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U.C.'s forestry research has great influence

Evaluation of the influence of a research program is notoriously difficult and, at best, imprecise. It gives me special pleasure, therefore, to be able to identify specific important contributions of a major component of the program in the University of California Agricultural Experiment Station—research in forestry and forest products—the subject of this special issue of *California Agriculture*.

For nearly three-quarters of a century, forestry research here has produced basic scientific contributions in such fields as tree seedling physiology, techniques for generation and interpretation of remotely-sensed resource information, forest and range ecology, evaluation of forest soils, the biology of forest pathogens and insects, and methods for evaluating costs and benefits associated with forest land use.

Our forestry research program has been developed over the years in close cooperation with other agencies. The U.S. Forest Service's Pacific Southwest Forest and Range Experiment Station and the California Department of Forestry have worked with us in numerous efforts. In 1957 the three agencies developed a comprehensive research plan for forestry and related wildland resources research. The plan may have been the first attempt by any Federal/State forestry research group to prepare a long-range assessment of forestry research needs. The initial cooperators have worked closely ever since, both to realize the objectives of a stronger forestry research effort and to maintain the content of the plan amid rapidly changing resource conditions.

The research program has contributed to improved factory practices in California in innumerable ways, only a few of which can be cited:

- Revolutionized forest inventory methods through application of remote-sensing techniques.
- Vastly improved nursery and tree-planting techniques, based on improved understanding of seedling physiology.
- Improved practices for use of fire as a tool of forest management and fuel hazard reduction, based on better understanding of fire ecology and development of techniques for controlled burning.
- Development and dissemination of several major concepts for forest resource evaluation and management, including tables for estimation of volume, growth, and yield of a number of important commer-

cial forest species, and (in cooperation with other agencies) preparation of the California Wildland Soils/Vegetation Maps.

- Development of efficient and conservative management regimes for several forage types.
- Development of techniques for improved biological control of some of the important forest pests.
- Investigation of the biology of water storage of logs, leading to the generally adopted land storage technique rather than the former practice of water storage of logs.
- Development of information on the basic properties of several important species of California hardwoods.
- Development of "thin saw" technology resulting in substantial reduction of waste in wood processing.

It is not possible to assess comprehensively the economic or conservational impacts on forestry of these important developments. As in any such situation, advances usually knit together a variety of threads, of which the research of a particular agency may be only a part. Nevertheless, one cannot examine field forestry practice in California in 1979 without finding almost daily applications of the research output of U.C.'s forestry research program.

Several parts of the past research program (and many of the people who were involved in it) have had a direct and significant influence on the remarkable development of state forestry policy which took place between 1972 and 1978. The Z'berg-Nejedly Forest Practices Act, the Forest Tax Reform Act of 1976, the Forest Resource Assessment and Policy Act of 1977, and the Forest Resource Improvement Act of 1978 all show the influence of University of California research. Many members of our staff, drawing on their project experience, were of direct assistance to members of the Legislature in formulating these important statutes.

The accomplishments in basic and applied science and in forestry technology and policy provide a real and positive measure of the significance of the University's research in forestry in California. The most important contribution of all, however, may be the training provided to graduate and undergraduate students. Today, these people are providing a significant part of the forestry research leadership in the U.S., in other countries, and in the international forestry research community.