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United States Department of Agriculture
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Program Aid 1731

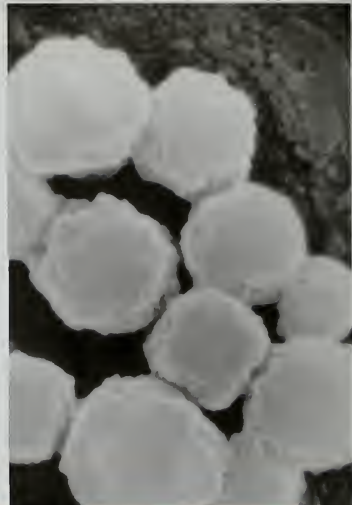
***Forming
Partnerships
with the Forest Service:
Transferring Forest Service
Research and Development
to the Marketplace***



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Forest Service Research

The Research and Development arm of the USDA Forest Service (FS R&D) is one of the world's leading forestry research organizations, conducting and sponsoring basic and applied research. This research generates credible, relevant knowledge and exciting new technologies that can be used to sustain the health, productivity, and diversity of the Nation's forests and rangelands to meet the needs of present and future generations. Creating and communicating knowledge and technology to private landowners so they can better sustain the health, productivity, and diversity of their lands is as important to FS R&D as serving the needs of the public land managers.



Scanning electron micrograph of gypsy moth virus polyhedra

A Forest Service-developed wood decay test aids in the structural maintenance of this timber bridge

Cooperative Research and Development Agreements

A frequently utilized agreement for beginning research development is the Cooperative Research and Development Agreement (CRADA). CRADAs were created by the Federal Technology Transfer Act of 1986 (Public Law 99-502). CRADAs authorize Forest Service scientists to work collaboratively with private firms to help commercialize technology based on collaborative research. CRADAs differ from the other Forest Service agreements mainly by providing the cooperative firm with the first right to exclusive licenses on patented inventions discovered or developed under the agreement.

Under a CRADA, the cooperating firm provides the know-how needed to develop and commercialize a new product, process, or service. The firm may also provide funds to cover some of the added costs to the Forest Service for work done under the agreement. Or the firm might contribute personnel (for example, a postdoctoral scientist, graduate student, or technician), equipment, or materials. In some cases a CRADA may involve no transfer of funds to the Forest Service. As a cooperator, the Forest Service provides research personnel, laboratory facilities, materials, equipment, supplies, and other "in-kind" contributions. As with its other cooperative agreements, the Forest Service enters into a CRADA only when the research objective is consistent with the agency's mission.



Forest Service researcher analyzing data

Technology Transfer Agreements with the Forest Service

Research results create no value for the public unless and until they are converted into practical products, processes, and services. The USDA Forest Service has a long and successful history of collaborating with commercial firms to convert research into usable information and technology. Technology transfer agreements were developed to improve this traditional cooperation, increasing the benefits to the public and to commercial firms.

Several different types of agreements are commonly used for technology transfer. All of them allow the Government and industry to work together in developing new technologies. They vary based on the level of contribution from each party and expected benefits. The ultimate purpose of all technology transfer is to better coordinate research activities between the parties such that results are efficiently transferred to the public. In addition to CRADAs, the following types of agreements between commercial firms and the Forest Service are available:

Challenge Cost-Share Agreement (CCS): An agreement with an entity to work cooperatively with the Forest Service to produce something of mutual interest. Costs are shared between the Forest Service and the partner.

Cooperative Agreement (CA): The Forest Service provides support or stimulation to a cooperator's program of mutual interest. The Forest Service is substantially involved in the research, as well as having the oversight responsibility. Both parties make contributions towards the research.

Memorandum of Understanding (MOU): The purpose of this agreement is to coordinate activities for a common purpose. No funding or value changes hands and it is not a fund-obligating document.

Research Joint Venture Agreement (RJVA): The purpose of this agreement is to perform basic or applied research of mutual benefit. The parties must share a mutual benefit in addition to a mutual interest. Mutual benefit exists when the parties benefit in the same qualitative way from the objectives of the agreement. Each party makes a minimum monetary contribution.

Research Cost-Reimbursable Agreement (RCRA): This agreement is for the acquisition of goods and services, including personal services, for mutual benefit from a State Cooperative Institution.

Forest Service research has helped preserve our sensitive wetlands

Technology aids in preventing premature wood decay in utility poles

New ideas from the Forest Service could change the face of our office buildings



Benefits of CRADAs to Commercial Firms

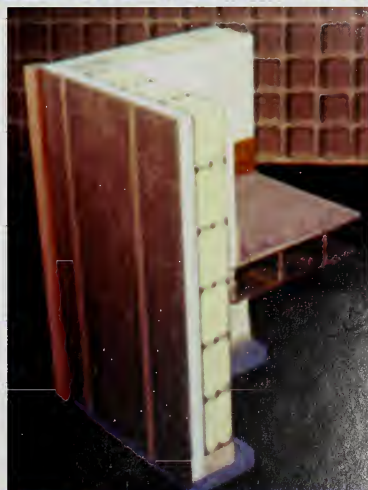
- First right to exclusive licenses on patented inventions made under the agreement
- Improved access to Forest Service scientists and facilities
- Increased access to expertise related to research results and inventions
- New product and process concepts

Benefits of CRADAs to the Forest Service

- Increased opportunities to develop and transfer technology
- Better feedback from industry on what research is needed
- Increased familiarity with problems related to commercialization of a product or process
- The Forest Service and scientists share licensing fees and royalties

Steps Commercial Firms Can Take To Initiate a CRADA with the Forest Service

- Learn of Forest Service research capabilities, programs, and results. (See below for sources of information.)
- Contact Forest Service scientists responsible for programs that interest you.
- With the scientist, develop a brief proposal. Visits to Forest Service research laboratories are often extremely helpful.
- Ensure that the draft proposal receives appropriate preliminary review and clearance within the firm.
- Work with the Forest Service scientist to develop a cooperative research and development program.
- Approve cooperative research and development agreement incorporating the proposed research plan.



Patent and License Program

Many important Forest Service discoveries are transferred directly to the public, without intellectual property protection. Some Forest Service inventions require significant financial investments and resources from the private sector before the public can benefit from a new, improved product or service. To provide an incentive for such investments, the Forest Service may patent new inventions and transfer technologies to the public through patent licenses.

The Forest Service technology licensing program grants licenses to qualified businesses and individuals who wish to commercialize Forest Service technologies. Licenses may be exclusive, nonexclusive, or partially exclusive, and foreign patent rights are available for licensing in some cases. The Agricultural Research Service's Office of Technology Transfer (ARS-OTT) administers the entire U.S. Department of Agriculture's technology licensing program, including that of the Forest Service.

Near right: Forest Service researcher measures moisture in home's basement

Middle right: Controlling gypsy moth attack through virus strain improvements

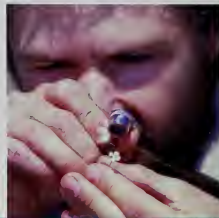
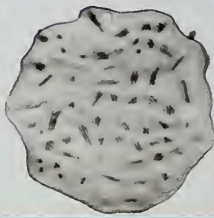
Left: Analyzing vegetation from the Sand Dunes area on the Hiawatha National Forest

Above: Recycling preservative-treated waste wood

Left: Forest Service research utilizes the fungal role in our ecosystem

Above: Technology creates a more efficient greenhouse

Right: Improving safety through our partnerships



How To Apply for a Patent License

Licensing federally owned inventions is done in accordance with Federal regulations (37 CFR 404). A copy of these regulations can be obtained from the technology licensing program coordinator or the ARS-OTT Web site.

Businesses or individuals wanting to commercialize a Forest Service invention must submit a patent license application. Information provided with the application is used to determine whether the applicant has a sufficient plan for developing and marketing the invention, as well as the financial and technical resources needed to carry out the plan. Business plans from a license applicant are confidential.

Patent license applications are available by mail or may be downloaded electronically from the ARS-OTT homepage. All patent license applications should be forwarded to the technology licensing program coordinator.

License Provisions

Patent licenses granted by the USDA are royalty bearing and include provisions for license execution fees, annual license maintenance fees, and patent cost reimbursements. License fees and royalty rates are negotiable. Information submitted by the applicant—including estimates of potential market size, market share, and profitability—is used to help determine fair and reasonable terms. Other factors are also considered, such as scope of the licensed patent, scope of rights granted, and financial and resource investments required for commercialization.

Licensees are required to submit periodic progress reports detailing the progress made to commercialize licensed patents. After the first sale of royalty-bearing products, licensees are required to submit royalty reports, including information on quantity of products made, used, and sold and the amount of royalties due USDA. This information is confidential and not publicly disclosed.

Special Considerations for Exclusive Licenses

Exclusive or partially exclusive patent licenses—including licenses that are co-exclusive (limited number of licensees), exclusive territory (limited to a specific country), and exclusive field (limited to a specific use)—may be granted for non-CRADA inventions, but only after public notice has been made.

Spaceboard technology promises to alter the construction industry without harming our environment

Early detection of wood decay fungi through Forest Service innovation

Promising Commercial Partnerships

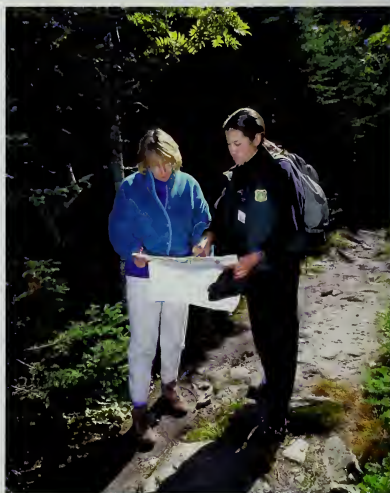
The Forest Service has established relationships with many businesses throughout the United States to develop and commercialize its technologies. These relationships have resulted in a variety of new job opportunities, helping to bolster local, State, and national economies. Currently, the Forest Service has several promising partnerships:

- Spaceboard, a unique structural material developed by Forest Service scientists from virgin and/or recycled fibers, is approaching large-scale production by the licensee. This strong, environmentally friendly product promises to change the market for a wide variety of end products, such as floor and wall paneling, office furniture, and construction materials.
- The Forest Service recently licensed its Greenhouse Illumination System. This invention uses an oscillating parabolic mirror behind a sodium arc lamp to flick beams of light from one end of the greenhouse to the other, providing intermittent light to the entire area. This capability greatly increases plant growth and flowering.

- Another Forest Service licensee is working to improve livestock management and reduce the effects of livestock in riparian areas using the Forest Service-invented electronic fencing technology. This invention controls livestock access by defining an exclusion area with electronic transmitters. Through conditioning, the animals learn to stay clear of such places, eliminating the need for fences.

Through partnerships such as those described, the Forest Service helps deliver innovative technologies to a changing world.

Working together to achieve results



Additional Information

The USDA Technology Transfer Information Center (TTIC) helps to promote the rapid conversion of federally developed inventions into commercial products by getting the results of research into the hands of those individuals and organizations who can put it into practical use.

To accomplish these goals, TTIC provides a variety of services to professionals involved in the innovations process. For more information about TTIC activities or services, please contact:

Technology Transfer Information Center
National Agricultural Library, 4th floor
Beltsville, MD 20705-2351
Phone: (301) 504-6045
FAX: (301) 504-6409
<http://www.nal.usda.gov/ttic>

Sources of Information About New Forest Service Technology

In addition to contacts with individual scientists, professional society meetings, and professional journals, commercial firms can learn more about Forest Service research from:

Online Databases

Patents Available for Licensing—To maintain a competitive edge, obtain current listings of newly filed Forest Service patent applications and issued patents on-line from the U.S. Department of Agriculture (USDA). Each month information on licensable technologies is made available on the Internet via the USDA Agricultural Research Service (ARS) World Wide Web server. Brief descriptions of licensable technology containing inventor names, addresses, and telephone numbers are provided. Industry keywords targeting commercialization opportunities of USDA licensable technologies are also offered each month. Information on issued patents and filed patent applications available for licensing can be accessed electronically through the ARS Technology Transfer homepage at <http://ott.arsusda.gov/>

TEKTRAN Internet Reports—Over 25,000 brief, easy-to-read summaries of the latest research results that have been peer-reviewed and cleared by Forest Service management (prepublication notices); about 400 new findings are added to the database each month. TEKTRAN can be accessed electronically through the ARS Technology Transfer homepage at <http://ott.arsusda.gov/>

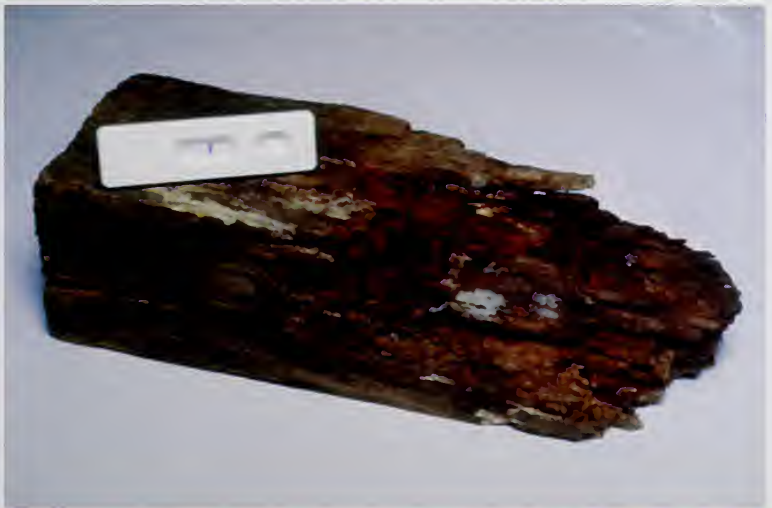
CRIS (Current Research Information System)—Abstracts describing all ongoing (and some recently

completed) agricultural research projects at least partly funded by the Federal Government. CRIS is one of the databases available through Dialog Information Services, a commercial online service. Write or call Current Research Information System, Cooperative State Research, Education, and Extension Service, USDA, National Agricultural Library, Beltsville, MD 20705-2350; (301) 504-6846. <http://cris.csrees.usda.gov>

AGRICOLA—The bibliographic database of the National Agricultural Library. Provides comprehensive coverage of worldwide journal literature and monographs on agriculture and related subjects. Available through Dialog and through the Bibliographic Retrieval Service. Write or call AGRICOLA, National Agricultural Library, USDA, Beltsville, MD 20705-2350; (301) 504-6813.

For further information about technology transfer agreements with the Forest Service, write or call:

Janet I. Stockhausen
Patent & Licensing Program
USDA Forest Service
One Gifford Pinchot Dr.
Madison, WI 53726-2398
Phone: (608) 231-9502
Fax: (608) 231-9508



Forest Service Publications

Current research publications are issued and distributed by individual Forest Service Research Stations. A list of available publications can be accessed through the USDA Forest Service homepage at <http://www.fs.fed.us/> Publications may also be requested directly from:

Forest Products Laboratory
One Gifford Pinchot Dr.
Madison, WI 53726-2398
Phone: (608) 231-9200
<http://www.fpl.fs.fed.us>

North Central Research Station
(Distributed by FPL)
1992 Folwell Avenue
St. Paul, MN 55103
Phone: (651) 649-5000
<http://www.ncrs.fs.fed.us>

Northeastern Research Station
11 Campus Blvd., Suite 200
Newton Square, PA 19703
Phone: (610) 557-4017
<http://www.fs.fed.us/ne>

Pacific Northwest Research Station
333 SW First Avenue
Portland, OR 97204
Phone: (503) 808-2592
<http://www.fs.fed.us/pnw>

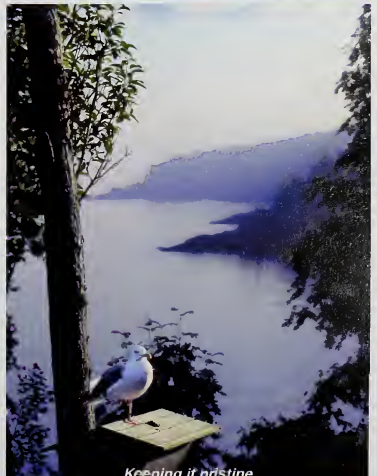
Pacific Southwest Research Station
(Distributed by Rocky Mtn Res Sta-Fort Collins)
800 Buchanan Street
West Annex Building
Albany, CA 94710-0011
Phone: (510) 559-6300
<http://www.fs.fed.us/psw>

Rocky Mountain Research Station - Ft. Collins
Natural Resources Research Center
2150 Centre Avenue, Building A
Fort Collins, CO 80526-8121
Phone: (970) 295-5021
<http://www.fs.fed.us/rm>

Rocky Mountain Research Station - Ogden
507 25th Street
Ogden, UT 84401
Phone: (801) 625-5388
<http://www.fs.fed.us/rm/ogden>

Southern Research Station
200 W.T. Weaver Blvd.
Asheville, NC 28804
Phone: (828) 257-4832
<http://www.srs.fs.usda.gov>

Washington Office
1400 Independence Ave. S.W.
Washington, DC 20250-0002
Phone: (202) 205-8333
<http://www.fs.fed.us>



Researching to protect from destruction

Using technology to clean our water

Keeping it pristine

Forest Service Mission

The phrase "CARING FOR THE LAND AND SERVING PEOPLE" captures the Forest Service mission. This mission, as set forth in law, is to achieve quality land management under the sustainable yield multiple-use management concept to meet the diverse needs of people. This includes

- Advocating a conservation ethic in promoting the health, productivity, diversity, and beauty of the forests and associated lands.
- Listening to people and responding to their diverse needs in making decisions.
- Protecting and managing the national forests and grasslands so they best demonstrate the sustainable yield multiple-use management concept.
- Providing technical and financial assistance to State and private forest landowners, encouraging them to practice good stewardship and quality land management in meeting their specific objectives.
- Providing technical and financial assistance to cities and communities to improve their natural environment by planting trees and caring for their forests.

- Providing international technical assistance and scientific exchanges to sustain and enhance global resources and to encourage quality land management.
- Helping States and communities to wisely use forests to promote economic development and a quality environment.
- Developing and providing technical knowledge aimed at improving our capability to protect, manage, and use forests and rangelands.
- Providing work, training, and education to the unemployed, underemployed, elderly, youth, and disadvantaged in pursuit of our mission.

Laboratory visits

To acquaint commercial firms with its latest research discoveries, the Forest Service periodically holds technology transfer meetings at its laboratories. Check individual research station Web sites for listings. These meetings also provide industry a first-hand opportunity to meet and confer with individual scientists about ongoing research projects.

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May 2004