

## INFLUENCE OF NITROGEN ON OLD CRESTED WHEATGRASS STANDS

The nitrogen fertilizer trial on old crested wheat grass stands, begun in 1951, was concluded this year with the clipping of the plots which were fertilized in the spring of 1954. In this trial a new area was fertilized each year and the residual effects of the initial fertilization were determined by clipping each year following the application until no visible response could be detected. A new trial was begun this year in which the same plots will receive the same amount fertilizer each year. The 50 and 100 lb. rates of N application have been retained in the new study, and a lighter rate, 25 lbs. N, has been added. The heavy rate, 150 lbs. N, has been discontinued.

[Table 8](#) gives the results of the five year study of the influence of nitrogen fertilizer on the production of crested wheat grass hay from old stands. Rates of application in this trial have been light, 195 lbs. of fertilizer per acre (50# N); medium, 300 lbs. of fertilizer per acre (100# N); and heavy, 450 lbs. of fertilizer per acre (150# N). The fertilizer has been applied in the spring by broadcasting on the surface from the fertilizer attachment of a grain drill.

The data from the trial as summarized in Table 8 show that substantial percentage increases in yield have been obtained from all rates of application.

Table 8. Influence of Nitrogen Fertilizer Treatments on Forage Production from an old Crested Wheat grass Field. Hay Yields in Pounds per Acre, Over-dry .											
Time of Application	Year of Yield	Yields from Treatments				Percentage Increase in Forage Production			Total Additional Forage Production		
		No N Check	50# N Light	100# N Medium	150# N Heavy	Light	Medium	Heavy	Light	Medium	Heavy
	1951	1627	1976	2233	2250	21.5	37.2	38.2	349	596	623

Spring - 1951	1952	467	456	720	841	5.4	54.2	80.1	25	253	374
	1953	3330	3532	4481	4485	6.1	64.6	34.7	202	1151	1155
Total for 3 years									576	2000	2152
Spring - 1952	1952	366	609	636	716	69.1	73.8	95.6	253	270	350
	1953	2897	4507	4635	5596	55.8	60.0	93.1	1610	1738	2695
Total for 2 years									1863	2008	3045
Spring - 1953	1953	2761	4348	5508	5354	57.5	99.5	93.9	1587	2747	2593
Spring - 1954	1954	1243	1953	2083	2381	57.1	67.6	91.6	710	840	1138
	1955	1124	1227	1404	1782	9.2	24.9	58.5	103	280	658
Total for 2 years									813	1120	1796

The medium and heavy rates have increased the yield more than the light rate, but these increases in yield have not generally been proportional to the additional amounts of nitrogen supplied. The average increase in production from a light application of nitrogen has been 1201 lbs. per acre; from a medium application 1969 lbs.; and from a heavy application 2441 lbs. Thus the first 50 lbs. of nitrogen has produced 1201 lbs. of dry hay; the second 50 lbs. increment has produced an additional 768 lbs. of hay; and the third 50 lb. increment of nitrogen has produced only 472 lbs. of additional hay. The first 1200 lbs. of additional hay requires only 50 lbs. of nitrogen, but to get another 1200 lbs. of hay, 100 more pounds of nitrogen are required. The results thus far would seem to indicate that it would be difficult to justify the use of nitrogen at rates greater than 50 lbs. per acre in this area.

The first year results from the new fertilizer trial are given in [Table 9](#). Twenty five pounds of nitrogen gave the surprisingly good increase in yield of 820 lbs. per acre of dry hay. Fifty pounds of nitrogen gave only slightly better yields, but 100 pounds of nitrogen produced 1214 lbs. per acre of extra hay. The present results will become of significance primarily when the effects of repeated applications of nitrogen to the same plots begin to show.

Table 9. First Year Yields From the Application of Nitrogen Fertilizer to old Stands of Crested Wheat grass.

Yield Factors	Rate of Application lbs. per acre			
	Check No N	Very light 25# N	Light 50# N	Medium 100# N
Yield - lbs. per acre	1276	2096	2121	2494
Increase over check	---	820	845	1218
Percentage increase	---	64.3	66.2	95.4

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