

Cottonwood Creek Ranch-Tehama County
Phosphorus Source and Rate Experiment
Initial Establishment-October 21, 1970

Treatment#	Fertilizer Material	Material	Rate, lbs/A		
			P ₂ O ₅	SO ₄ -S	S
1	Single Superphosphate (0-20-0-12)	2000	400	240	
2	Sulfur Fortified Treble (0-35-0-17)	1200	420		210
3	Single Superphosphate (0-20-0-12)	1000	200	120	
4	Sulfur Fortified Treble (0-35-0-17)	600	210		105
5	Single Superphosphate (0-20-0-12)	500	100	60	
6	Sulfur Fortified Treble (0-35-0-17)	300	105		52.5
7	Check	0	0	0	
8	TVA Treble (0-54-0-0)	380	205		

Refertilization on Oct. 20 and 27, 1978

Treatment #	Material	Material	Rate, lbs/A		
			P ₂ O ₅	SO ₄ -S	Lime
1	Control	0	0	0	0
2	Treble superphosphate (0-45-0-1)	11.1	5	0	0
3	Treble superphosphate (0-45-0-1)	22.2	10	0	0
4	Treble superphosphate (0-45-0-1)	44.4	20	0	0
5	Treble (0-45-0-1)+Gypsum (17.5-S)	{ 22.2 57.1	10	10	0
6	Treble (0-45-0-1)+Gypsum (17.5-S)	{ 44.4 114.3	20	20	0
7	Lime+Treble superphosphate (0-45-0-1)	11.1	5	0	2 tons
8	Lime+Treble superphosphate (0-45-0-1)	22.2	10	0	2 tons
9	Lime+Treble superphosphate (0-45-0-1)	44.4	20	0	2 tons
10	Lime+Treble (0-45-0-1)+Gypsum (17.5-S)	{ 22.2 57.1	10	10	2 tons
11	Lime+Treble (0-45-0-1)+Gypsum (17.5-S)	{ 44.4 114.3	20	20	2 tons
12	Lime		0	0	2 tons

Reapplication of Fertilizer on Phosphorus Source
and Rate Experiment
Cottonwood Creek Ranch - Tehama County
October 20 and 27, 1978



Old
Trt
#

Plot 11
Treatment 11

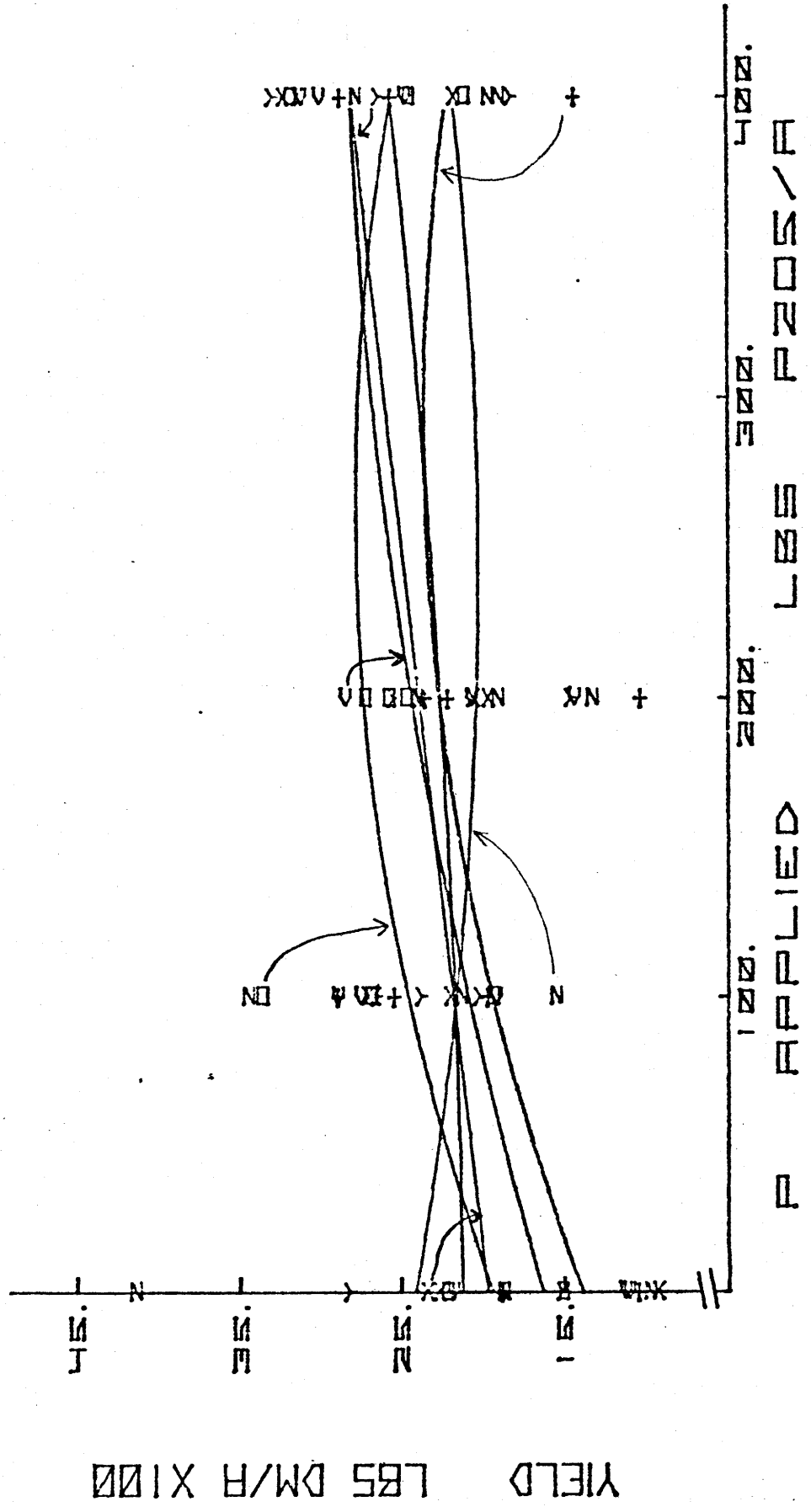
Rep
I

Rep
II

REP
III

1	2	12	5	10	7	4	9	11	6	3	1	8
2												
3	10	3	11	1	5	2	8	7	9	12	4	6
4												
5	5	8	10	7	1	11	3	12	2	9	4	6
6												
7	12	9	4	8	2	5	7	1	11	3	6	10
8	9	6	7	1	11	3	2	12	4	8	5	10
1	6	12	9	4	1	3	7	10	11	5	8	2
2												
4												
3	4	6	10	7	8	11	9	2	5	12	3	1
6												
5	12	6	4	11	2	5	1	8	3	9	7	10
7	7	10	11	4	6	1	3	9	2	5	8	12
8	11	4	2	3	10	7	6	8	12	5	9	1
3	9	8	1	5	2	4	11	3	6	10	7	12
4												
6												
5	6	9	10	3	8	7	12	4	2	11	5	1
2												
1	3	12	6	11	2	4	1	8	10	9	7	5
7	11	7	3	12	8	10	6	4	1	2	9	5
8	12	8	6	5	7	9	2	11	10	4	1	3

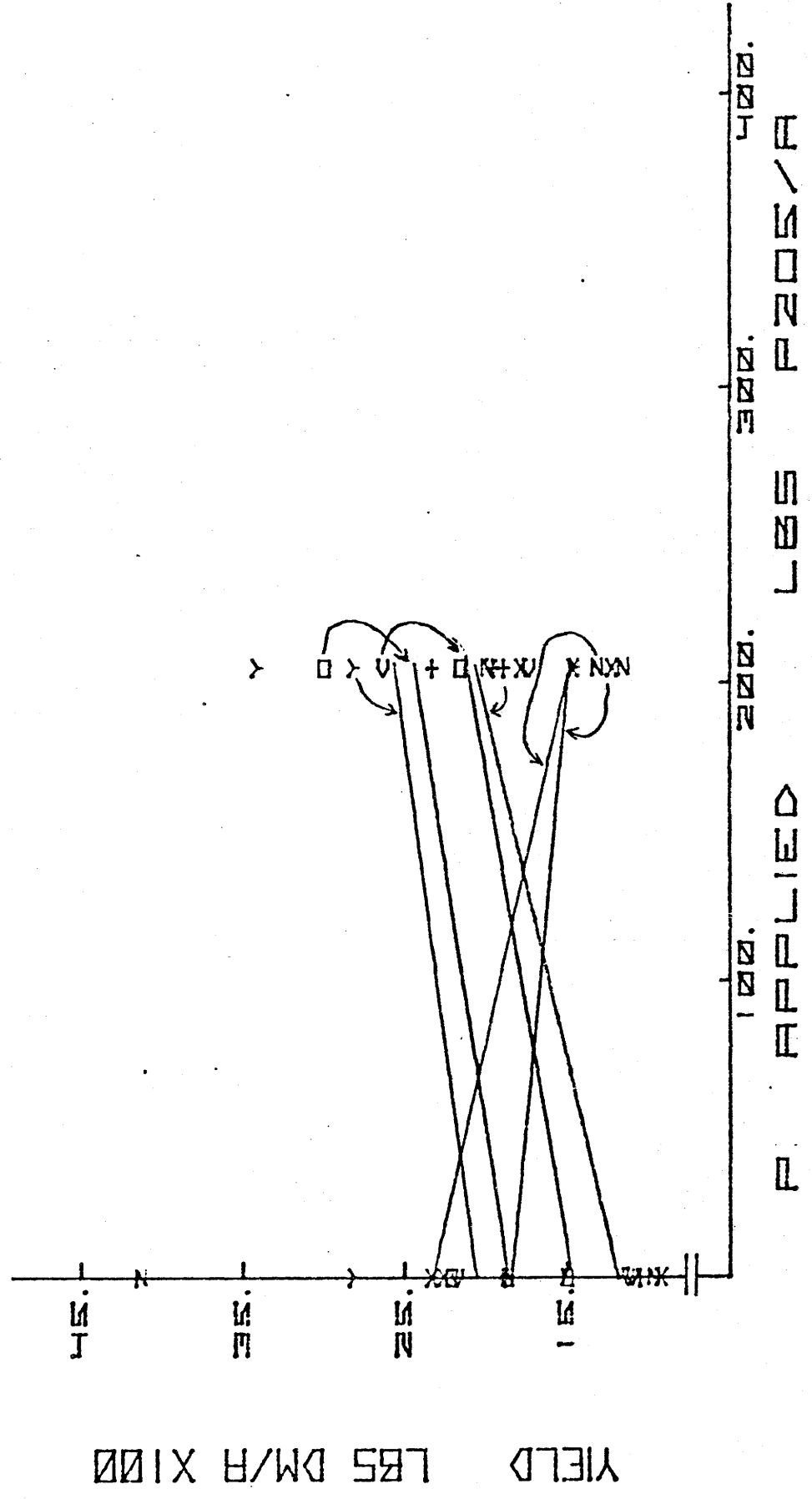
FORAGE YIELD RESPONSE IN 1979 TO THE 1978 APPLICATION OF CONTROL [C], P [X], F+S [O], LIME [Z], LIME+P [Y] AND LIME+P+S [C] OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.



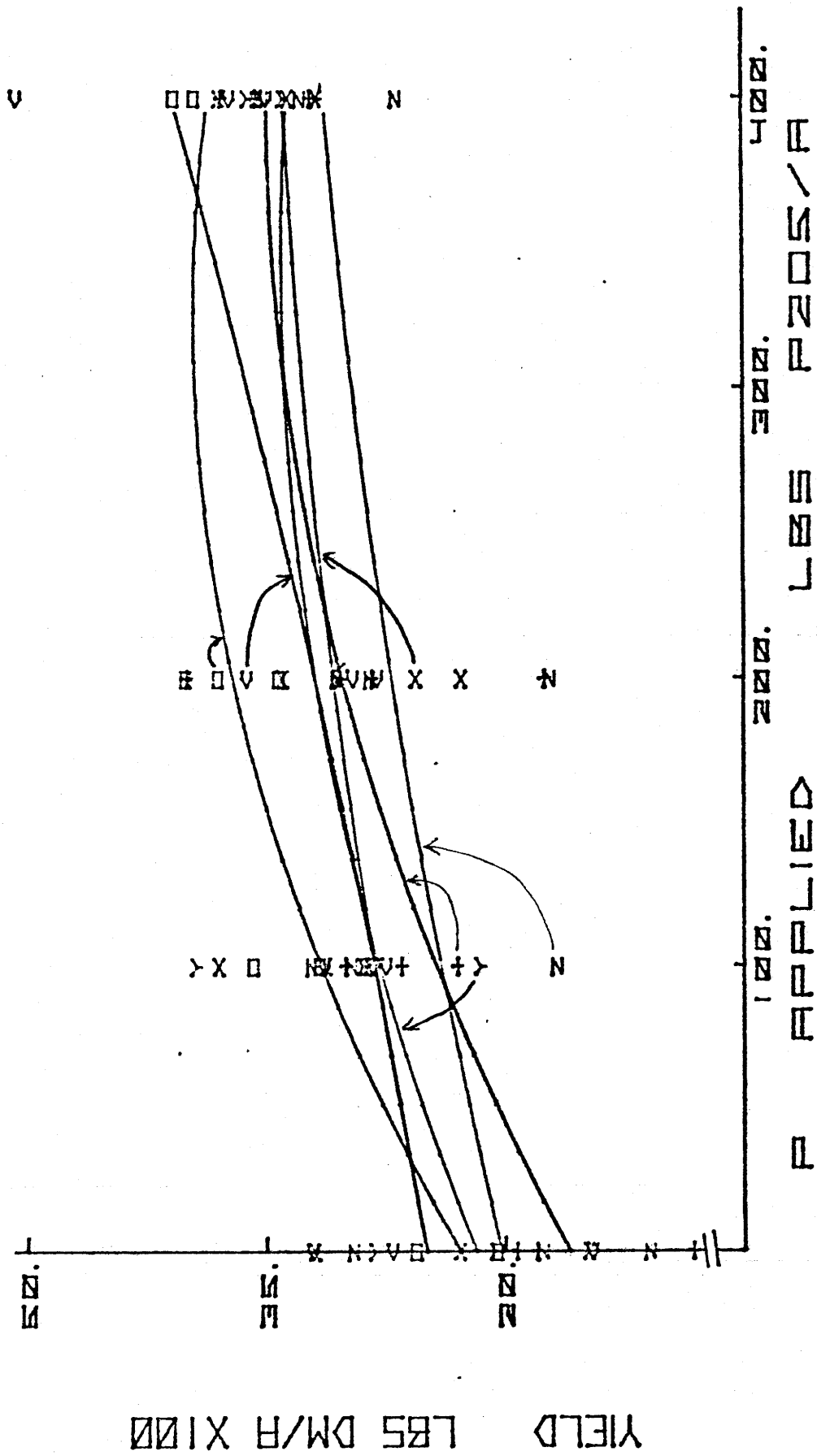
YIELD LBS DM/R X 100

LBS APPLIED P

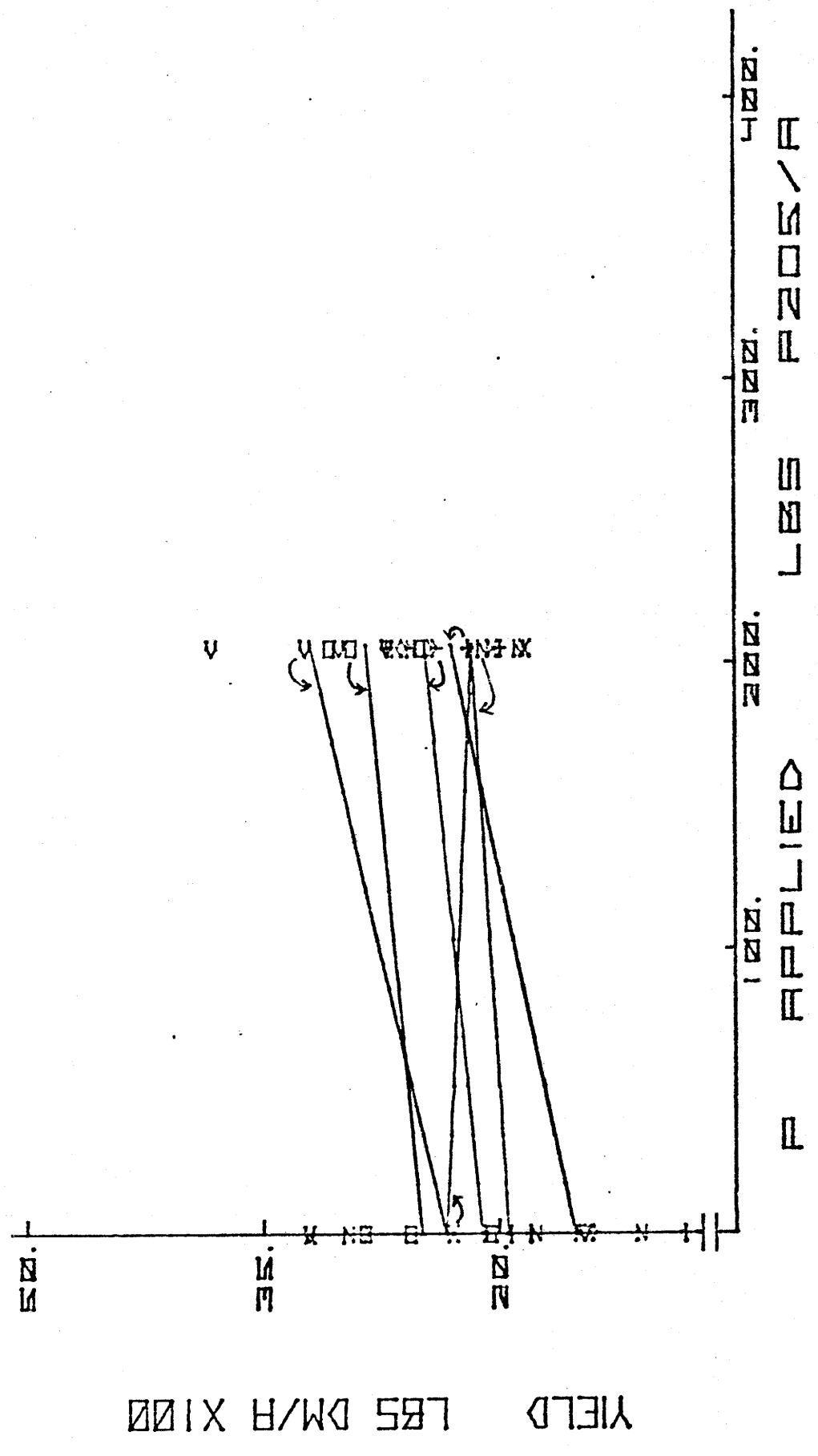
FORAGE YIELD RESPONSE IN 1978 TO THE 1978 APPLICATION OF CONTROL C+D, P C+D, P+S C+D, LIME C+D, LIME+P C+D AND LIME+P+S C+D OVER THE 1978 APPLIED TREBLE SUPERPHOSPHATE TREATMENT. COTTONWOOD CREEK RANCH.



FORAGE YIELD RESPONSE IN 1980 TO THE 1978 APPLICATION OF CONTROL (+), PCX, P+S CO₂, LIME (+), LIME+P (+) AND LIME+P+S (+) OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.



FORAGE YIELD RESPONSE IN 1980 TO THE 1978 APPLICATION OF CONTROL [C], P [X], P+S [O], LIME [Z], LIME+P [Y] AND LIME+P+S [C] OVER THE 1970 APPLIED TREBLE SUPERPHOSPHATE TREATMENT. COTTONWOOD CREEK RANCH.



October 21, 1970

PHOSPHORUS SOURCE & RATE EXPERIMENT

Single Superphosphate Vs. Sulfur Fortified Treble Vs. T.V.A. Treble
 (0-21-0-12 SO₄-S) (0-~~40~~0-20 SS) (0-54-0-0)
 (0-35-0-17 ES)

1970-72

REPS

Plot # Area 1
Treatment

Area 2
 ←-180 M²->

Area 3

I

II

III

1.	1	2000 Super		
2.	2	1200 CSFS		
3.	3	1000 Super		
4.	4	600 CSFS		
5.	5	500 Super		
6.	6	300 CSFS		
7.	7	Check		
8.	8	370 Treble		
9.	1	2000 Super		
10.	2	1200 CSFS		
11.	4	600 CSFS		
12.	3	1000 Super		
13.	6	300 CSFS		
14.	5	500 Super		
15.	7	Check		
16.	8	370 Treble		
17.	3	1000 Super		
18.	4	600 CSFS		
19.	6	300 CSFS		
20.	5	500 Super		
21.	2	1200 CSFS		
22.	1	2000 Super		
23.	7	Check		
24.	8	370 Treble		

Area I
 Fertilized Fall 1970
 Harvested Spring, 1971

Harvested Observed 1972
 Observed 1973
Grazed 1972 -
retreated 1978

Area II
 Fertilized Fall 1970
 Grazed 1970-71

Harvest Spring 1972
Observed 1973 / 1973

Nutrients Applied

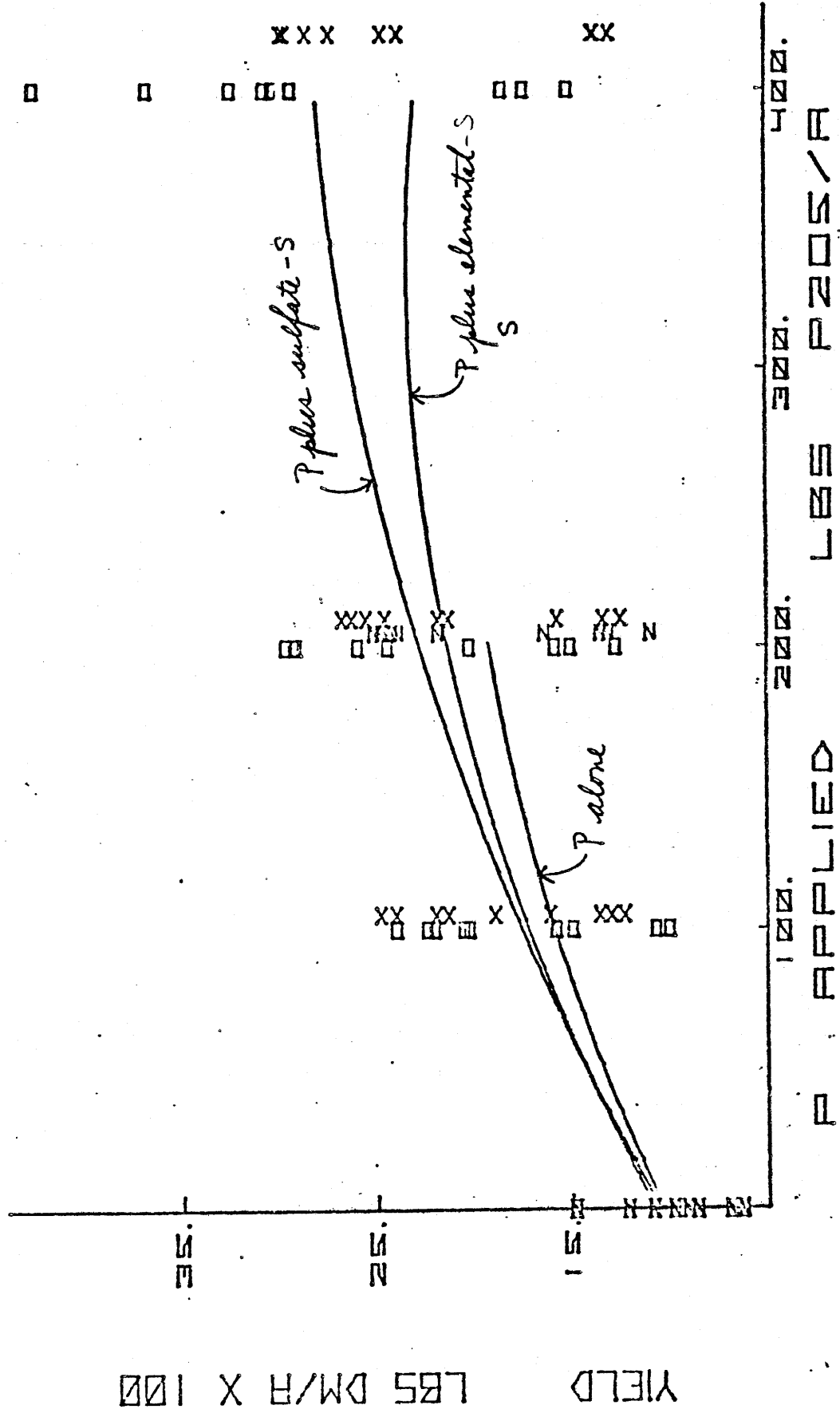
Area III
 Fertilized Fall 1970
 Grazed 1970-71

Grazed 1972
 Harvest Spring ~~1973~~ / 1974

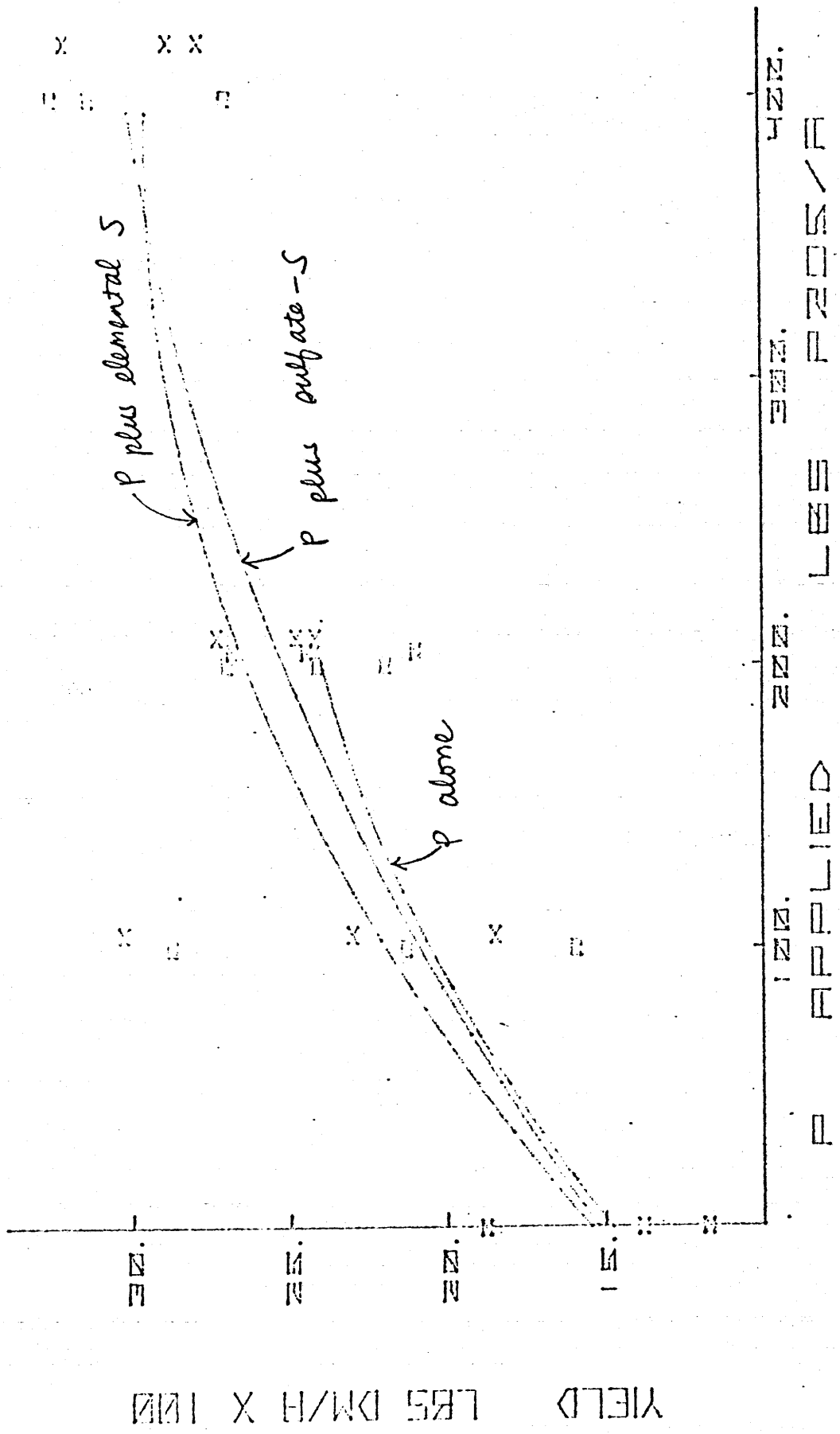
	<u>P₂O₅</u>	<u>S</u>
380 lbs. Treble	285	0
500 lbs. Super	100	120 60
1000 lbs. Super	200	240 120
2000 lbs. Super	400	480 240

	<u>P₂O₅</u>	<u>S</u>
300 lbs. CSFS	105	120-52.5
600 lbs. CSFS	210	240 105
1200 lbs. CSFS	420	480 210

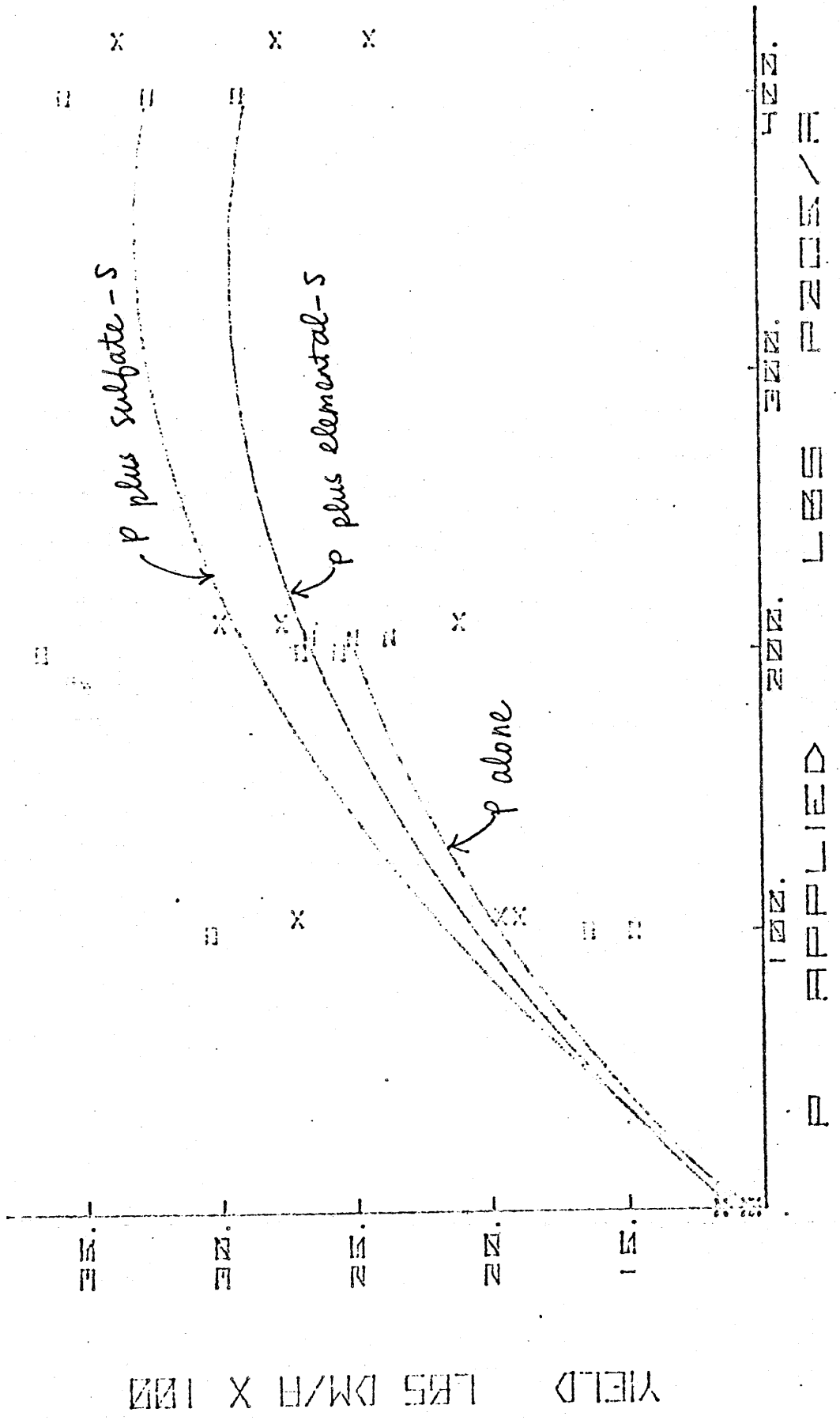
SUMMARY OF 3 YEARS (1972-1980) TREATMENT MEANS FORAGE YIELD RESPONSE TO P ALONE (Z), WITH ELEMENTAL-S (X), OR SULFATE-S (O) APPLIED IN 1970. COTTONWOOD CREEK RANCH.



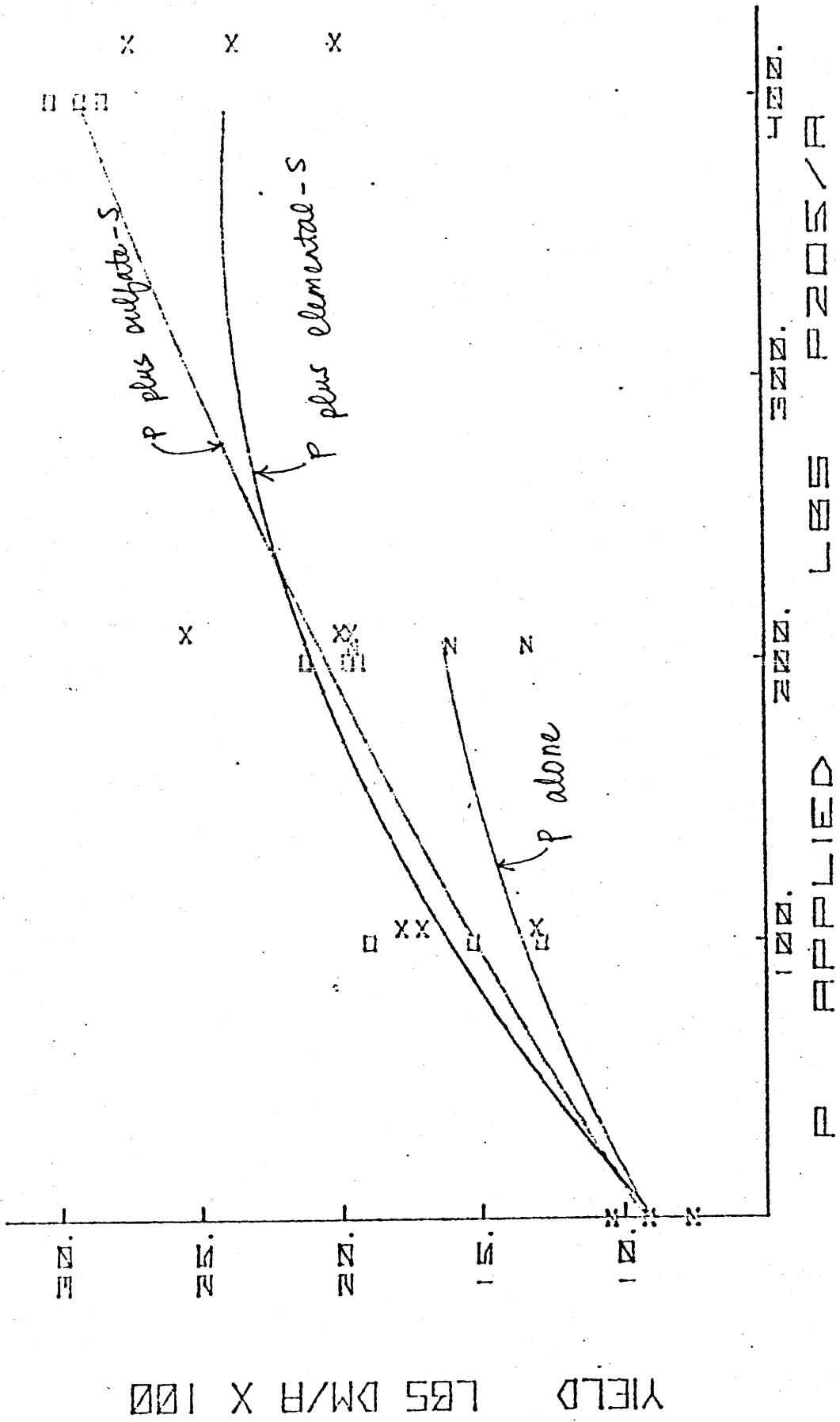
THE FOLLOWING TABLE SHOWS THE YIELD OF DRY MATTER PER ACRE
 OF PASTURE UNDER DIFFERENT TREATMENTS OF PHOSPHORUS AND
 SULFUR. THE YIELD IS GIVEN IN TONS PER ACRE. THE TREATMENTS
 ARE: P ALONE, P PLUS SULFATE-S, P PLUS ELEMENTAL S.



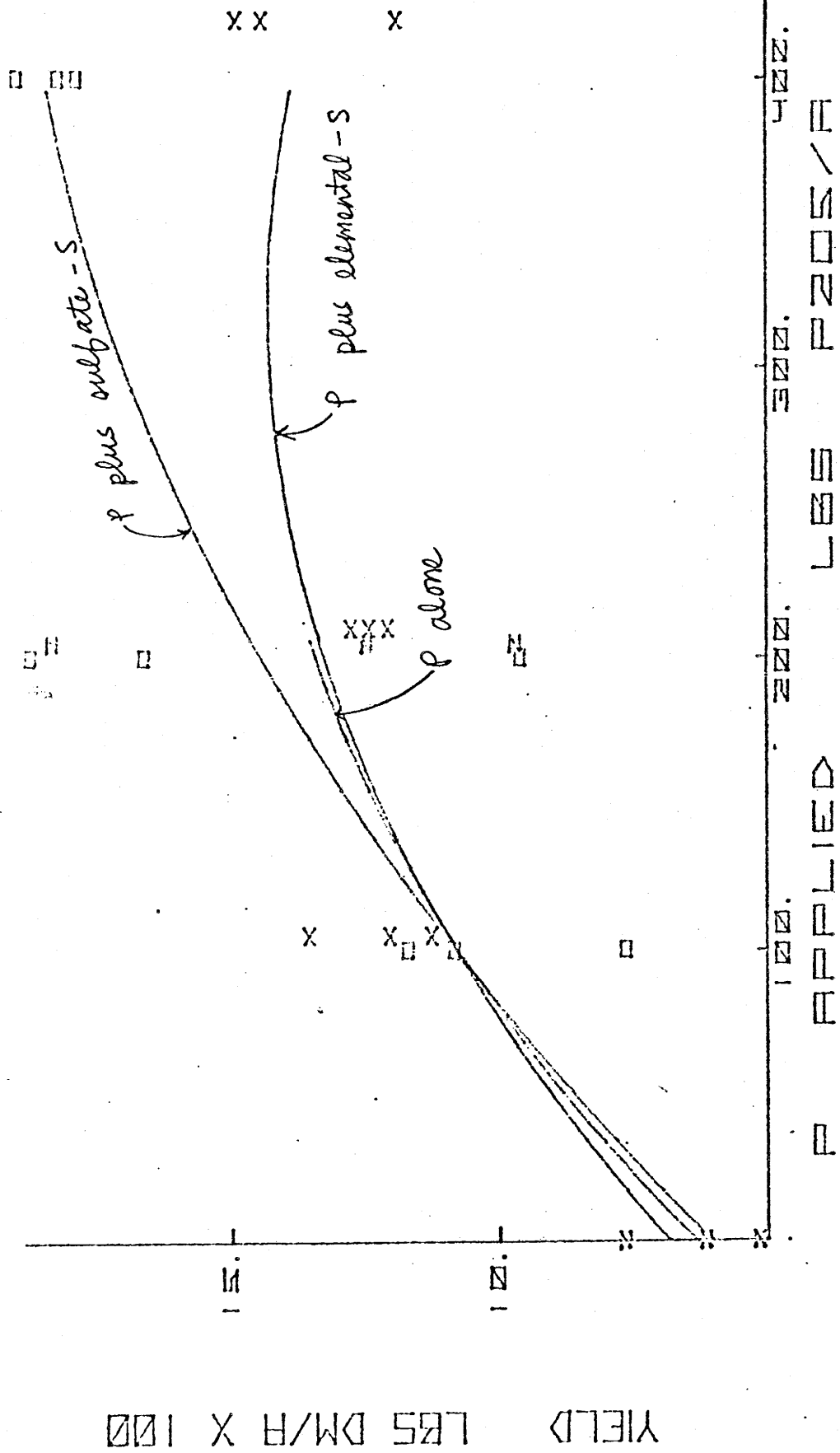
CONCENTRATION OF PHOSPHORUS IN THE SOIL IN 1978 TO 1979. THE YIELD OF CORN WITH DIFFERENT LEVELS OF PHOSPHORUS AND SULFUR IS SHOWN IN THE FOLLOWING TABLE.



FORAGE YIELD RESPONSE IN 1978 TO P ALONE
 AND WITH ELEMENTAL-S OR SULFATE-S
 TREATMENTS IN 1979. COTTONWOOD VARIETY.



FORAGE YIELD RESPONSE IN 1977 TO P ALONE AND P PLUS SULFATE - S WITH ELEMENTAL S OR SULFUR FOR Sulfate - S AND WITH ELEMENTAL S IN 1978. YIELD IN TONS PER ACRE



Cottonwood Creek Ranch
 Phosphorus Source and Rate Trial
 New Treatments applied Nov 18, 1974

Plot #	Treatment	Plot #	Treatment	Plot #	Treatment	Plot #	Treatment
1	2000 SUPER	①	②	③	④	⑤	
2	1200 CSPS	⑩	⑨	⑧	⑦	⑥	
3	1000 SUPER	⑪	⑫	⑬	⑭	⑮	
4	600 CSPS	⑳	⑲	⑱	⑳	㉑	
5	500 SUPER	㉒	㉓	㉔	㉕	㉖	
6	300 CSPS	③①	③②	③③	③④	③⑤	
7	CHECK	④①	④②	④③	④④	④⑤	
8	370 TREBLE	④⑥	④⑦	④⑧	④⑨	④⑩	
1	2000 SUPER	④⑪	④⑫	④⑬	④⑭	④⑮	
2	1200 CSPS	④⑯	④⑰	④⑱	④⑲	④⑳	
4	600 CSPS	④㉑	④㉒	④㉓	④㉔	④㉕	
3	1000 SUPER	④③①	④③②	④③③	④③④	④③⑤	
6	300 CSPS	④③⑥	④③⑦	④③⑧	④③⑨	④③⑩	
5	500 SUPER	④③⑪	④③⑫	④③⑬	④③⑭	④③⑮	
7	CHECK	④③⑯	④③⑰	④③⑱	④③⑲	④③⑳	
8	370 TREBLE	④③㉑	④③㉒	④③㉓	④③㉔	④③㉕	
3	1000 SUPER	④③③①	④③③②	④③③③	④③③④	④③③⑤	
4	600 CSPS	④③③⑥	④③③⑦	④③③⑧	④③③⑨	④③③⑩	
6	300 CSPS	④③③⑪	④③③⑫	④③③⑬	④③③⑭	④③③⑮	
5	500 SUPER	④③③⑯	④③③⑰	④③③⑱	④③③⑲	④③③⑳	
2	1200 CSPS	④③③㉑	④③③㉒	④③③㉓	④③③㉔	④③③㉕	
1	2000 SUPER	④③④①	④③④②	④③④③	④③④④	④③④⑤	
7	CHECK	④③④⑥	④③④⑦	④③④⑧	④③④⑨	④③④⑩	
8	370 TREBLE	④③④⑪	④③④⑫	④③④⑬	④③④⑭	④③④⑮	

250 #

Super 500

500 #

CHECK

0-35-0-250

CSPS - 250

0-35-0-250

Pop corn 100

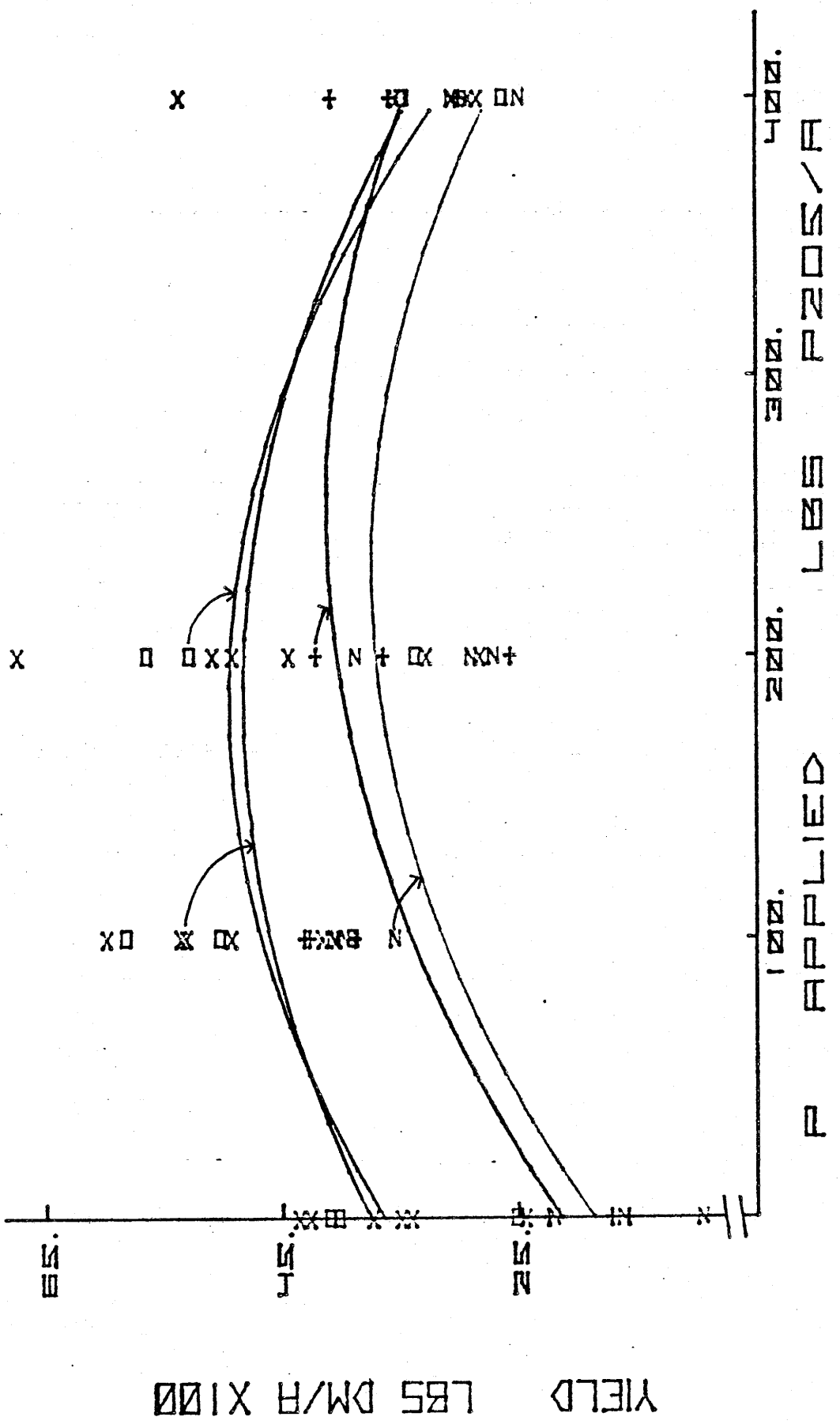
CHECK

Pop corn 100 #/a

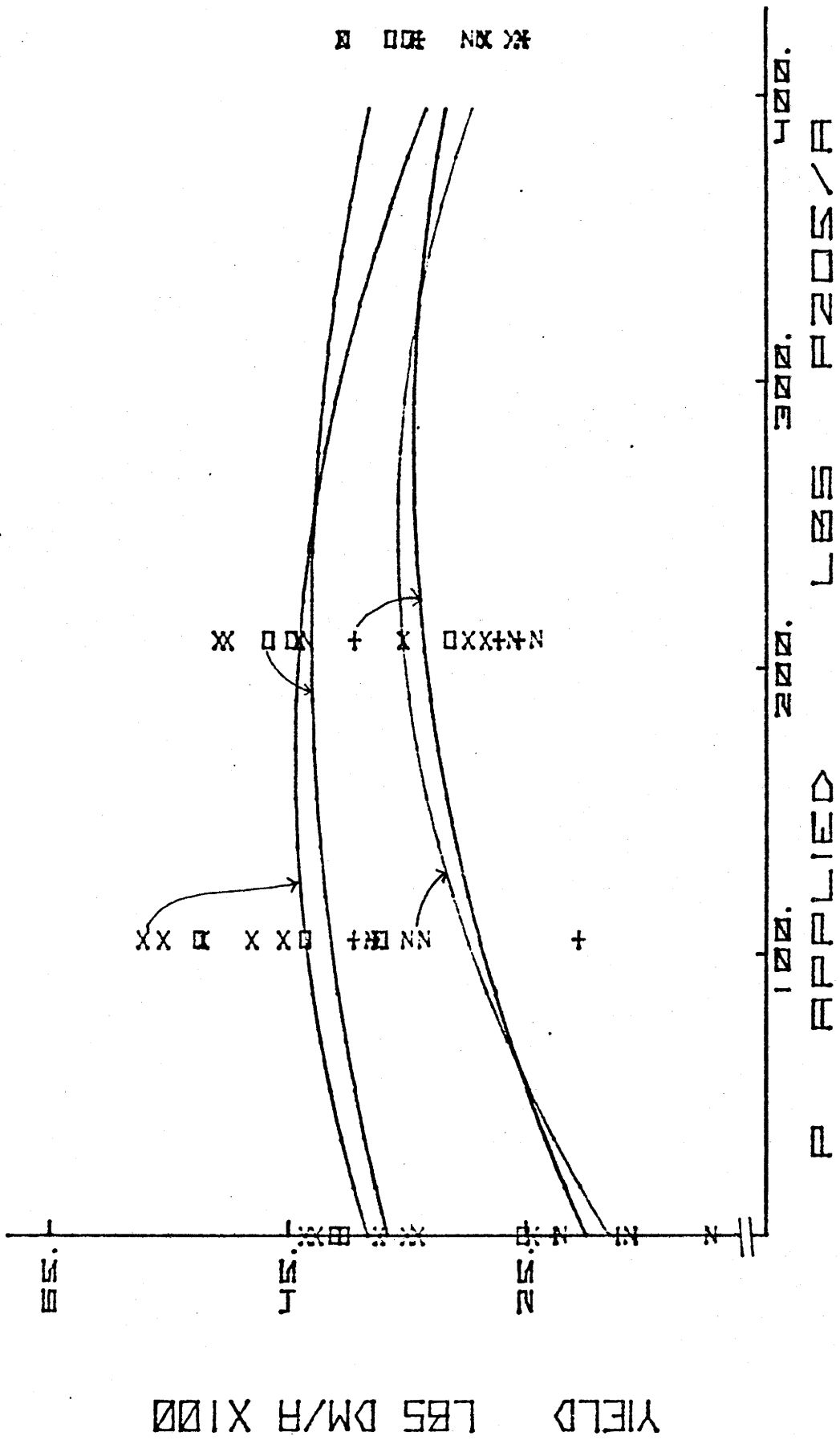
CSPS - 250

Pop corn 100

FORAGE YIELD RESPONSE IN 1975 TO THE 1974 APPLICATION OF NONE (0), ELEMENTS (20), P+ELEMENTS (40) AND P+SULFATE-S (60) OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.



FORAGE YIELD RESPONSE IN 1975 TO THE 1974 APPLICATION OF NONE (+), ELEMENTS (Z), P+ELEMENTS (X) AND P+SULFATES (O) OVER THE 1970 APPLIED COPS TREATMENTS. COTTONWOOD CREEK RANCH.

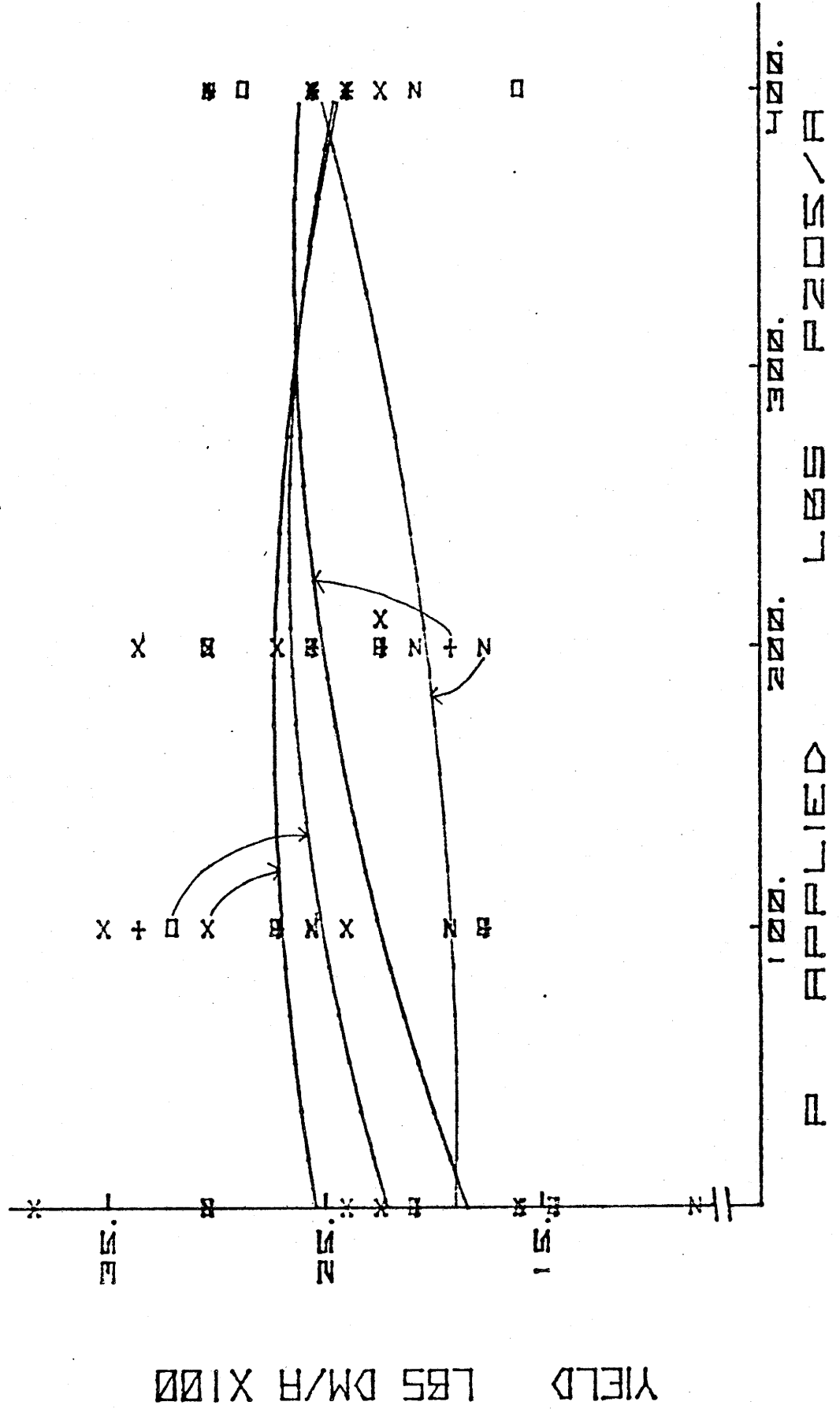


YIELD

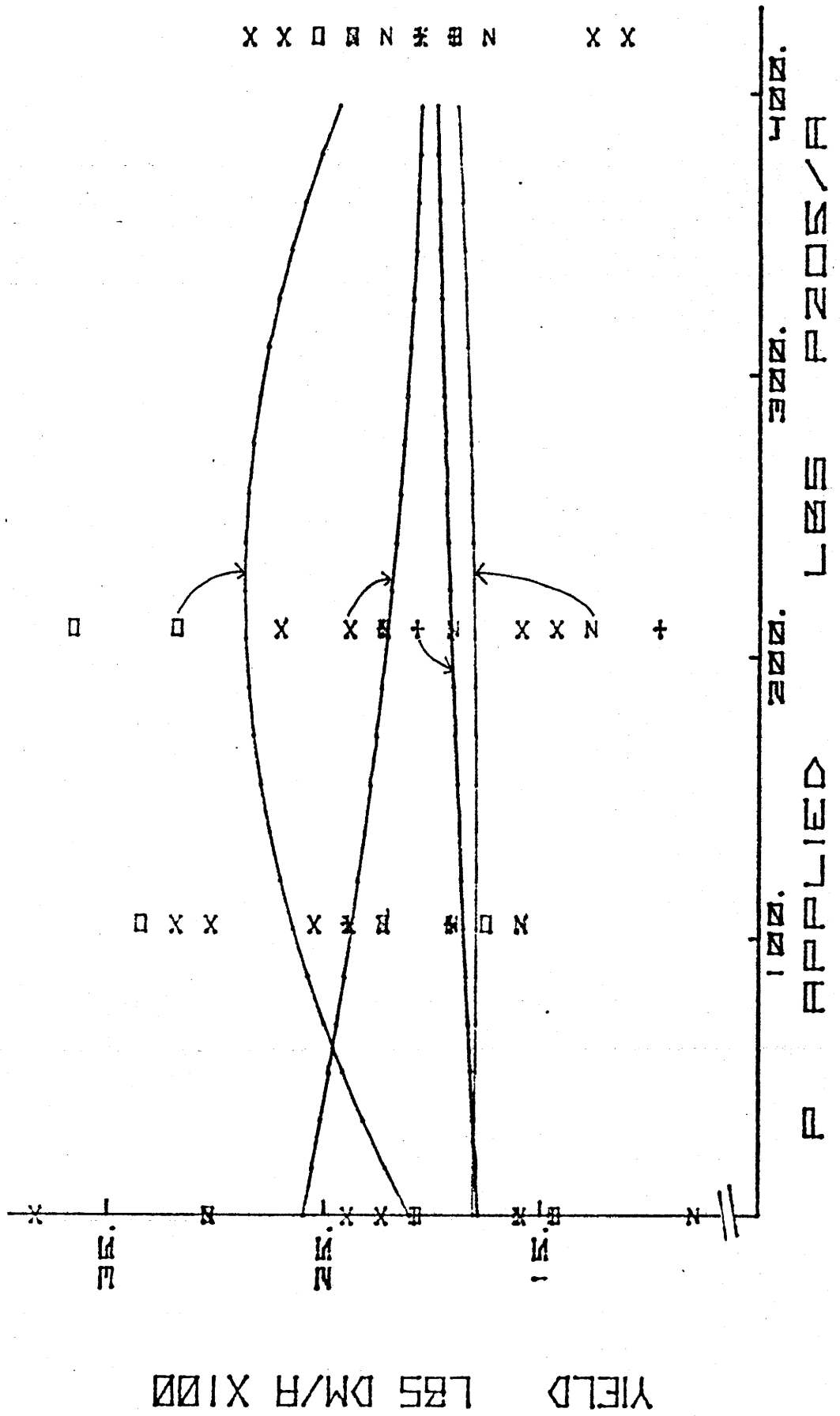
LBS DM/A X 100

P APPLIED LBS P₂O₅/A

FORAGE YIELD RESPONSE IN 1976 TO THE 1974 APPLICATION OF NONE (C), ELEMENTS (Z), P+ELEMENTS (X) AND P+SULFATE-S CO OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.

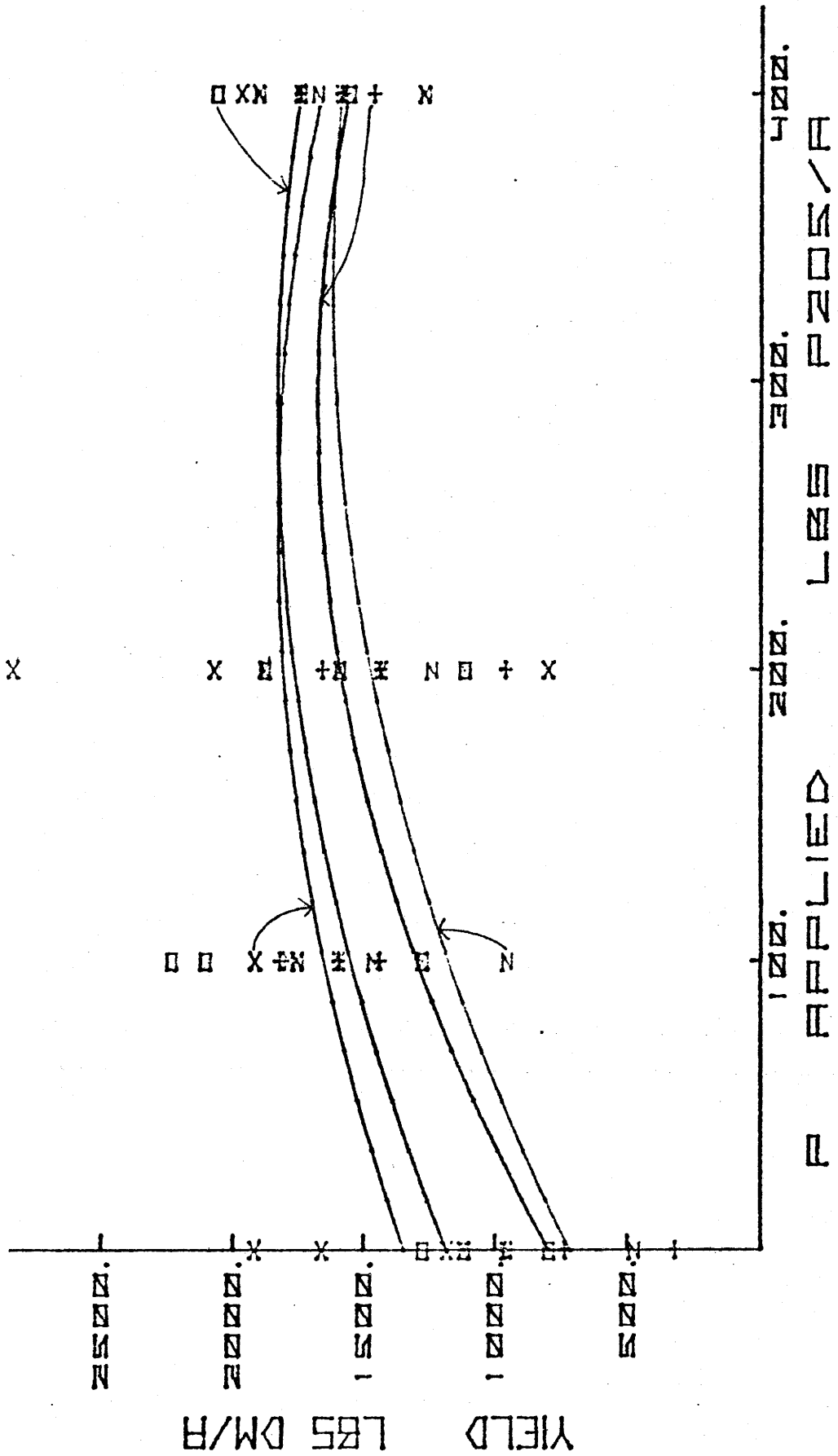


FORAGE YIELD RESPONSE IN 1976 TO THE 1974 APPLICATION OF NONE (0), P+ELEMENTS (20), P+SULFATE-S (20) OVER THE 1970 APPLIED COPS TREATMENTS. COTTONWOOD CREEK RANCH.

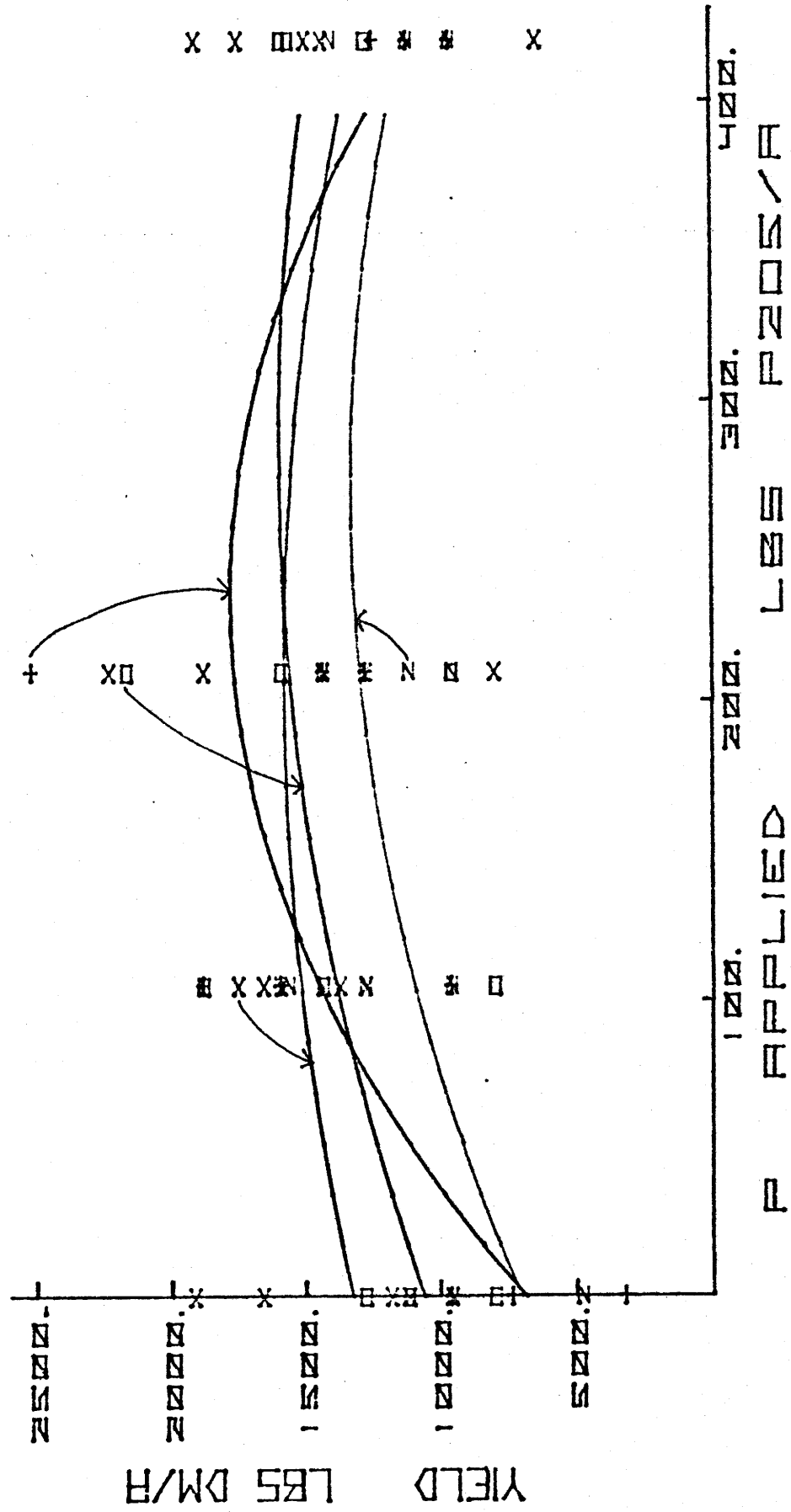


X X O O N N N N X X

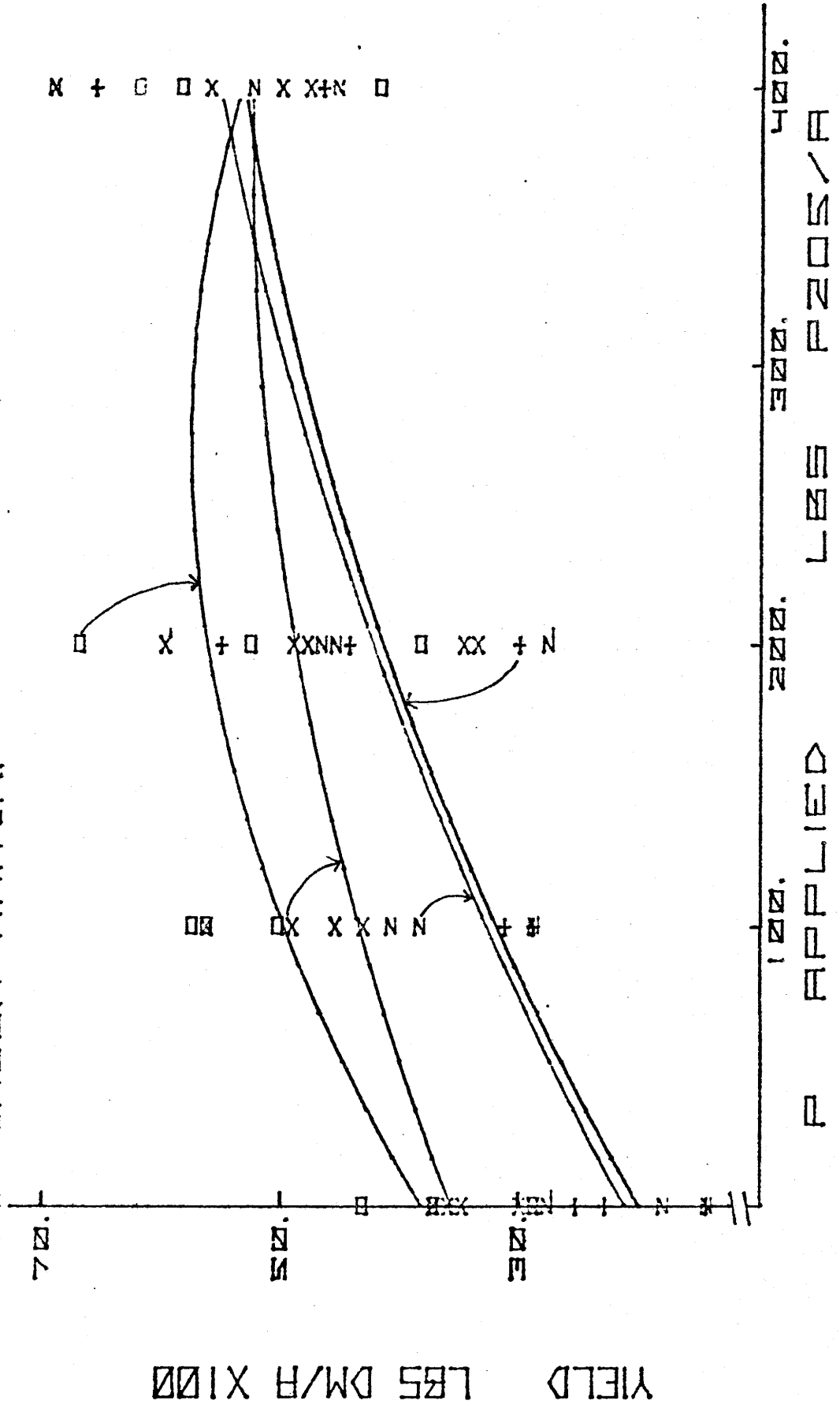
FORAGE YIELD RESPONSE IN 1977 TO THE 1974 APPLICATION OF NONE C+J, ELEMENTS C2J, P+ELEMENTS C3J AND P+SULFATE-S C0J OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK BRANCH.



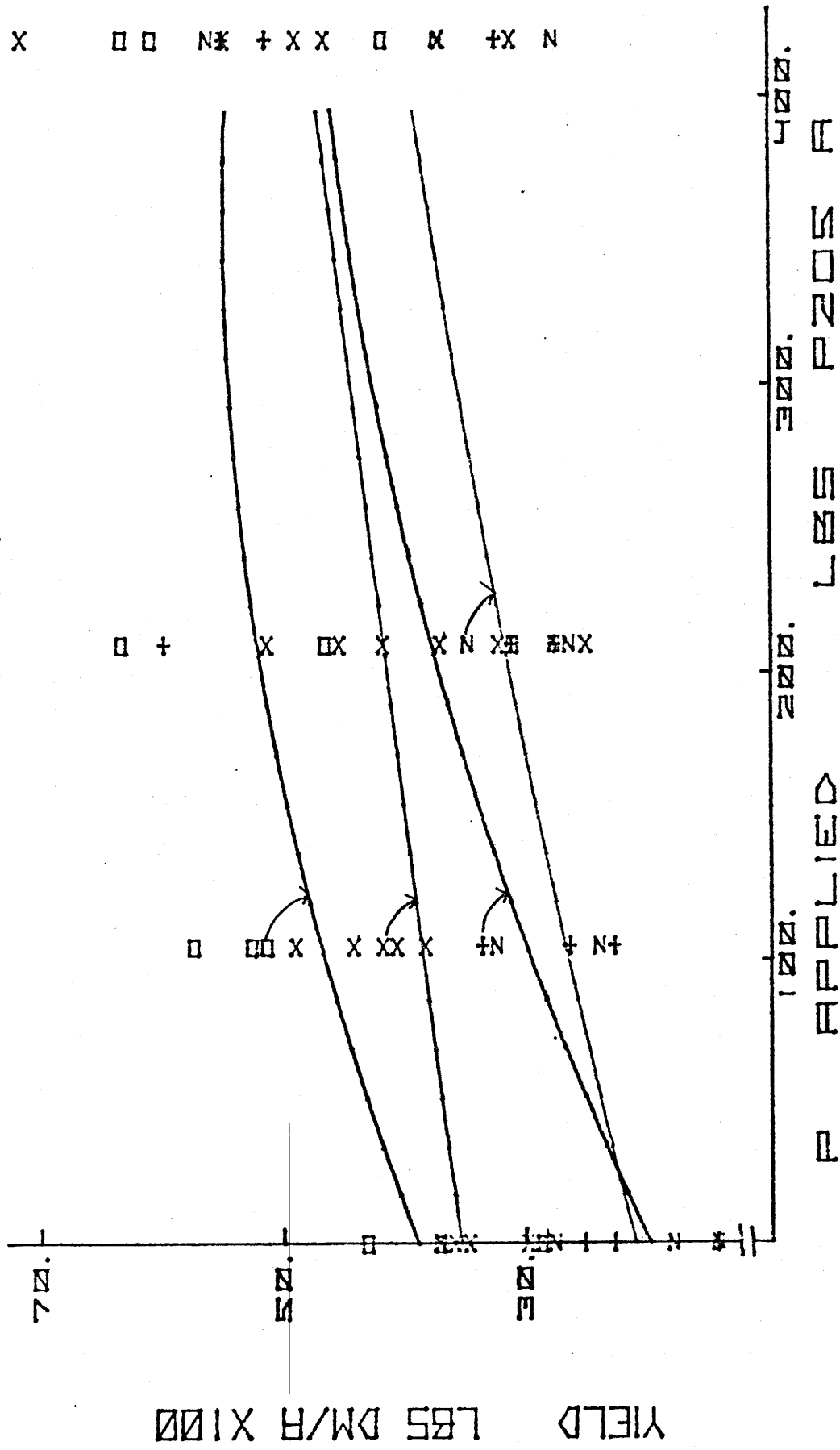
FORAGE YIELD RESPONSE IN 1977 TO THE 1974 APPLICATION OF NONE (+), ELEMENTS (Z), P+ELEMENTS (X) AND P+SULFATE'S (O) OVER THE 1970 APPLIED CUBES TREATMENTS. COTTONWOOD CREEK RANGE II.



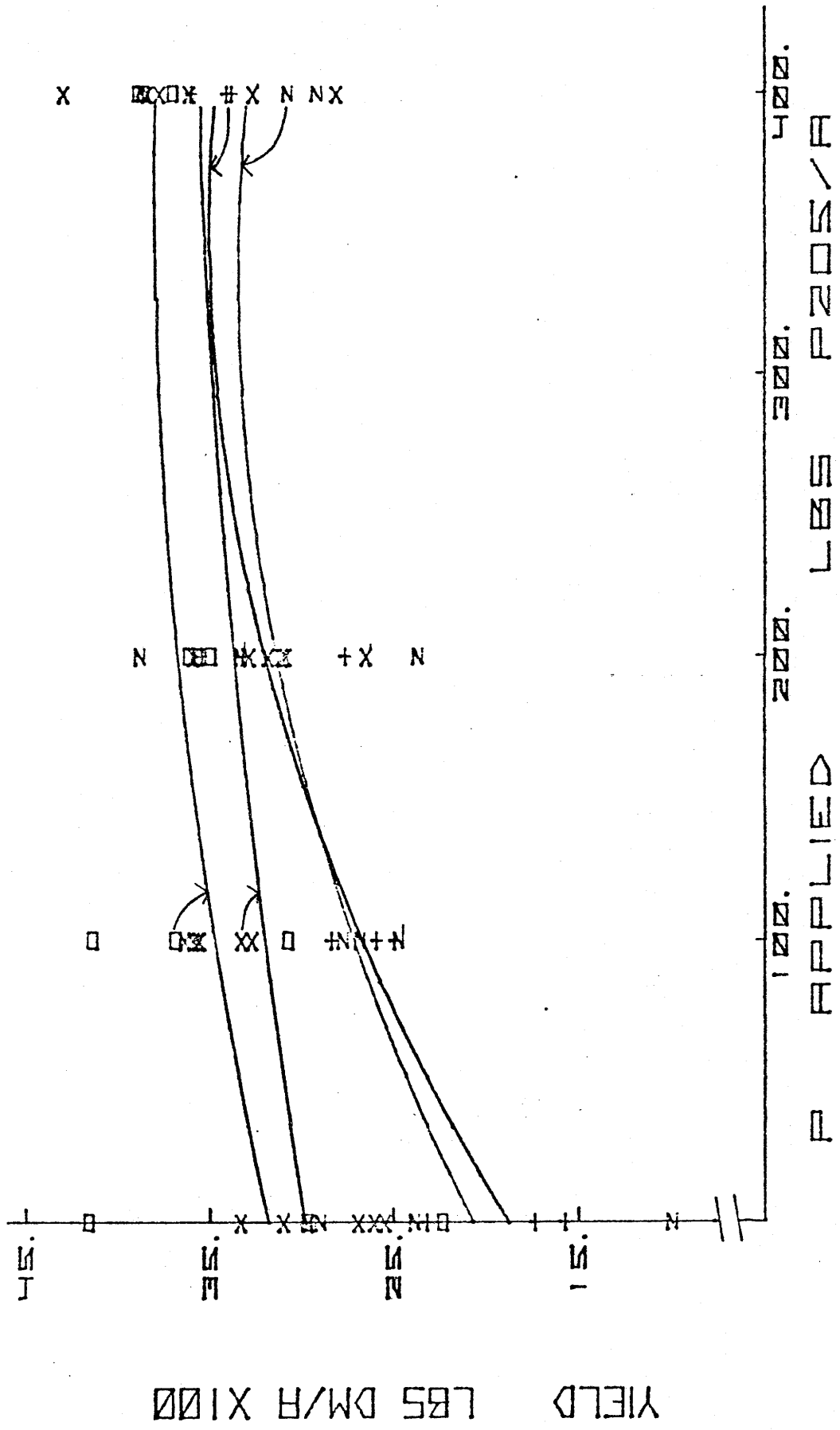
FORAGE YIELD RESPONSE IN 1978 TO THE 1974 APPLICATION OF NONE (+), ELEMENTS (Z), P+ELEMENTS (X) AND P+SULFATE-S CO3 OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.



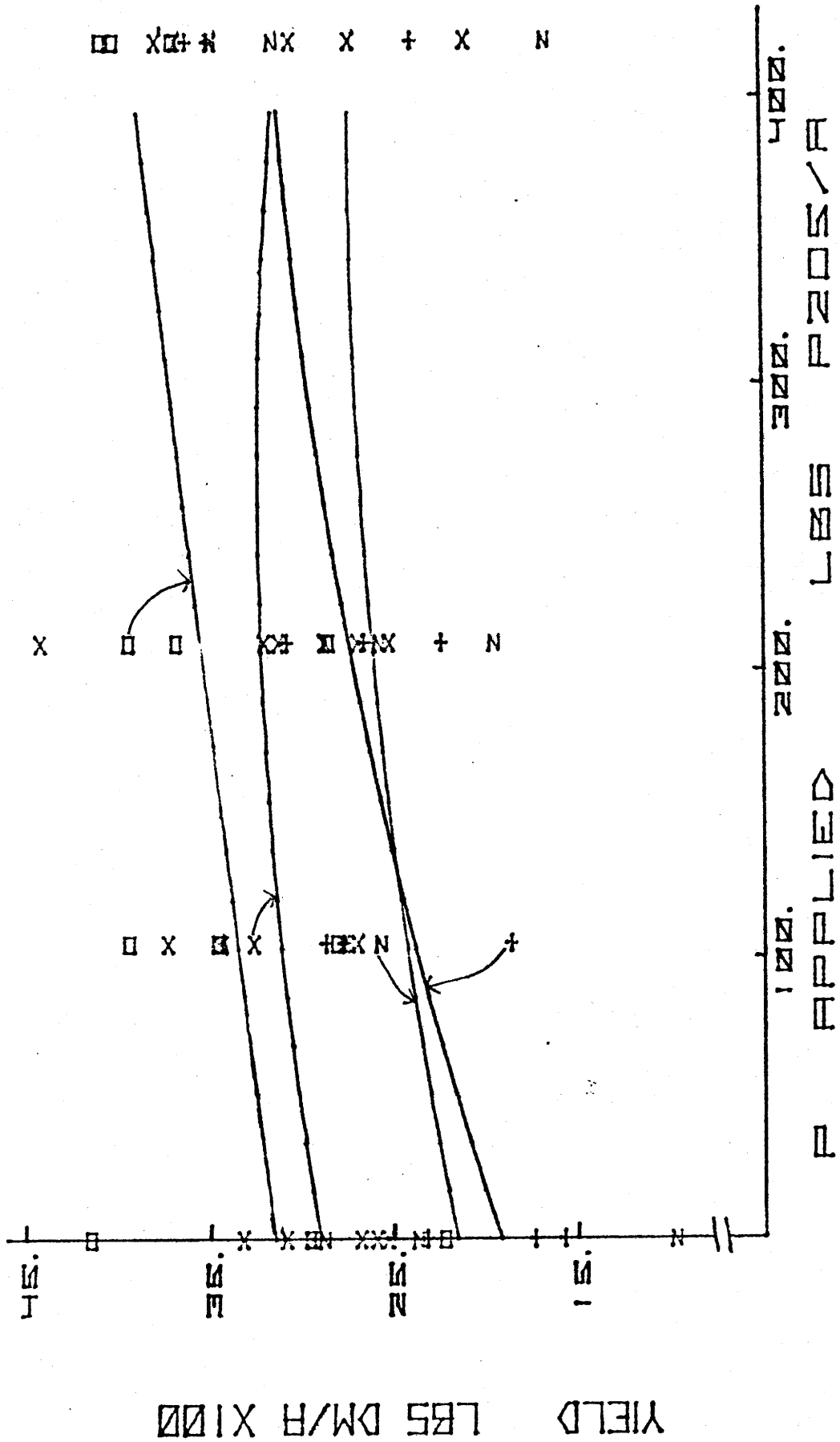
FORAGE YIELD RESPONSE IN 1978 TO THE 1974 APPLICATION OF NONE [0], ELEMENTS [2], P+ELEMENTS [X] AND P+SULFATES [0] OVER THE 1970 APPLIED COPS TREATMENTS. COTTONWOOD CREEK RANCH.



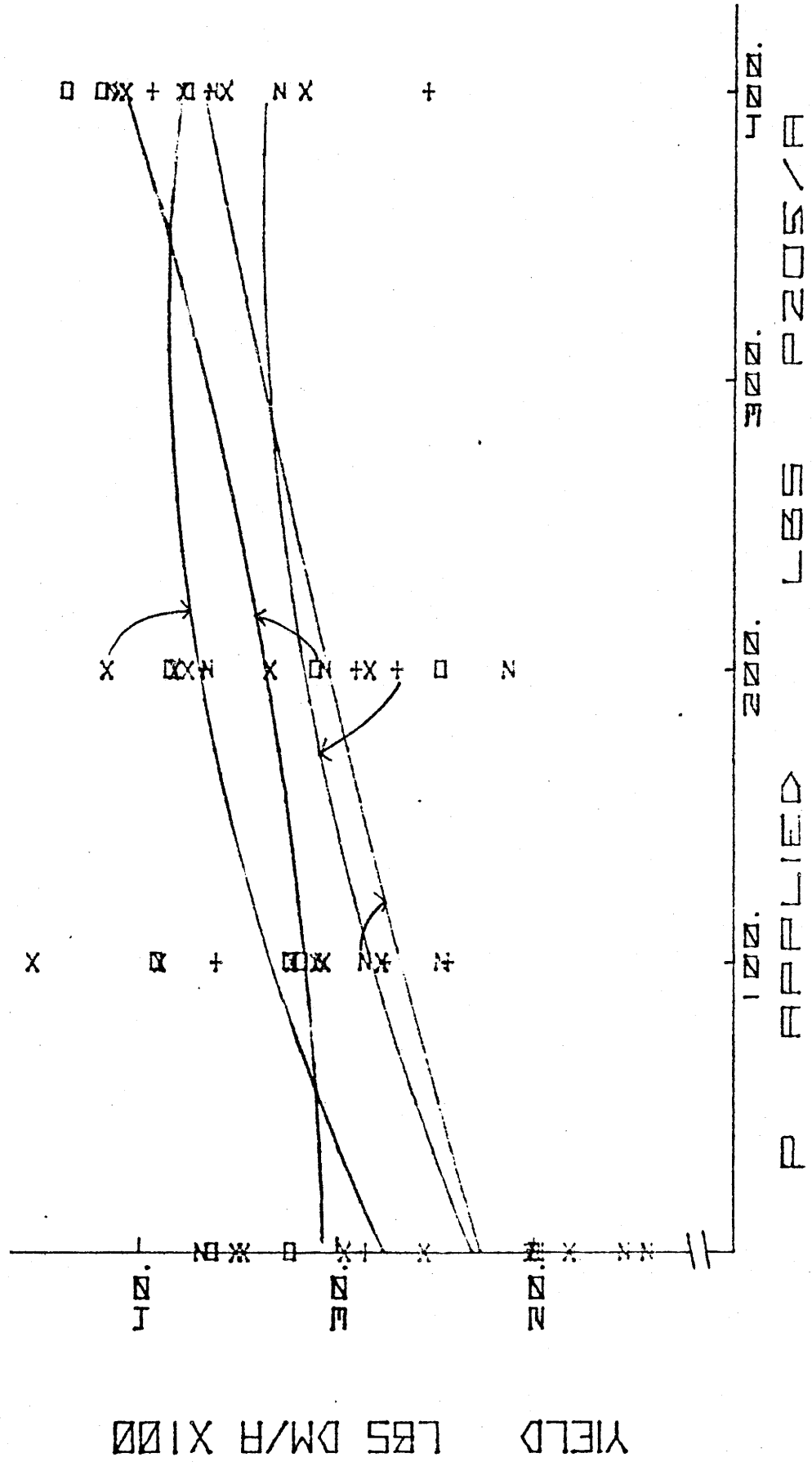
FORAGE YIELD RESPONSE IN 1979 TO THE 1974 APPLICATION OF NONE [0], ELEMENTS [2], P+ELEMENTS [X] AND P+SULFATE-S [0] OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.



FORRAGE YIELD RESPONSE IN 1978 TO THE 1974 APPLICATION OF NONE C+3, ELEMENTS C23, P+ELEMENTS CXC AND P+SULFATE-S CO3 OVER THE 1970 APPLIED CURE TREATMENTS. COTTONWOOD CREEK RIVER.



FORAGE YIELD RESPONSE IN 1980 TO THE 1974 APPLICATION OF NONE (N), P (P), P+K (PK), P+S (PS), P+S+K (PSK) AND P+S+K (PSK) OVER THE 1970 APPLIED SINGLE SUPERPHOSPHATE TREATMENTS. COTTONWOOD CREEK RANCH.



FORAGE YIELD RESPONSE IN 1980 TO THE 1974 APPLICATION OF NONE (+), ELEMENTS (Z), P+ELEMENTS (X) AND P+SULFATE-S (O) OVER THE 1970 APPLIED CSFS TREATMENTS. COTTONWOOD CREEK RANCH.

