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**CATTLE FEEDLOT MANAGEMENT
IN SOUTH DAKOTA**

by

Donald C. Taylor and Dillon M. Feuz*

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CATTLE FEEDLOT MANAGEMENT IN SOUTH DAKOTA

Donald C. Taylor and Dillon M. Feuz

| | |
|--|-----|
| Table of contents | ii |
| Acknowledgements | iii |
| List of figures | iv |
| List of tables | iv |
| Summary | 1 |
| Introduction | 4 |
| Mail survey and data analysis | 4 |
| Cattle feeder respondent profile | 6 |
| Nature of feedlots | 10 |
| Feeder cattle placement in 1991 | 12 |
| Feeding practices | 14 |
| Health management practices | 17 |
| Manure management practices | 19 |
| References cited | 20 |
| Annex A. Cattle feeder questionnaire | 21 |

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Donald C. Taylor and Dillon M. Feuz
March 14, 1994

LIST OF FIGURES

| | |
|--|----|
| Figure 1. Regional boundaries, numbers and sizes of reporting feedlots, South Dakota | 7 |
| Figure 2. Percent of feeders with livestock enterprises other than feeding cattle, by size-of-feedlot | 8 |
| Figure 3. Percent of feeders who feed cattle in confinement during the entire feeding period, by size-of-feedlot | 10 |
| Figure 4. Mean percent of quarterly feedlot utilization, by size-of-feedlot | 11 |
| Figure 5. Percent of feedlots with selected physical features, by size-of-feedlot | 11 |
| Figure 6. Percent of feedlots with selected pieces of equipment for handling cattle, by size-of-feedlot | 12 |
| Figure 7. Mean percent of home-raised cattle placed on feed, by size-of-feedlot | 13 |
| Figure 8. Mean percent of cattle placed on feed each quarter, by size-of-feedlot | 13 |
| Figure 9. Mean percent grain in total diet dry matter intake at various stages in the feeding period, by size-of-feedlot | 14 |
| Figure 10. Percent of feeders following selected feed and health management practices, by size-of-feedlot | 15 |
| Figure 11. Mean targeted average daily gain for steers at various stages in the feeding period, by size-of-feedlot | 16 |
| Figure 12. Percent of feeders making selected uses of antibiotics, by size-of-feedlot | 17 |
| Figure 13. Percent of feeders using selected production tools, by size-of-feedlot | 18 |

LIST OF TABLES

| | |
|--|----|
| Table 1. Cattle feedlot respondents, by size- and location-of-feedlot | 25 |
| Table 2. Incidence of other livestock enterprises on farms/ranches with feedlots, by size- and location-of-feedlot | 26 |
| Table 3. Selected labor and employment features of cattle feeders, by size- and location-of-feedlot | 27 |
| Table 4. Selected personal and financial features of cattle feeders, by size- and location-of-feedlot | 28 |

| | |
|--|----|
| Table 5. Grazing-confinement feeding system, by size- and location-of-feedlot | 29 |
| Table 6. Rate of feedlot utilization, by quarter and size- and type-of-feedlot | 30 |
| Table 7. Feedlot physical features, by size- and location-of-feedlot | 31 |
| Table 8. Equipment for handling and feeding cattle, by size- and location-of-feedlot | 31 |
| Table 9. Home-raised cattle placed on feed in 1991, by size- and location-of-feedlot | 32 |
| Table 10. Cattle placed on feed in 1991 backgrounded and sold rather than finished for slaughter, by size- and location-of-feedlot | 32 |
| Table 11. Quarter of cattle placement, by size- and location-of-feedlot | 32 |
| Table 12. Importance of grain for steers at various stages in the feeding period, by size- and location-of-feedlot | 33 |
| Table 13. Feeding of "organically" produced feedstuffs to finishing cattle, by size- and location-of-feedlot | 34 |
| Table 14. Importance of home-raised feeds fed to cattle, by size- and location-of-feedlot | 34 |
| Table 15. Selected feed and health management practices followed by managers, by size- and location-of-feedlot | 35 |
| Table 16. Targeted average daily gain for steers at various stages in the feeding period, by size- and location-of-feedlot | 36 |
| Table 17. Targeted final finishing weight for slaughter cattle, by size- and location-of-feedlot | 36 |
| Table 18. Antibiotic-use, by size- and location-of-feedlot | 37 |
| Table 19. Use of selected production tools with finishing cattle, by size-of-feedlot . . | 38 |
| Table 20. Use of selected production tools with finishing cattle, by location-of-feedlot | 39 |
| Table 21. Reasons for using selected production tools with finishing cattle | 40 |
| Table 22. Reasons for not using selected production tools with finishing cattle | 40 |
| Table 23. Management of manure from finishing cattle, by size- and location-of-feedlot | 41 |
| Table 24. Application of manure to cropland following row crops/grains, by size- and location-of-feedlot | 42 |

CATTLE FEEDLOT MANAGEMENT IN SOUTH DAKOTA

SUMMARY

This research report is based on the results of a mail survey of randomly selected South Dakota beef cattle feeders undertaken during the winter of 1991-92. The purpose of the survey was to determine the nature of management practices followed by the state's cattle feeders and whether those practices differ by size- and/or location-of-feedlot.

Fifty of the 98 cattle feeders responding to the survey have feedlots located in the southeast, 41 in the northeast, and 6 in the west (the location of one is unknown). Feedlot design capacities range from 11 to 1,665 head and average 965 head each. These feedlots are much above the average of 75 head per feedlot for South Dakota as-a-whole. Thirty three percent of the feeders have feedlots designed for less than 170 head (hereafter termed "small" feedlots), 36% for 170-670 head ("medium" feedlots), and 31% for more than 670 head ("large" feedlots). Feedlot sizes in the northeast, west, and southeast average 1,175, 965, and 800 head, respectively.

On average, cattle feeders operate 1,405 acres of cropland, which is 2.3 times the average for the state. Average cropland acreages range from 625 acres for small feedlots to 1,935 acres for large feedlots and from 875 acres for feedlots in the southeast to 1,775 acres in the northeast.

Nearly 70% of cattle feeders report having livestock enterprises other than cattle feeding. Sixty three percent of them have beef cow herds, 18% market slaughter hogs, 14% have farrowing operations, and 13% sell feeder calves. Nearly 42% of feeders earn 75% or more of their gross farm income from sale of livestock. At the other extreme, 20% of them derive less than 50% of their gross farm income from livestock sales.

Selected findings from the study are as follows:

1. Eighty eight percent of feedlot managers keep their cattle in confinement during the entire feeding period. However, only 5% of feeders have "confinement barns."
2. The average feedlot utilization rate for the four quarters in 1991 is 73% of design capacity. The highest quarter is January-March (84%) and the lowest is July-September (58%).
3. Cattle in 91% of feedlots are protected with shelter-belt windbreaks. Other relatively common physical features are mounds (68%), bedding-use (68%), fence windbreaks (62%), and partial paving of feedlots with concrete (58%).
4. Of the cattle placed on feed in 1991, 34% were home-raised. Forty six percent were placed on feed during October-December, followed by 29% in January-March and 12-13% in each of the other quarters.

5. The average targeted daily rates of gain for steers at various stages in the feeding period are as follows: 2.35 lb--backgrounding, 2.79 lb--early finishing, and 2.93 lb--late finishing. Average targeted finishing weights for steers and heifers are 1,223 lb and 1,127 lb, respectively.

6. The mean percentages of grain to total dry matter intake in the diets of cattle at various stages in the feeding period are as follows: 33%--backgrounding, 53%--early finishing, and 72%--late finishing.

7. Eighty four percent of feeders have grain storage facilities to take advantage of price drops in purchased feed grains, 76% use feed scales to monitor and control feeding rates, and 74% test feeds for nutrient composition at least once a year.

8. Nearly 94% of feeders report using antibiotics with their finishing cattle. The most common type of antibiotic-use is treating specific sicknesses/injuries that arise with individual animals. The most common vaccination for finishing cattle is 7-way clostridial bacteria (91% of feedlots). Other commonly used production tools are parasiticides (93%), ionophores (92%), and growth promotants (90%).

9. Eighty seven percent of feeders apply at least some of the manure produced by their finishing cattle directly to farmland in solid raw form, 40% as "compost," and 10% from runoff holding ponds. Feeders report applying an average of 11 tons of solid raw manure per acre per application on their cropland. On the average over a 15-year period, they typically apply manure to particular fields of cropland 5.8 times.

10. Factors directly associated with size-of-feedlot (i.e., factors whose values are higher for larger feedlots) are:

- * Confinement feeding during entire feeding period (versus grazing during part of feeding period);

- * High rate of feedlot utilization;

- * Presence of shelter-belt windbreaks, mounds, and fence windbreaks;

- * Use of permanent corrals, cattle squeezes, and cattle scales;

- * Uniform placement of cattle in feedlot throughout the year;

- * High targeted average daily gain for early and late finishing steers;

- * Relative importance of grain in total diet dry matter intake;

- * Use of feed scales, feed testing, feed records, and health records;

- * Use of antibiotics to treat specific sicknesses and newly purchased cattle; and

- * Use of parasiticides, ionophores, and growth promotants.

11. Factors **inversely** associated with size-of-feedlot (i.e., factors whose values are smaller for larger feedlots) are:

- * Presence of other livestock enterprises;
- * Home-raising of cattle placed on feed; and
- * High targeted average daily gain for backgrounded cattle.

12. Factors associated with location-of-feedlot are as follows:

* Beef cow herds more commonly associated with feedlots in the west than with feedlots in the northeast or southeast;

* Acreage of cropland least in the west and greatest in the northeast;

* Various types of cattle handling and feeding equipment generally most common in the west and least common in the southeast;

* Targeted daily rates of gain greatest in the northeast and lowest in the west;

* Role of grazing in cattle finishing greatest in the west;

* Percent of grain to total diet dry matter intake highest in the northeast and lowest in the west;

* Vaccination-use highest in the northeast;

* Use of production tools other than antibiotics and vaccinations highest in the southeast.

It is hoped that these results will provide useful insights to (a) research and extension personnel on beef cattle production practices meriting possible attention in their respective research and educational programs and (b) beef cattle producers on alternative practices deserving possible consideration in order that the state's beef cattle industry can remain competitive in its rapidly changing environment.

CATTLE FEEDLOT MANAGEMENT IN SOUTH DAKOTA

Donald C. Taylor and Dillon M. Feuz

INTRODUCTION

Livestock are a major contributor to the economy of South Dakota and the livestock industry of the nation. During 1989-91, for example, cash receipts from total livestock and products in South Dakota averaged \$2.17 billion, representing 62.1% of total cash receipts from farm marketings and government payments to the state's farmers. Over the past 10 years, South Dakota has ranked between 12th and 19th nationally in its cash receipts from livestock and livestock products (S.D. Stat. Ag. Serv., 1993).¹

The subject of this report is South Dakota's beef cattle feeding industry. During the past 10 years, South Dakota has generally ranked 8th to 11th nationally in "cattle on feed" (S.D. Agric. Stat. Serv., 1993). During the past three years, the number of cattle on feed in the state has averaged about 317 thousand head.

This research report is based on the results of a 1991-92 mail survey of South Dakota beef cattle feedlot managers. The overall purpose of the survey was to determine the nature of management practices followed by the state's cattle feeders and whether those practices differ by size- and/or location-of-feedlot.

The report is organized around (1) a brief description of the mail survey and data analysis procedures, (2) a profile of the cattle feeders who responded to the survey, and (3) descriptions of (a) the feedlots, (b) feeder cattle placement in 1991, and (c) cattle feeding, health, and manure management practices being followed by the state's feedlot managers. Attention is drawn to contrasts in management practices by size- and location-of-feedlot. Results are interpreted relative to the results of a survey of the state's cattle feeders some 3 years earlier (Taylor and Wagner, 1991) and, as appropriate, to the results of a survey of the state's cow-calf operators in 1991-92 (Taylor and Feuz, 1992) and census data for farmers generally in the state (USDC, 1989).

MAIL SURVEY AND DATA ANALYSIS

A questionnaire designed to determine overall farm/ranch and cattle management practices, feedlot physical facilities, cattle feeding practices, animal handling and health, and manure handling and management was pre-tested, revised, and mailed to 500 cattle feeders in South Dakota (see Annex A for a copy of the questionnaire). All of the state's cattle feeders with a feedlot capacity of 500 head or more received the questionnaire; an approximate 12%

¹In addition to taking data from this 1993 publication, data were derived from the nine prior annual issues of South Dakota Agricultural Statistics. The same applies to the data cited in the following paragraph.

random sample of feedlots with less than 500 head also received the questionnaire.² The selection of sample and mailing of the questionnaire was done through South Dakota's Agriculture Statistics Service in Sioux Falls. The initial mailing of the questionnaire was in late November 1991; a follow-up mailing to non-respondents was sent in early January 1992.

Of the 500 questionnaires mailed out, 214 were returned, for a response rate of 42.8%. One hundred nine of the feeders returned non-completed questionnaires, however, reflecting the presence of only backgrounded and stocker (versus finishing) cattle on their farms/ranches or that they were no longer feeding any type of cattle. Three of the questionnaires were returned too late to be included in data analysis and four questionnaires were not usable. The results presented in this report, therefore, are based on the responses of 98 cattle feeders in South Dakota.

The survey responses were first analyzed for all 98 feedlot respondents collectively and then by size-of-feedlot and location-of-feedlot. Size-of-feedlot was defined by "feedlot design capacity," based on an assumed 1.5 ft of linear feed bunk space per head of finishing cattle (MPS, 1987).³ The following feedlot size categories were established:

- * "Small," under 170 head;
- * "Medium," 170-670 head; and
- * "Large," 670 head or more.

Location-of-feedlot was defined in terms of whether feedlots were sited in the "southeastern," "northeastern," or "western" part of the state.

Data were inputted into Lotus 1-2-3 spreadsheets and later transferred to SAS-PC for analysis. The most commonly used tools of data analysis for generating the data reported in this publication are means and frequency distributions.

²The reason for unequal sampling fractions was to help insure an adequate number of the relatively scarce larger feedlots to compare with relatively common smaller feedlots.

³It is conceivable that some feeders--especially those with larger feedlots--would provide less feed bunk space per head than this published norm of 1.5 ft (John Wagner, personal communication, March 9, 1994). To whatever extent that the 1.5-ft assumption may be too liberal, the estimated design capacity of feedlots in the survey is downward-biased. Relationships associated with different sizes-of-feedlot, however, would not be altered.

CATTLE FEEDER RESPONDENT PROFILE

Design capacity of feedlots

The design capacity for the 83 feedlot managers who provided data on feed bunk space in their feedlots in the 1991-92 survey ranges from 11 to 6,665 head and averages 965 head.⁴ This compares to means of 900 head for the 1988 survey respondents (Taylor and Wagner, 1991, 12) and 75 head for feeders in the state as-a-whole (USDC, 1989, 28). Thus, in interpreting the results presented in this report, readers should bear in mind that the data gained through the 1991-92 survey pertain to feedlots which are much above-average in size for South Dakota. On the other hand, since the 78 feedlots in the state with a capacity of 1,000 head or more account for 73% of the total cattle marketed in the state (S.D. Agric. Stat. Serv., 1993, 49), the feedlots covered in the survey represent a relatively "large" (but undefined) proportion of the cattle fed out in the state.

Of the 97 cattle feeders responding to the survey who indicated the county of their location, 50 (52%) are located in the southeast, 41 (42%) in the northeast, and 6 (6%) in the west.⁵ Twenty seven feeders (33%) operate small feedlots, 30 (36%) medium feedlots, and 26 (31%) large feedlots. The vast majority of small feedlots in the 1991-92 survey are in the southeast, the medium feedlots are about evenly split between the southeast and the northeast, and a majority of the large feedlots are in the northeast (Table 1). Average feedlot sizes in the northeast, west, and southeast are 1,175, 965, and 800 head, respectively (Figure 1).

Other livestock enterprises

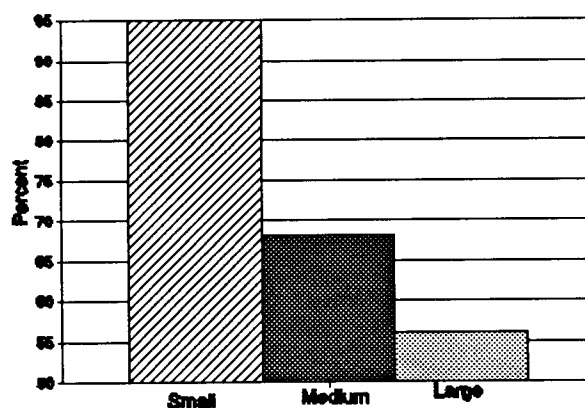
Nearly 70% of cattle feeders have livestock enterprises other than cattle feeding (Table 2). Sixty three percent of the feeders have beef cow herds, 13% sell feeder calves, and 9% sell stocker cattle. Eighteen percent of the cattle feeders market slaughter hogs; 14% have farrowing operations. Ten percent have dairy herds. Fewer than 5% have supplemental sheep or poultry enterprises.

The presence of other livestock enterprises is inversely related to size-of-feedlot, with 95% of small feedlots and only 56% of large feedlots having such enterprises (Figure 2). Beef cow herds are more commonly associated with feedlots in the west than with feedlots in the other regions (Table 2). Regional differences in other supplementary livestock enterprises, however, are rather limited.

⁴Fifteen feeders did not indicate the amount of feed bunk space in their feedlots. One cattle feeder did not indicate the county in which his/her farmstead was located. Data for these feedlots, therefore, could not be taken into account in the size- and location-of-feedlot analyses. Thus, while the average (mean) values for various characteristics of the entire sample of 98 feedlots usually fall within the range of the means for the various size and location groupings, they do not necessarily do so.

⁵Because the number of feedlot respondents in the west is small, the strength of conclusions that can be drawn about differences between feedlots in the west and elsewhere in the state is limited.

Figure 2. Percent of feeders with livestock enterprises other than feeding cattle, by size-of-feedlot.



Cropland operated along with feedlots

The average cropland area reported by 1991-92 feedlot respondents is 1,405 acres, which is well over twice the average 605 acres for farms/ranches throughout the state (USDC, 1989, 7) and the average of 635 acres for the cow-calf operators surveyed in 1991-92 (Taylor and Feuz, 1992, 26). In 1991-92, 20% of the feedlots have more than 2,000 acres of cropland, 25% between 1,000 and 2,000 acres, 34% between 500 and 1,000 acres, and 21% less than 500 acres. The average cropland areas operated by feedlot managers with various sizes-of-feedlot and in different locations are as follows:

- * Small feedlots: 625 acres
- * Medium feedlots: 1,310 acres;
- * Large feedlots: 1,935 acres;
- * West: 875 acres;
- * Southeast: 1,275 acres; and
- * Northeast: 1,775 acres.

Thus, the area of cropland associated with the feedlots in this study (a) is much above-average compared to farmers/ranchers generally in the state and (b) has a strong direct relationship with feedlot size.

Family labor and off-farm employment

Nearly 48% of the cattle feeders in the 1991-92 survey report using only family labor in their cattle finishing operation (Table 3). At the other extreme, family labor constitutes less than 60% of total cattle finishing labor for 21% of the feeders. An inverse relationship exists between percent of family labor and size-of-feedlot. For example, 12% of large feedlots rely only on family labor in finishing cattle, whereas 69% of small feedlots do.

These results are generally similar to those in the 1988 cattle feeder survey, although differences in the relative importance of hired labor between large and small feedlots are less in the 1991-92 survey than in the 1988 survey (Taylor and Wagner, 1991, 17). Compared to

cow-calf producers (Taylor and Feuz, 1992, 7), hired labor is relatively more important with cattle feeding operations.

Nearly 23% of the cattle feeders in the 1991-92 survey indicate they undertake custom work for other farmers; 16% of them have off-farm employment (Table 3). These percentages are somewhat smaller than those for cow-calf producers (Taylor and Feuz, 1992, 7) and much less than the 37% of farmers/ranchers throughout the state who work off-farm (USDC, 1989, 1). The percent of feeders undertaking custom work varies directly with size-of-feedlot, whereas there is no patterned relationship between feedlot manager off-farm employment and size-of-feedlot.

Thirty four percent of feedlot managers have spouses who work off-farm (Table 3). Of spouses who work off-farm, 61% do so full-time. The relationship between full-time work and size-of-feedlot is inverse, i.e., spouses of the managers of small feedlots show a greater tendency to work full-time than those of larger feedlots.

Feedlot managers and management

The average age of feedlot managers is 48 years (Table 4), which is just under the average age of 50 years for farmers/ranchers throughout the state (USDC, 1989, 1). The relationship between manager age and size-of-feedlot is somewhat inverse, with managers of large feedlots averaging 6 years less than those of small feedlots. Managers in the west average 4-6 years younger than those in the east.

Nearly 42% of the feeders in the 1991-92 survey typically realize more than 75% of their annual gross farm income from the sale of livestock (Table 4). At the other extreme, less than 5% of them realize less than 25% of gross income from livestock. The relative importance of livestock in gross farm income is somewhat greater with cattle feeders than with cow-calf operators (Taylor and Feuz, 1992, 30).

In general, larger feedlots derive a larger percent of gross farm income from livestock. For example, at least one-half of the medium and large feedlots derive 75% or more of their income from livestock, whereas only about one-fourth of the small feedlots do (Table 4). This same generally direct relationship between size-of-feedlot and percent of gross farm income from livestock was shown in the 1988 feedlot survey (Taylor and Wagner, 1991, 17).

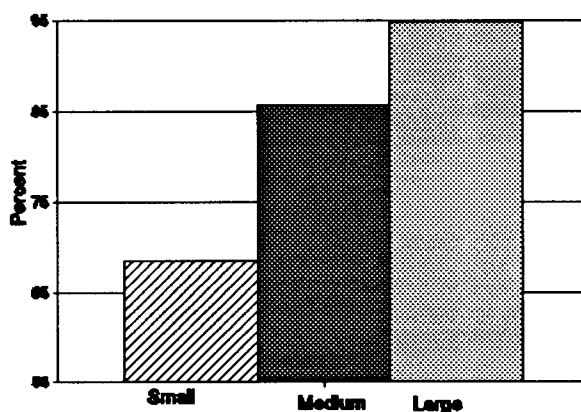
About 13% of the feedlot managers in the 1991-92 survey indicate that they own their farm/ranches debt-free. At the other extreme, 32% of feedlot managers report debt-to-asset ratios of 0.40 or greater. Financial experts view this level of debt as a sign of possible financial difficulty. The level of debt exposure is directly related to size-of-feedlot, with debt-to-assets ratios of 0.40 or greater for 57% of the large feedlots and less than 0.20 for 53% of small feedlots. For feedlot managers in the northeast, debt loads are above-average, whereas in the west they are below-average.

NATURE OF FEEDLOTS

Type of feeding system

Eighty three percent of feedlot managers keep their cattle in confinement during the entire feeding period (Table 5). Nine percent graze their cattle during part of the backgrounding period and confinement feed thereafter. Only 4% graze their feeder cattle during the entire backgrounding period. At the other extreme, 4% confinement feed their cattle for less than 100 days after grazing. Feeding system is closely related to size-of-feedlot, with cattle being confinement fed during the entire feeding period in 95% of large feedlots, but in only 68% of small feedlots (Figure 3). The relative role of grazing in cattle finishing is greater in the west than in either of the other two regions.

Figure 3. Percent of feeders who feed cattle in confinement during the entire feeding period, by size-of-feedlot.

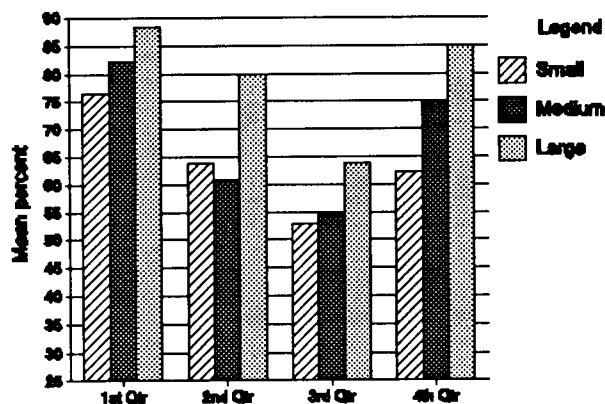


Feedlot utilization in 1991

For all 98 feedlots in the 1991-92 survey, the average annual feedlot utilization rate (percent of design capacity used) throughout the year is 73% (Table 6). Among the four quarters, the utilization rate is highest for January-March (84%), second highest for October-December (78%), third highest for April-June (71%), and lowest for July-September (58%). These relative utilization rates are reflected in 55% of the feedlots being fully utilized in January-March, whereas only 17% are in July-September.

Feedlot utilization varies directly with size-of-feedlot, with the average annual utilization rate 14 percentage points higher for large than small feedlots (Figure 4). The difference in utilization rates between large and small feedlots is greatest in October-December (23 percentage points) and least in January-March and July-September (11-12 percentage points). These results are generally similar to those for the 1988 feedlot survey (Taylor and Wagner, 1991, 13).

Figure 4. Mean percent of quarterly feedlot utilization, by size-of-feedlot.

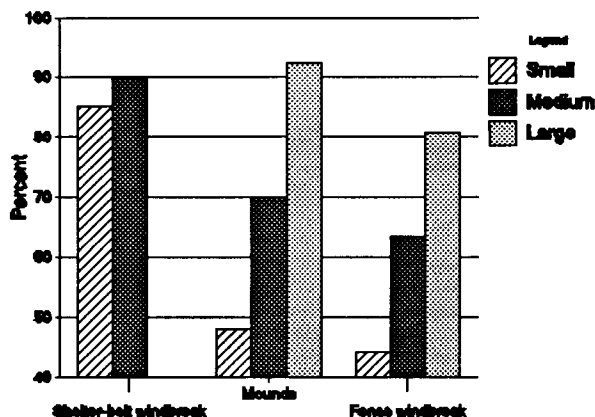


Feedlot features

Cattle in 91% of feedlots in the 1991-92 survey are reported to be protected with shelter-belt windbreaks (Table 7). Other relatively common physical features are mounds (68%), bedding-use (68%), fence windbreaks (62%), and partial paving of feedlots with concrete (58%). These findings are similar to those in the 1988 survey, except that the percentages of feeders reporting these features in the 1991-92 survey is somewhat higher than in 1988 (Taylor and Wagner, 1991, 14). Confinement barns and complete paving of feedlots with concrete, on the other hand, are uncommon in both surveys.

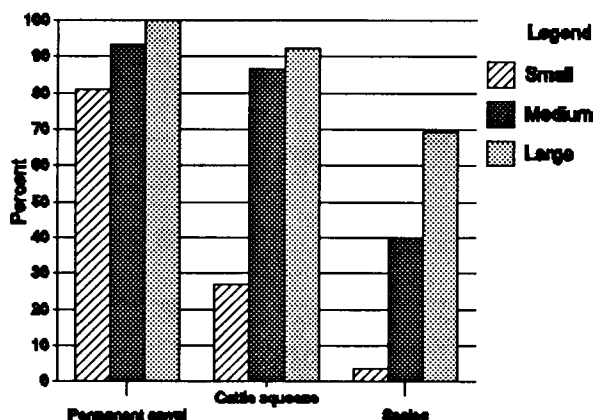
The presence of shelter-belt windbreaks, mounds, and fence windbreaks is directly related with size-of-feedlot in the 1991-92 survey (Figure 5). The same patterns were also shown in the 1988 survey, except that small-large feedlot differences were less for shelter-belt windbreaks and greater for mounds and fence windbreaks in 1988 than in 1991-92.

Figure 5. Percent of feedlots with selected physical features, by size-of-feedlot.



The vast majority (92-93%) of respondents indicate that loading chutes and permanent corrals/holding pens are associated with their feedlots (Table 8). Cattle squeezes (72%) and salt-mineral feeders (62%) are the next most common items of handling and feeding equipment, followed by calf creep feeders (40%), scales (35%), and portable corrals (32%). On the other hand, only 3% of the feedlots have dipping vats. A strong direct relationship exists between size-of-feedlot and the presence of both cattle squeezes and scales (Figure 6). Also, the percentage of feedlots with permanent corrals is larger for large feedlots (100%) than for small feedlots (81%). The various types of handling and feeding equipment tend to be most common in western feedlots and least common in southeastern feedlots.

Figure 6. Percent of feedlots with selected pieces of equipment for handling cattle, by size-of-feedlot.



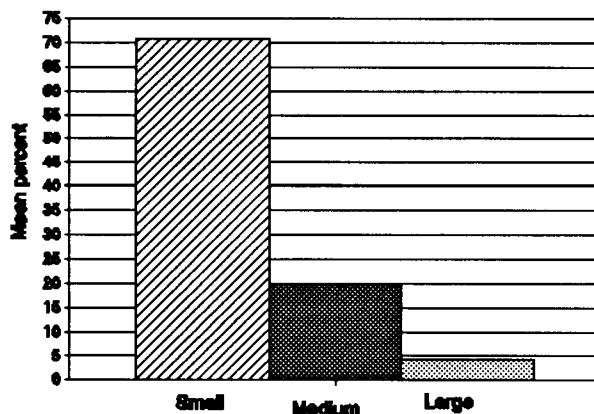
FEEDER CATTLE PLACEMENT IN 1991

Source and disposition of feeder cattle

Of the cattle placed on feed in 1991, 34% were home-raised (Table 9). Just over 20% of managers feed only home-raised cattle. At the other extreme, 40% of them feed only purchased feeder cattle. The relationship between home-raising of feeder cattle and size-of-feedlot is strongly inverse, with the percentage of home-raised cattle placed on feed in small feedlots being 71% and in large feedlots only 4% (Figure 7). The home-raising of feeder cattle, on the other hand, differs little by location-of-feedlot. These results are consistent with those from the 1988 survey, except that the percentages of home-raised cattle are generally somewhat greater in the 1991-92 survey than in the earlier survey (Taylor and Wagner, 1991, 20).

Of the cattle placed on feed in 1991, about 11% were sold after backgrounding, rather than after being finished for slaughter (Table 10). The percentages of cattle sold after backgrounding are slightly higher for large feedlots than small or medium feedlots and for feedlots in the northeast and west than in the southeast.

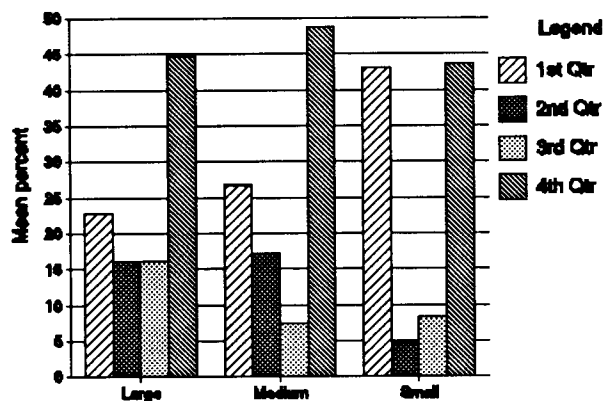
Figure 7. Mean percent of home-raised cattle placed on feed, by size-of-feedlot



Timing of placement

Of the cattle placed on feed in 1991, 46% entered the feedlot in October-December (fourth quarter), followed by 29% in January-March, 13% in April-June, and 12% in July-September (Table 11). Cattle are placed on feed more uniformly throughout the year in larger feedlots—especially during the first three quarters of the year (Figure 8). The general nature of the seasonal pattern in cattle being placed in the feedlot in the 1991-92 survey is similar to that in the 1988 survey. However, the quarter-by-quarter placement of cattle in large feedlots is less uniform in 1991-92 than in 1988 (Taylor and Wagner, 1991, 21-22).

Figure 8. Mean percent of cattle placed on feed each quarter, by size-of-feedlot.



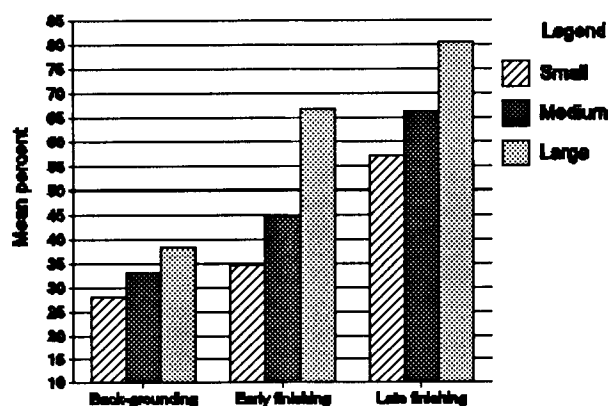
FEEDING PRACTICES

Feed rations

Feedlot managers in the 1991-92 survey report an average of 33% grain--relative to total dry matter intake--in the diets of cattle during the growing period (Table 12). Analogous percentages for the early and late finishing periods are 53% and 72%, respectively. These percentages are lower than those reported for the 1988 survey (39% for backgrounded cattle and 80% for finishing cattle), especially for finishing cattle (Taylor and Wagner, 1991, 25).

The relationship between the relative percentage of grain in cattle diets and size-of-feedlot is direct in 1991-1992 (Figure 9), the same as it was in 1988. The percentage of grain in cattle diets in the 1991-92 survey is highest for feedlots in the northeast and lowest for those in the west, although locational differences narrow as the feeding period progresses (Table 12).

Figure 8. Mean percent grain in total diet dry matter intake at various stages in the feeding period, by size of feedlot.



Slightly over 6% of the cattle feedlot respondents report that they feed some type of "organically" produced (with no synthetic fertilizers or pesticides) feedstuffs to their finishing cattle (Table 13). Of the "organic" feedstuffs used, slightly more are harvested forages than grazed forages or grains. These percentages are lower than in the 1991-92 cow-calf survey in which 29% of producers indicated that they feed some type of "organically" produced feedstuffs to their cows and calves (Taylor and Feuz, 1993, 13).

Sources of feeds

In the 1991-92 survey, the average proportions of cattle receiving feedstuffs typically home-raised (i.e., raised on the farm/ranch that has the feedlot) are as follows: 94%--corn silage, 85%--high moisture grain, 81%--hay, and 66%--dry grain (Table 14). Compared to the 1988 survey results, these proportions are somewhat lower for corn silage (99% in 1988), but much higher for high moisture grain (53%), hay (58%), and dry grain (43%) (Taylor and Wagner, 1991, 26). Whether these differences (unintentionally) reflect atypical production conditions prior to one or both of the survey times, or something more fundamental is unknown.

Except for dry grain, there are no systematic patterns between home-raising of various feedstuffs and size-of-feedlot in the 1991-92 survey. The relationship between percentage of home-raised dry grain and size-of-feedlot is inverse, with 76% of cattle in small feedlots and only 52% of cattle in large feedlots receiving home-raised grain (Table 14). In the 1988 survey, inverse relationships between home-raised feedstuffs and size-of-feedlot were found not only for dry grain, but also for high moisture grain and hay.

Feed management practices

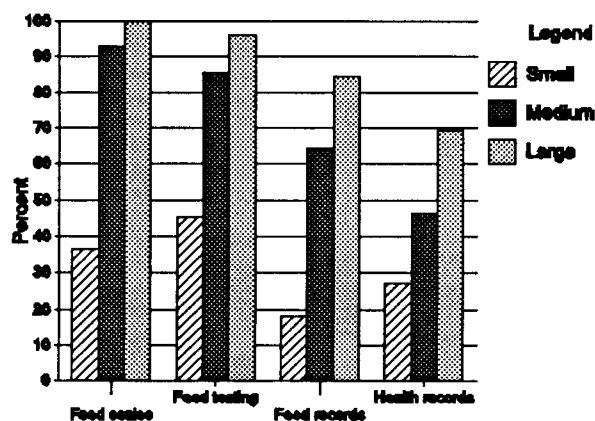
The following percentages of feedlot managers in the 1991-92 survey indicated use of various additional feed management practices:

- * 84% have grain storage facilities to take advantage of price drops in purchased feed grains;
- * 76% use feed scales to monitor and control feeding rates;
- * 74% test feeds for nutrient composition at least once a year;
- * 46% keep feed records for separate pens of cattle; and
- * 28% check cattle weights periodically to track cattle performance (Table 15).

These rates are 10-21 percentage points higher for the various practices than in the 1988 cattle feedlot survey (Taylor and Wagner, 1991, 32).

In general, use of these feed management practices varies directly with size-of-feedlot (Figure 10). The strongest relationships with feedlot size involve use of feed scales, feed testing, and feed records; the weakest relationship involves grain storage facilities. These outcomes are similar to those from the 1988 survey, except that differences among feedlot sizes in the use of grain storage facilities were greater in 1988 (Taylor and Wagner, 1991, 32) than in 1991-92.

Figure 10. Percent of feeders following selected feed and health management practices, by size-of-feedlot.



Targeted weights

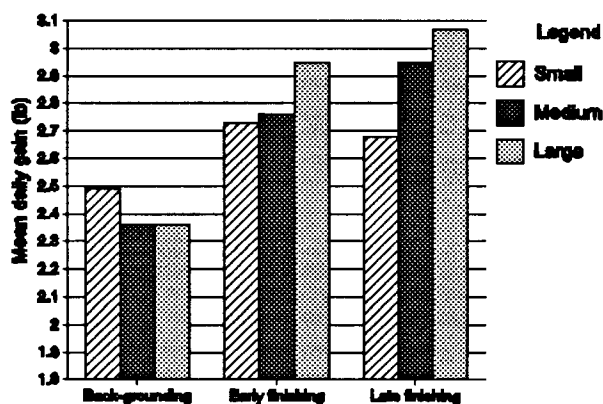
The average targeted daily rates of gain for steers at various stages in the feeding period reported through the 1991-92 survey are as follows: 2.35 lb-- backgrounding, 2.79 lb--early finishing, and 2.93 lb--late finishing (Table 16). The rate of gain during backgrounding is comparable with that from the 1988 survey, but the finishing rates of gain are lower than the 3.05 lb/day reported for steers during the finishing period in the earlier survey (Taylor and Wagner, 1991, 24).

The targeted daily rates of gain in the 1991-92 survey vary by size- and location-of-feedlot as follows:

- * During backgrounding, rate of gain is greater for small than medium or large feedlots;
- * During both finishing periods, on the other hand, rate of gain is directly related with size-of-feedlot (Figure 11); and
- * Rates of gain are greatest in the northeast and lowest in the west (Table 16).

The average targeted finishing weights for steers and heifers for the 1991-92 reporting feedlots are 1,223 lb and 1,127 lb, respectively (Table 17). These average weights are 7 lb less for steers and 22 lb greater for heifers than in the 1988 survey (Taylor and Wagner, 1991, 24). Except for slightly lower weights in the west, targeted finishing weights do not vary systematically by either size- or location-of-feedlot.

Figure 11. Mean targeted average daily gain for steers at various stages in the feeding period, by size-of-feedlot.



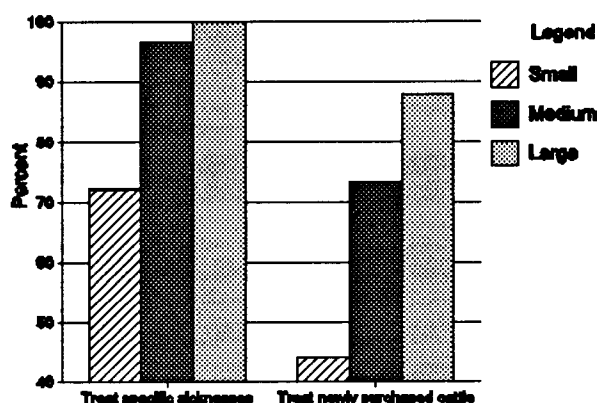
HEALTH MANAGEMENT PRACTICES

Health production tools

Nearly 94% of feeders (including all those with medium and large feedlots) in the 1991-92 survey reported that they use antibiotics with their finishing cattle (Table 18). The most common type of use for antibiotics is treating specific sicknesses/injuries that arise with individual animals (87% of feedlots), followed by treating newly purchased cattle upon arrival at the feedlot (63%) and routinely feeding low levels of antibiotics (subtherapeutically) in the feed (30%).

Except for the routine feeding of antibiotics, the percentages of feeders using antibiotics for specific purposes and size-of-feedlot are clearly positive in their relation with each other (Figure 12). While the questions on antibiotic use in the 1988 feedlot survey were less detailed than in the 1991-92 survey, larger feedlots were generally shown in 1988 to also make greater use of antibiotics than smaller feedlots (Taylor and Wagner, 1991, 28-29).

Figure 12. Percent of feeders making selected uses of antibiotics, by size-of-feedlot.

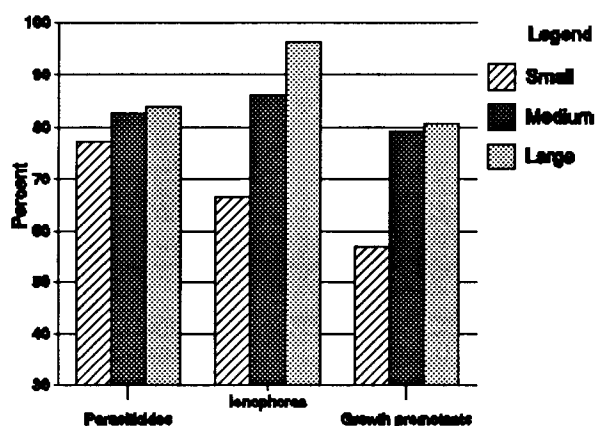


Of the various other non-vaccination health production tools shown in Table 19,⁶ the two which are most commonly used are ionophores that alter fermentation in the rumen and parasiticides. These two tools are used with all cattle in 80-81% of feedlots, with some cattle in 11-13% of feedlots, and with no cattle in only 7-8% of feedlots. Growth promotants are used with all cattle in 72% of feedlots, insecticides/fumigants in 58% of feedlots, and coccidiosis

⁶In showing the various "named" production tools in Tables 19 and 20, we are simply providing illustrations of the type of products that can be found in the market. By naming them, we do not imply endorsement of their effectiveness. They are manufactured as follows: Amprolium--MSDAGVET-Merck, Rahway, NJ; Bovatec--Roche Animal Nutrition, Nutley, NJ; Compudose-- Elanco Products Company, Indianapolis, IN; Deccox--Rhône-Poulenc, Atlanta, GA; Ralgro--Pitman-Moore, Terre Haute, IN; Rumensin--Elanco; and Synovex--Syntex Animal Health, West Des Moines, IA.

control in 46% of feedlots. The use of ionophores, parasiticides, and growth promotants is positively related to size-of-feedlot, with the small-large feedlot difference greatest for ionophores (Figure 13). These results in 1991-92 are generally similar to those for ionophores and growth promotants in 1988 (parasiticide-use was not covered in the 1988 survey).

Figure 13. Percent of feeders using selected production tools, by size-of-feedlot.



The most common vaccination administered to finishing cattle, namely, 7-way clostridial bacterin, is used on all cattle in 91% of the feedlots and with some cattle in the remaining 9% of feedlots (Table 19). The other vaccinations--BVD, IBR, PI₃, Haemophilus somnus, and BSRV--are used with all cattle in 80-88% of feedlots, with some cattle in 11-19% of feedlots, and with no cattle in only 1-3% of feedlots. Vaccination-use does not appear to be related to feedlot size.

Whereas there was little evidence of interregional differences in antibiotic use (recall Table 18), it appears that the percentages of feedlot managers using vaccinations with their finishing cattle are somewhat above-average in the northeast and that the other production tools are used somewhat more commonly in the southeast than in the other two regions (Table 20).

By far the most important reasons for cattle feeders (indicated by 55-84% of them) to use each of parasiticides, ionophores, growth promotants, and insecticides/fumigants are to (1) improve cattle physical performance and (2) reduce cost per pound of gain (Table 21). Except for ionophores, improved cattle performance is viewed as more important than reduced cost of gain. The third most important reason for using these production tools (indicated by 16-27% of producers) is advice from professional consultants. The most important reasons for feeders using coccidiosis controls are more diverse, with improved cattle performance ranking first and reduced cost of gain and advice of consultants not far behind. Of almost no importance as rationale for using these five production tools are the advice of others and neighbors who use the production tool.

Those relatively few producers who do not use these production tools have quite diverse reasons for not doing so (Table 22). By far their most important reason for not using coccidiosis control (62% of those who do not control for coccidiosis) is because the control is not believed to be cost effective. Producers do not use parasiticides to avoid "excessive" cattle handling (50%) and possible negative impacts on consumer health (33%). Producers do not use ionophores because of questions on ionophores' cost effectiveness (44%) and possible negative impacts on consumer health (33%). Producers not using insecticides/fumigants prefer to avoid "excessive" cattle handling (33%), question the cost effectiveness of the insect controls (25%), and prefer to follow natural production methods (25%). Equal percentages (30%) of producers indicate "excessive" cattle handling and a preference to follow natural production methods as reasons for their not using growth promotants.

Water sources

No cattle feeder in the 1991-92 survey reported experiencing water quantity problems during years of average precipitation and run-off. Four of them (4% of respondents), however, indicated water quantity problems during years of below-average precipitation. Only two feeders (2%) reported water quality problems, one involving sulphur and the other iron. These percentages are considerably less than for cow-calf operators in the 1991-92 survey (11% and 38% of cow-calf operators experience water quantity problems in years of average and below-average precipitation and water run-off, respectively, and 10% experience water quality problems) (Taylor and Feuz, 1992, 17-18).

MANURE MANAGEMENT PRACTICES

Eighty seven percent of the cattle feeders surveyed in 1991-92 apply at least some of the manure produced by their finishing cattle directly to farmland in solid raw form (Table 23). Forty percent apply some manure in a "composted" form. While the term "composted" was not defined in the questionnaire, we presume that feeders interpreted this to mean manure that was stacked and held for later spreading, rather than manure that was windrowed and periodically turned over a period of several months before spreading. Ten percent of feeders report placing their manure in runoff holding ponds and disposing of it by land application.

Of the total manure produced by finishing cattle, an estimated 69% is applied in solid raw form, 22% in composted form, and the remaining 9% in a variety of other forms. Forty seven percent of feeders apply all their manure in solid raw form. At the other extreme, 19% apply less than 33% of their manure as solid raw manure. Nine percent of feeders apply all their manure in composted form, whereas 71% of them apply less than 33% of their manure in a composted form.

On the average over a 15-year period, feeders typically apply manure to particular fields of cropland 5.8 times (Table 24). The frequency of manure applications appears to be above-average for feedlots of medium size and those located in the northeast. Six percent of feeders apply manure to particular fields of cropland once each year. At the other extreme, 37% apply manure to particular fields only 2-3 times over a 15-year period. Feeders report applying an average of 11 tons of manure per acre per application on their cropland.

Readers are encouraged to return to the first section of the report to find a summary of findings from the study.

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CATTLE FEEDING QUESTIONNAIRE

1. Do you finish cattle to slaughter on your farm/ranch?
 ___ no. If no, please stop and return the questionnaire in the enclosed envelope.
 ___ Yes. If yes, please proceed to complete the questionnaire and then return it in the enclosed envelope.

Overall farm operation

2. In what county is your farmstead located? _____
 3. How many acres of farmland, by type of tenure, did you operate in 1991? (please show 0's for any category of land that you do not have)

| Type of farmland | Acres (to the nearest 10) | | |
|---|---------------------------|--------|-------|
| | Owned | Rented | Total |
| Cropland, including row crops, small grains, set-aside, fallow, and hay in rotation | _____ | _____ | _____ |
| Conservation Reserve Program | _____ | _____ | _____ |
| Improved permanent pasture and hay | _____ | _____ | _____ |
| Native permanent pasture and hay | _____ | _____ | _____ |
| Other (e.g., woodland, farmstead) | _____ | _____ | _____ |
| Total | _____ | _____ | _____ |

4. In addition to finishing cattle, do you have other livestock on your farm/ranch. Yes ___ No ___. If yes

- a. About how many animals would you market in a typical year?
 ___ Feeder calves ___ Feeder lambs
 ___ Stocker cattle ___ Slaughter lambs
 ___ Feeder pigs ___ Poultry
 ___ Slaughter pigs ___ Other _____
- b. About how many breeding animals would you maintain each year?
 ___ Dairy cows ___ Beef cows ___ Poultry
 ___ Sows ___ Ewes ___ Other _____

5. Approximately what percent of your gross farm income over the past 5 years has typically been from the sale of livestock? (please check one)
 ___ less than 25%
 ___ 25% to 49%
 ___ 50% to 75%
 ___ more than 75%

Cattle management

6. Approximately what percentage of the cattle that you placed on feed in 1991 were:
 a. Raised on your own farm/ranch? ___%
 b. Backgrounded and sold rather than finished for slaughter? ___%
 7. Approximately what percentage of the cattle you fed in 1991 were placed on feed during each of the following quarters?
 ___% Jan-Mar ___% Apr-Jun
 ___% July-Sept ___% Oct-Dec

8. Which of the following best describes the system for feeding the majority of your cattle? (please check one)
 ___ Confinement feeding during entire feeding period
 ___ Grazing during part of backgrounding period, confinement feeding thereafter
 ___ Grazing during all the backgrounding period, confinement feeding thereafter
 ___ Grazing, followed by a period of confinement feeding for < 100 days.
 ___ Other (specify: _____)

9. To what targeted daily rates of gain (nearest 0.1 lb/day) do you most commonly feed the following types of cattle? (please show "n/a" if you do not have the indicated type of cattle)
 ___ Backgrounded steers (roughly 500-750 lb)
 ___ Early finishing steers (roughly 750-950 lb)
 ___ Late finishing steers (950+ lb)

10. To what targeted final finishing weight (nearest 25 lb) do you most commonly feed:
 slaughter steers? _____ lb.
 slaughter heifers? _____ lb.

11. Please place a check before each practice that you follow:

- ___ Feeds are tested for nutrient composition at least once a year
 ___ Have grain storage facilities to take advantage of price drops in purchased feed grains
 ___ Feed records are kept for separate pens of cattle
 ___ Cattle weights are checked periodically to track performance
 ___ Feed scales are used to monitor and control feeding rates
 ___ Records on the amounts and sources of medications administered to individual animals are maintained

12. What do you estimate to be your average out-of-pocket expenditure for purchased (versus raised) inputs? For example, protein supplement, minerals, production tools, other supplies and veterinary expense, power and fuel, building & equipment repair--per head finished in your feedlot? \$ _____ per head.

Physical facilities

13. This question concerns the capacity of your feedlot. About how many feet (to the nearest 25) of feed bunks do you have at 100% feedlot utilization? _____ feet. Of this total footage, how many feet are designed for feeding from:

- ___ One side (fenceline) _____ feet
 ___ Two sides (portable) _____ feet

14. On average during each quarter of 1991, about what percent of this design capacity was actually used?

- ___% Jan-Mar ___% Apr-Jun
 ___% July-Sept ___% Oct-Dec

15. Which of the following cattle handling facilities do you have? (check as many as apply)

- ___ Permanent corral/holding pen ___ Loading chute
 ___ Portable corral/holding pen ___ Scales
 ___ Cattle squeeze ___ Dipping vat
 ___ Salt-mineral feeder ___ Calf creep feeder

16. Which of the following features are part of your cattle finishing operation? (please check as many as apply and supply the added information as requested)

- Confinement barn: mechanical ventilation (if so, approx. how many sq. ft. per head? _____)
- Confinement barn: natural ventilation (if so, approx. how many sq. ft. per head? _____)
- Mounds (what is the average slope of your feedlot? Percentage slope _____%)
- Bedding (if so, please specify the type of bedding used: _____)
- Covered protection from wind and snow
- Fence windbreak
- Shelter-belt windbreak
- Completely paved with concrete
- Partially paved with concrete

Cattle feeding practices

17. Approximately what percentage of grain to total dry matter intake (i.e., relative to the dry matter in corn silage, hay, pasture, and crop residues) do you commonly feed the following types of cattle? (please show 'n/a' if you do not have the indicated type of cattle)

- % Backgrounded steers (500-750 lb)
- % Early finishing steers (750-950 lb)
- % Late finishing steers (950+ lb)

18. About what percentages of the following types of feed fed to your cattle do you typically raise (rather than purchase) on your farm? Please show 'n/a' if you do not feed the indicated feedstuff.

- % Dry grain % High moisture grain
- % Hay % Corn silage

19. Do you feed any organically produced (with no synthetic fertilizers or pesticides) grains or forages to your finishing cattle? Yes No . If yes, what approximate percentages of the following total feedstuffs fed to your cattle are organically produced? Please show 'n/a' if you do not feed the indicated feedstuff.

- % Grains % Harvested forages
- % Grazed forages

20. Do you experience drinking water quantity problems with your beef operation? (please answer yes or no for each)

- In an average year of precipitation and water run-off?
- In years of below-average (e.g., worst 2 of 10 years) precipitation and water run-off?

21. Do you commonly experience any water quality problems with your finishing cattle? Yes No .

- a. If yes, please check which one(s)?

- Salinity Nitrate Sodium Bacteria
- Other (specify: _____)

- b. Have you taken steps to try to overcome the problem(s)? Yes No . If yes, please describe them below.

22. Do you sometimes feed the following to your finishing cattle? (please check as many as apply)

- Plastic pellets for roughage
- Recycled manure
- Feed formulas containing urea and/or anhydrous ammonia
- Animal by-products (e.g., meat, bone, offal, feather, fish meals)
- Preservatives
- Solvent-extracted feeds
- Sawdust and other non-food ingredients

Animal handling and health

23. Do you use antibiotics in your cattle feeding operation?

- Yes. If so, please check as many of the following types of antibiotic uses as apply:

- Subtherapeutically (routinely) at low levels in the feed
- Treat specific illnesses/injuries that arise with individual animals
- Newly purchased cattle upon arrival at feedlot
- Other (specify: _____)

- No. If so, please state your 2 or 3 main reasons.

24. Please place a check under the response that describes how you use the following "production tools" with your finishing cattle.

| Production tool | Description of use (For each prod. tool, check 1 of the 3) | | |
|---|--|--------------------------|--------------------------|
| | All Cattle | Some Cattle | No Cattle |
| a. Growth promotants (e.g., Ralgro, Compudose, Synovex) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Ionophores (e.g., Bovatec, Rumensin) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Coccidiosis control (e.g., Deccox, Bovatec, Amprolium) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Parasiticides | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Insecticides/fumigants | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Vaccinations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7-way clostridial bacterin | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| IBR | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| BVD | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| PI, | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| BRSV | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Haemophilus somnus | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

25. For each of the production tools listed in question 24, please show the number(s) from below of your most important reason(s) for use or non-use.

| | Use | Non-use |
|-------------------------|-------|---------|
| a. Growth promotants | _____ | _____ |
| b. Ionophores | _____ | _____ |
| c. Coccidiosis controls | _____ | _____ |
| d. Parasiticides | _____ | _____ |
| e. Insecticides | _____ | _____ |
| f. Vaccinations | _____ | _____ |

Possible reasons for using the production tool

1. Improve my cattle's physical production performance (e.g., feed conversion)
2. Reduces cost per pound of gain in my cattle
3. Professional consultants advise me to use the production tool
4. Neighbors use the production tool
5. Others have advised me to use the production tool
6. Other reasons: please specify in question 25

Possible reasons for not using the production tool

1. Cost of production tool exceeds increased production value from using it
2. Prefer to avoid extra handling of cattle to administer the production tool
3. Prefer to follow natural production methods to the maximum extent possible
Concern over possible negative impacts of production tool on consumers' health
5. Other reasons: please specify in question 25

26. Briefly discuss any additional factors or philosophies that contribute to your use or non-use of the previously mentioned production tools.

27. What do you consider to be your 2-3 most important precautions for keeping your finishing cattle healthy, i.e., for them to resist infection, parasitic attacks, and metabolic disorders and overcome injury by rapid healing?

28. Do you have facilities for segregating ill or injured animals? Yes ___ No ___. If yes, please briefly describe the facilities.

Manure handling and management

29. Approximately what percentage of the total manure from your finishing cattle in a typical year do you manage in each of the following ways?

- ___ % Solid raw manure applied directly to the land
 - ___ % Composted manure applied to the land
 - ___ % Runoff holding pond disposed of by land application
 - ___ % Runoff holding pond disposed of by irrigation
 - ___ % Falls on grazing land
 - ___ % Other (specify: _____)
- 100%

30. The following questions pertain to the manure produced by all livestock on your farm, including your finishing cattle.

a. Of the total acreages of the following types of land that you operate, what percentages would typically receive applications of spread manure (versus manure dropped while grazing) over a 15-year period?

- ___ % Cropland following row crops/grains
- ___ % Cropland following sod
- ___ % Improved hay land
- ___ % Improved rangeland
- ___ % Native hay land
- ___ % Native rangeland

b. Of that land receiving spread manure applications, approximately how many times during a 15 year period would typical individual fields receive manure applications?

- ___ Cropland following row crops/grains
- ___ Cropland following sod
- ___ Improved hay land
- ___ Improved rangeland
- ___ Native hay land
- ___ Native rangeland

c. About how much manure per acre (tons of solid raw manure or gallons of liquid manure) would you typically apply each time that you spread manure on a particular field? Please indicate "d/k" if you don't know.

Ton/acre or Gal/acre

- ___ Cropland following row crops/grains
- ___ Cropland following sod
- ___ Improved hay/rangeland
- ___ Native hay/rangeland

Other

31. Approximately what percentage of the labor required in your cattle finishing operation is provided by family members? ___%

32. Do you have off-farm employment? Yes ___ No ___ Do you do custom work for other farmers? Yes ___ No ___

33. Are you married? Yes ___ No ___ If yes, does your spouse have off-farm employment? yes ___ No ___. If yes, is the employment full-time ___ or part-time ___?

34. How old are you? ___ years

35. What is your approximate overall farm/ranch debt-to-asset ratio? (please check one)

- ___ Zero
- ___ 0.01-0.09
- ___ 0.10-0.19
- ___ 0.20-0.29
- ___ 0.30-0.39
- ___ 0.40-0.49
- ___ 0.50-0.59
- ___ 0.60 or higher

36. How would you classify your production methods?
(please check one)

- I am a "mainstream" (conventional) beef producer.
 I am an "organic" beef producer.
 In some respects, I am "organic," but in others I am "mainstream" (conventional). If so, what steps would you need to take before you could become "organic?"

37. Thank you very much for taking time to complete this questionnaire. Please insert the questionnaire in the enclosed envelope and send it back to us. If you would like to receive a copy of the results of the survey, please check here and a copy will be sent to you.

38. Would you be willing to cooperate in possible future research (e.g., to be personally interviewed) concerning beef cattle in South Dakota?
Yes Maybe No . If yes or maybe, please indicate your name and address below. Many thanks.

Table 1. Cattle feedlot respondents, by size- and location-of-feedlot.

| <u>Location-of-feedlot</u> | <u>Number of feedlots</u> | | | | <u>State total</u> |
|----------------------------|-------------------------------|---------------|--------------|----------------------------|--------------------|
| | <u>Size-of-feedlot (head)</u> | | | <u>Missing information</u> | |
| | <u>Small</u> | <u>Medium</u> | <u>Large</u> | | |
| Southeast | 21 | 15 | 9 | 5 | 50 |
| Northeast | 6 | 13 | 16 | 6 | 41 |
| West | 0 | 2 | 1 | 3 | 6 |
| Missing information | 0 | 0 | 0 | 1 | 1 |
| State total | 27 | 30 | 26 | 15 | 98 |

Table 2. Incidence of other livestock enterprises on farms/ranches with feedlots, by size- and location-of-feedlot.

| Other livestock enterprises | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
|---|-----------------|--------|-------|--------------|---------------------|-----------|------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Percent of feeders with livestock enterprises other than feeding cattle | 95.0 | 68.2 | 56.1 | 69.4 | 72.1 | 63.4 | 83.3 |
| Percent of feeders with other livestock enterprises who market: | | | | | | | |
| Slaughter hogs | 35.0 | 31.8 | 4.9 | 18.4 | 20.9 | 14.6 | 16.7 |
| Feeder calves | 25.0 | 9.1 | 12.2 | 13.3 | 11.6 | 17.1 | 33.3 |
| Stocker cattle | 30.0 | 4.5 | 7.3 | 9.2 | 11.6 | 9.8 | 33.3 |
| Slaughter lambs | 10.0 | 0 | 2.4 | 4.1 | 4.7 | 4.9 | 0 |
| Feeder pigs | 0 | 0 | 7.3 | 3.1 | 4.7 | 0 | 0 |
| Feeder lambs | 0 | 0 | 4.9 | 2.0 | 0 | 4.9 | 0 |
| Poultry | 0 | 0 | 4.9 | 2.0 | 2.3 | 2.4 | 0 |
| Percent of feeders with other livestock enterprises who maintain: | | | | | | | |
| Beef cow herds | 90.0 | 50.0 | 39.0 | 62.5 | 39.5 | 48.8 | 66.7 |
| Swine breeding herds | 30.0 | 13.6 | 9.8 | 14.3 | 14.0 | 9.8 | 0 |
| Dairy herds | 15.0 | 13.6 | 7.3 | 10.2 | 11.6 | 9.8 | 16.7 |
| Sheep flocks | 5.0 | 0 | 4.9 | 5.1 | 2.3 | 9.8 | 0 |
| Poultry | 5.0 | 0 | 2.4 | 3.1 | 0 | 4.9 | 0 |

Table 3. Selected labor and employment features of cattle feeders, by size- and location-of-feedlot.

| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
|---|-----------------|--------|-------|-----------------|---------------------|-----------|------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Percent of feeders reporting the following percentage ranges of the total labor required by their finishing cattle being provided by family members | | | | | | | |
| 100% | 69.2 | 56.7 | 12.0 | 47.9 | 58.3 | 32.5 | 66.7 |
| 80.0% - 99.9% | 23.1 | 16.6 | 12.0 | 15.9 | 10.4 | 22.5 | 16.7 |
| 60.0% - 79.9% | 0 | 16.7 | 24.0 | 14.9 | 17.6 | 17.5 | 0 |
| Less than 60% | 7.7 | 10.0 | 52.0 | 21.3 | 16.7 | 27.5 | 16.7 |
| Percent of feeders with off-farm employment | 19.2 | 10.0 | 24.0 | 15.6 | 18.4 | 15.0 | 0 |
| Percent of feeders who do custom work for other farmers | 16.0 | 25.0 | 29.2 | 22.8 | 22.9 | 24.3 | 16.7 |
| Percent of spouses with off-farm employment | 36.0 | 40.7 | 28.0 | 34.1 | 32.6 | 36.8 | 33.3 |
| Percent of spouses with off-farm employment who work full-time | 77.7 | 54.5 | 42.9 | 61.2 | 66.7 | 57.1 | 50.0 |

Table 4. Selected personal and financial features of cattle feeders, by size- and location-of-feedlot.

| | <u>Size-of-feedlot</u> | | | <u>All feedlots</u> | <u>Location-of-herd</u> | | |
|--|------------------------|---------------|--------------|-------------------------|-------------------------|------------------|-------------|
| | <u>Small</u> | <u>Medium</u> | <u>Large</u> | | <u>Southeast</u> | <u>Northeast</u> | <u>West</u> |
| Mean age of cattle feedlot manager (years) | 51.0 | 45.8 | 45.2 | 48.0 | 49.1 | 47.4 | 42.7 |
| Percent of feeders married | 92.6 | 100.0 | 96.2 | 95.8 | 95.8 | 95.0 | 100.0 |
| Percent of feeders reporting the following percentage ranges of their gross farm income over the past 5 years as typically being from the sale of livestock | | | | | | | |
| More than 75.0% | 25.9 | 50.0 | 52.0 | 41.7 | 42.0 | 40.0 | 50.0 |
| 50.0 - 75.0% | 22.2 | 33.3 | 32.0 | 32.3 | 32.0 | 32.5 | 33.3 |
| 25.0 - 49.9% | 48.1 | 13.3 | 8.0 | 21.9 | 22.0 | 22.5 | 16.7 |
| Less than 25% | 3.7 | 3.3 | 8.0 | 4.2 | 4.0 | 5.0 | 0 |
| Percent of feeders reporting the following overall farm/ranch debt-to-asset ratios | | | | | | | |
| 0.60 or higher | 13.0 | 11.1 | 13.0 | 10.7 | 9.1 | 14.3 | 0 |
| 0.40 - 0.59 | 8.7 | 22.2 | 43.5 | 21.4 | 20.4 | 25.7 | 0 |
| 0.20 - 0.39 | 26.1 | 44.5 | 26.1 | 32.2 | 38.7 | 25.7 | 20.0 |
| 0.01 - 0.19 | 34.8 | 11.1 | 13.1 | 22.6 | 22.7 | 20.0 | 40.0 |
| Zero | 17.4 | 11.1 | 4.3 | 13.1 | 9.1 | 14.3 | 40.0 |

Table 5. Grazing-confinement feeding system, by size- and location-of-feedlot.

| System | Percent of feeders | | | | | | |
|---|--------------------|--------|-------|-----------------|---------------------|-----------|------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| Confinement feeding during entire feeding period | 68.4 | 85.7 | 94.9 | 83.0 | 85.7 | 84.6 | 66.7 |
| Grazing during part of backgrounding period, confinement feeding thereafter | 21.1 | 4.8 | 2.6 | 8.5 | 4.8 | 7.7 | 16.7 |
| Grazing during all the backgrounding period, confinement feeding thereafter | 10.5 | 0 | 0 | 4.3 | 4.8 | 2.6 | 16.7 |
| Grazing, followed by a period of confinement feeding for < 100 days | 0 | 9.5 | 2.6 | 4.2 | 4.8 | 5.1 | 0 |

Table 6. Rate of feedlot utilization, by quarter and size- and type-of-feedlot.*

| | <u>Size-of-feedlot</u> | | | All feedlots | <u>Location-of-feedlot</u> | | |
|--|---------------------------|--------|-------|-----------------|----------------------------|-----------|------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Mean percentage utilization | | | | | | | |
| First quarter | 76.5 | 82.3 | 88.5 | 84.1 | 82.1 | 84.2 | 82.5 |
| Second quarter | 63.8 | 60.9 | 80.0 | 70.8 | 68.3 | 72.2 | 72.5 |
| Third quarter | 52.8 | 54.5 | 63.8 | 57.7 | 60.0 | 54.7 | 30.0 |
| Fourth quarter | 62.3 | 75.2 | 84.9 | 77.5 | 78.5 | 78.5 | 67.5 |
| Four quarters | 63.9 | 68.2 | 79.3 | 72.5 | 72.2 | 72.4 | 63.1 |
| Producer frequency distribution, by percentage range of utilization | | | | | | | |
| | <u>Percent of feeders</u> | | | | | | |
| First quarter | | | | | | | |
| 100% | 55.0 | 68.2 | 48.7 | 54.9 | 53.7 | 53.8 | 50.0 |
| 66.7% - 99.9% | 15.0 | 9.1 | 43.6 | 27.5 | 26.8 | 28.3 | 25.0 |
| 33.3% - 66.6% | 20.0 | 9.1 | 2.6 | 9.9 | 9.7 | 10.2 | 25.0 |
| 0.1% - 33.2% | 0 | 9.1 | 0 | 2.2 | 2.5 | 2.6 | 0 |
| 0% | 10.0 | 4.5 | 5.1 | 5.5 | 7.3 | 5.1 | 0 |
| Second quarter | | | | | | | |
| 100% | 35.0 | 36.4 | 28.2 | 30.8 | 34.1 | 28.2 | 25.0 |
| 66.7% - 99.9% | 25.0 | 18.1 | 51.3 | 36.2 | 31.8 | 38.5 | 50.0 |
| 33.3% - 66.6% | 15.0 | 18.2 | 17.9 | 18.7 | 17.0 | 23.0 | 0 |
| 0.1% - 33.2% | 5.0 | 9.1 | 2.6 | 5.5 | 2.5 | 5.2 | 25.0 |
| 0% | 20.0 | 18.2 | 0 | 8.8 | 14.6 | 5.1 | 0 |
| Third quarter | | | | | | | |
| 100% | 25.0 | 22.7 | 12.8 | 16.5 | 22.0 | 10.3 | 0 |
| 66.7% - 99.9% | 10.0 | 13.7 | 43.6 | 27.5 | 29.2 | 28.2 | 0 |
| 33.3% - 66.6% | 35.0 | 40.9 | 25.7 | 32.9 | 26.8 | 38.4 | 25.0 |
| 0.1% - 33.2% | 5.0 | 9.1 | 12.8 | 11.0 | 4.9 | 12.8 | 75.0 |
| 0% | 25.0 | 13.6 | 5.1 | 12.1 | 17.1 | 10.3 | 0 |
| Fourth quarter | | | | | | | |
| 100% | 40.0 | 45.5 | 38.5 | 39.6 | 46.3 | 33.3 | 25.0 |
| 66.6% - 99.9% | 10.0 | 27.2 | 46.1 | 34.0 | 26.9 | 43.6 | 25.0 |
| 33.3% - 66.6% | 25.0 | 13.7 | 12.8 | 16.5 | 17.0 | 15.4 | 50.0 |
| 0.1% - 33.2% | 10.0 | 4.5 | 2.6 | 4.4 | 2.5 | 5.1 | 0 |
| 0% | 15.0 | 9.1 | 0 | 5.5 | 7.3 | 2.6 | 0 |

*Rate of utilization is defined, in principle, in terms of percentage of design capacity.

Table 7. Feedlot physical features, by size- and location-of-feedlot.

| Physical feature | Percent of feeders having the physical feature | | | | | | |
|---|--|--------|-------|-----------------|---------------------|-----------|------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| Shelter-belt windbreak | 85.2 | 90.0 | 96.2 | 90.7 | 87.8 | 97.6 | 66.7 |
| Mounds | 48.1 | 70.0 | 92.3 | 68.0 | 61.2 | 75.6 | 66.7 |
| Bedding | 70.4 | 76.7 | 57.7 | 68.0 | 57.1 | 80.5 | 66.7 |
| Fence windbreak | 44.4 | 63.3 | 80.8 | 61.9 | 57.1 | 63.4 | 83.3 |
| Partially paved with concrete | 40.7 | 70.0 | 61.5 | 57.7 | 65.3 | 51.2 | 50.0 |
| Covered protection from wind and snow | 37.0 | 23.3 | 26.9 | 28.9 | 30.6 | 29.3 | 16.7 |
| Confinement barn: Natural ventilation* | 0 | 13.3 | 3.8 | 5.2 | 6.1 | 4.9 | 0 |
| Completely paved with concrete | 0 | 3.3 | 7.7 | 5.2 | 6.1 | 4.9 | 0 |

*No one reported a confinement barn with mechanical ventilation.

Table 8. Equipment for handling and feeding cattle, by size- and location-of-feedlot.

| Physical facility | Percentage of feeders having the physical facility | | | | | | |
|------------------------------|--|--------|-------|-----------------|---------------------|-----------|-------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| Loading chute | 80.8 | 100.0 | 96.2 | 92.8 | 91.8 | 92.7 | 100.0 |
| Permanent corral/holding pen | 80.8 | 93.3 | 100.0 | 91.8 | 87.8 | 95.1 | 100.0 |
| Cattle squeeze | 26.9 | 86.7 | 92.3 | 72.2 | 61.2 | 80.5 | 100.0 |
| Salt-mineral feeder | 80.8 | 63.3 | 38.5 | 61.9 | 69.4 | 51.2 | 66.7 |
| Calf creep feeder | 46.2 | 50.0 | 26.9 | 40.2 | 34.7 | 46.3 | 50.0 |
| Scales | 3.8 | 40.0 | 69.2 | 35.1 | 24.5 | 46.3 | 50.0 |
| Portable corral | 26.9 | 40.0 | 19.2 | 32.0 | 26.5 | 31.7 | 66.7 |
| Dipping vat | 3.8 | 0 | 7.7 | 3.1 | 2.0 | 4.9 | 0 |

Table 9. Home-raised cattle placed on feed in 1991, by size- and location-of-feedlot.

| | <u>Size-of-feedlot</u> | | | All feedlots | <u>Location-of-feedlot</u> | | |
|--|---------------------------|--------|-------|-----------------|----------------------------|-----------|------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Mean percentage of home-raised cattle | 70.7 | 19.7 | 4.4 | 33.6 | 35.9 | 31.3 | 30.8 |
| Producer frequency distribution, by percentage range of home-raised cattle | <u>Percent of feeders</u> | | | | | | |
| 100% | 53.8 | 6.7 | 0 | 20.4 | 22.9 | 20.5 | 0 |
| 66.7% - 99.9% | 11.6 | 0 | 0 | 5.4 | 6.3 | 2.6 | 16.7 |
| 33.3% - 66.6% | 11.5 | 13.3 | 0 | 8.6 | 8.3 | 7.7 | 16.7 |
| 0.1% - 33.2% | 11.6 | 33.3 | 32.0 | 25.8 | 25.0 | 25.6 | 33.3 |
| 0% | 11.5 | 46.7 | 68.0 | 39.8 | 37.5 | 43.6 | 33.3 |

Table 10. Cattle placed on feed in 1991 backgrounded and sold rather than finished for slaughter, by size- and location-of-feedlot.

| <u>Mean percentage</u> | |
|----------------------------|------|
| <u>Size-of-feedlot</u> | |
| Small | 10.1 |
| Medium | 10.6 |
| Large | 17.4 |
| All feedlots | 11.3 |
| <u>Location-of-feedlot</u> | |
| Southeast | 7.5 |
| Northeast | 15.5 |
| West | 15.0 |

Table 11. Quarter of cattle placement, by size- and location-of-feedlot.

| Quarter | <u>Percent of cattle</u> | | | | | | |
|---------|--------------------------|--------|-------|-----------------|----------------------------|-----------|------|
| | <u>Size-of-feedlot</u> | | | All feedlots | <u>Location-of-feedlot</u> | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| First | 43.2 | 26.7 | 22.8 | 28.5 | 26.9 | 27.2 | 28.3 |
| Second | 4.7 | 17.1 | 16.2 | 13.0 | 16.0 | 11.9 | 4.2 |
| Third | 8.4 | 7.5 | 16.2 | 12.5 | 11.7 | 11.6 | 20.8 |
| Fourth | 43.7 | 48.7 | 44.8 | 46.0 | 45.4 | 49.4 | 46.7 |

Table 12. Importance of grain for steers at various stages in the feeding period, by size- and location-of-feedlot.

| Stage of feeding/percentage grain in total diet dry matter intake (DMI) | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
|---|---------------------------|--------|-------|--------------|---------------------|-----------|------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Mean percentage grain of total DMI | | | | | | | |
| Backgrounded steers (500 - 750 lb) | 28.0 | 33.1 | 38.5 | 33.1 | 31.4 | 36.8 | 13.6 |
| Early finishing steers (750 - 950 lb) | 34.8 | 44.8 | 66.7 | 52.6 | 48.1 | 58.2 | 40.0 |
| Late finishing steers (> 950 lb) | 57.2 | 66.3 | 80.5 | 72.3 | 70.9 | 74.1 | 69.0 |
| Producer frequency distribution by percentage range of grain to total DMI | | | | | | | |
| | <u>Percent of feeders</u> | | | | | | |
| <u>Backgrounded steers (500 - 750 lb)</u> | | | | | | | |
| More than 60.0% | 11.1 | 0 | 10.5 | 9.5 | 11.8 | 9.1 | 0 |
| 40.1% - 60.0% | 22.2 | 31.3 | 34.2 | 27.0 | 20.6 | 36.4 | 0 |
| 20.1% - 40.0% | 11.1 | 43.7 | 31.6 | 27.0 | 26.4 | 27.2 | 20.0 |
| 20.0% or less | 55.6 | 25.0 | 23.7 | 36.5 | 41.2 | 27.3 | 80.0 |
| <u>Early finishing steers (750 - 950 lb)</u> | | | | | | | |
| More than 60.0% | 11.1 | 25.0 | 68.4 | 44.6 | 38.2 | 51.5 | 40.0 |
| 40.1% - 60.0% | 33.3 | 43.7 | 21.1 | 27.0 | 26.5 | 30.3 | 0 |
| 20.1% - 40.0% | 22.3 | 6.3 | 5.2 | 8.1 | 11.8 | 3.0 | 20.0 |
| 20.0% or less | 33.3 | 25.0 | 5.3 | 20.3 | 23.5 | 15.2 | 40.0 |
| <u>Late finishing steers (> 950 lb)</u> | | | | | | | |
| More than 60.0% | 33.3 | 68.7 | 89.5 | 75.7 | 79.4 | 75.8 | 60.0 |
| 40.1% - 60.0% | 44.5 | 12.5 | 10.5 | 13.5 | 8.8 | 15.1 | 20.0 |
| 20.1% - 40.0% | 11.1 | 6.3 | 0 | 5.4 | 3.0 | 6.1 | 20.0 |
| 20.0% or less | 11.1 | 12.5 | 0 | 5.4 | 8.8 | 3.0 | 0 |

Table 13. Feeding of "organically" produced feedstuffs to finishing cattle, by size- and location-of-feedlot.

| Feedstuff | Percent of feeders feeding "organically" produced feedstuffs | | | | | | |
|-------------------------|--|--------|-------|--------------|---------------------|-----------|------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| All types of feedstuffs | 8.0 | 6.7 | 4.0 | 6.4 | 8.5 | 4.9 | 0 |
| Harvest forages | 4.0 | 3.3 | 4.0 | 3.2 | 4.3 | 2.4 | 0 |
| Grazed forages | 4.0 | 3.3 | 0 | 2.1 | 2.1 | 2.4 | 0 |
| Grains | 0 | 0 | 4.0 | 2.1 | 4.3 | 0 | 0 |

Table 14. Importance of home-raised feeds fed to cattle, by size- and location-of-feedlot.

| Feed | Mean percentage of cattle receiving the home-raised feed | | | | | | |
|---------------------|--|--------|-------|--------------|---------------------|-----------|-------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| Corn silage | 86.1 | 98.4 | 95.0 | 94.3 | 93.0 | 95.2 | 100.0 |
| High moisture grain | 75.0 | 88.3 | 83.4 | 84.9 | 88.3 | 86.3 | 58.8 |
| Hay | 80.9 | 90.6 | 61.9 | 80.8 | 76.8 | 85.7 | 85.0 |
| Dry grain | 76.4 | 64.9 | 52.4 | 65.8 | 64.9 | 71.4 | 43.0 |

Table 15. Selected feed and health management practices followed by managers, by size- and location-of-feedlot.

| <u>Management practice</u> | <u>Percentage of feeders following the practice</u> | | | | | | |
|---|---|---------------|--------------|---------------------|----------------------------|------------------|-------------|
| | <u>Size-of-feedlot</u> | | | <u>All feedlots</u> | <u>Location-of-feedlot</u> | | |
| | <u>Small</u> | <u>Medium</u> | <u>Large</u> | | <u>Southeast</u> | <u>Northeast</u> | <u>West</u> |
| <u>Feed management</u> | | | | | | | |
| Have grain storage facilities to take advantage of price drops in purchased feed grains | 81.8 | 89.3 | 84.6 | 84.3 | 88.6 | 76.9 | 100.0 |
| Feed scales are used to monitor and control feeding rates | 36.4 | 92.9 | 100.0 | 76.4 | 70.5 | 84.6 | 80.0 |
| Feeds are tested for nutrient composition at least once a year | 45.5 | 85.7 | 96.2 | 74.2 | 65.9 | 87.2 | 60.0 |
| Feed records are kept for separate pens of cattle | 18.2 | 64.3 | 84.6 | 46.1 | 40.9 | 53.8 | 40.0 |
| Cattle weights are checked periodically to track performance | 9.1 | 39.3 | 42.3 | 28.1 | 22.7 | 35.9 | 20.0 |
| <u>Health management</u> | | | | | | | |
| Records on the amounts and sources of medications administered to individual animals are maintained | 27.3 | 46.4 | 69.2 | 53.9 | 47.7 | 61.5 | 60.0 |

Table 16. Targeted average daily gain for steers at various stages in the feeding period, by size- and location-of-feedlot.

| Stage of feeding | Mean average daily gain (lb) | | | | | | |
|-------------------------------|------------------------------|--------|-------|-----------------|---------------------|-----------|------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| Backgrounded steers | | | | | | | |
| (500 - 750 lb) | 2.49 | 2.36 | 2.36 | 2.35 | 2.32 | 2.40 | 2.07 |
| Early finishing steers | | | | | | | |
| (750 - 950 lb) | 2.73 | 2.76 | 2.95 | 2.79 | 2.74 | 2.85 | 2.68 |
| Late finishing steers | | | | | | | |
| (> 950 lb) | 2.68 | 2.95 | 3.07 | 2.93 | 2.92 | 2.97 | 2.80 |

Table 17. Targeted final finishing weight for slaughter cattle, by size- and location-of-feedlot.

| | Mean target weight (lb) | | | | | | |
|---------|-------------------------|--------|-------|-----------------|---------------------|-----------|-------|
| | Size-of-feedlot | | | All feedlots | Location-of-feedlot | | |
| | Small | Medium | Large | | Southeast | Northeast | West |
| Steers | 1,230 | 1,214 | 1,231 | 1,223 | 1,229 | 1,223 | 1,192 |
| Heifers | 1,142 | 1,112 | 1,123 | 1,127 | 1,127 | 1,132 | 1,112 |

Table 18. Antibiotic-use, by size- and location-of-feedlot.

| <u>Antibiotic-use</u> | <u>Size-of-feedlot</u> | | | <u>All feedlots</u> | <u>Location-of-feedlot</u> | | |
|---|------------------------|---------------|--------------|-------------------------|----------------------------|------------------|-------------|
| | <u>Small</u> | <u>Medium</u> | <u>Large</u> | | <u>Southeast</u> | <u>Northeast</u> | <u>West</u> |
| Percent of feeders using antibiotics with finishing cattle | 84.0 | 100.0 | 100.0 | 93.7 | 93.8 | 92.7 | 100.0 |
| Percent of producers who: | | | | | | | |
| Treat specific illnesses/injuries that arise with individual animals | 72.0 | 96.7 | 100.0 | 87.4 | 85.4 | 90.2 | 80.0 |
| Treat newly purchased cattle upon arrival at feedlot | 44.0 | 73.3 | 88.0 | 63.2 | 66.7 | 61.0 | 60.0 |
| Routinely feed low levels of antibiotics (subtherapeutically) in the feed | 32.0 | 20.0 | 40.0 | 29.5 | 35.4 | 26.8 | 0 |

Table 19. Use of selected production tools with finishing cattle, by size-of-feedlot.

| Production tool | Percent of feeders who use the tool with: | | | | | | | | | | | |
|--|---|-------|-------|--------------|-----------------|-------|-------|--------------|-----------------|-------|------|--------------|
| | All cattle | | | | Some cattle | | | | No cattle | | | |
| | Size-of-feedlot | | | All feedlots | Size-of-feedlot | | | All feedlots | Size-of-feedlot | | | All feedlots |
| Small | Medium | Large | Small | | Medium | Large | Small | | Medium | Large | | |
| Ionophores (e.g., Bovatec, Rumensin) | 66.7 | 86.2 | 96.2 | 80.7 | 19.0 | 6.9 | 3.8 | 11.4 | 14.3 | 6.9 | 0 | 7.9 |
| Parasiticides | 77.3 | 82.8 | 84.0 | 80.2 | 18.2 | 10.3 | 12.0 | 12.8 | 4.5 | 6.9 | 4.0 | 7.0 |
| Growth promotants (e.g., Ralgro, Compudose, Synovex) | 57.1 | 79.3 | 80.8 | 71.7 | 28.6 | 17.2 | 15.4 | 18.9 | 14.3 | 3.4 | 3.8 | 10.0 |
| Insecticides/fumigants | 60.0 | 59.1 | 58.3 | 58.0 | 13.3 | 22.7 | 37.5 | 24.6 | 26.7 | 18.2 | 4.2 | 17.4 |
| Coccidiosis control (e.g., Deccox, Bovatec, Amprolium) | 58.8 | 37.0 | 50.0 | 45.7 | 29.4 | 55.6 | 30.8 | 40.7 | 11.8 | 7.4 | 19.2 | 13.6 |
| Vaccinations | | | | | | | | | | | | |
| 7-way clostridial bacterin | 88.5 | 88.0 | 96.0 | 91.1 | 11.5 | 12.0 | 4.0 | 8.9 | 0 | 0 | 0 | 0 |
| BVD | 88.2 | 88.9 | 88.0 | 87.8 | 11.8 | 7.4 | 12.0 | 11.0 | 0 | 3.7 | 0 | 1.2 |
| IBR | 82.4 | 88.9 | 88.5 | 86.7 | 17.6 | 7.4 | 11.5 | 12.0 | 0 | 3.7 | 0 | 1.2 |
| PI ₃ | 92.9 | 76.9 | 87.5 | 84.0 | 7.1 | 15.4 | 12.5 | 13.3 | 0 | 7.7 | 0 | 2.7 |
| Haemophilus somnus | 86.7 | 78.3 | 78.3 | 81.4 | 13.3 | 17.4 | 17.4 | 15.7 | 0 | 4.3 | 4.3 | 2.9 |
| BRSV | 91.7 | 75.0 | 76.2 | 80.0 | 8.3 | 20.8 | 23.8 | 18.5 | 0 | 4.2 | 0 | 1.5 |

Table 20. Use of selected production tools with finishing cattle, by location-of-feedlot.

| Production tool | Percent of feeders who use the tool with: | | | | | | | | | | | |
|--|---|------|-----------|--------------|---------------------|------|-----------|--------------|---------------------|------|------|--------------|
| | All cattle | | | | Some cattle | | | | No cattle | | | |
| | Location-of-feedlot | | | All feedlots | Location-of-feedlot | | | All feedlots | Location-of-feedlot | | | All feedlots |
| Southeast | Northeast | West | Southeast | | Northeast | West | Southeast | | Northeast | West | | |
| Ionophores (e.g., Bovatec, Rumensin) | 84.1 | 78.9 | 66.7 | 80.7 | 9.1 | 13.2 | 16.7 | 11.4 | 6.8 | 7.9 | 16.7 | 7.9 |
| Parasiticides | 92.9 | 66.7 | 80.0 | 80.2 | 7.1 | 17.9 | 20.0 | 12.8 | 0 | 15.4 | 0 | 7.0 |
| Growth promotants (e.g., Ralgro, Compudose, Synovex) | 76.7 | 70.0 | 50.0 | 71.1 | 18.6 | 17.5 | 33.3 | 18.9 | 4.7 | 12.5 | 16.7 | 10.0 |
| Insecticides/fumigants | 67.7 | 48.5 | 60.0 | 58.0 | 25.8 | 24.2 | 20.0 | 24.6 | 6.5 | 27.3 | 20.0 | 17.4 |
| Coccidiosis control (e.g., Deccox, Bovatec, Amprolium) | 57.5 | 32.4 | 50.0 | 45.7 | 40.0 | 43.2 | 25.0 | 40.7 | 2.5 | 24.3 | 25.0 | 13.6 |
| Vaccinations | | | | | | | | | | | | |
| 7-way clostridial bacterin | 87.0 | 97.3 | 83.3 | 91.1 | 13.0 | 2.7 | 16.7 | 8.9 | 0 | 0 | 0 | 0 |
| BVD | 84.2 | 94.6 | 66.7 | 87.8 | 15.8 | 2.7 | 33.3 | 11.0 | 0 | 2.7 | 0 | 1.2 |
| IBR | 82.1 | 94.6 | 66.7 | 86.7 | 17.9 | 2.7 | 33.3 | 12.0 | 0 | 2.7 | 0 | 1.2 |
| PI ₃ | 75.8 | 94.4 | 66.7 | 84.0 | 24.2 | 5.6 | 33.3 | 13.3 | 0 | 0 | 0 | 2.7 |
| Haemophilus somnus | 78.1 | 85.3 | 75.0 | 81.4 | 21.9 | 8.8 | 25.0 | 15.7 | 0 | 5.9 | 0 | 2.9 |
| BRSV | 67.9 | 90.6 | 80.0 | 80.0 | 32.1 | 6.2 | 20.0 | 18.5 | 0 | 3.1 | 0 | 1.5 |

Table 21. Reasons for using selected production tools with finishing cattle.

| Reason for use | Percent of cattle feeders reporting the indicated reason ^a | | | | |
|--|---|------------|-------------------|-------------------------|---------------------|
| | Parasiticides | Ionophores | Growth promotants | Insecticides/ fumigants | Coccidiosis control |
| | (67) | (57) | (70) | (55) | (56) |
| Improve cattle physical production performance | 71.6 | 70.2 | 84.3 | 65.5 | 62.5 |
| Reduce cost per pound of gain | 62.7 | 80.7 | 57.1 | 54.5 | 44.6 |
| Professional consultants' advice | 26.9 | 17.5 | 15.7 | 23.6 | 41.1 |
| Others' advice | 4.5 | 3.5 | 4.3 | 3.6 | 1.8 |
| Neighbors use production tool | 1.5 | 1.8 | 1.4 | 1.8 | 1.8 |

^aThe numbers shown in parens in the first row of the table are the numbers of cattle feeders providing reasons for using the indicated production tools.

Table 22. Reasons for not using selected production tools with finishing cattle.

| Reasons for not using the tool | Percent of cattle feeders reporting the indicated reason ^a | | | | |
|--|---|------------|-------------------|-------------------------|---------------------|
| | Parasiticides | Ionophores | Growth promotants | Insecticides/ fumigants | Coccidiosis control |
| | (6) | (9) | (10) | (12) | (13) |
| Not cost effective | 16.7 | 44.4 | 20.0 | 25.0 | 61.5 |
| Possible negative impacts on consumer health | 33.3 | 33.3 | 20.0 | 16.7 | 7.7 |
| Requires too much cattle handling | 50.0 | 11.1 | 30.0 | 33.3 | 7.7 |
| Prefer to follow natural production methods | 0 | 11.0 | 30.0 | 25.0 | 15.4 |

^aThe numbers shown in parens in the first row of the table are the numbers of cattle feeders providing reasons for using the indicated production tools.

Table 23. Management of manure from finishing cattle, by size- and location-of-feedlot.

| | <u>Size-of-feedlot</u> | | | All feedlots | <u>Location-of-feedlot</u> | | |
|--|------------------------|--------|-------|---------------------------|----------------------------|-----------|------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Percent of feeders who apply manure in the following forms | | | | | | | |
| Solid raw | 83.3 | 81.0 | 100.0 | 86.5 | 86.8 | 87.2 | 66.7 |
| Composted | 33.3 | 38.1 | 35.1 | 40.4 | 36.8 | 48.7 | 33.3 |
| Runoff holding pond directly to land | 5.6 | 19.0 | 8.1 | 10.1 | 7.9 | 7.7 | 0 |
| Grazing cattle | 11.1 | 4.8 | 8.1 | 9.0 | 15.8 | 5.1 | 0 |
| "Mounds" and "piles" ^a | 0 | 4.8 | 2.7 | 3.4 | 0 | 2.6 | 33.3 |
| Runoff holding pond via irrigation water | 0 | 0 | 5.4 | 2.2 | 2.6 | 2.6 | 0 |
| Mean percentage of manure applied in the following forms | | | | | | | |
| Solid raw | 72.5 | 63.3 | 78.2 | 69.3 | 72.8 | 67.1 | 55.0 |
| Composted | 22.8 | 23.8 | 15.0 | 22.1 | 21.6 | 25.4 | 20.0 |
| Runoff holding pond directly to land | 2.8 | 6.9 | 2.7 | 3.7 | 2.9 | 2.7 | 0 |
| "Mounds" and "piles" ^a | 0 | 4.8 | 1.4 | 2.8 | 0 | 2.6 | 25.0 |
| Grazing cattle | 1.9 | 1.2 | 1.1 | 1.4 | 2.5 | 0.9 | 0 |
| Runoff holding pond via irrigation water | 0 | 0 | 1.6 | 0.7 | 0.3 | 1.3 | 0 |
| Selected producer frequency distributions, by percentage ranges of manure applied | | | | <u>Percent of feeders</u> | | | |
| Solid raw manure | | | | | | | |
| 100% | 66.7 | 38.1 | 51.4 | 47.2 | 57.9 | 41.0 | 33.3 |
| 66.7% - 99.9% | 0 | 14.3 | 13.5 | 12.4 | 10.5 | 12.8 | 16.7 |
| 33.3% - 66.6% | 5.6 | 23.8 | 29.7 | 21.3 | 5.3 | 33.4 | 16.7 |
| Less than 33.3% | 27.8 | 23.8 | 5.4 | 19.1 | 26.3 | 12.8 | 33.3 |
| Composted manure | | | | | | | |
| 100% | 11.1 | 14.3 | 0 | 9.0 | 7.9 | 10.3 | 16.7 |
| 66.7% - 99.9% | 0 | 4.7 | 2.7 | 3.4 | 7.9 | 0 | 0 |
| 33.3% - 66.6% | 22.2 | 9.6 | 21.6 | 16.8 | 13.1 | 23.0 | 0 |
| Less than 33.3% | 66.7 | 71.4 | 75.7 | 70.8 | 71.1 | 66.7 | 83.3 |

^aThese terms were used by feeders who responded to the "other" category regarding the form in which their manure was applied to land.

Table 24. Application of manure to cropland following row crops/grains, by size- and location-of-feedlot.

| | <u>Size-of-feedlot</u> | | | All feedlots | <u>Location-of-feedlot</u> | | |
|--|------------------------|--------|-------|-----------------|----------------------------|-----------|-------------------|
| | Small | Medium | Large | | Southeast | Northeast | West |
| Number of times that typical fields would receive manure applications during a 15 year period | | | | | | | |
| Mean number of times | 5.6 | 7.2 | 4.7 | 5.8 | 5.7 | 6.3 | 4.0 ^a |
| Producer frequency distribution | Percent of feeders | | | | | | |
| 15 times | 8.3 | 11.5 | 0 | 6.2 | 7.0 | 6.1 | 0 |
| 10 - 14 times | 8.4 | 19.3 | 9.1 | 13.6 | 11.6 | 18.1 | 0 |
| 6 - 9 times | 25.0 | 26.9 | 13.6 | 20.9 | 20.9 | 21.3 | 20.0 |
| 4 - 5 times | 16.6 | 15.4 | 36.4 | 22.3 | 21.0 | 24.2 | 20.0 |
| 2 - 3 times | 41.7 | 26.9 | 40.9 | 37.0 | 39.5 | 30.3 | 60.0 |
| Tons of solid raw manure per acre per application | | | | | | | |
| Mean | 11.4 | 10.4 | 13.1 | 11.1 | 11.1 | 10.2 | 20.0 ^b |
| Producer frequency distribution | Percent of feeders | | | | | | |
| 15 tons or more | 25.0 | 23.1 | 41.2 | 27.3 | 22.7 | 30.0 | 50.0 |
| 10 - 14 tons | 0 | 30.7 | 29.4 | 27.3 | 27.3 | 25.0 | 50.0 |
| 5 - 9 tons | 25.0 | 30.8 | 11.8 | 18.2 | 22.7 | 15.0 | 0 |
| Less than 5 tons | 50.0 | 15.4 | 17.6 | 27.3 | 27.3 | 30.0 | 0 |

^aBased on only 5 observations.

^bBased on only 2 observations.