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1954

REPORT of ROTATION and TILLAGE TRIALS

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INTRODUCTION

This is a report of the Rotation and Tillage Trials conducted at the Dickinson Experiment Station in 1954.

The Dickinson Experiment Station is a branch station of the North Dakota Agricultural Experiment Station, and is under the supervision of Mr. Raymond J. Douglas, Superintendent.

The completion of the 1954 crop year marks the 48th year of continuous crop rotation and tillage investigations at this station. These trials have established the following facts regarding farming practices for southwestern North Dakota:

1. Highest yields of small grains are obtained after fallow, followed closely by high yields on clean cornland. Corn should largely replace summer fallow on a combination livestock and grain farm since the corn can be utilized as feed. The value of the corn crop greatly exceeds the value of the additional yields of small grains obtained from fallow over that obtained from cornland.
2. Disking of small grain stubble in the spring in preparation for seeding the grain crop is a very undesirable practice and should be ruled out in southwestern North Dakota. Over a 45 year period, spring plowing in place of double disking stubble has resulted in a yield of wheat of approximately four bushels more per acre.
3. Double disking of clean cornland, in preparation for seeding wheat, is very satisfactory. However, if the cornland is not clean, spring moldboard plowing is more desirable.

4. Results obtained following a green manure crop do not justify the use of this practice in southwestern North Dakota.
5. No significant yield differences have been found between common and plowless or trashy fallow. Due to the fact that plowless fallow helps prevent both wind and water erosion it is recommended over regular common fallow. Best results have been from fallow when the first operation began about May 15 and was completed not later than June 1.
6. Perhaps the most successful rotation in this area is a three year rotation of wheat on clean cornland, disked; oats on spring-plowed wheat stubble, and corn on spring-plowed oat stubble. In this rotation, where barley is needed for feed, part of the oat acreage could be switched to barley without materially affecting the rotation.
7. Four year rotations do not produce quite as high yields as three year rotations except three year rotations which include fallow.
8. Five and six year rotations, or deferred rotations which include grasses or legumes, are good soil conserving or soil building practices which produce good yields and at the same time help maintain fertility of the soil. In the case of both alfalfa and sweet clover, nitrogen and humus are added to the soil. In the case of crested wheatgrass or any other grass, humus is added to the soil and the fine roots bind the soil together and help prevent both wind and water erosion. A grass or legume in any of these rotations is very valuable from the standpoint of feed production in a mixed farming operation.

CHARACTER OF THE SEASON

Precipitation totaling 2.63 inches for the first three months of 1954 provided sufficient soil moisture for spring work, and conditions for seeding small grain were generally good in this area. April rainfall was light and precipitation in May was nearly three-quarters of an inch below the average but temperatures were low for both of these months and warm, drying winds were not a serious problem. Cool, rainy weather in June was favorable for small grain and hay crops but retarded growth of corn. Small grain was beginning to head the last week in June. Stem rust of wheat was first observed about June 24th, but cool weather retarded its early development. One of the driest Julys in 63 years coupled with high temperatures during the month, (on 17 days during the month maximum temperature was 90^{o}F or higher) damaged small grain and hay crops considerably and hastened development of corn. The dry, hot, July weather did retard development of wheat stem rust, however. Heaviest August rainfall in 63 years, 6.82 inches, came too late to benefit small grains much but provided much needed moisture for the corn crop and pastures,

which made excellent growth during this month and into September. Precipitation in September was below average and heavy weed growth promoted by the unusual August rainfall dried out the surface soil rapidly. The soil was found to be in poor condition for fall plowing on September 20th when the fall plowed plots in the rotation and tillage trials were worked. Precipitation in October and November has been light. Heavy winter snowfall and/or timely spring rainfall will be necessary to provide moisture for germination and early growth of the 1955 crop.

Winter wheat and winter rye seeded on September 3, 1954 have made only a weak growth and are not in the vigorous condition necessary for them to successfully withstand the winter.

Daily Precipitation & Climatic Data Summary Tables

ROTATION AND TILLAGE TRIALS - 1954

The 1954 trials complete 48 years of study in dry land soil management at the Dickinson Experiment Station. In 1907 all trials were grown on uniform cropping and are not included in the 45 year average for that reason.

In the following summary tables, 1954 yields for the 4 principal crops, wheat, oats, barley and corn, included in these trials are compared with annual averages for the past 5 years and with the 45 year average for the more important cultural methods under investigation.

Rotation and Tillage Trial Summary Table

Yields were fairly good in 1954, considering the erratic seasonal rainfall pattern, and again followed the pattern of the 45 year average with one exception. Highest yields of small grains were obtained on green manured plots and were closely followed by yields from disked cornland and spring plowed stubble in that order. Fall plowing again proved to be one of the poorest tillage methods in these trials. Yields of small grain on double disked stubble were also extremely low. Yields on fallow were poor in comparison with what is usually expected from this method of production.

Part of the rotation and tillage trials on the Main field were revised in 1954 in preparation for long time commercial fertilizer trials which will be started in 1955. On Field "N" trials were revised to include a comparison of the

moldboard plow, the one-way disk and the double disk for wheat production on stubble land.

Summary Sheets - Rotation and Tillage Experiments - Main Field - 1954

Rotation Sheets - Rotation and Tillage Experiments - Main Field - 1954

Rotation Sheets - Rotation and Tillage Experiments - Field N - 1954

Daily Precipitation - 1954													
1954	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1	.04	0	T	T	0	T	0	0	0	.13	T	0	
2	.01	0	.12	.11	0	.84	.03	T	0	T	0	0	
3	0	0	0	T	.03	.09	.01	0	0	0	0	0	
4	0	0	0	0	0	0	0	.76	0	0	0	0	
5	T	0	0	0	0	0	0	.11	.13	0	0	0	
6	0	0	0	.05	.12	.52	0	.26	.13	0	0	T	
7	0	0	T	.01	0	.01	0	.16	.02	0	0	T	
8	.20	0	T	0	0	T	0	T	0	0	0	0	
9	T	0	0	0	0	0	T	0	T	0	0	0	
10	0	0	.02	0	0	.25	T	.03	0	.02	0	0	
11	0	T	.18	0	0	.01	0	T	0	.07	0	0	
12	T	0	.69	0	0	T	T	2.25	0	0	0	0	
13	0	T	0	0	.04	T	0	.21	.05	0	0	0	
14	.01	.25	0	0	0	0	0	0	.16	0	0	0	
15	.05	0	.06	0	0	0	.01	.56	.02	0	0	0	
16	.10	0	0	0	0	0	0	.20	.10	0	0	0	
17	0	0	0	0	0	.06	.01	1.29	.01	0	T	0	
18	T	0	T	0	0	.04	0	.06	.04	0	0	.01	

19	0	0	0	0	0	.22	0	0	0	0	0	0	
20	T	0	0	0	0	.05	0	0	0	0	0	0	
21	0	0	.01	.13	T	.04	0	0	0	0	T	0	
22	0	.17	.01	0	.01	0	.10	.40	0	0	0	0	
23	0	0	0	0	.70	0	0	.01	0	0	0	0	
24	.05	0	T	0	.02	.01	0	0	0	.04	0	0	
25	T	.36	.15	0	0	.29	0	0	0	.10	0	0	
26	T	.08	0	0	0	0	0	.02	0	.03	.08	0	
27	0	0	T	0	.35	0	.03	.50	0	0	0	T	
28	T	0	.07	.04	.26	.15	.02	0	0	0	.01	0	
29	0		T	.15	.03	.25	T	0	T	T	.02	0	
30	0		T	T	0	.01	.35	0	T	T	T	.12	
31	0		T		.11		.03	0		0		T	
Sums	**.46**	**.86**	**1.31**	**.49**	**1.67**	**2.84**	**.59**	**6.82**	**.66**	**.39**	**.11**	**.13**	**16.33**

Climatic Data Summary - 1954

Climatic Data	Jan. 1954	Feb. 1954	Mar. 1954	Apr. 1954	May 1954	June 1954	July 1954	Aug. 1954	Sept. 1954	Oct. 1954	Nov. 1954	Dec. 1954	Total Amount	Mean Seasonal
Annual Precipitation	.46	.86	1.31	.49	1.67	2.84	.59	6.82	.66	.39	.11	.13	16.33	5.59

61 Year Average	.47	.43	.77	1.24	2.21	3.48	2.19	1.74	1.19	.87	.54	.44	15.57	9.12
Mean Temperature - Degrees Fahrenheit													Mean annual	
Annual	4.6	34.6	20.2	38.7	50.6	59.8	71.8	66.0	56.3	44.2	37.4	26.5	42.5	
34 Year Average	10.2	13.2	24.9	41.8	52.2	61.6	68.1	66.2	56.0	43.7	28.1	16.2	40.2	
Wind Velocity - Miles per hour														
Annual				4.9	5.2	5.5	4.7	4.3	4.8					
34 Year Average				6.7	6.7	5.6	4.7	4.9	5.2					
Last Killing Frost in the Spring							First Killing Frost in the Fall							
1954	May 10 - 28°F						1954	September 21 - 23°F						
45 Year Average	May 18						45 Year Average	September 15.						
Frost free season for 1954 - 132 days. 45 year average frost free season - 117 days.														

Summary - Wheat Yields									
Cultural Method	**No. Plots**	**1949**	**1950**	**1951**	**1952**	**1953**	**1954**	**Average 1908-1952**	**Relative Yields % 1908-1952**
Fallow	4	9.7	23.1	23.9	10.7	22.2	9.2	20.7	100%
Green Manure	3	6.5	24.5	23.7	8.9	24.3	12.0	18.8	91%
Disked Cornground	8	10.3	18.4	21.4	9.8	20.7	9.4	18.2	88%
S.P.Stubble	1	5.7	17.2	13.5	7.5	18.7	8.7	13.4	65%
F.P. Stubble	2	7.5	23.5	15.6	9.0	18.7	10.3	14.8	71%
Continuous:									
Spring Plowing	1	3.2	14.5	13.7	7.5	15.8	9.0	11.5	56%
Fall Plowing	1	2.7	8.7	13.0	9.2	14.6	4.5	11.0	53%
Alternate Wheat and Fallow	1	7.2	17.5	22.2	8.2	21.2	10.3	19.6	95%

Summary - Oat Yields									
Cultural Method	**No. Plots**	**1949**	**1950**	**1951**	**1952**	**1953**	**1954**	**Average 1908-1952**	**Relative Yields % 1908-1952**
Fallow	2	24.9	51.9	62.2	27.3	59.5	32.1	46.8	100%
Green Manure	3	15.9	58.7	54.6	24.6	65.1	38.0	45.2	97%

Disked Cornland	4	22.7	40.8	54.2	22.1	48.9	26.6	37.2	80%
S.P. Stubble	4	32.8	44.2	35.6	22.5	58.7	33.0	36.1	77%
F.P. Stubble	5	19.1	46.9	37.1	26.3	50.0	19.1	32.1	69%
Sod	3	23.6	43.1	44.9	26.5	48.2	22.3	33.8	72%
Continuous:									
Spring Plowing	1	13.8	30.6	42.5	16.9	37.8	25.3	26.6	57%
Fall Plowing	1	8.1	43.0	33.8	20.0	31.7	13.1	24.6	53%
Alternate Oats and Fallow	1	23.4	53.8	60.6	29.4	50.3	32.2	45.5	97%

Summary - Barley Yields

Cultural Method	No. Plots	1949	1950	1951	1952	1953	1954	Average 1908-1952	Relative Yields % 1908-1952
Disked Cornland	1	14.1	24.0	35.2	15.9	29.3	15.5	21.2	79%
S.P. Stubble	1	5.8	29.6	22.7	12.4	29.0	18.4	16.2	60%
Continuous:									
Spring Plowing	1	7.7	19.4	28.1	16.9	27.1	15.9	16.0	59%
Fall Plowing	1	1.5	12.9	29.2	20.0	23.7	6.5	14.8	54%
Alternate Barley and Fallow	1	12.7	32.7	38.5	29.4	32.4	15.5	24.2	89%

Summary - Corn Grain Yields									
Cultural Method	**No. Plots**	**1949**	**1950**	**1951**	**1952**	**1953**	**1954**	**Average 1908-1952**	**Relative Yields % 1908-1952**
Spring Plowing	15	13.9	22.0	23.2	16.0	50.0	14.9	17.6	100%
Fall Plowing	4	13.7	24.1	25.5	18.1	30.0	4.7	16.2	92%
Continuous:									
Spring Plowing	1	5.0	22.1	29.1	14.9	22.9	4.2	19.0	108%
Fall Plowing	1	14.1	20.4	34.4	17.6	14.3	3.3	18.9	107%
Alternate Corn and fallow	1	13.8	16.4	29.1	32.9	14.3	12.0	20.9	119%

Summary - Corn Silage Yields									
Cultural Method	**No. Plots**	**1949**	**1950**	**1951**	**1952**	**1953**	**1954**	**Average 1908-1952**	**Relative Yields % 1908-1952**
Spring Plowing	15	4526	7990	7928	5569	13300	11433	7168	100%
Fall Plowing	4	3920	7224	8726	5450	10175	7450	6268	88%
Continuous:									
Spring Plowing	1	2100	7900	8180	2700	8900	5200	6380	89%
Fall Plowing	1	4720	6360	9520	4600	7100	7800	6122	85%

Alternate Corn and Fallow	1	5740	6600	7800	7000	9600	11100	6900	96%00000000

[1]Silage yields previous to 1952 figured on basis of air dry corn fodder yield calculated as 50% of silage weight.

SUMMARY SHEETS

ROTATION AND TILLAGE EXPERIMENTS

MAIN FIELD - 1954

Crop - Wheat - Main Field		**Station - Dickinson, North Dakota**						**Year - 1954**	
Rotation Number	Previous Crop	Tillage Method						Sum	Average
		DD	SP	FP	F	GM			
1	Corn	7.8							
10	Corn	11.7							
11	Corn	7.3							
12	Corn	11.2							
14	Corn	10.0							
16	Corn	9.0							
31	Corn	7.5							
42	Corn	10.3					DD after Corn (8)	74.8	9.4
2	Corn		9.3				SP after Corn (1)	9.3	9.3
3	Corn			8.0					
62	Corn			12.5			FP after Corn (2)	20.5	10.3
							All methods after Corn		

							(11)	104.6	9.5
9	Oats		8.7				SP after Oats (1)	8.7	8.7
4	Oats			6.2					
8	Oats			5.3			FP after Oats (2)	11.5	5.8
							All methods after Oats (3)	20.2	6.7
5	Fallow				8.5				
MC-C	Fallow				10.3				
61	Fallow				10.2				
63	Fallow				7.8		After fallow (4)	36.8	9.2
15	S. Clover					12.7			
17	S. Clover					11.5			
32	S. Clover					11.7	GM after Clover (3)	35.9	12.0
MC-A	Wheat		9.0				SP Continuous (1)	9.0	9.0
MC-B	Wheat			4.5			FP Continuous (1)	4.5	4.5
415	Potatoes	11.7					DD after potatoes (1)	11.7	11.7
Sum		86.5	27.0	36.5	36.8	35.9			
Plots		9	3	5	4	3			

Average		9.6	9.0	7.3	9.2	12.0			

Crop - Oats - Main Field		**Station - Dickinson, ND**							**Year - 1954**	
Rotation Number	Previous Crop	Tillage Method							Sum	Average
		DD	SP	FP	GM	Sod	F			
4	Corn	23.4								
15	Corn	28.8								
17	Corn	27.8								
32	Corn	26.3						DD after Corn (4)	106.3	26.6
7	Corn		25.6							
9	Corn		25.6					SP after Corn (2)	51.2	25.6
2	Wheat		31.9							
61	Wheat		34.4							
62	Wheat		34.4							
63	Wheat		31.3					SP after Wheat (4)	132.0	33.0
1	Wheat			17.5						

3	Wheat			15.0						
5	Wheat			16.9						
12	Wheat			23.8				FP after Wheat (4)	73.2	18.3
6	Barley			22.5				FP after Barley (1)	22.5	22.5
14	S. Clover				37.5					
16	S. Clover				43.1					
31	S. Clover				33.4			GM after S. Clover (3)	114.0	38.0
42	Alfalfa					16.6				
10	Cr. Wht.					25.6				
11	S. Clover					24.7		After sod (3)	66.9	22.3
8	Fallow						31.9			
Mc-C							32.2	After fallow (2)	64.1	32.1
								S.P.		

MC-A	Oats		25.3					S.P. Continuous	25.3	25.3
MC-B	Oats			13.1				FP Continuous	13.1	13.1
Sum		106.3	208.5	108.8	114.0	66.9	64.1			
Plots		4	7	6	3	3	2			
Average		26.6	29.8	18.1	38.0	22.3	32.1			

Crop - Barley - Main Field
Station - Dickinson, North Dakota
Year - 1954

Rotation Number	Previous Crop	Tillage Method			
		DD	SP	FP	F
6	Corn	15.5			
7	Oats		18.4		
MC-A	Barley		15.9		

MC-B	Barley			6.5	
MC-D	Fallow				15.5
Sum		15.5	34.3	6.5	15.5
Plots		1	2	1	1
Average		15.5	17.2	6.5	15.5

Crop - Corn - Main Field				**Station - Dickinson, North Dakota**					**Year - 1954**			
Rotation Number	Previous Crop	SP		FP		F			Summary		Average	
		Grain	Silage	Grain	Silage	Grain	Silage		Grain	Silage	Grain	Silage
2	Oats	16.0	12,900									
10	Oats	19.8	14,600									
11	Oats	16.2	9,900									
12	Oats	13.2	11,400									
14	Oats	13.4	12,200									
16	Oats	18.1	10,700									
31	Oats	14.4	11,400									
42	Oats	15.5	12,500									
62	Oats	10.1	12,200					SP after Oats (9)	136.7	107,800	15.2	11,978

1	Oats			3.5	6200							
3	Oats			4.7	7800							
6	Oats			3.3	8800			FP after Oats (3)	11.5	22,800	3.8	7600
9	Wheat	13.6	8,800									
15	Wheat	15.1	11,600									
17	Wheat	16.9	10,600									
18	Wheat	13.2	10,400									
32	Wheat	13.2	11,300					SP after Wheat (5)	72.0	52,700	14.4	10,540
4	Wheat			7.1	7000			FP after Wheat (1)	7.1	7000	7.1	7000
7	Barley	15.3	11,000					SP after Barley (1)	15.3	11,000	15.3	11,000
MC-A	Corn	4.2	5200					SP Continuous	4.2	5200	4.2	5200
MC-B	Corn			3.3	7800			FP Continuous	3.3	7800	3.3	7800
MC-D	Corn					12.0	11,100	Alternate Corn and fallow	12.0	11,100	12.0	11,100

Sum		228.2	176,700	21.9	37,600	12.0	11,100					
Plots		16	16	5	5	1	1					
Average		14.3	11,044	4.4	7520	12.0	11,100					

Crop - Crested Wheatgrass
Station - Dickinson
Year - 1954

Rotation Number	Previous Crop	Yield lb. per acre
10A		1050
11 E		1650
12 C		900
12 D		1050
12 E		750

Crop - Alfalfa

Station - Dickinson
Year - 1954

Rotation Number	Previous Crop	Yield lb. per acre
42 A		---
42 B		200
42 C		1600

Crop - Sweet Clover
Station - Dickinson
Year - 1954

Rotation Number	Previous Crop	Yield lbs. per acre
11 A		1100
11 E		0

Crop - Potatoes
Station - Dickinson

Year - 1954				
Rotation Number	Previous Crop	Yield - Bu. per acre		
		U.S. No. 1	Culls	Total
414	Fallow	63.3	18.3	81.6
415	Wheat	50.8	17.5	68.3

ROTATION SHEETS

ROTATION AND TILLAGE EXPERIMENTS

MAIN FIELD - 1954

Project - Rotation and Tillage Trials

Rotation - 1 - Main Field		**Year - 1954**	
	A	B	C
Crop	Wheat DC	Oats FP	Corn FP
Variety	Pilot	Gopher	Nodak 301
Plowing date		9-6-53	9-6-53
Plowing depth		4 - 5 inches	4 - 5 inches
Tillage before seeding	DD 4-20-54	DD 4-20-54	DD 5-18-54
Seeding date	4-22-54	4-23-54	5-19-54
Seeding rate	1 bu. per acre	1 ½ bu. per acre	8 lb. per acre
Seeding manner	DD press drill	DD press drill	2-horse planter
Tillage after seeding			Necessary cultivation to control weeds
Harvest date	8-9-54	7-30-54	9-8-54, 11-19-54
Total pounds			6200# silage per acre
Straw, pounds			
Grain, pounds	47	55	15
Yields per acre	7.8 bpa	17.5 b.p.a.	3.5 b.p.a.

Grade	Test Wt. 53.0	Test Wt. 34.0	No. 2

Rotation - 2 - Main Field		**Year - 1954**	
	A	B	C
Crop	Wheat SP	Oats SP	Corn SP
Variety	Pilot	Gopher	Nodak 301
Plowing date	4-20-54	4-20-54	5-18-54
Plowing depth	4 - 5 inches	4 - 5 inches	4 - 5 inches
Tillage before seeding			
Seeding date	4-22-54	4-23-54	5-19-54
Seeding rate	1 bu. per acre	1 ½ bu. per acre	8 lb. per acre
Seeding manner	DD press drill	DD press drill	2-horse planter
Tillage after seeding			Necessary cultivation to control weeds
Harvest date	8-9-54	7-30-54	9-8-54, 11-19-54
Total pounds			
Straw, pounds			

Grain, pounds	56	102	67
Yields per acre	9.3 b.p.a.	31.9 b.p.a.	16.0 b.p.a.
Grade	Test Wt. 53.0	Test Wt. 35.5	No. 2

Rotation - 3 - Main Field		**Year - 1954**	
	A	B	C
Crop	Wheat FP	Oats FP	Corn FP
Variety	Pilot	Gopher	Nodak 301
Plowing date	9-7-53	9-6-53	9-6-53
Plowing depth	4 - 5 inches	4 - 5 inches	4 - 5 inches
Tillage before seeding	DD 4-20-54	DD 4-20-54	DD 5-18-54
Seeding date	4-22-54	4-23-54	5-19-54
Seeding rate	1 bu. per acre	1 ½ bu. per acre	8 lb. per acre
Seeding manner	DD press drill	DD press drill	2-horse planter
Tillage after seeding			Necessary cultivation to control weeds.

Harvest date	8-9-54	7-30-54	9-8-54, 11-19-54
Total pounds			7800# silage per acre
Straw, pounds			
Grain, pounds	48	48	20
Yields per acre	8.0 b.p.a.	15.0 b.p.a.	4.7 b.p.a.
Grade	Test Wt. 54.0	Test Wt. 32.5	No. 2

Rotation - 4 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats DC	Wheat FP	Corn FP
Variety	Gopher	Pilot	Nodak 301
Plowing date		9-6-53	9-6-53
Plowing depth		4 - 5 inches	4 - 5 inches
Tillage before seeding	DD 4-20-54	DD 4-20-54	DD 5-18-54
Seeding date	4-23-54	4-22-54	5-19-54
Seeding rate	1 ½ bu. per acre	1 bu. per acre	8 lb. per acre

Seeding manner	DD press drill	DD press drill	2-horse planter
Tillage after seeding			Necessary cultivation to control weeds.
Harvest date	7-3-54	8-9-54	9-8-54, 11-19-54
Total pounds			7000# silage per acre
Straw, pounds			
Grain, pounds	75	37	30
Yields per acre	23.4 b.p.a.	6.2 b.p.a.	7.1 b.p.a.
Grade	Test Wt. 35.0	Test Wt. 54.0	No. 2

Rotation - 5 - Main Field		**Year - 1954**	
	A	B	C
Crop	Wheat F	Oats FP	Fallow
Variety	Pilot	Gopher	
Plowing date		9-6-53	
Plowing			

Plowing depth		4 - 5 inches	
Tillage before seeding	DD 4-20-54	DD 4-20-54	
Seeding date	4-22-54	4-23-54	
Seeding rate	1 bu. per acre	1 ½ bu. per acre	
Seeding manner	DD press drill	DD press drill	
Tillage after seeding			
Harvest date	8-9-54	7-30-54	
Total pounds			
Straw, pounds			
Grain, pounds	51	54	
Yields per acre	8.5 b.p.a.	16.9 b.p.a.	
Grade	Test Wt. 52.0	Test Wt. 33.0	

Rotation - 6 - Main Field		**Year - 1954**	
	A	B	C

Crop	Barley DC	Oats FP	Corn FP
Variety	Trebi	Gopher	Nodak 301
Plowing date		9-6-53	9-6-53
Plowing depth		4 - 5 inches	4 - 5 inches
Tillage before seeding	DD 4-20-54	DD 4-20-54	DD 5-18-54
Seeding date	4-22-54	4-23-54	5-19-54
Seeding rate	5 pecks per acre	1 ½ bu. per acre	8 lb. per acre
Seeding manner	DD press drill	DD press drill	2-horse planter
Tillage after seeding			Necessary cultivation to control weeds.
Harvest date	8-3-54	7-30-54	9-8-54, 11-19-54
Total pounds			8800# silage per acre
Straw, pounds			
Grain, pounds	76	72	14
Yields per acre	15.5 b.p.a.	22.5 b.p.a.	3.3 b.p.a.
Grade	Test Wt. 37.0	Test WT. 36.0	No. 2

		21", Fair but slightly uneven.	

Rotation - 7 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats SP	Barley SP	Corn SP
Variety	Gopher	Trebi	Nodak 301
Plowing date	4-20-54	4-20-54	5-18-54
Plowing depth	4 - 5 inches	4 - 5 inches	4 - 5 inches
Tillage before seeding			
Seeding date	4-23-54	4-22-54	5-19-54
Seeding rate	1 ½ bu. per acre	5 pecks per acre	8 lb. per acre
Seeding manner	DD press drill	DD press drill	DD press drill
Tillage after seeding			Necessary cultivation to control weeds.
Harvest date	7-30-54	8-3-54	9-8-54, 11-19-54
Total pounds			11,000# silage p.a.

Straw, pounds			
Grain, pounds	82	90	65
Yields per acre	25.6 b.p.a.	18.4 b.p.a.	15.3 b.p.a.
Grade	Test Wt. 33.5	Test Wt. 37.0	No. 2

Rotation - 8 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats F	Wheat FP	Fallow
Variety	Gopher	Pilot	
Plowing date		9-6-53	
Plowing depth		4 - 5 inches	
Tillage before seeding	D.F. 4-20-54	DD 4-20-54	
Seeding date	4-23-54	4-22-54	
Seeding rate	1 ½ bu. per acre	1 bu. per acre	
Seeding manner	DD press drill	DD press drill	
Tillage after seeding			

Harvest date	7-30-54	8-9-54	
Total pounds			
Straw, pounds			
Grain, pounds	102	32	
Yields per acre	31.9 b.p.a.	5.3 b.p.a.	
Grade	Test Wt. 35.0	Test Wt. 53.0	

Rotation - 9 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats, SP	Wheat, Sp	Corn, SP
Variety	Gopher	Pilot	Nodak 301
Plowing date	4-20-54	4-20-54	5-19-54
Plowing depth	4 - 5 inches	4 - 5 inches	4 - 5 inches
Tillage before seeding			
Seeding date	4-23-54	4-22-54	5-19-54
Seeding rate	1 ½ bu. per acre	1 bu. per acre	8 lb. per acre
Seeding manner	DD press drill	DD press drill	2-horse planter

Tillage after seeding			Necessary cultivation to control weeds.
Harvest date	7-30-54	8-9-54	9-8-54, 11-19-54
Total pounds			8800# silage p.a.
Straw, pounds			
Grain, pounds	82	52	58
Yields per acre	25.6 b.p.a.	8.7 b.p.a.	13.6 b.p.a.
Grade	Test Wt. 34.0	Test Wt. 53.5	No. 2

Rotation - 10-Main Field			**Year - 1954**		
	A	B	C	D	E
Crop	Cr. Wheat	Oats FP	Corn SP	Wheat DC Cr. Wheat	Cr. Wheat
Variety	Standard	Gopher	Nodak 301	Pilot	Standard
Plowing date		9-6-53	5-18-54		
Plowing depth		4 - 5 inches	4 - 5 inches		
Tillage					

before seeding		DD 4-20-54		DD 4-20-54	
Seeding date	1952	4-23-54	5-19-54	4-22-54	1953
Seeding rate		1 ½ b.p.a.	8 lb. per acre	1 bu. per acre	
Seeding manner		DD press drill	2-hrse. planter	DD press drill	
Tillage after seeding			Necessary cultivation to control weeds.		
Harvest date	6-28-54	7-30-54	9-8-54, 11-19-54	8-9-54	6-28-54
Total pounds	105		14,600# silage per acre		165
Straw, pounds					
Grain, pounds		82	84	70	
Yields per acre	1050 lbs.	25.6 b.p.a.	19.8 b.p.a.	11.7 b.p.a.	1650 lbs.
Grade	Good	Test Wt. 36.0	No. 2	Test Wt. 52.0	Good

Rotation - 11 - Main Field			Year - 1954		
	A	B	C	D	E
Crop	S. Clover	Oats, SP	Corn, Sp	Wheat, DC	S. Clover
Variety	YB S. Clover	Gopher	Nodak 301	Pilot	YB S. Clover
Plowing date		4-20-54	5-18-54		
Plowing depth		4 - 5 inches	4 -5 inches		
Tillage before seeding				DD 4-20-54	
Seeding date	1953	4-23-54	5-19-54	4-22-54	4-23-54
Seeding rate	10 lbs/acre	1 ½ b.p.a.	8 lbs/per acre	1 b.p.a.	8 lbs/acre
Seeding manner	DD press drill	DD press drill	2-horse planter	DD press drill	DD press drill
Tillage after seeding			Necessary cultivation to control weeds.		
Harvest date	6-28-54	7-30-54		8-9-54	
Total pounds	110		9900# silage per acre		
Straw					

Straw, pounds					
Grain, pounds		79	69	44	
Yields per acre	1100 lbs.	24.7 b.p.a.	16.2 b.p.a.	7.3 b.p.a.	
Grade	Good	Test Wt. 29.0	No. 2	Test Wt. 52.0	
					Year of establishment for 11 E.

Rotation - 12 - Main Field				**Year - 1954**		
	A	B	C	D	E	F
Crop	Corn SP	Wheat DC Cr. Wheat	Cr. Wheat	Cr. Wheat	Cr. Wheat	Oats FP
Variety	Nodak 301	Pilot	Standard	Standard	Standard	Gopher
Plowing date	5-18-54					9-6-53
Plowing depth	4 - 5 inches					4 - 5 inches
Tillage before seeding		DD 4-20-54				DD 4-20-54

Seeding date	5-19-54	4-22-54	1953	1952	1951	4-23-54
Seeding rate	8 lb/acre	1 bu./acre				1 ½ bu./acre
Seeding manner	2 row planter	DD press drill				DD press drill
Tillage after seeding	Necessary cultivation to control weeds					
Harvest date	9-8-54 11-19-54	8-9-54	6-28-54	6-28-54	6-28-54	7-30-54
Total pounds	11,400# silage per acre		90	105	75	
Straw, pounds						
Grain, pounds	56	67				76
Yields per acre	13.2	11.2 b.p.a.	900 lbs.	1050 lbs.	750 lbs.	23.8 b.p.a.
Grade	No. 2	Test Wt. 54.0	Good	Good	Good	Test Wt. 33.0

Rotation - 14 - Main Field			Year - 1954	
	A	B	C	D
Crop	Corn, SP	Wheat DC S. Clover	S. Clover	Oats, GM
Variety	Nodak 301	Pilot YB S. Clover	YB S. Clover	Gopher
Plowing date	5-18-54			
Plowing depth	4 - 5 inches			
Tillage before seeding		DD 4-20-54		DD 4-20-54
Seeding date	5-19-54	4-22-54		4-23-54
Seeding rate	8 lb. per acre	1 bu. per acre		1 ½ bu. per acre
Seeding, manner	2 Row Planter	DD press drill		DD press drill
Tillage after seeding	Necessary cultivation to control weeds.			
Harvest date	9-8-54, 11-19-54	8-9-54		7-30-54
Total pounds	12,200# silage			

Total pounds	per acre			
Straw, pounds				
Grain, pounds	57	60		120
Yields per acre	13.4 b.p.a.	10.0 b.p.a.		37.5 b.p.a.
Grade	No. 2	Test Wt. 55.0		Test Wt. 33.0

Rotation - 15 - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Corn, SP	Wheat DC S. Clover	S. Clover, GM	Oats, GM
Variety	Nodak 301	Pilot YB S. Clover	YB S. Clover	Gopher
Plowing date	5-18-54			
Plowing depth	4-5 inches			
Tillage before seeding		DD 4-20-54		DD 4-20-54

Seeding date	5-19-54	4-23-54		4-22-54
Seeding rate	8 lb. per acre	1 ½ bu. per acre		1 bu. per acre
Seeding, manner	2 Row planter	DD press drill		DD press drill
Tillage after seeding	Necessary cultivation to control weeds			
Harvest date	9-8-54, 11-19-54	7-30-54		8-9-54
Total pounds	11,600# silage/acre			
Straw, pounds				
Grain, pounds	64	92		76
Yields per acre	15.1 b.p.a.	28.8 b.p.a.		12.7 b.p.a.
Grade	No. 2	Test wt. 30.0		Test Wt. 52.0

Rotation - 16 - Main Field			**Year - 1954**	
	A	B	C	D
		Wheat, DC		

Crop	Corn, SP	S. Clover	S. Clover	Oats, GM
Variety	Nodak 301	Pilot YB S. Clover	YB S. Clover	Gopher
Plowing date	5-18-54			
Plowing depth	4-5 inches			
Tillage before seeding		DD 4-20-54		DD 4-20-54
Seeding date	5-19-54	4-22-54		4-23-54
Seeding rate	8 lb. per acre	1 bu. per acre		1 ½ bu. per acre
Seeding, manner	2 Row Planter	DD press drill		DD press drill
Tillage after seeding	Necessary cultivation to control weeds			
Harvest date	9-18-54, 11-19-54	8-9-54		7-30-54
Total pounds	10,700# silage/acre			
Straw, pounds				

Grain, pounds	77	54		138
Yields per acre	18.1 b.p.a.	9.0 b.p.a.		43.1 b.p.a.
Grade	No. 2	Test Wt. 54.0		Test Wt. 35.0

Rotation - 17 - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Corn , SP	Oats, DC S. Clover	S. Clover	Wheat, GM
Variety	Nodak 301	Gopher YB. S. Clover	YB. S. Clover	Pilot
Plowing date	5-18-54			
Plowing depth	4-5 inches			
Tillage before seeding		DD 4-20-54		DD 4-20-54
Seeding date	5-19-54	4-23-54		4-22-54
Seeding rate	8 lb. per acre	1 ½ bu. per acre		1 bu. per acre

Seeding, manner	2 Row Planter	DD Press Drill		DD Press Drill
Tillage after seeding	Necessary cultivation to control weeds			
Harvest date	9-8-54, 11-19-54	7-30-54		8-9-54
Total pounds	10,600# silage/acre			
Straw, pounds				
Grain, pounds	72	89		69
Yields per acre	16.9 b.p.a.	27.8 b.p.a.		11.5 b.p.a.
Grade	No. 2	Test Wt. 33.5		Test Wt. 52.0

Rotation - 18 - Main Field		**Year - 1954**
	A	B
Crop	Oats, DC	Corn, SP
Variety	Gopher	Nodak 301
Plowing date		5-18-54
Plowing		

Plowing depth		4-5 inches
Tillage before seeding	DD 4-20-54	
Seeding date	4-23-54	5-19-54
Seeding rate	1 ½ bu. per acre	8 lb. per acre
Seeding manner	DD Press Drill	2 Row Planter
Tillage after seeding		Necessary cultivation to control weeds
Harvest date	7-30-54	9-8-54, 11-19-54
Total pounds		10,400# silage per acre
Straw, pounds		
Grain, pounds	84	56
Yields per acre	26.3 b.p.a	13.2 b.p.a.
Grade	Test Wt. 37.0	No. 2

Rotation - 18 - Main Field		Year - 1954
	C	D
Crop	Corn, SP Fer	Wheat DC Fer
Variety	Nodak 3-1	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 row planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54, 11-19-54	8-9-54
Total pounds	12,800# silage per acre	
Straw, pounds		

Grain, pounds	56	62
Yields per acre	13.2 b.p.a.	10.3 b.p.a.
Grade	No. 2	Test Wt. 55.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 19 - Main Field		**Year - 1954**
	A	B
Crop	Corn, SP CK	Wheat, DC CK
Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding	2 Row Planter	DD press drill

manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54, 11-19-54	8-9-54
Total pounds	11,200# silage per acre	
Straw, pounds		
Grain, pounds	61	66
Yields per acre	14.4 bu. per acre	11.0 bu. per acre
Grade	No. 2	Test Wt. 57.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 19 Main Field		**Year - 1954**
	C	D
Crop	Corn SP	Wheat DC Fer
Variety	Nodak 301	Pilot
Plowing date	5-18-54	

Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54, 11-19-54	8-9-54
Total pounds	10,600# silage per acre	
Straw, pounds		
Grain, pounds	60	82
Yields per acre	14.4 bu. per acre	13.7 bu. per acre
Grade	No. 2	Test Wt. 53.0
Year of uniform cropping. Do not include in future		

averages.

Rotation - 31 - Main Field			Year - 1954	
	A	B	C	D
Crop	Corn, SP	Wheat, DC S. Clover	S. Clover	Oats, GM
Variety	Nodak 301	Pilot YB S. Clover	YB S. Clover	Gopher
Plowing date	5-18-54			
Plowing depth	4-5 inches			
Tillage before seeding		DD 4-20-54		DD 4-20-54
Seeding date	5-19-54	4-22-54		4-23-54
Seeding rate	3 lb. per acre	1 bu. per acre		1 ½ bu. per acre
Seeding, manner	2 Row Planter	DD press drill		DD press drill
Tillage after seeding	Necessary cultivation to control weeds			
Harvest date	9-8-54, 11-19-54	8-9-54		7-30-54
Total pounds	11,400# silage per acre			
Straw, pounds				

Grain, pounds	61	45		107
Yields per acre	14.4 b.p.a.	7.5 b.p.a.		33.4 b.p.a.
Grade	No. 2	Test Wt. 51.0		Test Wt. 34.0

Rotation - 32 - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Corn SP	Oats DC S. Clover	S. Clover	Wheat GM
Variety	Nodak 301	Gopher YB S. Clover	YB S. Clover	Pilot
Plowing date	5-18-54			
Plowing depth	4-5 inches			
Tillage before seeding		DD 4-20-54		DD 4-20-54
Seeding date	5-19-54	4-23-54		4-22-54
Seeding rate	8 lb. per acre	1 ½ bu. per acre		1 bu. per acre
Seeding, manner	2 Row planter	DD press drill		DD press drill
Tillage after seeding	Necessary cultivation to control weeds			
Harvest date	9-8-54, 11-19-54	7-30-54		8-9-54
Total pounds	11,300# silage/acre			

Straw, pounds				
Grain, pounds	56	84		70
Yields per acre	13.2 b.p.a.	26.3 b.p.a.		11.7 b.p.a.
Grade	No. 2	Test Wt. 31.0		Test Wt. 52.0

Rotation - 42 - Main Field				**Year - 1954**		
	A	B	C	D	E	F
Crop	Alfalfa	Alfalfa	Alfalfa	Oats, FP	Corn, SP	Wheat, DC
Variety	Ladak	Ladak	Ladak	Gopher	Nodak 301	Pilot
Plowing date				9-6-53	5-18-54	
Plowing depth				4-5 inches	4-5 inches	
Tillage before seeding				DD 4-20-54		DD 4-20-54
Seeding date	1954	1953	1952	4-23-54	5-19-54	4-22-54
Seeding rate	10 lbs/acre	10 lbs/acre	10 lbs/acre	1 ½ bu/acre	8 lbs/acre	1 bu./acre
Seeding manner	DD Press Drill			DD Press Drill	2 Row Plant	DD Press Drill
Tillage after seeding					Necessary Cultivation to control weeds	
Harvest date		6-28-54	6-28-54	7-30-54	9-8-54 11-19-54	8-9-54

Total pounds		20	160		12,500# Silage/Acre	
Straw, pounds						
Grain, pounds				53	66	62
Yields per acre		200 lbs.	1600 lbs.	16.6 b.p.a.	15.5 b.p.a.	10.3 b.p.a.
Grade		Good	Good	Test Wt. 31.0	No. 2	Test Wt. 51.0
Year of establishment for 42 A.						

Rotation - 61 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats, SP	Fallow	Wheat, F
Variety	Gopher		Pilot
Plowing date	4-20-54		
Plowing depth	4-5 inches		
Tillage before seeding			DF 4-20-54
Seeding date	4-23-54		4-22-54
Seeding rate	1 ½ bu. per acre		1 bu. per acre
Seeding manner	DD press drill		DD press drill
Tillage after seeding			
Harvest date	7-30-54		8-9-54
Total pounds			

Straw, pounds			
Grain, pounds	110		61
Yields per acre	34.4 b.p.a.		10.2 b.p.a.
Grade	Test Wt. 33.0		Test Wt. 51.0

Rotation - 62 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats, SP	Corn, SP, Manured	Wheat, FP
Variety	Gopher	Nodak 301	Pilot
Plowing date	4-20-54	5-18-54	9-6-53
Plowing depth	4-5 inches	4-5 inches	4-5 inches
Tillage before seeding			DD 4-20-54
Seeding date	4-23-54	5-19-54	4-22-54
Seeding rate	1 ½ bu. per acre	8 lb. per acre	1 bu. per acre
Seeding manner	DD press drill	2 Row Planter	DD press drill
Tillage after seeding		Necessary Cultivation to control weeds	
Harvest date	7-30-54	9-8-54, 11-19-54	8-9-54
Total pounds		12,200# silage per acre	
Straw, pounds			
Grain, pounds	110	43	75
Yields per acre	34.4 b.p.a.	10.1 b.p.a.	12.5 b.p.a.

Grade	Test WT. 30.5	No. 2	Test Wt. 51.0

Rotation - 63 - Main Field		**Year - 1954**	
	A	B	C
Crop	Oats, SP	Fallow	Wheat, F
Variety	Gopher		Pilot
Plowing date	4-20-54		
Plowing depth	4-5 inches		
Tillage before seeding			DF 4-20-54
Seeding date	4-23-54		4-22-54
Seeding rate	1 ½ bu. per acre		1bu. per acre
Seeding manner	DD press drill		DD press drill
Tillage after seeding			
Harvest date	7-30-54		8-9-54
Total pounds			
Straw, pounds			
Grain, pounds	100		47
Yields per acre	31.3 b.p.a.		7.8 b.p.a.
Grade	Test Wt. 33.5		Test Wt. 52.0

Rotation - 78 - Main Field		**Year - 1954**
	C’	D’
Crop	Corn, SP	Wheat DC Fer
Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54	8-9-54
Total pounds	13,200# silage per acre	
Straw, pounds		
Grain, pounds		78
Yields per acre		13.0 b.p.a.
Grade		Test Wt. 52.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 40 - Main Field		**Year - 1954**
	A	B
Crop	Corn SP	Wheat DC Fer
Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54	8-9-54
Total pounds	8800# silage per acre	
Straw, pounds		
Grain, pounds		56
Yields per acre		9.3 b.p.a.
Grade		Test Wt. 52.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 49 - Main Field		Year - 1954
	A	B
Crop	Corn SP-Ck.	Wheat DC-Ck.
Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54	8-9-54
Total pounds	10,400# silage per acre	
Straw, pounds		
Grain, pounds		86
Yields per acre		14.3 b.p.a.
Grade		Test Wt. 51.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 79 - Main Field	Year - 1954

	A	B
Crop	Corn SP	Wheat DC Fer
Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54	8-9-54
Total pounds	9800# silage per acre	
Straw, pounds		
Grain, pounds		60
Yields per acre		10.0 bu. per acre
Grade		Test Wt. 52.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 242 - Main Field	**Year - 1954**
A	B

Crop	Corn Sp Fer	Wheat Dc Fer
Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2 Row Planter	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	9-8-54	8-9-54
Total pounds	8200# silage per acre	
Straw, pounds		
Grain, pounds		57
Yields per acre		9.5 bu. per acre
Grade		Test wt. 55.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 245 - Main Field		**Year - 1954**
	A	B
Crop	Corn SP CK.	Wheat DC CK.

Variety	Nodak 301	Pilot
Plowing date	5-18-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-19-54	4-22-54
Seeding rate	8 lb. per acre	1 bu. per acre
Seeding manner	2-horse planter	DD press drill
Tillage after seeding	Necessary Cultivation to control weeds.	
Harvest date	9-18-54	8-9-54
Total pounds	7200# silage per acre	
Straw, pounds		
Grain, pounds		54
Yields per acre		9.0 bu. per acre
Grade		Test Wt. 53.0
Year of uniform cropping. Do not include in future averages.		

Rotation - 414 - Main Field		**Year - 1954**
	A	B
Crop	Potatoes F	Fallow
Variety	Cobbler	

Plowing date		
Plowing depth		
Tillage before seeding	DF 5-4-54	
Seeding date	5-5-54	
Seeding rate	10 b.p.a.	
Seeding manner	Hand planted	
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	10-5-54	
Total pounds	490	
Straw, pounds		
Grain, pounds		
Yields per acre	63.3 b.p.a. U.S. No. 1 18.3 b.p.a. Culls	
Grade		

Rotation - 415 - Main Field		**Year - 1954**
	A	B
Crop	Potatoes SP	Wheat DD
Variety	Cobbler	Pilot

Plowing date	5-4-54	
Plowing depth	4-5 inches	
Tillage before seeding		DD 4-20-54
Seeding date	5-5-54	4-22-54
Seeding rate	10 b.p.a.	1 bu. per acre
Seeding manner	Hand Planted	DD press drill
Tillage after seeding	Necessary cultivation to control weeds	
Harvest date	10-5-54	8-9-54
Total pounds	410	
Straw, pounds		
Grain, pounds		70
Yields per acre	50.8 b.p.a. U.S. No. 1 17.5 b.p.a. Culls	11.7 bu. per acre
Grade		Test Wt. 53.5

Rotation - Wheat - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Wheat SP	Wheat FP	Fallow	Wheat F
Variety	Pilot	Pilot		Pilot
Plowing date	4-20-54	9-6-53		

Plowing depth	4-5 inches	4-5 inches		
Tillage before seeding		DD 4-20-54		DF 4-20-54
Seeding date	4-22-54	4-22-54		4-22-54
Seeding rate	1 bu. per acre	1 bu. per acre		1 bu. per acre
Seeding, manner	DD Press Drill	DD Press Drill		DD Press Drill
Tillage after seeding				
Harvest date	8-9-54	8-9-54		8-9-54
Total pounds				
Straw, pounds				
Grain, pounds	54	27		62
Yields per acre	9.0 bu. per acre	4.5 bu. per acre		10.3 bu. per acre
Grade	Test Wt. 54.0	Test Wt. 53.0		Test Wt. 53.0

Rotation - Oats - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Oats SP	Oats FP	Fallow	Oats F
Variety	Gopher	Gopher		Gopher
Plowing date	4-20-54	9-6-53		
Plowing depth	4-5 inches	4-5 inches		

Tillage before seeding		DD 4-20-54		DF 4-20-54
Seeding date	4-23-54	4-23-54		4-23-54
Seeding rate	1 ½ bu. per acre	1 ½ bu. per acre		1 ½ bu. per acre
Seeding, manner	DD Press Drill	DD Press Drill		DD Press Drill
Tillage after seeding				
Harvest date	7-30-54	7-30-54		7-30-54
Total pounds				
Straw, pounds				
Grain, pounds	81	42		103
Yields per acre	25.3 b.p.a	13.1 b.p.a.		32.2 b.p.a.
Grade	Test Wt. 36.5	Test Wt. 31.0		Test Wt. 33.0

Rotation - Barley - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Barley SP	Barley FP	Fallow	Barley F
Variety	Trebi	Trebi		Trebi
Plowing date	4-20-54	9-6-53		
Plowing depth	4-5 inches	4-5 inches		
Tillage before seeding		DD 4-20-54		DF 4-20-54

Seeding date	4-22-54	4-22-54		4-22-54
Seeding rate	5 Pecks	5 Pecks		5 Pecks
Seeding, manner	DD Press Drill	DD Press Drill		DD Press Drill
Tillage after seeding				
Harvest date	8-3-54	8-3-54		8-3-54
Total pounds				
Straw, pounds				
Grain, pounds	78	32		76
Yields per acre	15.9 bu, per acre	6.5 bu. per acre		15.5 bu. per acre
Grade	Test Wt. 37.0	Test Wt. 37.0		Test Wt. 36.0

Rotation - Corn - Main Field			**Year - 1954**	
	A	B	C	D
Crop	Corn SP	Corn FP	Fallow	Corn F
Variety	Nodak 301	Nodak 301		Nodak 301
Plowing date	5-18-54	9-7-53		
Plowing depth	4.5 inches	4-5 inches		
Tillage before seeding		DD 5-18-54		DF 5-18-54
Seeding date	5-19-54	5-19-54		5-19-54

Seeding rate	8 lb. per acre	8 lb. per acre		8 lb. per acre
Seeding, manner	2 Row Planter	2 Row Planter		2 Row Planter
Tillage after seeding	Necessary cultivation to control weeds	Necessary cultivation to control weeds		Necessary cultivation to control weeds
Harvest date	9-8-54, 11-19-54	9-8-54, 11-19-54		9-8-54, 11-19-54
Total pounds	5200# Silage/acre	7800# Silage/acre		11,100# Silage/acre
Straw, pounds				
Grain, pounds	18	14		51
Yields per acre	4.2 bu. per acre	3.3 bu. per acre		12.0 bu. per acre
Grade	No. 2	No. 2		No. 2

SUMMARY SHEETS

ROTATION AND TILLAGE TRIALS

FIELD N - 1954

Crop - Wheat - Field - N		Station - Dickinson				Year - 1954	
Rotation Number	Previous Crop	Tillage Method					
		DD	SP	FP	Disked	Burned	Fallow
					Stubble	Stubble	
68	Corn	8.8					
71	Corn	11.8					
MC A	Wheat		5.5				
MC B				6.2			
583 A	Wheat					4.5	
583 B	Wheat		6.0				
583 C	Wheat				2.8		
569 C	Wheat				4.3		
MC-C	Fallow						11.0
72	Fallow						15.3

225	Fallow						9.7
226	Fallow						10.3
227	Fallow						11.5
228	Fallow						11.5
473	Fallow						8.8
569 B	Fallow						8.2
Sum		20.6	11.5	6.2	7.1	4.5	86.3
Plots		2	2	1	2	1	8
Average		10.3	5.8	6.2	3.6	4.5	10.8

Crop - Oats - Field - N		**Station - Dickinson**			**Year - 1954**
Rotation Number	Previous Crop	Tillage Method			
		DD	FP	F	DD stubble
72	Corn	35.0			
68	Wheat		25.0		
579 B	Oats				24.7

71	Fallow			43.8	
579 A	Fallow			33.1	
Sum		35.0	25.0	76.9	24.7
Plots		1	1	2	2
Average		35.0	25.0	38.5	24.7

Crop - Corn - Field - N
Station - Dickinson
Year - 1954

Rotation Number	Previous Crop	Tillage Method	
		Grain	Silage
68	Oats	6.8	10600
71	Oats	11.5	13400
72	Wheat	18.8	15200
Sum		37.1	39200
Plots		3	3
Average		12.4	13067

Crop - Durum Wheat Station - Dickinson Year - 1954				
Rotation Number	Previous Crop	Tillage Method		
		SP	FP	Fallow
MC-A	Durum	12.3		
MC-B	Durum		9.2	
MC-C	Durum			12.0
472	Fallow			12.2
Sum		12.3	9.2	24.2
Plots		1	1	2
Average		12.3	9.2	12.1

ROTATION SHEETS

ROTATION AND TILLAGE TRIALS

FIELD "N" - 1954

Project - Rotation and Tillage Trials

Rotation - 18 - Field N			**Year - 1954**	
	A	B	C	D
Crop	Cr. Wheat	Wheat SP	Wheat OW	Wheat DD
Variety		Pilot	Pilot	Pilot
Plowing date		4-23-54		
Plowing depth		4-5 inches		
Tillage before seeding			O.W. 4-23-54	DD 4-22-54
Seeding date		4-24-54	4-24-54	4-24-54
Seeding rate		1 bu. per acre	1 bu. per acre	1 bu. per acre
Seeding, manner		DD Press Drill	DD Press Drill	DD Press Drill
Tillage after seeding				
Harvest date		8-9-54	8-9-54	8-9-54
Total pounds				
Straw, pounds				
Grain, pounds		71	53	70
Yields per acre		11.8 bu. per acre	8.8 bu. per acre	11.7 bu. per acre
Grade		Test Wt. 56.0	Test Wt. 55.0	Test Wt. 56.0
Year of uniform cropping. 1954 yields should not be included in future averages from this trial.				

Rotation - 19 - Field N			**Year - 1954**	
	A	B	C	D
Crop	Cr. Wheat	Wheat SP	Wheat OW	Wheat DD
Variety		Pilot	Pilot	Pilot
Plowing date		4-23-54		
Plowing depth		4-5 inches		
Tillage before seeding			O.W. 4-23-54	DD 4-22-54
Seeding date		4-24-54	4-24-54	4-24-54
Seeding rate		1 bu. per acre	1 bu. per acre	1 bu. per acre
Seeding, manner		DD Press Drill	DD Press Drill	DD Press Drill
Tillage after seeding				
Harvest date		8-9-54	8-9-54	8-9-54
Total pounds				
Straw, pounds				
Grain, pounds		59	44	63
Yields per acre		9.8 bu. per acre	7.3 bu. per acre	10.5 bu. per acre
Grade		Test Wt. 57.0	Test Wt. 58.0	Test Wt. 53.0
Year of uniform cropping. 1954 yields should not be included in future averages from the trial.				

Rotation - 68 - Field N		Year - 1954	
	A	B	C
Crop	Corn SP Manured	Wheat DC	Oats FP
Variety	Nodak 301	Pilot	Gopher
Plowing date	5-18-54		9-7-53
Plowing depth	4-5 inches		4-5 inches
Tillage before seeding		DD 4-22-54	DD 4-2-54
Seeding date	5-19-54	4-24-54	4-23-54
Seeding rate	8 lb. per acre	1 bu. per acre	1 ½ bu. per acre
Seeding manner	2 Row Planter	DD Press Drill	DD Press Drill
Tillage after seeding	Necessary cultivation to control weeds		
Harvest date	9-8-54, 11-19-54	8-9-54	7-30-54
Total pounds	10,600# Silage per acre		
Straw, pounds			
Grain, pounds	29	53	80
Yields per acre	6.8 bu. per acre	8.8 bu. per acre	25.0 bu. per acre
Grade	No. 2	Test Wt. 51.0	Test Wt. 30.0

Rotation - 71 - Field N			Year - 1954	

	A	B	C	D
Crop	Fallow Manured	Oats F	Corn SP	Wheat DC
Variety		Gopher	Nodak 301	Pilot
Plowing date			9-18-54	
Plowing depth			4-5 inches	
Tillage before seeding		DF 4-23-54		DD 4-22-54
Seeding date		4-23-54	5-19-54	4-24-54
Seeding rate		1 ½ bu. per acre	8 lbs. per acre	1 bu. per acre
Seeding, manner		DD Press Drill	2 Row Planter	DD Press Drill
Tillage after seeding			Necessary cultivation to control weeds	
Harvest date		7-30-54	9-8-54, 11-19-54	8-9-54
Total pounds			13,400# silage per acre	
Straw, pounds				
Grain, pounds		140	49	71
Yields per acre		43.8 bu. per acre	11.5 bu. per acre	11.8 bu. per acre
Grade		Test Wt. 34.0	No. 2	Test Wt. 53.0

Rotation - 72 - Field N			**Year - 1954**	
	A	B	C	D

Crop	Fallow - Manured	Wheat F	Corn SP	Oats DC
Variety		Pilot	Nodak 301	Gopher
Plowing date			5-18-54	
Plowing depth			4-5 inches	
Tillage before seeding		DF 4-23-54		DD 4-22-54
Seeding date		4-24-54	5-19-54	4-23-54
Seeding rate		1 bu. per acre	8 lbs. per acre	1 ½ bu. per acre
Seeding, manner		DD Press Drill	2 Row Planter	DD Press Drill
Tillage after seeding			Necessary cultivation to control weeds	
Harvest date		8-9-54	9-8-54, 11-19-54	7-30-54
Total pounds			15,200# Silage per acre	
Straw, pounds				
Grain, pounds		92	80	112
Yields per acre		15.3 bu. per acre	18.8 bu. per acre	35.0 bu. per acre
Grade		Test Wt. 53.0	No. 2	Test wt. 33.5

Rotation - 224 - Field N		**Year - 1954**
	A	B
Crop	Cr. Wheat	Fallow DF 5-1

Variety		
Plowing date		
Plowing depth		
Tillage before seeding		
Seeding date		
Seeding rate		
Seeding manner		
Tillage after seeding		
Harvest date		
Total pounds		
Straw, pounds		
Grain, pounds		
Yields per acre		
Grade		

Rotation - 225 - Field N		**Year - 1954**
	A	B
Crop	Wheat	Fallow P 5-1
Variety	Pilot	

Plowing date		
Plowing depth		
Tillage before seeding	DF 4-23-54	
Seeding date	4-24-54	
Seeding rate	1 bu. per acre	
Seeding manner	DD Press Drill	
Tillage after seeding		
Harvest date	8-9-94	
Total pounds		
Straw, pounds		
Grain, pounds	58	
Yields per acre	9.7 bu. per acre	
Grade	Test Wt, 54.0	

Rotation - 226- Field N		**Year - 1954**
	A	B
Crop	Wheat	Fallow DF 5-15
Variety	Pilot	
Plowing date		

Plowing depth		
Tillage before seeding	DF 4-23-54	
Seeding date	4-24-54	
Seeding rate	1 bu. per acre	
Seeding manner	DD Press Drill	
Tillage after seeding		
Harvest date	8-9-54	
Total pounds		
Straw, pounds		
Grain, pounds	62	
Yields per acre	10.3 bu. per acre	
Grade	Test Wt. 55.5	

Rotation - 227 - Field N		**Year - 1954**
	A	B
Crop	Wheat	Fallow P 5–15
Variety	Pilot	
Plowing date		
Plowing depth		
Tillage before		

Tillage before seeding	DF 4-23-54	
Seeding date	4-24-54	
Seeding rate	1 bu. per acre	
Seeding manner	DD Press Drill	
Tillage after seeding		
Harvest date	8-9-54	
Total pounds		
Straw, pounds		
Grain, pounds	69	
Yields per acre	11.5 bu. per acre	
Grade	Test Wt. 54.0	

Rotation - 228 - Field N		**Year - 1954**
	A	B
Crop	Wheat	Fallow DF 6-1
Variety	Pilot	
Plowing date		
Plowing depth		
Tillage before seeding	DF 4-23-54	

Seeding date	4-24-54	
Seeding rate	1 bu. per acre	
Seeding manner	DD Press Drill	
Tillage after seeding		
Harvest date	8-9-54	
Total pounds		
Straw, pounds		
Grain, pounds	69	
Yields per acre	11.5 bu. per acre	
Grade	Test Wt. 54.0	

Rotation - 472		**Year - 1954**
	E	F
Crop	Durum DF	Fallow
Variety	Sentry	
Plowing date		
Plowing depth		
Tillage before seeding	DF 4-23-54	
Seeding date	4-24-54	

Seeding rate	1 bu. per acre	
Seeding manner	DD Press Drill	
Tillage after seeding		
Harvest date	8-9-54	
Total pounds		
Straw, pounds		
Grain, pounds	73	
Yields per acre	12.2 bu. per acre	
Grade	Test Wt. 60.0	

Rotation - 473 - Field N		**Year - 1954**
	E’	F’
Crop	Wheat DF	Fallow
Variety	Pilot	
Plowing date		
Plowing depth		
Tillage before seeding	DF 4-23-54	
Seeding date	4-24-54	
Seeding rate	1 bu. per acre	
Seeding		

Seeding manner	DD Press Drill	
Tillage after seeding		
Harvest date	8-9-54	
Total pounds		
Straw, pounds		
Grain, pounds	53	
Yields per acre	8.8 bu. per acre	
Grade	Test Wt. 55.0	

Rotation - 569 - Field N		**Year - 1954**	
	A	B	C
Crop	Fallow	Wheat F	Wheat DD
Variety		Pilot	Pilot
Plowing date			
Plowing depth			
Tillage before seeding		DF 4-23-54	DD 4-22-54
Seeding date		4-24-54	4-24-54
Seeding rate		1 bu. per acre	1 bu. per acre
Seeding manner		DD Press Drill	DD Press Drill
Tillage after			

Tillage after seeding			
Harvest date		8-9-54	8-9-54
Total pounds			
Straw, pounds			
Grain, pounds		49	26
Yields per acre		8.2 bu. per acre	4.3 bu. per acre
Grade		Test Wt. 54.0	Test Wt. 56.0

Rotation - 579 - Field N		**Year - 1954**	
	A	B	C
Crop	Oats F	Oats DD	Fallow
Variety	Gopher	Gopher	
Plowing date			
Plowing depth			
Tillage before seeding	DF 4-23-54	4-22-54	
Seeding date	4-23-54	4-23-54	
Seeding rate	1 ½ bu. per acre	1 ½ bu. per acre	
Seeding manner	DD Press Drill	DD Press Drill	
Tillage after seeding			

Harvest date	7-30-54	7-30-54	
Total pounds			
Straw, pounds			
Grain, pounds	106	79	
Yields per acre	33.1 bu. per acre	24.7 bu. per acre	
Grade	Test Wt. 38.0	Test Wt. 38.0	

Rotation - 583 - Field N		**Year - 1954**	
	A	B	C
Crop	Wheat DD Burned	Wheat SP	Wheat DD
Variety	Pilot	Pilot	Pilot
Plowing date		4-23-54	
Plowing depth		4-5 inches	
Tillage before seeding	DD 4-22-54		DD 4-22-54
Seeding date	4-24-54	4-24-54	4-24-54
Seeding rate	1 bu. per acre	1 bu. per acre	1 bu. per acre
Seeding manner	DD Press Drill	DD Press Drill	DD Press Drill
Tillage after seeding			
Harvest date	8-9-54	8-9-54	8-9-54
Total pounds			

Straw, pounds			
Grain, pounds	27	36	17
Yields per acre	4.5 Bu. per acre	6.0 bu. per acre	2.8 bu. per acre
Grade	Test Wt. 52.0	Test Wt. 53.0	Test Wt. 54.0

Rotation - 700 - Field N		**Year - 1954**	
	A	B	C
Crop	Wheat Sp	Wheat OW	Wheat DD
Variety	Pilot	Pilot	Pilot
Plowing date	4-23-54		
Plowing depth	4-5 inches		
Tillage before seeding		O.W. 4-23-54	DD 4-22-54
Seeding date	4-24-54	4-24-54	4-24-54
Seeding rate	1 bu. per acre	1 bu. per acre	1 bu. per acre
Seeding manner	DD Press Drill	DD Press Drill	DD Press Drill
Tillage after seeding			
Harvest date	8-9-54	8-9-54	8-9-54
Total pounds			
Straw, pounds			
Grain, pounds	73	73	75

Yields per acre	12.2 bu. per acre	12.2 bu. per acre	12.5 bu. per acre
Grade	Test Wt. 56.0	Test Wt. 53.0	Test Wt. 52.0
Year of uniform cropping. 1954 yields should not be included in future averages from this trial.			

Rotation - 710 - Field N		**Year - 1954**	
	A	B	C
Crop	Wheat SP	Wheat OW	Wheat DD
Variety	Pilot	Pilot	Pilot
Plowing date	4-23-54		
Plowing depth	4-5 inches		
Tillage before seeding		O.W. 4-23-54	DD 4-22-54
Seeding date	4-24-54	4-24-54	4-24-54
Seeding rate	1 bu. per acre	1 bu. per acre	1 bu. per acre
Seeding manner	DD Press Drill	DD Press Drill	DD Press Drill
Tillage after seeding			
Harvest date	8-9-54	8-9-54	8-9-54
Total pounds			
Straw, pounds			
Grain, pounds	84	63	62
Yields per acre	14.0 bu. per acre	10.5 bu. per acre	10.3 bu. per acre

Grade	Test Wt. 53.0	Test Wt. 51.0	Test Wt. 52.5
Year of uniform cropping. 1954 yields should not be included in future averages from this trial.			

Rotation - Common Wheat - Field N			**Year - 1954**	
	A’	B’	C’	D’
Crop	Wheat Sp	Wheat FP	Wheat F	Fallow
Variety	Pilot	Pilot	Pilot	
Plowing date	4-23-54	9-7-53		
Plowing depth	4-5 inches	4-5 inches		
Tillage before seeding		DD 4-22-54	DF 4-23-54	
Seeding date	4-24-54	4-24-54	4-24-54	
Seeding rate	1 bu. per acre	1 bu. per acre	1 bu. per acre	
Seeding, manner	DD Press Drill	DD Press Drill	DD Press Drill	
Tillage after seeding				
Harvest date	8-9-54	8-9-54	8-9-54	
Total pounds				
Straw, pounds				
Grain, pounds	33	37	66	
Yields per acre	5.5 bu. per acre	6.2 bu. per acre	11.0 bu. per acre	

Grade	Test Wt. 53.5	Test Wt. 53.0	Test Wt. 52.0	

Rotation - Durum Wheat - Field N - Continuous			**Year - 1954**	
	A	B	C	D
Crop	Durum SP	Durum SP	Durum F	Fallow
Variety	Sentry	Sentry	Sentry	
Plowing date	4-23-54	9-7-53		
Plowing depth	4-5 inches	4-5 inches		
Tillage before seeding		DD 4-23-54	DF 4-23-54	
Seeding date	4-24-54	4-24-54	4-24-54	
Seeding rate	1 bu. per acre	1 bu. per acre	1 bu. per acre	
Seeding, manner	DD Press Drill	DD Press Drill	DD Press Drill	
Tillage after seeding				
Harvest date	8-9-54	8-9-54	8-9-54	
Total pounds				
Straw, pounds				
Grain, pounds	74	55	72	
Yields per acre	12.3 bu. per acre	9.2 bu. per acre	12.0 bu. per acre	
Grade	Test Wt. 61.0	Test Wt. 58.0	Test Wt. 60.0	