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South Dakota Beef Cow-Calf Producer Management Practices

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SOUTH DAKOTA BEEF COW-CALF PRODUCER MANAGEMENT PRACTICES

by

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SUMMARY

This research report is based on the results of a mail survey of randomly selected South Dakota beef cow-calf operators undertaken during late 1991. The purpose of the survey was to determine the nature of management practices followed by the state's cow-calf producers and whether those practices differ by size and/or location of herd. Attention was given to producers' overall cow-calf, breeding, feeding, and health management practices.

Of the 62 cow-calf producers responding to the survey, 40 have cow herds east of the Missouri and 21 west of the Missouri (hereafter termed as herds in the "East" or "West"). Herd sizes range from 15 to 500 and average 122 cows each. Thirty one producers have fewer than 100 cows (hereafter termed "small" herds) and 23 have 100 or more cows ("large" herds). Herd sizes in the East average 78 cows each and in the West 219 cows.

On average, producers operate about 2,200 acres of land, the major categories of which are native permanent pasture (57% of the total), cropland (29%), and improved permanent pasture (11%). Farms/ranches in the West average 3.3 times as large as those in the East (3,990 versus 1,207 acres each).

Nearly 79% of producers report having livestock enterprises other than beef cow herds leading to the sale of weaned calves. Forty eight percent of them market backgrounded cattle, 35% market slaughter hogs, 27% maintain swine breeding herds, 23% market slaughter cattle, and 21% market stocker cattle. About 35% of producers earn 75% or more of their gross farm income from sale of livestock. At the other extreme, 20% of producers derive less than 50% of their income from livestock sales.

The most important (a) management practices reported by responding producers and (b) differences in practices, by size and location of herd, are as follows:

1. The average heifer replacement rate is 12.6%, with the average rate for large herds considerably higher than that for small herds (16.1% versus 11.0%).

2. The average "typical" weaned calf crop reported by various producers is 94%. Based on the number of exposed cows and replacement heifers retained in the herd in the fall, the average computed weaned calf crop for the survey respondents in 1991 is 90%.

3. Producers wean their calves at an average age of 7.2 mo. Average weaning weights for steer and heifer calves are 538 and 501 lb., respectively.

4. The ages of calves at castration, dehorning, and branding--while highly variant among producers--average 3.4, 4.6, and 4.6 mo., respectively. Calves in small herds and herds in the East are considerably older when these events take place.

5. In selecting herd sires to mate to mature cows, producers place greatest emphasis on weaning weights, followed in order by "correct" body confirmation, reproductive performance, sound feet and legs, transmission of milk production to daughters, and disease resistance.

6. Sixty three percent of producers pregnancy check their cows, 48% fertility test their bulls, 21% flush their cows prior to the breeding season, 15% production test their cows, and 5% use hormones to control breeding seasons.

7. The average starting dates of the breeding season for mature cows and replacement heifers are May 29th and May 23rd, respectively. For producers with large herds and herds in the West, these starting dates are considerably earlier.

8. Average lengths of breeding season for mature cows and replacement heifers are 77 and 72 days, respectively. For producers with large herds, breeding seasons are shorter.

9. Of the total forages consumed by responding producers' beef cow herds, the percentages of estimated dry matter intake from different sources are as follows: grazed pasture, 55%; harvested hay, 28%; corn silage, 10%; crop residues, 6%; and sorghum silage, 1%. For producers with large herds and herds in the West, the relative importance of grazed pasture in total herd dry matter intake is above-average and the relative importance of corn silage and grazed crop residues is below-average.

10. Twenty nine percent of producers indicate they feed some type of "organically" produced (with no synthetic fertilizers or pesticides) feedstuffs to their beef cows and calves. Larger proportions of producers with large herds and herds in the West feed "organic" feedstuffs.

11. Eighty one percent of producers report that their cow herds graze native permanent pasture, 56% graze corn stalks, 44% graze improved permanent pasture, and 30% graze small grain residues. A much higher percentage of producers with small herds and herds in the East graze corn stalks. Native permanent pasture is more common with producers in the West, whereas improved permanent pasture is more common with producers in the East.

12. The average annual lengths of grazing season for various forages are as follows: native permanent pasture, 177 days; improved permanent pasture, 115 days; corn stalks, 53 days; and small grain residues, 18 days. Annual grazing seasons for producers with large herds are 41-43% longer for native permanent pasture and corn stalks than for producers with small herds. The grazing season for producers in the West is 82% longer for native permanent pasture, but 40-55% shorter for improved permanent pasture and corn stalks, than for producers in the East.

13. Average reported stocking rates for native and improved permanent pasture are 8.7 and 3.7 acres per cow, respectively. For producers with large herds and herds in the West, average acres per cow for native permanent pasture are considerably higher.

14. Continuous grazing is the most common reported grazing management system, followed by deferred rotation, rest-rotation, complimentary rotation, and strip-grazing. For small herds and herds in the East, continuous grazing is far more common and deferred grazing is far less common.

15. Ninety two percent of responding producers use antibiotics with their cow herds. By far the most common manner of using the antibiotics is treating specific illnesses/injuries that arise with individual animals, followed by treating groups of animals at a particular age to prevent the onset of specific diseases (e.g., scours) and routinely feeding low levels of antibiotics (subtherapeutically) in creep feed. Treating groups of animals to prevent the onset of specific diseases is more common for producers with large herds and herds in the West.

16. Between 92% and 98% of producers (a) use insecticides/fumigants and parasiticides and (b) vaccinate for Brucellosis, blackleg, and IBR-BVD-PI3. About 77% vaccinate for calf scours. Producers with large herds more commonly vaccinate for Brucellosis, blackleg, and calf scours and use parasiticides than do producers with small herds. Producers with herds in the West more commonly vaccinate for Brucellosis, blackleg, and calf scours, but less commonly for IBR-BVD-PI3, than do producers in the East.

17. Nearly 50% of producers provide "outdoor care, with natural shelter" for their cow-calf herds. Another near 40% of producers provide "outdoor/indoor" care including open-front sheds/winter housing/corrals and the remaining 11-12% report "outdoor" cow-calf operations.

18. About 85% of producers have facilities for segregating sick or injured animals; 76% provide special protection to their beef herds from snow, mud, wind, heat, and other potential climate-related problems; and 72% provide special care/facilities for cows when they calve.

19. By far the most important sources of water for cattle are ground water (84% of producers) and man-made ponds (75%). Between 18% and 21% of producers also report obtaining water for their herds from each of springs/artesian wells, rivers/creeks, and natural ponds. Producers with large herds and herds in the West rely more heavily on springs/artesian wells.

20. Water quantity problems are reported by (a) 11% of producers in an average year of precipitation and water run-off and (b) 38% of producers in years of below-average (e.g., worst 2 of 10 years) water availability. Ten percent of producers report experiencing water quality problems. Problems of both water quantity and water quality are greater with herds in the West.

21. It appears that producers with large herds may exercise a slightly above-average amount of effort to minimize stress on their cattle. Their most important steps to minimize stress are providing sound herd nutrition, taking special care when handling cattle, and providing wind protection to cattle during winter.

SOUTH DAKOTA BEEF COW-CALF PRODUCER MANAGEMENT PRACTICES

by Donald C. Taylor and Dillon M. Feuz

INTRODUCTION

South Dakota's livestock industry is a major contributor to the livestock industry of the nation and the economy of the state. During the past 10 years, for example, South Dakota has ranked between 12th and 19th nationally in its cash receipts from livestock and livestock products (S.D. Stat Ag Serv, 1992).[1] During 1988-90, cash receipts from total livestock and products in South Dakota averaged $2.15 billion, representing 61.5% of total cash receipts from farm marketings and government payments to the state's farmers.

The subject of this report is South Dakota's beef cow-calf industry. During the past 10 years, South Dakota has generally ranked fifth nationally--behind Texas, Missouri, Oklahoma, and Nebraska--in "beef cows that have calved" (S.D. Agric. Stat. Serv., 1992).[2] During the past three years, the number of beef cows calving in South Dakota has averaged 1.51 million, down 29% from the 1975 peak of 2.13 million (S.D. Agric. Stat. Serv., 1976).[3]

This research report is based on the results of a 1991 mail survey of South Dakota beef cow-calf operators. The purpose of the survey was to determine the nature of management practices followed by the state's cow-calf producers and whether those practices differ by size and/or location of herd.

The report is organized around a brief description of the mail survey procedures, a profile of the cow-calf producers who responded to the survey, and descriptions of overall cow-calf, breeding, feeding, and health management practices. Attention is drawn to contrasts in management practices between small and large herds and between herds located east and west of the Missouri River (hereafter termed as simply herds in the "East" or herds in the "West").

MAIL SURVEY

A questionnaire designed to determine beef cow herd inventory and production management practices, other livestock enterprises, housing and cattle handling facilities, and livestock water supply was designed, pre-tested, and mailed to a random sample of 500 cow-calf operators in South Dakota (see Annex A for a copy of the questionnaire).[4] The selection of sample and mailing of the

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[1]In addition to taking data from this 1992 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.

[2]In one of the 10 years, however, South Dakota ranked sixth, with Kansas being slightly ahead of South Dakota.

[3]For the U.S., beef cow numbers in 1991 were 26% below their peak in 1975 (Krause, 1992, 8).

[4]Because only a few producers answered Question 49, the results for that question are not presented in this report.

questionnaire was done through South Dakota's Agriculture Statistics Service in Sioux Falls. The initial mailing of the questionnaire was in November 1991; a follow-up mailing to non-respondents was sent in early January 1992.

Of the 500 questionnaires mailed out, 132 were returned, for a response rate of 26.4%. Sixty seven of the producers returned non-completed questionnaires, however, reflecting an absence of beef cow herds on their farms/ranches (see Question 1, Annex A). Three of the questionnaires were returned too late to be included in data analysis. The results presented in this report, therefore, are based on the responses of 62 cow-calf producers in South Dakota.

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.

COW-CALF PRODUCER PROFILE

Of the 62 cow-calf producers responding to the survey, 40 are located in the East and 21 in the West.[5] Thirty one have fewer than 100 cows (hereafter termed "small" herds) and 23 have 100 or more cows ("large" herds). Herd size was measured in terms of the total number of mature cows and yearling replacements in each herd that were exposed to a bull or artificially inseminated in 1990 (Questions 2a and 3a).

Respondents to the mail survey report herds varying in size from 15 to 500 cows and averaging 122 cows each. Of the 122 cow average, 107 are mature cows and 15 are yearling replacements.[6] The U.S. Census of Agriculture for South Dakota in 1987 (USDC, 1989, 29) shows an average herd size in South Dakota of 158,[7] thereby implying that responding producers are somewhat below-average in

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[5]One producer did not indicate the county in which his/her farmstead was located (Question 25) and eight producers did not respond to Questions 2a and/or 2b concerning the size of their herds. Data on these farms/ranches, therefore, could not be taken into account in the location- and size-of-herd analyses. Thus, while the average (mean) values for various characteristics of the entire sample of 62 herds usually fall between those shown for small versus large herds and herds in the East versus in the West, they do not necessarily do so.

[6]Thus, 12% of the cows calving in the survey producer herds in 1991 were first calf 2-year olds. By way of comparison, first calf 2-year olds represent 17% of cows that calved in 1990 and 1991 in the 61 South Dakota beef cow herds being analyzed through the SDSU Animal and Range Science CHAPS (Cow Herd Appraisal of Performance Software) program (Boggs, 1990; Boggs, 1991).

[7]Krause (1992, 11 and 13) reports an average size-of-herd for cow-calf operators in the Great Plains (North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas) in 1987 of 48, with 90% of the herds having fewer than 100 cows each. For the U.S., average herd-size in 1987 was 38; 94% of herds had fewer than 100 cows each (USDC, 1989, 29).

The average number of cows reported by Dooley, et al. (1982), based on 1978

the state in herd size. On the other hand, only 57% of the respondents to the survey have fewer than 100 cows, compared to 74% as reported in the 1987 Census of Agriculture for South Dakota (USDC, 1989, 29) and 75% as reported in 1990 by the South Dakota Agriculture Statistics Service (S.D. Agric. Stat. Serv., 1992, 5) (Table 1). The ambiguity of respondent herds appearing to be both smaller and larger than "average" could arise from an overall above-average survey response rate of farms/ranches with over 100 cows each, but a below-average response rate for exceptionally large herds in the state.

Survey respondents in the East have herds averaging 78 cows each and in the West averaging 219 cows. Only 22% of herds in the East are large, whereas 88% of those in the West are (Table 1). In fact, nearly 65% of the respondents in the West have herds with 150 cows or more. Of the herds in the East, 28 are small and 8 are large. In the West, 2 herds are small and 15 are large.

Responding producers operate an average of just under 2,200 acres of land (Table 2). Of the total, 57% is native permanent pasture and hay, 29% is cropland, 11% is improved permanent pasture and hay, 2% is in the Conservation Reserve Program, and 1% is in woods and farmsteads.

The average farm/ranch in the West is 3.3 times as large as that in the East (3,990 versus 1,207 acres each). Native permanent pasture is the major type of land (70% of total acres) for producers in the West, whereas cropland (53%) and native permanent pasture (34%) are both important in the East. Producers with large herds and herds in the West have much above-average percentages of native permanent pasture and below-average percentages of cropland.

The average percentage of rented land for the various producers is 44%. The main types of land rented are native permanent pasture (an average of 582 acres per producer), cropland (287 acres), and improved permanent pasture (84 acres). The percentages of rented land for the various types of herds are as follows: small 38%, large 47%, East 39%, and West 47%.

The main type of land rented by producers with small herds and herds in the East is cropland (averages of 221 and 320 rented acres, respectively). The main type of land rented by producers with large herds and herds in the West is native permanent pasture (1,417 and 1,542 acres, respectively).

Nearly 79% of producers report having livestock enterprises other than beef cow herds leading to the sale of weaned calves (Table 3). Forty eight percent of producers market backgrounded cattle, 35% market slaughter hogs, 27% maintain swine breeding herds, 23% market slaughter cattle, and 21% market stocker cattle. Dairy, feeder pig, various sheep, and poultry enterprises are less common on the responding producers' farms/ranches.

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and 1979 mail surveys of 466 beef cattle producers in South Dakota, is 163 head. Average numbers of cows in the 61 South Dakota CHAPS herds in 1990 and 1991 were 110 and 102, respectively (Boggs, 1990; Boggs, 1991).

Differences between small and large cow herds in the incidence of other livestock enterprises are generally small. An exception is a more common occurrence of hog enterprises associated with small compared to large cow herds.

Although the incidence of non-cow-calf enterprises in the West is only slightly less than that in the East, considerably smaller percentages of producers in the West market backgrounded and slaughter cattle, market slaughter hogs, and maintain dairy herds. On the other hand, sheep enterprises are somewhat more common in the West than in the East.

The average numbers of other livestock marketed and maintained by responding cow-calf producers are indicated in Table 4. Because sample sizes for most types of livestock are relatively small, only limited conclusions can be drawn from the data presented in this table. Nevertheless and not surprisingly, greater numbers of backgrounded, stocker, and slaughter cattle appear to be marketed by producers with large compared to small herds. Numbers of backgrounded and stocker cattle marketed and the size of various sheep enterprises are generally greater in the West than in the East.

Nearly 65% of producers report using only family labor with their beef cow herds (Table 5). An additional 23% of the producers rely on family labor to meet 80-99% of their cow herd labor requirements. Family labor is adequate to meet less than 80% of herd cow needs for only 12% of the producers. The percentage of producers relying only on family labor with small herds is much higher than that for large herds (76% versus 52% of small versus large herds, respectively). Nearly 70% of herds in the East rely exclusively on family labor, whereas only 55% of herds in the West do.

About 27% of producers indicate they have off-farm employment. That percentage is considerably less for producers with large herds (14%) than with small herds (32%). About 25% of producers report undertaking custom work for other farmers. In this case, however, producers with large herds more commonly do custom work (33% of them) than producers with small herds (19%). Differences are small in the incidence of off-farm employment and custom work for herds in the East versus in the West.

Nearly 84% of producers report being married. These percentages are higher for producers with large herds and herds in the West. Slightly less than one-half of spouses have off-farm employment, with the percentage somewhat smaller for producers with small herds (42% of them) than with large herds (56%). About 55% of spouses with off-farm employment work full-time, with this percentage being lower for producer families in the East (46% of them) than in the West (67%).

About 35% of producers report earning 75% or more of their gross farm income from the sale of livestock (Table 6). The percentages of producers with large herds and herds in the West who derive the vast majority of their income from livestock are greater than for small herds and herds in the East. At the other extreme, 20% of responding producers derive less than 50% of their income from livestock sales.

Nearly 20% of producers indicate they own their farms/ranches debt-free. Larger proportions of producers with small herds and herds in the East own their farms/ranches debt-free. At the other extreme, 35% of producers report debt-to-asset ratios of 0.40 or greater. Financial experts view this level of debt as a sign of possible financial difficulty. About 40% of producers with large herds have this level of debt exposure, whereas only 30% of producers with small herds do. The location-of-herd contrast is greater than the size-of-herd contrast, with 47% of producers in the West having debt-to-asset ratios of 0.40 or greater and only 28% of producers in the East having this level of debt exposure.

COW-CALF MANAGEMENT PRACTICES

Cattle breeds and heifer replacement rates

Nearly 55% of responding producers indicate having "commercial" English beef breeds on their farms/ranches, followed by 39% for "commercial" exotic European beef breeds (Table 7). Exotic European-English crosses are also common, with 15-16% of producers having crosses in which either English breeding is dominant, exotic European breeding is dominant, or the mix of exotic European and English breeding is approximately 50-50. About 13% of producers have purebred English breeds and only 3% have purebred exotic European breeds.[8]

"Commercial" English beef breeds, exotic European beef breeds, and approximate 50-50 European-English crosses are more common for producers with large than small herds. On the other hand, exotic European-English crosses with exotic dominance are more common for small than large herds. The same type of large-versus-small herd pattern exists for herds in the West versus in the East.

Producers have an average heifer replacement rate of 12.6%, with the average rate for large herds (16.1%) considerably higher than that for small herds (11.0%) and for herds in the West (14.0%) being somewhat higher than that in the East (11.8%). About one-third of all responding producers retain 20 or more heifer calves as replacements for every 100 cows in their herd (Table 8). This relatively high level of replacement is followed by one-half of producers with large herds, which is more than twice the proportion for small herds. At the other extreme, 42% of producers retain 10 or fewer replacement heifers per 100 cows. This lower replacement rate is considerably more common for producers with small herds (53% of them) than with large herds (18%) and from the East (49%) than from the West (29%).

Calf management

By far the most common means that responding producers use to identify their calves is ear tags (82% of producers), followed by hide branding (42%), tattooing (18%), and ear notching (16%) (Table 9). Hide branding is far more common and ear tattooing is less common with large herds and herds in the West.

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[8]Dooley, et al. (1982) reports 37% of the beef cattle herds in South Dakota which they surveyed in 1978 and 1979 to have totally "straightbred" cattle.

Producers were asked to indicate their "typical" percentage weaned calf crop relative to the number of their cows determined (believed) to be pregnant in the prior fall (Question 5). The average "typical" reported weaned calf crop is 94%. Sixty four percent of producers indicated a weaned calf crop percentage of 95% or more and 33% of them a weaned calf crop percentage of 90-94.9% (Table 10). These reported percentage calf crops differ relatively little by size or location of cow herd.

The actual percentage weaned calf crop for 1991 for each herd was computed based on the following definition:

$$\frac{\text{Total calves weaned in 1991 (Question 4a)}}{\text{Number of mature cows and yearling replacements kept and calved in 1991 (Questions 2b and 3b)}} * 100.$$

The computed average weaned calf crop percentage for 1991 is 90%. The computed average percentage calf crops for each of the small, large, East, and West groups of herds are also generally 4-5% less than the reported "typical" percentages. Whether the calf crop in 1991 was below-average or producers may believe they have slightly higher than actual calving percentages is unknown.[9]

The average age of weaning calves for the responding producers is 7.2 mo. (Table 11).[10] Thirty five producers report weaning ages of more than 7 mo. and 26% of them weaning ages of less than 7 mo. Weaning ages differ little by either size or location of herd.

The average weaning weight reported by producers for steer calves is 538 lb. and for heifer calves it is 501 lb.[11] Fifty eight percent of steer calves and 30% of heifer calves weigh 550 lb. or more at weaning. At the other extreme, 10% of steer calves and 18% of heifer calves weigh less than 450 lb. at weaning. The calf weaning weight for small herds averages about 4% less than that for large herds and about 2% less for herds in the East than in the West.

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[9]The Standardized Performance Analysis (SPA) guidelines adopted by the National Cattleman's Association and supported by many university scientists bases "weaned calf crops" on the numbers of cows exposed to bulls, with adjustments for inventory changes for cows subsequent to exposure. Since we did not consider it feasible to obtain such detailed data from respondents in our survey, we were unable to determine a weaned calf percentage consistent with SPA guidelines.

Dooley, et al. (1982) report an 87% average mean "calving rate" of cows exposed for breeding and a 78% meaning "weaning rate" in their 1978 and 1979 survey of South Dakota beef cattle herds.

[10]This average weaning age is slightly more than the average reported weaning ages for South Dakota CHAPS beef cow herds of 6.8 mo. in 1991 (Boggs, 1991) and 6.6 mo. in 1990 (Boggs, 1990). Dooley, et al. (1982) report a 6.8 mo. mean weaning age of calves.

[11]By way of comparison, average weaning weights for the South Dakota CHAPS beef cow herds in 1991 were 507 lb. (Boggs, 1991) and in 1990 were 523 lb. (Boggs, 1990). The average weaning weight of calves in the Dooley, et al. (1982) survey of South Dakota beef cattle herds was 468 lb.

All producers report castrating bull calves not retained for breeding purposes. Ages at castration are widely variant, ranging among producers from 1 to 9 mo. and averaging 3.4 mo. (Table 12). While over one-third of the producers castrate at 1 mo., 29% of them castrate at 6 mo. or more. Part of the variation in castration age revolves around location and size of herd, with the average ages for different groups of producers as follows:

* Herds in the East, 4.3 mo.;
* Herds in the West, 1.7 mo.;
* Small herds, 3.9 mo.; and
* Large herds, 2.6 mo.

By far the majority of producers castrate by cutting (83% of them), with an elastrator being the second most common method. Method of castration does not differ much by size or location of herd.

Ninety three percent of producers report dehorning their calves (Table 13). Whether the other 7% of producers have polled or horned calves is unknown. Ages of dehorning are also widely variant, ranging among producers from 1 to 9 mo., and averaging 4.6 mo. (Table 13). Twenty eight percent of producers dehorn at 1 mo., 24% at 2-5 mo., 18% at 6 mo., and 31% at 7 mo. or more. As with castration, average ages at dehorning are greater in the East than in the West and with small than large herds. Margins of difference in average ages for East-versus-West and small-versus-large herds, however, are greater with respect to dehorning than castration.

Saws/clippers are the most common method of dehorning (used by 53% of responding producers), followed by dehorning spoons (24%), hot irons (20%), and chemicals (11%). Producers with small herds are above-average in their use of saws/clippers and below-average in their use of dehorning spoons and hot irons. Whereas saws/clippers are dominant in the East, hot irons are most common in the West, followed rather closely by saws/clippers and dehorning spoons.

Seventy two percent of producers brand their calves. All producers with herds in the West and 87% with large herds brand their calves, whereas only slightly more than one-half of producers with small herds and herds in the East brand their calves.[12] The average age of calves at branding is 4.6 mo. (Table 14). Variations in branding age among producers with small versus large herds and herds in the East versus the West follow the same patterns, but are greater in magnitude than for dehorning and castration. By far the most common method of branding is the hot iron (94% of producers), with only 6% of producers using freeze brands.

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[12]South Dakota state law requires cattle to be branded west of the Missouri River. No such regulation applies to cattle in the East.

BREEDING PRACTICES

Herd bull selection

In choosing herd sires for mating to mature cows, producers were asked to assign weights--on a scale of 0 to 10--reflecting the relative importance of six possible herd sire selection criteria. On average, producers give the greatest weight in selecting herd sires to the potential for a herd sire to transmit high calf weaning weights (average score of 7.1) (Table 15). Average scores for other herd sire selection criteria are as follows:

* "Correct" body confirmation, 6.4;
* Reproductive performance, 6.0;
* Sound feet and legs, 5.7;
* Transmission of milk production to daughters, 5.6; and
* Disease resistance, 4.0.

Differences by size and location of herd in the relative importance of different herd sire selection criteria tend to be rather small. Exceptions involve producers with small herds who assign an above-average importance to the transmission of disease resistance by potential herd sires and producers in the West who assign an above-average importance to herd sire transmission of favorable reproductive performance.

Nearly 60% of responding producers report all their cows being bred by natural service, rather than by artificial insemination (Table 16).[13] Only 3% of producers breed less than one-half of their cows by natural service. Producers with small herds tend to rely slightly more than those with large herds on natural service than on artificial insemination. For example, in 71% of small herds and 48% of large herds, producers rely exclusively on natural service. Differences tend to be limited in the role of artificial insemination in herds in the East versus those in the West.

Breeding program management

Sixty three percent of responding producers pregnancy check their cows, 48% fertility test their bulls, 21% flush cows prior to the breeding season, 15% production test their cows, and 5% use hormones to control breeding seasons (Table 17).[14]

Size-of-herd differences in following these practices are not great, although somewhat (5-10 percentage points) more producers with large than small herds follow each of these practices. Somewhat more producers in the East than

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[13]In contrast to the 40% of producers in our survey who use artificial insemination, Dooley, et al. (1982) report 29% of the producers in their 1978 and 1979 surveys of South Dakota beef cattle producers to use artificial insemination.

[14]Dooley, et al. (1982) report 43% of their 1978 and 1979 surveyed beef cattle producers to pregnancy check their cows and 25% of them to fertility test their bulls.

in the West pregnancy check cows, fertility test bulls, and production test cows. On the other hand, a smaller percentage of producers in the East flush cows prior to the breeding season. Producers who flush their cows do so more commonly with improved pasture than through feeding concentrates.

Breeding season

Responding producers report average starting dates of the breeding season for mature cows and replacement heifers of May 29th and May 23rd, respectively (Table 18). Nevertheless, more producers begin to breed their cows and replacement heifers during June than during any other month. Average ending dates for the breeding season for mature cows and replacement heifers are August 13th and August 1st, respectively.

Starting dates for the beginning of the breeding season vary widely by size and location of herd. Producers with large herds start their breeding season for mature cows 22 days before those with small herds do; the corresponding large-small herd difference for replacement heifers is 36 days. Differences in the time at which the breeding season ends are even greater, with the respective average final dates for breeding mature cows and replacement heifers being 46 and 49 days earlier for large herds than for small herds. Beginning and ending dates for the breeding season are 17-24 days earlier for herds in the West than in the East.

The average lengths of breeding season for mature cows and replacement heifers are 77 and 72 days, respectively (Table 19).[15] The percentages of producers with breeding seasons less than 75 days are as follows: 54% for mature cows and 65% for replacement heifers.

As with starting and ending dates of breeding season, average lengths of breeding season also vary by size and location of herd. The respective average lengths of breeding season for mature cows and replacement heifers are 22 and 14 days less for producers with large than with small herds. Differences in breeding season length differ by location much less than by size, with average breeding seasons being 2-4 days shorter in the East than in the West.

Calving assistance

Responding producers report that they physically help to calve 20% of 2-year old heifers and 4% of mature cows (Table 20). Seventeen percent of producers report helping more than 30% of their 2-year old heifers to calve. At the other extreme, 15% of producers help less than 5% of their 2-year old heifers to calve. Seventeen percent of producers help 6% or more of their mature cows

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[15]The average length of breeding season for mature cows (replacement heifers) does not correspond directly with the difference between the starting and ending dates of the breeding season for mature cows (replacement heifers) because some producers reported a date for **only** the beginning **or only** the end of their breeding season.

Dooley, et al. (1982) report a mean 96 day length of breeding season for their 1978 and 1979 surveyed beef cattle herds.

to calve. The need to provide calving assistance to 2-year old heifers is somewhat less on large than small farms, but differs little by location of herd.

FEEDING PRACTICES

Types and sources of feedstuffs used with cow herds

Of the total forages consumed by responding producers' beef cow herds, the average percentages of estimated dry matter intake from different sources are as follows:

* Grazed pasture, 55%;
* Harvested hay, 28%;
* Corn silage, 10%;
* Crop residues, 6%; and
* Sorghum silage, 1%.

Fifty nine percent of producers indicate that grazed pasture represents a majority (50% or more) of the total dry matter forage intake for their cow herds (Table 21). Harvested hay represents 25-49% of dry matter forage intake for 62% of producers. Corn silage and grazed crop residues constitute no more than 50% of dry matter forage intake for any producer and as much as 25-49% of dry matter intake for only 8-9% of producers. Thirty six percent of producers graze no crop residues and 62% feed no corn silage.

The relative importance of grazed pasture in total herd dry matter intake is above-average for producers with large herds and herds in the West. On the other hand, the relative importance of corn silage and grazed crop residues is below-average on these types of farms.

The percentages of home-raised feedstuffs consumed by beef cow herds average as follows:

* Alfalfa hay, 91%;
* Grass/native hay, 90%;
* Corn silage, 88%;
* Dry grain, 87%; and
* Mixed hay, 85%.

The percentages of producers who feed only home-raised feedstuffs are as follows: corn silage, 86%; grass/native hay, 81%; dry grain, 79%; alfalfa, 77%; and mixed hay, 76% (Table 22). Producers with small herds feed higher percentages of home-raised feedstuffs than those with large herds. Producers in the East also tend to feed larger proportions of home-raised mixed hay and dry grain than those in the West.

Twenty nine percent of producers indicate that they feed some type of "organically" produced (with no synthetic fertilizers or pesticides) feedstuffs to their beef cows and calves (Table 23). Twenty two percent of the producers graze some "organically" managed forages, 20% feed some "organically" produced harvested forages, and 9% feed some "organically" produced grains. Above-average

percentages of producers with large herds and herds in the West feed "organically" produced feedstuffs.

Of producers who feed some "organically" produced feedstuffs, 80% feed only "organically" produced grains, 67% feed only "organically" managed grazed forages, and 55% feed only "organically" produced harvested forages. Thus, while a smaller percentage of producers feed "organically" produced grains than other feedstuffs, those who do so feed an above-average proportion of "organically" produced feed.

Grazing and creep feeding practices

Eighty one percent of responding producers report that their cow herds graze native permanent pasture, followed by 56% who graze corn stalks, 44% who graze improved permanent pasture, and 30% who graze small grain residues (Table 24). A much higher percentage of producers with small than large herds (70% versus 43% of producers with small versus large herds) graze corn stalks, whereas somewhat below-average percentages of these producers graze native and improved permanent pastures. A much higher percentage of producers with herds in the East than in the West (74% versus 17%) graze corn stalks. Native permanent pasture is more common with producers in the West, whereas improved permanent pasture is more common with producers in the East. The percentages of producers who graze small grain residues do not vary much by size or location of herd.

The average annual lengths of grazing season reported for various forages are as follows:

* Native permanent pasture, 177 days;
* Improved permanent pasture, 115 days;
* Corn stalks, 53 days; and
* Small grain residues, 18 days.

The annual grazing seasons for producers with large herds are 41-43% longer for native permanent pasture and corn stalks than for producers with small herds. The grazing season for producers in the West is 82% longer for native permanent pasture, but 40-55% shorter for improved permanent pasture and corn stalks, than for producers in the East.

Average reported stocking rates for native and improved permanent pasture are 8.7 and 3.7 acres per cow, respectively.[16] Average acreages per cow for native permanent pasture are considerably higher for producers with large than small herds (13.3 versus 5.5) and herds in the West than in the East (14.5 versus 4.9). The same patterns of size-of-herd and location-of-herd differences are shown with improved permanent pasture, but margins of contrast are much smaller.

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[16]Stocking rates were incorrectly specified in Question 30 as "cows per acre," rather than as "acres per cow." Many respondents provided data as if the question had been written "acres per cow." In instances where producers appeared to report "cows per acre," responses were converted to "acres per cow."

"Continuous grazing"--involving grazing particular pastures throughout the grazing season year after year--is the most common grazing management system followed by responding producers (42% of them). Twenty seven percent of producers follow "deferred rotation" in which grazing is delayed until seed maturity of the important forage species is completed and livestock are moved from one pasture to another on a scheduled basis. Eighteen percent follow "rest-rotation" in which livestock are periodically kept off particular pastures for durations of 12 consecutive months. Twelve percent follow "complimentary" rotation involving a combination of improved pasture and native range. By taking advantage of differences in growing seasons and stages of maturity between improved pasture and native range, producers are able to lengthen the effective pasture growing season and improve the overall quality of the forage. Finally, 2% follow "cell-" or "strip-grazing" involving short duration ("ideally" no more than five days), intensive grazing among eight or more rotation areas comprising single grazing management units.

Continuous grazing is far more common with small than large herds and herds in the East than in the West. Deferred rotation is far less common with these types of herds.

Fifty percent of producers "never" creep feed their calves. On the other hand, 23% of them "always" creep feed calves and 27% of them "sometimes" creep feed calves (Table 25).[17] The most common reason why producers sometimes creep feed their calves is when pastures become unusually short. In general, producers with small herds and herds in the East have above-average tendencies to creep feed their calves.

HEALTH MANAGEMENT

Health "production tools"

Ninety two percent of responding producers use antibiotics with their cow herds (Table 26). By far the most common manner of using the antibiotics is to treat specific illnesses/injuries that arise with individual animals (84% of producers).[18] Forty one percent of producers treat groups of animals at a particular age to prevent the onset of specific diseases (e.g., scours) and 10% of them routinely feed low levels of antibiotics (subtherapeutically) in creep feed.

The use of antibiotics to treat specific illnesses/injuries differs little by size or location of herd. On the other hand, treating groups of animals to prevent the onset of specific diseases is more common for producers with large herds and herds in the West. The incidence of subtherapeutic use of antibiotics in creep feed is somewhat below-average with large herds and herds in the West.

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[17]Dooley, et al. (1982) report 23% of their 1978 and 1979 surveyed beef cattle producers in South Dakota to creep feed their calves.

[18]Thirty six percent of producers report using antibiotics in two or more different ways.

Between 92% and 98% of producers report (a) using insecticides/fumigants and parasiticides and (b) vaccinating for Brucellosis, blackleg, and IBR-BVD-PI3 (Table 27).[19] Of those producers using these health management tools, vaccinations are much more likely to be used "regularly" (by 93-95% of producers) rather than "sometimes" only. Insecticides, fumigants, and parasiticides are used "regularly" by only 64-69% of producers. About 77% of producers report vaccinating for calf scours, with 64% of those who do so doing it "regularly."

Producers with large herds more commonly vaccinate for Brucellosis, blackleg, and calf scours and use parasiticides than do producers with small herds. Producers with herds in the West more commonly vaccinate for Brucellosis, blackleg, and calf scours, but less commonly for IBR-BVD-PI3, than do producers in the East. Insecticides/fumigants are used slightly less commonly in herds in the West.

Cattle handling and feeding facilities

Nearly 50% of responding producers provide "outdoor care, with natural shelter," for their cow-calf herds (Table 28). The most common natural shelter is trees, followed by draws (protected gullies). Another near 40% of producers report the care they provide to their cow herds to be "outdoor/indoor, including open-front sheds/winter housing/corrals." The remaining 11-12% of producers report that they have "outdoor" cow-calf operations.[20]

Differences in the overall type of cow-calf facilities do not vary much by size of herd. An above-average percentage of herds in the West, however, rely on "outdoor/indoor" facilities, while various types of "outdoor" facilities are more common in the East.

The following percentages of producers have the following types of cattle handling and feeding facilities: permanent corral/holding pen, 89%; salt-mineral feeder, 80%; loading chute, 71%; cattle squeeze, 53%; calf creep feeder, 46%; portable corral/holding pen, 41%; scales, 15%; and dipping vat, 2%. The percentages of producers with special cattle handling facilities tend to be greater for large than small herds, with the greatest differences being for portable corrals/holding pens, cattle squeezes, loading chutes, and permanent corrals/holding pens. These same types of cattle handling facilities are more common for herds in the West than in the East. On the other hand, scales and salt-mineral feeders are slightly less common for herds in the West than in the East.

About 76% of producers provide special protection to their beef herds from snow, mud, wind, heat, and other potential climate-related problems. Such care is more common for producers with small herds and herds in the East. The most

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[19]Dooley, at al. (1982) report 37% of the beef cattle producers in their 1978 and 1979 surveys to treat their cattle for internal parasites.

[20]No producer indicated using "indoor confinement" facilities with his/her cow-calf operation.

common types of special protection are trees, earth wind breaks, and calf shelters.

About 72% of producers provide special care/facilities for cows when they calve. Separate pastures for "heavy" springing cows are most common, followed by individual maternity pens and special covered areas for groups of "heavy" springing cows. The most important differences in the types of maternity practices by size and location of herd are as follows:

* Producers with herds in the West more commonly have individual maternity pens than herds in the East;

* Producers with large herds more commonly have separate pastures for "heavy" springing cows than producers with small herds; and

* Producers with small herds more commonly have special covered maternity areas for groups of "heavy" springing cows than producers with large herds.

Eighty five percent of producers have facilities for segregating sick or injured animals, with such facilities being somewhat more common for producers with small than large herds.

Water sources

By far the most important sources of water for cattle are pumped ground water (84% of producers) and man-made ponds (75%) (Table 29). Between 18% and 21% of producers also report obtaining water for their herds from each of springs/artesian wells, rivers/creeks, and natural ponds. Producers with large herds and herds in the West rely more heavily on springs/artesian wells. Other smaller differences in water sources by size and location of herd are producers with (a) small herds making above-average use of ground water and below-average use of rivers/creeks and (b) herds in the East making above-average use of man-made ponds and ground water.

Relatively few producers report relying on only one water source to meet the needs of their cow herds. Exceptions are 9% of producers who rely exclusively on each of springs/artesian wells and ground water and 5% of them who rely exclusively on man-made ponds. Between 60% and 65% of producers rely on each of ground water and natural ponds for 50-99% of their water needs. The vast majority of producers who use springs/artesian wells (91% of them) and rivers/creeks (80%) use these sources to supplement other sources (only 1-49% of their water needs are met by these sources).

Eighty five percent of producers indicate that their cattle have unlimited (in place and time) access to their farm's/ranch's major water source. Thirteen percent of producers report limited access of their cattle to water and 2% indicate that water must be moved from its source to an access point for their cattle. Level of access to water differs little by size or location of herd.

Water quantity problems are reported by 11% of producers in an average year of precipitation and water run-off and 38% of producers in years of below-average (e.g., worst 2 of 10 years) water availability (Table 30). Ten percent of

producers report experiencing water quality problems.[21] Problems of both water quantity and water quality are greater with herds in the West than in the East, e.g., 53% of producers with herds in the West versus 31% in the East report problems of water quantity in years of below-average water availability.

Cattle stress

Producers were asked to reflect--on a scale of 0 to 10--their level of effort to minimize stress on their cattle. The average score for all responding producers was 6.90, with slightly more apparent effort by producers with large than small herds and herds in the East than in the West (Table 31).

The most important steps reported by producers to minimize stress on their cattle are, in order, (1) provide sound nutrition; (2) take special care when handling cattle (e.g., work cattle when weather is "good," minimize the working of animals, not wean and work cattle at the same time); (3) provide wind protection during winter; (4) provide plenty of room for cattle; (5) provide plenty of "good" water; (6) provide dry, bedded loafing areas; and (7) stay away from high birth-weight bulls. Additional precautions taken by producers to keep their beef cows and calves healthy are using vaccinations, controlling insects, maintaining sanitary conditions, and "continuously" monitoring the condition of cows and calves.

Diseases and death losses

Thirty percent of producers report more than 5% of their cows and calves to have encountered at least one disease sometime during the past 5 years (Table 32). A considerably larger percentage of producers with large than small herds (46% versus 23% of large versus small herds) experienced a disease outbreak involving at least 5% of their herd. Thirty five percent of herds in the West versus 27% of herds in the East experienced such a disease outbreak.

Enteric (intestinal) diseases are the most common type of disease reported (31% of all diseases reported), followed by foot rot (22%), external parasites (16%), pinkeye (13%), bovine respiratory disease syndrome (BRDS) (9%), internal parasites (6%), and nutritional and metabolic diseases (3%). The relative importance of these various diseases varies much by size of herd, with producers having small herds more commonly experiencing enteric diseases and foot rot and less commonly experiencing external parasites and BRDS than producers with large herds. Herds in the East have more commonly experienced foot rot, but less commonly experienced external parasites, than those in the West.

The average typical death loss reported by producers for baby calves from birth to weaning is 3.9% (Table 33). This type of death loss is somewhat higher for large herds (4.5%) than for small herds (3.9%), but differs little by location-of-herd. The average death loss for replacement heifers from weaning to first calving is 1.1%, with death losses generally higher for small herds and herds in the East. The average annual death loss for brood cows is 1.6%, with the same size-of-herd and location-of-herd patterns of difference as for

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[21]Types of water quality problems are indicated in the footnote to Table 30.

replacement heifers. The average reported annual death loss for bulls is 0.6% but, in this case, death losses are higher for large herds and herds in the West.

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

REFERENCES CITED

Boggs, D.L. 1990. CHAPS summary for South Dakota, 1990. In 1990 South Dakota beef report, Dept. of Animal and Range Sciences. Brookings, S.D.: South Dakota Agric. Exper. Sta. and Coop. Ext. Serv.

Boggs, D.L. 1991. CHAPS summary for South Dakota, 1991. In 1991 South Dakota beef report, Dept. of Animal and Range Sciences. Brookings, S.D.: South Dakota Agric. Exper. Sta. and Coop. Ext. Serv.

Dooley, V., C.A. Dinkel, C.A. McPeake, and E.L. Lasley. 1982. A survey evaluation of South Dakota beef cattle production. **J. of Animal Science** 55(2):224-231.

Krause, K.R. 1992. The beef cow-calf industry, 1964-87: Location and size. Agric. Econ. Rpt. 659. Washington, D.C.: Commodity Econ. Div., Econ. Res. Serv., U.S. Dept. of Agric. June.

S.D. Agric. Stat. Serv. 1976. South Dakota agricultural statistics, 1975. Sioux Falls, S.D.: South Dakota Crop and Livest. Reporting Serv., South Dakota Dept. of Agric., and U.S. Dept. of Agric. May.

S.D. Agric. Stat. Serv. 1992. South Dakota agricultural statistics, 1991-1992. Sioux Falls, S.D.: South Dakota Agric. Stat. Serv., South Dakota Dept. of Agric., and U.S. Dept. of Agric. May.

USDC. 1989. 1987 Census of agriculture, Vol. 1, Geographic area series, Part 41, South Dakota and county data. Washington, D.C.: Bur. of the Census, U.S. Dept. of Commerce.

COW-CALF QUESTIONNAIRE

1. Do you have a beef cow herd on your farm/ranch?

___ No. If no, please stop now and return the questionnaire in the enclosed envelope.
___ Yes. If yes, please proceed to complete the questionnaire.

Beef cow herd inventory and production practices

2a. How many beef cows, 2 years and older, were exposed to a bull or artificially inseminated in 1990? ____

b. How many were kept and calved in 1991? ____

3a. How many yearling replacement heifers were exposed to a bull or artificially inseminated in 1990? ____

b. How many were kept and calved in 1991? ____

4a. How many total calves were weaned in 1991? ____

b. What was the average weaning age (in months)? ____

c. What was the average weaning weight for steers _____
heifers _____

5. Relative to the number of cows determined (believed) to be pregnant in the fall, what percentage calf crop do you typically wean? ____%

6. For each category of cattle shown below, please indicate your typical average percentage death loss.

____% Baby calves from birth to weaning
____% Replacement heifers from weaning to first calving
____% Brood cows per year
____% Bulls per year

7. What main types of cattle do you have in your cow herd? (please check those categories that comprise at least 25% of the cows in your herd)

___ Purebred exotic European breeds
___ "Commercial" exotic European breeds
___ Purebred English beef breeds
___ "Commercial" English beef breeds

Exotic European-English crosses
___ Exotic European breeds dominant
___ English breeds dominant
___ About 50-50 European-English

___ Other (specify: _____)

8. For every 100 cows in your herd, how many heifer calves would you typically retain as replacements? ____

9. In a typical year, approximately what percentage of your brood cows are bred:

____% With herd bull? ____% Artificially?

10. In choosing herd sires for mating to mature cows, what weight (on a scale from 0 to 10) do you give to each of the following selection criteria?

____ Transmitting milk production to daughters
____ High calf weaning weights
____ Sound feet and legs
____ "Correct" body confirmation
____ Disease resistance
____ Reproductive performance
____ Other (specify: _____)

11. Do you flush cows before the breeding system? Yes ___ No ___. If yes, how do you flush them? (check as many as apply)

___ Place them on improved pastures
___ Feed them concentrate
___ Other (specify: _____)

12. What are the dates for your typical breeding season?

	Start	End
Cows	_____	_____
Replacement Heifers	_____	_____

13. Do you creep feed your calves? (check all that apply)

___ Never
___ Sometimes, if pastures are unusually short
___ Sometimes, if (specify:_____)
___ Always

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

___ Pregnancy check cows
___ Fertility test bulls
___ Use hormones to control breeding seasons
___ Production test cows

15. What average target weights (nearest 25 lb) do you have for:

_____lb. Yearling heifers at breeding
_____lb. Two-year old heifers at first calving
_____lb. Mature brood cows
_____lb. Mature herd sires

16. Which of the following types of animal identification do you use? (please check as many as apply)

___ Ear tagging
___ Horn branding
___ Neck chains or straps
___ Other (specify:_____)
___ Hide branding
___ Tattooing
___ Ear notching

17. Do you follow each of the following practices? If so, (a) at what age are most of your calves when you perform the practice and (b) how do you perform the practice?

	Practice performed? Y=yes or N=no?	If yes, at how many months?	How performed Please check as many as apply
Dehorning	___	____	___ Chemicals ___ Saws, clippers ___ Hot iron ___ Dehorning spoon ___ Other (_____)
Castration	___	____	___ Cutting ___ Injectable chem. ___ Burdizzo pincers ___ Elastrator ___ Scrotum shortening ___ Other (_____)
Branding	___	____	___ Branding fluid ___ Freeze branding ___ Hot iron ___ Other (_____)

18. In a typical year, what percentages of cows would you physically help to calve?

____% Two-year old heifers at first calving
____% Mature cows

19. Do you use antibiotics with your beef cows and calves?

___ Never.
___ Yes. If yes, please check those uses of antibiotics that apply:

___ Subtherapeutically (routinely) at low levels in creep feed
___ Treat specific illnesses/injuries that arise with individual animals
___ In groups of animals at a particular age to prevent the onset of specific diseases (e.g., scours)
___ Other (specify: _____)

20. Please place a check before the response that describes how you use the following other "production tools" with your beef cow herd.

	Description of use (for each prod. tool check 1 of the 3)		
Production tool	Regularly	Sometimes	Never
Bangs vaccination	___	___	___
Blackleg vaccination	___	___	___
IBR-BVD-PI3 vaccination	___	___	___
Calf scours vaccination	___	___	___
Insecticides/fumigants	___	___	___
Parasiticides	___	___	___

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

22. In your management of cattle, what weight--on a scale from 0 to 10--do you consider that you give to minimizing the stress on your cattle. Show your rating here _____. If your rating is 6 or higher, what do you consider to be the 2-3 most important steps you take to minimize the stress on your cattle?

23. During any of the past 5 years, have more than 5% of your cows or calves encountered a particular type of disease? Yes ___ No ___. If yes, please place a check before that type(s) of disease.

___ Bovine respiratory disease syndrome
___ Enteric diseases (including calf scours)
___ Reproductive diseases of bacterial and viral origin
___ Internal parasites
___ External parasites
___ Nutritional and metabolic diseases
___ Pinkeye
___ Foot rot
___ Johne's disease
___ Other (specify: _____)

Other Livestock Enterprises

24. In addition to maintaining a beef cow herd and selling weaned calves, 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?

___ Backgrounded cattle
___ Stocker cattle
___ Slaughter cattle
___ Feeder pigs
___ Slaughter hogs
___ Feeder lambs
___ Slaughter lambs
___ Poultry
___ Other_____

b. About how many breeding animals would you maintain each year?

___ Dairy cows
___ Ewes
___ Poultry
___ Other_____
___ Sows

Crop and pasture land resources and cattle feeding practices

25. In what county is your farmstead located? _____

26. 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)

	Acres (to the nearest 10)		
Type of farmland	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	___	___	___

27. About what percentages of the following types of feed used with your beef cow herd do you typically raise (rather than purchase) on your farm?

___ % Dry grain ___ % Alfalfa hay ___ % Grass/native hay

___ % Corn silage ___ % Mixed hay

28. Of the total forages consumed by your beef cow herd, approximately what percentages (on a dry matter basis) are represented by each of the following?

___% Grazed pasture
___% Grazed crop residues
___% Other (specify: _____)
___% Corn silage
___% Harvested hay
100%

29. In a typical year, for approximately how many days (to nearest 10) does your beef cow herd graze each of the following? (please show a "0" for those sources that you do not graze)

___ Improved permanent pasture
___ Native permanent pasture
___ Other (specify: _____)
___ Small grain residues
___ Corn stalks

30. In a typical year, what would be your stocking rates (Cows/acre) on the following types of pasture? (please show n/a if you do not have the indicated pasture category)

___ Improved permanent pasture
___ Native permanent pasture

31. How would you characterize your stocking rates relative to SCS recommendations? (please check one)

___ More acres than SCS recommendations
___ Close to SCS recommendations
___ Fewer acres than SCS recommendations
___ Do not know

32. Which term describes most closely your grazing management system? (please check one)

___ Continuous grazing
___ Deferred rotation
___ Complimentary (use of improved pasture and native range)
___ Rest-rotation
___ Cell or strip grazing
___ Other (specify:_____)

33. Do you feed any organically produced (with no synthetic fertilizers or pesticides) feedstuffs to your beef cows and calves? Yes ___ No ___.
If yes, what approximate percentages of the following total feedstuffs fed to your cows and calves are organically produced?

___% Grains
___% Harvested forages
___% Grazed forages

Physical facilities

34. Please check the following description that most accurately describes your cow calf operation.

___ Outdoor
___ Outdoor, with natural shelter (please describe the natural shelter: _____)
___ Outdoor/indoor, including open-front sheds/winter housing
___ Indoor confinement
___ Other (specify: _____)

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

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

36. Do you provide special protection to your beef cows from snow, mud, wind, heat, and other potential climatic-related problems? Yes ___ No ___. If yes, indicate what you consider to be your 2-3 most important types of protection.

37. Do you provide special care/facilities for your cows when they calve? Yes ___ No ___. If yes, what type of care/facilities do you provide? (check as many as apply)

___ Separate pasture for heavy springing cows
___ Special covered maternity areas for groups of heavy springing cows
___ Individual maternity pens/box stalls
___ Other (specify: _____)

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

Water supply

39. About what percentage of your beef cow herd's annual water needs is met from each of the following sources?

___ Natural pond
___ River, creek
___ Other (specify: _____)
___ Man-made pond
___ Pumped ground water
___ Springs
100% Total

40. What access does your beef cow herd have to its main water source? (please check only one)

___ Unlimited in place and time
___ Limited, e.g., during only certain seasons or only in certain areas
___ None, water is moved from the source to an access point such as a tank or containment pond

41. 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?

42. Do you commonly experience any water quality problems with your beef cow herd? 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.

Financial and other

43. Approximately what percent of your gross farm income over the past 5 years has typically been from the sale of all types of livestock? (please check one)

___ less than 25%
___ 25% to 49%
___ 50% to 75%
___ more than 75%

44. 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

45. Approximately what percentage of the labor required for your beef cow herd is provided by family members?
___%

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

47. 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 ___?

48. 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, please indicate the steps would you need to take before you could become "organic?"

49. With regards to your beef cow-calf enterprise, please identify your 1990 or 1991 income and expenses. (Please fill in as many blanks as apply and for which you have data. Your IRS tax return should have most of this information. Like all of the survey, the information on individual ranches will be kept strictly confidential. Reporting will be on an average basis for groups of farms in the survey.)

Cow-Calf Enterprise Income Statement

Income	Number	Weight	Price/cwt	Total
Steer Calves				
Heifer Calves				
Cull Cows				
Total Income				

Expenses	Units	# of Units	Price/Unit	
Feed and Pasture				
Alfalfa Hay				
Other Hay				
Corn Silage				
Corn Grain				
Protein Supplement				
Salt & Minerals				
Native Pasture				
Improved Pasture				
Public Lands				
Corn Stalks				
Total Feed & Pasture				
Direct Livestock Expenses				
Veterinary and Medicine				
Livestock Supplies				
Hired Labor				
Cash Cost of Machinery				
Marketing				
Bull Charge or Breeding Fee				
Miscellaneous Cash Cost				
Total Direct				
Indirect Expenses				
General Overhead				
Insurance				
Total Indirect				
Total All Expenses				

50. 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. ___

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

Table 1. Beef cow herd size, by location, South Dakota, 1991.

Size-of-herd category	Percent of herds, by size-of-herd category				
	1991 Mail survey			1987 Census	1990
	East	West	State	for state[a]	for state[b]
Less than 50 head	37.8	5.9	27.8	50.9	53.0
50-99 head	40.6	5.9	29.6	23.5	22.0
100-149 head	8.1	23.5	13.0	25.6	25.0
150 head or more	13.5	64.7	29.6		

[a]USDC (1989, 29)
[b]S.D. Ag Stat Serv (1992, 5)

Table 2. Acres of land operated by cow-calf producers in 1991, by type of land tenure and by size and location of cow herd.

Type of cow herd and type of land[a]	Mean values					
	Owned land		Rented land		Total land	
	Acres	Percent	Acres	Percent	Acres	Percent
All herds						
Native permanent pasture and hay	667	54.1	582	60.4	1,249	56.8
Cropland	349	28.3	287	29.8	636	29.0
Improved permanent pasture and hay	163	13.2	84	8.7	247	11.2
Conservation Reserve Program	34	2.7	1	0.1	35	1.6
Other	21	1.7	10	1.0	31	1.4
Total	1,234	100.0	964	100.0	2,198	100.0
Small herds						
Native permanent pasture and hay	278	53.0	48	15.1	326	38.7
Cropland	194	37.0	221	69.5	415	49.2
Improved permanent pasture and hay	36	6.8	33	10.4	69	8.2
Conservation Reserve Program	12	2.3	1	0.3	13	1.5
Other	5	0.9	15	4.7	20	2.4
Total	525	100.0	318	100.0	843	100.0
Large herds						
Native permanent pasture and hay	1,189	56.2	1,417	75.6	2,606	65.3
Cropland	488	23.0	391	20.9	879	22.0
Improved permanent pasture and hay	326	15.4	56	3.0	382	9.6
Conservation Reserve Program	74	3.5	2	0.1	76	1.9
Other	40	1.9	7	0.4	47	1.2
Total	2,117	100.0	1,873	100.0	3,990	100.0
Herds in the East						
Native permanent pasture and hay	310	42.3	101	21.3	411	34.1
Cropland	314	42.8	320	67.5	634	52.5
Improved permanent pasture and hay	71	9.7	37	7.8	108	8.9
Conservation Reserve Program	13	1.8	1	0.2	14	1.2
Other	25	3.4	15	3.2	40	3.3
Total	733	100.0	474	100.0	1,207	100.0
Herds in the West						
Native permanent pasture and hay	1,383	61.7	1,542	79.2	2,925	69.8
Cropland	419	18.7	221	11.3	640	15.3
Improved permanent pasture and hay	351	15.7	182	9.3	533	12.7
Conservation Reserve Program	77	3.4	2	0.1	79	1.9
Other	12	0.5	1	0.1	13	0.3
Total	2,242	100.0	1,948	100.0	4,190	100.0

[a]"Cropland includes row crops, small grains, set-aside, fallow, and hay in rotation. "Other" includes woodland and farmsteads.

Table 3. Incidence of other livestock enterprises on beef-cow farms/ranches, by size and location of cow herd.

Other livestock enterprises	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers with livestock enterprises other than maintaining beef cow herds and selling weaned calves	77.4	73.9	78.7	80.0	76.2
Percent of producers with other livestock enterprises who market:[a]					
Backgrounded cattle	45.8	52.9	47.9	53.1	37.5
Slaughter hogs	54.2	17.6	35.4	43.8	18.8
Slaughter cattle	25.0	17.6	22.9	31.3	6.3
Stocker cattle	20.8	17.6	20.8	18.8	25.0
Feeder pigs	12.5	11.8	10.4	9.4	12.5
Feeder lambs	0	11.8	8.3	3.1	18.8
Slaughter lambs	4.2	0	2.1	3.1	0
Poultry	4.2	0	2.1	3.1	0
Percent of producers with other livestock enterprises who maintain:					
Swine breeding herds	37.5	17.6	27.1	9.4	12.5
Dairy herds	12.5	17.6	12.5	34.4	18.8
Sheep flocks	8.3	11.8	12.5	9.4	18.8

[a]In addition to the enterprises shown below, one producer in the East with a "large" cow herd reports raising and marketing dairy replacements.

Table 4. Size of other livestock enterprises on beef-cow farms/ranches, by size and location of cow herd.[a]

Other livestock enterprises	Herd size		All herds	Herd location	
	Small	Large		East	West
Mean number of animals marketed in a typical year					
Backgrounded cattle	40(11)	139(7)	80(20)	59(15)	142(5)
Slaughter hogs	368(9)	393(3)	375(12)	474(9)	77(3)
Slaughter cattle	23(5)	43(3)	38(9)	43(8)	5(1)
Stocker cattle	51(5)	80(3)	62(10)	44(6)	89(4)
Feeder pigs	510(2)	200(1)	407(3)	510(2)	200(1)
Feeder lambs	n/a	425(2)	245(4)	120(1)	287(3)
Mean number of breeding animals maintained each year					
Brood sows	39(9)	42(3)	38(13)	39(11)	33(2)
Dairy cows	37(3)	40(1)	38(4)	37(3)	40(1)
Breeding ewes	53(2)	400(2)	170(6)	68(3)	271(3)

[a]The numbers of producers who provided information on the numbers of their different types of animals are shown in parentheses beside the respective means reported below.

Table 5. Selected labor and employment features of producer families, by size and location of cow herd.

Labor/employment feature	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers reporting the following percentages (ranges) of the total labor required by their beef cow herd being provided by family numbers					
Less than 60%	6.9	0	7.1	8.3	5.0
60-79%	0	9.5	5.4	2.8	10.0
80-99%	17.2	38.1	23.2	19.5	30.0
100%	75.9	52.4	64.3	69.4	55.0
Percent of producers reporting that they have off-farm employment	32.1	14.3	27.3	28.6	25.0
Percent of producers reporting that they do custom work for other farmers	19.2	33.3	24.5	23.5	26.3
Percent of producers reporting that they are married	75.9	90.5	83.9	77.8	95.0
Percent of spouses that have off-farm employment	41.7	55.6	48.9	46.7	52.9
Percent of spouses with off-farm employment who work full-time	55.6	60.0	54.5	46.2	66.7

Table 6. Selected financial features of producers, by size and location of cow herd.

Financial feature	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers reporting the following percentages (ranges) of their gross farm income over the past 5 years typically being from the sale of livestock					
Less than 25%	7.4	4.8	7.4	8.8	5.0
25%-49%	14.8	9.5	13.0	11.8	15.0
50%-75%	51.9	33.3	44.4	52.9	30.0
More than 75%	25.9	52.4	35.2	26.5	50.0
Percent of producers reporting the following overall farm/ranch debt-to-asset ratios					
Zero	25.0	10.0	19.6	27.6	5.9
0.01-0.19	10.0	35.0	23.9	17.2	35.3
0.20-0.39	35.0	15.0	21.7	27.6	11.7
0.40-0.59	20.0	30.0	26.1	17.3	41.2
0.60 or higher	10.0	10.0	8.7	10.3	5.9

Table 7. Breeds of cattle in cow herds, by size and location of herd.

Type of cattle	Percent of cow herds with each type of cattle				
	Herd size		All herds	Herd location	
	Small	Large		East	West
"Commercial" English beef breeds	51.6	70.0	54.8	48.8	66.7
"Commercial" exotic beef breeds	25.8	52.2	38.7	34.1	47.6
Exotic European-English crosses					
English breeds dominant	19.4	13.0	16.1	17.1	14.3
About 50-50 European-English	6.5	30.4	16.1	14.6	19.0
Exotic European breeds dominant	22.6	8.7	14.5	17.1	9.5
Purebred English beef breeds	12.9	8.7	12.9	14.6	9.5
Purebred exotic European breeds	3.2	4.3	3.2	4.9	0

Table 8. Heifer calf replacement rates, by size and location of cow herd.

Heifer calf replacement rate (%)	Percent of producers who follow the indicated replacement rate				
	Herd size		All herds	Herd location	
	Small	Large		East	West
0[a]	20.0	9.1	20.0	20.5	19.0
1-9%	16.7	4.5	10.0	10.3	9.5
10%	16.7	4.5	11.7	17.9	0
11-14%	3.3	13.7	6.6	2.6	14.3
15%	20.0	18.2	16.7	15.4	19.0
16-19%	0	0	1.6	2.6	0
20%	16.7	31.8	21.7	25.6	14.3
21% or more	6.6	18.2	11.7	5.1	23.8

[a]It is presumed that producers who report **retaining** no heifer calves as herd replacements would either have a practice of buying their heifer replacements or possibly could have relatively recently started their cow-calf operations with herds of young cows.

Table 9. Means of identifying calves, by size and location of cow herd.

Calf identification practice[a]	Percent of producers who follow the indicated practice				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Ear tagging	83.9	87.0	82.3	85.4	76.2
Hide branding	19.4	65.2	41.9	24.4	76.2
Tattooing	22.6	13.0	17.7	26.8	0
Ear notching	9.7	26.1	16.1	14.6	19.0

[a]No producer reported using (i) neck chains or straps or (ii) horn branding to identify their calves. Twelve producers who indicated that they brand their calves did not indicate whether they use hide or horn brands.

Table 10. Weaned calf percentages, reported as "typical" by producers and calculated for 1991, by size and location of cow herd.

Weaned calf percentage (range)	Percent of herds with indicated weaned calf percentage range				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Reported as "typical"					
Less than 80%	0	0	0	0	0
80.0-84.9%	0	4.8	1.7	0	5.3
85.0-89.9%	3.2	0	1.7	2.6	0
90.0-94.9%	32.2	38.1	32.8	33.3	31.6
95.0-99.9%	54.8	52.3	56.9	53.8	63.1
100%	9.7	4.8	6.9	10.3	0
Calculated for 1991					
Less than 75%	6.9	0	3.8	5.6	0
75.0-79.9%	13.8	13.6	13.2	11.1	17.6
80.0-84.9%	17.2	13.6	17.0	16.7	17.6
85.0-89.9%	6.8	18.2	11.3	11.1	11.8
90.0-94.9%	10.4	18.2	13.2	16.7	5.9
95.0-99.9%	17.2	36.4	26.4	16.7	47.1
100%	27.6	0	15.1	22.2	0

Table 11. Weaned calf ages and weights, by size and location of cow herd.

Weaned calf characteristic	Herd size		All herds	Herd location	
	Small	Large		East	West
Age at weaning					
Mean age (months)	7.10	7.23	7.16	7.13	7.22
Producer frequency distribution (%)					
Less than 7 months	29.0	28.6	26.3	25.6	27.8
7 months	38.7	28.6	38.6	38.5	38.9
8 months	25.8	38.1	29.8	30.8	27.8
9 months or more	6.5	4.8	5.3	5.1	5.5
Weight of steer calves					
Mean weight (pounds)	528	548	538	535	543
Producer frequency distribution (%)					
Less than 450 pounds	16.0	0	10.0	9.4	11.1
450-499 pounds	12.0	14.3	12.0	12.5	11.1
500-549 pounds	8.0	38.1	20.0	15.6	27.8
550-599 pounds	40.0	28.6	34.0	37.5	27.8
600 pounds or more	24.0	19.0	24.0	25.0	22.2
Weight of heifer calves					
Mean weight (pounds)	490	512	501	497	509
Producer frequency distribution (%)					
Less than 400 pounds	8.0	0	6.0	4.0	0
400-449 pounds	16.0	9.5	12.0	14.0	16.7
450-499 pounds	16.0	19.1	16.0	15.6	16.7
500-549 pounds	28.0	42.8	36.0	31.2	44.5
550 pounds or more	32.0	28.6	30.0	34.4	22.2

Table 12. Castration practices, by size and location of cow herd.[a]

Castration practice	Herd size		All herds	Herd location	
	Small	Large		East	West
Age at castration					
Mean age (months)	3.89	2.61	3.39	4.33	1.70
Producer frequency distribution (%)					
1 month	32.1	39.2	33.9	22.2	55.0
2 months	21.4	17.4	19.6	19.4	20.0
3-5 months	3.6	34.8	17.8	13.9	25.0
6 months	25.0	4.3	16.1	25.0	0
7 months or more	17.9	4.3	12.6	19.4	0
Castration method (% of producers who follow each method)[b]					
Cutting	80.0	87.0	83.3	84.6	81.0
Elastrator	20.0	13.0	16.7	12.8	23.8

[a]All producers report that they castrate bull calves not retained for breeding purposes.

[b]In addition to the two castration methods shown below, one producer uses Burdizzo pinchers and another scrotum shortening. Two producers each report using two different castration methods.

Table 13. Dehorning practices, by size and location of cow herd.

Dehorning practice	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers who dehorn their calves	90.0	100.0	93.3	92.5	95.0
Age at dehorning					
Mean age (months)	5.58	3.52	4.59	5.81	2.53
Producer frequency distribution (%)					
1 month	20.8	34.8	27.5	12.5	52.6
2-5 months	8.4	39.1	23.5	18.8	31.6
6 months	25.0	8.7	17.6	25.0	5.3
7 months	25.0	8.7	17.6	25.0	5.3
8 months or more	20.8	8.7	13.8	18.8	5.3
Dehorning method (% of producers who dehorn who follow each method)[a]					
Saws/clippers	64.4	43.5	52.7	63.9	31.6
Dehorning spoon	15.4	34.8	23.6	19.4	31.6
Hot iron	11.5	26.1	20.0	8.3	42.1
Chemicals	11.5	13.0	10.9	8.3	15.8

[a]Five producers each report using two different dehorning methods.

Table 14. Branding practices, by size and location of cow herd.

Branding practice	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers who brand their calves	52.2	87.0	71.7	53.1	100.0
Age at branding					
Mean age (months)	6.50	2.67	4.55	8.70	2.37
Producer frequency distribution (%)					
1 month	37.5	33.3	34.5	10.0	47.4
2 months	0	22.2	13.8	10.0	15.8
3 months	12.5	33.3	24.1	10.0	31.6
4-9 months	25.0	11.1	13.8	40.0	0
10 months or more	25.0	0	13.8	30.0	5.3
Branding method (% of producers who brand who follow each method)					
Hot iron	87.5	95.0	93.9	83.3	100.0
Freeze branding	12.5	5.0	6.1	16.7	0

Table 15. Importance of various criteria in selecting herd sires to mate to mature cows, by size and location of cow herd.

Selection criterion	Average weight to each herd sire selection criterion[a]				
	Herd size		All herds	Herd location	
	Small	Large		East	West
High calf weaning weights	7.39	6.87	7.14	6.51	6.33
"Correct" body confirmation	7.00	6.52	6.43	5.85	5.71
Reproductive performance	6.48	6.78	5.95	4.73	6.62
Sound feet and legs	6.16	5.70	5.66	4.95	5.43
Transmitting milk production to daughters	6.54	5.78	5.63	5.17	4.90
Disease resistance	5.91	3.65	4.00	3.83	3.19

[a]Producers assigned a weight, on a scale from 0 to 10, to reflect the relative importance of each criterion in selecting herd sires to mate to their mature cows.

Table 16. Herd bull selection practice, by size and location of cow herd.

Percent (range) of cows in herd bred by natural service[a]	Percent of producers who breed the indicated percentage (ranges) of cows by natural service				
	Herd size		All herds	Herd location	
	Small	Large		East	West
0	0	0	0	0	0
1 - 49%	3.2	4.3	3.4	2.6	5.0
50 - 89%	6.5	17.4	10.2	12.8	5.0
90 - 99%	19.3	30.5	27.1	20.5	40.0
100%	71.0	47.8	59.3	64.1	50.0

[a]Cows not bred naturally are bred through artificial insemination. One producer breeds as many as 95% of his cows artificially. The three other producers relying most heavily on artificial insemination breed 75%, 72%, and 40% of the cows in their respective herds artificially.

Table 17. Selected breeding practices, by size and location of cow herd.

Management practice	Percent of producers following the indicated management practice				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Breeding practice					
Pregnancy check cows	61.2	69.6	62.9	65.9	57.1
Fertility test bulls	48.4	56.5	48.4	51.2	42.9
Flush cows prior to breeding season	16.1	26.1	21.0	14.6	33.3
Production test cows	12.9	21.7	14.5	17.1	9.5
Use hormones to control breeding reasons	3.2	8.7	4.8	4.9	4.8
Of those producers who flush cows, the percent who flush with:[a]					
Improved pasture	60.0	83.3	76.9	66.7	85.7
Feeding of concentrates	40.0	50.0	38.5	33.3	42.9

[a]Two producers flush their cows with both improved pasture and feeding of concentrates.

Table 18. Typical breeding season dates, cows and replacement heifers, by size and location of cow herd.

Breeding season dates	Herd size		All herds	Herd location	
	Small	Large		East	West
Cows					
Mean starting date	June 10	May 18	May 29	June 5	May 16
Producer frequency distribution (%)					
Before Apr 1	3.3	26.1	15.0	9.8	26.3
Apr 1-30	3.3	4.3	3.3	4.8	0
May 1-31	10.0	4.3	8.4	7.4	10.5
June 1-30	60.0	65.2	61.6	60.9	63.2
After June 30	23.4	0	11.7	17.1	0
Mean ending date	Sept 6	July 22	Aug 13	Aug 19	July 28
Producer frequency distribution (%)					
Before Jul 1	4.2	31.8	18.0	14.7	25.0
July 1-31	0	9.1	4.0	0	12.5
Aug 1-31	37.5	31.8	36.0	38.2	31.2
Sept 1-30	25.0	18.2	22.0	26.5	12.5
After Sept 30	33.3	9.1	20.0	20.6	18.8
Replacement heifers					
Mean starting date	June 12	May 6	May 23	June 1	May 8
Producer frequency distribution (%)					
Before Apr 1	0	25.0	14.3	12.0	17.6
Apr 1-30	0	5.0	2.4	0	5.9
May 1-31	16.7	30.0	23.8	16.0	35.3
June 1-30	66.6	40.0	52.4	60.0	41.2
After June 30	16.7	0	7.1	12.0	0
Mean ending date	Aug 28	July 9	Aug 1	Aug 8	July 21
Producer frequency distribution (%)					
Before July 1	0	36.8	20.6	15.0	28.6
July 1-31	0	15.8	8.8	5.0	14.3
Aug 1-31	64.3	31.6	44.1	50.0	35.7
Sept 1-30	14.3	15.8	14.7	15.0	14.3
After Sept 30	21.4	0	11.8	15.0	7.1

Table 19. Length of breeding season, cows and replacement heifers, by size and location of cow herd.

Length of breeding season	Herd size		All herds	Herd location	
	Small	Large		East	West
Cows					
Mean length (days)	88.2	66.5	76.8	78.2	73.9
Producer frequency distribution (%)					
Less than 50 days	4.2	22.7	14.0	11.8	18.7
50-74 days	29.2	50.0	40.0	38.2	43.8
75-99 days	37.5	22.8	30.0	32.4	25.0
100 days or more	29.2	4.5	16.0	17.6	12.5
Replacement heifers					
Mean length (days)	79.3	65.0	72.4	73.5	70.9
Producer frequency distribution (%)					
Less than 50 days	7.1	15.8	11.8	5.0	21.4
50-74 days	42.9	63.1	52.9	60.0	42.9
75-99 days	35.7	15.8	23.5	25.0	21.4
100 days or more	14.3	5.3	11.8	10.0	14.3

Table 20. Percentages of cows that producers physically help to calve, by size and location of cow herd.

Percent (range) of cows that producers help to calve	Percent of producers who help the indicated percentages of cows to calve				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Two-year old heifers at first calving					
1-4%	12.0	15.0	15.4	18.8	10.0
5-9%	4.0	20.0	11.5	6.2	20.0
10%	24.0	15.0	23.1	21.9	25.0
11-30%	36.0	40.0	32.7	34.3	30.0
31% or more	24.0	10.0	17.3	18.8	15.0
Mature cows					
0-2%	48.3	39.1	43.1	44.7	40.0
3-5%	34.5	43.5	39.7	36.9	45.0
6% or more	17.2	17.4	17.2	18.4	15.0

Table 21. Forages consumed by cow-calf herd, by size and location of herd.

Forage and its estimated percentage (range) of total dry matter intake by cow-calf herd	Percent of producers who use the indicated percentage range of dry matter from each forage				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Grazed pasture					
0-24%	0	0	0	0	0
25-49%	51.7	25.0	41.5	52.8	17.6
50-74%	38.0	35.0	37.7	41.6	29.5
75-100%	10.3	40.0	20.8	5.6	52.9
Harvested hay					
0	3.5	0	1.9	2.8	0
1-24%	24.1	40.0	28.3	22.2	41.2
25-49%	65.5	55.0	62.3	69.4	47.0
50-74%	6.9	5.0	7.5	5.6	11.8
75-100%	0	0	0	0	0
Corn silage					
0	55.2	70.0	62.3	52.8	76.5
1-24%	31.0	30.0	30.2	36.1	23.5
25-49%	13.8	0	7.5	11.1	0
50-74%	0	0	0	0	0
75-100%	0	0	0	0	0
Grazed crop residues					
0	20.7	55.0	35.9	22.2	64.7
1-24%	69.0	35.0	54.7	63.9	35.3
25-49%	10.3	10.0	9.4	13.9	0
50-74%	0	0	0	0	0
75-100%	0	0	0	0	0

Table 22. Home-raised feedstuffs used in cow-calf production, by size and location of cow herd.

Feedstuff and percentage (range) that is typically home-raised	Percent of producers who use the indicated percentages of home-raised feeds				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Alfalfa hay					
1-49%	0	11.8	6.4	5.9	7.7
50-99%	8.0	17.6	17.0	11.8	30.8
100%	92.0	70.6	76.6	82.3	61.5
Grass/native hay					
1-49%	4.2	15.0	8.5	9.4	6.7
50-99%	4.2	15.0	10.6	6.2	20.0
100%	91.6	70.0	80.9	84.4	73.3
Corn silage					
1-49%	6.3	20.0	14.3	14.3	14.3
50-99%	0	0	0	0	0
100%	93.7	80.0	85.7	85.7	85.7
Dry grain					
1-49%	5.0	16.7	11.8	11.1	14.3
50-99%	0	25.0	8.8	3.7	28.6
100%	95.0	58.3	79.4	85.2	57.1
Mixed hay					
1-49%	0	23.5	17.1	11.1	28.6
50-99%	5.3	11.8	7.3	3.7	14.3
100%	94.7	64.7	75.6	85.2	57.1

Table 23. Feeding of "organically" produced feedstuffs to cows and calves, by size and location of cow herd.

Organic feedstuff use	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers who feed some "organically" produced:					
Feedstuffs (all types)	23.3	36.4	28.8	20.5	45.0
Grazed forages	13.8	31.8	22.0	15.8	35.0
Harvested forages	20.7	22.7	20.3	15.8	30.0
Grains	3.4	18.2	8.5	5.3	15.0
Percent of above producers who feed the following percentages (ranges) of "organically" produced feedstuffs					
Grazed forages					
1-49%	0	0	8.3	0	14.3
50-99%	25.0	28.6	25.0	20.0	28.6
100%	75.0	71.4	66.7	80.0	57.1
Harvested forages					
1-49%	16.7	20.0	18.2	20.0	16.7
50-99%	33.3	20.0	27.3	20.0	33.3
100%	50.0	60.0	54.5	60.0	50.0
Grains					
1-49%	0	0	0	0	0
50-99%	0	25.0	20.0	0	33.3
100%	100.0	75.0	80.0	100.0	66.7

Table 24. Cow-calf producer grazing practices, by size and location of cow herd.

Grazing practice	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers who graze:					
Native permanent pasture	80.0	90.5	80.7	74.4	94.4
Corn stalks	70.0	42.9	56.1	74.4	16.7
Improved permanent pasture	40.0	47.6	43.9	48.7	33.3
Small grain residues	30.0	28.6	29.8	28.2	33.3
Mean number of days of grazing:					
Native permanent pasture	148	212	177	136	247
Improved permanent pasture	102	102	115	127	76
Corn stalks	49	69	53	56	25
Small grain residues	18	15	18	18	18
Mean stocking rates (acre/cow)					
Native permanent pasture	5.5	13.3	8.7	4.9	14.5
Improved permanent pasture	3.3	3.6	3.7	3.2	5.6
Percent of producers who follow particular systems of grazing management					
Continuous grazing	63.3	21.7	41.7	56.4	14.3
Deferred rotation	6.7	43.5	26.7	7.7	61.9
Rest-rotation	16.7	17.4	18.3	17.9	19.0
Complimentary (improved pasture and native range)	10.0	17.4	11.7	15.4	4.8
Cell or strip-grazing	3.3	0	1.7	2.6	0

Table 25. Creep feeding practices, by size and location of cow herd.

Incidence of creep feeding calves	Percent of producers following the indicated incidence of creep feeding				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Never	45.2	52.2	50.0	45.2	60.0
Sometimes[a]	29.0	30.4	27.4	28.6	25.0
Always	29.0	17.4	22.6	26.2	15.0

[a]The most common reason why producers "sometimes" creep feed their calves is when pastures become unusually short. In addition, two producers creep feed first-calf heifers' calves, one creep feeds old cows' calves, and one creep feeds when winters are unusually severe.

Table 26. Antibiotic-use by cow-calf producers, by size and location of cow herd.

Antibiotic-use practice	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of farmers using antibiotics with cow-calf herd	93.5	95.7	91.9	90.2	95.2
Percent of producers who:					
Treat specific illnesses/ injuries that arise with individual animals	87.1	87.0	83.6	82.9	85.0
Treat groups of animals at a particular age to prevent the onset of specific diseases (e.g., scours)	38.7	47.8	41.0	36.6	50.0
Routinely feed low levels of antibiotics (subtherapeutically) in creep feed	12.9	8.7	9.8	12.2	5.0

Table 27. Use of selected health "production tools" by cow-calf producers, by size and location of cow herd.

Production tool	Percent of producers who use the selected "production tool"				
	Herd size		All herds[a]	Herd location	
	Small	Large		East	West
Insecticides/fumigants	100.0	100.0	98.0	100.0	94.4
Bucellosis vaccination	92.6	100.0	96.5	94.6	100.0
Blackleg vaccination	88.9	100.0	94.8	91.9	100.0
IBR-BVD-PI3 vaccination	92.9	90.5	92.6	94.4	88.9
Parasiticides	88.9	100.0	91.8	90.9	93.8
Calf scours vaccination	70.8	87.5	76.7	73.3	84.6

[a]Of those who use each production tool, the percentages of producers who use the tool "regularly" (rather than "sometimes" only) are as follows:

64% Insecticides/fumigants;
93% Bangs vaccination;
95% Blackleg vaccination;
94% IBR-BVD-PI3 vaccination;
69% Parasiticides; and
64% Calf scours vaccination.

Table 28. Physical facilities for housing and handling cattle, by size and location of cow herd.

Physical facility	Herd size		All herds	Herd location	
	Small	Large		East	West
Overall characterization of cow-calf operation (% of producers)[a]					
Outdoor, with natural shelter	48.4	52.2	49.2	51.2	45.0
Outdoor/indoor, including open-front sheds/winter housing/corrals	38.7	39.1	39.3	34.2	50.0
Outdoor	12.9	8.7	11.5	14.6	5.0
Percent of producers with particular cattle handling and feeding facilities					
Permanent corral/holding pen	86.7	95.7	88.5	82.5	100.0
Salt-mineral feeder	83.3	87.0	80.3	82.5	76.2
Loading chute	63.3	78.3	70.5	62.5	85.7
Cattle squeeze	43.3	69.6	52.5	40.0	76.2
Calf creep feeder	50.0	47.8	45.9	45.0	47.6
Portable corral/holding pen	26.7	65.2	41.0	35.0	52.4
Scales	13.3	17.4	14.8	17.5	9.5
Dipping vat	3.3	0	1.6	2.5	0
Percent of producers who provide special protection to beef cows from snow, mud, wind, heat, and other potential climate-related problems	86.7	65.2	76.3	82.1	65.0
Percent of producers who provide special care/facilities for cows when they calve	73.3	69.6	71.7	66.7	81.0
Percent of above producers who follow particular maternity practices[b]					
Separate pasture for "heavy" springing cows	68.2	81.3	74.4	73.1	76.5
Individual maternity pens/box stalls	31.8	37.5	30.2	23.1	41.2
Special covered maternity areas for groups of "heavy" springing cows	27.3	18.8	25.6	26.9	23.5
Percent of producers with facilities for segregating sick or injured animals	93.5	81.8	85.0	85.0	85.0

[a]No producer indicated using "indoor confinement" facilities with his/her cow-calf operation.

[b]In addition to the responses below, seven producers indicated they provide special care/facilities for their cows when they calve through "barns" and two producers through "windbreaks".

Table 29. Water sources for beef cow herds, by size and location of herd.

Water source	Herd size: Small	Herd size: Large	All herds	Herd Location: East	Herd Location: West
Percent of producers who rely on various water sources[a]					
Pumped ground water	87.1	73.9	83.6	85.4	76.2
Man-made ponds	80.6	78.3	75.4	82.9	57.1
Springs/artesian wells	9.7	43.5	21.3	9.8	42.9
Rivers/creeks	16.1	26.1	19.7	17.1	23.8
Natural ponds	16.1	13.0	18.0	14.6	23.8
Percent of above producers who obtain the following percentages (ranges) of water from particular sources[b]					
Pumped ground water					
1-49%	20.0	42.9	26.1	22.6	33.3
50-99%	68.0	57.1	65.2	64.5	66.7
100%	12.0	0	8.7	12.9	0
Man-made ponds					
1-49%	52.2	46.2	48.7	43.3	66.7
50-99%	43.5	46.2	46.2	53.3	22.2
100%	4.3	7.7	5.1	3.3	11.1
Springs/artesian wells					
1-49%	100.0	87.5	90.9	100.0	85.7
50-99%	0	0	0	0	0
100%	0	12.5	9.1	0	14.3
River/creeks					
1-49%	100.0	50.0	80.0	85.7	66.7
50-99%	0	50.0	20.0	14.3	33.3
100%	0	0	0	0	0
Natural ponds					
1-59%	60.0	50.0	40.0	80.0	0
50-99%	40.0	50.0	60.0	20.0	100.0
100%	0	0	0	0	0
Level of access of cow herd to main water source					
Unlimited in place and time	83.9	82.6	85.0	85.0	85.0
Limited, e.g., during only certain seasons or only in certain areas	16.1	13.0	13.3	15.0	10.0
None, water is moved from the source to an access point such as a tank or containment pond	0	4.3	1.7	0	5.0

[a]Three producers also indicate that they obtain between 50% and 85% of their water from piped public water sources, e.g., rural water systems.

[b]Ninety three percent of the responding producers utilize both pumped groundwater and man-made ponds for their beef cattle. Forty nine percent of such producers obtain all their water from only these two sources. An additional 25% of them meet between 75% and 99% of their water needs from these two sources, 16% between 50% and 74% of water needs, and 11% less than 50% of water needs.

Table 30. Cattle drinking water problems, by size and location of cow herd.

Drinking water problems	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers experiencing water quantity problems:					
In an average year of precipitation and water run-off	3.4	5.0	10.7	5.0	25.0
In years of below-average (e.g., worst 2 of 10 years) precipitation and water run-off	33.3	40.9	37.9	30.8	52.6
Percent of producers experiencing water quality problems[a]	9.7	8.7	9.8	2.5	23.8

[a]The types of water quality problems experienced are as follows:

Salinity: two producers (both West);
Sodium: two producers (both West);
Bacteria: one producer (West);
Algae: one producer (West);
Hard water: one producer (West);
Stale water: one producer (East; and
Muddy water: one producer (West).

Table 31. Level of effort to minimize stress on cattle, by size and location of cow herd.

Score of level of effort to minimize stress*	Percent of producers with indicated level of effort to minimize stress				
	Herd size		All herds	Herd location	
	Small	Large		East	West
2-4	3.6	10.5	5.9	5.7	6.2
5	35.7	21.1	29.4	31.4	25.0
6-7	14.3	10.5	11.8	8.6	18.8
8	28.6	42.1	35.3	34.3	37.5
9-10	17.8	15.8	17.6	20.0	12.5

*Producers reflected--on a scale of 0 to 10--their level of effort to minimize stress on their cattle.

Table 32. Cow-calf herd diseases, by size and location of herd.

Experience of diseases	Herd size		All herds	Herd location	
	Small	Large		East	West
Percent of producers for whom more than 5% of their cows and calves have encountered a particular disease during one or more of the past 5 years	22.6	45.5	29.5	26.8	35.0
Relative importance of various diseases (percentages of all reported diseases represented by each disease)[a]					
Enteric diseases (including calf scours)	40.0	23.8	31.3	31.6	30.8
Foot rot	40.0	14.3	21.9	31.6	7.7
External parasites	0	23.8	15.6	10.5	23.1
Pinkeye	10.0	14.3	12.5	10.5	15.4
Bovine respiratory disease syndrome	0	14.3	9.4	10.5	7.7
Internal parasites	10.0	4.8	6.3	5.3	7.7
Nutritional and metabolic diseases	0	4.8	3.1	0	7.7

[a]No producer reported more than 5% of his/her cows and calves to have experienced (i) reproductive diseases of bacterial and viral origin or (ii) Johne's disease. A reported case of coccidiosis was included in the "enteric disease" rather than internal parasite category.

Table 33. Typical herd death losses, by size and location of cow herd.

Type of cattle	Mean reported percentage of death loss				
	Herd size		All herds	Herd location	
	Small	Large		East	West
Baby calves from birth to weaning	3.87	4.48	3.93	3.95	3.90
Replacement heifers from weaning to first calving	1.43	0.79	1.11	1.43	0.44
Brood cows per year	1.76	1.24	1.57	1.83	1.05
Bulls per year	0.45	0.93	0.62	0.41	0.97