

## 1959 Annual Report Introduction

BY RAYMOND J. DOUGLAS  
Superintendent

Our efforts to develop and improve the Agriculture in western North Dakota were stepped up in 1959. The most important and far reaching individual program that our efforts have been geared to is the improvement and expansion of livestock feeding, with the feeding out of beef cattle as the largest and most important phase of this program.

We must never lose sight of the fact that this enterprise is part of balanced agriculture and probably will only reach its greatest importance where it fits into the over all program.

The agricultural program is not complete in western North Dakota until our operators in general have a balance between small grain, livestock, and grass and legumes. This means either feeding the grain produced to the livestock raised on the farm or ranch or when the feed grain produced exceed the amount needed, either selling the grain not utilized or buying additional livestock to use up all feed grain raised.

This program of feeding out the livestock raised, will double the income from the cow herd for those who normally sell their calves. Those who feed out market cattle will augment their income more than those who market their feed grain as a cash crop.

An over all increase in our farm income is not going to be from one or two improvements in the farming operations but by new enterprises and many improvements which taken together substantially augment the farm income. The day of the easy dollar is gone and the operator who saves where ever he can will be the one who is successful. The new enterprises and improved organization can be extensive and in our work at the Dickinson Experiment Station we can do much to point the way in this direction.

Our overall program at the Dickinson Experiment Station is essentially as follows:

### LAND

Two more payments are to be made on the SW1/4 of Section 32-140-96 which was purchased from Joe A. Kostelecky in 1957. This land

was purchased for \$12,000.00 and to date payments have been made in the amount of \$7500.00, with two payments in the amount of \$2250.00 each to be made on or about April 1, 1960 and April 1, 1961. These payments will be made from the oil lease payments of 25 cents per acre on 643.78 acres of Station land leased to the Atlantic Refining company, with the difference being made up by the income from sales of grain and livestock.

Our over all development program calls for an increase in the acreage of range land in the Badlands adjacent to Pyramid Park. We hope to secure this land through the Forestry Service in the not too distant future, which of course must also have the approval of local grazing Ass'n.

We will need about 480 acres additional which will give us a total of about 1120 acres of grazing land.

This will provide adequate grazing for 100 head of cows and their calves from between June 20 and July 1 to about October 1 each year. This will make it possible to divide our cow herd into three groups during the breeding season with all three groups in the same range area. As we are operating presently two-thirds of the herd is grazed in the Badland and one-third on our land at the Dickinson Experiment Station headquarters. Previously we rented the acreage for grazing the one-third of our herd not in the Badlands; however, beginning in the spring of 1959 this was no longer necessary due to an increase in the acreage set aside for grazing at the Station. This additional range is essential for the best type of herd improvement and bull testing program.

## IMPROVEMENTS

During 1959, we painted most of the buildings on the Livestock Farm but did not include the hog house, the bank of twelve cattle lots and sheds first constructed and the new lots completed late in 1959. In 1960 we plan to finish the painting of buildings and lots on the Livestock Farm and paint all buildings on the Agronomy Farm.

New sheds and lots were constructed for the cow herd in 1959. This included a line of sheds 200 feet by 20 feet open on the East, and three lots 60 feet deep, with two of these lots being 70 feet wide and the other 60 feet across the front. This gives us adequate space for feeding at least 100 at one time along the front. The feed trough which is 28 inches wide, 19 inches deep, with a 32 inch back and 6 inches off the ground is proving very satisfactory. The opening between the front of the trough and neck bar is 19 inches.

These lots are equipped with automatic waterers. The animals are taken out for weighing, etc., through doors in the rear of each shed, into an alley, which leads to the corral and scale.

New sheds and lots extending 200 feet North of the hospital barn. Were constructed at a cost of approximately \$2,000.00.

Electric fences were put in where new fences were needed. In every case the electric fence was entirely satisfactory, and held animals better than the conventional type of fence. The most satisfactory type of electric fence is furnished current by a fencer which operates from a 110 volt current through a power line transformer. Fences of this type proved satisfactory when used to hold steers in small lots for early

spring grazing. Few if any conventional fences could not be replaced by electric fence.

In 1959 we should increase the size of our holding pens at Pyramid Park since we do not have adequate room for sorting and loading out cattle. This was a 1959 project which did not get completed on schedule.

Some improvement and repair work should be done at Pyramid Park which includes;

- Construction of a new dugout and dam to guarantee an adequate water supply for the herd at all times. Three years ago when the existing water hole was enlarged it appeared that it would provide adequate water for our herd in any grazing season. This year was dry and the water supply became so low towards the end of September, that it may have reduced the gains the last month. Due to the depth we would need to drill for water, a dug out would be cheaper than a well and we are sure would provide an adequate H<sub>2</sub>O supply.
- Shingle the scale house and storage shed along with doing some work on the foundation which has cracked in several places. This building also needs painting in 1960.
- Repair work also needs to be done on the cabin, which includes sealing up the building on the inside with a mouse proof composition board, repairing the floor, walls and painting the outside.

The old barn on the Livestock Farm was razed in 1959. Due to the height of the roof and lack of equipment Kolling Construction Company was hired to take the roof off which cost about \$200.00. The stalls were taken out and put in the hospital barn. Our men took down the sides and ends in-tact and moved them out into the hay lot for use later on. The sides were split, the ends cut down and the material used for the back and ends of the new cattle sheds.

The old foundation and much debris was pushed into a hole on the spot by a dozer at the time the area was leveled for landscaping. The yard was landscaped and according to plan planted to trees and grass. This was one of the most significant changes we have made in the Dickinson Experiment Station up to the present.

An underground water line over 200 feet long was laid below the frost line to service the waterers installed in the new cattle lots. These waterers include extra cups for watering animals held in the pasture adjacent to cattle lots.

Dry lots on concrete for summer feeding of pigs were increased from two to six in 1959. This also included finishing the shed on the first bank of two lots put in during 1958. These lots include automatic waterers, gutter, cess pool and tile drainage from the cess pool.

Each lot contain 160 sq. feet adequate for 10 fattening pigs. These lots are as satisfactory and economical for feeding out pigs as any type dry lot or pasture in use today. They were constructed at a cost of about \$100.00 per lot and should require little service for many years.

New lots for growing out pigs on concrete.

The hospital barn was completed, with stalls being put in, the hospital room sealed up, and a cattle squeeze installed. The stall for diseased animals was completed, and equipment including a hoist add to aid in post-mortem examinations.

The five pasture lots for swine west of the main hog house were re-built using a 42 inch woven wire in 1959. This eliminated the pigs from getting mixed up in the lots unless by chance they happen to work under the fence. The lots across the alley on the East side of the hog barn should be rebuilt in 1960.

The check dam which diverts water into the ditches and dikes on Section 5 should be raised three to five inches in 1960, this will force more water into the irrigation project. The height the dam can be raised will depend upon the recommendations of the Soil Conservation Service. This change should include from one-to-two more acres in the irrigation project.

A new office will be built at the Livestock Farm. This will be constructed at the East end of the granary, and be about 10 feet wide, with the length the width of the building. The portion of the building remaining will be used for storage of livestock supplies.

Plans are being considered to increase the size of the grain storage bins at the hog house and install a second hand grain elevator leg to fill the bins. Present storage is 650 bushels which if this change is made will increase the capacity to 1000 bushels.

A new four stair furnace was put in the residence at the Livestock farm at a total cost of about \$500.00

No settlement has been reached with the Atlantic Refining Company for the surface damage which resulted from drilling one oil well and installing oil tanks on NW1/4 of Section 32-140-96. A final settlement must be made with regard to this in 1960.

The concrete foundation for a machine shed 40 feet by 70 feet was put in during the fall of 1959. Due to the comprehensive building program in 1959 the machine shed we planned to build was delayed except the foundation until 1960. Some of the lumber needed especially dimension material to be used was taken out of the old barn razed in 1958 and 1959.

We have an appropriation of \$25000.00 for the construction of a grain elevator at the Agronomy farm. Plans were initially drawn, which resulted in bids in excess of the appropriation; hence the plans had to be re-worked to keep in line with the money available.

This will also include a scale, hoist, man lift, leg and distributor. Plans are in progress to move the seed house, we have at the present time, up to the side of the elevator and make additional cleaning, work and storage room available. The new plans for the grain elevator

should be completed about the middle of February so that the bids can be let about March 1, 1960. Construction of the new elevator should begin early this spring.

## MODEL PROJECTS

The model poultry flock was maintained again in 1959. It was handled as we believe a farmer or rancher should handle his flock with regard to size, feeding and management. It may be that the flock on the averages farm or ranch should be even larger than this one with commercial poultry production on such a large scale.

The model garden was continued again in 1959, with improvements in the project for 1960.

About 100 spruce trees were planted on the Station 1959. This consisted of new plantings and replacements in the plantings already started. Replacements will be made when needed again in the spring of 1960.

A project in cooperation with the Extension Forester will be started in 1960 with the planting of three acres of evergreens. These will consist of spruce, cedar, fir and pine trees to determine hardiness of the different species in Western North Dakota.

Renovation of the shelter belt on the Livestock Farm will be continued in 1960.

The landscaping of the site where the old barn was will be carried further in 1960 by replacing dead and dying trees and making additions where needed. This will do much to improve the appearance of the Livestock Farm as a whole.

Renovation of the old shelter belt on the north side of farmstead at the Agronomy Farm which has been delayed for several years will be started in 1960. This will include removing the deciduous trees re-working the tract and adding some spruce, cedar, along with a row of shrubs as a snow trap will make this work a complete shelter belt in itself.

We believe there is no substitute for using a plastic cover on a trench or bunker type silo or where silage may be pile on the ground. To this end we cover our silos the way believe it should be done when the proper material is available which consists of:

- Covering the silage with plastic the same day the filling is completed.
- Using 2 mil plastic of whatever width is available with from 3 to 6 inches lapping.
- Covering the entire area of the plastic with about 2 inches of heavy material like, manure, well rotted straw or a mixture of these with dirt.

- Covering a trench silo with plastic at the Dickinson Experiment Station.

## INFORMATION

An effort is made to acquaint farmers and ranchers with the various programs being carried on at the Dickinson Experiment Station. To this end material was release on the radio, TV, through new articles, tours, classes, and field days. When projects are completed they are closed out and released in the Experiment Station Bimonthly.

## WEATHER RECORDS KEPT FOR THE DEPARTMENT OF COMMERCE INCLUDE:

- Maximum, minimum and 7 A.M. temperature reading each day.
- Total wind velocity for each 24 hour period.
- Free surface evaporation between April 1, and October 1 each year.
- Daily precipitation, snow fall and depth of snow on the ground.
- A graph of the daily temperature changes as they occur and changes in soil temperature at a depth of 8 inches.
- Yearly weather report.

Weather report released in 1959.

On occasion the question is asked which weather report originating in Dickinson is official. With regard to our records the Meteorologist in Charge at the Weather Bureau, U.S. Dept. of Commerce has the following to say.

"The weather records made by the Dickinson Experiment Station are part of the network of the cooperative stations used over the United States by the Weather Bureau for Climatological studies and many other uses. The records from the Experiment Station are especially important because the instruments have a very good exposure, observations are made conscientiously at the same time that readings are made at the other cooperative stations and the instruments have been at the same place for many years. Evaporation readings are made at only six stations in the State with Dickinson and Mandan having the longest records.

The records from the airport are more for current weather for pilots and tourists."

[Precipitation Table](#)

[General Weather Information](#)

## GENERAL INFORMATION

The Dickinson Experiment Station has been selected as the only bench mark weather station site in North Dakota. The climatological bench-mark program required very careful selection of some 50 observing stations in the United States to form a network whose continuous records serve in the extremely important business of providing firm measures of climatic characteristics and trends of change. It is obvious, of course, that the longer these records are the better. Further, their quality in respect to accuracy and unbroken continuity must be of the best. Their value decreases, however, with each change in instrument location. On all of these scores, Dickinson's record is among the best in the country.

### LIVESTOCK PROGRAM

Improving the cow herd.

- Beef herd wintering trials are being continued with a normal ration of 22 pounds of hay or an equivalent being fed to each animal. This year due to a shortage of feed we are feeding 12 pounds of hay, 12 pounds corn silage and 5 pounds of oats straw. The straw replaces an equal amount of hay by weight.
- At the present time we have 102 head of breeding cows includes 6 heifers which have been on the moldy silage trial. We aim to keep at least 96 head of breeding cows as a minimum.
- Heifers put back in the breeding herd are selected from the top half of the heifer calf crop by weight at weaning. The heifer calves in this group to be retained are selected for thickness, type, quality, conformation and breed character.
- The cow herd is culled each year for the defects listed until our replacement animals have been used to keep the cow herd up to the desired numbers.
  - Disease such as cancer eye, pink eye, lumb jaw, etc.
  - Poor producers - those producing poor quality and light calves.
  - Dry cows.
  - Wild cows and those with undesirable markings.

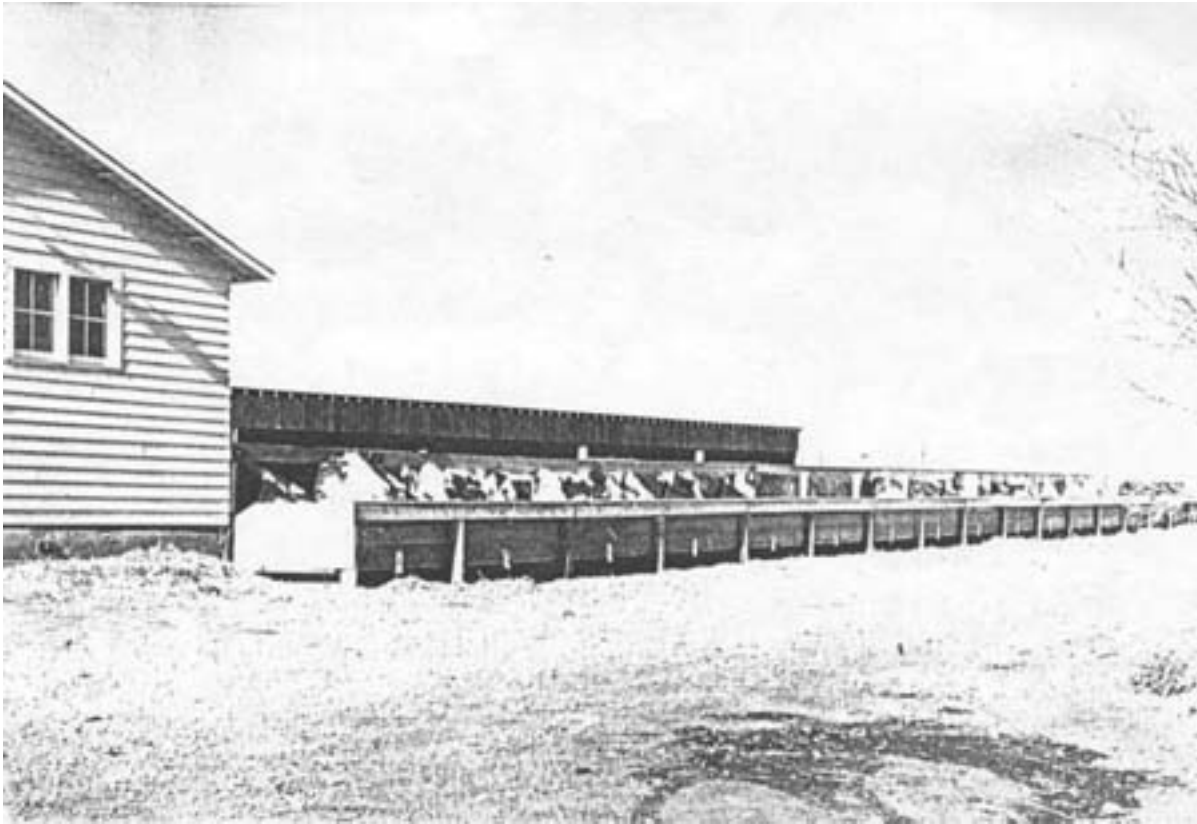
- A bull testing program with one bull calf being added to the herd each year. The bull calf is fed out the first winter to determine by his gaining ability whether he should be added to the herd sires being used. One third of the cows divided on a careful cross section of the herd are bred to one bull until the growth qualities of each bull's calves are determined. Bulls siring light poor quality calves are eliminated at the earliest possible date.
- In 1958 we had a real problem in eliminating listeriosis from our cow herd, which was first discovered because of several abortions occurring during the winter. Two vaccinations the first year and one to follow each year will completely eradicate the disease. Listeriosis and the resulting Mucosal disease that developed in our calves ruined our calf crop for 1958 which we attempted to feed out during the winter and summer of 1959.

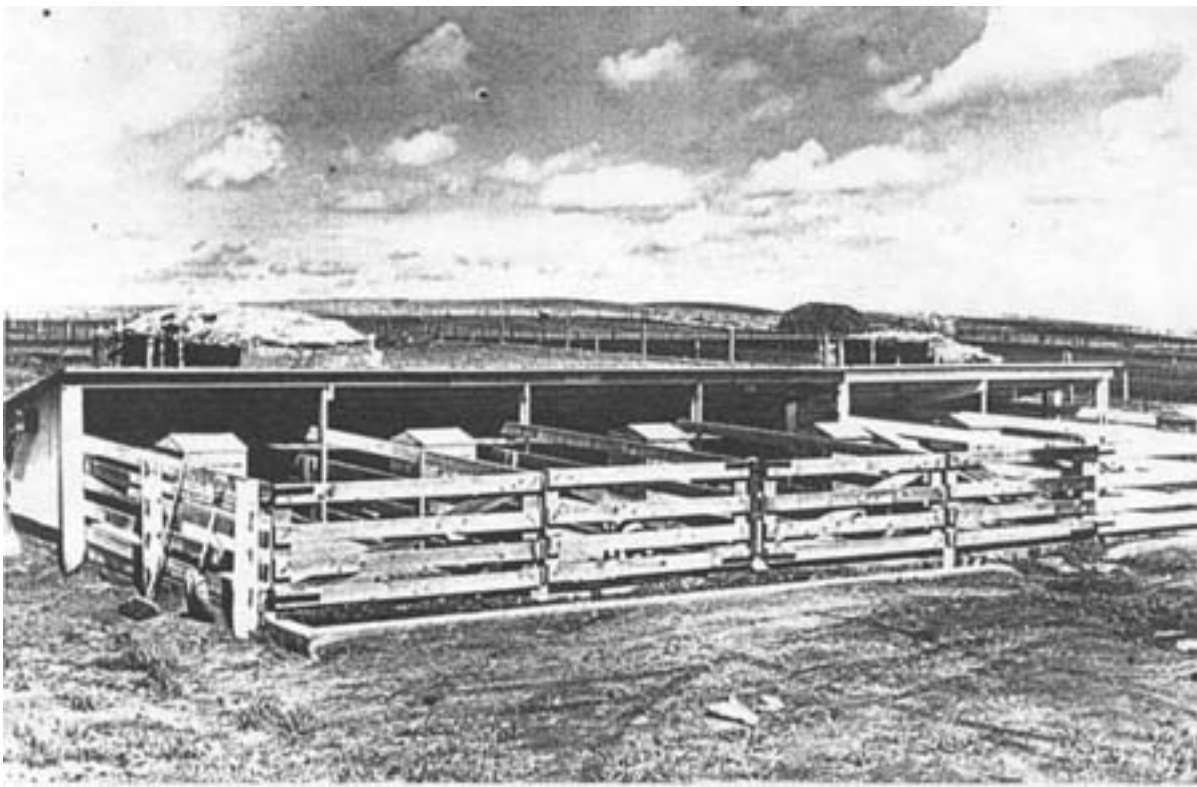
Growing out and fattening beef cattle for market. The following projects are being carried on in an attempt to provide a guide for our livestock men in feeding out the cattle they raise for slaughter where such a program fits into their operation. It is an aid in developing one of the most important enterprises ever brought into being in North Dakota.

- Roughing calves through the winter to gain from .5 to 1 pound per day. To be followed by one of the following.
  - Dry lot fattening following the wintering period, without being turned out on grass.
  - To be grazed on early spring and good summer pasture followed by dry lot feeding.
- Feeding calves in dry lot from weaning to slaughter.
  - To include steers, heifers, and lots of mixed calves.
  - Bred and open heifers.
- Roughage rations to be used, with corn silage being the base since it is the best yielding and most palatable roughage in the Western two-thirds of North Dakota.
  - Limited grain rations to be used.
  - Use of dried beef pulp in grain rations.
  - All additives showing promise to be tested with roughage rations.
  - Various pelleted feeds to be tried along with the corn silage.
  - Quality feeds to be checked which includes:
    - Moldy silage and its effect on both fattening and breeding cattle.
    - Late maturing corn as compared to corn recommended for the area.



- Grazing off corn as compared to the corn being harvested as silage and fed in dry lot.





## SWINE PROGRAM

- Breeding program
  - Improve the gaining ability of our Yorkshire herd by a breeding and selection program. The gilts saved are only from among the best gaining Purebred gilts raised each year, and from these only Yorkshires of the best meat type go back into the herd. Performance tested boars are used as herd sires. An effort is being made to fix the gaining ability in the offspring of the most outstanding gilts by limited inbreeding.
- Trials
  - Pasture trials have been conducted to determine the best temporary pasture crop for swine. New crops will be tested when such crops show promise.
  - Dry lot and pasture trials are compared. Dry lot with a concrete floor and 16 sq. ft. per pig are used in these trials.
  - New rations and new supplements are tried.
  - Additives are used in the ration when it appears they may be worth while.
  - Two litters per year are farrowed.

- Cheap winter and summer quarters are used.
- Mechanical improvements are used to reduce labor in hog production.
- Trials are being carried out to determine value of injectable iron to prevent anemia and increase gains.
- Best methods of preparing ration which includes, grinding, mixing, and pelleting are employed.
- Farrowing pens, litter, and methods of handling are a part of our swine program.

## GRASS AND LEGUME INVESTIGATIONS

- Hay yields.
  - Selection of best grasses on basis maintaining a stand, hay yield and quality.
    - Several varieties of intermediate wheat grass and brome grass are compared in this respect.
    - Grass-alfalfa mixtures are also compared for pasture and hay.
- Protein content of leafy grasses
  - Since high protein content indicates better feed, protein determinations are run on better adapted varieties.
- Alfalfa
  - Trials on winter-hardiness and best yielding varieties.
- Sweet clover
  - An effort is being made to determine the best hay yields from low-coumarin varieties.
- Fertilizer trials
  - The influence of nitrogen on old stands of crested wheat grass as a method of increasing yield and renovation.
  - This will be followed by a protein check, and an analysis to determine the nitrates in the grass harvested from fertilized fields.
  - Fertilizing different varieties of grass by seeding alfalfa.
- Pastures for early spring grazing.
  - Crested wheatgrass.

- Crested wheatgrass-alfalfa mixtures.
- These are also used in early spring grazing as a part of a pasture rotation system with native grass.
- A trial will be instituted this year to compare different grass varieties for summer grazing, from about June 20 or July 1 well on into late summer.

## AGRONOMIC INVESTIGATIONS

- Tillage practices and crop rotations are being continued, including those listed.
  - Spring plowing as compared to fall plowing.
  - Comparing moldboard plowing, one-waying, double disking and cultivating in preparation of stubble for seeding small grain.
  - Disked clean corn land as compared to moldboard plowing for small grain.
  - Best time for first tillage operation on fallow for maximum small grain yield.
  - Best method of handling fallow for maximum weed destruction, moisture absorption and to prevent both wind and water erosion.
- The following methods of fallow are being compared by observation, trash being incorporated in the surface soil, and on the basis of wheat yield.
  - Moldboard plow
  - Chemical fallow
  - Treatment of fallow with narrow 6" to 8" shovels
  - Treatment with medium 18" to 24" blades.
  - Using a wide blade such as the noble or victory blade.
- Small grain varieties
  - For the purpose of comparing the yields of adapted varieties of:
    - Wheat
    - Oats
    - Barley
    - Flax
    - Rye

The recommendation is made from this as to the best variety of each crop for West River Area.
- Crop rotations

- To determine the crop rotation best suited to the West River Area which includes.
  - Continuous cropping
  - Alternative cropping
  - Two year grain rotation corn as compared to fallow
  - Three year rotations
  - Four year rotations, including green manure
  - Five and six year rotation with grasses and legumes
- Fertilizer trials
  - Fertilization of wheat on corn land and corn on stubble land along with the residual effect of these fertilizer applications on the crop the following year.
  - Trials on the proper placement of fertilizer when fertilizing corn.
- Roughage trial including special corn projects.
  - Trials comparing different corn varieties, and other forage crops including Sudan, cane, sorghum, oats and peas and sorghum grass.
  - Corn spacing trial - to determine the best distance to plant the seeds apart in the row - this is a determination of the rate per acre to plant corn for silage.
- Moisture conservation
  - To compare the moisture in stubble at seeding time in the spring when the acreage was cropped to small grain the year before and handled under the following conditions.
    - Stubble left standing over without cultivation.
    - Stubble one-wayed in the fall.
    - Tilled with a noble blade in the fall.
    - Deep tillage with a spike tooth, resulting in much of the stubble left standing.
- Small grain nurseries to compare many new varieties available in limited quantities for future use in the area. This is also used as a comparison of new varieties in other nurseries through the great plains.
- Wheat breeding program which includes:
  - Making new crosses each year.
  - Testing crosses which show promise for:
    - Yield
    - Quality

- Rust resistance
- Other qualities such as maturity date, strength of straw, etc.

## GENERAL FARMING OPERATIONS

We started the winter feeding period with the following feed supply on hand at the Dickinson Experiment Station.

175 ton of hay @ \$20.00	\$3500.00
900 ton of corn silage @ \$7.24	6516.00
1000 bushels of barley @ .80	800.00
5000 bushels of oats @ .50	2500.00

## PERMANENT IMPROVEMENTS

- New cow shed and lots.  
200 feet of underground water line.  
100 spruce trees.

## EQUIPMENT

- 1 feed mixer one ton
- 1 Gehl forage wagon and conveyor extension
- 1 cattle oiler
- 1 ½ ton Chevrolet pick-up
- 4 chicken fountains
- Kelvinator refrigerator

## LIVESTOCK

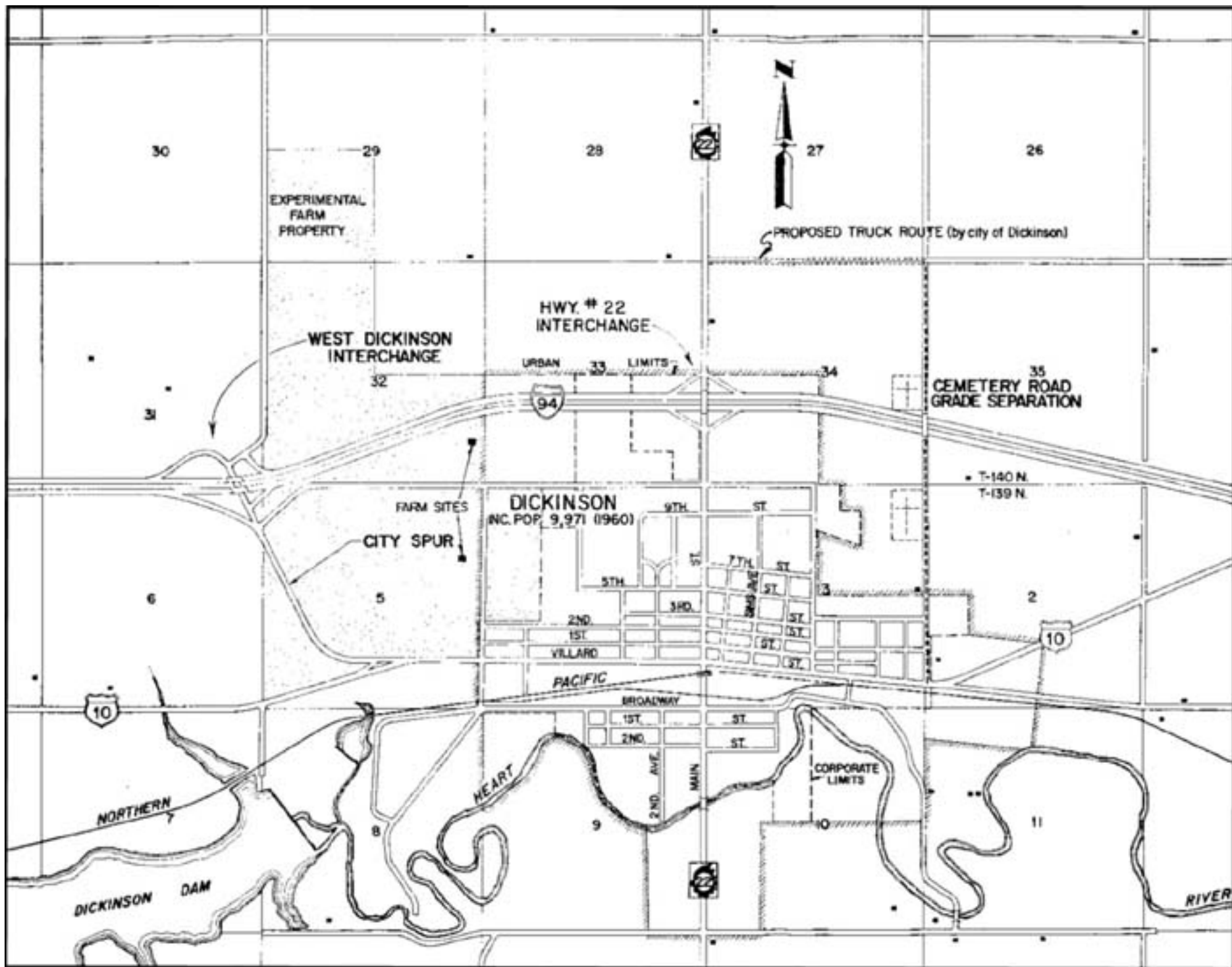
- 1 Purebred Duroc Jersey Gilt
- 57 steer calves and yearlings

- 1 Duroc Jersey Boar
- 500 Baby chicks
- 1 Purebred Hereford bull
- 9 Heifer calves
- 1 Yorkshire boar

[MEETINGS AND TOURS](#)

[RADIO AND TV PROGRAMS](#)

[GENERAL SUMMARY](#)





[Back to Annual Report Index](#) | [DREC Home](#) | [Email DREC](#)