

## REPORT ON THE BIENNIAL WESTERN FOREST NURSERYMAN'S MEETING

Place - U. S. Forest Service nurseries at Haugan, Montana, and Coeur d'Alene, Idaho.

Dates - August 17 and 10 with registration during the afternoon and evening of August 16, 1960.

Introduction - An effort has been made to keep this report brief but complete with respect to the "meat" of the subjects covered and the ideas expressed.

Floor discussions following papers have been edited to retain essential information and relevant ideas but to omit **repetitious** or irrelevant material. The full tape **recording was made of** all subject matter presentations and the floor discussion on each. Exceptions were in the case of prepared papers which were read and turned in to the chairman for the record. The transcribing of the tapes was quite a long and laborious process in spite of our **efforts to** have the recording clear and properly notated. We hope that no one will feel slighted if he finds that some of his remarks have been omitted.

The meeting opened at 8 a.m. in the Haugan schoolhouse.

There was a brief time allotted to complete registration and details with respect to the meeting. Program Chairman Frank Pitkin opened the meeting and turned it over to G. M. DeJarnette for a welcoming statement. DeJarnette gave a brief history of Savenac Nursery which was established in 1909 and until recently was the only Region 1 nursery. The name is derived from that of the original homesteader of the area. He was a German named Saffenack. Following Saffenack's relinquishment, the listing was recalled, the area set aside as an administrative site, and the nursery established.

Production at Savenac has varied from 2 to 10 million, depending on appropriations. Peak production was reached during CCC days. Of late years the nursery has been "under wraps, ." so to speak, with **production** of about 3 million.

DeJarnette explained that the Region still has a backlog of more than 500,000 acres of nonproducing burns of 1910 and subsequent years. If present plans for an expanded reforestation program are carried out, both Savenac and the nursery now being established at Coeur d'Alene will be needed. Savenac can be expanded to 12 million **transplants annually**. Coeur d'Alene will produce 15 to 20 million at. least.

Frank Pitkin **thanked** members of the participating organizations for their interest and assistance in developing a good program. He feels that he had better cooperation this year than ever before in his experience in arranging programs.

He explained some of the changes necessitated by late arrivals and the unavoidable absence of some of the men assigned topics.

The meeting was then opened for the formal presentation of papers and panel discussions. DeJarnette served as meeting chairman. He expressed thanks to Frank Pitkin **and to** Jim Augenstein, co-hosts, for a very fine job of program and meeting arrangements.

#### Panel Discussions and Payers

1. Seed Orchards and Seed Production Areas, Tom Greathouse, Chairman.

#### Developments in the

By Tom Greathouse

"My friends, by ye Democrats, Independents or Republicans, *if* elected, I promise you a seed orchard for every climatic zone in the 11 western states.

"It is a pleasure to be here, today to give you a thumbnail sketch of forest tree seed orchard development in the..northwest. Our objective is to produce seed from known, fast-growing, good form, cone-producing parents located in the various climatic zones. It is expected that intensively managed seed orchards will yield:

- 1). More viable seeds per cone
- 2) More cones per unit of branch length
- 3) Larger cones
- 4) Insect-free cones

"Parent tree selection for these early orchards was based on outward appearance only. Ideally we should wait to start a seed orchard until we know for sure what characteristics will be transmitted or what kind of progeny our goodlooking parents will produce. This would mean by waiting 20 to 50 years. Meanwhile we have to reforest many thousands of cutover and burned-over acres annually.

"All other growing things produce offspring which, on the average, resemble one or both parents or are intermediate between them. Why not trees?

"If we breed only the fastest growing, best formed, insect, disease, and frost resistant trees, the offspring should, on the average, resemble the two parents:" We call this positive selection. Much of OUT seed now comes from the poorest form, limbiest, slowest-growing specimens which are accessible, easy to climb and, good cone producers. If our seed orchards do no more than eliminate negative selection of seed source, we think they will pay their way.

"However, Tony Squillace reported a 5 percent genetic gain **in offspring** of western white pine following selection of parents. If we can increase the volume and quality yields of our harvest by 5 percent instead of losing 5 to 25 percent by negative selection, I think even the economists will approve investments in seed orchards.

"The first **known** seed orchard work was done by Manning Seed **in** 1956, near Centralia. **In** 1958 Port Blakely, Weyerhauser, the Forest Service, and others entered the picture. New areas were started in 1959. Most of the orchards will produce Douglas-fir seed, but the Forest Service is also working with ponderosa, sugar, and western white pine.

"A few slides will illustrate the problems and promises of seed orchards in the Northwest.

1) Selecting plus trees involves considerable searching in natural stands between 20 and 100 plus years of age.

a) A poor phenotype

b) Two poor phenotypes, two good phenotypes

c) A fine, mature ponderosa

d) A plus tree selected for Douglas-fir seed orchard, 00 year old stand

e) A good phenotype, showing evidence of good limb form and **branching** habit, vigor, and cone production

2) Selecting the site is complicated.

a) Soil tests are very important. A deep soil permits more leeway in fertilizing, irrigating, etc.

b) A shallow soil may cause fertilizer burn.

c) A previous cone-bearing history in the area is desirable. Watch **for** frost pockets.

d) Check for hot spots of disease infection--armillaria is prevalent in some areas.

3) Incompatibility--some clones do not graft well at Dennie Ahl. They **may put on good growth** first and second years, then die.

4) Protection is necessary.

a) Wildlife of all sorts like the fertilized browse found in a seed orchard.

b) Insects may **destroy** your crops if not controlled. They **too** like vitamin packed seed.

(1) For control pollination work on a small scale, insect bags may be placed over cones.

(2) For full **scale** production, spraying will, be necessary. Any volunteers?

5) A seed orchard for western white pine.

a) Shows the lack of suitable land in most areas. Vigorous six-year-old understocks were available **on** about 8 acres **in** this case.

b) Pollinating flowers at 6 feet is preferred by some to 60 feet or 100 feet above ground. This is a big advantage in progeny testing once an orchard is producing.

6) Many folks **ask** why and how I got **in this** work. This is the first tree I grafted. With such luck I felt I had found my niche.

7) Boundary sign of first Douglas-fir seed orchard started by Forest Service.

a) Bark graft which put on 26" of growth second year. Note it still looked like a branch.

b) Cleft graft with about 18 cone flowers on 4/10/59.

c) Another cleft graft growing erect. By 6/10/59, all but two cones had **aborted**. These matured and yielded filled seed.

d) The payoff--a graft which had 20 normal cone buds on 18" of vegetative growth, 6/10/59. Shortly after, all but two cones removed.

e) Controlled pollination **on** the ground.

f) A poor union made by a bark graft. Believed due to fast scion; is from 200 year old tree which has lost most of its vigor. Not in our orchard.

g) Shows **lack** of maintenance. Graft dead, top whorl has taken over. Maintenance is as vital to an orchard as to your garden. Terminals of top whorls are trimmed at first, then top whorl removed entirely in our orchard.

8) Seed production area; definition, ' a natural stand of cone-bearing age which has been thinned, fertilized, and otherwise put under management.

a) Douglas-fir seed-production area tree 15 years old which yielded four bushels (2 sacks) of cones **in** 1959. It had been fertilized in 1957, 1958, and 1959. It was best of 200 trees. Some yielded nothing.

9) Tree breeding often leads one's thoughts to other types of breeding. This tree has great potential.

10) An oddity--a true hermaphrodite Douglas-fir flower. The base yielded normal pollen, the outer portion was a normal cone.

11) If my predictions of 75 pounds of Douglas-fir seed per acre in a fully producing orchard are not realized, I plan to fade away behind the sugar pine into a masking sunset."