Table 7. Effect of boron rates on the Ca content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Ca in tissue, %					
0	.63	.66	.67	.64	.69	.81
1	.64	.68	.69	.68	.77	.78
2	.54	.65	.62	.67	.72	.80
4	.59	.67	.65	.62	.81	.82
8	.65	.66	.69	.69	.74	.76

Table 8. Effect of boron rates on the Mg content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Mg in tissue, %					
0	.24	.23	.24	.26	.28	.35
1	.25	.25	.26	.30	.34	.38
2	.21	.24	.24	.30	.32	.37
4	.24	.26	.25	.27	.35	.39
8	.26	.27	.25	.28	.29	.34

Table 9. Effect of boron rates on the Fe content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Fe in tissue, ppm					
0	1214	746	502	440	473	1164
1	1862	852	490	317	477	1052
2	2459	722	492	406	526	1071
4	1894	693	522	400	437	1029
8	2270	824	469	552	567	1046

Table 10. Effect of boron rates on Mn content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Mn in tissue, ppm					
0	105	92	97	81	78	81
1	98	99	98	85	87	77
2	117	89	92	89	79	75
4	95	89	96	81	91	85
8	112	83	92	85	86	74

Table 11. Effect of boron rates on Cu content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Cu in tissue, ppm					
0	14	13	8	9	5	5
1	13	10	7	9	6	5
2	12	9	9	8	6	5
4	15	10	8	9	6	5
8	13	9	8	8	6	4

Table 12. Effect of boron rates on the Zn content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Zn in tissue, ppm					
0	37	25	20	14	19	15
1	36	29	20	15	22	16
2	43	23	19	13	20	15
4	45	24	19	14	22	15
8	41	28	19	14	20	14

Table 13. Effect of boron rates on Mo content of corn.

Treatment	Sampling					
B, lbs/A	1	2	3	4	5	6
	Mo in tissue, ppm					
0	1.8	.9	.9	.6	.6	.7
1	1.9	.9	.9	.8	.6	.7
2	2.2	.8	.9	.7	.6	.8
4	1.9	.9	.8	.7	.6	.6
8	2.2	.9	.9	.6	.4	.7

Table 14. Effect of boron rates on stand and yield of alfalfa.

Treatments B, lbs/A	Stand plants/f^2	Yield* tons/A
0	39	1.3
2	44	1.5
4	33	1.3
8	33	1.3
16	17	1.2

*Newly seeded alfalfa - 1 cutting only.

Table 15. Effect of boron rates on boron content of alfalfa.

Treatments B, lbs/A	Stage of growth 10" tall	Mature
	B in tissue, ppm	
0	22.6	16.5
2	34.9	43.5
4	44.3	46.7
8	59.8	56.1
16	82.7	74.6

Table 16. Effect of boron rates on nitrogen and sulfur content of alfalfa.

Treatments B, lbs/A	Stage of growth 10" tall	Mature	Stage of growth 10" tall	Mature
	N in tissue, %		S in tissue, %	
0	3.61	2.23	.353	.296
2	3.44	2.41	.373	.299
4	3.83	2.49	.341	.324
8	3.44	2.69	.373	.347
16	3.59	2.64	.385	.339

Table 17. Effect of boron rates on certain chemical elements in alfalfa 10" high.

Treatments B, lbs/A	Chemical elements							
	P	K	Mg	Fe	Mn	Cu	Zn	Mo
	in %			in ppm				
0	.271	2.06	.300	92	43	3	17	4
2	.273	2.07	.313	92	41	3	18	4
4	.285	2.09	.311	98	40	3	16	4
8	.295	2.26	.318	98	41	3	18	5
16	.287	2.17	.329	101	43	3	19	4

Table 18. Effect of boron rates on certain chemical elements in mature alfalfa.

Treatments B, lbs/A	Chemical elements							
	P	K	Mg	Fe	Mn	Cu	Zn	Mo
	in %			in ppm				
0	.212	1.68	.305	320	40	3	15	4
2	.245	1.71	.332	424	42	4	15	5
4	.227	1.58	.313	425	39	4	15	4
8	.236	1.62	.299	437	42	4	15	5
16	.247	1.82	.328	428	43	4	16	5

Table 19. Effect of boron rates on available boron in the soil after one cropping season.

Treatments B, lbs/A	Depth 0 - 6"	6 - 12"	12 - 18"
	available B, ppm		
0	.36	.28	.22
1	.61	.30	.23
2	.72	.45	.47
4	1.11	.80	.40
8	1.98	1.45	.71

CONTINUOUS CORN - HIGH FERTILITY EXPERIMENT

Rosemount Experiment Station
W. P. Martin, P. M. Burson, D. S. Fairchild, B. D. McCaslin

This experiment was established in 1953. Yields have been harvested annually for 17 years. During this time, soil and plant samples have been periodically taken and analyzed. Yield results from past years may be found in the 1963, 1964, 1965, 1966, 1967, 1968 and 1969 mimeographed "Bluebook".

The 1969 growing season was unfavorable for optimum corn production at Rosemount. The spring was characterized by excessive amounts of soil moisture from spring rains and the past fall's accumulation. From August to harvest, a moisture shortage was critical.

The corn was planted in 30-inch rows on May 14. Four pounds of active atrazine plus one cultivation resulted in poor weed control. Yields obtained in 1969 were generally quite poor (Table 1). A slight response was shown to the first 100 pound increment of N at all levels of P and K. A further N addition of 100 pounds resulted in no significant increase in yields in treatments 4 and 7. Within treatment 10, the addition of 244 pounds of N resulted in a 23 bushel increase over the 144 pounds of N with the same rates of P and K. But this yield increase was not consistent with the other treatments of 200 or more pounds of N. After 17 years, yields from the check treatment were still high. A possible reason for this may be due to the 4 foot depth of colluvium material on which this experiment is located. The soil type within the experimental area is a Port Byron silt loam.

Table 1. The fertility treatments and corresponding 1969 corn yields.

Treatment Number	Fertilizer Treatments*	1969 Yield ** bu/A
1	0 + 0 + 0	84.8 abc***
2	12 + 36 + 108	75.1 a
3	112 + 36 + 108	86.3 abc
4	212 + 36 + 108	87.6 abc
5	28 + 84 +252	80.8 abc
6	128 + 84 + 252	97.9 cd
7	228 + 84 + 252	104.6 de
8	44 + 132 + 396	90.5 abc
9	144 + 132 + 396	93.9 bc
10	244 + 132 + 396	117.1 e

* Pounds per acre of N + P_2O_5 + K_2O. Applied in 1969.

** Combined yield average of the high and low populations at each fertility treatment.

*** Numbers followed by the same letter are not significantly different at the 5.0% level population (Duncan's New Multiple Range Test).

All fertility treatments were tested at two plant populations. Results given in Table 2 show higher yields at the high populations in 1969.

Table 2. The plant population and corresponding 1969 corn yields.

Population Plants/Acre	1969 Yield * bu/A
Low - 23,000	84.3 a
High - 32,000	99.4 b

* Combined yield average of all ten fertility treatments at each population.

Sixth leaf samples were taken at advanced silking stage from all high population plots for tissue analysis. Results are presented in Table 3.

Between the ten fertilizer treatments, highly significant differences were observed in the leaf tissue concentrations of P, K, Fe, Mg, Zn, Cu, and Mn. Concentration of P and K increased as the amount of each respective nutrient in the fertilizer treatments was increased. Manganese (Mn) content also increased with the higher fertilizer rates.

Leaf contents of Zn and Mg decreased with the higher rates of phosphate and potash. Leaf contents of Zn and Cu are low and approach the deficient range of reported levels for optimum corn production.

Soil samples were taken from 0-36" after crop removal. As of this date, the samples have not been analyzed. Samples were taken to 36" to determine if there has been a movement of N, P, and K at these different levels of fertility for a period of 17 years.

Table 3. Spectrographic analyses of sixth leaf in 1969 of continuous corn under variable fertilizer treatments.

Treatment Number	Fertilizer Treatments	%				ppm					
		P	K	Ca	Mg	Al	Fe	Zn	Cu	Mn	B
1	0 + 0 + 0	0.22 a	1.24 a	0.61 a	0.39 d	45.4 a	130.0 a	19.0 bc	3.9 ab	38.4 a	9.4 a
2	12 + 36 + 108	0.25 ab	1.60 bc	0.51 a	0.28 abc	46.4 a	122.0 a	14.6 ab	3.3 a	38.0 a	8.8 a
3	112 + 36 + 108	0.30 bc	1.36 ab	0.63 a	0.34 c	52.8 a	171.9 b	26.3 d	6.7 d	69.8 bcd	10.6 a
4	212 + 36 + 108	0.32 cd	1.38 ab	0.56 a	0.30 bc	48.7 a	162.2 b	21.2 c	5.5 c	71.1 bcd	9.4 a
5	28 + 84 + 252	0.31 bcd	1.98 d	0.56 a	0.27 ab	54.5 a	171.1 b	13.5 a	5.2 c	51.2 ab	9.4 a
6	128 + 84 + 252	0.37 de	1.78 cd	0.57 a	0.24 ab	55.7 a	191.9 bcd	19.3 bc	5.0 bc	73.4 bcd	9.6 a
7	228 + 84 + 252	0.37 d	1.80 cd	0.56 a	0.21 a	51.5 a	188.9 bc	19.3 bc	5.4 c	79.6 bcd	10.8 a
8	44 + 132 + 396	0.33 cde	1.92 d	0.55 a	0.23 ab	55.4 a	183.1 bc	11.9 a	4.1 abc	60.6 abc	7.6 a
9	144 + 132 + 396	0.37 de	1.91 d	0.55 a	0.22 a	53.7 a	214.4 cd	15.5 ab	4.0 abc	95.1 d	10.2 a
10	244 + 132 + 396	0.39 e	1.90 d	0.55 a	0.22 a	53.1 a	220.9 d	15.6 ab	4.4 abc	90.3 cd	9.7 a
Significance		**	**	N.S.	**	N.S.	**	**	**	**	N.S.
F Value		8.28	13.35	2.12	7.91	1.20	10.25	7.03	6.34	4.43	1.19
CV		11.7	8.8	8.3	15.2	12.9	11.4	18.1	16.6	28.1	17.4

WASECA EXPERIMENTS

Russell D. Frazier

Soil Scientist, Southern School & Experiment Station

Zinc Sources on Corn

In a continuation of work started in 1968 at Waseca, liquid and granular applications were made on a site different from that used in 1968. Materials were applied to the soil before planting. Treatments and yield results are given below. Soil type of the experimental area is Webster Clay loam. Corn was planted May 3; Northrup-King PX 50 was used at a population of 28,000 plants per acre. Anhydrous Ammonia was used on the area, supplying N at a rate of 170 pounds per acre.

Results

Liquid	Zn Rate/acre	Yield, bu./ac.
1. Zn SO_4	10 lb.	158 c
2. Zn NO_3	10 lb.	172 d
3. Na_2Zn	2.5 lb.	154 b
Granular		
4. Zn SO_4	10 lb.	156 bc
5. Check	--	149 a

Soil test vaules: pH, 6.6; p, 72; K, 430.

These same treatments in 1968 on a nearby but poorly drained area gave a decidedly negative response to all forms of zinc fertilization.

Alfalfa Fertilization

Cooperating with Dr. Bill Lueschen, we established a fertility trial on the station in May, 1969. Soil type of the area is Webster Clay loam. Soil test values before treatment were: pH, 5.7; P, 40; K, 240. Limestone was applied at a uniform rate of 7 tons per acre.

Seeding was made with no companion crop, using chemical establishment of EPTC + 2, 4 DB. Two cuttings were removed on July 14 and August 25. Total yield and treatments are shown below. Split plots were used of three varieties: Vernal, Saranac and Minnesota Synthetic N. Six replications were used. Rates of P_2O_5 used were 30 and 150 pounds per acre; K_2O rates were 0, 60 and 300 pounds per acre. There were no significant differences found for varieties nor for fertilizer treatment.

Average Total yield in tons per acre for two cuttings, including all three varieties are shown below:

		K_2O lb./ac.			
		0	60	300	Mean
P_2O_5	30	1.74	1.81	1.79	1.78
lb./ac.	150	1.87	1.91	1.89	1.89
	mean	1.81	1.86	1.84	

Residual Effects of N-P-K- Treatments on Soybeans

Soybeans have been bulk-planted on the N-P-K plots since 1967, when broadcast fertilization treatments were stopped. Merit beans were planted

in 1969. Averages of two reps are shown:

	Bu/acre
Check	29.9
N	27.7
P	28.4
K	32.2
NP	29.3
NK	32.5
PK	34.5
NPK	32.7
NPK+	35.2

Corn Population Research

The corn management information indicates higher and higher yields as we increase population. Some date which Dr. Lueschen and I have gathered at Waseca indicates that with present full-season single-crosses we should not assume that the sky is the limit on population. We selected ten of the best full-season varieties we could find by discussion with University and seed company agronomists. Populations studied were 24-, 32-, 40-, and 48,000 plants per acre. The tables below indicate the 1969 yield results following fertilizer application totalling 800 pounds per acre N, 375 pounds per acre P_2O_5 and 750 pounds per acre K_2O applied in the past two seasons.

	1969 Bu/Ac average of 4 reps			
Single Cross	24,000	32,000	40,000	48,000
A	150	154	151	149
B	160	161	162	144
C	152	153	144	112
D	162	166	147	134
E	140	143	135	120
F	146	142	143	120
G	132	139	131	126
H	166	159	155	146
I	124	129	127	103
J(Prolific)	117	130	105	117

Fertilizer:
1968 400+250+500
1969 400+125+250
Insecticide: Bux Ten
Herbicide:
Atrazine - Ramrod Pre
Atrazine + Oil Post

1969 Foliar-Applied Micronutrients (Tilney Farms, Lewisville)

Again in 1969, micronutrients were foliar-applied in replicated plots in a production field at The Tilney Farms. Materials were taken up in water with urea at the rate of 1 lb. urea in 20 gallons of water. Treatments were made on July 25. Crop history on the field was corn-corn-sugarbeets-soybean (Hark).

Soil test information for 1969:

Depth	pH	P	K
0-12"	7.3	28	410
12-18"	7.2	18	310
18-24"	7.2	16	390
24-30"	7.0	11	400
30-36"	7.0	10	390

Results	Material, lb/acre	Bu/ac
1. Fe 138 chelate	10	34.3 ab
2. Mn chelate	5	38.8 b
3. Cu chelate	5	30.6 a
4. Zn chelate	5	38.0 b
5. All 4 chelates	ditto	35.1 b
6. Check	--	37.4 b

Foliar contents for the treatments were:

Treatment		P	K	Ca	Mg	Al	Fe	Zn	Cu	Mn
		%				P P M				
Fe	1.	.48	2.04	.989	.37	30	150	37	11	49
Mn	2.	.48	2.12	.980	.34	29	144	37	11	51
Cu	3.	.48	2.23	1.00	.38	27	142	33	13	68
Zn	4.	.48	2.17	.980	.37	28	148	42	12	67
mix	5.	.51	2.15	1.03	.39	32	171	45	13	52
check	6.	.49	2.05	1.05	.41	33	154	37	13	67

Sugar Corn Experiments

Data for the 1967 sugar corn experiments were included in the 1968 Blue Book. Analysis of the 1967-1969 data is awaiting return of the 1969 lab data from the cooperating company laboratory.

Statistical analysis of the 1967 sugar production data indicated significant response to K treatment, but not to N, nor to band versus seed placement of row fertilizer.

Treatments have included N levels of 70 and 140 and 210 pounds per acre, K_2O treatments of 0, 200 and 400 pounds per acre and band versus seed placement of row fertilizer in nominal amounts.

In 1968, sugar production yields were calculated in a different fashion than previously, giving a more accurate picture of sugar production. Again, potassium treatment gave significant response. Row placement also had a significant effect on production.

Pounds per acre sugar production from sugar corn
Waseca, 1968

Treatment	Pounds sugar/acre	Significance
Band	1878	*
Seed Placement	1754	
N 70	1829	ns
N 140	1787	
N 210	1832	
K 0	1749	*
K 200	1779	
K 400	1920	

Examination of 1969 data submitted to the analytical laboratory tends to indicate that production of plant material was increased due to K fertilization, but not from N fertilization nor from method of row fertilization. When sugar analysis and other data are available, statistical analysis of 3-year's data will be completed.

Fertilizer and Lime Trials at Pierz, Morrison Co., Minnesota 1969

C. J. Overdahl, B. C. McCaslin, D. S. Fairchild

This experiment was initiated in the fall of 1962. These plots were established to determine needed rates of potassium, lime, and phosphorus. Lime applications of 5 tons per acre were made in 1962, bringing the average soil pH to 6.7. Seeding treatments of K in the spring of 1963 consisted of 0, 60, 120, 180 and 240 pounds per acre of K_2O.

Annual topdressing treatments of 0, 120 and 240 pounds per acre of K_2O were started in the fall of 1964. All seeding time treatments were split three ways. This amounted to 20 plots of each topdressing rate. These plot numbers were reduced to 10 each in 1968 when the topdressing treatments were omitted on half of them.

Results definitely show that high rates of potassium, both at seeding time and topdressed later, are necessary for most economical production.

This experiment has terminated as of 1969. A complete discussion of yields, soil and plant tissue levels and fertilizer recommendations will be summarized in a miscellaneous report to be published in 1970.

METHOD OF CORN PLANTING STUDY

Lancaster, Wisconsin
University of Wisconsin
Lancaster Experiment Farm

William Paulson, Supt., Arthur Peterson, and James Swan

The following field experiment was conducted near Lancaster, Wisconsin during the 1969 growing season on the same site as the 1968 study.

Soil: Fayette silt loam, 6 to 8% south slope

Previous crop: Corn

Fertilizer: 250-300 lbs/acre of 6-24-24

100 lbs. of N as anhydrous ammonia

Planting Date: May 12 - tillage on same day

Experimental Design: Two - 3 x 3 latin squares

Plot size of 24 x 50 feet with alleys from 15-50 feet

Soil temperature measurements (3-inch depth in row) were made on only two of the 6 columns. Four couples were used in parallel on each treatment.

Corn: Wisconsin 110 days.

Population: June 16 - avg. of 2 rows - 26 feet long/plot

Plow wheeltrack	18,400	
None-Coulter plant	29,727	thinned to about 19,000
Chisel Coulter plant	28,700	

At Harvest: October 27

Plow wheeltrack	17,300
Non-Coulter plant	17,800
Chisle Coulter plant	19,800

Treatments:

	Tillage	Planting
C	Chisel	Coulter plant
WT	Spring plow	Wheeltrack plant
N	None	Coulter plant

CORN YIELDS (Bu/Acre)

Replicates	I	II	III	IV	V	VI	Total
Row 1	C 107.0	N 103.9	WT 87.2	N 84.8	WT 105.0	C 117.1	
Row 2	WT 113.9	C 117.8	N 74.9	C 99.1	N 87.3	WT 127.5	
Row 3	N 88.4	WT 124.8	C 100.0	WT 117.3	C 129.9	N 133.2	
	309.3	346.5	263.0	301.2	322.2	377.8	1920.0

ANOVA RANDOMIZED BLOCKS

	SS	dF	MS	F
Total	5080.86	17	--	--
Blocks	2588.29	5	517.65	4.17*
Treatment	1252.33	2	626.17	5.04*
Error	1240.24	10	124.0	--

Level of significance	5%	1%
$F_{(2,10)}$ =	4.10	7.56
$F_{(5,10)}$ =	3.33	5.64

Duncan's Multiple Range Test - Corn Yields 1969

	Plow-wheeltrack	Chisel Coulter plant	NONE Coulter plant
÷ 6	675.7	672.3	572.5
Avg =	112.6	112.0	95.4

1% & 5% level of significance

	5%	5%	1%
P =	2	3	2
dF =	3.15	3.30	4.48
x 4.545	14.3	15.0	20.4

$S_{\bar{x}} = \sqrt{\frac{ms}{6}} \quad \sqrt{\frac{124}{6}} = \sqrt{20.66}$

$S_{\bar{x}} = 4.545$

Plow WT and NONE CP are significantly different at the 5% level

Chisel CP and NONE CP are also significantly different at the 5% level

Early Corn Growth gms/plant

	Replicate I	II	III	IV	V	VI	
Row 1	C 0.20	N 0.37	WT 0.54	N 0.242	WT 0.39	C 0.125	1.867
	WT 0.27	C 0.103	N 0.345	C 0.121	N 0.193	WT 0.584	1.616
	N 0.15	WT 0.36	C 0.38	WT 0.33	C 0.185	N 0.25	1.655
	0.62	0.833	1.265	0.693	0.768	0.959	5.138

RANDOMIZED BLOCK ANOVA - EARLY GROWTH

	SS	df	MS	F
Total	0.28618045	17	--	--
Block	.08947578	5	.02038	5.6*
Treatment	0.16074845	2	.08037	22.3**
Error	.0359562	10	.00359	--

$F(2, 10) = 1\% \ (7.56); \quad 5\% \ (4.10)$

$S_{\bar{x}} = \sqrt{\frac{ms}{6}} = \sqrt{\frac{.00359}{6}} = \sqrt{.000598} = .0243$

Duncan's Multiple Range Test

	5% level	P= 2	P= 3	1% level	P= 2	P= 3
df		3.15	3.30		4.48	4.73
error df, 10	x .0243	0.0765	0.0243	x .0243	0.109	0.113

Plow wheeltrack	NONE Coulter plant	Chisel Coulter plant
0.415 gms/plant	0.258 gms/plant	0.186 gms/plant

Early growth of plow wheeltrack is significantly different from both None and Chisel at 1% level.

WEATHER SUMMARY - 1969

University of Wisconsin Experimental Farm - Lancaster

Month	Temperature				Precipitation		Growing Degree Day Base 50°	
	Mean Max.	Mean Min.	Mean	Departure from Normal	Total	Departure from Normal	1969	Departure from Normal
Apr.	59.2	39.2	49.2	1.9	3.25	-.12	--	--
May	68.8	48.3	58.6	1.4	3.44	.72	284	30
June	71.4	52.2	61.8	-5.2	8.24	3.32	352	-161
July	81.4	62.2	71.8	.7	3.75	.10	665	--
Aug.	83.8	59.7	70.5	2.1	.52	-2.92	672	94
Sept.	72.5	50.2	61.4	.9	1.71	-1.94	344	18
Oct.	56.4	37.5	47.0	-4.0	3.50	1.67	--	--
							2317	2336

Last day in spring with minimum temperature 32° or below 5/12
28° or below 4/29

First day in fall with minimum temperature 32° or below 10/14
28° or below 10/14

TRACE ELEMENT STUDY WITH KENTUCKY BLUEGRASS AND TIMOTHY - 1969 [1)]

John Grava, D. S. Fairchild, B. D. McCaslin,
G. W. Randall and R. S. Farnham

Three field experiments with Kentucky blugrass and timothy were conducted to study the effects of trace element applications on seed yields and chemical composition of tissue. All materials were top-dressed on established stands of grasses on growers' fields. General information on the experimental sites is given in table 1.

Table 1. Location, soil type and other information concerning the experiments.

Field No.	Location	Species variety	Age of stand	Soil Type
1.	Ed Baumgartner Roseau County	Bluegrass Park	1968 seeding	Peat
2.	E. Helmstetter Lake of the Woods Co.	Bluegrass Park	1967 seeding	Spooner very fine sandy loam
3.	C. Viken Roseau County	Timothy Climax	1967 seeding	Glyndon silt loam

A latin square design was used with six treatments replicated six times. Following amounts and sources of trace elements were used:

Treatment	Rate
1. None	---
2. Boron (B)	2 lbs./acre boron
3. Copper (Cu)	50 lbs/acre $CuSO_4 \cdot 5H_2O$
4. Manganese (Mn)	50 lbs/acre $MnSO_4$
5. Zinc (Zn)	50 lbs/acre $ZnSO_4 \cdot H_2O$
6. B, Cu, Mn, Zn	Same as above

1) See Soil Series 84, "A Report on Field Research in Soils", March 1969, pp. 172 for results obtained from similar investigations conducted in 1968.

All treatments received a uniform application of N, P and K. All materials were applied on October 15, 1969.

The individual plots were 10 feet wide and 20 feet long. Plant tissue samples were collected at the beginning of the emergence of heads or panicles. Contents of the four chemical elements were determined in a multi-element emission spectrophotometer. A strip 17 feet long and 34 inches wide up the center of each plot was cut for seed yields.

Adjacent to each of the three main experiments with trace elements, six additional plots were established to measure the effects of fertilization with N, P and K on seed yields. Increases in seed yields, ranging from 243 to 356 pounds per acre, resulted from application of the three major nutrient elements (table 2).

Table 2. Effect of Fertilization on the Seed Yield of Park Kentucky Bluegrass and Climax Timothy, 1969.

Plant Nutrients Applied N P_2O_5 K_2O	Field 1 Bluegrass Peat (E.B.)	Field 2 Bluegrass Vfsl (E.H.)	Field 3 Timothy Sil (C.V.)
Lbs/Acre	Yield of seed, lbs/acre		
None	201	115	126
12 + 48 + 48*	444	---	---
24 + 96 + 96*	411	---	---
60 + 30 + 30*	---	299	---
90 + 45 + 45*	---	380	391
120 + 60 + 60*	---	---	482

*Following trace elements applied: B, Cu, Mn, Zn.
Fertilizer treatments were made on October 15, 1968