MORNING SESSION

Chairman: Ernst J. Schreiner

OBJECTIVES, METHODS OF ESTABLISHMENT AND PRESENT STATUS OF SEED PRODUCTION AREAS AND SEED ORCHARDS IN WEST VIRGINIA

Alvin C. Allison [1]

West Virginia has had what we consider to have been "fairly good" progress in our tree improvement program. In addition, some long-term plans and goals have also been agreed upon.

Current work is being carried out through the "informal cooperation" of the West Virginia Department of Natural Resources, the West Virginia University, and the U. S. Forest Service, Clyde Hunt of the Forest Service and Dr. Franklin Cech of the University, both forest geneticists newly working in our area, have been assisting us in utilizing what resources we now have available.

The Department of Natural Resources has had some experience in this business of establishing seed orchards and seed production areas. Although such experience has been quite limited, it has taught us a few lessons.

We have learned that you cannot establish a seed orchard and then "walk off" and "leave it". In the springs of 1948, 1949, and 1950 we established some clonal seed orchards of the dominant-stemmed black locust with planting stock provided by Wilmer W. Steiner, who was then at the Soil Conservation Services Beltsville Nursery. These seed orchards were established on the SCS Land-Use Project located near our Lesage State Forest Nursery. In the early 1950s, we ran out of money, closed down our Lesage Nursery, and sort of forgot about the seed orchards. Later on, the ownership of the Land-Use Project changed. The new owners also became low on money and needed some locust posts, so they harvested two of the clones in our seed orchards. One orchard location also has been cleared for a dam site.

Based on this experience, we are trying to put our new seed orchards and/or seed production areas where we own the land and also have a qualified employee nearby who can be assigned the responsibility for the area. As a starter, we have been working on a five-acre white pine seed production area and a three-acre Virginia pine seed production area that are located on State Forest lands. Future plans call for locating seed orchards on the McClintic Wildlife Area, some State-owned land that is located near our new Clements State Tree Nursery. State Forest Superintendents will be given responsibility for the seed production areas and the Nursery Superintendent will be responsible for checking and maintaining the seed orchards.

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We have learned that you cannot put a seed orchard or seed production area into production without taking care of it. We once had a ten-year lease on a Chinese chestnut orchard that guaranteed us the entire annual seed crop for which we were, in turn, committed to pay the current delivered price for Chinese chestnut seed. This arrangement worked fine except for the fact that we paid for over two hundred pounds of weeviled chestnuts one year and only raised twelve seedlings ! On checking the terms of our lease, we did not have any way of making the owner of the seed orchard deliver us weevil-free seed, so we had to get permission to go into our leased orchard and spray it in order to protect ourselves.

From this experience, we have learned that you can't maintain seed orchards or seed production areas for nothing; it costs money and requires some special equipment. That is a second reason for our proposed seed orchards to be located near our nursery so that nursery equipment and personnel may be used to maintain the areas, carry on cultural and spray programs, and supervise the harvesting of future crops of seed.

It might now be appropriate to make a few comments in regard to the seed production area and seed orchard acreages listed for West Virginia in the program distributed for this meeting. These initial species, as listed, represent the major species used in our current nursery production program. White pine is adaptable to almost all of our State, Virginia pine is being planted in increasing quantities for the production of pulpwood, and black locust is used as the major species in our surface mine spoil reclamation program, Shortleaf pine and yellow poplar are high on our list due to their desirable characteristics and continued demand in our planting program. Black cherry and black walnut are being promoted through Dr. Cech at the University. In recent years, we have not produced black cherry in our nurseries and have been concentrating on shipping stratified black walnut seed rather than seedlings. We have also developed one autumn olive seed production area since this shrub is being used in ever-increasing quantities for game food and surface mine spoil reclamation planting.

The foregoing comments represent some of the more troublesome problems that have confronted us in West Virginia as we have worked with, talked about, and planned for seed orchards and seed production areas. If you are doing similar work, you know that there are many other problems that can come up,

The other phase of our tree improvement project that has concerned us somewhat is the cost of developing seed orchards and seed production areas. We recognize that seed orchards will be much more expensive and time-consuming than seed production areas. In order to get some idea of costs as we go along in our program, we tried to do some rough "cost accounting" in our recent work on seed production areas.

FACTUAL DATA ON ESTABLISHMENT OF THE GOBBLER'S KNOB VIRGINIA PINE SEED PRODUCTION AREA

This seed production area was selected in the spring of 1964 and the first roguing was done in June of 1964. At this time the area was thinned and the more obviously undesirable trees were rogued, Briers and other hardwood vegetation were also removed so that our consulting geneticists were free to roam the plantation when, in July of 1964, they selected the final trees to be rogued. The 84 trees selected for roguing in July, are to be removed this coming fall so that their cone crop may be collected at the time of removal.

Location = Cabwayling State Forest, Wayne County., Dunlow, W. Va
Species - Virginia pine (Pinus vir iniana)
Seed source - Wirt County., W. Va. Approx. 800 feet elevation)
Planted - Spring of 1958
Age and source of stock - 4-0 seedlings., Parsons State Forest Nursery
Age of plantation (from seed) at time of initial roguing - 10 years
Acreage involved - 3 acres (2 acres in plantation and 1 acre fringe)
Average d.b.h, - 4 ½"
Average total height - 9 feet
Elevation of seed production area - 1800 feet
Exposure - Knob

Summary of Roguing Information (Gobbler's Knob S.P.A.)

Reason for removal	Number of trees removed 6/3/64 1/	6/4/64 1/	Marked for removal 7/23/64 2/	Totals Number 3/	Percent
Forked top	-	-	12	12	5.3
Forked mostly basal	13	1	1	15	6.6
Crooked	84	3	35	122	53.8
Spacing	7	1	20	28	12.3
Suppressed	14	-	9	23	10.1
Diseased	-	-	6	6	2.7
Snow damaged	18	2	-	20	8.8
Over-sexed	-	-	1	1	0.4
Totals	136	7	84	227	100.0
No. left after roguing	357	350	266	266	
No. prior to roguing	493	357	350	493	
Percent rogued	27.6	2.0	31.6	46.0	

1/ June 3rd and 4th trees selected for removal by Al Allison, Bob Daoust, Ben Dickens, and Jim Deitz, Foresters with the Department of Natural Resources.

2/ July 23rd trees selected for removal by Dr. Frank Cech and Clyde Hunt, consulting forest geneticists.

3/ It is interesting to note that of the 227 trees removed, 143 or 63.4% of the roguing job was obvious enough to be accomplished before our consulting forest geneticists arrived to select the final 84 trees for roguing. Such preliminary roguing and clearing of the seed production area permitted efficient use of the time of our consulting geneticists.

Cost Summary for Gobbler's Knob S.P.A.

Date (1964)	Item, rate and job description		Costs
June	216 hrs. labor, $1.00/hr. - Clean-up and initial roguing	$216.00	
July	4 hrs. labor, $1.00/hr. - Maintenance	4.00	
Aug.	112 hrs. labor, $1.00/hr. - Hardwood removal & fringe area clean-up	112.00	
Oct. 1/	160 hrs. labor, $1.00/hr. - Cone collection and final roguing	160.00	
Labor subtotal	492 hrs.		$492.00
June	3 days Roguing and supervision, $30/day (Deitz, Dickens, Daoust, Allison)	90.00	
July	1 day Geneticists, $50/day (Cech & Hunt)	50.00	
June & Aug.	2 days Supervising & checking, $30/day (Dickens)	60.00	
Oct. 2/	1 day Supervising, $30/day (Dickens)	30.00	
Supervision subtotal	7 days		230.00
June & July	2 days rotary mower, $3/day - Clean-up	6.00	
June, July, & Aug.	6 days - 1 1/2 ton truck, $15/day - Tree hauling	90.00	
Oct. 2/	1 day - 1 1/2 ton truck, $15/day - Tree hauling	15.00	
Equipment subtotal	9 days		111.00
Total gross cost for initial development of S.P.A.			833.00
Less value of 10 bushels of Virginia pine cones, $4.50/bushel 1/			90.00
Total net cost for initial development of S.P.A.			743.00
Net cost per acre of actual trees (2 acres)			371.50
Net cost per acre of area included (3 acres)			247.67

1/ Supplemental information: 160 man hours were spent in October of 1964 in the collection of cones from any trees that had a cone crop and in the removal of these 84 trees. Twenty bushels of cones were gathered and yielded 15 lbs. 10 oz. of seed. This past fall we paid $4.50 per bushel for Virginia pine cones, so the value of this cone crop would be $90.00; leaving $70.00 as the cost of labor to rogue out the 84 trees at a wage rate of one dollar per hour.

2/ Includes additional work done in October, 1964.

FACTUAL DATA ON ESTABLISHMENT OF THE SENECA STATE FOREST 'WHITE PINE SEED PRODUCTION AREA

This seed production area was selected in the spring of 1964 and the roguing was done during June, July and August of 1964 The adjoining parent stand of white pine will be harvested for use by our State Forests before the seed production area comes into full cone production. There were a few conelets on one 17-year-old tree that was removed during the initial thinning and roguing. Stumps were treated with borax as soon as the tree was felled in order to prevent the spread of Fomes annosus.

Location - Seneca State Forest, Pocahontas County, Dunmore, W. Va.
Species - White pine (Pinus strobus)
Seed source - Natural regeneration from adjoining stand
Average age of stand (from seed) at time of initial roguing - 15 years
Range in age - 10 years to 20 years
Acreage involved - 5 acres
Average d.b.h. - 4" to 4 1/2" Range in d.b.h. - 2" to 7"
Average total height - 20 feet Range in total height - 15 to 30 feet
Elevation of seed production area - approximately 2600 feet
Exposure - East
Spacing of trees prior to thinning and roguing - 4' x 4' or closer
Spacing of trees after thinning and roguing - 6' x 6' or greater

Cost Summary for Seneca State Forest S.P.A.
(For everything except brush & top removal or chipping)

Date (1964)	Item, rate and job description		Costs
June thru Aug.	400 hrs. labor, $1.10/hr.[1]	- Pruning, thinning and roguing	$440.00	
	152 hrs. labor, $1.00/hr.	- Pruning, thinning and roguing	152.00	
Labor subtotal	552 hrs.			$592.00
June & July	3 days, $30/day	- Roguing and supervising (Fromhart, Allison, & Cech)	90.00	
June	1 day, $50/day	- Geneticists - Cech and Hunt (Dr. True, For. Pathologist also involved)	50.00	
July & Aug.	2 days, $30/day	- Roguing & Supervising (Fromhart)	60.00	
Supervision subtotal	6 days			200.00
June & July	5 rolls, $ 64 each	- Flagging	3.20	
	1 case, $6.00/case	- Borax	6.00	
	1 1/4 cases, $9.60/case	- Borateem	12.00	
Materials subtotal	5 rolls and 2 1/4 cases			21.20
June thru Aug.	100 hrs., $.90/hr.	- Estimated running time Chain saw	90.00	
Equipment subtotal	100 hrs.			90.00
Total gross cost for initial development of Seneca State Forest S.P.A.				903.20
Less value of 4 cords of pulpwood, $5.00/cd. (Roadside)				20.00
Total net cost for initial development of Seneca State Forest S.P.A.				883.20
Net cost per acre of actual trees (5 acres) & area included (5 acres)				176.64[2]

1/ Labor rate of $1.00/hr. is for ADCU labor (Aid to Dependent Children of the Unemployed) that is administered by the W. Va. Department of Welfare. There is no direct charge to us for this labor, but we do have to provide supervision. Labor rate of $1.10/hr. is the current rate paid by our Department of Natural Resources.

2/ This cost is estimated to reach slightly over $200.00 per acre after brush and top removal or chipping has been accomplished.