AFTERNOON SESSION

Chairman- C. Eugene Farnsworth

ESTIMATING SEED TREE NEEDS FOR EASTERN WHITE PINE SEED PRODUCTION AREAS

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Previously a paper was presented to NEFTIC in which I reported the results of efforts to stimulate seed production of individual eastern white pines (Proceedings 9th NEFTIC: 35-40. 1962). In 1962 a partial cone crop materialized and cone collections were made from the treatment trees. Analysis of the data did not indicate that there was any difference between treatments as to cone size, number of seeds per cone, or weight of seed per cone. Only the treatments as reported were effective in increasing cone numbers.

An analysis of the relationship between measurements of cone size and seed yield indicated a linear relationship between numbers of seeds per cone and cone length, Such a relationship is shown for cone collections from other parts of New Hampshire. This linear relationship permits easy extrapolation of seed yields since the average number of seeds/cone can be used to estimate total yield for any number of cones of varying size so long as average cone length and average seed yield of the average cone are estimated.

I used this approach to estimate the potential seed yields for trees in the stimulation study for the years in which we had cone crop failure, but for which we had an estimate of conelet production (tables 1, 2). The data contained in table 2 can be used then to estimate potential seed yield from a seed production area. If we can assume that 15 seed trees/acre will be used in the production area then a tabulation of yield is possible (table 3).

Table 1.--Average number of conelets per tree.
(Adapted from table 7, N. H. Agr. Expt. Sta. Bull. 107)

D.b.h. (inches)	1958 Unfert.	1958 Fert.	1959 Total*	1960 Unfert.	1960 Fert.	1961 Total*
14	24	48	58	116	183	32
16	40	85	115	222	273	55
18	58	136	210	338	607	84
20	75	-	351	413	-	114

* No significant difference between fertilized and unfertilized trees.

Table 2.--Estimated pounds of seed per tree.*

D.b.h. (inches)	1958 Unfert.	1958 Fert.	1959 Total	1960 Unfert.	1960 Fert.	1961 Total
14	0.05	0.10	0.12	0.25	0.40	0.07
16	0.09	0.18	0.25	0.48	0.59	0.12
18	0.12	0.29	0.45	0.73	1.26	0.18
20	0.16	-	0.76	0.89	-	0.25

* Based on 0.0021 pounds of seed/cone.

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Table 3.--Seed production from one acre of fertilized white pine - 15 seed trees/acre.

D.b.h. (inches)	Pounds of seed per acre			
	1958	1959	1960	1961
14	1.5	1.8	6.0	1.0
16	2.7	3.7	8.8	1.8
18	4.3	6.7	18.9	2.7

These yields do not, I am sure, indicate what would be the potential for seed production if the trees had been selected at an earlier age for fecundity, and had the trees been allowed to develop to their fullest, Nor does the data take in account the effects of annual applications of fertilizer and the possible effects of a chemical spray program.

I do feel that it gives us some idea of what might be expected when we go into a natural stand to establish a seed production area, There is the possibility that annual cone collections cannot be anticipated or if they are anticipated they will not be realized without management which includes application of fertilizer and a program to control seed and cone insects and diseases.