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SILVICULTURE PROJECT
by
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HEIGHT STUDY OF DOUGLAS FIR REPRODUCTION IN SMALL OPENINGS

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HEIGHT STUDY OF DOUGLAS FIR REPRODUCTION
(Pseudotsuga taxifolia)

1. The purpose of this study was to make a height reproduction study of Douglas Fir and to determine the effect of competition on height growth of Douglas Fir reproduction in small openings.

2. Location (see map)

This project is located on the ranch of L.R. Millican which is located ¼ mile East of the village of Walterville, Oregon and nine (9) miles East of Springfield, Oregon on the McKenzie Highway.

The plot is located approximately 60 chains from the northwest corner of the Millican Homestead ranch house on a bearing of N 36° W, and lies at the base of a rock bluff which is situated about two (2) chains North of the plot. (see map).

3. History of the area

The timber was removed from this area many years ago and some trees were left for seed trees. The area has since grown up to groups of second growth Douglas Fir and Oregon Oak, (Quercus garryana). Smaller openings were left and these openings have seeded in with Douglas Fir varying from 14 to 18 years in age.

4. Appearance and condition of plots

All plots presented a similar appearance, as they were located in small openings and surrounded by Fir and Oak brush. They are on a north exposure in fairly steep country running

from 8% to 20% slope. The soil for the most part is a clay loam.

5. Record of treatment, costs, and time

No treatment was necessary other than to measure the height of seedlings along a straight line and at six (6) foot intervals. However, much time (about 30 hours) was spent in trying to locate the desired area during the fall, winter, and spring terms.

No money, other than bus fare, was expended, as horses were furnished by the ranch.

Three trips were made to the Booth-Kelly cutting, a distance of five miles, in search of a desired seed-tree plot, but none was found. This area was cut over about twelve years ago and burned heavily. Although several unmerchantable trees were left standing after the cutting, most of them were killed by the subsequent burning, and reproduction is practically non existant. The area has been used for grazing since the burn. Gossip indicates that some reproduction was established after the initial burn, but was killed when stockmen fired the area a second time.

6. Method of setting up experiment

The plots were located in small openings which were stocked with reproduction. The height growth of the young trees was measured at six foot intervals along a line drawn through the center of the openings.

The fifth sample plot was located in a small opening

surrounded by low oak brush. The height growth curve for this plot was found to be similar to those of the previous plots. Plants were measured at two foot intervals in this plot.

7. Measurements taken, methods used, and intervals of remeasurement

a. Measurements taken

Height of each young tree at six foot intervals along a line through the center of the plot.

Plot NO.	Age-yrs.	% Slope	Height of samples @ 6 foot intervals															
1	15	3-6	0	0	3'1"	4'8"	9'6"	6'2"	6'	4'9"	3'1"	1'7"	0					
2	14	8-10	0	0	0	3'3"	0	0	5'1"	10'	11'	9'10"	8'7"	5	3'2"	1'	0	0
3	18	8-10	0	0	0'9"	0	3'1"	0	8'2"	18'	16'	10'6"	3'	0				
4	15	15-20	0	0	0	18'	16'	22'	22'6"	16'	13'	8'8"	6'8"	9'1"	0	0		
			Height of samples @ 6 foot intervals															
5	12	6-8	5'8"	0	6'5"	0	8'7"	7'2"	0	0	0							

b. Methods used

The smaller trees were measured by means of a four foot steel rule, but the height of the largest samples had to be estimated.

c. Intervals for remeasurement

I do not believe that remeasurement will be necessary.

8. Photographs and charts

No photographs were taken as there was no camera available; however, a rough map of the area will be found below as well as the curves of height growth for the different plots.

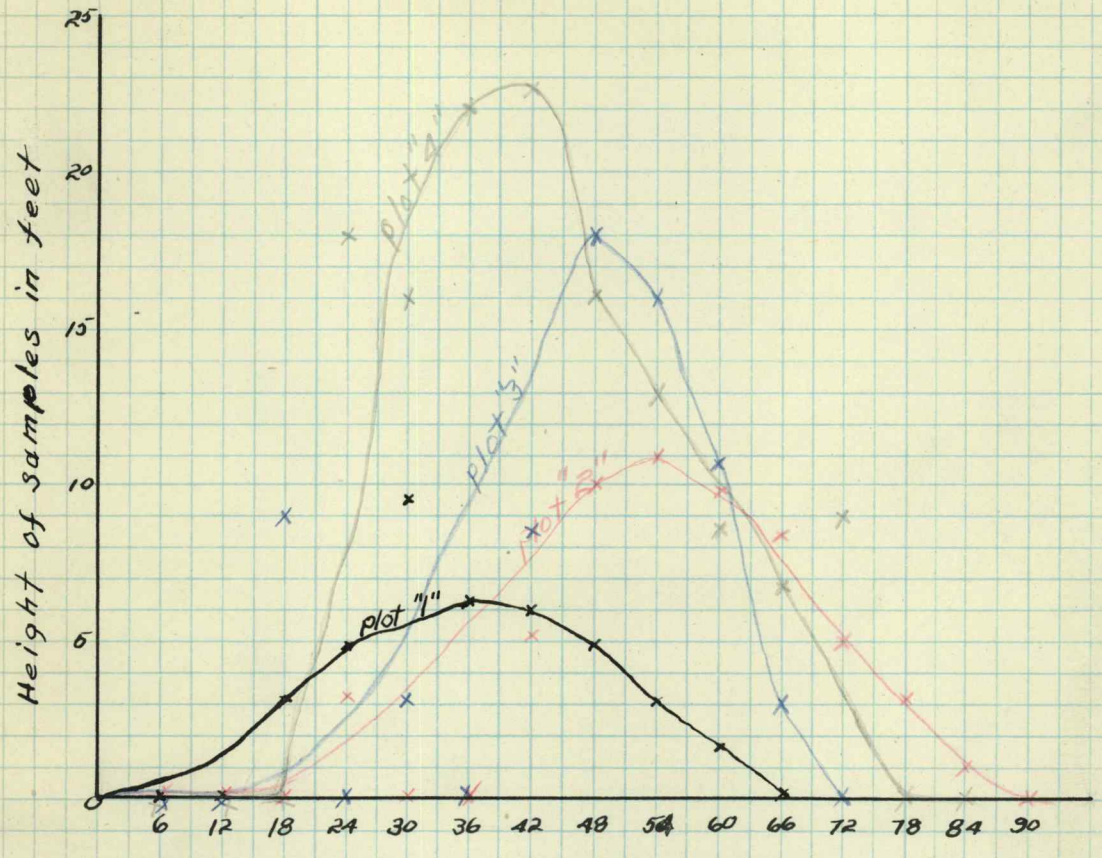
9. Results

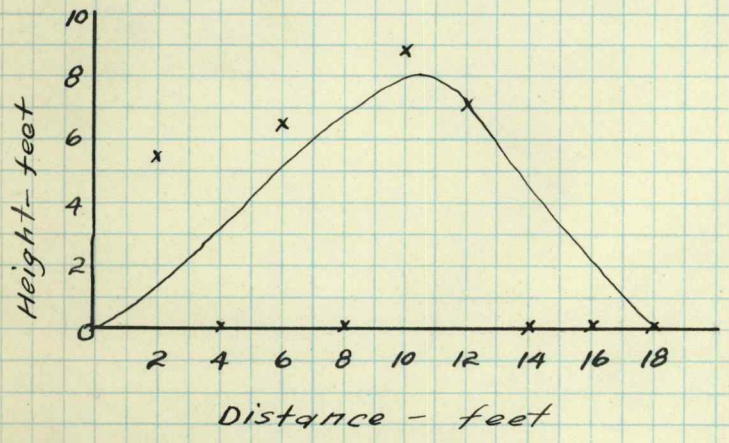
The results of this experiment, as can be seen by the charts and graphs, following page 4, show a very definite correlation

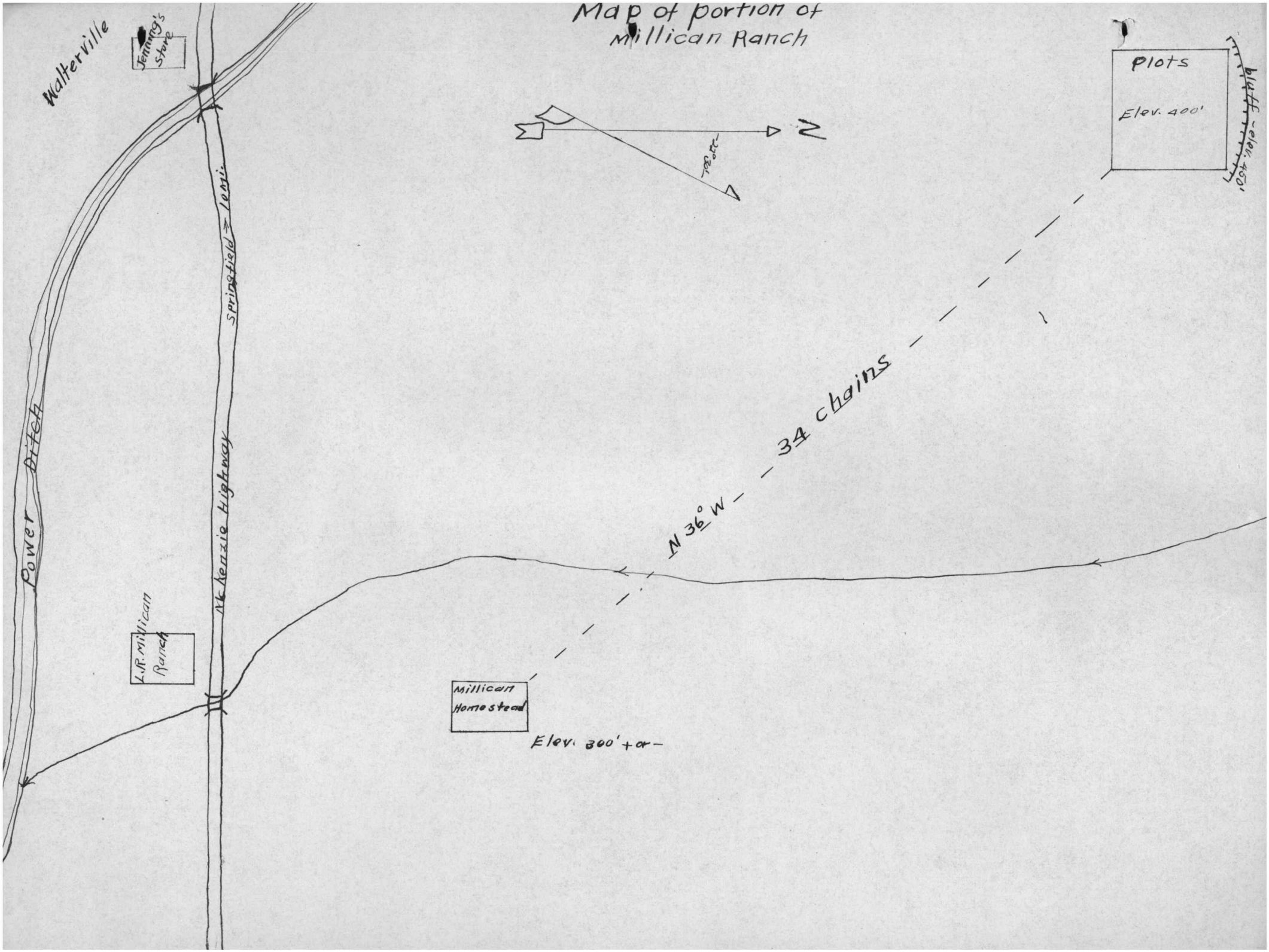
between height growth and distance from edge of the opening. In each case the taller and more sturdy trees were found near the center of the opening.

The tendency for the larger samples to occur in the center of each plot is probably due to a combination of factors of which available soil moisture, soil nutrients, and free access to sunlight are probably the most important.

Some of the exceptionally small plants were found directly under the shade of the surrounding vegetation and were probably limited in growth mostly by inadaquete sunlight; however, other plants found near the edges of the openings apparently had free access to sunlight, yet they were decidedly shorter than the plants in the center of the openings. This would seem to indicate that competition between the root systems of the over-story plants and the root systems of the sample plants for available soil moisture and soil nutrients is a most important factor in limiting the height growth of the latter plants.


Height of samples in feet
25
20
15
10
5
plot "4"
plot "3"
plot "2"
plot "1"
6 12 18 24 30 36 42 48 54 60 66 72 78 84 90
Distance across opening in feet


Height - feet
10
8
6
4
2
2 4 6 8 10 12 14 16 18
Distance - feet


Map of portion of
Millican Ranch
Walterville
Jennings Store
Springfield & Lenzi
McKenzie Highway
Power Ditch
L.R. Millican Ranch
Millican Homestead
Elev. 300' + or -
N 36° W - 34 chains
Plots
Elev. 400'
Bluff - elev. 420'
N
220°

Plots scale 1" = 10 chains