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Operation of Webber Demonstration Farm, 1929 - 1938

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Operation of
WEBBER
DEMONSTRATION
FARM
1929-1938

Agricultural Experiment Station
South Dakota State College
Brookings, S. D.



Contents

| | |
|--|----|
| Preliminary Statement | 5 |
| Selecting the Farm | 5 |
| Planning the Improvements | 6 |
| 1. The House | 9 |
| 2. The Barn | 9 |
| 3. Shop and Garage | 10 |
| 4. Hog House | 10 |
| 5. Poultry House | 11 |
| 6. Granary | 11 |
| 7. Implement Building | 12 |
| The Water Supply | 12 |
| Selecting the Farm Operator | 13 |
| Planting the Shelter Belt | 13 |
| Use of Credit | 16 |
| Types of Farming | 16 |
| Operating Plans | 17 |
| The Farm Fields | 18 |
| Estimated Feed Requirements and Production | 20 |
| Reserve Important | 20 |
| 1. Building Financial Reserve | 21 |
| 2. Feed Reserve | 22 |
| Conditions Change Operation Plans | 23 |
| 1. Additional Milk in Demand | 23 |
| 2. Hog Enterprise Terminated | 24 |
| 3. Termination Cash Crop Plan | 24 |
| 4. Sheep Project Started | 24 |
| 5. Special Problems | 25 |
| 6. Inventories | 26 |
| The Ten Year Business Summary | 28 |
| 1. Gross Income | 28 |
| 2. Gross Expense | 28 |
| 3. Family Labor Income | 29 |
| Summary | 30 |

Operation of Webber Demonstration Farm 1929-1938

By C. Larsen

Preliminary Statement

In the spring of 1927, Mr. C. C. Webber approached the State Board of Regents of Education with the following problem:

"I own a lot of land, and pay taxes on it, in the state of South Dakota. I want to know if I shall continue to keep this land, and pay taxes on it. The State Agricultural College, I think, is the institution to show me. Now I propose to the State Board of Regents of Education that they:

1. Select any piece of land that I own in South Dakota for the purpose of conducting a demonstration farm by actual farming tests.

2. After this land has been selected, plan and supervise the construction of a practicable set of improvements, advise me, and I will pay for same.

3. I will pay the taxes on any piece of such land you may select for a period of 10 years.

4. Give you complete authority to operate the same for 10 years, and then make a report of it."

The above provisions were agreed to by the State Board of Regents of Education, and said Board signed a contract with Mr. Webber to carry into effect the above propositions.

Selecting The Farm

After taking into consideration the size of the available tracts, convenience for management, quality of land, and location in respect to roads and markets, three quarters of land located together were chosen, namely:

The West Half ($W\frac{1}{2}$) of Section Twenty-one (21); The Southeast Quarter ($SE\frac{1}{4}$) of Section Twenty (20), all in Township One Hundred Twelve (112) North, Range Seventy-eight (78) West of the 5th P. M., Hughes County, South Dakota.

This land is located about 15 miles northeast of Pierre, and about 14 miles west of Blunt in Hughes County. With the exception of one hill which is part of the permanent pasture, the land may be classed as level. It is of black loamy soil and fertile.

In the early years of the operation, the main highway, No. 14, passed by the northwest corner of the north quarter, which is the location of the farm buildings. From the standpoint of road maintenance and keeping the traffic open during unfavorable weather, such a main highway was of great benefit, es-

pecially considering that the delivery of milk from the farm to the city of Pierre became a daily task. Now, highway No. 14 has been changed to enter Pierre about five miles south of the demonstration farm. This three-quarter section farm is located about 10 miles east of the Missouri River, away from the breaks and hills adjacent to the river.

Planning The Improvements

Building is a job not performed every year. When buildings of a permanent nature are once set up, the correctness or faults endure for a long time, so considerable care was taken in making the best of plans and improvements possible, without going into needless expense. Prof. Ralph L. Patty, head of the Agricultural Engineering Department of State College, did most of the work in this connection. The work involved planning the details of each separate unit, as well as coordinating the location of the different units in relation to the various enterprises of the farm.

Those interested conferred relative to the kind of buildings and improvements needed, and also, relative to the amount of money which reasonably would be expended on the same.

Some were of the opinion that this farming enterprise should be started in a small way as a homesteader or a beginner would be required to do. For living quarters, a small shack; for a barn and poultry house, buildings made from poles and covered with straw; and then as the project progressed, replace these temporary improvements with more permanent ones according to the earnings and ability to pay.

This method of farm improvements has been successfully followed by many of the thrifty farm families in the central west and older farming regions. Many fine farm buildings and equipment can be pointed to with much pride as a result of such a gradual building up program.

However, by this method much time is required, in most instances a life time. A great deal of planning into the future is necessary to properly coordinate all improvements over a long period of years. The tendency is to build before ability to construct adequate and permanent buildings. Difficult economic times may prevent any new improvements and thus compel a farm family to live under very meager circumstances continuously.

By fully equipping the farm premises at one time the plans can be drawn, studied and coordinated, and the operator has an opportunity to make use of improvements for better living, and for better business.

In this manner the community benefits from the improved service that can be rendered by good improvements. The appearance of a well improved farm place contributes to general public interest.

So with the equipment of this farm. Rather than to delay the improvements and ask the operator and family to live and work on a low and unhandy plane of production, it was decided to fully equip the farm at one time. These improvements were to be made near the main traveled road, at that time highway No. 14.

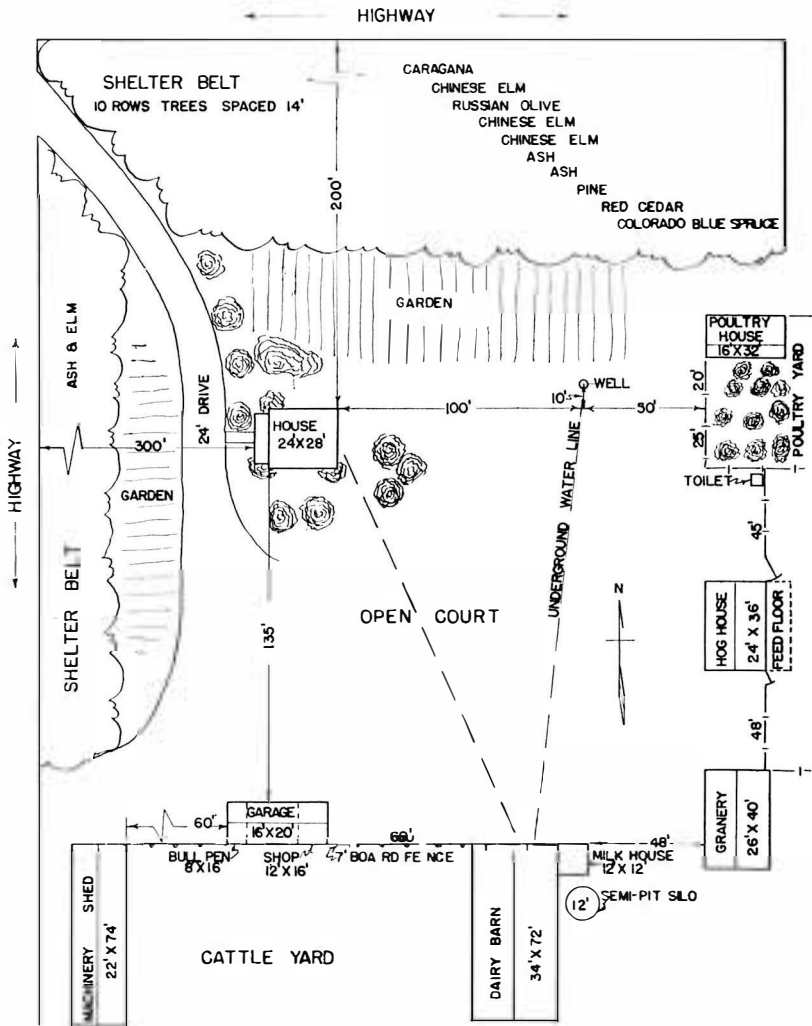


Fig. 1. This diagram shows the farmstead plans and indicates the kind of trees in the shelter-belt as well as the location of buildings.

Naturally, the person who was to pay for the improvements should be consulted. The proposition was put up to Mr. Webber for final decision. After giving consideration, Mr. Webber decided that, "the improvements should be such as any good farm family should have for good living, and such as may be required to carry on the particular farming enterprises. You and your specialists draw such a set of plans and I will pay for them."

A little later Mr. Webber even decided that the place should be modernized with running water throughout. He said, "No farm woman should be compelled to carry water to the house on my farm. I want this place improved in such a way as every farm place should be for good living."

In accordance with this decision by Mr. Webber, the plans were drawn for a house, barn, hog house, granary, poultry house, shop and garage and an implement shed. This estimate was approved by Mr. Webber and a local contractor was hired by Mr. Webber to supervise the building.

The buildings were located not less than 300 feet from the main highway. The house was built on the highest part of the farmstead so as to have the drainage and slope, away from the house. This provided an outlet for the sewage disposal system.

The buildings were located in a logical order so as to make work and chores come as handy as possible. As will be seen from the plans, the distances between the chief buildings are about 60 feet. This to minimize danger of fire and also to obtain lowest insurance rates.



Fig. 2. The farm dwelling is conveniently arranged and modern throughout.

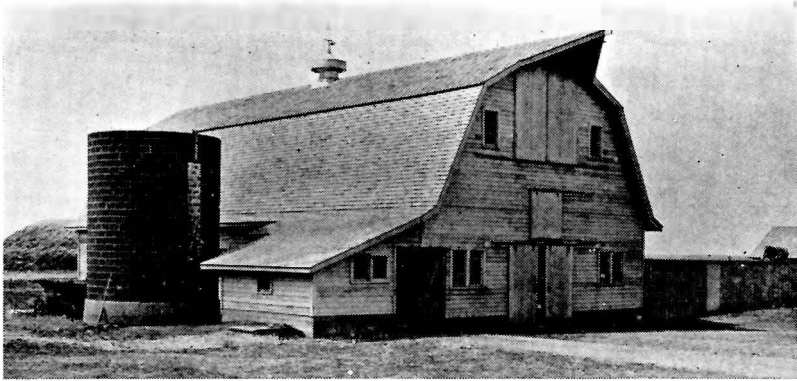


Fig. 3. This large barn provided adequate housing for the livestock. Note the board fence that gives protection from the north winds.

A serious loss was suffered in the early morning of February 5, 1934 when the barn burned. If the other buildings had been located very close, they no doubt would have burned too. So far as could be ascertained the cause of the fire was spontaneous combustion in the alfalfa hay mow.

House. The dwelling is a two-story house 24 by 28 feet, and having a west front porch. There is a full concrete basement, having a soft water cistern, coal room, fruit room, and hot air furnace. The first story consists of a dining room, living room, bedroom, bathroom and kitchen. There are two entrances to this floor from the outside. One to the front porch leading to the living room, and a side entrance leading to the basement and kitchen. The second story has two bedrooms with a closet off each. The stairway is from the kitchen.

Barn. The present barn is 72 by 34 feet. There are 30 cow stalls and stanchions. The cow stanchions face out and toward the wall, and there is an 8 foot driveway through the center of the barn. At one end, at the side, are two double horse stalls. At the other side, at the same end, there is an equal space for calf pens and one maternity pen. The gutters, mangers and floors are of concrete. The barn stands on $9\frac{1}{2}$ foot posts and the roof is of the gambrel type. The mow holds approximately 50 tons of hay. In addition, the hay mow holds the water storage supply tank. This water supply is pumped from the windmill to the storage tank and supplies the pressure for the whole farmstead. At one side in the hay mow there is a bin for feed grain. Into this bin is elevated the ground feed used for feeding.

Adjacent to the northeast corner of the barn there is a milk room 12 feet square with a built-in concrete milk-cooling tank. Near the barn there is also a pit silo 12 feet in diameter. This pit is 20 feet deep and is plastered with cement on the inside. The superstructure is of hollow clay tile and is 14 feet high. The capacity of this silo is about 75 tons.

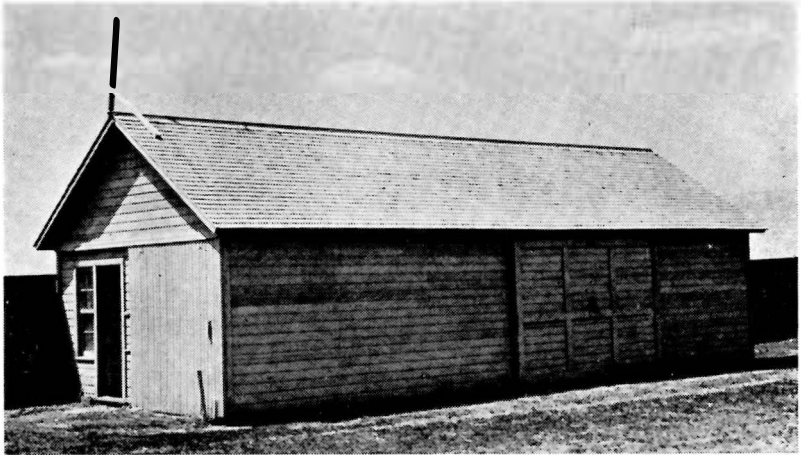


Fig. 4. This building provided room for the farm shop, the family car, and the bull pen.

Shop and Garage. This is 16 by 20 feet, and has room for one car, a farm shop at one end, and a bull pen at the other.

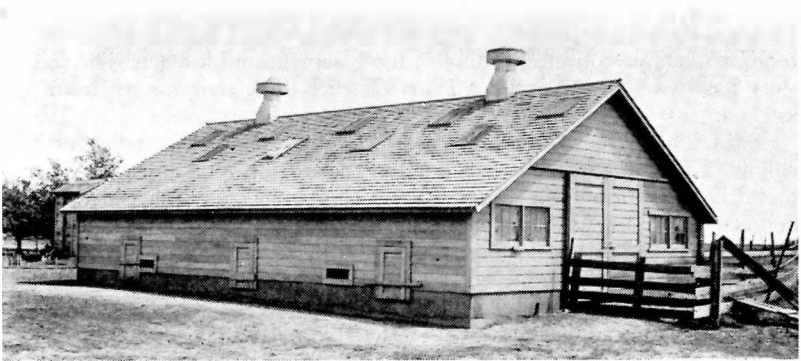


Fig. 5. After the hog project was closed this hog house was used for a sheep shed and calf pens

Hog House. This building is 24 by 36 feet. It stands on 5 foot posts, and has a concrete floor with a driveway through the center. On the east side of the building there is a concrete feeding platform.

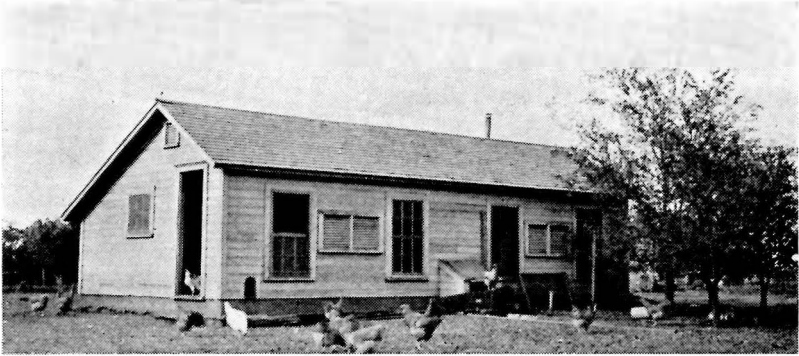


Fig. 6. Included in the plans drawn up for the building program was this fine poultry house.

Poultry House. This is the standard South Dakota poultry house as designed by Prof. R. L. Patty. It is 16 by 32 feet, and has a concrete floor.

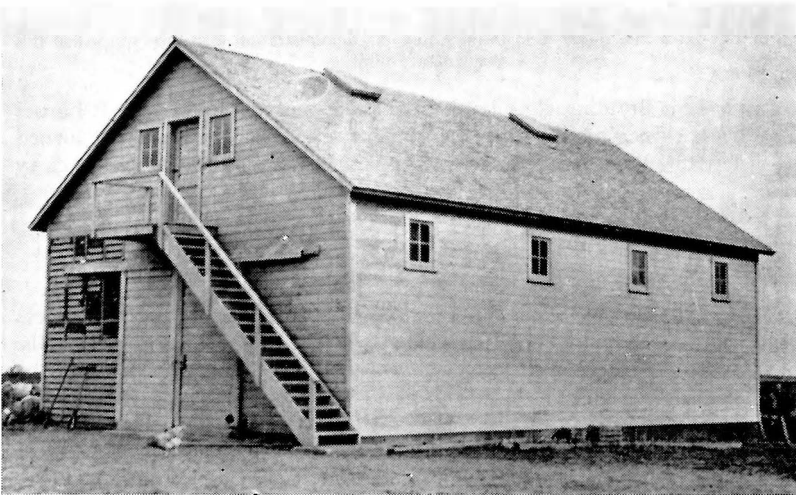


Fig. 7. The east side of this granary was used as a corn crib and grain was stored on the west. The upper part was used for storing seed corn and other seed grains.

Granary. This building is 26 by 40 feet. It has a 10 foot driveway through the center with eight foot bins on each side. The east side is built for a corn crib and the other side for a granary. The upstairs is floored and sided, and used for seed storage. In harvest time when extra help is employed, it is also used as a bunk house.

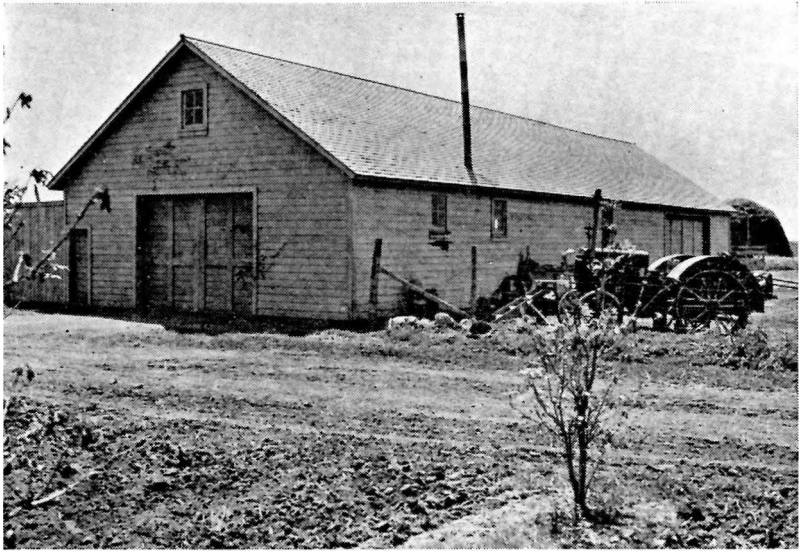


Fig. 8. The farm machinery used in operating the demonstration farm was housed in this implement building.

Implement Building. The implement building is 22 by 74 feet. It houses all of the machinery on the farm. During the time, after the barn was burned and a new one built, this shed was used as an emergency barn for the dairy herd.

The Water Supply

A good, dependable water supply is a basic essential for any farm. Farmers living in this area had complained that it was difficult to obtain good wells. During part of the season the wells went dry, which necessitated hauling the water from the river or creek, and at times the long distances made this impracticable.

The local well drillers were asked to make a survey of the probability of obtaining water. None of them would guarantee well water. All agreed that a bored well was not advisable, because too many of them had proven failures. Some thought that a drilled well would be a success, and a number of people advised that an artesian well would be the best and most dependable source of water.

Well drillers of high ability were asked to make a survey. Their recommendation was that an artesian well could be drilled that would furnish an adequate supply of water, not entirely suitable for house use, but would serve well as water for stock. They advised first, to try to obtain a drilled well.

This was done and a well of good water was obtained at a depth of 240 feet. This four inch well has been thoroughly tested for quality and quantity, and both have been found to be excellent. Throughout the successive dry years there has never been a shortage of water. Because the farmstead was located, in the earlier years of the operation, near the main traveled highway No. 14, east and west, many tourists, as well as neighbors, stopped here to obtain a good cold drink of water.

The windmill and a force pump were installed. One and one-fourth inch galvanized pipes were laid to the barn and to the house at a depth of seven feet. The pump forces water to the supply tank overhead in the barn. This supply tank furnishes the storage as well as the pressure to the buildings.

Selecting The Farm Operator

It was of community importance for this project to be successful. A local cooperating committee was appointed. The committee was of special help in selecting a person to operate this demonstration farm. Such an operator was not to be tenant, nor a manager, nor a partner, nor an owner. He was to be a cooperator. The selecting of such a man and family was not an easy task. To operate a farm so as to make it a financial success and a public demonstration, from a point of management 200 miles distant, required a first class farm operator and family. Some members of the committee suggested:

1. Select a young man who is an agricultural college graduate and who has had some practical farming experience as well. Such a young man with family was not then available. The experienced men, who also were college graduates, were already in positions and careers earning more income than could be realized by operating this demonstration farm.

2. Others suggested getting a good Iowa or Illinois farmer who understood mixed livestock farming.

3. Others thought that a man with a wide and successful local farming experience, and having a known good family would be best.

This latter idea prevailed. A survey was then made of probable farmers with good family. Among several available men named, W. R. McGibney, a successful farmer living in the community, was unanimously chosen by the committee. This proved to be a most fortunate choice, for Mr. McGibney was a reliable and industrious farmer, as well as a good manager. His family consisted of a wife, and a son and a daughter, 16 and 14 years of age respectively, and all were fine cooperators. This family was progressive and all members thorough believers in improved and new methods of agriculture.

During the period the operator was on the farm there was sufficient income to send their two children through high school and college.

Planting The Shelter Belt

A shelter belt was planted in the spring of the second year of occupancy, 1928, on the north, northwest and northeast of the house and farmstead. From the house to the road north, there is a distance of 200 feet. Ten rows of trees 14 feet apart were planted. The rows were 600 feet long, east and west,

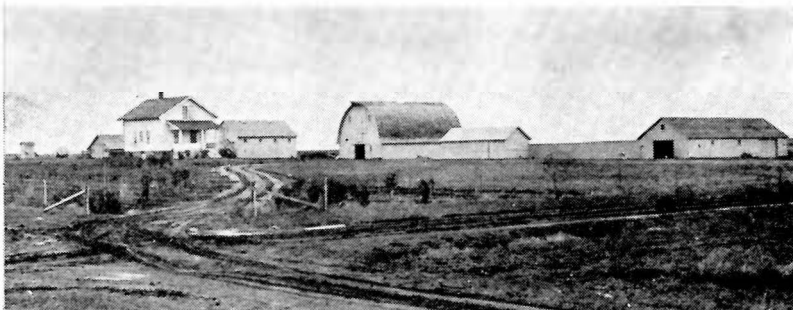


Fig. 9. In 1928 the shelter belt was started. Seedlings were planted on the north, northeast and northwest.

and the trees were planted seven feet apart in the row. They were planted this close with the view of moving every other one and transplanting them after a couple years of growth.

The kind of trees planted were as shown on the accompanying map, page 7. Beginning at the point farthest away from the house to the north, the outer row was caragana; then one row Chinese elms that were permitted to grow bushy without trimming; and the third row was planted to Russian olives. These three rows were planted with a view of forming a tight shelter. The next two rows were Chinese elm, next two rows ash, then one row of Scotch pine (*ponderosa*), one row red cedar and one row Colorado blue spruce.



Fig. 10. The above picture of the shelter belt was taken in 1936, after eight years of growth.

With the exception of the conifers (pine, red cedar and blue spruce), all of the trees planted grew well. A few red cedar and pine trees survived. All of these evergreens were replanted the following year and a special effort was made to obtain good plants. The first lot of evergreens had become mouldy in storage, and it was thought this may have been injurious and had something to do with the trees not growing. This time special effort was made to not only obtain good trees but also to shelter them from the south wind and warm sun. This was done by means of placing a wide board edgewise along the south side of the small trees. These small evergreen trees were also watered several times during the dry period. There was a little slope on the ground, and the current of water was permitted to run along the side of the plants by means of a small ditch. These little evergreens made a good start, but as the summer progressed, they gradually perished.



Fig. 11. This close up view of the trees shows the vigorous growth during the period 1928-1936.

A third try was made to get a start of evergreen seedlings, but it was likewise unsuccessful. There are a few of each kind of evergreens left, but none are very thrifty.

Two years later the grove of deciduous trees had grown to be good size and every other tree in the row was dug out and planted to the west of the house. These trees were planted 16 feet apart and all of them grew and did well. However, the transplanting caused a considerable set-back, but all of them grew, and they grew more bushy than did those of the original planting.

In addition to the trees planted, a considerable number of ornamental bushes were planted around and near the house. These were largely honeysuckle and lilac. They are hardy and also ornamental. They blossom beauti-

fully in the spring. The red berries of the honey-suckle remain on the bush during the summer.

The grove of trees has done well as is shown in the accompanying illustration, and this in spite of the most adverse weather conditions experienced in that area. Not only was the drought severe, but for two successive years, 1931-1932, the grasshoppers infested the grove. They completely stripped the leaves off the trees, and even barked the smaller limbs, yet in the face of this, the trees came back the following spring.

The deciduous trees and ornamental shrubs planted grew successfully. The ground was broken, disced and left fallow for one year before the trees were planted.

The planted grove was frequently cultivated to keep free from weeds. After a rain, the surface of this ground tends to pack. This was broken up by cultivation shortly after each heavy rain so as to leave the soil free to be aerated and for preservation of the moisture. The ground was also cultivated cross-ways to the slope to retain moisture.

Use Of Credit

When the operator took charge of this demonstration farm, it was mutually agreed that no chattel mortgage was permitted on any of the personal property in use on the farm, nor was it to be given or required by any of the cooperators.

It was acknowledged and mutually understood that as a matter of basic business principles in managing this demonstration farm, it was best not to have any personal and transient property mortgaged.

Stay out of debt if possible was the rule. If necessary to go into debt, pay as soon as possible, and at no time was there a mortgage given as security. The management was at all times free to operate without the restrictions that usually accompany mortgage procedure.

Types Of Farming

Before starting to operate, three types of farming were advanced as being suitable for a farm located in this region.

1. **Ranching and raising of beef cattle.** This would involve starting with grade cows and the purchase of a purebred Hereford sire, and probably a couple of purebred young Hereford cows with calf at foot, and in calf to a good sire. This would also necessitate the production of winter feed for the herd.

The farm is located 15 miles from any town and there is considerable native prairie land near, which could be rented. Nearby land could also be rented for payment of taxes. Using this for range and raising of winter feed-crops, such a project could be operated with little cash outlay.

2. Sheep ranching. This was another project that came very nearly being adopted. It could have been carried out with little additional hired help and cash outlay. The idea was to start with about 100 young ewes in lamb, and gradually increase the flock to about 300 ewes, or as many as could be conveniently handled. The young ewes at that time, 1927, could have been bought at a relatively low price. Since that time the prices of wool and lambs have been gradually strengthened, and the enterprise without doubt, could have been made an outstanding success.

3. Dairy and Hog Production. This involved using the herd of grade cows owned by Mr. McGibney, and for the college to supply three pure bred Holstein cows and one registered Holstein bull as foundation stock, and gradually improve the herd of dairy cows. This also involved having the college supply three pure bred Duroc-Jersey sows and one pure bred Duroc-Jersey sire with a similar objective.

All of the above contemplated projects provided for a poultry raising enterprise; although this project was not to be enlarged any more than could be taken care by Mrs. McGibney in addition to her many other duties.

McGibney was given his choice of the above three leading projects. The theory was that a man will do best with what he likes. Mr. McGibney had formerly produced market milk for the Chicago territory. He understood the milk production work, and the dairy and hog project was selected by him as being the most certain of results. He also chose the Holstein breed of cattle. Had the operator chosen either the beef cattle or the sheep project the College would have furnished a few head of foundation stock.

Operating Plans

The operator moved into the new improvements in the spring of 1928. There were many adjustments to be made in this connection. Fences on the home half-section were built. Arrangements were made for suitable yards. Board fences for yards and proper shelter were built. The permanent alfalfa fields were seeded. These fields of alfalfa became well established and produced hay for six years. Instead of reseeding, these alfalfa fields were plowed up and put into corn, cane and sudan grass. The loss of these alfalfa fields was a drawback to operating as a dairy farm.

When the project was started it included:

1. The keeping of about 12 grade dairy cows, a pure bred Holstein sire and accompanying young stock.
2. The keeping of enough brood sows (9) to raise one car load of hogs (65) each year and supply enough brood sows for the following year.
3. The sale of cash grain (wheat or flax) from one of the 55 acre fields in its appropriate rotation each year.
4. A flock of about 150 chickens.

According to climatic and crop conditions of recent years, and according to calculations, the 480 acres of land laid out into fields as indicated, would

produce about the needed nutrients for the different types of livestock, and the work could be taken care of by hiring a minimum amount of help. The kind of crops, both as to seeding, cultivating and harvesting, were planned so as to distribute the work over the year, and it was planned to have the cows freshen in the fall so as to have most of the milking during the winter as the prices of dairy products are usually higher at that time of the year and labor more plentiful.

The Farm Fields

As previously mentioned, the farm comprised three quarter sections, or 480 acres. The half section or 320 acres constituted the home farm. It was fenced with woven wire. Three 15 acre fields for calf, hog and night cow pasture, near the buildings, were likewise fenced with woven wire. The first two were seeded to alfalfa and the night pasture was seeded to sweet clover. In addition, 80 acres of the southwest quarter were seeded to Grimm alfalfa, making a total of 110 acres of land seeded to alfalfa, or nearly one-fourth of the farm. It was a splendid spring, 1927, and the alfalfa stand obtained was almost perfect. These alfalfa fields withstood the unfavorable crop conditions longer than any other fields in that neighborhood, and it was not until 1935 when the alfalfa winter killed, due largely to drought the previous year, and to grasshoppers eating the crowns too close to the ground.

In addition to the owned 480 acres, the 160 acres located immediately north of the farm buildings were rented for pasture and during the last eight years additional adjacent 160 acres were rented. Both of these tracts were rented at 11 cents per acre. This made 800 acres of use for the demonstration farm.

The accompanying diagram illustrates the planned use of the different fields. This plan of crop rotation was put into practice and calculated to supply the immediate needs of the livestock and also, to produce one field of cash crop, either flax or wheat each year.

Although the recorded previous years were good crop production years, it was evident after two years of farming operations here, that there were outstanding farming hazards in this region and that plans could not always be carried out.

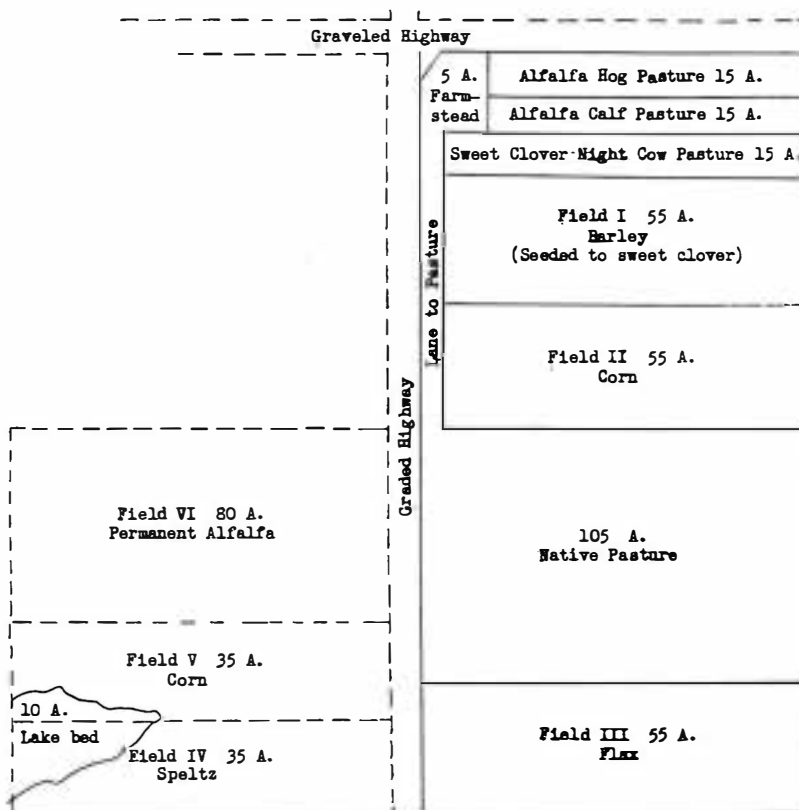


Fig. 12. The above diagram shows the fields as they were first planned. However, because of abnormal seasons it was found necessary to make some changes.

1928 ESTIMATED FEED REQUIREMENTS

| Stock | Rough Feed | Concentrates |
|----------------------|-------------------------------------|---|
| 15 milk cows | 3 tons hay=45 T. (Plus pasture) | 10 lbs. grain per animal per day for 8 months=36,000 lbs. |
| 15 calves | | |
| 8 yearling heifers | 1 ton hay=15 T. (Plus pasture) | 5 lbs. grain per animal per day for 8 months=18,000 lbs. |
| 7 2-year-old heifers | | |
| 8 horses | 1½ tons hay=12 T. (Plus pasture) | 10 lbs. grain per animal per day for 12 months=29,200 lbs. |
| 8 sows | | 15 bu. grain per animal for 12 months=6,700 lbs. |
| 60 pigs | | 12 bu. grain per animal for 12 months=40,320 lbs. |
| | Total hay=72 T. | Total grain=130,020 lbs. or 65 T. |

The above were estimates made of feed requirements in order that the production fields might be fitted to the annual needs. Due to variations in amount of production during the different years, the yields did not always correspond with estimated needs.

1928 PRODUCTION

| Acres | Rough Feed | Concentrates |
|---|----------------------------|--|
| 50 acres | | barley @ 23 bu. per acre=1147 bu.=55,200 lbs. |
| 25 acres | | speltz @ 30 bu. per acre= 750 bu.=35,520 lbs. |
| 35 acres | | corn @ 25 bu. per acre= 875 bu.=49,000 lbs. |
| 85 acres alfalfa @ 1.25T.=106.25 T. (2 cuttings) | | |
| | Total rough feed=106.25 T. | Total concentrates=139,720 lbs. or 69.86 T. |

Plus 160 acres native pasture.

Plus 15 acres alfalfa hog pasture which yielded some hay from furthest end of pasture.

Plus 15 acres alfalfa pasture for calves and pigs.

Plus 15 acres sweet clover night pasture.

Plus straw, silage, etc.

Plus 70 acres wheat cash crop @ 14 bu. per acre=1047 bu. cash crop.

Reserve Important

In the contract, two important provisions were inserted: 1. The building of a financial reserve, and 2. The accumulation of a feed reserve. The application of these two provisions proved to be very useful to the uniform and continuous operation of the different enterprises of the farm. In any farming region there are business, livestock, weather and crop hazards, and reserves of both cash and feed are important.

Building Financial Reserve. Shortage of operating capital for the farmers has been one of the most serious drawbacks to successful farm management. Good management presupposes operating capital. Good management also presupposes an understanding of how to properly fit in the many details of managing a farm, and the proper use of capital in the different farm operations and in the community. Operating capital helps one to do the right thing at the right time and in the right place. Ready money is an instrument of thrift if correctly used.

Part of the plan in connection with operating this demonstration farm was to gradually provide for an accumulation of a reserve fund which could be used in times of need, so as to keep the plant in uniform operation throughout the year, and one year after the other.

The contract provided that one-sixth of the gross cash income should be set aside for a cash reserve. During the years of operation, there was an average yearly gross income of \$5,542, and one-sixth of this amount was set aside as a reserve, or \$923.66 per year. The contract provided that this reserve money must be invested in the operation of the plant, and invested in the farm. This cash reserve proved to be a wise provision. There were years when there were partial crop failures, and it was necessary to purchase feed in order to continue uniform operation of the production plant.

Most of the reserve, under the circumstances, was used for buying feed grain. Without the accumulated reserve, it would have been impossible to have continued to maintain the production of the herd. In fact, when the unfavorable years came, most of the farmers living in that area were forced to go out of the farming business and sell their cows and other livestock. The reserve fund provided means and elasticity to the continued operations.

With a cash reserve the management was able to make feed purchases when prices were lowest, and when there was a nearby supply. The practice was to lay up a feed supply each fall. This feed reserve gave a sense of security for the winter, and it enabled the farm operator to stay out of debt.

With some cash or operating capital one can ask for services with a feeling that there is no imposition; for instance, veterinary services, machinery repairs and similar things that if not attended to promptly may prove to be costly.

The reserve fund was also used for maintaining the farm, such as building board fences around the barn yard, building concrete water tank, repairing and painting the buildings, planting trees, purchasing good herd sires, purchase of sheep to start the sheep enterprise. With a cash reserve on hand better purchases could usually be made; and much greater satisfaction to the operator resulted when cash could be paid for repairs and other purchases for keeping the farm in good repair and running order.

The reserve fund was kept in a local bank, which was closed on March 4, 1933. \$305.25 of the reserve was thus tied up and some of it lost. A new bank account was opened in another bank. Later, \$122.45 was paid out from the participating certificate in the closed bank in the form of dividends, leaving

a balance of \$182.80 in the participating certificate at the time this account was closed. At the close of the 10 year period, there was a balance of \$440.73 in the reserve fund, and the same was sent direct to Mr. Webber, the owner of the farm.

Feed Reserve. Plenty of feed on hand is important for any livestock farm, and it was of special importance in connection with the operation of this demonstration farm. Feed reserve may be of even greater importance than is a money reserve, for a reasonable amount of money may not buy feed. Feed shortage has been very acute, and in such times feed reserve is a blessing. The aim was to accumulate each summer and fall a year's supply of rough feed, and each fall the plan was to purchase at least sufficient grain to carry through the winter until the beginning of the pasture season. Usually enough rough feed was raised, but in most years it was necessary to buy much of the feed concentrates. In years of very low prices of rough feed, an effort was made to have an extra supply of good hay on hand. In that region and in most years it was possible to buy hay during the fall at a very low price. Grain could also usually be bought during the early fall at the lowest possible figure.

Some years the crop production season was unfavorable. In such years the feed reserve went low, and it was not easy to at once reestablish reserve feed. However, crop failures usually do not occur several years in succession. A crop failure was usually succeeded by a more favorable crop year, and the reserve feed again was established. In 1939 there was a feed reserve of about 250 tons of hay.

In connection with operating a stock farm, what is generally known as a crop failure year to an average farmer may not be a crop failure to the livestock farmer. In fact, what is known as a crop failure to a grain farmer, may be a source of extra amount of rough feed to a livestock farmer. This actually proved to be the case.



Fig. 13. Early in the operation of the demonstration farm it was found advisable to maintain large feed reserves. The large stack of prairie hay pictured above is typical of this practice.

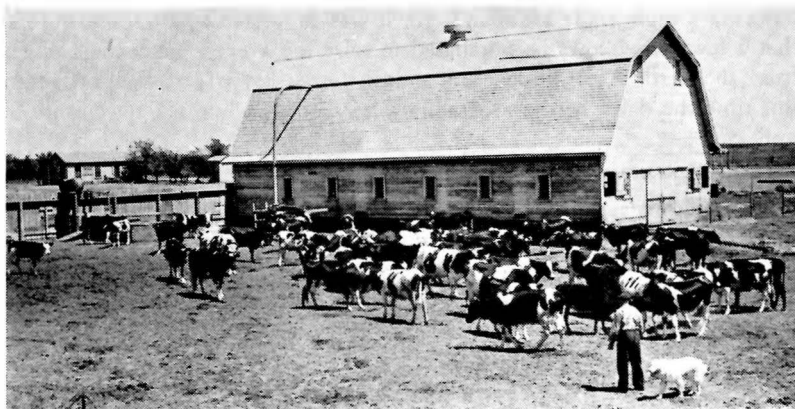


Fig. 14. A dairy herd of approximately 40 cows and 10 heifers was maintained. Whole milk was sold on the Pierre market.

Conditions Change Operating Plans

Additional Milk In Demand. Beginning in 1931, a series of years of light rainfall began, which made crop planning and crop raising difficult. The conditions accompanying these dry years became favorable for the multiplication of the grasshoppers. For the producers who did not have a feed reserve, nor financial reserve, it was difficult and in many cases impossible for them to continue their normal operations.

A milk shortage in that area ensued for some time, and it was necessary for the milk distributor in Pierre to ship in milk by train or truck.

The Pierre milk plant operator came to the demonstration farm management and made an examination of the existing milk producing conditions and facilities. He suggested that arrangements be made to increase the milk production on the demonstration farm. He found favorable conditions for the production of good and sanitary milk: 1. A herd of good grade dairy cows, 2. Sanitary barn, having concrete floor, gutters and mangers, and kept in a good sanitary condition, and a separate milk room with proper cooling facilities, 3. Tubercular tested cows and otherwise disease free herd, for the production of clean, healthful milk, and 4. Favorable conditions for increasing the output according to demand.

Accordingly, arrangements were made to sell the milk wholesale to a Pierre market milk plant. Following these arrangements, the production of market milk became the chief marketing enterprise for the demonstration farm. The price of market milk containing $3\frac{1}{2}$ per cent fat varied between \$1.75 and \$2.50 per 100 pounds, delivered at Pierre, and there was very little surplus milk at any time subsequent to this arrangement.

At this time, 1931, there were 14 cows in milk. With the reserve fund, arrangements were made to augment the herd. Though the policy was to

build up a high grade Holstein herd, it was suggested by the milk buyers, that a few Jersey cows be purchased to raise the average percentage of fat from the herd. Accordingly, four young Jersey cows were bought. From this time the dairy herd was gradually increased in number to 35 and 40 milk cows.

This necessitated the purchase of feed. The reserve fund came in handy. With the purchase of this needed feed and additional cows, the gross income was also increased, and the nearly exhausted reserve fund was soon rebuilt.

Although this assumed milk marketing plan instead of general farming plan, worked out well, there were some problems accompanying the change of methods:

1. The demonstration farm was located 15 miles from Pierre, and some means of conveyance, other than team and wagon, for the milk was necessary. A truck was purchased for milk hauling.

2. It was necessary to obtain additional help. Two men were hired. It was necessary for the help to get up early in the morning so as to get the fresh milk cooled and delivered to the milk pasteurizing and bottling plant the same morning.

3. It was also necessary to give additional emphasis to sanitation of the help, utensils and surroundings.

Hog Enterprise Terminated. Aside from a few hogs to supply pork for the home, the hog project was terminated in 1931. A hog is unable to tide over a feed shortage period as well as certain other farm animals. He can not thrive and be finished on rough feed, such as is produced most years in a semi-arid region. The residual feed from a dry year is chiefly coarse feed. The hog requires most of his nutrients in the form of concentrates or grains. Up to a weight of about 100 pounds, pigs will forage on alfalfa and other green pasture, with very little grain. Such hogs may be sold as feeder pigs, and there is a demand for such pigs at a premium. Pigs raised in this manner are thrifty and sturdy, and in a semi-thin condition. They are well suited to the needs of feeders in the corn belt. However, realizing that the market-milk enterprise was to be emphasized, and that there would be no surplus skim milk for the pigs, it was decided to give up the hog raising project entirely.

Termination of Cash Crop Plan. Previous to starting the demonstration farm, records showed that wheat and flax had been successfully raised over a period of years, so the laying out of the rotation of fields included the production of flax or wheat as a cash crop in one field (55 acres) each year. The risk involved in raising these cash crops proved to be great, and it was decided to produce, instead, as much coarse feed as possible for the dairy herd, such as sorghums, sudans and oats for hay. This latter plan fitted in with the plan of increased milk production, and it was followed.

Sheep Project Started. The conditions in that region were favorable for sheep raising. It seemed best that emphasis be placed on some additional

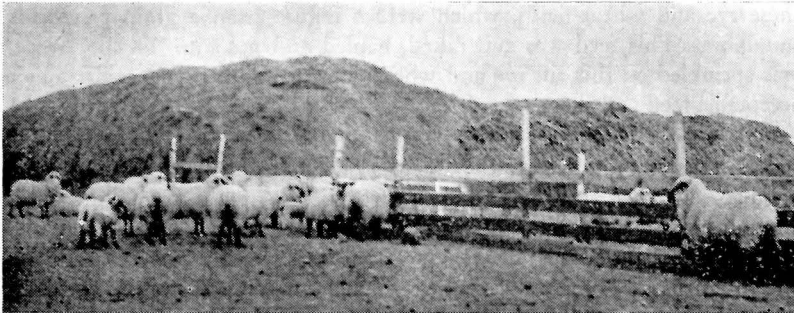


Fig. 15. The sheep project on the farm was started when it was found advisable to conclude the hog project.

enterprise besides the dairy. Then too, the farm operator and wife were not so strong physically as they were some years ago, and some thought had to be given to creating a type of farm work which might be carried out with less strenuous labor and shorter hours than are required in the operation of a dairy farm. Besides, the son and daughter were no longer at home to help with the work. The sheep project was thought to be the answer to this labor problem.

This was done by the purchase of a few western bred ewes, two Hampshire ewes and a pure bred Hampshire ram, with the view of building up a high-grade flock of Hampshire sheep. This sheep enterprise has succeeded very well. At the time of the original purchase, the price of sheep was relatively low. Since then, the price of sheep has gradually strengthened and the flock has increased so that at the present time there is a flock of about 75 young ewes. With this number of ewes now in the flock, it will not take long to develop a flock of 200 ewes, or even more. Such a flock, under average economic conditions will contribute materially to the support of a family; and in such case, the dairy enterprise may be gradually decreased to suit the operator.

Special Problems. For several seasons hot, dry weather and grasshoppers prevented oats and barley from fully maturing, and to a grain farmer, these crops would have been a complete loss; but in this case, these crops hit by unfavorable conditions before maturity, were cut for hay and made rough feed. Such conditions provided a needed feed supply and helped to establish a rough feed reserve.

In the unfavorable crop production years, it was necessary to make an extra exertion in order to obtain enough rough feed. For instance, one year an extensive neighboring grain farmer seeded a large area to rye and wheat. Due to unfavorable weather conditions, these crops were not harvested. For a slight trade-in value of calves, permission was obtained to cut the best part of

these rye and wheat fields, which were a failure from a grain producing standpoint. This feed was cut, raked, hauled and put into the silo. Water was sprinkled on this cut rye and wheat, it was tramped well, and it made acceptable feed and silage.

Naturally, in unfavorable crop years, much of the seeded crop grew up to russian thistles and other similar weeds, which ordinarily were considered a liability, but when these weeds, together with some crops, were cut, hauled and put into the silo while still practically green, they made fair feed. At any rate, such feed served the purpose. The silage was fed to the cows during the late summer and fall and the silo was refilled with similar kinds of feed the same fall.

The above practice did not follow the plan as laid out, but it was a way of self-preservation. The reserve feed on hand, plus what rough feed could be gathered in accordance with that previously mentioned, provided rough feed enough for sustaining the entire dairy herd during the unfavorable periods.

Some neighboring farmers did not take pains to conserve feed in the above manner, and they were forced to sell their livestock, and whatever was raised became a complete loss. However, for those who made this extra effort to scrape up this feed, the herds were saved and the plant continued in operation.

During these dry years weedy flavor in the milk was one of the difficult problems to handle. The weedy flavors were especially troublesome during the early spring when wild onions and garlic were plentiful, and somewhat troublesome during the whole summer.

To take the cows off pasture entirely was hardly practicable. It was found that the best way of handling the weedy milk problem was to take the herd of cows into the yard about three to four hours previous to milking, or about noon. During this time the cows eliminated the weedy flavor from the milk, or from the system of the cows. So far as known, this weedy flavor is not injurious to the health of persons consuming the milk, but they are very objectionable to the milk consumers generally, and if any such milk is marketed, consumers make serious complaints.

When the emphasis shifted to the production of market milk, the calves were sold for veal, with the exception of the heifer calves from the choice producing cows.

Inventories. Each spring an inventory was made of the land, improvements, feed, implements and livestock. However, there was a gradual decrease in the value of the land during the 10 years, due largely to unfavorable agricultural conditions during this period. In 1927 good farm land generally, was priced at about \$20 per acre, and now, in 1940, land in that vicinity may be purchased for about \$5 per acre. In the summation table, interest on all investments has been calculated. The value of the buildings was decreased two percent per year. It will be noticed that the value of livestock inventory dropped

INVENTORIES ON THE WEBBER DEMONSTRATION FARM—1929-1938

| | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 |
|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Livestock | 3,548.00 | 3,935.00 | 3,200.00 | 2,381.00 | 2,386.00 | 2,664.00 | 3,014.25 | 2,984.25 | 3,158.25 | 3,625.00 |
| Implements | 3,506.50 | 3,321.00 | 2,977.00 | 3,163.00 | 2,703.50 | 2,412.00 | 2,170.00 | 1,930.00 | 1,741.00 | 1,561.00 |
| Feed | 93.00 | 230.00 | 300.00 | 395.00 | 901.00 | 555.00 | 75.00 | 2,100.00 | 350.00 | 310.00 |
| Total | 7,147.50 | 7,486.00 | 6,477.00 | 5,959.00 | 5,999.50 | 5,631.00 | 5,259.25 | 7,014.25 | 5,249.25 | 5,496.00 |

markedly in 1932. This was due to dropping the hog project during the previous year, and consequent sale of hogs. There was a gradual increase in both the number and quality of cows, but at this time the market milk project was begun, and only the heifer calves from the very best cows were raised. The rest of the calves were sold as veal, so the number of young cattle was on the decrease.

In that region there is very little market for dairy cattle, so the inventory price of cows was kept about the same, although the production ability of each cow was gradually improved. The value of each cow was based on the value of dairy cows in this and in neighboring locations. The amount of feed on hand each spring also varied some. The sheep project was started slowly in 1932 and affected the livestock inventory very little for several years.

The Ten Year Business Summary

Gross Income. The following table shows the summary of the gross income for each of the 10 years, as well as of the total for the 10 years. From this it will be seen that milk and cream brought more than four times as much of an income as all of the rest of the income combined.

There was a gradual increase in the income of dairy products, starting out in 1929 with \$1,915.15, and the last year, 1938, this income had gradually increased to \$7,686.00. The large and sudden decrease in the hogs and poultry income is due to the termination of the hog project in 1931. The decrease in income from grain is due to the termination of the cash grain production, and substituting therefore the raising of roughage for the dairy herd.

The increase in the sheep, wool and miscellaneous columns is due chiefly to the increase in the lamb and wool crops.

Gross Expense. The gross expenses show a gradually small increase over the 10 year period, with the exception of the year 1932. That year the economic situation was uncertain. Prices of farm products were extremely low and farm labor was obtainable at a lower cost.

The receipts above cash expenses run fairly uniform, with the exception of 1934 and 1935. In spite of a good feed reserve on hand, the crop failure of 1934 and extremely short crop of 1935 made it necessary to purchase considerable feed, and largely explains the low receipts above cash expenses.

In connection with the apparent high receipts above cash expenses, it should be stated that the family and hired help living expenses are not included in the expenses of operation, consequently these living expenses were borne by the operator. These expenses—board, washing, house expenditures and other incidentals for the family and help—are of no small item in the total for each year.

The milk, cream, garden products and much of the beef, pork and lard were produced on the farm, and used in the household without charging it as expenses.

WEBBER FARM INCOME RECORD

| Year | Dairy (Mily,Cream) | Hogs, Poultry (veal included) | Sheep and wool (including miscl.) | Grain Sales (Wheat,Flax) | Total Income |
|---------------|-----------------------|----------------------------------|--------------------------------------|-----------------------------|-----------------|
| 1929 | \$1,915.41 | \$2,022.67 | 8.50 | 654.67 | 4,601.25 |
| 1930 | 2,074.53 | 2,118.48 | | 245.33 Hail 259.52 Ins. | 4,697.86 |
| 1931 | 2,956.56 | 1,125.22 | | 63.00 | 4,144.78 |
| 1932 | 2,955.35 | 159.30 | | | 3,114.65 |
| 1933 | 3,399.36 | 593.99 | 15.19 | | 4,008.54 |
| 1934 | 4,621.66 | 448.12 | 10.20 | | 5,079.98 |
| 1935 | 5,161.06 | 269.63 | 20.00 | | 5,450.69 |
| 1936 | 6,506.46 | 312.50 | 673.14 | | 7,492.10 |
| 1937 | 7,616.56 | 130.22 | 728.02 | | 8,474.80 |
| 1938 | 7,686.00 | 205.05 | 470.61 | | 8,361.66 |
| Ten Yr. Total | \$44,892.95 | \$7,385.18 | \$1,222.52 | \$1,925.66 | \$55,426.31 |

WEBBER FARM EXPENSE RECORD

| Year | Feed and Seed | Labor (hired) | Gas and Oil | Miscellaneous re- pairs, land rental veterinary, etc. | Total Expense Cash | Receipts above cash expanse |
|---------------|------------------|------------------|----------------|---|--------------------------|-----------------------------------|
| 1929 | 402.50 | 575.70 | 500.00 | 831.79 | 2,309.99 | 2,291.26 |
| 1930 | 873.60 | 616.80 | 593.97 | 678.78 | 2,763.15 | 1,934.71 |
| 1931 | 1,428.76 | 314.89 | 271.38 | 610.34 | 2,625.37 | 1,519.41 |
| 1932 | 411.50 | 368.65 | 426.54 | 435.08 | 1,641.77 | 1,472.88 |
| 1933 | 1,260.80 | 424.50 | 506.38 | 419.31 | 2,610.99 | 1,397.55 |
| 1934 | 2,696.39 | 466.84 | 545.70 | 589.12 | 4,298.05 | 781.93 |
| 1935 | 3,341.70 | 405.91 | 592.42 | 495.83 | 4,835.86 | 614.83 |
| 1936 | 3,762.85 | 583.03 | 810.10 | 762.78 | 5,918.76 | 1,573.34 |
| 1937 | 4,385.05 | 718.61 | 841.99 | 682.09 | 6,627.74 | 1,847.06 |
| 1938 | 2,516.03 | 1,386.20 | 919.57 | 970.75 | 5,792.55 | 2,569.11 |
| Ten yr. total | 21,079.18 | 5,861.13 | 6,008.05 | 6,475.87 | 39,424.23 | 16,002.08 |

Family Labor Income. As has previously been stated, the owner, Mr. Webber, paid the taxes. There is also interest on land and buildings investments which, properly, are chargeable to the income from the farm. These expenses have been accounted for in the above table. Not including the interest and taxes as expenses, the average family income was \$1,600.21. Although the taxes and interest were not actual outlays of money from the demonstration farm, they should be considered as items chargeable to the farm operations. A farm should make interest on investments and pay taxes in addition to making a fair living for the family. When considered from this point of view, the family labor income is low, and during 1934 and 1935

there was a loss. However, the milk, poultry products, some meat and garden products were supplied by the farm.

The average family labor income for the 10 year period was \$368.31, which is very small reward for the labor of both wife and husband, and during the non-school months, for labor of son and daughter.

SUMMARY SHOWING NET FAMILY LABOR INCOME

| Year | Receipts above cash expense | Tax | Receipts above cash expenses minus tax | Interest on Investment (Buildings, Land, Imple-ments, Livestock, etc., as per Inventory @ 5% | Family labor income |
|-----------------|-----------------------------|--------|--|--|---------------------|
| 1929 | 2,291.26 | 288.00 | 2,003.26 | 1,066.74 | 936.52 |
| 1930 | 1,934.71 | 299.12 | 1,595.59 | 1,057.68 | 537.91 |
| 1931 | 1,519.41 | 205.68 | 1,313.73 | 1,151.20 | 162.53 |
| 1932 | 1,472.88 | 208.31 | 1,264.57 | 1,087.61 | 176.96 |
| 1933 | 1,397.55 | 219.09 | 1,178.46 | 1,047.95 | 130.51 |
| 1934 | 781.93 | 111.61 | 670.32 | 1,037.98 | -367.66 |
| 1935 | 614.83 | 128.16 | 486.67 | 1,007.19 | -520.52 |
| 1936 | 1,573.34 | 115.20 | 1,458.14 | 979.96 | 478.18 |
| 1937 | 1,847.06 | 133.62 | 1,713.44 | 1,055.71 | 657.73 |
| 1938 | 2,569.11 | 122.51 | 2,446.60 | 955.64 | 1,490.96 |
| Ten Yr. Average | 1,600.20 | 187.13 | 1,413.08 | 1,044.77 | 368.31 |

Summary

1. In this region, central South Dakota, on the Webber Demonstration Farm, livestock farming was demonstrated to be successful. This involves the following chief factors:

- a. Good supply of water
- b. Grazing land
- c. Supply of silage for present feed and for reserve feed
- d. The raising of rough feed for winter use.

The best common coarse feed crops produced on the demonstration farm were Sudan grass, low prussic acid cane, oats for hay cut just before ripe, alfalfa and prairie hay which, if not produced in sufficient quantity on home farm, could usually be purchased each fall at a low price. Alfalfa proved to be an excellent crop after a stand is obtained.

2. The kinds of livestock selected for the demonstration farm were dairy cattle (Holstein), sheep, hogs and poultry. A beef cattle project for raising feeders also would have fitted in well. Hogs did well on alfalfa up to the feeder stage; after that, increased feed concentrates were required and that region did not prove to be dependable for feed grain production. The sheep project nicked nicely with the dairy project. Sheep do well on short grazing

and the price of wool and lambs have been good and stable during this ten year period, lambs selling between 6 to 10 cents per pound; wool between 18 to 30 cents. Likewise, the price of dairy products have been fair and reasonably stable during the 10 year period, milk selling between \$1.75 to \$2.50 per 100 pounds.

3. Around the farm home the standards of rural living are formed. That was one reason why Mr. Webber, the owner, said: "Build such improvements as any good farm family should have for good living and for convenient farm operation." There was an investment of about \$14,000 in farm improvements. They were good, practical improvements, but not extravagant. The house cost \$3,947 without plumbing and provided comfortable living quarters for the operator, his wife, two children and two hired men. The barn cost \$3,638, and provided good practicable accommodations for the sanitary production of milk. The granary, poultry house, hog house and other small buildings were built to furnish the economic needs for the place.

4. One important problem emphasized in the management of this farm was sufficient capital investment, sufficient operating capital, and sufficient capital for the permanent investments. It was believed farming should not be undertaken with too low investment and little or no operating capital. Too little available money has proven to be the route to low rural living standards and to inadequate and improper farm management. The farming business must bring such returns as will enable the operator to earn a fair interest on proper investment and provide a good American standard of living. Farming is a business and a mode of life. As an operator of a business unit with an investment of between \$20,000 to \$30,000 there must be good management back of the various farm enterprises; management that includes some experience and good judgement in the expansion and contraction of money and credits. In the end, farming is like any other business, it must pay or it cannot endure. Neither can the standards of rural living and rural education be maintained if the family income is not sufficient to meet the exigencies of good wholesome Christian living.

Considering that the operation of the Webber farm did not have to pay taxes, nor the interest on the buildings and land, the income accruing from operating the farm was satisfactory, but if the operator had been compelled to pay these taxes and interest on all investments, then the income to the farm family would have been too low for good living.

This demonstration farm had dairying for its major project, chiefly because of its nearness to Pierre offering a good milk outlet. Generally speaking, this country being in a short grass area, also is well adapted to the raising of stock cattle and sheep.