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COOPERATIVE FORESTRY RESEARCH

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Current national priorities include the expansion of domestic and forest markets for forest products to increase productivity and economic opportunities for rural land owners; the expansion of biotechnology and basic biological research to increase productivity of the forest resource; the increased ability to produce forest products while maintaining water, wildlife, recreation and range resources; the protection, evaluation and management of the forest resource; strengthening of the forest resource; and development of scientific and professional forest resource management expertise.

Forestry research varies from fundamental studies to applied studies. A balance between fundamental and applied research is important yet, all cases should be problem-oriented. Ultimately, the research should lead to the transfer of new knowledge that addresses, at least in part, national research goals.

The plains states have an opportunity to conduct collaborative research that will promote economic opportunities for rural land owners. Forestry research that addresses these issues is being conducted by Universities, State and Federal agencies and private industry throughout the nation. The efforts of the Cooperative States Research Service performs an important coordinating role in the review and approval of all projects that receive federal funding.

Recently, forestry research has taken on a new importance. The economic plight of the small family farmers brought the importance of woodland management to their attention. Land-grant Universities throughout this region have an opportunity and a public responsibility to conduct research that will foster increased management of trees as a component of the farm operation.

Research that can effectively address a problem of this scope and complexity must have both biological and socioeconomic dimensions. Effective research must involve scientists with expertise in forest soils, tree physiology, silviculture, forest genetics, biometrics, forest economics and forest management.

The establishment of trees on sites characterized by excessive grass competition for moisture, harsh summer and winter conditions presents a key challenge for researchers. How can the right tree species be matched with the site, yet, also have desired

economic traits? This important question requires a balanced research program coordinated among primarily soil scientists, forest geneticists and silviculturists. Representative soil types with varying microclimatic conditions must be identified to represent the types of areas in need of reforestation. Forest tree species must then be collected from throughout their natural range and planted on these selected test sites. Through time, the tree plantings are evaluated for survival and growth characteristics.

Forest genetic research has had a history of excellent cooperation between states. In Iowa, Missouri, Illinois, Kansas and other midwest plains states, cottonwood, red oak, walnut, pines, and other species have been tested for genetic differences. Phenotypic (growth expressions) traits have been observed. These tests have provided a strong data base enabling the geneticist to recommend genetic selections that will grow well on specific sites. Many of these tree plantings have been developed into plantations and are now producing seedlings for specific plantings.

What growth traits are of interest? What are projected uses of the trees to be planted?

Trees planted in Iowa should ultimately reduce the effects of wind on heat loss from the homestead and soil and moisture loss from the fields. These trees must have the capacity to withstand drying winds, become firmly established in the soil, grow rapidly and develop a dense crown. But what about alternate uses of these windbreaks? For example, what species of wildlife can be harbored? Are there recreational opportunities that can be developed?

These are among many questions we are asking as we try to choose from the alternative genetic combinations available for planting.

Research involving genetic control and selection for specific sites is also applicable to plantings for Christmas tree production, short term energy biomass production, commercial nut production, timber and veneer production. Note that in all cases the term "production" suggests an economic value to the farmer as part of integrated farm management.

The states of Iowa, Illinois and Missouri are discussing ways to conduct joint research that could encourage the use of more forestry-related activities into farming systems. The overall research goal is to

define for the landowner a spectrum of management alternatives, each with a defined economic dimension. This goal requires the coupling of economic and computer science with biological research.

Four Universities including Iowa State University, University of Illinois, Southern Illinois University and the University of Missouri, Columbia have begun to jointly plan research that will address four key areas including: 1) the development of forest products; 2) alternatives to traditional forest management; 3) economics of forest management and 4) natural resource education. The ultimate goal will be to engage scientists across state lines, in cooperative ventures that can contribute strongly to these four areas. This tri-state effort is an important mechanism for effective future forestry research in the plains region.

