On May 12, 1992, the first truckload of the City of Lincoln's dewatered biosolids was delivered to farmland in Lancaster County. This event ended a decade of planning by Lincoln's sanitary engineers to dispose of this municipal organic waste in a more environmentally responsible, beneficial manner — rather than being buried in the landfill. In the last 20 years, more than 100 area farmers have applied nearly 600,000 tons of biosolids to their cropland, improving their soil and increasing yields.

University of Nebraska–Lincoln Extension in Lancaster County has worked with cooperating farmers since the beginning of this program, taking soil tests, making sure biosolids are not applied too close to sensitive environmental features that might compromise surface and groundwater, determining application rates, and calibrating equipment. Program goals are to enhance the productivity of area soils through the environmentally-safe use of this material and to work with as many farmers as possible. We encourage farmers to apply biosolids as soon as possible and to take steps to reduce odors when they occur.

Nebraska farmers tend to be a conservative lot, but a few progressive farmers jumped into using biosolids wholeheartedly right away. Others adopted a wait-and-see attitude; they sat back and watched their neighbor’s corn grow faster and larger and produce higher yields before they were convinced about biosolids.

**What’s in Biosolids That Makes it So Good?**

Biosolids contain significant quantities of all macro and micronutrients needed for crop growth. One application typically increases organic matter in soil about 0.6%, which increases water infiltration and improves soil tilth. For highly eroded or excavated soils, a single biosolids application can immediately make them productive.
Demand for Biosolids

There is more demand than ever for biosolids, but most cooperating farmers are not using biosolids for nitrogen (N). It is the readily available phosphorus (P) that cooperators want. After a single application of biosolids, a P deficient soil typically increases 30–40 ppm (Bray-P test). With average crop removal rates, it will take 10–12 years for the soil tests to return to original levels.

Farmers are Paying for Biosolids

At the beginning of the program, it was tough to find farmers who were willing to use biosolids because they had to have a loader, spreader and enough time to apply the material. To encourage more farmers to use biosolids, in 1993, the city began paying cooperators to defray application costs. Twenty years later, there is so much demand for biosolids, cooperators are actually paying the city for it. Biosolids are delivered to field storage sites, but cooperating farmers are still responsible for application — either applying it themselves, or hiring a custom applicator to apply it for them.

EPA Regulations

In 1993, federal regulations set standards for pathogens, heavy metal concentrations, and rules that determine application rates and application sites. The intent of these regulations was — and still is — to prevent harm to people, wildlife, and the environment. Soil tests are taken on fields to make sure the soil needs nitrogen and to determine application rates. There are also restrictions that prevent application of this material close to wells, rivers, streams, and public water supplies.

GPS/GIS Technology

In 1997, extension purchased a global positioning system (GPS) receiver and geographic information system (GIS) software used to map storage and application sites. This monitoring system has become important in tracking multiple applications on fields.

Everyone Wins

This is a program where everyone wins. The City of Lincoln wins because the cost associated with landfilling biosolids is greater than the cost of the biosolids program. It may be hard to believe, but to landfill biosolids, the City has to pay tipping fees just like any other user. Landfill users — nearly everyone in Lancaster County — win because this program saves landfill space and extends the life of the Bluff Road Landfill. Cooperating farmers win because they get greater yields, which helps their bottom line. UNL Extension wins because this program is one to be proud of — few extension programs do a better job of demonstrating the interdependence of urban and rural sectors of our society.

For more information about the biosolids program, contact Barb Ogg or Dave Smith at 402-441-7180, Monday–Friday, 8 a.m.–4:30 p.m.

Teaching An Old Guy New Tricks

My favorite biosolids story is about Wally Hansson, who lived in Wahoo, but had 145 acres on Ashland Road, just inside the Lancaster County line. In 1993, I met Wally at his farm to flag storage sites.

“Wally, we will bring enough biosolids so you won’t need to apply any other fertilizer,” I said. “In fact, I don’t want you to add other fertilizer to this field.”

Wally looked at me and said, “I can’t believe it. Surely, I need to add something more. Are you sure?”

“Yes, Wally, I am quite sure,” I said. “I know it is hard to believe, but trust me, and let’s just see what happens.”

After his 1994 corn crop was harvested, Wally stopped by the office to sign paperwork.

He said, “I didn’t add any other fertilizer, just like you said. But, you were right ... I just harvested the best corn crop I ever got off that field.”

As I recall, 1994 was an exceptional year for growing crops in eastern Nebraska. Rains came periodically and at just the right time for growing crops, but Wally credited the biosolids application for his best corn crop ever. Wally passed away in 2010 at age 88. He used to stop by the office sometimes just to pass the time.

—Barb Ogg

Biosolids Also Benefit Pastures

Mark Benes is a grain and livestock farmer north of Lincoln. He has been using biosolids for 10 years on crop fields and about eight years ago tried biosolids to fertilize a pasture for summer grazing of his cow/calf pairs.

“My normal stocking rate for that pasture is about 20 pair,” Benes says. “Biosolids made that field so lush and productive I could have increased my rate. Even after I got my cows off in the fall, there was so much forage left, I was tempted to take a hay cutting.”

Since pasture is normally on poorer soils the benefits of using biosolids for both pasture and hay fields can be substantial in increased yields and soil improvement.

—Dave Smith