

**STUDY NO. 77 RED PINE PLANTATION**

**FERTILIZATION STUDY**

**(1972)**

**James A. Johnson**

**June 1972**

Study No. 77  
Red Pine Plantation Fertilization

I. Objectives:

The objective of this study is to test conventional dry fertilizer and Na-Churs Liquid Fertilizer and its effects in red pine growth on the Baraga Plains Plantation No. 27, Sec. 14, T49N-R34W (SE, SW). The red pine was planted in the Spring of 1970 with 2-0 nursery stock.

II. Procedures:

Four replications of each test along with a control will be established beginning from the north side of the plantation. Only furrowed rows will be used. Stakes designating type of treatment will be placed at the beginning of each row. Pre-treatment height measurements will be taken on each tree. Height will be measured from the ground level to the base of the terminal bud, using a steel rule calibrated in inches and tenths of inches. Every tenth tree will be numbered by inserting and numbering a garden stake adjacent to the tree.

Dry fertilizer will be applied at the rate of 1200 lbs. per acre of mixed fertilizer in the ratio of 10% Nitrogen, 10% Pos.  $P_2O_5$ , and 10% Potash  $K_2O$ . Calculating a square foot area at this application rate per acre amounts to 12 grams per tree. In addition to the mixed fertilizer, kilndried agstone lime will be applied at the rate of 600 lbs per acre or 6.2 grams per tree.

Na-Churs soil testing crop service recommend the following application of liquid foliar spray. Three gal. per acre of mixed liquid in the ratio of 9% Nitrogen, 18% Phos. 9% Potash, 3% sulfur with three applications during the growing season and one application of 3-18-18-3 in late fall. Tree elements in the following amounts was also recommended; Mg 16 oz./A, ZN 13 oz/A.

A "Solo", back pack mist spray blower, will be used for applying the liquid fertilizer. In testing the application rate it was found that 280 rapid openings and closings of the valve dissipated 1 gal. of water. The calculated weight of one gallon of fertilizer measures 11.179 lbs. or 178.86 oz. Providing the flow would be the same as the water used in the test, this would amount to  $178.86 \div 280$  equals .639 oz per spray. Using 6' x 6' tree spacing or 1200 trees per acre would figure  $.639 \times 1200 = 766.8$  oz. or 4.29 gals per acre. The exact application rate will be known following fertilization. When a fine mist application is used undiluted Na-Churs is recommended. For best results spraying should be done in late afternoon or evening.

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Progress Report  
(August 1972)

On June 6, 1972 each row of seedlings was marked with an identification stake designating type of treatment. Each seedling height was measured to the base of the terminal bud in inches and tenths of inches and every tenth tree marked with a garden stake. Dry fertilizer (10-10-10) was applied at the rate of 12 grams per tree. Kiln-dried agstone lime was applied at the rate of 6.2 grams per tree.

On Friday June 9, 1972 at 7:30 P.M. a foliar spraying of 279 trees was accomplished in 20 minutes using a "Solo" back pack mist sprayer. Undiluted Na-Churs 9-18-9-3 was applied at the rate of 4 gal. per acre. The leaders had flushed and growth begun. A heavy frost occurred during the night ( $25^{\circ}$ ) causing the death of the buds. A second spraying was made on July 6, 1972 at 3:15 P.M. It appears that no growth will be attained in 1972 because of the killing frost. Height measurements will again be made in May of 1973. A second fertilization attempt will again be made during the summer of 1973.

Due to the frost killing in June the third foliar application was eliminated. The test will again be repeated during the summer of 1973.

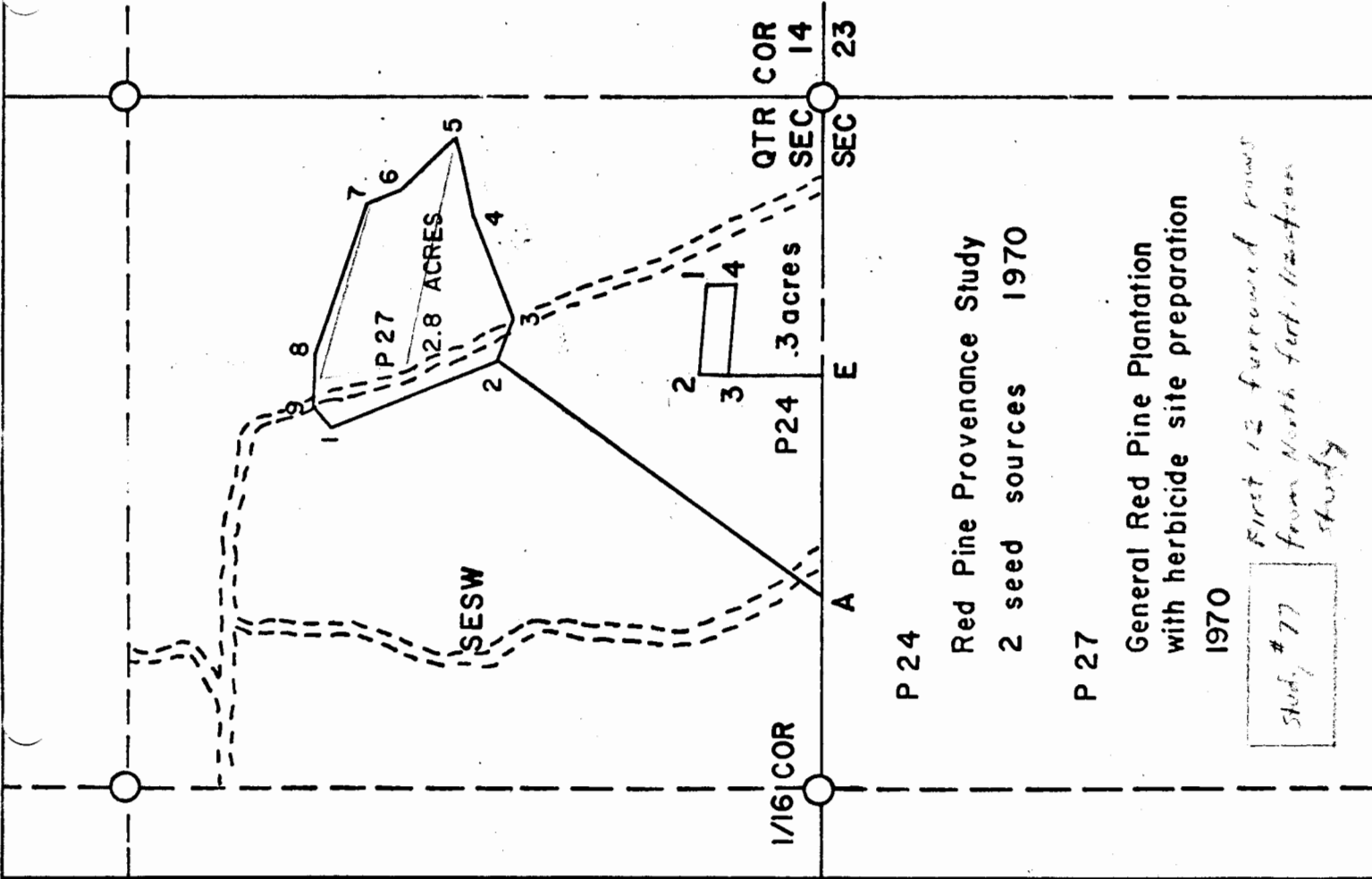
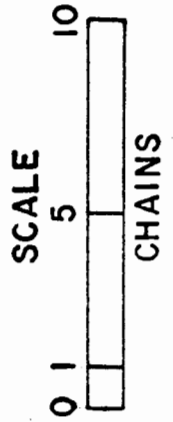
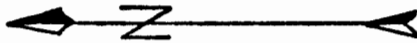
FORD FORESTRY CENTER MTU  
 BARAGA COUNTY, MICHIGAN  
 SEC. 14 T49N R34W

PLANTATION 24

1/16 cor. - E	Due E	11.97 chains
E - 3	Due N	2.71
1 - 2	N 86° W	2.54
2 - 3	Due S	.84
3 - 4	S 85° E	2.56
4 - 1	N 2° W	.85

PLANTATION 27

1/16 cor. - A	Due E	
A - 2	N 36° E	5.65
1 - 2	S 23° E	11.53
2 - 3	S 70° E	5.09
3 - 4	N 68° E	1.34
4 - 5	N 77° E	2.83
5 - 6	N 44° W	2.66
6 - 7	N 21° W	2.16
7 - 8	N 72° W	1.06
8 - 9	N 88° W	4.45
9 - 1	S 47° W	1.68
		.80



P 24  
 Red Pine Provenance Study  
 2 seed sources 1970

P 27  
 General Red Pine Plantation  
 with herbicide site preparation  
 1970

Study #77  
 First 12 foreward rows  
 from North fert. location  
 study