April - June 2020 Edition

Management Solutions

Agronomic Solutions, LLC

Spring 2020 Issue

Covid 19

Covid 19, Coronavirus, and pandemic are words we all wish we had never heard, much less ever had to be concerned about. But as we all know, this is the current reality in our world.

Here at Agronomic Solutions we are trying to take precautions at several levels:

* working from home where possible; however, most of us are back in the office since the 4th of May
* consulting by phone instead of site visits when possible

We are still able to soil sample during this time, so don't hesitate to call if you are due for sampling. And don't forget to keep your manure sampling up-to-date. The lab is still working. Because of social distancing, they are not running a full staff, so things may take an extra day or two to get the results. All in all, they are doing a great job keeping up with the spring sampling.

IDEM

* Offices are still closed with the employees working from home for permitting and compliance. We are able to be in contact, but in some situations things are moving a little slower.
* No farm inspections in May - starting again in July and July.
* Still processing construction applications and renewals.
* Renewals must be turned in digitally and on time. There have been no extensions of deadlines.
* Switching in general to all electronic submissions.
* Still required to follow ALL the rules of your permit. You must continue to do your daily, weekly, monthly reports and not let things slide during this time.

COUNTY (Indiana)

* All counties are making their own guidelines as they try to follow best procedures during this pandemic.
* LaGrange County is planning to start in-person meetings (Site Plans, BZA, etc.) the week of May 18th. They have made provisions to turn in Site Plan applications, etc.
* Some counties are having modified meetings in May with social distancing procedures in place.
* Most counties still have an online way to be able to pull building permits.

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 - Customer Averages ...

The charts below show the average manure value per acre.

Current Fertilizer Prices—May 7, 2020

28% Semi- prepay	560# N / ton	$270 / ton	$0.482 / # N
18-46-0	1040# P_2O_5 / ton	$400 / ton	$0.385 / # P_2O_5
0-0-62 Semi	1200# K_2O / ton	$354 / ton	$0.295 / # K_2O

Swine Grower Pit				Dairy Lagoon		
N	32.2	$15.53		N	7.4	$3.57
P	20.5	$7.88		P	6.2	$2.38
K	26.3	$7.76		K	12.2	$3.60
	Per 1000 gal	**$31.17**			Per 1000 gal	**$9.55**

4000 gal / A = $124.67 / acre 12,000 gal / A = $114.62 / acre

Calf – Manure Pack				Duck—Liquid		
N	7.3	$3.52		N	26.9	$12.97
P	10.4	$4.00		P	25.0	$9.62
K	13.3	$3.92		K	24.5	$7.23
	Per ton	**$11.44**			Per 1000 gal	**$29.81**

15 ton / A = $171.65 / acre 5,000 gal / A = $149.06 / acre

Broilers - Litter		(Layers - Litter)	
N	34.1 (34.1)	$16.44	($16.44)
P	60.8 (85.6)	$23.38	($32.92)
K	60.3 (60.3)	$17.79	($17.79)
	Per ton	**$57.61**	**($67.15)**

3.0 ton / A = $172.84 ($201.46) / acre

...now worth an average of $155.72 / acre

Hot Swine Pit Samples ...

We are starting to have some issues with very high testing manure analysis from hog finisher pits. Usually in situations with wet/dry feeders that promotes more solids in the pit with less water.

While not hauling a bunch of water sounds like a good idea, the legal spreading rates for this product would be 2000-2500 gallons per acre, which is difficult to do.

Consider using a pit additive to try to digest some of the solids and nitrogen.

In addition to **improving air quality** and **preserving nutrients**, manure (pit) additives are also used to **reduce solids and liquefy manure for better handling.**

Manure additives are usually liquid or solid. Liquid additives are relatively easy to prepare and apply by spraying or by pouring directly into manure pits. Solid additives are easy to store and transport. Some are granular or powders that can be dissolved in water before application or directly applied onto manure surfaces. Another form is self-dissolving solids in different shapes that slowly release into the liquid manure over a period of time.

Use safety precautions

Some manure additives are chemicals or primarily based on chemicals that may be corrosive and hazardous. Application instructions must be followed. Some chemical-based manure additives may entail rapid reactions with manure when applied and cause quick release of toxic gases, posing a deadly danger.

Costs differ significantly

One source for information would be Hog Slat, Inc. (hogslat.com) Ph. # 866-464-7528

Emergency use of milk as a fertilizer ...

DO NOT DUMP YOUR MILK DOWN THE DRAIN! THIS SENDS IT TO THE NEAREST DITCH!!

Difficult challenges in the dairy industry such as those resulting from COVID-19 result in times when a market is not available for milk. When those occur, using the surplus milk as a nutrient bonus for land application or manure storage may provide a short-term option for gaining some value from milk and benefit the soil.

A couple things to consider before adding the extra milk to your soil or manure storage:

* First and foremost, check local ordinances to see if using milk in land applications or in manure storage is allowed.
* Be sure to account for the nutrients in the milk in your nutrient management plan.
* Keep records of the milk used in this manner, including dates, volume, reason for disposal, and where it was used.

What Is Milk's Value as a Fertilizer?

One can assume that 100% of the nutrient in milk will be plant available during the cropping season immediately following application. Here is a quick comparison of milk and dairy manure nutrient value.

Table 1. Typical nutrient concentrations for milk and dairy manure (pounds per 1,000 gallons).

Nutrient	Milk	Dairy Manure at 4% dry matter
Nitrogen	46	7
Phosphorus as P_2O_5	26	3
Potassium as K_2O	17	11
Sulfur	2	1

Are there Environmental Concerns with Milk?

There are two issues which should be considered in planning.

* Milk has a very high "Biological Oxygen Demand", many times higher than manure. That means, when it is breaking down in soil or water, it consumes a lot of oxygen. The oxygen demand for degrading 1 Pint of Milk will consume all the oxygen from 1,600 gallons of surface water. ***Milk cannot be allowed to get into fresh water!***
* *The degradation process for milk will produce significant and powerful odors.* Injecting or disking milk into the soil will minimize those odors. The soil is a good filter for odors. If this is not possible, choose a site with no downwind neighbors. Check the weather forecast for the 48 hours after milk is to be land applied. Note wind direction during the evening and nighttime hours, when odors often concentrate near the ground. Select a site with no neighbors in this direction. Discussions with neighbors about your plans for milk disposal are also encouraged.

Emergency Livestock Mortality …

Funding is available to help with safe disposal of livestock due to COVID-19

USDA's Natural Resources Conservation Service (NRCS) is offering financial and technical assistance to livestock producers for animal mortality disposal, resulting from impacts of the COVID-19 pandemic.

We sincerely hope it does not come to any of you having to euthanize your animals. However, in the event that it is necessary, we want you to know that the Environmental Quality Incentives Program (EQIP) is ready to help.

Before euthanizing any animals, you MUST CONTACT NRCS

How to Apply:

Producers facing livestock depopulation are encouraged to file the EQIP application (Form CCC-1200) with their local NRCS field office. Applications are being accepted now.

Through EQIP, a producer can apply for a practice called Emergency Animal Mortality Management and other practices to properly dispose of carcasses. Across the nation, NRCS will offer options for farmers to find the right alternatives for their needs.

Options may include:

- burial
- incineration
- disposal at landfill or render
- carcass disposal other than burial, incineration, landfill or render
- in-house composing

The producer is responsible for the proper disposal of animal mortality by following requirements specific to each option. All Federal, State and Local laws must be followed and are the responsibility of the producer to secure any necessary permits.

Plans and permits may be required for each option through the Indiana Department of Environmental Management (IDEM) and others as needed.

To receive assistance:

- Producers must have both an application and an approved early start waiver filed at the local NRCS office prior to disposal of animal carcasses.
- All NRCS standards must be followed, and NRCS will provide the technical assistance needed
- Financial assistance is limited and all applications may not be funded.
- Nationally-established payment caps may apply.

Additional Information can be found at: https://www.farmers.gov/

A good resource on Covid-19 for any confined feeding operation can be found at: ***indianapork.org/covid-19-resources***

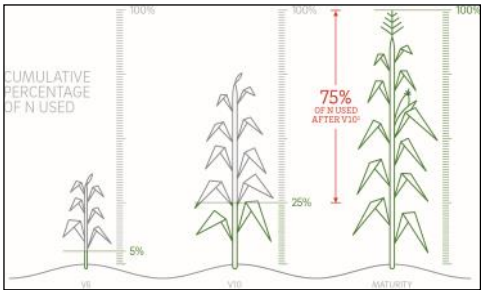
Strategies for Managing Corn Nitrogen …

Nitrogen is often the most limiting nutrient in producing crops. Often farmers tend to over apply this nitrogen. You should have a comprehensive knowledge of N management strategies and develop a detailed management plan for optimal nitrogen use.

Nitrate (NO_3^-) is the common form of nitrogen in soil and the form which plants can assimilate into energy. Since NO_3^- is a negatively charged ion, it will not be held by soil particles, which are also negatively charged. Therefore, N can easily leach as rainwater flows through the soil. In sandy soils, N leaching occurs even more rapidly. This is because of the soil's structure, which has low water holding capacity. Deep channels developed by water flow patterns and fauna in the soils allow for faster leaching of soluble N in water. N is also readily leached through the process of decomposition of organic matter. Due to the increased availability of air in sandy soils, microbes quickly degrade plant residues, releasing N into the soil. If not utilized properly, the N released will be leached before being useful to the next crop planted.

Any N management strategy must include:

1. Predicted yield goal
2. Application timing
3. Potential sources of available N such as manure, crops residues, and N contribution from previous legume crop
4. Crops rotation
5. Cover crop
6. Soil properties



How much N does corn require?

Soil mineral N content is very sensitive to environmental factors including rainfall and temperature. Therefore, testing the soil before or at the planting time cannot predict how much N will be available when crop enters its rapid growth stage. Through some studies it is strongly recommended that on manured fields little or no nitrogen starter be applied. A Pre-sidedress Soil Nitrate Test (PSNT) should be used to determine if organic sources of N in the soil such as manure and crop residues are adequate to meet the needs of the crop. In general, there is potential to reduce N rates by 20% if farmers sidedress rather than apply N at planting.

When to apply?

The goal of a good N management program is to have maximum nitrate in the soil when plants are rapidly growing and minimum residual nitrate in the soil at harvest. The young corn plants produce little amount of dry matter and pick up only small amounts of N, P_2O_5 and K_2O. Because corn plants start growing rapidly in mid June, delaying N fertilizer application until plants reach 12 inches tall (6-8 weeks after planting) can significantly reduce N leaching and reduce cost of purchased fertilizer. When corn is planted into a field high in residual N because of previous manure or legume crops, often no yield advantage can be found by fertilizing the crop at planting.

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Dates to Remember …

(15 July) Mid Season Crop Diagnostic Training

Agronomy Center for Research & Education, near West Lafayette. Organized by Purdue's Crop Diagnostic Training & Research Center.
PRE-REGISTRATION REQUIRED.

(5 Aug) Indiana CCA Crop Diagnostic Training

Agronomy Center for Research & Education, near West Lafayette. Organized by Purdue's Crop Diagnostic Training & Research Center.
PRE-REGISTRATION REQUIRED.

(19 Aug) Pinney-Purdue Ag. Center Field Day

Near Wanatah, IN. Organized by Purdue Extension.

(20 Aug) Northeast-Purdue Ag. Center Field Day

Near Columbia City, IN.
Organized by Purdue Extension.

(3 Sep) Crops Field Day at Purdue's Agronomy Farm

Near West Lafayette, IN.
Organized by Purdue Extension.

(9 Sep) Late Season Crop Diagnostic Training

Pinney Purdue Ag. Center, near Wanatah IN.
Organized by Purdue Extension.

The Great Horse Manure Crisis of 1894

By the late 1800s, large cities all around the world were "drowning in horse manure". To function, cities were dependent on thousands of horses for the transport of both people and goods.

In 1900 London, there were over 11,000 "cabs" plus several thousand horse-drawn buses, each needing 12 horses per day. To add to this, there were yet more horse-drawn carts delivering goods - totaling at least 50,000 horses on streets of the largest city in the world.

The large amount of manure left behind on the streets attracted huge numbers of flies which then spread typhoid fever and other diseases. On average a horse will produce 15 to 35 pounds of manure per day, plus 2 pints of urine. To make things worse, the life expectancy for a working horse was only 3 years. Horse carcasses had to be removed from the streets, but the corpses were often left to putrefy so they could be more easily sawn into pieces for removal.

This wasn't just a British crisis: New York had a population of 100,000 horses producing around 2.5m pounds of manure a day.

This problem came to a head when in 1894, The Times newspaper predicted… "In 50 years, every street in London will be buried under nine feet of manure." **This became known as the 'Great Horse Manure Crisis of 1894'.**

The terrible situation was debated in 1898 at the world's first international urban planning conference in New York, but no solution could be found. It seemed urban civilization was doomed.

However, necessity is the mother of invention. Henry Ford came up with a process of building motor cars at affordable prices. Electric trams and motor buses appeared on the streets.

By 1912, this seemingly insurmountable problem had been resolved; in cities all around the globe, horses had been replaced and now motorized vehicles were the main source of transport.