Dead Reckoning

Carcass Composting Is Option For Dealing With Dead Livestock

BY RITA BRHEL
P&D Correspondent

Mortality is a natural part of any livestock operation. No matter how foolproof farm management systems are, there are still animals — young and old — that succumb to illness, disease, drought-induced plant toxins, aging and other causes of death.

Getting rid of dead animals, though, can be a tricky ordeal. South Dakota and Nebraska law requires that livestock carcasses are disposed of in an approved manner by 36 hours post-death. These disposal methods are limited to burying at a depth of at least four feet, incinerated in a closed facility, picked up by a renderer or composted.

At one point, all a farmer had to do was to pick up the telephone and call the local dead wagon, another name for the renderer, to pick up a dead cow, hog, sheep, goat or horse. The service was free, as the renderer's profit was in processing the carcass into hides, greases, tallows and other byproducts. Nowadays, renderers charge for picking up dead animal, if there's one locally available. Otherwise, producers are left to figure out what to do with dead animals on the farm.

Burying a carcass occasionally on the farm isn't that concerning, but for a large livestock operation, burying is impractical at best and could be a potential water pollutant at worse. Incineration is a limited option. That leaves composting.

To get an idea of what livestock composting is about, think of a compost bin for lawn and garden waste, but on a larger scale. Saquib Muktar, agricultural engineer at Texas A&M University in College Station, Texas, said there are a lot of misconceptions about what a livestock compost pile looks like. What it isn't: It's not dead animals scattered around the ground to rot in the open air, allowing wild animals to scavenge. It's not a pile of dead animals, either.

Rather, a livestock compost pile is carcass that is completely covered with composting feedstock, Muktar explained.

Livestock composting has an art and science to it. The carcass needs to get to a proper moisture content and temperature to encourage rapid decomposing and kill pathogens, but the sight and smell must be kept at a minimum, and the compost pile needs to be constructed in such a way that groundwater and surface waters aren't contaminated by potential pathogens.

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The typical compost pile is five to seven feet tall with sloped sides to shed off rainwater. The top of the pile may be more pointed to promote better water runoff in wet climates, or flat or concave in dry climates where keeping enough moisture to aid in decomposition may be difficult. The compost pile would sit on a plastic liner to prevent leaching of carcass materials into the soil and eventual groundwater. Envisioning a cross-section of a compost pile itself, the floor of the pile would be a two-foot bed of woodchips or straw to serve as a bulking agent to absorb moisture and maintain the pile structure. The carcass is then placed on top and covered with a composting feedstock, which may include manure, spilled or spoiled feed, straw, chopped corn stalks and other mixed organic matter.

The term "composting" refers to a process, said Amy Schmidt, agricultural engineer at the University of Nebraska in Lincoln, Neb. It's not enough to construct a compost pile and let it sit. This is a choice farmers can make, though it's a much slower process and more appropriate for smaller operations.

But the composting that Schmidt referred to involves an intensive-management system with daily monitoring of heat and moisture within the pile. Internal pile temperatures should be 120 to 160 degrees F, with a temperature of 131 degrees F maintained for at least three consecutive days during each heating cycle. Each heating cycle is 90 days, and at the end of each cycle, the pile should be turned and composting feedstock and moisture should be added if needed. Two heating cycles are needed and sometimes a third, depending on the condition of the carcass at the end of the second heating cycle. Large carcasses need to be composted longer than smaller carcasses. Mature compost, or the material left over from successful carcass composting, is dark in color with a consistent texture and an earthy scent.

Karl VanDevender, agricultural engineer at the University of Arkansas in Little Rock, Arkansas, said the main concern with composting is managing rain runoff to bypass the compost pile. His solution: maximize vegetative cover and minimize bare soil. In areas where plant cover doesn't work, runoff can be redirected though drainage construction, gravel use, concrete structures and similar modifications to the soil surface.

"We don't necessarily need to re-route all runoff water," VanDevender said. "If the water is coming in contact with a grassy area, we don't need to do anything at all."

Another downside to composting is managing nuisance issues, whether it has been deemed unsightly by the farmer's spouse or the neighbor has concerns with odor or wild scavengers. But VanDevender has found that a well-constructed compost pile is unlikely to have these problems.

"Keep it as inconspicuous to the public as possible," he said. "If there are legs sticking out, that's not acceptable. This whole concept of 'out of sight, out of mind' really applies to people but also applies to predators."

Commentary

A Bit Of History Of U.S. Ag Development

BY RITA BRHEL
P&D Correspondent

Abraham Lincoln is probably my favorite of the U.S. presidents. It's not only that he abolished slavery and saw the end to the Civil War, but he just seemed like an all-around good guy. Plus he was from Illinois, where I have a lot of my extended family. Now, I have another reason to like him.

It was Lincoln who, with Congress, established the U.S. Department of Agriculture in 1862 as well as the land-grant Colleges for Agriculture through the Morrill Act, which eventually led to the development of agriculture experiment stations.

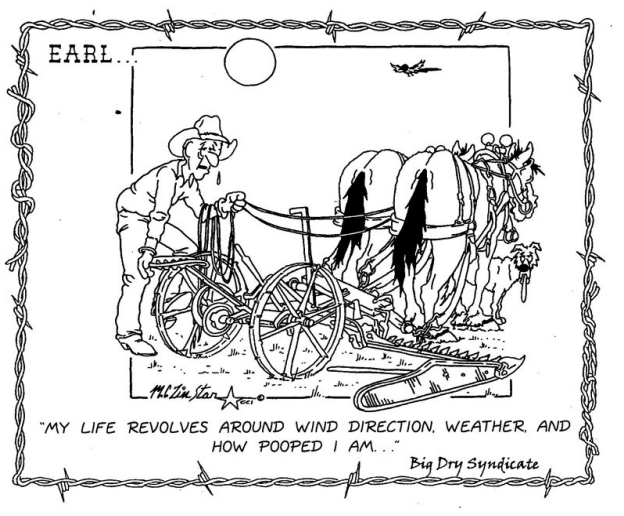
I learned this after reading information a historian over in Zanesville, Ohio, found in his research. I also have family in Ohio. Apparently, according to Chuck Bell, who is also a retired county agent, the nation's founding fathers, George Washington and Thomas Jefferson, were both big believers in agricultural development as the backbone of the United States' economy. Washington had recommended to Congress in 1796 to fund a national board of agriculture, which Lincoln later deemed the Department of Agriculture, but at the time, Congress ignored Washington.

Bell mentioned that the demographics would hugely different in Washington's time from today, as we might have guessed. Back then, 99 percent of the population was involved in agriculture and 10 bushels of corn per acre was considered a bumper crop. Perhaps Congress didn't think of appropriating money to a national board of agriculture, because it seemed ridiculous to them at the time that there would be anything but an economy grown on crops and livestock. Of course, the U.S. population at the time was much smaller than it is today and technology has changed so much of the production landscape in such a relatively short amount of time. Back in Washington's time, I imagine, it took much longer for advancements to occur, in general.

But Washington and Jefferson did have the foresight to put economic emphasis on development of the agricultural economy, and it is this kind of targeting by the right people where advancement occurs the fastest, in general.

1862, only about 150 years ago, seems to be a long time ago in a way, but relative to the history of modern mankind, it is almost a blink of an eye. And now farmers make up less than 2 percent of a population that is exponentially larger than it was a century and a half ago, and it is these farmers that are able to pull out 150-plus bushels per acre from their fields. It's surreal to think of how fast things have moved in agriculture and technology if you stop to think about it.

At the same time, we must be careful to not overextend our natural resources. Sometimes, I think it must be a precarious balancing act, to be able to demand so much of our soil and water to produce such yields as we do but yet not to deplete them at the same time. But that's part of that agricultural economic development, too. And the U.S. Department of Agriculture keeps a fairly good balance between conservation-minded and production-oriented programs, at least in my mind. The struggle, it seems, is more of keeping the non-agricultural public — of which there's a whole lot of them — educated and informed on the importance of agriculture so that Congress will continue to give it the appropriate financial emphasis that Washington and Jefferson had in mind.



USDA Rural Development Set For Fair

HURON — USDA Rural Development will host an informational booth at the 2014 South Dakota State Fair in Huron on Aug. 28 in conjunction with Value Added Agriculture Center Day.

Information will be available regarding the programs offered by the agency from 9 a.m.-4 p.m. The booth will be located in the Value Added Ag tent near the Freedom Stage.

"We invite you to stop by our booth to visit with staff regarding the many programs available through USDA Rural Development," said Elsie M. Meeks, USDA Rural Development state director. "USDA Rural Development staff will be on site to assist fair goers who may have an interest in learning more about all of the great programs our agency offers. We consider it a privilege to assist with making dreams a reality for rural South Dakotans."

Housing Programs offered by USDA Rural Development include the guaranteed housing loan program, direct housing loan program, and the home repair and rehabilitation loan and grant program. Assistance is available to low and moderate income families that live in rural areas.

USDA Rural Development's business and community programs are designed to enhance the growth of economic opportunities of rural areas by providing the means for construction, expansion, or enhancement of community facilities, telecommunication and distance education programs, water and waste disposal systems, and business ventures.

USDA Rural Development has eight offices in the state that assist rural communities. Office locations include a state office in Huron, along with area offices in Aberdeen, Mitchell, Pierre, Rapid City, Sioux Falls, Watertown, and Yankton.

For more information about programs available through USDA Rural Development visit www.rurdev.usda.gov/.

Farmers See Saline-Sodic Soil Issues

HURON — Farmers across South Dakota, especially in the east and the James River Valley, are seeing an increase in salinity and sodic soil problems. Out on the landscape, the white spots on the soil surface without vegetation are identified as saline soils that have high salts, while sodic soils have high sodium levels.

At a July field day near Pierpont, farm groups hosted experts from the USDA Natural Resources Conservation Service (NRCS), South Dakota State University (SDSU) and about 120 farmers to take a close look at what is happening with water movement within the soils of those problem areas. As part of a Conservation Innovation Grant from NRCS, North Dakota State University and SDSU are exploring salinity and sodicity treatment practices. The universities are tracking soil performance under various management options and researching alternatives such as using amendments to improve infiltration, especially in the affected areas that are tiled. Much of SDSU's research and the discussions that day where about successes.

How those areas are managed, i.e., crop rotation, use of a no-till system or conventional tillage, tile drainage, etc., affects the productivity. NRCS Conservation Agronomist Jason Miller, Pierre, told the crowd that managing soil moisture or water stored in the soil throughout the year is important to keep the fields productive. The high salinity/sodic problem is caused by a combination of soils that have high salt concentrations deep in the soil profile and then not growing a crop to utilize the majority of soil moisture received throughout the year. "The management made the natural function of water movement in soils quit working properly," Miller explained. "So, in essence, the water table begins to rise in some areas because the cropping has been changed to an annual crop versus a perennial vegetation. While other areas, it is water coming or nearing the soil surface on a sidehill, or what we call a saline seep. Both occur when the cropping system that is employed does not use enough of the moisture."

At the field day, Dave Gillen who farms in Aurora County, explained how he is dealing with some of the areas through seeding perennial vegetation to try to get these areas producing again. With corn prices this year, Gillen says his strategy is to get the soil and water movement back working properly so when there is an upswing in corn prices, those areas could potentially be planted again.

"Understanding water movement through those soils and using farming practices that mimic nature to better manage plant available water will speed recovery and get saline or sodic soils producing any return," Miller explains.

"Just tiling a corn and soybean field to try to move water isn't the answer because in a salinity/sodic area, the overall soil ecosystem has been damaged and isn't functioning correctly," says Miller. "You've got to address 'the whole' of the situation. Those areas need a perennial crop that will tolerate the salinity/sodicity soil to use the available soil water."

Conventional tillage systems destroy soil structure and the macropores that are essential for water movement," explains Miller, "so eliminating tillage will help the soil's physical, biological and chemical properties. Tillage makes the problem worse because it dries the surface which results in more salts accumulating at the soil surface from the capillary rise of soil water from the disturbed area.

Soil microbes need food. Corn and soybeans are not growing in these areas so there's no food for the microbes to function. Miller recommends planting a barley or rye at the minimum, but perennial vegetation for a minimum of 3-5 years would be best. Monitoring through soil tests will document the soil health benefits.

"Managing for healthier soils can be complex task with long-term implications. If you're seeing problems with your soil and production, get help," says Miller.

Increasing organic matter to get better use of water in those areas can be done by eliminating tillage and keeping living roots growing longer throughout the year. Miller says, "Crops, like corn and soybeans, use water in the soil for a limited time so adding cover crops use more moisture and to feed the soil will help."

Diversifying crop rotations or other alternatives such as seeding perennial vegetation will also help to bring back proper soil function. An area could also be entered into the Conservation Reserve Program (CRP) under continuous sign-up. NRCS can help farmers determine the best option for these resource concerns.