

National Reforestation, Nurseries, and Genetic Resources (RNGR) Program

USDA Forest Service

National Reforestation, Nurseries, and Genetic Resources Team
State and Private Forestry



Background: Tree planting programs have been a major part of forestry and conservation since modern land management began. Reforestation and restoration projects yield better air and water quality, enhanced wildlife habitat, greater biodiversity and ecosystem sustainability, healthier forests, reduced soil erosion, and increased timber production. With the adoption of the Forest Service National Native Plants Policy and the growing activity and interest shown by other agencies and organizations in ecosystem restoration and sustainability, planting programs are the subject of renewed interest. Demand for native species, each having its own cultural and site requirements, has risen dramatically, as have requests for information about how to propagate, store, ship, and plant native species. Relevant expertise and research within the Forest Service, universities, and other organizations is hard pressed to adequately address this increasing need for reliable, scientifically sound information.

Nearly 1,200 “native plant” nurseries nationwide produce the plants destined for restoration, reforestation, and conservation uses. This segment of the nursery industry lacks technical support — most sources, government or private, focus on commercial timber species or horticultural and landscape materials. As a result, the federal role in regional and national coordination and assistance is especially important.

Key Issues:

- Climate change, invasive species, and ecosystem services issues require different seed collection, nursery, and reforestation techniques and services than ongoing timber production and conservation programs.
- Demand for native plants is increasing faster than information on propagation and restoration techniques is being developed.
- Research capacity and expertise on native plant propagation and restoration is declining in the Forest Service, universities, and other organizations, and better coordination and collaboration is needed to more effectively use these limited resources.
- Native plant nurseries lack technical assistance available to forest industry or horticultural nursery segments.



A father and his daughter plant seeds in the Cultural Plant Propagation Center at the Moencopi Day School in Tuba City, AZ. Photo by Tom Landis.

Program Description: The USDA Forest Service is the federal agency responsible for helping states to produce, distribute, and plant seedlings on private land. In 2001, the agency created the National Reforestation, Nursery, and Genetics Resources (RNGR) Program within State and Private Forestry. In 2004, an agreement with National Forest System and Research and Development expanded RNGR to better coordinate activities and outreach, use expertise more effectively, and provide program continuity. Technical specialists assigned to RNGR are located across the country. RNGR's first priority is direct technical assistance to federal, tribal, state, territorial, and private nurseries. The USDA Forest Service National Seed Laboratory (NSL) is a key component of the RNGR Program, particularly important in addressing emerging germplasm conservation needs.

The RNGR Program provides assistance in native plant seed and seedling production where other sources of technical assistance are unavailable. RNGR activities focus on:

- adequate supplies of reasonably priced, high quality, genetically well-adapted seedlings for conservation and reforestation;
- propagation and planting methods that improve seedling survival and growth; and
- cost-effective production and planting techniques.



Bareroot hardwood seedlings grow at the Missouri Department of Conservation, George O. White State Forest Nursery. Photo by R. Kasten Dumroese.

Accomplishments:

- **Periodicals**—*Forest Nursery Notes*, *Native Plants Journal* (with Indiana University), and *Tree Planters' Notes* (with Oregon State University) deliver information and research results to the nursery and reforestation community worldwide. These periodicals feature easy to understand, hands-on information that can be readily applied in the field. *Forest Nursery Notes* is distributed twice each year to more than 1,200 subscribers around the world. It is the second most popular publication on the RNGR Internet site (<http://rngr.net>) with more than 20,000 visits in the past year.
- **USDA Agriculture Handbooks**—RNGR recently published *The Woody Plant Seed Manual* (in cooperation with Research and Development), the final volume of *The Container Tree Nursery Manual* titled *Seedling Processing, Storage, and Outplanting*, and the two-volume *Nursery Manual for Native Plants: A Guide for Tribal Nurseries*. Two additional handbooks are near completion: the *Tropical Nursery Manual* and the *Hardwood Nursery Manual*. These publications summarize current knowledge on specific subjects, providing a source of information and reference for field professionals. The *Container Tree Nursery Manual* is the standard for the industry and is the most frequently downloaded publication from the RNGR Internet site (<http://rngr.net>).
- **Internet Sites**—The RNGR site at <http://rngr.net> has the most extensive searchable and downloadable online collection of information on producing native plants. The site had 44,000 visits during the past year from 182 countries. Nearly 220,000 pages were viewed with more than 38,000 downloads. RNGR created and continues to support the Native Plants Network site at <http://www.nativeplantnetwork.org> (with the University of Idaho). This one-of-its-kind searchable database contains more than 2,800 protocols for producing native plants.



Container plants grow in the Moencopi Day School greenhouse on the Hopi Reservation in Tuba City, AZ. Photo by Jeremy Pinto.

- **Tribal Nursery Emphasis**—The *Tribal Nursery Needs Assessment* identifies outreach and technology transfer needs for Native Americans. The *Assessment* led to the formation of the Tribal Nursery Council, an annual Tribal Nursery Conference, a series of annual nursery training workshops at tribal facilities, development of a Cultural Plant Propagation Center at the Moencopi Day School near Tuba City, AZ, and a cooperative project with the Hopi Tribe and the USDA Natural Resources Conservation Service to restore tribal lands by removing exotic invasive plants. This cooperative work received one of the inaugural *Two Chiefs' Partnership Awards* in 2006. RNGR has engaged more than 70 tribes and 200 tribal members.
- **Conferences**—RNGR assists with organization and management of the western, southern, and northeastern regional nursery conferences that provide venues for technical information, networking, and discussion of emerging issues for nursery managers. Papers presented at these meetings are published by RNGR as the *National Nursery Proceedings* in cooperation with the Rocky Mountain Research Station.
- **Training**—Program staff members recently organized and conducted training in tropical nursery management, seed collection, seed conditioning, native plant propagation, tree planting, longleaf ecosystem restoration, and hardwood nursery management.
- **Collaborative Agreements and Cooperative Efforts**—To leverage scarce resources, RNGR partners with universities (Purdue, Oregon State, Indiana, Georgia, Hawaii, Idaho, Michigan Tech., and Washington State), federal agencies (the USDA Natural Resources Conservation Service and Agricultural Research Service and the USDI Bureau of Land Management and National Park Service), State agencies (Hawaii, Idaho, Indiana, Minnesota), and Forest Service nurseries. RNGR works with International Forestry, the Institute for Pacific Island Forestry, and the International Institute for Tropical Forestry to provide training and technical assistance to nursery and reforestation programs in the Caribbean and Pacific. RNGR collaborates with the USDA Foreign Agricultural Service (FAS), U.S. Agency for International Development, U.S. Fish and Wildlife Service, and the Food and Agriculture Organization of the United Nations to provide nursery and reforestation assistance internationally (for instance, RNGR just supplied FAS with a nursery manual and training tools for work in Afghanistan). RNGR also collaborates with Autonomous University of Chapingo and the Mexican Forest Service (SEMARNAT) to translate and print the *Container Tree Nursery Manual* in Spanish and has obtained support for the Spanish translation of the *Tropical Tree Seed Manual* and a southern pine tree planting video. RNGR is collaborating with Northeast Forestry University in Harbin, China, to translate and print the *Container Tree Nursery Manual* in Chinese.
- **Studies and Assessments**—RNGR cooperates with NFS nurseries, state nurseries, and universities to assess and respond to specific nursery and field problems. Current studies are developing protocols for:
 - assessing hardwood seedling quality and cold hardiness in the central, eastern, and southern United States;
 - identifying stock types for restoration of native hardwoods in Hawaii;
 - using fall fertilization to improve seedling growth and reduce nutrient leaching in nurseries in the Midwest;
 - developing subirrigation methods for container seedlings to reduce water use and potential pollution nationwide; and
 - enhancing techniques for growing longleaf pine seedlings in the southern United States.

RNGR assists the NFS nursery program by participating in nursery reviews and assisting with specific nursery problems. RNGR has ongoing projects with the Rocky Mountain Research Station Shrub Sciences Laboratory, the Southern Research Station Bottomlands Hardwood Laboratory, and the National Agroforestry Center.

Staff:

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Future Direction:

The future of RNGR is two-fold:

- **Maintain core technical assistance and technology transfer activities (periodicals, handbooks, proceedings, Internet sites, and facilitation of regional nursery meetings and the Intertribal Nursery Council).** These activities use electronic distribution of information wherever possible to efficiently provide nursery managers and restoration specialists with timely and useful information not available elsewhere.
- **Develop new tools, protocols, and relationships needed to address increasing complex forest ecosystem conservation and restoration challenges arising from invasive species introductions and global climate change.** RNGR has a critical role in assuring the supply of quality plant material from appropriate seed sources for government agencies and the general public and in assisting with germplasm preservation and redeployment as invasive organisms threaten native plant species with extinction.

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