

NUTRIENT MANAGEMENT NEWS

NDSU EXTENSION SERVICE

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Special Points of Interest:

- Are you in the process of planning spring manure applications? Contact Ron at 701-652-2951 if you have questions or if you would like your manure sampled.
- Find soil health information on Facebook. Check out www.facebook.com/soilhealth.
- Check out the Nutrient Management Website at www.ndsu.edu/nm for more information.
- Email Chris at Chris.Augustin@ndsu.edu to receive this newsletter.

NUTRIENT MANAGEMENT NEWS IS CHANGING GEARS

Greetings!

There are some changes going on with Nutrient Management News. You will still see articles devoted to nutrient management practices, but also articles on soil health.

NDSU received funding for several soil science/health positions during the 2011 North Dakota legislative session. A few of those positions have been filled (Langdon, Carrington, and North Central Research Extension Centers) and some are in the process of being filled.

Naeem Kalwar and Chris Augustin were selected for the Area Extension Specialist/Soil Health positions at the Langdon Research Extension Center and North Central REC (Minot) respectively. Causing the changes to Nutrient Management News.

We can be liked on Facebook at www.facebook.com/soilhealth. There you will find recent articles, videos, workshop updates, and more! Stay tuned for more updates with all that is going on.

Thanks for reading!

Chris



A saline area near Carrington.

SOIL HEALTH SPECIALIST, NAEEM KALWAR

Naeem grew up in a small but important agricultural town of the south eastern province of Pakistan, Sindh. Being the son of an Agriculture University Professor made Naeem aware of agriculture and its importance to the Pakistani economy. Located about 10 miles away from one of Pakistan's largest cities, Hyderabad. Tandojam has the privilege of hosting the province's only Agriculture University

campus, Provincial Directorates for Agriculture Research, Agriculture Extension, Agriculture Workshops, Town Planning and the Nuclear Institute for Agriculture. Following in the footsteps of his father, Naeem completed a Bachelors and Master's degree in Soil Science in 1995. In August of 1995 he became an area specialist / agronomist with Pakistan's pioneer private ferti-

lizer manufacturing company Engro Chemical Pakistan Ltd. He served all over the province and worked closely with the farming community to improve yields and economics of field (cotton, rice, sugarcane and wheat), horticultural (mangoes, banana, jujube, guava, papaya and chiku) and high cash value (red & green chilies, onions, tomatoes and okra) crops. Along with maintaining the health and produc-

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WHAT'S MANURE WORTH?

UMN Extension has developed a new web-based calculator to determine the value of manure

A new web-based tool developed by Dr. William F. Lazarus, Extension Economist and Professor in the Department of Applied Economics, is now available. The web-based calculator may be used to compare the economic value of manure from alternative manure application rates and methods. The value is based on crop nutrient needs for a specific field and crop rotation, fertilizer prices, manure hauling costs, manure type, and application method. In addition to assisting with management of current livestock and crop operations, the calculator can be useful in budgeting new facilities or evaluation of contract production through estimating the effect of manure and manure management on cash flow. The calculations can also assist crop and livestock producers estimate the value of manure that may be transferred or sold from one entity to another.

Livestock producers face uncertain markets and narrow margins. This situation

motivates growers to optimize production methods, utilizing all resources including manure. In addition, an increase in the price of commercial fertilizer experienced since 2009, has heightened interest in the use of livestock manure for supplying crop nutrients and has significantly increased the value of manure as a nutrient source.

In recent years more producers have been considering the contribution of manure value to cash flow in livestock operation budgets, and seeking an appropriate market value in exchange situations between livestock producers and crop producers. More crop producers also appear to be seeking manure as a major nutrient source, either by purchasing from a livestock producer or by adding livestock to their operations, particularly swine finishing. Determining the economic value of the nutrients in livestock manure can be tricky. Nutrients in commercial fertilizer are acquired by paying for the nutrients and a small application charge. With manure, you in effect, "acquire" nutrients by pay-

ing for the cost of application, even if you already have ownership of the manure in a storage structure.

Additionally, commercial fertilizer supplies the amount and ratio of nutrients you need or ordered. With manure, you get the amount and ratio of nutrients that it contains, which complicates the determination of a value. Even when a rate that supplies the correct amount of nitrogen is applied, the amount of phosphorous and potash applied may not match what you would have purchased commercially, and amounts applied above crop needs probably have no value. In the past, manure application costs often exceeded the value of the nutrients applied. Now, in many situations, the nutrient value in the manure exceeds the cost of application.

The web-based calculator is available at <http://z.umn.edu/manurevalue>.

Jose A. Hernandez
University of Minnesota
Extension

<http://blog.lib.umn.edu/efans/cropnews/2012/02/whats-manure-worth.html>



Surface applying solid manure with a horizontal beater manure spreader.

“The web-based calculator may be used to compare the economic value of manure from alternative manure application rates and methods.”



The Livestock Environmental Management Area Extension Specialist will setup workshops and demonstrations like this manure spreader calibration demonstration.

AREA EXTENSION SPECIALIST, LIVESTOCK ENVIRONMENTAL MANAGEMENT POSITION AVAILABLE

The NDSU Extension Service is now accepting applications for the Area Extension Specialist, Livestock Environmental Management Position. The chosen candidate will be stationed at the

Carrington Research Extension Center in Carrington North Dakota. Job duties include assisting livestock producers with nutrient management issues and creating educational programs to help manage ma-

nure and livestock facilities using best management practices. More information can be found at:

<https://jobs.ndsu.edu/postings/1970>

SWINE MANURE IMPROVES SOIL HEALTH

Swine manure, like other manures, is a good fertilizer. However, soil and manure nutrient tests and manure applicator calibration are required to meet crop yield goals and prevent pollution. Fertility is just one of the benefits of manure in the soil. Manure can improve many properties in the soil that also benefit crops and can increase yields.

Soil benefits from swine manure predominately come from the addition of organic matter. Ideally, prairie soils should be composed of 45 percent minerals, 25 percent air (soil pore space), 25 percent water (soil pore space) and 5 percent organic matter. However, due to tillage, soil organic matter has been reduced and is typically around 3 percent. Even though organic matter makes up a small piece of the soil composition pie, organic matter can have the greatest effect on soil prop-

erties. Manure applications can increase soil organic matter.

Increasing soil organic matter improves many soil properties. Organic matter is relatively light and has a lot of surface area. Organic matter's surface provides pores in a soil that increase soil water holding capacity, water infiltration, and lower soil bulk density. Organic matter also has glues that help hold soil together, thereby improving structure. Studies have indicated that soil properties are improved more on sandy soils than clayey soils.

Soil organic matter has weak negative charges on the surface. This negative charge holds onto positively charged nutrients such as ammonium and slowly releases the nutrients to plants and prevents nutrients from being lost.

In addition to improving these soil properties, the

addition of organic matter feeds soil microbes and can increase microbial activity. Increased microbial activity improves nutrient cycling. Fungi and bacteria feed on organic matter. Protozoa in the soil feed on the bacteria and fungi. Excess nitrogen from their feeding is re-released as plant-available nitrogen.

Mycorrhizae are fungi that form symbiotic relationships with plants. They attach to plant roots and increase root size. By doing this, mycorrhizae allow plants to gather more nutrients. Plants then secrete carbohydrates used by the fungi.

With all of these benefits from the addition of swine manure, producers should apply manure at agronomic rates. This reduces the chance of water pollution yet allows good crop yields and improves soil health.

Chris Augustin



Liquid manure is being applied through injection into the soil.

“Increasing soil organic matter improves many soil properties... the addition of organic matter feeds soil microbes and can increase microbial activity.”

NAEEM KALWAR

tivity of the area soils for a sustainable future. This was achieved by overcoming problems like soil compaction, high water table, high pH, low soil O.M. levels, soil salinity & sodicity along with helping the farmers with the selection of better crop rotations, selection of improved seed varieties suitable to the local areas, seed rates, planting methods, use of balanced fertilizer doses based on soil analysis reports and improved farm management practices. To achieve these objectives, Naeem and his team sampled soils, worked one-on-

one with producers, and conducted various workshops. Demonstration plots were planted to show the differences between emerging and conventional practices. Besides that, the team developed, updated and published crop booklets, brochures and pamphlets on a continuous basis.

During that period, Naeem became a staunch supporter of maintaining the health and productivity of soil. The most important challenge he faced was soil salinity and sodicity problems. Considering all that, he always gave special emphasis to these issues as good

crop yields are directly related to a productive and problem free soil.

After coming to Canada in 2006, Naeem completed another Masters in Land Resource Science at the University of Guelph in Ontario. Naeem became the Soil Health Area Specialist at the Langdon Research Extension Center in March of 2012. He plans to contribute his soil health, extension related work experience, and teamwork effort to prevent and mitigate soil salinity, soil sodicity, and other soil health related issues in North Dakota.



Naeem Kalwar is an Area Extension Specialist/Soil Health at the Langdon Research Extension Center.

We are on the Web!
www.ndsu.edu/nm

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The last *Commentary from the CAFO Corral* discussed irrigation products for runoff pond management. We would like to keep you thinking on how to manage your ponds. It is easy to get complacent; it has been a great year weather wise caused by last winter's lack of snowfall. This is leading to little spring runoff across most of the state. However, the potential is still there for a large runoff event to occur this spring, summer, or fall. As we have seen in recent years, periods of wet weather has led to pond management issues.

State animal feeding permitted facilities are allowed to discharge when certain criteria are met. That criteria is the livestock facility must not discharge pollutants to surface waters from a rain-

fall event that is less than or equal to a 25-year, 24-hour rainfall event. These rainfall events range from 3.5 inches to 4.0 inches across the state. So if you are an owner of a runoff pond, it is in your best interest to know the 25-year, 24-hour rainfall event for the area your operation is located. It is also in your best interest to maintain records so if a discharge occurs you can show why the discharge occurred.

Containment pond effluent must be applied at agronomic rates. This past year the department worked with local soil conservation districts employees on sampling runoff ponds for nutrient content. The samples were taken from the pump during irrigation. The samples showed that there are nutrients in the runoff re-

quiring agronomic applications (Table 1). Effluent must also be applied at or below the soil water infiltration rate. Coarsely textured soils like sand infiltrates water faster (.79 in/hr) than finely textured/clayey soils (0.04—0.20 in/hr).

Applying containment pond effluents at agronomic rates and below soil water infiltration rates prevents runoff and surface water pollution.

Brady Espe
North Dakota Department
of Health
701-328-5228

Table 1. Containment pond effluent average nutrient results from 8 ponds.

Total N	Ammonium	Nitrate & Nitrite	Phosphorus	Sulfate	Chloride	Total Dissolved
-----mg/L-----						
69.3	30.2	0.4	23.6	708.1	256.1	2637.5

RESEARCH EXTENSION CENTER FIELD DAYS

Carrington Research Extension Center, July 17, 701-652-2951

Central Grasslands Research Extension Center (Streeter), June 27, 701-424-3606

Dickinson Research Extension Center, July 11, 701-483-2348

Langdon Research Extension Center, July 19, 701-256-2582

Hettinger Research Extension Center, July 10, 701-567-4323

North Central Research Extension Center (Minot), July 18, 701-857-7682

Williston Research Extension Center, July 12, 701-774-4315

Thanks for reading this issue of *Nutrient Management News*! You may distribute this in any manner you see fit. If you would like to receive future copies, email me (chris.augustin@ndsu.edu) to be added to the list.