

American Association for the Advancement of Science

Science serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

Publisher: Richard S. Nicholson
Editor: Daniel E. Koshland, Jr.
Deputy Editor: Ellis Rubinstein
Managing Editor: Monica M. Bradford
International Editor: Alun Anderson
Deputy Editors: Philip H. Abelson (*Engineering and Applied Sciences*); John I. Brauman (*Physical Sciences*); Thomas R. Cech (*Biological Sciences*)

EDITORIAL STAFF

Assistant Managing Editor: Dawn Bennett
Senior Editors: Eleanore Butz, Martha Coleman, Barbara Jasny, Katrina L. Kelner, Phillip D. Szurmi, David F. Voss
Associate Editors: R. Brooks Hanson, Pamela J. Hines, Kelly LaMarco, Linda J. Miller, L. Bryan Ray
Letters: Christine Gilbert, *editor*; Steven S. Lapham
Book Reviews: Katherine Livingston, *editor*; Teresa Fryberger
Contributing Editor: Lawrence I. Grossman
Chief Production Editor: Ellen E. Murphy
Editing Department: Lois Schmitt, *head*; Denise Gipson, Julianne Hunt, Steven Powell
Copy Desk: MaryBeth Branigan, Joi S. Granger, Margaret E. Gray, Beverly Shields
Production: James Landry, *Director*; Wendy K. Shank, *Manager*; Catherine S. Siskos, *Assistant Manager*; Scherraine Mack, *Associate*; Linda C. Owens, *Macintosh Operator*
Art: Amy Decker Henry, *Director*; Julie Cherry, *Assistant Director*; Diana DeFrancesco, *Associate*; Holly Bishop, *Graphics Assistant*
Systems Analyst: William Carter

NEWS STAFF

Managing News Editor: Colin Norman
Deputy News Editors: Tim Appenzeller, John M. Benditt, Jean Marx
News and Comment/Research News: Ivan Amato, Faye Flam, Troy Gately (copy), Ann Gibbons, David P. Hamilton, Constance Holden, Richard A. Kerr, Elliot Marshall, Joseph Palca, Leslie Roberts, Richard Stone
Bureaus: Marcia Barinaga (West Coast), Michelle Hoffman (Northeast), Anne Simon Moffat (Midwest)
Contributing Correspondents: Joseph Alper, Jeremy Cheras, Barry A. Cipra, Robert Crease, Elizabeth Culotta, M. Mitchell Waldrop, Karen Wright

BUSINESS STAFF

Marketing Director: Beth Rosner
Circulation Director: Michael Spinella
Fulfillment Manager: Marlene Zendell
Financial Analyst: Deborah Rivera-Wienhold
Classified Advertising Supervisor: Michele Pearl

ADVERTISING REPRESENTATIVES

Director: Earl J. Scherago
Traffic Manager: Donna Rivera
Traffic Manager (Recruitment): Gwen Canter
Advertising Sales Manager: Richard L. Charles
Marketing Manager: Herbert L. Burklund
Employment Sales Manager: Edward C. Keller
Sales: New York, NY 10036: J. Kevin Heneby, 1515 Broadway (212-730-1050); Scotch Plains, NJ 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); Hoffman Estates, IL 60195: Jack Ryan, 525 W. Higgins Rd. (708-885-8675); San Jose, CA 95112: Bob Brindley, 310 S. 16th St. (408-998-4690); Dorset, VT 05251: Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581); Damascus, MD 20872: Rick Sommer, 11318 Kings Valley Dr. (301-972-9270); U.K., Europe: Nick Jones, +44(0)647)52918; Telex 42513; FAX (0647) 52053.

Information for contributors appears on pages 35–37 of the 4 January 1991 issue. Editorial correspondence, including requests for permission to reprint and reprint orders, should be sent to 1333 H Street, NW, Washington, DC 20005. Telephone: 202-326-6500. London office: 071-494-0062.
Advertising correspondence should be sent to Tenth Floor, 1515 Broadway, New York, NY 10036. Telephone 212-730-1050 or WU Telex 968082 SCHEFRAGO, or FAX 212-382-3725.
Subscription/Member Benefits Questions: 202-326-6417. **Science:** 202-326-6500. **Other AAAS Programs:** 202-326-6400.

Resources of Plant Germplasm

Conserving the world's biological diversity has emerged as a matter of international concern. Annually, many species are disappearing. Of particular importance are plant species related to those employed in agriculture. Some of the plants that produce little or no food possess genetic traits that enable them to withstand stress, pests, or diseases of many kinds. In the United States, most of the plants grown in agriculture have been bred to resist many known hazards. However, it is inevitable that destructive capabilities of pests and disease organisms will evolve. When such contingencies arise, plant breeders seek to incorporate germplasm having the necessary resistant characteristics. Preserving biodiversity of relevant plant species is in effect an inexpensive insurance policy to safeguard future low-cost supplies of food.

In this matter, the National Plant Germplasm System (NPGS) of the United States has an important role. It has responsibility for about 400,000 accessions of 8,700 species. Additional accessions are held by commercial breeders, universities, other organizations, and individuals. Most species are not originally native to the United States. The major crop plants were brought here by immigrants or plant collectors. Among those who brought seeds to the United States were Benjamin Franklin and Thomas Jefferson. Later, U.S. botanists roamed the world collecting many thousands of specimens. In recent decades much of the new germplasm has been acquired through exchanges with organizations or individuals elsewhere. Other countries, including Russia, China, and India, have substantial collections. However, the United States is reputed to have the most extensive one.

In the United States only a small fraction of the varieties of plants is grown intensively. Most of the germplasm is safeguarded in the special facilities of the NPGS. Under special conditions seeds can remain viable for many years. However, circumstances in many small tropical countries are such that heavy losses would occur rather quickly. Seeds must be dried to a moisture content of about 6% and then maintained in cold storage. A new facility located at Fort Collins, Colorado, will provide vaults cooled to liquid nitrogen temperatures. About 230,000 accessions are stored there. Special problems of germplasm preservation arise when seeds behave poorly after desiccation or when plants do not produce useful seeds. In any event, it is necessary from time to time to propagate the germplasm accessions. This activity is conducted at a substantial number of places, including Ames, Iowa; Geneva, New York; Griffin, Georgia; and Pullman, Washington. These four regional centers are responsible for management, regeneration, characterization, evaluation, and distribution of more than a third of the accessions of the national system.

Until the recent past, the primary motivation for collecting and maintaining germplasm was to ensure the self-sufficiency of U.S. agriculture. In effect, the effort has been broadened. Today, the United States is the world's largest distributor of plant germplasm. Each year, the NPGS supplies, free of charge, 230,000 samples from its collections to more than 100 nations. When seeds are involved, a sufficient number are provided to plant a row 15 meters long. The NPGS is rendering an important service both domestically and internationally. However, a recent report* of the Board of Agriculture of the National Research Council, which described NPGS in detail, also indicated that both the nation and the world could be even better served. The NPGS is a loose network of facilities that is administratively under the Agricultural Research Service of the Department of Agriculture. It is in effect an orphan. The NRC report recommended a substantial improvement in the status of NPGS and increases in its multifaceted efforts to manage some of the world's most precious genetic resources.

There is a basis for expectation that the situation may be improved. Under terms of congressional legislation (S2830-386), the structure and objectives of a National Genetic Resources Program have been outlined. The provisions of the act are broad and constructive in mandating research on genetic materials. The provisions also include, "Make available upon request without charge and without regard to the country from which the request originates the genetic material which the program originates." The next step in the process will be a report by the secretary of agriculture, due 1 November 1991, to Congress, followed by implementing appropriations.—PHILIP H. ABELSON

*Board on Agriculture, National Research Council, *Managing Global Genetic Resources. The National Germplasm System* (National Academy Press, Washington, DC, 1991).