Grass Seed Fertilizer Experiment

The 1967 results are a continuation of a Windsor Bluegrass experiment established in the fall of 1965 on the Merle Carlson and Louis Olson farms on new seeding Windsor Bluegrass. The 1967 results are from the Merle Carlson farm only. The objective of the experiment was to measure the effectiveness of three sources of N over a period of several years of bluegrass production. A number of farmers feel that urea does not give as good response as does ammonium nitrate.

The losses can be explained by volatilization of ammonia providing proper environmental conditions exist. Shell Petrolium Company tests on the soil during 1966 indicate that the volatilization would not be associated with the soil itself, however, under our conditions of production enough moisture is present to carry the nitrogen into the soil. The fertilizer is actually applied to a neutral or slightly alkaline bed of mixed ash and duff during the fall when air and soil surface temperatures can be relatively high.

It is presumed that under these conditions volatilization of ammonia can occur and this experiment is an attempt to evaluate whether these losses do in fact occur without actually measuring volatilization losses from the soil surface.

Four rates (50, 100, 150, and 200 #/A) of N were applied as Ammonium Sulphate, Ammonium Nitrate and Urea on a seedling stand in the fall of 1965 and again in the fall of 1966. The N content of the plant material, stems and leaves, was determined from samples taken at late bloom. The low rate of fertilization was more advanced than late bloom at the sampling date. The most advanced florets were in the milk stage of development.

The percentage of nitrogen and the average yields are presented in Table No. 17. The % N in the plant material at the 200# level tends to reflect the loss of N through volatilization with urea having the lowest N content and ammonium nitrate the highest N content, the yields per se indicate the exact opposite. However, if one considers the extremely high temperatures during part of the last week of June and the first week in July, then the yields are in proper order. The high temperatures arrested seed development, therefore, the plants having the highest N would be least mature and consequently lowest seed yield.

The plants in the 100# N treatment level were showing signs of maturing before the hot weather arrived and therefore show the N loss effect in the proper order.

A considerable amount of variation was observed visually between the plots of the experiment. All sources of the 50 pound rate were obviously deficient and all sources of the 200 pound rate were heavily lodged, however, at the 100 and 150 pound rates yellowing and early maturity wasn't consistent with rate or source between the four replications.

Seed yield by replicate and % N by replicate are presented in Appendix Tables No. 34 and 35, respectively.

Table No. 17

The Effect of Rates and Sources of Nitrogen Fertilizer on Seed Production and Percentage N in Culms of Windsor Bluegrass

Merle Carlson Farm - Culver, Oregon - 1967

Source & Rate Nitrogen Fertilizer Pounds Per Acre	(2)	Average (1) Yield Lbs. 1 Acre	Nitrogen Content % N
Ammonium Sulphate	50	393.80	
	100	923.32	1.00
	150	913.31	
	200	1002.57	1.24
	150 - K	987.09	
Ammonium Nitrate	50	465.46	
	100	958.54	.79
	150	923.33	
	200	941.98	1.27
Urea	50	442.38	
	100	810.38	.81-
	150	940.84	
	200	1056.92	1.15
L.S.D. 5%		187.	
C. V. %		15.8	

(1) At 22# Bushel Weight

(2) All plots received 80# s, 80# P_2O_5 and 200# K per acre, except where noted

Appendix Table No. 34

The Effect of Rates and Sources of Nitrogen Fertilizers on the Production of Windsor Bluegrass Seed

Merle Carlson Farm - Culver, Oregon - 1967

Source & Rate (2) Nitrogen Fertilizer Pounds Per Acre	Pounds of Seed Per Acre (1) I	II	III	IV	Average Yield Lbs/Acre
Ammonium Sulphate					
50	319.41	429.93	423.86	402.00	393.80
100	879.30	920.59	1090.62	802.78	923.32
150	675.26	1171.99	811.29	994.68	913.31
200	899.94	857.44	1135.56	1117.34	1002.57
150-K	1063.90	1159.85	1044.47	680.12	987.09
Ammonium Nitrate					
50	463.94	409.29	496.73	491.87	465.46
100	986.17	839.22	998.32	1010.46	958.54
150	868.37	929.09	998.32	897.52	923.33
200	965.53	977.67	967.26(3)	857.44	941.98
Urea 50	490.66	453.01	377.71	448.15	442.38
100	915.73	587.82	780.92	957.03	810.38
150	1067.55	698.34	965.53	1032.33	940.94
200	1111.27	1133.13	958.24	1025.04	1056.92
L.S.D. @ 5%					187.0
C. V. %					15.8

(1) Seed lots wind separated so that each plot yield was adjusted to a 22# bushel weight
(2) Phosphate, potash, and sulfur added at adequate uniform application rates with exception of one treatment at 150# N as ammonium nitrate in which K was omitted.
(3) Corrected Yield

Appendix Table No. 35

The Effect of Rate and Source of Nitrogen Fertilizer on the Nitrogen Content of Windsor Bluegrass

Merle Carlson Farm - Culver, Oregon - 1967

Fertilizer Application Pounds/Acre	% N by Replicate				
	I	II	III	IV	Average
100# Ammonium Sulphate	.92	.82	1.02	1.25	1.00
200# " "	1.11	1.38	1.34	1.13	1.24
100# Ammonium Nitrate	.80	.78	.75	.84	.79
200# " "	1.18	1.24	1.34	1 30	1.27
100# Urea	.79	.78	.78	.88	.81
200# "	1.29	1.00	1.14	1.16	1.15