

INTRODUCTION

RAYMOND J. DOUGLAS, SUPERINTENDENT

Each year indicates the increasing need for a balanced agricultural program in western North Dakota; in fact such a program is essential to our entire state. Besides feeding out of the livestock raised in North Dakota and improvement in our Agricultural program will be the nature of improved methods, practices and in the general handling of the operating unit which alone will not seem like any great change, but taken together will give us an increase in the income for the farm or ranch.

Our goal in the livestock feeding program should be feeding out to slaughter condition those animals we raise in North Dakota. This can be done with the greatest income to our operators by utilizing the feed raised on each unit properly supplemented to give greatest possible gains.

We must emphasize as has been done so many times in the past that feeding out our calves for slaughter will double the income from the cow herd, over what the livestock producer will receive if he sells his calves at weaning. Those who feed out their calves will find a good market for roughage produced on the farm and a better income from their grain than the local cash market can afford to pay. There is no one best way to feed cattle; use the home-grown feed to avoid the expense of freight, trucking, mixing, and processing. Buy enough supplements and minerals to balance the ration for the greatest possible gains.

In shaping our program, we must consider that we want to improve the income from an already great agricultural state.

Despite almost three million acres in the Soil Bank in 1960, North Dakota ranked first in the production of durum wheat, hard spring wheat, barley, flax and rye. It also ranked second in all wheat and grain hay, third for wild hay, fourth for dry peas and other hay, and fifth for corn silage production.

This indicates a chance to increase our greatest enterprise livestock feeding to a point where we can become one of the leading states in animals marketed for slaughter.

To the end of increasing our income from a balanced agriculture along with building the livestock feeding enterprise is our job.

We have an over-all program at the Dickinson Experiment Station which embodies the following projects, improvements and projected needs for future development.

I. LAND

- A. This year we will make the last payment on the SW 1/4 of Section 32-140-96 which was purchased in 1957. This land was purchased for \$12,000.00 and we have only one payment remaining of \$2,250.00 and interest due on or about April 1, 1961. These payments are all being made from oil-lease payments and sales income from livestock and grain. No State appropriation was made for any of the land purchased to become part of the Dickinson Experiment Station since 1960.
- B. We have a projected plan for increasing the size of Pyramid Park to gives us an additional grazing acreage in the Badlands. This is essential for properly handling our herd and livestock projects during the period from June 15 to October 15 each year. This land must be secured through the Forest Service and we hope will be realized in the not too distant future.

We need to add about three quarters or 480 acres to our present grazing area, to provide adequate range for our herd of 100 cows and their calves.

While we are grazing one-third of our cow herd at the Dickinson Experiment Station each summer, it would be desirable to graze the whole herd in the Badlands each year from June 15 to October 15 in three separate pastures. Our present grazing area only has sufficient acreage for two-thirds of our herd in two separate pastures. This additional grazing area is essential for the best herd management under range conditions.

II. Improvements

- A. During 1960, we painted the cattle sheds, cattle lots, hog house, machine shed, garage, and the brooder house on the Livestock Farm. The new drying house, seed house, shop, and machine shed were painted on the Agronomy Farm. During 1961, we will continue with this program which will include painting the three residences on both farms.
- B. We built the new machine shed on the Agronomy Farm during 1960. This building is 41' x 71' and is adequate for the storage for most of our machinery. In the construction of this building, we used all the material remaining from the two barns previously razed after our building program of the last two years. The machine shed cost approximately \$2500.00 not including labor which was from help already hired for the operation of the Station.
- C. We constructed under contract our grain elevator at a cost of about \$25,000.00 which was a State appropriation made by the 1959 Legislature. This elevator is adequate for our storage and grain handling needs. We are going to increase the seed cleaning area of this plant and the storage area by adding the seed house presently at the Station to this plant . This is a project long over-due at the Station and is very essential for handling both feed and seed grain raised at the Station.
- D. A new holding yard approximately 32 feet square was constructed at Pyramid Park. The yard is of real value to keep from over-crowding the holding pens which previously existed when weighing and holding cattle for loading out, etc.
- E. The scale and storage shed at Pyramid Park was repaired. This included fixing up the foundation where the cement had cracked in several places, shingling the building with asphalt shingles, and repairing the windows. We also painted all of the buildings at Pyramid Park.



F. Some improvement and repair work to be done at Pyramid Park in 1961:

1. The site for a new dugout and dam was located and staked, but was not constructed in 1960. Due to a series of circumstances, we were not able to get a contractor to do the job before the weather became too severe for that type of work. This new dugout was approved for a capacity of 3,000 cubic yards.

The additional water is needed to distribute grazing and will make the division of the area into two pastures more feasible. A dugout will provide water at less cost than a

new well would.

2. The repair work was not done on the inside of the cabin, which includes sealing up the building on the inside with a mouse-proof composition board, repairing the floor and walls. This project will be completed in 1961 if possible.

- G. About 50% of the hog fence on the Livestock Farm will need to be replaced in 1961. This requires a higher and heavier fence than was originally used, but the same as that used for rebuilding five lots in 1959. It will also be necessary to replace poor posts in the fence line.
- H. Work was not completed on the Check dam and diversion ditches on Section 5. Some repair work must be done on the South end of the Dike to prevent washing out of a gully, which has already been started. This repair work on the dike is a must for 1961.

We are also going to raise the check dam several inches so that more water will be forced out over the area to be flooded. The main part of the dike and diversion ditch are well grassed over and on that area further erosion will be prevented.

- I. An ally with cut-off gates was completed along the west side of the South bank of twelve lots for cattle on trials. Doors were also put into the shed which connect each lot with the ally. This is a great improvement for speed and efficiency in weighing, sorting, and moving the animals in these lots.
- J. The feed bunks now used for all animals in the trial lots were completed in 1960. This consisted of lining up the bunks along the driveway and placing them in the proper location. This is one of the most worthwhile improvements that we have made in our trial lots. Gates were also placed at the East end of each lot in this bank, for moving in and out with equipment and cleaning.
- K. Dead trees were replaced in the yard at the Livestock Farm which is being landscaped. The area was planted to crested wheat grass which was the lawn grass decided upon since the yard could not very well be irrigated.

- L. The Christmas tree demonstration planting was started in 1960 in cooperation with the Extension Service. These trees did well in their first year and with a limited number of replacements this planting could easily be brought up to a normal population. We were pleased with the first year's results in this demonstration.
- M. Plans are still in progress to install an elevator leg and increase the size of the grain bins on the elevator at the hog house. We would like to increase the bin capacity to 1,000 bushels and include a distributor for conveying the grain to the three different bins.
- N. Settlement was reached with the Atlantic Refining Company on the surface damage to the crops on the Station land the year the oil wells were drilled and storage tanks installed. It was decided that \$200.00 would cover the surface damage for the first year, and the contract we have with the company allows us \$50.00 a year beginning in 1957 for use of the land presently being used and to continue until all tanks and other equipment has been removed. Our initial payment was \$400.00 and each annual payment will be \$50.00 as long as their contract is in force.
- O. An electric hoist will be installed in the new grain elevator that will be adequate for pickups and small trucks. An effort is being made to purchase a used but good hoist for this purpose.

III. MODEL PROJECTS

- A. The model poultry flock will be continued again in 1961. It is handled as we believe a farmer or rancher should hand his flock of birds with regard to feeding, management, and size. It is our opinion that a smaller flock will not be an economical unit on any farm or ranch in western North Dakota; perhaps even a larger flock would be more desirable from a financial standpoint
- B. The model garden was a real asset to the Station in 1960 and an effort will be made to improve this project again in 1961.
- C. Spruce tree replacements were made at the Station again in 1960. New planting and

replacements will be made again in 1961 where needed.

- D. Renovation of the shelter belt at the Livestock Farm will be continued in 1961.
- E. The area being landscaped at the Livestock Farm where the old barn stood was seeded to grass in the fall of 1960. By the end of 1961, this project should be pretty well completed.
- F. Renovation of the old shelter belt North of the farmstead should start in 1961. This program has been on our agenda for several years, but has not been started; however, a special effort will be made to get this project underway in 1961. The project includes removing at least most of the deciduous trees, tilling the tract and planting some spruce, cedar and shrubs to make a well-balanced productive planting.

IV. INFORMATION

- A. A program is carried out each year acquainting ranchers and farmers with results of the projects being carried on at the Dickinson Experiment Station. This material is released in publications, news articles, tours, classes, and Field Days. When projects are completed, they are written up and released through the North Dakota Farm Research, Bimonthly Bulletin.

V. WEATHER RECORDS AT THE DICKINSON EXPERIMENT STATION INCLUDE:

1. Maximum, minimum and 7 a.m. temperature each day.
2. Wind velocity over each 24-hour period.
3. Free surface evaporation, April 1, to October 1 each year
4. Daily Precipitation.
5. Snow fall and depth of snow on the ground each day.
6. A thermograph record of the daily temperature changes as they occur each day along with the soil temperature at a depth of 8 inches.

A. Yearly Weather Report

From 1892-1960		1960	69-Yr. Simm.	Precipitation	Seasonal Apr. -July	Annual
January	.45	.13	30.68			
February	.44	.12	30.44			
March	.75	.58	51.68			
April	1.24	.35	85.64	1954	5.59	16.33
May	2.20	2.23	151.89	1955	10.14	14.65
June	3.49	3.06	241.01	1956	7.30	12.70
July	2.17	.58	149.56	1957	14.76	22.15
August	1.78	2.16	122.79	1958	8.14	12.18
September	1.19	.14	82.24	1959	6.15	13.41
October	.86	.02	59.20	1960	6.22	10.23
November	.55	.72	37.89	1941 - greatest of record	21.20	31.16
December	.40	.14	27.88	1936 - least of record	2.03	6.72
	15.52	10.23	1070.90			
69 Year Average - 15.52						
69 Year Average, April - July 9.10						

GENERAL INFORMATION

Latest Killing Frost in Spring			Earliest Killing Frost in Fall		
1915	June 16	30°F	1917	Aug. 9	30°F
1960	May 16	30°F	1960	Sept. 17	22°F
Frost-Free Season		Shortest of Record		Longest of Record	
1960 - 123 days		69 days - in 1915-1917		164 days - 1922	
Temperatures					
Lowest of Record			Greatest of Record		
1936	Feb. 16	47°F	1936	July 6	114°F
1960	Jan. 5	24°F	1960	July 21	107°F
1960 Greatest 24-hour precipitation - June 16 - 1.06					

VI. LIVESTOCK PROGRAM

A. Improving the cow herd.

1. An effort is being made to improve the productivity of the cow herd. The same ration is fed all animals which this winter is hay and straw. We would rather feed some silage but have not been feeding any in order to save it for the animals on trials feeding for market.
2. We have approximately 100 breeding animals in the cow herd. Our lots and range will handle 100 head in a very satisfactory manner.
3. The better heifers are put back in the breeding herd each year. In order to be a replacement heifer, a calf must be of an average weight or better on the basis of all

heifers raised in the current calf crop from which the heifers are being selected. Selection is then made on a basis of thickness, type, quality, and breed character.

4. The cow herd is culled each year to make room for the replacement heifers with the animals being removed on the basis of the following:
 - a. Defects; lump jaw, cancer eye, bad feet, etc.
 - b. Age
 - c. Temperament
 - d. Productivity
 - e. Dry cows

The productivity is determined by the cow's ability to produce a heavy calf of the right thickness and type at weaning.

5. It is our plan to add one bull calf to the herd each year. His gaining ability and quality is observed each year, and if he develops in a satisfactory manner, is saved for the breeding herd. Bulls are culled out after being entered in the breeding herd on the following basis:

- a. Lacking ability to produce good gaining calves of the right thickness and type at weaning.

6. In 1960, we vaccinated our herd for listeriosis, which has been the policy each year since the organism was first isolated in our herd. We do believe that the disease has been eradicated by now. However, the policy of vaccinating will be followed as long as recommended by the Veterinary Department at the North Dakota State University.

- B. Feeding Trials. Our feeding trials are built around feeding out steers and heifers to slaughter weight and condition. We believe this type of program our livestock feeders should look forward to

in their feeding operation, the fastest developing agricultural enterprise in North Dakota. The following systems are studied in developing the different possibilities in feeding out cattle for market:

1. Roughing calves through winter followed by one of the following:
 - a. Dry lot fattening following the wintering period.
 - b. Spring and summer grazing followed by dry lot finishing.
2. Feeding calves, both steers and heifers, in dry lot from weaning to slaughter in two stages:
 - a. The growing-fattening period or until the animals are about one year old.
 - b. The finishing period which follows the growing-fattening period and is of about six months' duration.

C. Rations

1. High roughage rations built around corn silage.
2. Limited grain in varying amounts with corn silage.
3. Use of dried beet pulp in rations.
4. Testing of additives showing promise.
5. Use of pelleted feeds when deemed feasible, especially in roughage rations.

D. Quality Feeds.

1. Late maturing corn as compared to corn recommended for the area.

E. Swine program

1. Breeding program

- a. Improving type, quality and gaining ability by the proper selection of gilts and the use of good boars.
- b. To improve our breeding program the following boars are used in our herd at the present time

UMPG Ken 44-9 bred by the University of Minnesota, born in February 6, 1959.

DDTO Atlas 175 bred by Donald Trapp, born on March 3, 1960

DDTO Toastmaster 297 born March 6, 1960 and bred by Donald Trapp.

- c. Only the best gaining gilts are saved each year, with an effort being made to fix the gaining ability through limited inbreeding.

2. Feeding Trials

- a. New pasture crops will be tested as temporary pastures when ever new crops are available.
- b. Dry lot and pasture trials are compared. Dry lot pigs being fed on cement.
- c. Limited feeding is compared to full-breeding in both pasture and dry-lot trials.
- d. New rations and supplements are compared.
- e. New additives showing promise will be tested.
- f. Straw sheds are used for both winter and summer quarters except at farrowing time.
- g. Trials are being conducted with injectable iron as a measure to prevent anemia.
- h. Mechanical improvements are used when it is determined that they more

- reduce cost of producing 100 pounds of pork.
- i. Best and handiest methods of preparing rations.
- j. A study of farrowing pens, litter and handling are being studied each year to improve the over-all cost of swine production.

VII. GRASS AND LEGUME INVESTIGATIONS

A. Hay Yields

1. Selection of new varieties and best use of known varieties for quality and hay yield.
2. Several new varieties of intermediate wheat grass and brome are being tested for value in both pasture and hay.
3. Grass-alfalfa mixtures are being tested for both pasture and hay.

B. Protein Content

1. Protein tests are run on best adapted varieties of grass.

C. Alfalfa

1. Trials on winter-hardiness and best yielding varieties are carried on.

D. Sweet Clover

1. Hay yields are determined from low-coumarin varieties.

E. Fertilizer

1. The influence of Nitrogen on old stands of crested wheat grass as a method of increasing yield without renovation.
2. Protein determinations will be made on grass from fertilized fields to determine nitrate

content of grass of such fields.

3. Fertilizing grass by seeding alfalfa.

F. Pastures for early spring grazing.

1. Crested Wheat grass

2. Crested Wheat-alfalfa mixture.

3. Crested Wheat grass pastures fertilized by adding nitrogen where most of alfalfa has disappeared.

4. Pastures have been seeded for summer grazing to compare the following grasses.

Russian Wildrye

Russian Wildrye and Alfalfa mixture

Lincoln Brome grass

Lincoln Brome grass and Alfalfa.

These pastures will be grazed from June 20 to October 1 each year.

VIII. AGRONOMIC INVESTIGATIONS

A. Tillage practices and crop rotations are being carried on as indicated.

1. Spring plowing as compared to fall plowing.

2. Comparing mold board plowing, one-waying, double disking, and cultivating in preparation of stubble for seeding of small grain.

3. Mold board plowing as compared to disking of cornland for seeding small grain.

B. Methods of Fallowing.

1. Best method of fallowing for weed destruction, moisture absorption and to prevent wind and water erosion, comparing the following:
 - a. Mold board plow
 - b. Treatment with medium-sized shovels.
 - c. Treatment with victory blade
 - d. Using one-way disk

C. Small grain Varieties

1. Comparing the yield of adapted varieties of the following:
 - a. Wheat
 - b. Oats
 - c. Barley
 - d. Flax
 - e. Rye
 - f. Winter Wheat

D. Crop Rotations

1. Best type of crop rotation for western North Dakota.
 - a. Continuous cropping
 1. With fertilizer and no fertilizer
 2. Alternate cropping
 - b. Three-year rotation comparing corn and fallow.
 - c. Four-year rotation

1. With green manure

E. Fertilizer trial

- a. Fertilization of wheat on cornland and corn on wheat stubble along with the residual effects the following year.
- b. Fertilizer placement with corn. Unless we can show better results by proper placement, fertilization of corn year after year does not pay.

F. Roughage Trial

1. Comparing the following:

- a. Corn varieties recommended
- b. Recommended and late maturing varieties
- c. Sudan
- d. Cane
- e. Sorghum
- f. Oats and peas
- g. Sorghum grass

2. Corn spacing trial.

- a. The best distance to plant the seeds apart in the row.
- b. For greatest tonage of corn for silage.

G. Spring moisture in small grain stubble when left alone or cultivated in the fall.

1. Stubble left standing no cultivation.
2. Stubble one-wayed in fall
3. Double Disked in fall

4. Stubble tilled with Victory blade.
5. Fall tillage with a spike-tooth implement.

H. Small grain nurseries comparing new varieties available in limited quantities.

1. Same trial at other stations indicates how new varieties do in the different states.

I. Wheat Breeding Program

1. New crosses are made each year.
2. These crosses tested for:
 - a. Yield
 - b. Quality
 - c. Resistance to rust and diseases
 - d. Comparing maturity date, strength of straw, etc.

IX. GENERAL FARMING OPERATIONS

Feed on hand at time winter feeding operation started:

300 tons of hay @ \$20.00	\$6,000.00
1000 tons corn silage @ \$7.24	7,420.00
1000 bushels of barley @ \$.70	700.00
5500 bushels of oats @ \$.50	2,750.00

EQUIPMENT

1 used coal heater

1 diesel tractor
 2 stock water tanks
 1 mower
 1 Calvinator water heater
 1 Chevrolet pickup
 2 AC Waterers
 1 Livestock oiler
 1 3/4-ton Ford Truck
 24 yards of Scoria

LIVESTOCK

500 Chickens
 1 Purebred Yearling Hereford Bull
 20 Steers
 2 Boars

MEETINGS AND TOURS

Date	Meetings	Attendance
Jan. 5-8	Annual Station Conference	
Jan. 26	Emmons County Agriculture Association, "Improving on Agriculture"	100
Feb. 1	Velva Vocational Agriculture, "Improved Agriculture"	75
Feb. 2	Jamestown Farm Institute, "Balancing the Farm Income"	500
Feb. 10	Minot Ward Co. Livestock Assoc., "Feeding Cattle for Market"	300
Feb. 16	Hettinger Sheep Day at the Experiment Station	

Feb. 18	Fargo Farm Managers Meeting, "Economical Hog House"	275
Feb. 20	Scranton Elevator Annual Meeting, "Feed Processing"	250
Feb. 24	Bowman Farmers Night School, "Improving our Agriculture"	6
March 2	Bowman Agriculture Class, "Improving our Agriculture"	10
March 7-8	Valley City Winter Show	
March 23	Burke Co. Agric. Improvement Assoc., "Why Not Feed Livestock"	200
March 31	C. of C. Agriculture Meeting	
May 3	F F A Annual Banquet - Carson	80
May 3	Dickinson State Teachers College Class, Tour of Station	35
May 26	NSSU Memorial Foundation	9
June 6-7	N.D. Stockmen's Assoc. Annual Meeting	
June 17	4-H Judging workout	80
June 29	Crop Day, Tour of Station	125
July 7	Towner & Mclean County Tour of the Dickinson Experiment Station	60
July 18	Agriculture Class - Dickinson Experiment Station	30
July 20	Farm Bureau Meeting at Bismarck, "A New Agriculture"	25
July 26	Southwest District Judging Contest at the Dickinson Experiment Station	60
August 5	Guatemala Wheat Field Trip	13
August 31	McIntosh County, "Livestock Feeding"	200

Sept. 7	Agriculture Committee C. of C.	10
Sept. 10	Belfield Community Show, Judged Show	200
Sept. 29	SC Service District Meeting, "A Balanced Agriculture"	60
Oct. 4	Barley Boosters Tour of the Dickinson Experiment Station Feed lots	75
Oct. 19	Dickinson Rotary Club - Annual Farmers Night	100
Oct. 21	Board of Higher Education visit	3
Oct. 22	SC Service Annual Awards Banquet, Main Speaker	80
Oct. 27	Kidder County Farm Bureau Meeting, "Experimental Work at the Dickinson Experiment Station"	100
Nov. 2	Interstate Seed & Grain Co., "Crop and Fertilizer"	100
Nov. 3	Rhame Public School Group tour of Station	10
Nov. 3	SC Service Group tour of Station	5
Nov. 3	Miller and Canover - Weather Bureau	2
Nov. 7	Mc Cluskey Farmers Group, "North Dakota Agriculture"	52
Nov. 10	Rotary Luncheon at Mandan, "Feeding out Cattle"	60
Nov. 14	SCS Banquet - Mandan, "Soil Conservation"	120
Nov. 23	Oliver Co. Agriculture Association, "Improving our Livestock Program"	30
Nov. 30	Burke Co. Agriculture Association, Livestock Research Roundup	50
Dec. 7	Livestock Research Roundup	1150
Dec. 19	Buford Community Hall, "Livestock Production"	100

RADIO PROGRAMS

We have a regular weekly radio broadcast in cooperation with the County Extension Agent. The following is a list of my radio programs from January 1, 1960 to December 31, 1960.

Date	Programs
January 1, 1960	Getting Ready for Spring Farrowing
February 11, 1960	Dickinson Experiment Station Feeding Trials
March 3, 1960	Getting Ready for Pig Crop
March 24, 1960	Rations for Calves
April 14, 1960	Early Spring Pasture for Steers
May 12, 1960	Value of Early Pasture
June 23, 1960	Crops Day at the Dickinson Experiment Station
July 21, 1960	Feeding Swine
August 1, 1960	Summer Hog Feeding
September 1, 1960	Feeding Yearlings for Market
September 29, 1960	Starting Calves on Feed
October 20, 1960	Livestock Research Roundup, Dec. 7, 1960
October 20, 1960	Calves for the Feed Lot
November 10, 1960	Livestock Research Roundup Program

GENERAL SUMMARY

	Farm Visits	No. Tours	People at meetings and tours	Meetings attended	Station calls	Radio talks	News Art.
January			100	2	5	1	
February			1406	7	8	1	
March	1		210	4	11	2	
April					8	1	
May		1	124	3	10	1	
June		1	205	2	8	1	2
July		1	175	4	7		
August		1	213	2	9	1	
September		1	270	3	10	2	
October		1	358	5	6	1	1
November	3	2	429	9	10	1	4
December		2	1300	3	12	2	1
Total	4	10	4790	44	104	14	8

[Back to 1960 Research Reports Table of Contents](#)

[Back to Research Reports](#)

[Back to Dickinson Research Extension Center \(http://www.ag.ndsu.nodak.edu/dickinso/\)](http://www.ag.ndsu.nodak.edu/dickinso/)

[Email: drec@ndsuext.nodak.edu](mailto:drec@ndsuext.nodak.edu)
