2011. Total land in farms, at 914 million acres, decreased 3 million acres from 2011. The average farm size is 421 acres, up 1 acre from the previous year. However, average farm sizes declined in all sales classes partially due to smaller farms moving up to higher sales classes.

2012 Livestock Operations

The number of operations with cattle totaled 915,000 for 2012, down 1 percent from 2011. Beef cow operations in 2012, at 729,000, were also down 1 percent from last year. The number of milk cow operations for 2012 totaled 58,000, down 3 percent from 2011.

The number of operations with hogs totaled 68,300 for 2012, down 1 percent from 2011. Places with 2,000 or more head accounted for 87 percent of the inventory.

Dates to Remember ...

July 24: Agronomy Field Day
Waterloo Farm Center (4743 CR 28)
Waterloo, IN 8:30 am - 3 pm

Aug. 6: OSU Manure Science Review
Hord Livestock Farms
Bucyrus, OH 8:50 am - 3 pm

Aug. 15: NE Purdue Ag Center Field Day
Columbia City, IN
CCH Credits available
for info call: 260-358-4826

Aug. 21: North American Manure Expo
Arkell, Ontario, Canada 8 am - 5 pm
Theme: "Getting It Right: Precision Manure Application"

Aug. 27- 29: Farm Progress 2013 Show
Decatur, IL 8 am - 5 pm

Sept. 17 - 19: OSU Farm Science Review
London, OH