Farm Views

Fertilizing Crop Land With Biosolids

An Educational Workshop about Lincoln's Biosolids Program

Feb. 28, 3:30–8:30 p.m.
Lancaster Extension Education Center,
444 Cherrycreek Road, Lincoln

Meet at 3:30 p.m. at the Lancaster Extension Education Center and travel to the Theresa Street Wastewater Facility at 4 p.m. for a tour. Educational program is back at the Lancaster Extension Education Center from 6–8:30 p.m.

Please preregister for this workshop by Feb. 25 with Karen Wedding by calling 441-7180.

At this biosolids workshop you will learn:
- how wastewater is processed and made safe for application.
- how regulations determine application rates and locations.
- how GPS and GIS technology is used in Lincoln's Biosolids Program.
- how you can reduce your out-of-pocket fertilizer costs.
- biosolids improves soil tilth, especially on poor or eroded soil.
- biosolids increases organic matter and water holding capacity.
- biosolids usually increases crop yields for several years after just one application.

Farm Management Web Page Added

If farming is the equivalent of running a manufacturing business, crop and livestock production is equivalent to the factory and farm management is equivalent to the "front office." People need ready access to farm management information. In recognition of this need, a farm management section has been added to the Lancaster County Extension, Ag & Acreage website and a new button has been added to the navigation bar.

This site features information from the University of Nebraska and other mid-western land-grant universities on leasing arrangements, estate planning, risk management, marketing, crop and livestock budgeting and taking best advantage of the farm program.

To access the Ag & Acreage web page, point your browser to:

www.lancaster.unl.edu/ag

There you will find the Nebraska Production Agriculture Web site along with the navigation bar for quick access to markets, weather, crops, livestock and farm management information plus access to the extension events calendar. (TD)

Check Condition of Stored Grain

Nebraska experienced one of the nicest falls in recent memory in 2001. We had good drying conditions and temperatures stayed unusually warm well into December. Most grain dried well in the field and required little additional drying to reach normal storage moisture of around 15 percent. One should not forget that moisture content is not the only consideration for safe long-term storage. The temperature of the stored grain is important as well. Maintaining grain temperature below 70 degrees F reduces insect reproduction. Insects become dormant at temperatures below 50 degrees F and many are killed below 32 degrees F. Temperature affects mold growth as well. Mold growth is reduced below 50 degrees F and nearly stops at temperatures below 40 degrees F.

When grain temperature is significantly warmer than the air temperature, convection currents can occur in a grain bin. Air will sink in the cooler grain near the bin wall and rise through the warmer grain in the center of the bin. Warm air moving up through the center carries moisture with it. When the warm/moist air contacts cold grain at the top surface, some of the moisture can condense and re-wet the grain. Crusted, moldy grain, sometimes with active storage insect activity can result if this condition is not discovered early and corrected by breaking up the crust and running aeration to dry and cool the grain.

To reduce convection currents in the grain, one should aerate whenever the average outdoor temperature is 20 degrees cooler than the grain temperature in the center of the bin. Typically, grain is aerated shortly after harvest in early fall and a again in late fall as outdoor temperatures cool into the thirties and forties. When cooling grain, be certain that the cooling front is pushed all the way through the grain mass before discontinuing the aeration. A cooling front pushed part way through the grain can result in moisture condensation in the zone where the two temperatures meet. This is especially important if grain temperature is being lowered more than 20 degrees in one step.

The amount of time required for an aeration cooling cycle depends on the airflow rate. The cooling time can be estimated by dividing 15 by the airflow rate. For example, 75 hours is needed with an airflow rate of 0.2 cfm/bu*. Check grain temperature at several locations to determine when the cooling front has been pushed completely through the grain. Grain temperature changes about 50 times faster than the moisture content, so the air's relative humidity is of little concern during grain cooling. Once grain has been cooled to below 50 degrees F, the fan could be run intermittently to prevent re-wetting.

When not running the aeration system, remember to close roof hatches to prevent rain and snow from getting into the bin. Cover the fan whenever it's not running to prevent problems caused by the chimney effect that can draw in moist air at the bottom of the bin and up through the grain. (TD)

* **cfm/bu** = Cubic feet of air per minute per bushel of grain in the bin. The airflow rate produced by a fan is a function of the fan design and the back pressure the fan must overcome. The back pressure is a function of the air delivery system, the type of grain and depth of grain in the bin. Once the type and depth of grain is known, the air flow can be estimated from performance data for the fan. The cubic feet of air per minute produced by the fan, divided by the total bushels in the bin, results in cfm/bu.

Testing Feed and Balancing Rations Saves Money

Feed is the largest expense of the beef cow/calf operation resulting in 55-65 percent of the total operation cost. Overfeeding increases costs. Inadequate feeding decreases animal performance and reduces profit potential.

Forage testing and ration balancing allows producers to develop a practical method to feed cows and calves a balanced, low-cost diet. The goal is to get the best performance possible with the feed resources available at the lowest cost.

The main advantage of testing and sorting feed for beef cow/calf operations is feeds can be targeted for their best use in the cow/calf enterprise. For example, on a spring-calving cow herd, a lower quality forage could be used during November and December, while animal nutrient demand is lower. The lower quality roughage also generates more heat in the digestion process, and this will come in handy during a time when extra heat can be used.

Top quality feeds should be used near calving time for the cow to recover from calving, to produce milk for the calf and so the cow is ready to be bred again. Depending on location and needs, money also can be saved in such a situation. In comparing average quality alfalfa to higher quality alfalfa, if the average hay can sell for $55 per ton and high quality, dairy quality or alfalfa with a relative feed value of 150 or higher at $95 per ton, then determine what feed is needed and how well it will do in the operation. Producers could sell some higher quality feed and buy back cheaper feed, if the time is right.

Photo by University of Nebraska Institute of Agriculture and Natural Resources

When buying hay, producers need to be aware of quality factors and base the price on the quality. Because one doesn't know how feeds will test until they are sampled, the most important things to test for are:

- **Moisture content —** Moisture is a measure of the amount of water in the feed. This is important because moisture dilutes the concentration of all nutrients.
- **Energy value** — For beef cow rations, the test for energy is total digestible nutrients (TDN). This is most useful when formulating rations and determining supplements that may be needed.
- **Protein value** — Usually expressed as percent crude protein. If producers must supplement protein, this information can be used to determine the source of protein that is most economical. As an example, if one had a large quantity of lower quality hay to feed, one could determine whether soybean meal, liquid protein sources, protein blocks or higher protein alfalfa would be the most economical source of supplemental protein to add to the ration to meet the animal's nutrition needs.

Testing for protein content also can help determine how the feed can be fed if it is to be used as a protein source in the ration. For example, protein doesn't have to be fed every day. If it would fit the herd's needs at five pounds a day for 100 cows, that would be 500 pounds of needed protein. If a 1,000 pound bale of hay was put out every other day, the protein need would be achieved. (TD)

SOURCES: Paul Hay, extension educator, Gage County, NU/IANR; Rick Rasby, Ph.D., beef specialist, NU/IANR