

Oregon State University



A Prospectus
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The Author

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Table of Contents

2	Introduction
4	Purpose
4	Scope
5	Participants
6	Organization
9	Research Approach
11	Data and Reports
11	Funding

Introduction

The forestry community in the Pacific Northwest has an increasing interest in its native hardwood resource. This community includes small woodland owners, forest industry and public agencies. Small woodland owners are major hardwood owners, and they could benefit from obtaining income from forest crops with shorter rotations than those usually seen with conifers. In the sawmill, veneer, and paper sides of the forest industry, the use of hardwoods, especially alder, has increased greatly in recent years. The industry is also seeking to diversify, including into hardwoods, making management of hardwood sites more important as hardwoods are substituted into markets like plywood and OSB. The costs of restrictions on chemical vegetation management practices are causing many landowners to leave a larger hardwood component in plantations. Public agencies see hardwoods as an important component in their program to maintain ecological diversity. The federal limits on herbicide use will result in a larger hardwood component on these lands.

This increase in interest in hardwoods has increased the number of questions being asked about techniques of reproduction, management, harvesting, processing and marketing. Support of hardwood silvicultural research in the Pacific Northwest is small relative to the investment made in conifer silvicultural research and to the market value of hardwoods. Researchers in both public and private agencies are conducting limited research on hardwoods, but most questions of great importance to hardwood silviculture in the region are not likely to receive adequate attention in the near future without extra effort. Personnel and resources of any one institution are inadequate for the task. Many of these problems, however, can be addressed by the combined talents and resources of both managers and researchers.

The majority of hardwood research in the Pacific Northwest is being conducted by five institutions. The University of Washington (UW) and Washington State University have programs in cottonwood genetics, spacing studies and alder provenance studies. The PNW Research Station is working on alder spacing studies, alder provenance studies, an alder soil-site productivity model, and cottonwood spacing trials. Weyerhaeuser Company has been

integrating alder nursery practices, plantation establishment, and stand management. Oregon State University (OSU) has programs in hardwood thinning, species trials, interplanting, spacing, and alder basic ecology. Crown Zellerbach has conducted a variety of biological and silvicultural studies of red alder and various *Populus* species and hybrids. Seattle City Light ended their alder and cottonwood biomass program. Several other smaller hardwood research programs also exist in the Northwest.

Many unaddressed questions still remain for nursery practices, regeneration, weed control, timing and density of spacing activities, growth and yield. Methodologies for this type of research are well developed, making research implementation easy.

A well-run cooperative is an efficient means of increasing and accelerating the level of hardwood silvicultural research in the region. Cooperatives are a mechanism of pooling limited resources to carry out research at a modest cost per cooperative member. A cooperative can also assure that important research problems are identified, because cooperators help choose the problems. Cooperatives also make it possible to conduct research on a broader scale and variety of lands and materials than are generally available to individual organizations. Because cooperators participate directly in research, communication of results is speeded and findings are applied more rapidly and effectively than occurs with conventional research methods. Finally, support for individual research organizations in the region has been shrinking. This cooperative can help fill the gaps in hardwood silviculture research programs being created by cutbacks in other programs.

Given these resource conditions, research needs and potential research support, this prospectus describes the structure and operation of the Hardwood Silviculture Cooperative.

Several factors make OSU uniquely qualified to be the sponsor of this cooperative. OSU has both the required expertise and willingness to assume the leadership role as well as experience with research cooperative operations. This prospectus has strong endorsement from the University Administration. Furthermore, OSU is centrally located in the Northwest's hardwood region, and strong supporting groups in botany and forestry (silviculture, ecology, physiology, economics, and forest products) are already located on campus.

Much research needs to be done. Further delay in acquiring the needed information can only lead to uninformed decisions in the future and subsequently, less revenue from hardwood management programs. Continued growth of the Cooperative will ensure that these needs are met as quickly as possible.

Purpose

The Hardwood Silviculture Cooperative conducts high priority silvicultural research on hardwood species and mixed hardwood/softwood stands in the Pacific Northwest, with the goal of providing information that will improve the management of these stands. The land base of the Pacific Northwest includes large areas that currently support or might best support hardwoods or a hardwood component under forest management systems with medium to long rotations. This land base and its use is the Cooperative's focus.

This program does not replace or supersede hardwood research by other organizations in the region. Research by these organizations (e.g., several departments at OSU, PNW Research Station, UW, Washington State University and a variety of corporate and private groups) is vital to sustained progress in hardwood Silviculture in the Pacific Northwest. The role of the Cooperative is to complement, accelerate and supplement the work of these organizations and accelerate research in areas they do not cover.

Scope

The activities of the Cooperative are divided into two broad areas: search in existing stands and research in new stands. Red alder is the species of primary, but not exclusive, interest.

Existing stands

- Density management. This topic includes issues of a) stocking guides and silvicultural strategies, b) growth and yield of managed stands, and c) quality recovery from managed stands.
- Species mixes. This topic includes issues of a) sites appropriate for mixes. b) management practices including proportion and density

management, c) stocking guides, and d) growth and yield as a function of proportion, density and site.

New stands

- Regeneration methods. While alder regenerates naturally very well, in those instances where intentional regeneration was planned, results have been mixed. Needed are reliable techniques for deliberate regeneration, including issues of natural regeneration and seedling regeneration including stock and genetic type.
- Alder site identification. How do site characteristics affect alder growth and, similarly, how do site characteristics affect the balance between benefits and detriments to production in mixed stands?
- Density management. Beginning with the regeneration step, this topic includes issues of a) stocking guides and silvicultural strategies, b) growth and yield of managed stands, and c) quality recovery from managed stands.
- Species mixes. Beginning with the regeneration step, this topic includes issues of a) sites appropriate for mixes, b) management practices including proportion and density management, c) stocking guides, and d) growth and yield as a function of site, density and proportion.

Participants

The principal participants in this Cooperative are intended to be OSU (Department of Forest Science), industrial and small private landowners and mill owners, public land management organizations, and non-voting liaison representatives from the UW (College of Forest Resources). Other agencies, organizations and institutions will also be invited to participate whenever their expertise or support is needed to meet research objectives.

Organization

The Cooperative Leader will be David E. Hibbs, a member of the faculty of the Department of Forest Science, OSU. The responsibilities of the Cooperative Leader are outlined in Table 2.

The Cooperative will have two membership categories: Regular and Associate (Table 1). Every member will have one representative on each of two committees: the Policy Committee and the Technical Committee. Specific responsibilities of the leadership and members of the Cooperative are listed in Table 2. A formal “Memorandum of Understanding” will be signed by each member of the Cooperative.

The Policy Committee will advise the Cooperative Leader, particularly on decisions concerning program strategy, size and support, and will approve program and budget proposals. Policy Committee representatives should be policy-level executives, and should be able to make resource commitments. OSU and liaison members will each have one non-voting representative on this Committee.

The Technical Committee will, within the guidelines adopted by the Policy Committee, identify and establish the priority of research problems and assist in planning, conducting, and evaluating studies. The Technical Committee representative of a member organization will be the person responsible for Cooperative activities of that organization. The UW can have one non-voting liaison representative on this committee. In addition, individuals with expertise in hardwood silviculture and related fields may be invited to serve as non-voting liaison members.

Generally, decisions are made by consensus or a two-thirds vote of members present (or sending proxy) at scheduled meetings. A quorum for votes is 50% of the voting membership.

Each Regular and Associate Member will provide support for the Cooperative in the form of an annual grant-in-aid to the OSU Forest Research Laboratory. Invoices will be sent July 1 for the current OSU fiscal year (July 1-June 30). In addition, members will provide additional support in the form of labor, equipment, study sites, expertise, etc., that is mutually agreed upon and specified in research work plans.

To insure a strong start, a philosophical commitment to at least five years of support from Cooperators is expected. The Cooperative's role and achievements will be reviewed yearly by the Policy Committee. The progress, plans and effectiveness of the Cooperative will be evaluated approximately every five years.

Table 1. Membership Categories

Regular Members

- Represented on the Technical and Policy Committees.
- Must participate in at least one Cooperative research project on a continuous basis.
- Members with a land base of more than 100,000 acres or any organization wishing to be a regular member.

Associate Members

- Represented on the Technical and Policy Committees.
- Must participate in at least one Cooperative research project on a continuous basis.
- Members with a land base of less than 100,000 acres (including mill owners without a land base).

Liaison Members

- Non-voting members of the Technical Committee.
- By invitation of Cooperative Leadership on recommendation of Cooperative.

Table 2. Responsibilities of the Hardwood Silviculture Research Cooperative

The Cooperative Leader will:

1. Represent OSU on the Policy and Technical Committees;
2. Lead the Technical Committee in identifying research projects that are needed;
3. Prepare work plans, including: clearly stated objectives, procedures, experimental design and responsibilities of participants with regards to establishment of experiments, acquisition of data, data analysis, and authorship of publications;
4. Obtain agreement on work plans;
5. Supervise implementation by Cooperators of work plans assuring that experiments are established or carried out as specified in the work plan, that appropriate maintenance of experiments is performed, that data are appropriately collected, and that data and/or results are disseminated to Cooperative members;
6. Serve as official repository of all Cooperative data;
7. Lead interpretation of results;
8. Write research results on completed projects, or at other appropriate times;
9. Prepare annual reports;
10. Prepare and administer annual operating budget of the Cooperative;
11. Hire and supervise personnel required to carry out research projects;
12. Call meetings of the Policy and Technical Committees at least annually to conduct business of the Cooperative; and

13. When appropriate, seek funding for research projects from sources outside the Cooperative.

Table 2.--(Continued)

Members of the Cooperative will:

1. Participate continuously in one or more Cooperative projects;
2. Provide a representative on the Policy Committee and Technical Committee;
3. Continue participation in all projects agreed to in accordance with responsibilities as outlined in an approved work plan;
4. Relinquish all proprietary rights to study results obtained through the research projects in this Cooperative; and
5. Have access to data generated by Cooperative projects.

Research Approach

A wide range of intensity and stage of development of hardwood silvicultural programs exists among forestry organizations in the Pacific Northwest. Thus, it would be very difficult and perhaps undesirable to attempt to find a set of hardwood research problems that would be of equal interest to all Cooperators. We have designed a program allowing flexibility of participation in research projects, while at the same time providing a framework for cooperation over a wide range of projects.

In this program, the cooperative research effort will consist of a group of individual research projects which will be outlined in a longterm plan. All Cooperators will support all of the projects in terms of administrative costs, but need not necessarily participate in all of them. In this manner, a wide variety of research projects can be accommodated simultaneously, with each Cooperator sharing in the effort by participating in a subset of the total projects, yet benefiting from the knowledge derived from all projects. More details of this approach are given in Table 3. Which projects will be undertaken initially by

the Cooperative will, of course, depend on the Cooperators and their priorities of interest as specified in the long-term plan.

Some research in the region is already directed toward each of the items listed under *Scope*. Additional research effort and information, however, is necessary if hardwood silviculture programs are to progress at levels more near their potential. Since the intent of the Cooperative is to complement research already underway and minimize duplication, research projects will be initiated only after consultation with and review by researchers having expertise in the area of concern.

Table 3. Approach to Research

1. Research will be guided by a long-term plan of work.
2. Research will be defined on a project basis.
3. All Cooperative projects must be approved by the Policy Committee and Cooperative leadership. In addition:
 - a. At least two-thirds of the members of the Technical Committee must approve a plan of work; and
 - b. At least three-fourths of the members of the Technical Committee must approve work plans when fewer than two-thirds of the members will be participating in the project.
4. While individual research projects may involve only a subset of Cooperative members, it is expected that the level of overall participation in Cooperative projects will be relatively similar among members. As a minimum, continuous participation in at least one project is required to retain status as a member of the Cooperative.
5. Participation of members in each project will be as defined in the work plan. Participation by one member may entail establishing and maintaining a study plot while another member may participate by providing expertise in a subject area.

6. When feasible, researchers from organizations outside the Cooperative with special expertise in subject areas of interest will be invited to participate in and, perhaps, direct particular projects.

Some of the research conducted by the Cooperative is designed to meet the immediate needs of foresters, while other studies examine the long-term benefit and impacts of certain management practices. A component of the Cooperative's research will be directed to basic or fundamental research. Through this effort, we can understand the basis of the system that is to be managed. Thus, innovative technology and better management should result.

Data and Reports

All information gained through Cooperative research projects will be non-proprietary, that is, once the results of a project have been analyzed, interpreted and properly reviewed, they become public information. All information will be reported as quickly as possible. The Cooperative will produce two types of formal reports:

- Project reports--information (interpreted and reviewed results) from Cooperative research projects published in newsletters, symposium proceedings, scientific articles, Extension bulletins, etc., and
- Annual reports--to include lists of Cooperative projects, members, accomplishments over the year and summaries of project reports.

In addition to formal reports, preliminary results of projects will be made available to Cooperative members (through meetings and interim reports) for their review and interpretation. Data sets will be available to Cooperators on request.

Copies of all data sets from Cooperative research projects will be stored by the Cooperative Leader in a computerized data bank.

Funding

The Pacific Northwest Hardwood Silviculture Cooperative will be funded from a variety of sources, including:

- Funds provided by the Oregon State Legislature to support research at the Forest Research Laboratory at OSU, e.g., partial salary of the Leader, office and lab space, secretarial help and overhead costs;
- Grants-in-aid (dues) provided on an annual basis by the members participating in the Cooperative (for salaries of staff other than the Cooperative Leader, and for graduate students and operating funds, e.g., computer costs, supplies and travel);
- Bi-lateral agreements between OSU and clients (including granting agencies) desiring to initiate or accelerate a particular project; and
- Gifts, fellowships and scholarships (for general support of Cooperative personnel and activities).

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