

Silage Dependable Forage Crop At Williston ; Fertilizer Boosts Irrigated Silage Corn

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Corn acreage has been on the increase in recent years in this northwestern section of North Dakota. Because of a short growing season the production of corn grain is undependable. However, good quality corn silage usually can be produced. Since the development of the field chopper, corn silage can be handled easily. It is possibly this factor which has lent greatest encouragement to increased corn acreage for silage in this area.

The common practice of the dryland grain farmer in this area is to alternately crop and fallow his land. The livestock or diversified operators may possibly fallow only a fourth of his land, then plant corn on the balance of the acreage normally fallowed. They usually plant the corn crop between May 15 and June 10 on spring plowed crop land.

On the irrigation projects the corn acreage has also increased. Being a row crop, it permits control of weeds in addition to producing high quality silage. Corn may not produce as much forage under irrigation as a perennial, such as alfalfa, but because it is an annual crop it can be readily adapted to fill a gap in the farm feed supply while the perennial requires a year for establishment.

To obtain information on corn variety and hybrid silage yields in this area, trials were initiated at the Williston Branch Stations in 1952. Plantings were made between May 10 and 20 in all years, on spring plowing on the dryland and fall plowing on the irrigation unit.

A plant population of about 17,000 plants per acre was established at both sites in drilled plantings. Plots were usually harvested during the first week of September. No fertilizer was applied on the dryland or irrigated plantings until in 1954. In 1954 and 1955, plots on irrigation were split and 200 pounds per acre of 33-0-0 were applied in a split application to half of the planting.

Results of these corn trials are given in Tables I and II. All silage yields are reported on a 70 per cent moisture basis. Actual moisture percentage at harvest ranged from 72 to 80 per cent in different varieties.

Nodakhybrid 208 and Rainbow Flint (Mandan Strain) have consistently produced the high yields on both dryland and irrigation. Though the tonnage of Rainbow has been highest, it is doubtful if it produced as much actual feed as did some of the earlier maturing lower yielding hybrids. The Rainbow variety was generally only in the milk stage at harvest, while earlier maturing hybrids were often glazed or in the soft dough stage.

Yields at the irrigation station have not been as high as might be expected. The 1953 and unfertilized 1954 yields are very low. In 1953 cutworms and other factors reduced the stands appreciably

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TABLE I.—Corn Silage Yields—Williston Dryland.

Variety or Hybrid	Tons/acre @ 70% moisture				Averages	
	1952	1953	1954	1955	'52 - '55	'54 - '55
AES 101				5.8		
Falconer				7.2		
Nodak 208	8.9	8.9	7.1	8.0	8.2	7.6
Wisc. 240	8.1		6.4	6.2		6.3
Norden 77				5.6		
Nodak 301	6.9	8.1	6.5	6.2	6.9	6.4
Nodak 306				5.6		
Nodak 305			6.8	7.8		7.3
Rainbow (Man.)	5.3	8.1	7.7	7.6	7.2	7.7
Wisc. 279			7.2			
Average	7.3	8.4	7.0	6.9		

TABLE II.—Corn Silage Yields—Williston Irrigation.

Variety or Hybrid	Tons/acre @ 70% moisture						Averages		
	1952 No	1953 No	1954* No N1		1955 No N1		'52 - '55 No	'54 - '55 No	'55 N1
AES 101					15.0	16.6			
Falconer					12.3	14.3			
Nodak 208	14.3	8.5	10.8	13.0	13.0	13.6	11.7	11.9	13.3
Wisc. 240	12.6		8.6	13.5	12.1	14.0		10.4	13.8
Norden 77					12.6	14.5			
Nodak 301	10.7	7.9	10.0	14.8	10.9	13.0	9.8	10.5	13.9
Nodak 306					12.0	13.9			
Nodak 305			9.8	13.3	14.4	16.0		12.1	14.7
Rainbow (Man.)	14.5	10.8	9.9	13.7	15.5	17.3	12.7	12.7	15.5
Wisc. 279					10.8	11.7			
Average	13.0	9.1	9.8	13.7	12.9	14.5			

*Severe hail damage on July 17.

No—no fertilizer applied; N1—200 lbs./acre of 33-0-0 in a split application.

and in 1954 a severe hailstorm in mid-July did serious damage. The response to nitrogen fertilizer averaged 3.9 tons per acre for all varieties in 1954, and only 1.6 tons per acre in 1955. The greater response in 1954 suggests that the non-fertilized plots were unable to recover as rapidly from the hail damage as the fertilized plots.

There appears to be a slight relationship between maturity and yield in the irrigation trials with the later maturing ones producing a slightly higher tonnage. This is not without exception, for in 1955 the early maturing hybrid AES101 yielded more than any other hybrids and very nearly as much as Rainbow Flint. In the dryland trials there does not appear to be any relationship between maturity and yield, but data suggest that the medium early hybrid, Nodak 208, may be somewhat better adapted to the area than other hybrids or varieties.

A comparison of yields obtained on dryland and irrigation indicate that fertilized plots under irrigation produced nearly twice the yields of those on dryland. It is believed that this difference could be even greater if the plant population were to be increased on the irrigation. A plant population of 20,000 per acre may aid in approaching the maximum productive potential under irrigation.