

## NITROGEN FERTILIZER ON CRESTED WHEATGRASS

### Plots Fertilized Every Year:

Table 8 gives the hay yields from old crested wheatgrass plots which have been fertilized every year with ammonium nitrate (33-0-0). This trial was begun in 1955 and 11 year's data are available from it. Throughout the trial the fertilizer has been applied in early spring, generally in early to mid-April. Treatments on the plots include check (no nitrogen), 25 pounds nitrogen per acre, 50 pounds, and 100 pounds.

Excellent yield responses were obtained in the 1965 season. The yield of 4,267 pounds of hay (oven-dry weight) obtained with 25 pounds of nitrogen per acre was the highest for this rate of application obtained during the 11-year period of the trial. Yields in 1962 and 1963, however, were almost as good. Slightly better yields were obtained in the 1963 season with the 50 and 100 pound rates than in the 1965 season. The production of the check in the 1965 season was 2223 pounds per acre, compared to the 11-year average of 1418 pounds per acre. Check yields in 1962 and 1963 were slightly better than the 1965 check yield.

All rates of application resulted in the production of a ton or more of additional hay above the check yield. Thus all three rates of application would have been profitable, with nitrogen figured at .10 per pound and hay valued at .01 per pound. However, the first 25 pounds of nitrogen produced the major boost in yield, and would have been the most economical rate of application. The 11-year average yields of 2,225 pounds per acre for the 25 pound rate, 2,419 pounds with the 50 pound rate, and 2,432 pounds from the 100 pound rate clearly show that there is no justification for the use of the 50 and 100 pound rates over a period of years. The average increment of production per 25 pound increment of nitrogen is relative small after the first 25 pound application.

**Table 8. Forage Production from Old Crested Wheatgrass Plots Fertilized Annually at Three Rates of Nitrogen (33-0-0).**

Year	Check	Dry Weight Yield-Lbs./Acre			Percentage Increase Over Check		
		25 Lbs. N	50 Lbs. N	100 Lbs. N	25 Lbs. N	50 Lbs. N	100 Lbs. N
1955	1276	2096	2121	2494	64.3	66.2	95.4
1956	612	751	763	670	22.7	24.7	9.5
1957	1356	2117	2064	2174	56.1	52.2	60.3
1958	1224	1679	1839	1993	37.0	50.2	62.8
1959	1116	1451	1284	1206	30.0	51.1	8.1
1960	1279	2003	1954	2160	56.6	52.6	68.9
1961	550	661	693	706	20.2	26.0	28.4
1962	2519	4130	4200	4326	64.0	66.7	71.7
1963	2289	3999	5199	4952	74.7	123.6	116.3
1964	1153	1324	1538	1235	14.8	33.4	7.1
1965	2223	4267	4950	4836	91.9	122.9	117.5
11 Yr. Av.	1418	2225	2419	2432	56.9	70.6	71.5

### Plots Fertilized Every Other Year:

The hay yields from the plots fertilized in alternate years with ammonium nitrate are given in table 9. The alternate-year plots are fertilized in early spring at the same rates as the every-year plots. Fertilizer has been applied on these plots in 1957, 1959, 1961, 1963, and 1965. In general there has been some carry over-effect, from year to year, especially at the heavier rates. Carry-over from the dry season of 1961 to the comparably moist season of 1962 was especially marked, with practically no yield increases being obtained in 1961, but with very substantial increases being obtained in 1962, a year after the fertilizer applications were made.

As would be expected, the 1965 yields on the alternate-year plots were about equal to the 1965 yields on the every-year plots, and all rates of fertilization would have been profitable in that season. The 9-year average yields, however, show that 50 pounds of nitrogen every-other-year, does not produce quite as much forage as 25 pounds every year. Since the cost of application is less for the alternate-year, 50 pounds N treatment, it is apparent that either 25 pounds N every year or 50 pounds N every other year could be used profitably on crested wheatgrass stands in this area. There would be no economic justification for the use of the 100 pounds N every other year.

**Table 9. Forage Production From Old Crested Wheatgrass Plots Fertilized Alternate Years<sup>1</sup> at Three Rates of Nitrogen (33-0-0).**

Year	Check	Dry Weight Yield - Lbs./Acre			Percentage Increase Over Check		
		25 Lbs. N	50 Lbs. N	100 Lbs. N	25 Lbs. N	50 Lbs. N	100 Lbs. N
1957	1239	1714	2013	2001	38.3	62.5	61.5
1958	1003	1016	1114	1250	1.3	11.1	24.6
1959	1094	1230	1266	1659	12.4	15.7	51.6
1960	1306	1813	1801	2187	38.8	37.8	67.5
1961	554	608	658	624	9.7	18.8	12.6
1962	2298	3049	3265	3792	32.7	42.1	65.0
1963	2087	3106	3525	4829	48.8	68.9	131.4
1964	952	946	1101	1202	0.0	15.6	26.3
1965	2086	3919	4457	4823	87.9	113.7	131.2
9 Yr. Av.	1402	1933	2133	2485	37.9	52.1	77.2

<sup>1</sup>Fertilizer applied in spring of 1957, 1959, 1961, 1963, and 1965.

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