

Western Regional Research Center

Albany, California



United States Department of Agriculture
Agricultural Research Service



Investing in Your Future

At the Western Regional Research Center, we conduct research to help meet the present and future needs of consumers, growers, and processors. Innovations from our laboratory, greenhouse, and field research enhance both food and nonfood uses of traditional and new crops. Our experiments yield new strategies to help agriculture work in harmony with the environment. Our research helps ensure the healthfulness and safety of the nation's food. Situated in Albany, California, the center is one of four regional research centers of the Agricultural Research Service of the U.S. Department of Agriculture.

Improving Crops for New Foods, New Uses

Our investigations of wheat, tomatoes, potatoes, and other crops are unlocking the secrets to better breads, tastier and more nutritious tomatoes, bruise-free potatoes, and health-promoting chemicals hidden in grapefruit and other citrus fruits.

Superior wheat-flour doughs produce the best-quality breads, rolls, and other baked goods. Special proteins within wheat kernels play a role in forming these doughs. Center researchers discovered and have copied the genes responsible for making these proteins, paving the way for improving wheat plants to further boost the quality and nutritional value of flour.

Other wheat studies under way may show us how to bolster the plants' resistance to insects and disease, thereby reducing the need for chemical pesticides.

As wheat researchers here and around the world find new wheat genes, they send the information to us—the central, computerized collection point for this vital information. The goal: accelerate mapping of the wheat genome to find valuable genes that control specific traits.

Unique cherry tomatoes, grown in our laboratory, may open the door to improved tomatoes and tomato products. Cells in the leaf-like calyx atop these unusual tomatoes turn plump, red, and juicy. Our studies may reveal how to trigger ripening and, perhaps, how to enhance the amount of lycopene or other carotenoids within the fruit. These compounds may lower the risks of cardiovascular disease and some forms of cancer.

Our research explores industrial products from agriculture as well, including lightweight concrete fortified with starch, oils for lubricants or other uses from castor beans, and latex from guayule, a desert shrub. These new products and the processes for making them can decrease the nation's reliance on imports and nonrenewable resources. The guayule latex may provide a safe, hypoallergenic alternative for people who have developed life-threatening allergies to latex made from imported rubber.



Helping the Environment

Beneficial insects that attack noxious weeds, such as yellow starthistle, saited cedar, tall whitetop, and Eurasian watermilfoil, offer a long-term, environmentally friendly alternative to costly herbicides. With ARS colleagues in Europe, we've begun building teams of imported insects to stop the spread of invasive weeds in western states. And we're testing novel approaches for restoring rangelands overrun with these weeds.

We're also inventing new tools to reduce destruction from major crop pests like Mediterranean fruit flies and codling moths. For example, new, more powerful lures that we've formulated trap these insects and disrupt their ability to reproduce before they can cause widespread damage.

Foods smuggled into the United States can harbor insect or disease pests. Our X-ray system speeds detection of such contraband in luggage at airports and other international terminals. In related work, we developed new software that enables high-speed, machine-vision sorters to quickly remove insect or disease-damaged almonds, pistachios, and walnuts from the processing line.

Our scientists are creating new bioenergy resources that could be used in place of nonrenewable natural resources. New techniques that we've invented to separate wheat into starch and protein concentrates allow new

uses of these by-products for biodegradable packaging and insulation. Our combinatorial genetics research is providing improved enzymes for producing biofuel ethanol from grain. Much of this work is carried out in our industrial style pilot plant, where laboratory findings can be readily scaled up to gauge their commercial potential.

Ensuring Healthy and Safe Foods

We're expanding the array of wholesome foods available to consumers, and we're investigating new methods for keeping pathogens like *E. coli*, *Salmonella*, and *Campylobacter* out of the food supply. In addition, our research is resulting in new methods to reduce or eliminate contamination of foods by compounds such as aflatoxins or glycoalkaloids.

Rice bran, the thin brown layer that coats rice kernels before milling, may now be more easily added to breads, breakfast cereals, and snack foods. That's due in part to our process for thwarting enzymes that would otherwise make the oil in bran turn rancid. Our studies also proved rice bran's cholesterol-lowering effects in animals and led to confirmatory tests with humans.

New and appetizing products made from fruits and vegetables may tempt more of us to eat the recommended five to nine servings each day. Edible coatings



that we're creating from a nearly invisible film to keep apple or pear slices fresh and other salad-bar-style fruits and vegetables from shriveling or browning.

Purees from apricots and other fruits and vegetables are key ingredients in new, high-fruit food bars that we're developing. These tasty, healthful bars should appeal to kids and adults alike.

Collaborate With Us

Our work evolves with each new discovery and as the needs of our nation and world change. We continue to pursue science and technology that will improve our food, our health, and our environment.

We welcome opportunities for new collaborations, which can be formal like a cooperative research and development agreement or some other less formal technology transfer arrangement. Many of the patents awarded to center scientists are available for licensing.

In addition to a permanent, full-time staff of about 200 scientists, technicians, and other specialists, we employ undergraduate and graduate students, postdoctoral fellows, and visiting scholars from the United States and abroad. High school students may be eligible for school credit through our annual Academic Workshop, or they may qualify for a summer internship.

Our Facilities

In addition to our newly renovated offices and laboratories at Albany, we maintain worksites-for research on exotic and invasive pests-at Davis, California, and Reno, Nevada. The renovation of our four-story, 20,000-square-foot pilot plant at Albany will be the most extensive upgrading of this space in more than 50 years.

How to Contact Us

For further information, please contact:

Director U.S. Department of Agriculture Agricultural
Research Service Western Regional Research Center
800 Buchanan Street Albany, CA 947 10 USA

Phone: (510) 559-5600

Fax: (510) 559-5963

E-mail: Jseiber@pw.usda.gov

Visit our web site at <http://www.pw.usda.gov>

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