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The South Dakota Dairy Industry in 2006

Alvaro Garcia, Extension dairy specialist

This fact sheet is one in a series intended to answer — with science-based land-grant university research — questions frequently asked by the public about issues and needs affecting agricultural growth, urban expansion, and rural community development in South Dakota.

The value of agricultural production of most U.S. farms fell by close to a third between 1993 and 2003. These are mostly small, family-run operations with sales less than \$250,000.

Over the same decade, the number of very large farms rose by nearly 50% and their share of production grew from 33 to 44%. Today's large commercial farm is not a one-man operation anymore but a multiple-operator farm. Only about 12% of these multiple-operator farms are multiple-generation operations. This can complicate the transfer of the farm from one generation to the next.

U.S.—cow numbers, milk production, milk prices

Dairy farms in the U.S. are going through a restructuring. From 1995 to 2004, dairy cow numbers decreased 5% while milk production increased 10% (Graphs 1, 2). At the same time, advances in animal and forage genetics, along with the adoption of best management practices, resulted in an increase in milk production per cow of 16% (Graph 3).

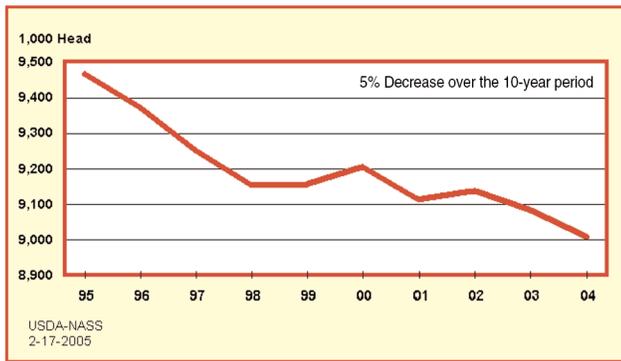
High milk price volatility has also characterized this period (Graph 4). In a market that is closely regulated by supply and demand, U.S. milk prices tend to follow fluctuations in milk availability, which is a result of changes in cow numbers, milk production, or both.

The reduction in cow numbers between 1995 and 1998 was accompanied by an increase in milk production per cow and total milk production. The low milk prices of 2002-2003, although not affecting milk output per cow (due to favorable feed/milk price ratios), resulted in a drop in milk cow numbers and a drop in total milk produced in the U.S.

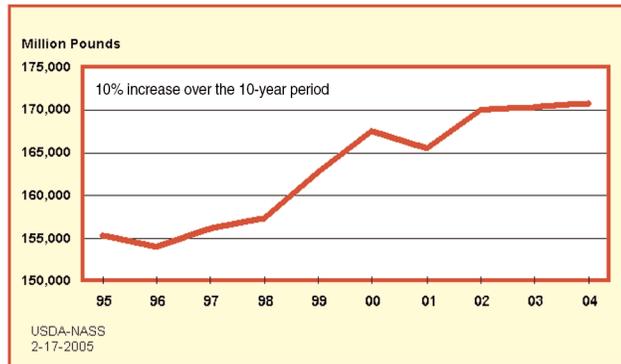
Dairy farm numbers have disappeared at an almost constant rate, dropping 58% in the U.S. during the last decade (Graph 5). The disparity between the drop in cow numbers (5%) and farm disappearance (58%) during this period suggests a trend toward dairy farm expansion in the nation.



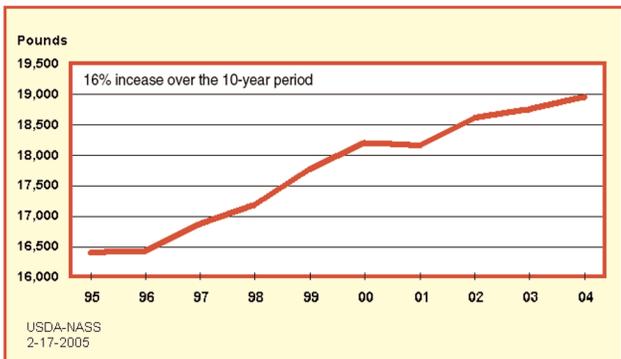
Graph 1. Milk Cows, 1995–2004. United States.



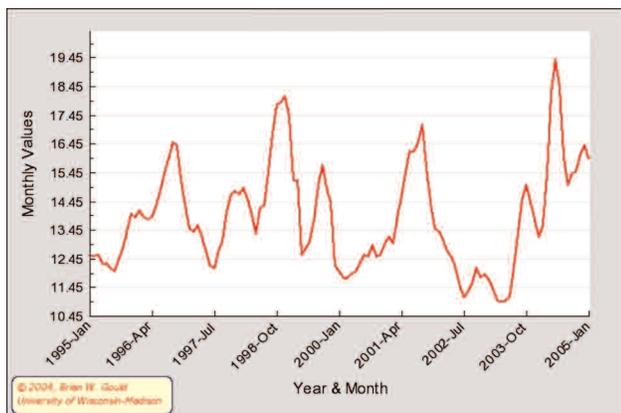
Graph 2. Milk Production, 1995–2004. United States.



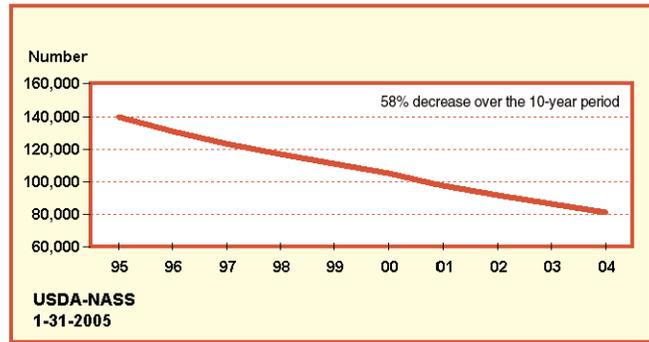
Graph 3. Milk per Cow, 1995–2004. United States.



Graph 4. All Milk Prices.



Graph 5. Milk Cow Operations, 1995–2004. United States.



South Dakota—cow numbers

Dairy cow numbers in South Dakota have followed the national trend in the industry. From a record high of 675,000 milk cows in February 1934 the state reached a record low of 79,000 cows in February 2004. Over 14 years, cow numbers also declined in the five-state region of which South Dakota is a part. South Dakota lost 42.9% of its cows in this period, second only to North Dakota (Graph 6).

The state cow herd dropped by 21.6% between 2000 and 2004 (Graph 7). At that point, cow numbers turned around. Between 2004 and 2005, the state, for the first time in over 50 years, had a net gain in cow numbers of 1.3% (Graph 8).

Meanwhile, milk production per cow increased steadily, mirroring what was happening in the U.S. as a whole. Increased production per cow is likely the result of consolidation of small farms into larger dairy units. Research has shown a positive correlation between farm size and milk production per cow.

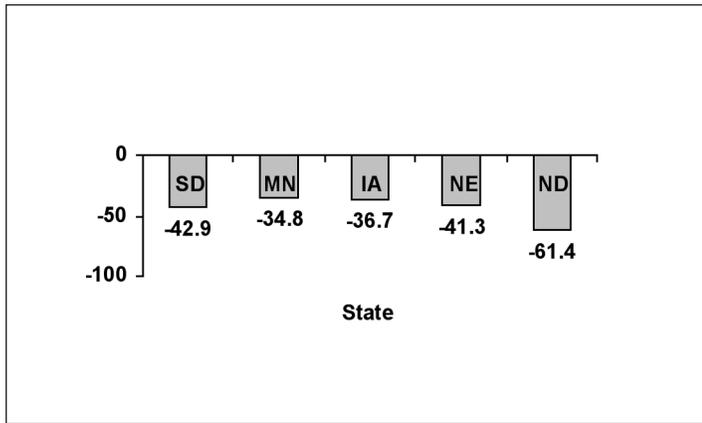
South Dakota—dairy farm numbers

Between 2000 and 2005, dairy farm numbers in South Dakota decreased by 40.9%, whereas dairy cow numbers decreased 20.6% during the same time (Graphs 7, 9). This difference suggests that consolidation was taking place, resulting in fewer but larger dairies.

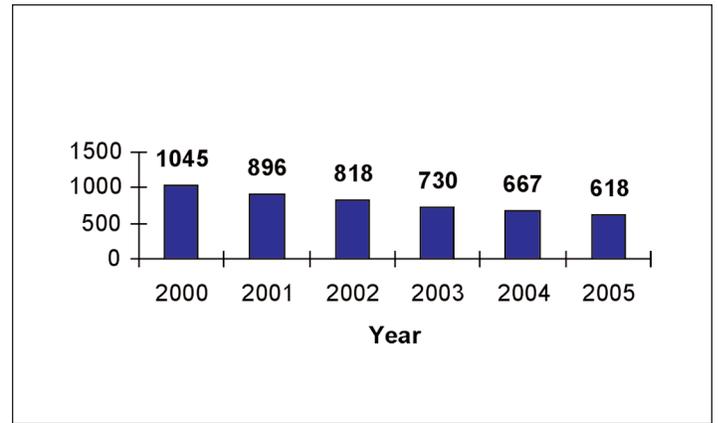
Starting in 1998, the USDA NASS began to compile information for South Dakota on cow numbers and percent production by dairy farm size groups (Graphs 10 and 11). During 1998, half of the milk produced in the state came from herds of 100 cows or less. In 2004 less than one-third came from that size group (Graph 10).

At the other end of the size scale, 12% of the milk came from herds with 500 cows or more in 1998; this climbed to 30% during 2004. During the same time period, there was no change in the percent of milk contributed by herds with 100 to 199 cows (22%) but there was a 12.5% increase from those with 200 and 499 cows.

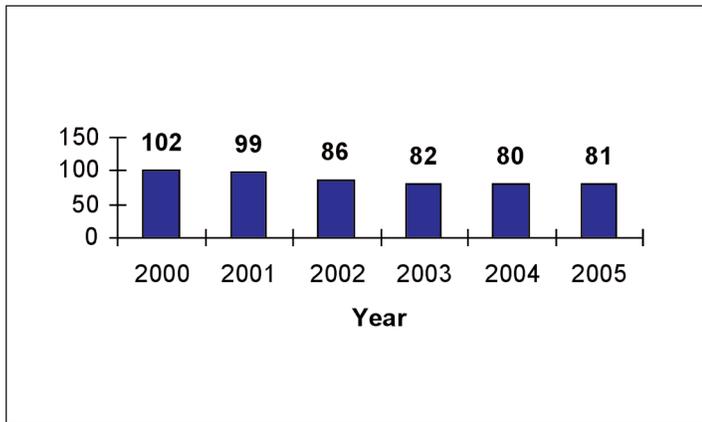
Graph 6. Regional Changes in Cow Numbers, 1990–2004.



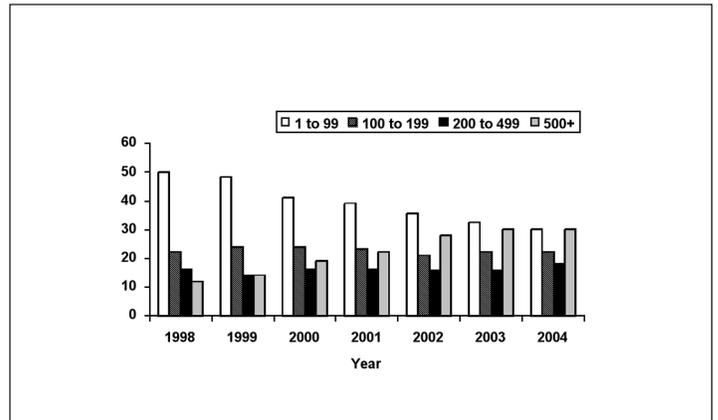
Graph 9. South Dakota Farm Numbers.



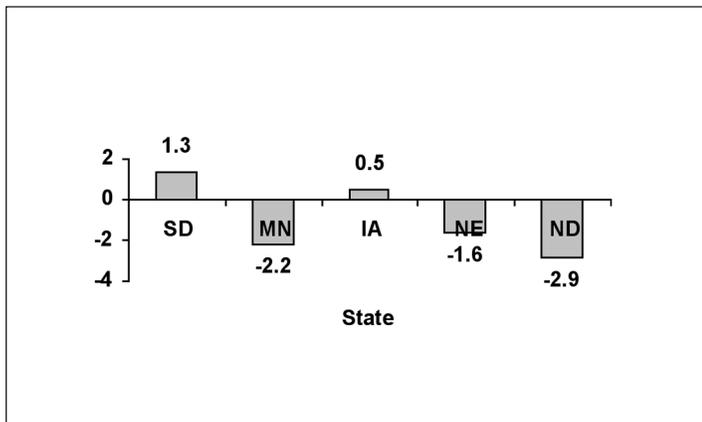
Graph 7. South Dakota Cow Numbers.



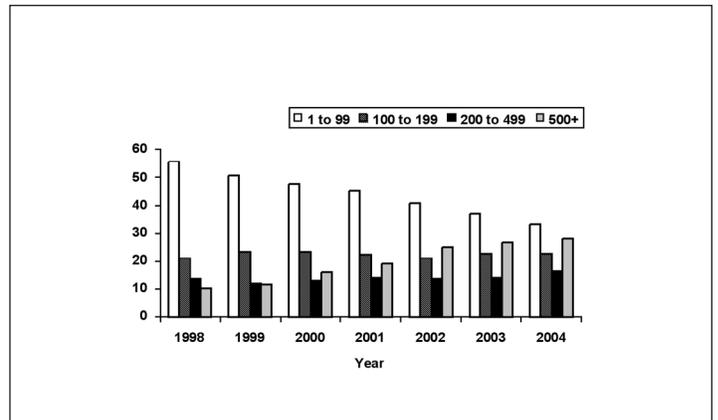
Graph 10. Cows by Size Groups in South Dakota, Percent Production.



Graph 8. Regional Changes in Cow Numbers, 2003–2004.



Graph 11. Cows by Size Groups in South Dakota, Percent Inventory.



The contribution of large dairies to total milk production in the state increased linearly between 1998 and 2002 and started to level off in 2003 and 2004. The milk contribution from dairies of 100 cows or less continued to drop. Nevertheless, this size group still represented one-third of total milk produced in the state during 2004.

Percent cow inventory followed the same trend as percent milk contributed by each dairy farm size group. Changes in contribution to the state's milk production by different size groups were thus mainly a result of changes in cow numbers (expansion) within each group, rather than differences in production per cow (Graph 11).

There was very little change in milk contributed to the total produced in the state or in cow numbers as a percent of the total inventory for both the 100-199 and 200-499 size groups. The impact of dairy farm quits on milk shipped or total cow numbers for both groups is thus in equilibrium with new start-ups or expansions from smaller dairies (less than 100 cows).

The disappearance of the smaller dairies from the USDA statistics is in part an artifact of the methodology used in the survey. Farms with less than 100 cows that are no longer in this size group are not necessarily those that exited the dairy industry. Some of them are actually expansions that fall into the next larger size category.

A slowdown in the rate of decline in cow numbers has been and will continue to be because of expansion of smaller and medium-sized operations and/or because of relocation of dairy producers to South Dakota from other parts of the U.S. and/or abroad.

In 2004, small dairies of less than 100 cows contributed 30% of the milk produced in the state, a significant portion of the total. These farmers, however, generally tend to be in an older age group (Table 1). Small operations are, in general, unable to sustain more than one household. This may make the transfer of farm management and ownership to the next generation more difficult.

South Dakota—dairy farm distribution and the community

Dairy farm distribution in South Dakota did not change much between 2000 and 2005 (Maps 1 and 2). In 2000, 71.1% were grade A and 28.9% were grade B. By 2005, grade B farms had dropped to 21.3%.

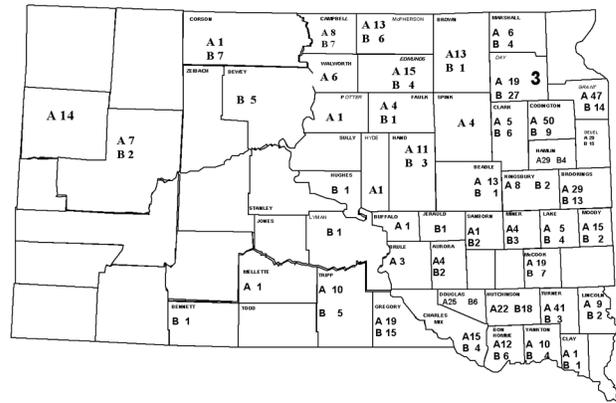
Grade B farms are disappearing at a faster rate than farm numbers (1,045 vs. 644). This can be partially explained by upgrading to grade A, likely a result of record low milk prices in 2000, 2002, and part of 2003. At the same time, milk quality as measured by somatic cells counts has been improving in the state as a whole.

Of the 102 dairy farms in existence west of the Missouri River in 2000, only 62 were left in 2005, a 60.8% drop that is very close to overall farm disappearance for the state of 61%. This suggests that location makes very little difference, if any at all, in dairy farm sustainability, although a comparison of both maps clearly shows the concentration of dairies along Interstate 29.

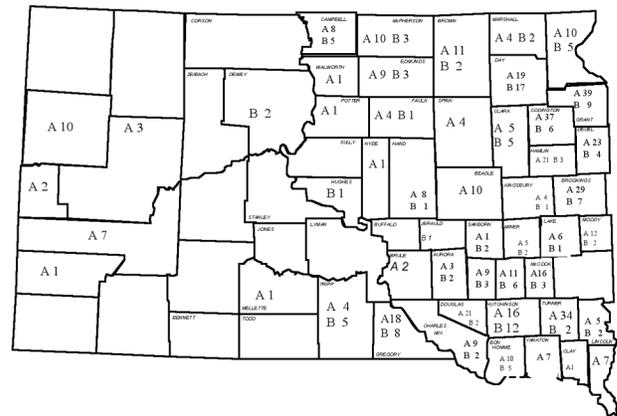
The economy of some rural areas depends on employment provided by farms both directly or indirectly. Shrinking economies provide fewer job opportunities, forcing workers to find new ways of making a living, often in metropolitan areas. As a result, many rural communities are having greater difficulty in providing critical services such as new roads, schools, and other community services. Between 1980 and 2004, South Dakota's total population grew by 12%. Urban areas grew 39% and rural areas decreased by 3% (Table 2). Laborers employed on large dairy farms usually live in nearby towns that provide the necessary amenities (e.g. school system, medical care, groceries, etc.).

New dairies are thus established in relative proximity to urban or suburban communities. This may result in conflicting points of view between dairy producers and those not directly involved in agriculture. Urban sprawl from the city outward has also brought the farm and the general public closer together (Table 2).

Map 1. South Dakota Dairy Farms, July 2000. Grade "A 743" Grade "B 302"



Map 2. South Dakota Dairy Farms, July 2005. Grade "A 507" Grade "B 137"



South Dakota—dairy processing

From the record high of 675,000 in 1934, dairy cows plummeted to the record low of 79,000 in 2004. In 1950, 379,000 cows gave 1.4 billion pounds of milk; in spite of a roughly 200% reduction in cow numbers, increased production per cow resulted in a drop in total milk production of only 4% between 1950 and 2004 (Table 3).

The record high milk production in 1990 fell off, with significant drops starting in 2000 (Table 3). Low milk prices in 2000, repeated in 2002 along with high feed prices (a result of the statewide drought that year), may explain the drops in milk production per cow and the total produced in the state (Graph 12). Farm numbers continue to drop; 618 dairy farms were reported as of December 2004.

Graph 12. Milk prices.

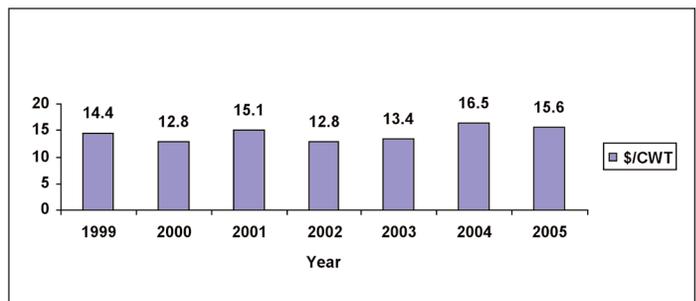


Table 1. Characteristics of principal South Dakota farm operators.

	1992	1997	2002
Average operator age (years)	51.1	51.7	53.3
Percent with farming as their primary occupation	76.8	70.8	72.6
Men (persons)	32,623	31,539	29,552
Women (persons)	1,434	1,652	2,184

USDA NASS, 2004

Table 2. Population changes in South Dakota.

Year	Rural *	Urban *	Total
1980	449,676	241,092	690,768
1990	429,094	266,910	696,004
2000	442,349	312,495	754,844
2004 (latest estimates)	436,715	334,168	770,883

Table 3. Milk production –South Dakota- 1950-2005.

Year	Dairy cows x 1,000	Production per cow (pounds)	Total production (million pounds)
1950	379	4,210	1,402
1960	281	5,900	1,463
1970	186	8,263	1,578
1980	155	10,497	1,669
1990	140	12,257	1,716
2000	102	16,020	1,634
2001	99	15,960	1,580
2002	86	14,988	1,289
2003	82	16,220	1,330
2004	80	16,838	1,347
2005	81	17,741	1,437

Source: USDA NASS

Table 4. South Dakota milk processing plants. 2005.

Name	Location	Products
Saputo Cheese USA	Big Stone City	Cheese drying
Davisco Foods Intl.	Lake Norden	Cheese, WPC, lactose.
Dimock Dairy Company	Dimock	Cheese
Cass Clay Creamery	Hoven	Cheese
Valley Queen Cheese Factory, Inc.	Milbank	Cheese, WPC, lactose.
Dairiconcepts	Pollock	Cheese, Whey, milk proteins
Dairy Farmers of America	Rapid City	Fluid milk
Gillete Dairy	Rapid City	Fluid milk
Dean Foods-Land O'Lakes	Sioux Falls	Fluid milk
Associated Milk Producers, Inc.	Freeman	Milk powder
South Dakota State University	Brookings	Research

Table 5. South Dakota, manufactured cheese products.

Year	Total (All types)	American Types	Cheddar	Other
American ¹	-----1,000 lbs-----			
1999	136,433	64,070	43,244	20,826
2000	147,641	73,572	52,646	20,926
2001	146,897	81,182	60,307	20,875
2002	155,664	77,151	49,473	27,678
2003	151,635	81,362	52,739	28,623
2004	159,278	NA	NA	NA

¹Includes Colby, Monterey, and Jack. NA — Not shown when fewer than 3 plants reported or when individual plant operations could not be disclosed.

On the other hand, an increase in milk processing capacity has helped support producers. The DAVISCO plant in Lake Norden was built in 2001, and plans for a new processing plant in Milbank have encouraged expansion and relocation at the producer level.

In 1950 there were 96 butter plants (creameries) in the state; none remain today. This decrease in butter production has been more than offset by the production of cheese, however. The state has 11 plants, six of which make cheese (Table 4). Total cheese production in 2004, slightly over 159 million pounds (Table 5), was an all time high, topping the previous record of nearly 156 million pounds in 1990. Other products currently being produced are lactose and whey protein concentrate.

Final comments

Consolidation of dairy farms into larger operations continues in the U.S. South Dakota is a part of this trend: Small (less than 100 cows) dairy farms continue to disappear while the number of farms with 100 to 199 and 200 to 499 have remained relatively constant. As these farms do not constitute the typical start-up dairy in the state (500 cows and above), it is reasonable to assume that the sustainability of both size groups results from expansion. Typically (but not always), more cows provide a better return on investment in land and facilities.

It is very likely that the typical dairy farm in the state will continue to grow; and when the venture is new, some of these owners will be from other states and overseas. A market for the milk produced on the farm is the prime factor in a decision to relocate or expand. South Dakota already has this market, which is currently in an expansion mode. Other factors include proximity to population centers and the availability of feed, labor, services, and other inputs. Feed continues to represent between 40 and 50% of the total cost of milk production. As of 2004 South Dakota is second in the nation in corn silage production, third in other forages (all hay, alfalfa silage, grass silage, and green chop), and sixth in corn for grain. These are feedstuffs that constitute between 80 and 90% of a typical Midwestern dairy cow ration.

In short, most of the constraints to livestock production and dairy in particular posed elsewhere in the U.S. and overseas are precisely the strengths of South Dakota. The growth of the dairy industry in the state will thus be highly dependent on the supply and demand for dairy products and on milk prices.

Fact sheets in the 925 livestock development series:

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- FS 925-G Dairies and Local Economic Development
- FS 925-H Redefining Dairy Expansion: More Milk or More Cows?
- FS 925-I The South Dakota Dairy Industry in 2006



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