

Average of Kentucky and C-1 Kentucky Bluegrass Locations

All treatments received P, K and S⁽¹⁾

All comparisons received 150 lbs. of nitrogen in a single application.

<u>Month of Application</u>	<u>Ave. Yield lbs. Seed Per Acre for Two Locations</u>
October	847.2
November	552.0
December	702.8
January	652.5
February	558.6

Average of Merion Bluegrass Locations

All treatments received P, K and S⁽¹⁾

All comparisons received 150 lbs. of nitrogen in a single application.

<u>Month of Application</u>	<u>Ave. Yield lbs. Seed Per Acre for Two Locations</u>
October	213.0
November	191.4
December	205.4
January	190.3
February	192.3

(1) This treatment was not necessarily the highest yielding treatment.

These results indicate a more marked difference in favor of the early application in the case of Kentucky bluegrass but with the trend the same in both cases. The seed yield is heaviest for the October application date, a sharp drop in seed yield for the November application and then an increase in December with the yield decreasing after December. The winter high yield application date usually varies by location between a December and January peak. This early winter high yield peak has been reported also in the 1960 annual report of the Central Oregon Experiment Station. At that time, no October application yield data was available. Other data gathered by this station indicates that the seed yield continues to decline after February, with April applications contributing more to vegetative growth than seed yields.

Yields for the four locations by replicate and mean of four replications may be found in Appendix Tables Nos. 1, 2, 3, and 4.

In conjunction with the fertility experiment above, an exploratory

experiment was conducted to determine the time of floral induction in Merion bluegrass as indicated by the shift of the apical meristem from a vegetative stage to floral stage. It was also hoped that some information might be gained on the effect of phosphate, potash and sulfur applications, and the time of nitrogen application on floral induction.

The Merion bluegrass locations were checked throughout the winter and early spring. It was not until March 14, 1962, that the first primordia shifted from vegetative to floral form.

The floral development appeared to be further advanced at the Madras location than at the Culver location. The reason for the more advanced state is not definitely known, but probably soil temperature is an important factor. The Madras location is from 400-500 feet lower in elevation and in a generally warmer region than the Culver area.

At this time it was necessary to select only one location for further study and the Madras location was selected.

By March 19, 1962, the shift was well under way at the Madras location but only in the primary bud. The results obtained are shown in Table 5.

Since the results of this table are similar to, but more clearly shown in the March 31 reading, (Table No. 6), only the March 31 readings will receive comment.

The results tend to indicate that at least a portion of the yield differences obtained are already manifest in the plant by the end of March. The treatment with no fertilizer was considerably slower in floral induction, the February application is next in line. The absence of phosphate, potash and sulfur for a complete fertilizer may also tend to slow floral induction. By March 31, all of the primary buds of the October and January treatments had started or completed floral induction with the January application most effective at least in the primary bud.

Recorded observations at the time of reading the floral development indicate that when no fertilizer was applied, two apparently distinct types of plants developed. One type consisted of rather thrifty plants with a strong primary and one or two strong lateral tillers. This type of plant showed no dead growth from the previous year and was apparently a new seedling. The second type plant was a mass of small and poorly developed tillers almost 100% vegetative and showed the dead stem growth of the previous year. The plants without phosphate had large numbers of small, spindly and brittle laterals. The absence of potash and sulfur treatments apparently had little to do with the condition of the tillers. These plants were thrifty and had good lateral development. The October nitrogen treatment produced a large number of healthy laterals and in many

Table No. 5

Floral Primordia Development
Merion Bluegrass

Marvin Light Farm - Madras, Oregon - 3/19/62

Fertilizer Application (1) Pounds Per Acre				Vegetative	Apical Elongation	Floral Differentiation
N	P	K	S			
0	0	0	0	5 (2)	1	4
150 (Oct.)	0	80	80	4	5	1
150 (Oct.)	80	0	80	5	3	2
150 (Oct.)	80	80	0	4	3	3
150 (Oct.)	80	80	80	2	3	5
150 (Jan.)	80	80	80	3	6	1
150 (Feb.)	80	80	80	2	3	5

- (1) All Phosphate, Potash and Sulfur applied in October.
- (2) The plants in the check treatment appeared to fall into two distinct classes. Those plants associated with last years growth were very much nitrogen starved and appeared to have vegetative primordia without exception. Those plants which appeared to be last years new seedlings and not associated with last years production were quite well developed and did not appear nitrogen deficient.

Table No. 6

Flora Primordia Development
Merion Bluegrass

Marvin Light Farm - Madras, Oregon - 3/31/62

Fertilizer Application Pounds Per Acre				Bud Type	Primordial Bud Development		
N	P	K	S		Vegetative	Apical Elongation	Floral Differentiation
0	0	0	0	Primary	4.4	-	5.6
				Lateral	9	-	1
150 (Oct.)	0	80	80	Primary	1.7	1.7	6.6
				Lateral	6.6	1.7	1.7
150 (Oct.)	80	0	80	Primary	2.4	.6	7.0
				Lateral	2.0	4.0	4.0
150 (Oct.)	80	80	0	Primary	.8	.8	8.4
				Lateral	2.0	6.0	2.0
150 (Oct.)	80	80	80	Primary	-	3.1	6.9
				Lateral	5.0	5.0	-
150 (Jan.)	80	80	80	Primary	-	-	10
				Lateral	6.4	.7	2.9
150 (Feb.)	80	80	80	Primary	3.3	1.7	5.0
				Lateral	2.4	3.8	3.8

cases it was difficult to separate the primary from the lateral tiller. The January nitrogen application made for highly variable tillering among the plants.

This information is of limited accuracy because of the necessarily small number of readings taken and individual plants examined but it does offer enough to justify a more thorough experiment in the future.

Appendix Table No. 1

Fertilizer Application and Yield of Kentucky Bluegrass
 Seed in Pounds Per Acre by Replicate and Mean
 J.D. Steinbeck Farm - Culver, Oregon - 1962

Fertilizer Appl. Pds. Per Acre						Seed Yield in Pds. Per Acre ⁽²⁾				Mean
			Time and Rate of N Application ⁽¹⁾			By Replicate				
P2O5	K2O	S	Fall	Winter	Spring	I	II	III	IV	
0	0	0	-	-	-	43.4	78.4	20.9	14.2	39.2
0	80	80	O150	-	-	623.8	940.8	570.5	713.1	712.1
80	0	80	O150	-	-	658.0	849.0	496.2	779.8	695.8
80	80	0	O150	-	-	513.7	825.7	382.8	618.0	585.1
80	80	80	O150	-	-	718.1	534.6	551.3	1109.5	803.4
80	80	80	O100	-	-	492.9	389.5	483.7	377.0	435.8
80	80	80	O 50	-	-	381.1	206.0	209.3	187.7	246.0
80	80	80	-	-	-	27.5	18.4	157.6	108.4	78.0
80	80	80	N150	-	-	583.0	469.5	186.0	378.6	404.3
80	80	80	-	D150	-	512.1	630.5	682.2	658.0	620.7
80	80	80	-	J150	-	482.9	291.9	379.5	669.7	456.0
80	80	80	-	F150	-	355.3	336.9	379.5	462.9	383.7
80	80	80	O 50	-	M100	387.0	348.6	313.6	284.4	333.4

(1) Time of application:

- O - October 16, 1961
- N - November 14, 1961
- D - December 21, 1961
- J - January 15, 1962
- F - February 15, 1962
- M - March 16, 1962

(2) Bushel weight: all plots 20.50 pounds per bushel.

Appendix Table No. 2

Fertilizer Application and Yield of Newport Kentucky
Bluegrass Seed in Pounds Per Acre by Replicate and Mean
Leslie Ramsey Farm - Madras, Oregon - 1962

Fertilizer Appl. Pds. Per Acre						Seed Yield in Pds. Per Acre ⁽²⁾				Mean
			Time and Rate of N Application ⁽¹⁾			By Replicate				
P ₂ O ₅	K ₂ O	S	Fall	Winter	Spring	I	II	III	IV	
0	-	-	-	-	-	38.4	0.0	71.7	21.7	33.0
0	80	80	O 150	-	-	960.8	628.0	1008.3	1052.5	912.4
80	-	80	O 150	-	-	749.8	880.7	718.1	750.6	774.8
80	80	-	O 150	-	-	765.6	959.9	1052.5	1161.8	985.0
80	80	80	O 150	-	-	889.0	1030.0	874.0	770.6	890.9
80	80	80	O 100	-	-	660.5	678.9	818.2	921.6	769.8
80	80	80	O 50	-	-	266.9	354.5	275.2	314.4	302.8
80	80	80	-	-	-	21.7	21.7	38.4	49.2	32.8
80	80	80	N 150	-	-	780.6	603.8	779.8	634.7	699.7
80	80	80	-	D 150	-	735.6	784.0	919.1	700.6	784.8
80	80	80	-	J 150	-	980.0	653.0	874.9	888.2	849.0
80	80	80	-	F 150	-	668.9	715.6	793.1	756.4	733.5
80	80	80	O 50	-	M 100	660.5	879.4	684.7	753.9	744.6

(1) Time of application:

- O - October 13, 1961
- N - November 14, 1961
- D - December 21, 1961
- J - January 15, 1962
- F - February 15, 1962
- M - March 16, 1962

(2) Bushel weight: all plots 20 pounds per bushel.

Appendix Table No. 3

Fertilizer Application and Yield of Merion Bluegrass
Seed in Pounds Per Acre by Replicate and Mean
Marvin Light Farm - Madras, Oregon - 1962

Fertilizer Appl. Pds. Per Acre						Seed Yield in Pds. Per Acre(2)				Mean
			Time and Rate of N Application(1)			By Replicate				
P ₂ O ₅	K ₂ O	S	Fall	Winter	Spring	I	II	III	IV	
0	0	0	-	-	-	21.68	21.68	70.06	92.57	51.50
0	80	80	O 150	-	-	283.56	265.21	308.58	299.41	289.19
80	0	80	O 150	-	-	366.96	333.60	351.11	331.10	345.69
80	80	0	O 150	-	-	232.69	330.26	231.02	417.00	302.74
80	80	80	O 150	-	-	344.44	447.86	341.11	269.38	350.70
80	80	80	O 100	-	-	200.99	160.13	221.01	358.62	235.19
80	80	80	O 50	-	-	111.76	126.77	174.31	90.91	125.94
80	80	80	-	-	-	35.86	-	51.71	30.02	29.40
80	80	80	N 150	-	-	333.60	323.59	250.20	323.59	307.75
80	80	80	-	D 150	-	355.28	403.66	308.58	293.57	340.27
80	80	80	-	J 150	-	276.89	333.60	311.08	308.58	307.54
80	80	80	-	F 150	-	207.67	422.84	330.26	300.24	315.25
80	80	80	O 50	-	M 100	250.20	246.86	250.20	324.43	267.92

(1) Time of Application:

- O - October 11, 1961
- N - November 14, 1961
- D - December 21, 1961
- J - January 15, 1962
- F - February 15, 1962
- M - March 16, 1962

(2) Bushel weight: all plots 20 pounds per bushel.

Appendix Table No. 4

Fertilizer Application and Yield of Merion Bluegrass
 Seed in Pounds Per Acre by Replicate and Mean
 Henry David Farm - Culver, Oregon - 1962

Fertilizer Appl. Pds. Per Acre						Seed Yield in Pds. Per Acre ⁽²⁾				Mean
			Time and Rate of N Application ⁽¹⁾			By Replicate				
P ₂ O ₅	K ₂ O	S	Fall	Winter	Spring	I	II	III	IV	
0	0	0	-	-	-	19.18	10.84	---	13.34	10.84
0	80	80	O 150	-	-	75.06	140.11	83.40	118.43	104.25
80	0	80	O 150	-	-	84.23	61.72	88.40	84.23	79.65
80	80	0	O 150	-	-	88.40	62.55	85.90	30.86	66.93
80	80	80	O 150	-	-	72.56	26.69	154.29	47.54	75.27
80	80	80	O 100	-	-	81.73	65.05	61.72	45.87	63.59
80	80	80	O 50	-	-	44.20	28.36	31.69	37.53	35.45
80	80	80	-	-	-	14.18	15.01	---	---	7.30
80	80	80	N 150	-	-	54.21	60.88	128.44	55.88	74.85
80	80	80	-	D 150	-	50.87	117.59	44.20	69.22	70.47
80	80	80	-	J 150	-	65.89	75.06	51.71	99.25	72.98
80	80	80	-	F 150	-	65.05	75.89	45.87	90.07	69.22
80	80	80	O 50	-	M 100	66.72	38.36	60.05	90.91	64.01

(1) Time of application:

- O - October 13, 1961
- N - November 14, 1961
- D - December 21, 1961
- J - January 15, 1962
- F - February 15, 1962
- M - March 16, 1962

(2) Bushel weight: all plots 20 pounds per bushel.