

B BROWN BEAR

Handling manure produced by small to mid-sized beef cattle feeding operations



Summer and winter, Cold Springs Farm's unique tractor-mounted aerator compostor strips manure from its feeder pens without disturbing the clay base below.

Manure handling made more effective

Though admittedly rather small by today's standards, Cold Springs Farm, Hanover, Illinois, has found it highly cost-effective to buy and use an ingenious attachment for their newest PTO-equipped farm tractor.

Their device, an interchangeable aerator compostor from Brown Bear Corporation, Corning, Iowa, provides the farm with benefits proven on a wide variety of material aerating operations over the past 20 years. Here, as at many similar installations of all sizes, this unique attachment processes manure-based compost in what the farm's management states as "far less time and far more effectively" than the succession of front-end loaders and other equipment it replaced. The continual controlled augering of the aerator unit, its 2'11" height and 11' width provides a finer, drier, more

homogenous mix. Full oxygenation results in more nitrogen and other soluble nutrients in the end product than was achieved previously. The final material is virtually free of weed seeds and pathogens.

Attachment (and detachment) of the unit takes little time. The tractor operator, working alone, makes the changeover from 1 1/2-yard loader bucket or dozer blade in about 30 minutes. All three tools work off the front end of a conventional New Holland TV-140, one of nine 90 to 175 hp tractors owned by Cold Springs Farm.

Their location is very unlike most of the Prairie State. Terrain here is hilly, not flat, originally heavily wooded, not grassy; attractive to tourists headed for the nearby historic Mississippi River town of Galena. The farm itself fattens an average of 7,000 mixed beef animals annually, 3,500 at a time. Much



Windrowing the manure down to the clay base keeps the cattle on solid footing and out of the rate of gain robbing deep manure.

of their corn and alfalfa feed comes from 600 rotated cropland acres on the property. Another 700 owned acres are devoted to pasture, much of it utilized for the grazing which develops good bone structure in young steers and heifers.

As to the herd, about half are self-owned, half on consignment from various customers from all over the United States. Efficiency is under constant study. Yardage fees currently come to only 33¢ per day per head. Though quite modest, the charge brings owners Robert and William Drucker what they call a fair return on their investment. Customers profit too, to the point that a very high percentage repeat their consignments from year to year.

The operation, under the direction of David Howard, resident manager, accepts animals of every variety and almost any size, generally 400 to 900 pounds. Finished weights customarily range from 1,100 to 1,300 pounds. Customers select the type feeding pen they prefer, from a range of fenced-in lots suitable for 15 to 200 head, clay or concrete based, completely open-air or with roofed sheds at one side for bad-weather protection. There are 23 pens in all, and a work force of seven, including the manager, a veterinarian, and nutritionist.

According to their figures, the herd produces an average of 45 tons of raw manure per day.

Cleaner pens

One of the two primary assignments for the aerator compostor attachment involves cleaning the pens, particularly the farm's larger 150 to 200 head clay-based enclosures.

With what manager Dave Howard terms "the proper settings" — described as an easy task, given the aerator's direct mounting, positive controls and 3,700 pounds of weight — the unit delivers a major benefit — the consistent clear pickup of manure at its shear point with the clay below. This ability removes almost all the manure and almost none of the the clay. Loaders and their buckets, no matter how sharp their edges, simply cannot cut that accurately, a farm spokesman notes. As a result of these bucket inaccuracies, the farm previously had to replace about 400 cubic yards of clay per pen per year. Now, with the aerator compostor in operation almost daily since its purchase in June 1998, Cold Springs Farm executives report they still need to place about 400 yards of replacement clay in each pen but, based on experience to date, the addition will be required only once every five years instead of annually.

The farm follows what in the Midwest has become standard pen cleaning procedures. Manure accumulations are removed once every two to three weeks. "This frequency maintains a favorable environment. No longer do our animals sometimes have to push through accumulations of wet



The versatile unit works within a composting area to mix the manure with hay, creating a seed-free pathogen-free, high-nutritive soil additive.

manure. The thinner layer and consistently drier footing improves health conditions. The incidence of such diseases as foot rot greatly decreases. Flies and other obnoxious insects are minimized.”

Equally important, experts note that the cleaner pens enable the animals to put most all of their energy into weight gains rather than burning up food value simply in moving around. Comfortable feeder stocks, studies show, often gain 3.5 pounds per head per day. Seriously wet and muddy footing, the studies continue, “reduce gains for similar animals in otherwise similar environments to 1.5 pounds per head per day — or less.”

Better compost in fewer manhours

All the manure produced at Cold Springs Farm is collected, moved, composted and re-cycled.

In the last 12 months, a total of more than 15,000 tons of manure, plus the equivalent in hay additives, was mixed, aerated, cured and applied to the farm’s croplands.

Based on the advantages it has displayed, composting itself has been assigned totally to the Brown Bear unit.

The material, stripped and collected by both auger and loaders, goes via tractor-towed box spreaders to a 2-acre plot set aside for composting and storage. Better all-weather traction has been assured by the one-time addition of borrowed clay, compacted to a minimum depth of 3 feet. Routine

maintenance of the naturally sloped hillside continues its desired drainage characteristics.

Following deposit of the raw manure at this site, one or two workers manually scatter loose hay atop it in a ratio, in volume, of about 1 to 1. This second ingredient, added at the recommendation of a number of authoritative research studies, increases carbon content of the mass and speeds curing.

As work time permits, the tractor and its aerator composter are driven to this area. One pass here thoroughly mixes the two ingredients, leaving them in precise, separate, cure-inducing separate windrows.

Re-turning twice weekly for approximately 13 weeks after the initial passes results in a material that looks and acts like rich high-organic black dirt. The inherent heat, which has built up and been maintained in pyramid shaped windrows approximately 8 feet wide and 3 to 4 feet high, has destroyed all weed and other intrusive seeds. Pathogens and viruses have not been a problem since aerator/composter mixing began, per regular tests conducted by University of Wisconsin agricultural laboratories.

Contents of the Cold Springs Farm finished compost, the lab studies show, include significant amounts of such essential ingredients as nitrogen, potash, phosphorus, sulphur and zinc, and such secondary and micro ingredients as calcium, magnesium, iron and zinc.



Windrows in the separate compost site are laid adjacent to one another to reduce the space requirement.

Aerator production is consistently high. With the infinite speeds of hydrostatic drive, Cold Springs' New Holland/Brown Bear combination turns up to 900 tons (2,400 cubic yards) per hour. Its total ranges up to 8 to 10 times that of the loaders it has replaced on this work.

Its output has also proved easier to handle than raw manure. More homogenous, drier, more granular, lower in volume, it costs less to load and to distribute.

Results are equally impressive.

Field application of the finished material has increased humus content to the extent that the soils hold more water, work easier and are more productive. Corn yields, once around 80 bushels per acre, have progressed to an average of 180 bushels per acre.

For alfalfa, application of the finished compost is at an average rate of 2.0 tons per acre. Spread is made after every cutting, accomplished at intervals of about 28 days. Most years, the local May-September growing season produces four cuttings. Yields average around 2.40 tons per acre per cutting, 25% more than obtained from fields which previously received uncomposted manure only. The alfalfa, states the local county ag agent, makes a highly nutritious cattle feed. Its growth also improves soil quality. The natural water seeking penetration of its root growth can reduce soil

compaction all the way down to the water-table which, on the Cold Springs Farm, lies about 40 feet below ground surface level.

For all these benefits, Dave Howard reports "absolutely no mechanical problems" with the aerator composter unit.

"It's built to last," he states. "It's simple to hook up, and simple to use."

"For a purchase price of only \$24,000, we've added a highly productive, low-cost method of aerating, turning and creating high-quality compost."

The veteran agricultural agent of a nearby Illinois county agrees. He says: "Our field studies and observations show that tractor-mounted aerators, like the one used by Cold Springs Farm, have proved to us that they effectively mix raw materials of dissimilar types, moisture contents, specific gravities and volumes. The Brown Bear is the only aerator composter we know of that builds its own initial windrows. Since it always works directly in line with windrowed materials, it requires no alleyways. Existing space is better utilized, mixing is more thorough, and the compost produced is of very high quality. We feel confident in recommending this type of aerator compactor to all serious beef producers, small, mid-sized or big."

Three Brown stripes . . . the sign of quality

