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What Size Farm or Ranch for South Dakota?

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What Size **FARM or RANCH**
for
South Dakota

Agricultural Economics Department
South Dakota Agricultural Experiment Station
SOUTH DAKOTA STATE COLLEGE • BROOKINGS

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The purpose of this bulletin is to inform farmers, ranchers and technicians about some of the more important factors affecting farm and ranch size and to suggest the number of acres required for a farmer to make a satisfactory living. The "family type" farm discussed in this publication may be described as "a farm large enough to provide full employment for the operator and his family and for some hired labor, particularly during the rush seasons of the year." It should be large enough to provide a comfortable living for the family and the possibility of saving for education, the purchase of a farm and retirement. The accomplishment of these objectives depend on the following of sound farm management practices.

Farmers and technicians often ask, "How many acres do I need for a full-time family type farm or ranch?" An acre of farmland is "larger" in some areas than others because it produces more. Wide regional variations occur in rainfall, topography and soil type. Differences in type of farming, degree of mechanization, labor supply, and age and tenure of the farmer are other important factors which make it necessary to study the problem of size in all areas of the state.

The study of farm size was started in 1943. The study included an analysis of 2,610 farm and ranch records from 24 County Agricultural Conservation offices. Two or more representative counties in each agricultural area except the Black Hills were selected for study (Figure 2). The Black Hills area was not studied intensely because of the wide differences in type of farming practiced there.

Information was obtained from about 10 percent of the total number of operators in each of the 24 counties. Records for 1943 and 1944 provided information on acres operated, land use, livestock numbers, tenancy, labor supply and age of operator. The U. S. Census records from 1910 to 1945 supplied information on average size and distribution of farms by size groups. Table 1 shows the number of farms and ranches studied, the average acreage operated and the average number of livestock per unit.

What Size Farm or Ranch for South Dakota

By C. R. HOGLUND¹

Size of farm or ranch is one of several important factors that affect financial success in South Dakota farming. It is a well known fact that some operators in a community make a good living, while others in the same area barely pay expenses or even fail outright. Even during recent years of favorable prices and weather, many farmers and ranchers have had low incomes. Approximately one out of every five farm operators in the state reported a gross income of less than \$1,500 for 1944 (1945 U. S. Census). About one out of every three operators reported a gross income of less than \$2,500. Farm and ranch record studies made in South Dakota during this same period show that a gross income of less than \$2,500 is entirely too low to provide a satisfactory living at present price levels. One of the main reasons for these low incomes is too small farms and ranches.

Early homestead laws contributed greatly to the establishment of temporary size patterns which were later found to be inadequate, particularly in the western two-thirds of the state. The settlement of most of South Dakota by residents from the central and eastern areas of the United States where there is more rainfall also influenced farm and ranch size.

In 1910, almost 60 percent of the operating units in the range area were from 100 to 499 acres in size. Most of these were 160- and 320-acre units. By 1945, the percentage of these small units had been reduced by more than half.

The Homestead Act of 1862 provided for grants of 160-acre tracts to settlers. This act was modified in 1909 to provide for 320-acre tracts and again in 1916 to increase the acreage to 640 acres in the semi-arid regions including South Dakota and other great plains states. Average size of farms in South Dakota was 335 acres in 1910, compared to the present average size of 626 acres. The largest increase took place in the western areas of the state. Although average farm size has been greatly changed since 1910, the ill effects of unsound settlement policies have not been entirely eliminated.

A small percent of farms in the state are too large from the standpoint of the best use of management, labor and other farm resources. Extremely favorable weather and price conditions the past few years have encouraged some farmers to greatly expand their operations. This has been particularly true in the cash grain areas of the state where large-scale operations have been highly profitable. Good weather has brought high crop yields and income even where poor management practices have been followed. These large-scale operations have made it difficult for many family-type operators to obtain enough land.

Amount of rainfall, the lay of the land and soil types are probably the most important physical factors that have contributed to the present size of farms and ranches in the various counties of the state. Average size of unit in Harding county, the extreme northwestern county of the state, is 18 times as large as the average farm in Union county, the extreme southeastern county. Normal rainfall averages about 14 inches in Harding county compared to over 25 inches in Union county. (Figure 1.) The topography is generally more rolling in the northwest than in other parts of the state.

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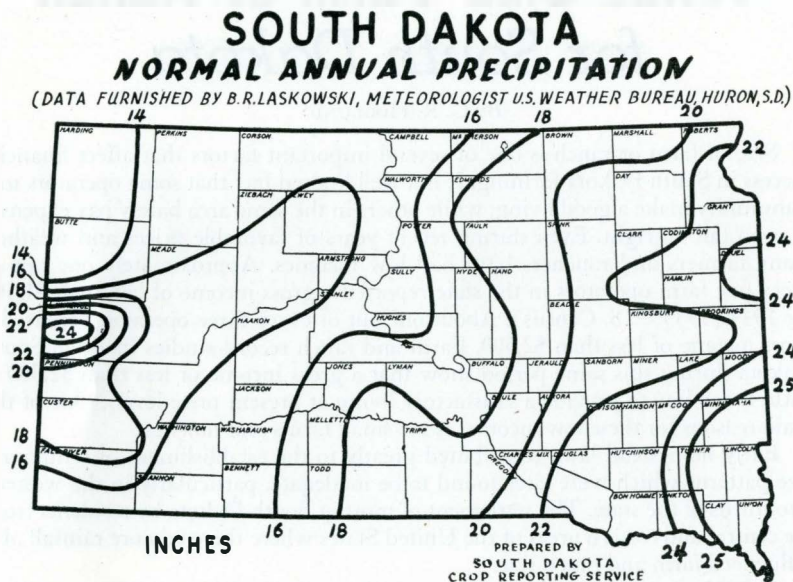


Figure 1. Normal annual precipitation in South Dakota.

Economic Importance of Size

Use of Labor. The increased cost of labor, together with greater mechanization, in recent years stresses the importance of a farm large enough to utilize this labor and equipment to full advantage. Enough crops and livestock cannot be produced on the undersized farm or ranch either to use farm resources to best advantage or to provide a satisfactory living.

Farms of less than 120 acres in the Southeastern area provided full use of only 65 percent of the available family labor (Table 2). In the Range area only 57 percent, or slightly more than half, of the available labor was fully used on the unit of less than 480 acres.

The study of labor use suggests that economical family sized units need to be at least 160 acres in the Southeastern area and 1280 acres in the range area. Information for the other areas studied also shows the need of adequate sized farms and ranches.

Relation of Size to Income. Farm management studies at South Dakota and other Agricultural Experiment Stations show a close relationship between earnings and size of farm business. A two-year average of operator's labor earnings for the Southeastern and North Central areas of the state show increases in earnings with increases in acres per farm (Table 3). The years 1944-45 were exceptionally favorable. Earnings of these size groups studied would be much lower with less favorable prices and climatic conditions.

Table 1. Number of Farms and Ranches, Average Acreage Operated and Average Livestock Numbers, Eight Areas Studied, 1943-44. (Data from 10 percent sample from 24 AAA county offices)

Area	Number of farms and ranches	Average acreage operated	All cattle	Average number per farm or ranch All sheep	Sows farrowed	Hens and pullets
2 Range	348	1511	49.5	70.1	2.6	94
3N North Central	203	586	35.9	24.9	4.0	125
3S North Central	169	1240	28.2	81.9	5.3	104
4 North James	420	436	45.9	21.1	5.5	133
5 Northeastern	352	315	26.6	11.0	6.9	144
6 South Central	281	640	44.9	10.7	8.3	157
7 South James	379	322	28.4	12.8	6.2	191
8 Southeastern	458	211	27.5	11.4	10.6	173
Total	2,610					

Table 2. Acres per Unit Related to Efficiency in Use of Labor, Southeastern and Range Areas, 1943-44*

Acres per farm or ranch	Number of farms or ranches	Percent of farms or ranches	Number of workers	Percent of available labor fully used†
Southeastern Area				
Under 120	39	11.6	1.2	65
160	148	43.9	1.3	88
240	59	17.5	1.7	95
320	73	21.7	1.9	100
360 and over	18	5.3	2.6	100
Range Area				
Under 480	70	20.1	1.2	57
640	89	25.6	1.3	75
1280	73	21.0	1.5	86
1920	40	11.5	1.6	93
2240 and over	76	21.8	1.8	100

*Information from AAA offices in 3 Southeastern and 6 Range counties.

†This percentage figure obtained by dividing total days productive work by total available labor and multiplying this by 100.

Table 3. Acres per Farm Related to Operator's Labor Earnings, 1944-45 Average, Southeastern and North Central Areas*

Southeastern Area			North Central Area		
Acres per farm	Number of farms	Average operator's labor earn.	Acres per farm	Number of farms	Average operator's labor earn.
Under 120	2	\$2,192	Under 560	11	\$2,880
160	5	\$3,567	640	3	\$3,634
240	7	\$4,015	800	8	\$4,456
320	8	\$4,559	960	7	\$5,200
400	6	\$5,965	1120	6	\$6,413
440 and over	4	\$7,028	1280 and over	16	\$7,471

*Information from 1944 and 1945 Annual Farm Record Summaries.

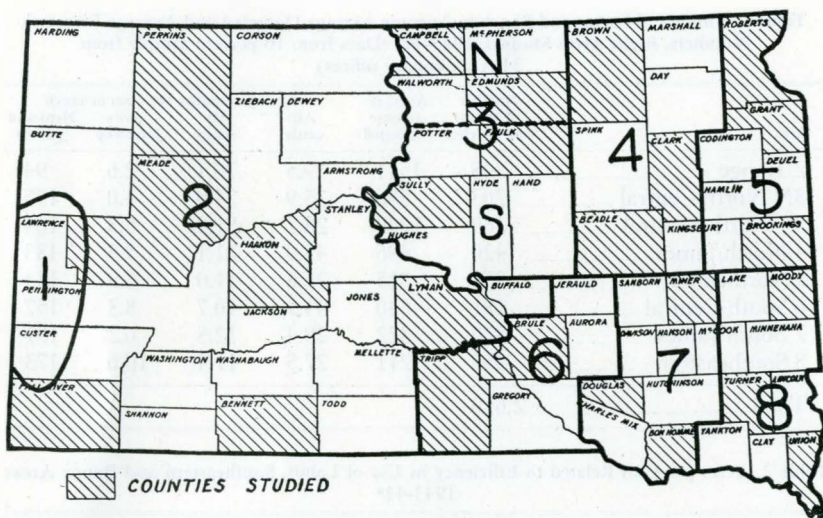


Figure 2. The eight agricultural areas of South Dakota, showing the location of the 24 counties studied. 1—Black Hills; 2—Range; 3—N. North Central; 3—S. North Central; 4—North James; 5—Northeast; 6—South Central; 7—South James; 8—Southeast.

The larger farm is at a disadvantage when prices are so low that the owner takes a loss on every unit of product sold, or when drought conditions are so severe that there is little or no farm production. However, the years in which the relationship of size to earnings is reversed are infrequent. A ten-year study (1928-37) of the relationship of size of business to earnings made by the Minnesota Agricultural Experiment Station showed that in only two out of the ten years did the larger farms have lower earnings.² These were the unfavorable years of 1931 and 1932, in which there were greater losses on the larger than on the smaller farms. Although there is no comparable information on South Dakota for the entire period, ranch records show that losses were also greater for the larger units in 1934 and 1936.³

Relation of Size to Relief. Size of farm or ranch operated was closely related to relief payments made during the depression years of 1933-36.⁴ A study of relief status in Turner, Edmunds, Haakon and Custer counties showed that about two-thirds of the operators of below average size farms and ranches were on relief, compared to only one-third of the operators of units above average in size. Somewhat less than half of the operators on average sized units were on relief. This may seem a contradiction of the statement that in such years of drought and low prices the large farm takes greater losses. The operators of the large farms, however, have usually built up reserves during good years to carry them through the bad ones.

²"Why Farm Earnings Vary," Minnesota Experiment Station Bulletin 386, June, 1945.

³"Profits and Losses in Ranching," South Dakota Agricultural Experiment Station Bulletin 352, June, 1941.

⁴"Size of Farm and Relief Status in South Dakota." Social Research Circular No. 9, June, 1937. South Dakota State College.

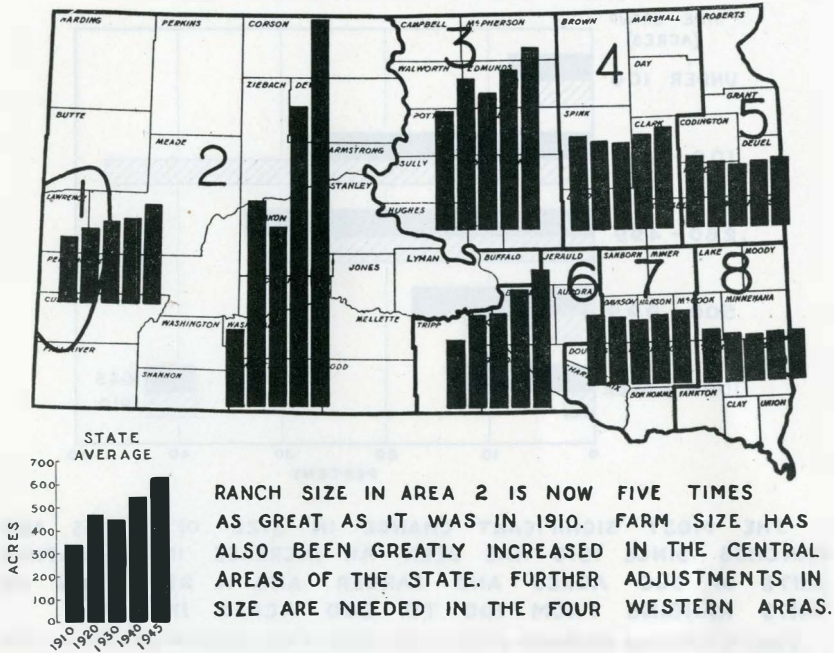


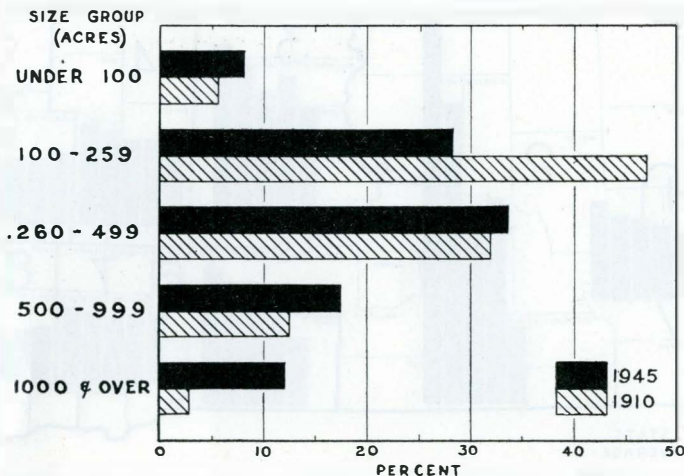
Figure 3. Average farm and ranch size in the eight agricultural areas of the state, 1910-1945.

Relief payments per capita during the four year period 1933-36 averaged \$175 or more in most of the central counties of the state. These payments ranged from \$58 to \$120 per capita in most of the southeastern and extreme western counties of the state. A higher percent of the farming units in the central than in any other area of the state have been too small. Considerable progress has been made the past ten years in adjustments to better sized farms and ranches. Farm families on these too-small units suffer low incomes during both favorable and unfavorable economic and climatic conditions. They lack the necessary reserves to carry them through bad years.

Changes in Size

Size Changes, 1910-1945. The average size of farms was much the same in the eight areas of the state in 1910. For example, farm size averaged about 300 acres in areas 1, 2, 5, 6 and 7 (Figure 3) at that time. During the next 35 years, ranch size in area 2 increased from an average of 332 acres to 1671 acres. Farm size was doubled in area 6 during this period. The size of the average farm in the four eastern areas of the state has changed very little since 1910.

Average farm and ranch size in areas 2 and 3 showed a decided drop from 1920 to 1930, but has continued to increase since then. This temporary reduction in size was due chiefly to the back-to-the-land movement that followed World War I. The peak in total number of farms and ranches in these two areas was not reached until 1935. About 4,600 operating units were added from 1920 to 1935. By 1945, however, there were 7,100 fewer farms and ranches in these two areas



THE MOST SIGNIFICANT CHANGE IN SIZE OF FARMS AND RANCHES SINCE 1910 HAS BEEN AN INCREASE IN OPERATING UNITS OF 500 ACRES AND LARGER AND A REDUCTION IN UNITS RANGING FROM 100 TO 260 ACRES IN SIZE.

Figure 4. Percentage distribution of farms and ranches by size groups in South Dakota, 1910 and 1945.

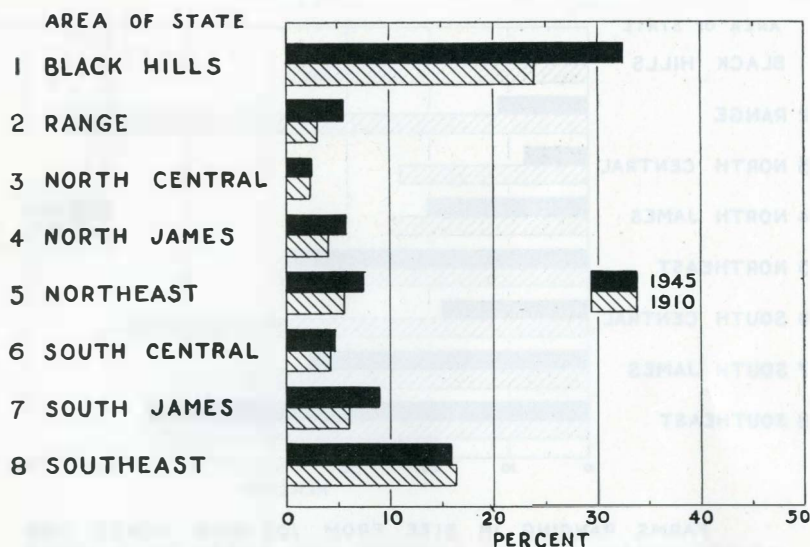
than in 1935. During this same ten-year period, the total number of farms and ranches in the state was reduced by 14,600, or by more than 17 percent.

Size Distribution, 1910-1945. The most significant changes in the size distribution of South Dakota farms and ranches during this 35-year period was an increase in numbers of farms 500 acres and over and decreases in numbers of farms under 260 acres (Figure 4). Sixty percent of the farms in the state, however, range between 100 and 499 acres. The proportion of farms and ranches 1000 acres and over in size increased more than four times during the 35-year period. Practically all of this increase was in the Central and range areas of the state.

Farms under 100 acres in size are relatively unimportant in South Dakota, making up only eight percent of all farms in the state. Slight increases took place in areas 1, 2, 4, 5 and 7 from 1910 to 1945 (Figure 5). This size group is important primarily in the Black Hills and Southeastern areas, accounting for 32.6 and 15.9 percent respectively of all farms in these two areas.

The 100 to 259-acre size group is important mainly in the four eastern and Black Hills areas of the state (Figure 6). From 1910 to 1945 the number of farms in this size group was sharply reduced in areas 2, 3, and 6, and to a lesser extent in all others except the two eastern areas.

Farms ranging from 260 to 499 acres are the predominant size group in areas 4, 5, 6 and 7 (Figure 7). The number of farms of this size has been greatly reduced in area 3 and increased somewhat in areas 6 and 7 during the past 35 years.



FARMS UNDER 100 ACRES IN SIZE ARE IMPORTANT PRIMARILY IN THE BLACK HILLS AND THE SOUTHEASTERN AREAS OF THE STATE.

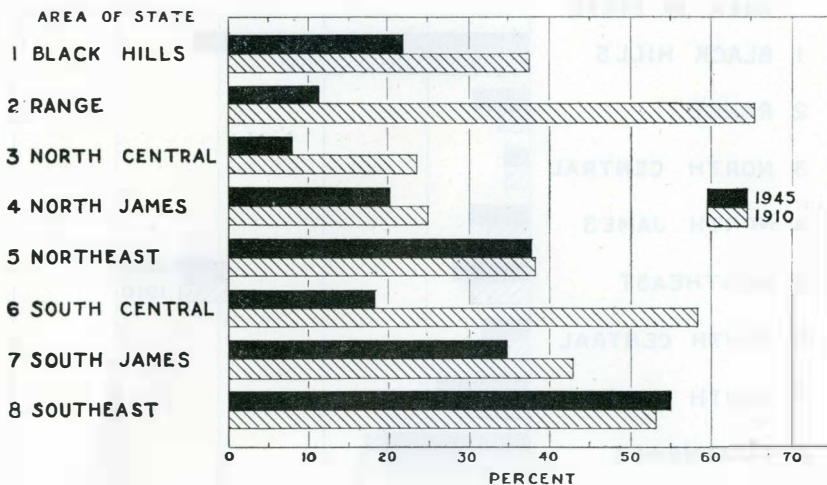
Figure 5. Percent of all farms in South Dakota that are under 100 acres in size.

Farms ranging in size from 500 to 999 acres are most common in the Central areas of the state (Figure 8). The proportion of farms in this size group has increased greatly in the four western areas of South Dakota since 1910. Less than 10 percent of the farms in the eastern two areas of the state are as large as 500 to 999 acres. Although units of this size account for 22 percent of all units in the range area, there has been a trend in recent years toward ranching units larger than this size group.

One out of every eight farms and ranches in South Dakota are 1,000 acres or larger. The range and the two central areas of the state have the highest proportion of these units (Figure 9). In the past 10 years the proportion of units of this size has more than doubled in these areas. Over 44 percent of the operating units in the range area, compared to less than five percent of the farms in the eastern four areas, are as large as 1,000 acres or more.

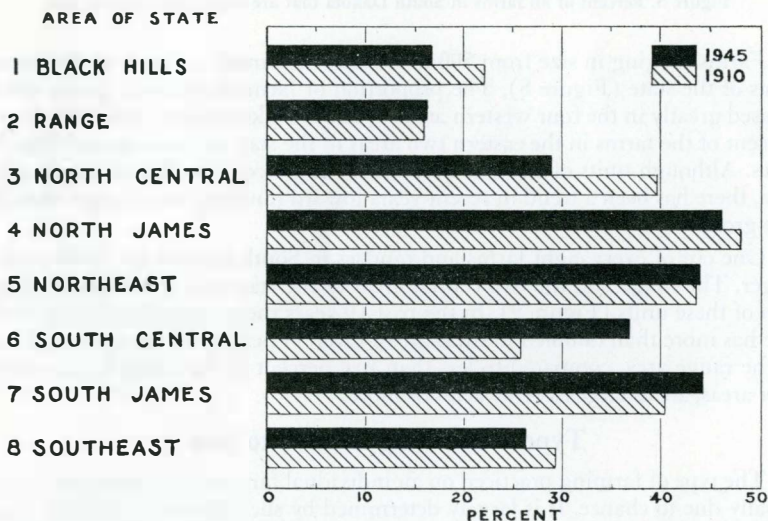
Type of Farming Related to Size

The type of farming practiced on an individual farm or in a community is not usually due to chance. It is largely determined by such factors as rainfall, topography, soil type, distance to market and local market facilities. Over a period of years, farmers and ranchers tend to adjust their operations to fit local environment and market conditions. Changes in both types and sizes of farms have taken place in the various areas of the state because of these adjustments.



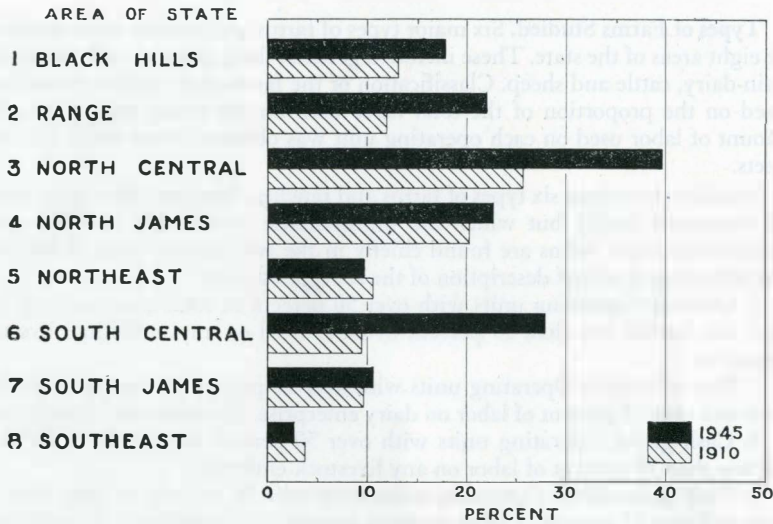
FARMS RANGING IN SIZE FROM 100-259 ACRES ARE FOUND CHIEFLY IN THE EASTERN AND BLACK HILLS AREAS. THIS SIZE HAS BEEN SHARPLY REDUCED IN THE CENTRAL AND RANGE AREAS SINCE 1910.

Figure 6. Percent of all farms in South Dakota that are 100 acres to 259 acres in size.



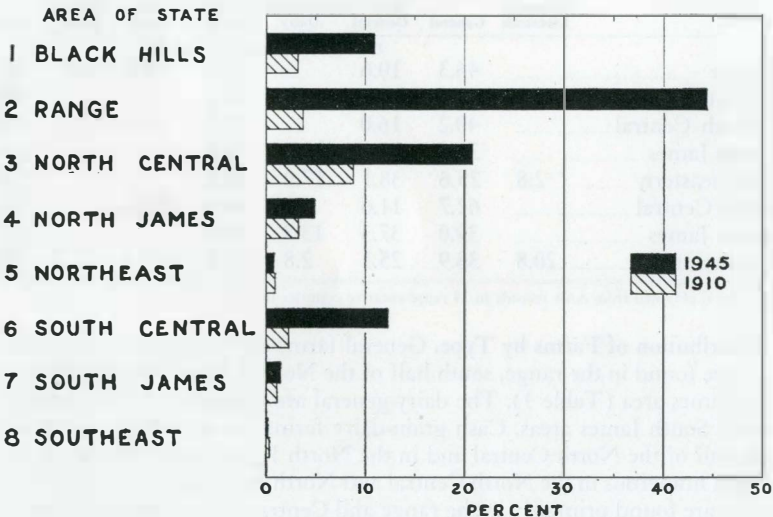
ALMOST A THIRD TO A HALF OF THE FARMS IN THE SIX EASTERN AREAS ARE 260-499 ACRES IN SIZE.

Figure 7. Percent of all farms in South Dakota that are 260 to 499 acres in size.



FARMS AND RANCHES RANGING IN SIZE FROM 500-999 ACRES HAVE BEEN INCREASED GREATLY IN THE CENTRAL AND WESTERN AREAS OF THE STATE THE PAST 35 YEARS.

Figure 8. Percent of all farms and ranches in South Dakota that are 500 to 999 acres in size.



OPERATING UNITS 1000 ACRES AND LARGER ACCOUNT FOR ABOUT 44 PERCENT OF ALL UNITS IN THE RANGE AREA. THIS SIZE GROUP IS ALSO IMPORTANT IN THE BLACK HILLS AND TWO CENTRAL AREAS OF THE STATE.

Figure 9. Percent of all farms and ranches in South Dakota that are 1,000 acres or more in size.

Types of Farms Studied. Six major types of farms and ranches were studied in the eight areas of the state. These included general, dairy-general, cash grain, cash grain-dairy, cattle and sheep. Classification of the farms and ranches studied was based on the proportion of the total labor used on the major enterprises. The amount of labor used on each operating unit was obtained from the AAA work sheets.

In addition to these six types of farms and ranches, there are other types which are important locally but which are unimportant numerically in other areas. Intensive livestock farms are found chiefly in the two eastern areas of the state. The following is a brief description of the six types studied.

1. **General:** Operating units with over 50 percent of total labor used on livestock but having less than 25 percent of labor used on any individual livestock enterprise.

2. **Dairy-General:** Operating units with over 50 percent of total labor on livestock and over 25 percent of labor on dairy enterprise. Minimum of 10 milk cows.

3. **Cash grain:** Operating units with over 50 percent of total labor on crops and less than 25 percent of labor on any livestock enterprise.

4. **Cash grain-dairy:** Operating units with over 50 percent of total labor on crops and over 25 percent of labor on dairy enterprise. Minimum of 10 milk cows.

5. **Cattle:** Operating units with over 50 percent of total labor on livestock and over 25 percent of labor on cattle. Minimum of 50 head of cattle.

6. **Sheep:** Operating units with over 50 percent of total labor on livestock and over 25 percent of labor on sheep. Minimum of 250 head of sheep.

Table 4. Percentage Distribution of Farms and Ranches by Type, Eight Areas of State, 1943-44*

Area	Intensive Livestock	General	Dairy- General	Cash Grain Dairy	Cash Grain	Cattle Ranch	Sheep Ranch	Total
Percent of all farms and ranches								
2 Range		46.3	10.6	-----	12.1	22.1	8.9	100
3N North Central		23.2	14.8	40.8	21.2	-----	-----	100
3S North Central		40.2	16.0	-----	23.1	13.0	7.7	100
4 North James		30.6	10.9	23.7	34.8	-----	-----	100
5 Northeastern	2.8	25.6	38.1	17.0	16.5	-----	-----	100
6 South Central		62.7	11.6	-----	14.1	11.6	-----	100
7 South James		39.0	37.3	13.3	10.4	-----	-----	100
8 Southeastern	20.8	38.9	25.1	2.8	12.4	-----	-----	100

*Information obtained from AAA records in 24 representative counties in state.

Distribution of Farms by Type. General farms and ranches are the predominant type found in the range, south half of the North Central, South Central and South James area (Table 4). The dairy-general are important in the North Eastern and South James areas. Cash grain-dairy farms are important chiefly in the north half of the North Central and in the North James areas. Cash grain farms are most numerous in the North Central and North James areas. Cattle and sheep ranches are found primarily in the range and Central areas of the state. Intensive livestock farms are limited mainly to the Northeastern and Southeastern areas.

Size Variations. The best use of the agricultural resources results in vast differences in size of farms even within a community. Most of the rolling land in the

Range and North Central areas of South Dakota are best suited to grass, and beef cattle and sheep production.

A relatively large acreage is required for an adequate sized cattle or sheep ranch. The average cattle ranch in the south half of the North Central area is over 2,000 acres, compared to 1,234 acres for cash grain units (Table 5). The cash grain farms have a much higher proportion of suitable cropland than do the cattle ranches.

In the four eastern areas of the state, cash grain and cash grain-dairy farms average the largest in size. Farms producing wheat, flax and other cash crops as major sources of income are the most extensive types in this part of the state. The dairy-general is the most intensive type of the four studied in these four areas, and is usually smaller (Table 5). Intensive livestock and grain farms are also found in the two eastern areas. These farms specialize in enterprises such as dairying, beef feeding, hogs or poultry and are usually more intensive and smaller than the general farms.

Table 5. Average Number of Acres Per Farm and Ranch, By Type, Eight Areas of State, 1943-44*

Area	General	Dairy-general	Cash grain-dairy	Cash grain	Cattle ranch	Sheep ranch
Average acres per farm or ranch						
2 Range	888	913	.....	828	2698	2671
3N North Central	657	507	603	531	.....	.....
3S North Central	965	745	.....	1234	2182	2062
4 North James	443	402	442	437	.....	.....
5 Northeastern	277	293	337	375	.....	.....
6 South Central	561	478	.....	558	1349	.....
7 South James	320	303	349	364	.....	.....
8 Southeastern	176	205	190	256	.....	.....

*Information obtained from AAA records in 24 representative counties in state.

Labor Supply Related to Size

Source of Farm Labor. One of the most important factors determining size of farm is the amount of labor supplied by the operator and his family. Seventy percent of the farmers in the state depend almost entirely on family labor and hire none or only a few months seasonal help (Table 6). Only eight percent of the operators in the state hire as much as 12 months of labor, and four percent hire as much as two or more full time hired men or its equivalent in part-time help. The amount of labor a farmer or rancher hires is determined to a large extent by the operator's age and physical condition, and the number and age of children helping with farm or ranch work.

Another four percent of farms in the state may be classed as part-time, as the operators spend only about half their time on productive farm work. Some of these are operated by retired or semi-retired farmers. Operators of other part-time farms depend on other sources of income to supplement their farming. This group of farmers are the least efficient. The family type farm with an equivalent of 1.5 full-time workers (16 months family labor and two months hired labor) was the most efficient in the use of labor. This group of farms averaged 276 days of pro-

ductive work per worker, compared to 221 days for the group with an equivalent of three or more full-time workers (Table 6).

Table 6. Relationship of Available Labor to Total Acres Operated and Labor Efficiency*

		Number of full-time workers per farm				
	.5	1.0	1.5	2.0	2.5	3.0 and over
Percent of farms	4.2	41.9	28.3	13.5	8.1	4.0
Months of labor:						
Operator and family	7	13	16	18	18	17
Hired	†	†	2	6	12	25
Total acres operated	322	430	605	717	851	1139
Days production per worker	185	273	276	241	226	221

*Information obtained from AAA records in 24 representative counties of the state.

†None or few days

The size of a full-time family type farm or ranch may vary a great deal because of the amount of family labor available and the amount of labor hired. At present, about 88 percent of the operators in the state hire an average of only six months or less of hired labor. The total amount of labor that can profitably be used on an individual farm or ranch is largely determined by the managerial ability of the operator. It is only natural then that neighboring farms of the same quality might vary greatly in the acreage operated.

Two-Family Farms. Farm business agreements providing for the joint operation of a farm by a father and son or non-related parties have been increasing in recent years. On a high proportion of these farms, both members are active in the management and operation of the farm. Where the son or other junior member of the farm business is married, a separate house on the same farmstead or on a separate farmstead is usually provided. The success of these farm business agreements depends to a great extent on a farm large enough to support both families.

Economy in the use of labor, machinery and equipment, and other farm resources are the chief advantages of such farm business agreements. It also provides the opportunity for a young farmer with limited capital to start farming on a more satisfactory basis. Difficulties in obtaining farms to rent often make it desirable to operate a farm jointly with a father or non-related farmer.

Tenure and Age Related to Size

Tenure Status of Operators. Almost half of the farms and ranches studied were tenant operated (Table 7). The rest were about equally divided between full owners and part owners. Only 27 percent of the operators in the Range area were tenants compared to over 50 percent in areas 4, 7 and 8. Full owners were most numerous in the Range area and the two eastern areas. The class of operators who own part of their land and rent the rest are found chiefly in the Central and Range areas.

Age Distribution of Operators. The farms studied were divided into four groups on the basis of age of operator as follows: operators under 35 years, 35-49 years, 50-64 years and 65 years and over. Over 70 percent of the tenant operators were in the two lower age groups (Table 8).

The size of farm operated by the full owners and tenants averaged about the same. The full and part owner operated farms were the smallest in the age group under 35 years, but tended to increase with each age group. The only exception was in the full owner group where the maximum size was reached in the age group of 50 to 64 years of age. The maximum size group for the tenants was reached in the age group 35 to 49 years, and declined rapidly thereafter. A rather sharp decline in the proportion of tenants in the two upper age groups also took place. This would indicate that a great many tenants either buy farms or ranches or quit farming by the time they reach 50 years of age.

The question arises as to whether the part-owners are the better managers since they operate the larger units. Farm record data indicates that in recent years this group of operators have had much higher incomes than the full owners or tenants. This increased income is partly due to the larger sized business.

Table 7. Total Number of Farms and Ranches Studied and Proportion Operated by Full Owners, Part Owners, and Tenants, Eight Areas of South Dakota, 1943-44*

Area	Total number of farms and ranches	Full owners	Percent of total Part owners	Tenants
2 Range	348	42.0	30.7	27.3
3N North Central	203	15.8	42.4	41.8
3S North Central	169	16.0	41.4	42.6
4 North James	420	24.5	16.7	58.8
5 Northeastern	352	29.5	23.3	47.2
6 South Central	281	17.8	37.0	45.2
7 South James	379	19.3	18.7	62.0
8 Southeastern	458	30.1	18.6	51.3
Total or average	2,610	25.7	25.8	48.5

*Information obtained from AAA records in 24 representative counties of the state.

Table 8. Percentage Distribution and Average Acreage Operated by Owners, Part-Owners and Tenants, By Age of Operator, 1943-44*

Age Group	Percentage Distribution			Average Acres Operated		
	Owners	Part-owners	Tenants	Owners	Part-owners	Tenants
Under 35	10	14	33	454	809	426
35—49	32	39	39	459	836	585
50—64	43	41	25	567	855	494
65 and over	15	6	3	553	956	369
Total or Average all ages:	100	100	100	519	847	503

*Information obtained from AAA records in 24 representative counties of state.

Adequate Family Sized Farms and Ranches

It is desirable that beginning farmers and ranchers get started on full-time going units. This is not always possible because of lack of capital or difficulties in buying or renting satisfactory farms or ranches. Many farmers have made the mis-

take of buying too-small units and then finding it impossible to get additional land later. Some farmers and ranchers, especially in the Central and Range areas, have been able to rent enough acreage to supplement their owned land. In very recent years, however, much of this rented land has been sold, a good deal of it to the operators themselves.

This increase in ownership has tended to stabilize a high proportion of farms and ranches in the western two-thirds of the state. Yet this very improvement in the status of some farmers and ranchers makes it harder for other operators to rent or buy more land.

What constitutes an adequate family-type farm or ranch in South Dakota? Vast differences in rainfall, topography, soil, and types of farming in the state make it impossible to give one general answer to that question. We must make recommendations by types of farms and ranches for each agricultural area of the state.

Table 9. Recommended Acreage for Family Type Farms and Ranches, Eight Agricultural Areas of South Dakota

Area	Intensive	Type of Farm		
		General and Dairy-General	Cash Grain and Cash Grain-Dairy	Cattle and Sheep Ranches
	acres	acres	acres	acres
2 Range	.....	960-1280	960-1800	1280-6000
3N North Central	.....	480- 800	640- 800	800-3000
3S North Central	.....	640- 960	800-1280	960-3000
4 North James	.....	400- 640	480- 640	.....
5 Northeastern	240-320	240- 400	320- 400	.....
6 South Central	.....	480- 800	640- 960	960-3000
7 South James	.....	320- 480	320- 480	.....
8 Southeastern	160-240	160- 320	240- 320	.....

Intensive Livestock Farms. Intensive livestock farms specializing in such enterprises as hogs, poultry, dairy, beef, and lamb feeding are limited almost entirely to the two eastern areas of the state. These farms usually have a high proportion of productive cropland and may have one or more major livestock enterprises. Dairy, hogs, and poultry are produced in varying proportions on most of these farms in the Northeastern area. Beef cattle and lamb feeding are less important enterprises. An adequate sized unit for such a farm would be 240 to 320 acres (Table 9).

In the Southeastern area, cattle and lamb feeding, dairy, hogs and poultry are important intensive livestock enterprises. An intensive livestock producer in this area would need about 160-240 acres.

General and Dairy-General. One of the most numerous types of farms found in the state is the general or dairy-general farm. Sales from livestock make up 60 percent or more of the total income. On the general farm, there is no major livestock enterprise. Dairying is a major livestock enterprise on the dairy-general farm: some hogs and poultry are produced on most of these farms. Beef cattle and sheep are important livestock on many general farms. Sale of crops usually contributes about 20 to 40 percent of the gross income.

The acreage required for an adequate sized unit depends upon the productivity and proportion of land that is in cropland, and how extensive the farming operations are. In the range area a general ranch would require from 960 to 1280 acres. This type of ranch would include a higher proportion of cropland than most cattle or sheep ranches. An adequate sized general or dairy-general farm in the Southeastern area might range from 160 to 320 acres, depending on the quality of cropland and pasture and the intensity of operation. Recommended acreage for general and dairy-general farms in the other areas of the state are shown in Table 9.

Cash Grain and Cash Grain-Dairy. Cash grain farms usually need to be somewhat larger than general farms due to the more extensive nature of the enterprises. Most cash grain farms have some minor livestock enterprises which help supplement the income from grain. A rather high proportion of wheat producers in the North Central and North James areas get a considerable part of their income from beef cattle, dairy and from hogs. Recommended acreages for cash grain and cash grain-dairy farms range from a minimum of 240 acres in the Southeastern area to 960 or more acres in the Range area (Table 9).

Cattle and Sheep Ranches. Present size of cattle and sheep ranches range from some that are less than 640 acres to others over 10,000 acres in size. An adequate family-type ranch would require from 1,280 acres to upwards of 6,000 acres or more in most of the Range area. A minimum sized cattle ranch would require 100 to 200 head of cattle (based on recent ranch studies).⁵ On the basis of 20 acres of grazing land per animal unit, a total of 2,000 to 4,000 acres would be needed. Variations in quality and topography of land would make it possible for some ranchers to operate on as little as eight to ten acres per animal unit, while others might require 30 to 40 acres per animal.

Adjustment to Adequate Sized Units. Some farmers and ranchers who want to enlarge small operating units find it almost impossible to do so. All land within a reasonable distance of the farmstead may be owned or rented on a longtime basis by adjacent operators. Farmers who cannot enlarge their farms may find it profitable to move to other communities where large enough units can be bought.

There are some possibilities of increasing earnings without increasing the acreage operated. This can be done by changing over to more intensive crop and livestock enterprises, or by producing more livestock and possibly buying more feed. This is especially true in the eastern counties of the state where the more intensive livestock enterprises fit in. Many farmers in this part of the state buy feeder cattle and lambs to be fed out on the farm. Some of these feeders can profitably buy a considerable quantity of feeds.

Dairy and poultry enterprises are well suited to small farms and may be increased to use labor to better advantage and to increase income. The opportunities for increasing size of business and income in this manner are very limited in the Central and Range areas of the state.

Difference in quality of the land, managerial ability, and type of farming carried out have a vast influence on farm size. A small proportion of successful farmers in the Southeastern area are operating farms that are much smaller than 160 acres. Most of these farmers have a combination of good quality land and intensive crop and livestock enterprises. Skilled managerial ability is also necessary

⁵"Ranching in Northwestern South Dakota," South Dakota Agricultural Experiment Station Bulletin 385. April, 1947.

for the success of these small units. On the other hand, many farms in this area must be much larger than the 320 acres recommended in Table 9. Farms with a great deal of rough or poor quality land may need a section (640 acres) or more to provide an adequate income for the farmer.

These same situations exist in other areas of the state. One must make a thorough appraisal of both the farm and the farmer to determine the type of farming that should be done and the acreage required for a good income.

Summary and Conclusions

Size of farm business is one of the most important factors affecting farm and ranch income. Incomes have been low on small sized units even during recent favorable price and climatic conditions. About one-third of all operators in the state reported a gross income of less than \$2,500 during 1944.

Average size of operating unit in South Dakota has been increased from 335 acres in 1910 to 626 in 1945. The greatest increases have occurred in the Central and Range areas of the state. Major factors which have contributed to the increase in size of units in these two areas are a greater knowledge of the limitations placed on intensive crop and livestock production by low rainfall, the lay of the land, soil productivity and distances to market.

A study of the relationship of size of operating unit and efficiency in use of labor indicates the need of adequate sized units. In the Southeastern area, only 65 percent of the available labor was used on farms of less than 120 acres. In the ranching area, less than 60 percent of the available labor was used to good advantage on units of less than 480 acres. The same relationship held true in other areas.

Size of farm, as measured by total acres operated, is closely related to type of farming. The amount of rainfall, topography and proportion of land suited for cropland or grazing largely determines the type of crops and livestock enterprises that are suited to a farm or ranch. Units with a large proportion of land best adapted to production of grass are suitable to more extensive systems of livestock production requiring large acreage of land.

Full-time family farms may vary a great deal in size due to the amount of available family labor and to the amount of labor hired. The amount of labor that can be profitably used on a farm is determined to a large extent by the managerial ability of the operator.

A majority of farms and ranches in the state would be classed as family type farms. Only one farmer in 12 hires as much as two or more full-time hired men or its equivalent in part-time help. Many young men interesting in farming may find it more desirable to start out on a share arrangement with a father or non related farmer than attempting to begin farming on their own. Such farm business arrangements make it possible to start farming with less capital and to make more economical use of labor, machinery and equipment.

A better adjustment of farm and ranch size and type to economic and environmental conditions is desirable. This would involve a reduction in the high proportion of inadequate sized operating units and the development of types of farming better suited to the individual farm or ranch. These changes would tend to stabilize production and income and to reduce the element of risk in all areas of South Dakota.