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UNL's Livestock Environmental Issues Committee Includes representation from UNL, Nebraska Department of Environmental Quality, Natural Resources Conservation Service, Natural Resources Districts, Center for Rural Affairs, Nebraska Cattlemen, USDA Ag Research Services, and Nebraska Pork Producers Association.

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## Marketing Manure-Part 1

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*This is part 1 of a two part series discussing the results of a manure marketing survey conducted by the University of Nebraska.*

Livestock enterprises have undergone substantial structural change in recent years, including the concentration of livestock and poultry industry into fewer farms (Council for Agricultural Science and Technology, 1996). There has been a reduction in farms with cattle by 50% and farms with swine by 80% between 1965 and 1995 while numbers of hogs and cattle in inventory has stayed nearly constant (USDA, 1965-1995). Livestock and poultry produce, annually, 3.5 and 3.1 million tons of plant-available nitrogen and phosphorus, respectively, as collectible manure (Council for Agricultural Science and Technology, 1996).

Livestock production can negatively impact surface water quality from pathogens, phosphorus, ammonia and organic matter, ground water quality from nitrate, soil quality from soluble

salts, copper, arsenic, and zinc, and air quality from odors, dust, pests, and aerial pathogens (Council for Agricultural Science and Technology, 1996).

A buzz word often used today in production agriculture is "value added." Examples are organic grain production, transgenic corn hybrids and soybean varieties which express a trait that consumers demand and, even in animal agriculture, we see producers trying to raise and market livestock directly for the consumer. Some livestock producers are realizing that an added value to livestock production is manure. Once thought of as a waste, some livestock producers have recognized that those so called "piles of manure" are actually piles of nutrients that corn and soybean growers have a need for and will purchase. According to Ray Massey, University of Missouri

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Commercial Agriculture Extension Economist, basic marketing principals list four things as affecting whether or not a person is likely to perceive value in and pay a price for a product. They are 1) the product itself, 2) the place and time convenience of the product, 3) the personal services associated with the product and 4) the price of the product. A survey of Nebraska livestock producers suggests some livestock operations have discovered this "value added" component.

In an effort to obtain facts concerning the marketing of manure, a survey was conducted in March of 1998 and consisted of mailing a survey instrument and cover letter to 210 feedlot owners using a mailing list from the Nebraska Cattlemen. Following the initial mailing, a postcard reminder was sent one week later and a copy of the survey and cover letter was sent two weeks later. A response rate of 117 of the original 210 (55%) surveys mailed resulted.

The survey was separated into six sections (A through F). These sections were titled as follows:

- A. About Your Livestock Operation
- B. About Users of Your Farms
- Manure
- C. Manure Export Services Provided
- D. Environmental/Nuisance Problems Encountered
- E. Lessons Learned
- F. Information Needs

The individuals responding to the survey were characteristic of the medium and large feedlots found in Nebraska. Outdoor feedlot or confinement building was the primary animal housing used by those surveyed (97%). On average, these

operations maintained an average one-time population of 5,650 animal units, which were primary finishing cattle. A few operations housed yearlings/calves and breeding stock in their feedlot. The average land base under the management of the operator was 1,323 acres, with a range of between 0 and 10,000 acres.

To provide sufficient land base for utilizing the nutrients in manure, a feedlot requires approximately one acre of land per 6 animal units for nitrogen utilization and one acre per 1 animal unit for phosphorus utilization. Less than 10% of those surveyed had sufficient land to maintain a density of less than 1 AU per acre. About half (54%) reported livestock to crop density between one and six AU per acre of cropland. More than one-third (36%) reported a density in excess of 6 AU per acre and 1 in 5 maintained a density in excess of 20 AU per acre.

Typically, lots under 1,000 animal units were likely to have access to sufficient land for meeting both nitrogen and phosphorus needs. Farms between 1,000 and 10,000 animal units had sufficient land for utilizing the nitrogen. However, a comparison of animal units per acre manured suggest that many may not be utilizing sufficient land for nitrogen management. These farms also lack sufficient land for managing phosphorus. The largest feedlots were short on land for both nitrogen and phosphorus management. Most of this group recognizes this concern as represented by 80% of these individuals exporting manure.

Regarding the export of manure nutrients to off-farm customers, 72 (64%) of the respondents said they did not export manure nutrients off-

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farm. The most common reason for not exporting (89%) was that they had a sufficient land base for utilization of the manure. The next most common reason for not exporting manure off-farm (24%) was that they did not have the time to spend exporting manure off-farm. Those farms that export manure have, on average, 30 animal units per available crop acre. Those who chose not to export manure have only 7 animal units per available crop acre.

When questioned relative to expenditures for manure collection, handling, and land application, the largest response (37%) indicated that the total financial expense was between 5% and 9% of their total expenses. The next highest breakdown of responses indicated that 30% of operators have manure expenses that total less than 5% of their total operating expenses.

The most common financial management arrangements was to give manure away at no charge (54%) to at least some users (Table 2). More than half of the producers were charging some or all customers for manure. The most common charge was per unit volume, weight, or load (30%). For those who charged for manure, a wide range of approaches for charging were reported (Table 3). Many producers

combined a charge per unit volume or weight with a charge for application area or distance traveled. Very few producers charged for manure as an organic fertilizer with a charge based upon the nutrient content of the product. For the primary user of the manure resource, the livestock operator was most often responsible for transport of the manure (68%), followed by the customer (34%).

**Table 1. Characteristics of feedlots involved in survey.**

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Size of Livestock Operation	< 1,000 Animal Units (11 farms)	1,000 - 4,999 Animal Units (52 farms)	5,000 - 10,000 Animal Units (27 farms)	> 10,000 Animal Units (15 farms)
<b>Average Size</b>				
- Animal Units	581	2,635	6,944	17,517
- Crop Acres	679	1,031	1,414	1,565
- AU/Crop Acre	0.9	2.6	4.9	11.2
<b>Manure Distribution</b>				
- % of Land	24%	19%	26%	88%
<b>Manured</b>	3.6	13.4	19.2	12.7
- AU/Acre Manured				
<b>Exporting Manure %</b>	9%	29%	41%	80%
- Do not export because of available land.	82%	60%	52%	20%

**Table 2. Common financial arrangement for transfer of manure to primary user.**

I pay users of manure to accept manure.	2%
I give manure away at no charge.	54%
I charge per unit volume, weight, or load.	30%
I charge per unit distance manure is hauled	20%
I charge per unit of nutrients provided.	4%

Table 3. Common financial charges made for sale of feedlot manure.

<u>Charge per unit volume, weight, or load</u>	<u>Charge per acres of application area</u>
\$1 to \$2 per ton (5 responses)	\$25 per acre for 10 ton application rate

\$1 per ton loading fee	\$30 to \$35 per acre (2 responses)
\$15 to \$65 per load (3 responses)	

<u>Combination Charges</u>	<u>Charge per distance hauled</u>
\$3 to \$5 per ton plus \$60 per hour for spreader	\$2 per loaded mile
\$10 per ton plus \$4/acre application area	
\$4.5/ton of compost plus hauling and spreading cost	
\$0.75 per mile per ton (\$65 per load minimum)	

\$2 per acre loading cost plus \$1.20 per ton per acre hauling cost plus \$5 per acre application cost.

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