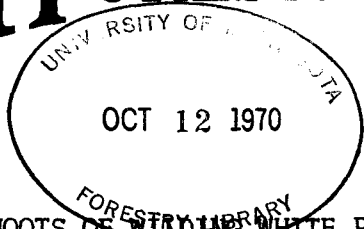


# MINNESOTA FORESTRY NOTES

COPY 2



No. 70  
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ADVENTITIOUS ROOTS AND SHOOTS OF WILDING WHITE PINE  
AT THE QUETICO-SUPERIOR WILDERNESS RESEARCH CENTER

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In the course of investigating various techniques for the possible stimulation of early flowering in various species of pine, the development of adventitious roots and shoots on young, wilding white pine (Pinus strobus L.) was observed (Figs. 1 and 2). The roots have been designated as adventitious since they do not originate from the root pole of the embryo nor its branches, but rather arise on older, aerial plant tissue. <sup>2,3/</sup>

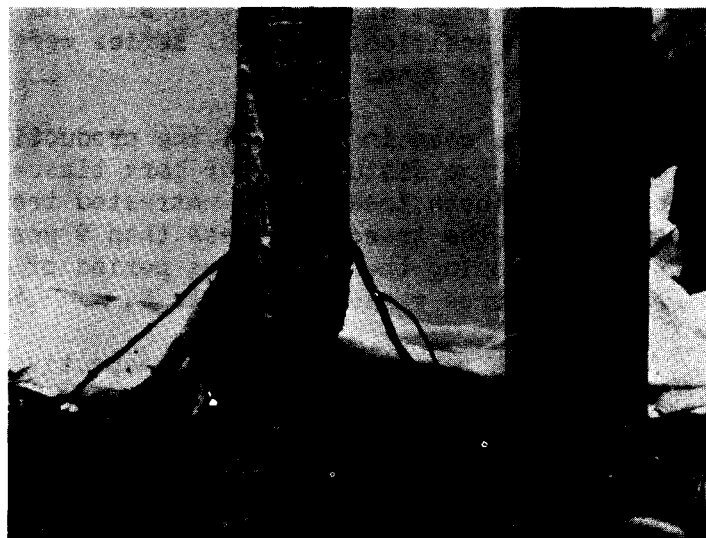


Fig. 1. Nine year old white pine showing adventitious shoots below a double bark inversion. Swelling on the stem is caused by the inversions.

Fig. 2. Nine year old white pine showing adventitious roots, 2 inches above the root crown.

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  - <sup>2/</sup> Eames, A. J. and L. H. MacDaniels. 1941. An Introduction to Plant Anatomy. 2nd. Ed. McGraw-Hill Book Co., New York.
  - <sup>3/</sup> Esau, Katherine, 1953. Plant Anatomy. John Wiley & Sons, Inc., New York.

The trees are growing on a good white pine site under a well stocked, mature stand of white pine. The roots are located 1/2 to 3 inches above the root crown, while the shoots are found 4-6 inches above the root crown, on, or directly below, the treatments described in Table 1.

TABLE I  
THE OCCURRENCE OF ADVENTITIOUS ROOTS AND SHOOTS ON WILDING WHITE PINE

	Treatment No. 1	Treatment No. 2	Treatment No. 3	Control Series 1	Control Series 2
Total No. of trees	28	29	29	22	25
No. of trees with roots	19	12	17	13	15
Total No. of roots	30	28	34	39	27
No. of trees with shoots	19	18	11	0	1
Total No. of shoots	40	27	24	0	2
Age of trees (yrs.)	9-13	9-13	9-13	9-13	9-13

Treatment No. 1 consisted of inverting 2 complete rings of bark,  $\frac{1}{2}$  inch wide. Treatment No. 2 consisted of inverting 2 partial rings of bark  $\frac{1}{2}$  inch wide, leaving a  $\frac{1}{4}$  inch strip intact. Treatment No. 3 consisted of removing 2 complete rings of bark  $\frac{1}{2}$  inch wide and replacing them in normal position. Control series were untreated. Treatments made in June, 1954.

As can be seen in Table I, the production of shoots was apparently stimulated by the disturbance of bark tissues. However, roots appeared frequently on both treated and untreated trees. The first of these roots appeared when the trees were less than 9 years old, and additional ones were formed during the succeeding period of 6 years or more. The number of roots per tree varied from 0 to 5.

Since the rooting occurred irrespective of bark disturbance, it is either a natural phenomenon occurring generally among young white pine, or it is the result of some condition of the particular site on which these trees are growing. If the condition is local, more detailed investigations of the possible cause are indicated. Thus far, inquiries among colleagues have not revealed additional reports of such rooting. The author would be interested to learn if this phenomenon has been observed by others, either on nursery or young wilding white pine. Comments may be directed to the author, c/o Quetico-Superior Wilderness Research Center, Ely, Minnesota.