

Agricultural Research is published 10 times a year by the Agricultural Research Service, U.S. Department of Agriculture (USDA). The Secretary of Agriculture has determined that this periodical is necessary in the transaction of public business required by law.

Tom Vilsack, Secretary
U.S. Department of Agriculture

Gale Buchanan, Under Secretary
Research, Education, and Economics

Edward B. Knippling, Administrator
Agricultural Research Service

Sandy Miller Hays, Director
Information Staff

Editor: Robert Sowers (301) 504-1651

Associate Editor: Sue Kendall (301) 504-1623

Art Director: William Johnson (301) 504-1659

Photo Editor: Anita Daniels (301) 504-1609

Staff Photographers:

Peggy Greb (301) 504-1620

Stephen Ausmus (301) 504-1607

Most information in this magazine is public property and may be reprinted without permission (except where copyright is noted). Non-copyrighted articles and high-resolution digital photos are available on the World Wide Web at ars.usda.gov/ar.

Paid subscriptions are available from the U.S. Government Printing Office (Superintendent of Documents). See back cover for ordering information. Complimentary 1-year subscriptions are available directly from ARS to public libraries, schools, USDA employees, and the news media. Call (301) 504-1638 or e-mail armag@ars.usda.gov.

This magazine may report research involving pesticides. It does not contain recommendations for their use, nor does it imply that uses discussed herein have been registered. All uses of pesticides must be registered by appropriate state and/or federal agencies before they can be recommended.

Reference to any commercial product or service is made with the understanding that no discrimination is intended and no endorsement by USDA is implied.

The USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Agricultural Research

Solving Problems for the Growing World

- 4 A Better Way To Spot Eggshell Cracks
- 6 Ethanol Byproducts Offer Savings for Farmers and Industry
- 9 Milkweed: From Floss to Fun in the Sun
- 10 Cross-Linking Cotton
- 12 Can Small Foe Foil Olive Fruit Fly?
- 14 Growing Premium Seafood—Inland!
- 17 Lab Saves Water While Researching New Ways To Fight Weeds
- 18 Guayule! Go Native With This Promising Biofuel—and Biomedical—Crop
- 20 Lowering Nitrogen Rates To Increase Profit, Environmental Sustainability
- 22 A Consistent Approach To Evaluate Genetically Engineered Crops
- 22 Helping the Peanut Industry
- 23 Science Update

Cover: ARS researchers have developed a tool that illuminates eggs and uses an imaging system to consistently identify eggshell cracks that are so tiny they're invisible. Electrical engineer Seung Chul Yoon (left) and agricultural engineer Kurt Lawrence evaluate image results from the microcrack detection system. Story begins on page 4. Photo by Stephen Ausmus. (D1308-19)

IN THE NEXT ISSUE

PARTNERING UP—Partnership and collaboration have always played a role in the Agricultural Research Service's successes. In the past decade alone, ARS has entered into about 3,000 new partnership agreements every year with a variety of public and private entities. The next issue of the magazine takes a look at some of the benefits of these kinds of collaborations. One major example is the concerted international effort to battle Ug99 stem rust of wheat and barley. Other partnerships are working to evaluate the effectiveness of conservation efforts on water quality, eradicate fruit flies in Hawaii, or develop new breeding lines of maize and soybeans. Still others have resulted in products that may end up in your kitchen, such as a high-protein snack food made with whey or a low-glycemic-index sweetener that can help people with diabetes better manage their diets.