

Composting Manure, Taming a Menace

Joel Rissman, Leaf River, Illinois

Low-Cost Waste Management in Beef Cattle Operation

Coordinator: Joel Rissman

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Joel Rissman built a retention pond and composting pad to deal with runoff coming from his farm's manure piles. By composting manure, he eliminated offensive odors, made it easier to haul the manure, and improved the land surrounding his cattle fields.

Every time that it rained, Joel Rissman noticed that runoff water coming from his farm's manure piles created severe weed problems behind his cattle yard. Rissman knew he couldn't fight the forces of nature, so he worked with the runoff instead. He diverted the runoff to a retention pond and used this new water source for his manure composting system.

Not only did the new system solve his weed problems, it reduced the risk of manure-laden runoff reaching a creek less than a mile away.

"The idea was to give myself a water source for composting manure. You have to use water to create an ideal environment for the micro-life to break down the manure," says Rissman, who farms 372 acres with his uncle in Leaf River, Illinois. He also uses the retention pond water to irrigate sweet corn, vegetables, fruit trees, flowers, and the lawn. Runoff, once a menace, has become his ally.

To build the retention pond and concrete composting pad, Rissman received a SARE grant from the University of Illinois. He built the pond directly behind



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the cattle yard and placed the composting pad between the cattle yard and the pond. Rissman also created grassed waterways, running along cattle yard fences from the composting pad to the retention pond.

The 50-by-50-foot pond is sloped to reach a maximum depth of 7 feet and was designed to handle a one-time 5½-inch, 24-hour rainfall. He sealed the bottom of the pond with a thin layer of bentonite topped with a quarter inch of high-calcium lime, preventing water from seeping into groundwater.

The compost pad, meanwhile, was built to hold four compost piles, each one about 10 feet wide by 5 feet tall, says Rissman. The sides of the pad slope away from the pile so that any runoff water will drain into the grassed waterways and travel straight to the pond.

The composting process actually starts in the cattle shed, Rissman explains. When the floor is bare, he puts down a 1-inch layer of high-calcium lime. The purpose of the lime, says Rissman, is to "help absorb the nitrogen-rich urine." This minimizes the loss of nitrogen in the form of ammonia.

When the bedding in the shed reaches a depth of about 4 inches, Rissman sprays it down with a compost starter inoculant, which jump-starts the breakdown process.

Then he re-sprays the pile about once a week. By the fourth to sixth week, Rissman cleans out the shed, moving the manure to the compost pad.

By composting manure, Rissman benefits in numerous ways. Besides eliminating the offensive odors of raw manure, he says the piles lose about 60 percent of their volume and about two-thirds of the weight, making the manure significantly easier to haul around. In addition, the nutrients in compost are already broken down and plant-available, and the process renders pathogens and weed seeds unviable.

As a result of the system, Rissman says he has seen great improvement in the land surrounding his cattle fields.

"I have never seen so little weed problems in the once affected area," he says.

Most importantly, Rissman was able to solve three problems—raw manure management, cattle yard runoff, and self-sustaining fertilization—with one simple, inexpensive solution. He says he has been able to eliminate the use of commercial fertilizers, saving money.

Through this experience, Rissman says he has also learned that there are many low-cost solutions to problems in agriculture.

"Projects such as this do not throw a lot of money at the problem, hoping for a quick solution," he says. "The huge base of farmer ingenuity and know-how can help alleviate many troublesome problems."

By Jason Peterson