

SCIENCE & EDUCATION Impact

Benefits from USDA/Land-Grant Partnership

Cool Foods

Finding ways to make favorite foods even better.

Even the best foods in the world aren't perfect. They probably never will be. But don't tell that to the USDA and Land-Grant universities, who are always looking for innovative ways to make foods healthier and more readily available.

Payoff

- **Say cheese.** Knowing exactly when to separate the curds and whey isn't a trivial concern for cheese makers. Separating the two parts either too early or too late can greatly reduce cheese quality or quantity. **Kentucky** researchers developed a technology that electronically senses when the curd and whey should be separated, taking the guesswork out of the process. One small manufacturer adopted the device and found that losses dropped by \$150,000 in one year. This could lead to better, cheaper cheeses for consumers.
- **Peanut better.** Kids probably couldn't think of any way to make peanut butter better. Many food scientists, though, are working to improve it. **Alabama A&M** researchers are developing a nonallergenic peanut clone, which may lead to a peanut allergy vaccine. **Georgia** food scientists found that combining peanut paste with 19 percent roasted soybeans or 14 percent nonfat dry milk produces peanut butter with all the amino acids 6- to 12-year-old children require and more calcium, vitamins and minerals, too. The better-for-you product has passed informal taste tests. **Oklahoma State** scientists have developed "P.B. Slices," individually wrapped peanut butter slices similar to American cheese slices. The product is expected to be available commercially in 2001.
- **Lobster tale.** The only thing wrong with Maine lobsters is that most of the country isn't near Maine. Until recently, exporting live lobsters was the only way this delicacy could reach distant markets that wanted the dramatic appearance of the whole lobster. **Maine** researchers, though, have found methods that processors can use to freeze lobsters with cryogenic gases to maintain quality for 15 months.

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- **Blueberry thrill.** Scientists discovered extraordinary health benefits in blueberries, and New Jersey farmers grow plenty of them. But besides blueberry muffins, how many ways can you eat them? Scientists at **Rutgers** are planning to expand the list. Already they've produced four prototype products: a juice, iced tea, sports drink and pomace, a pulpy food ingredient. The tea, called Jersey Blues, premiered in summer 2000 at about 50 farm stands and several county fairs. Sales were brisk, and surveys indicate 90 percent to 95 percent of the customers liked it.
- **Love meat tender.** You know when your steak is properly tender. Thanks to **Ohio State** scientists, farmers can know while the steak is still on the steer. Researchers found a genetic marker for potential tenderness in beef cattle. They developed a DNA test that will enable a farmer, just by sending a blood sample to the lab, to know with 99 percent accuracy a beef animal's potential for high marbling or very little marbling, the aspect of meat that makes it tender. If they use the test to select their breeding stock, tough steaks could soon be a thing of the past.
- **Crops of chocolate.** Most of the world's cocoa is grown on small farms in just five tropical countries. And it's not easy to grow. About 40 percent of the worldwide crop is lost to plant diseases and insects each year. Since Pennsylvania manufacturers annually produce 1.2 billion pounds of chocolate, **Penn State's** cocoa genetic breeding research program identified superior cocoa plants and used a process called somatic embryogenesis to clone as many as 4,000 new plants from a single flower. Farmers in sensitive rain forest areas soon will have ample access to high-quality plants, so sweethearts everywhere can keep that chocolate coming.
- **Dream fat.** Using biotechnology, **Georgia** food scientists attached specific fatty acids with nutritional and functional properties to the glycerol part of conventional fats and oils. The result was a designer fat that, when fed to mice, actually lowers blood cholesterol by half and boosts the immune system by increasing T-cells 19 percent. The reduced-calorie fat substitute can be used in a number of food products. People with

AIDS or high cholesterol likely will be the most interested customers when the first products become available.

- **Perfect rice.** A crack in a kernel of rice is a tiny problem. But if fissures happen in enough kernels — and they do — the problem gets more serious. The U.S. rice milling industry estimates losses of several million dollars annually, and losses continue in cooking and puffing processes further on. In a four-year study, **Arkansas** scientists developed an instrument to test kernels for fissures. The project has identified the conditions that lead to fissuring, enabling rice millers to minimize and sometimes eliminate rice kernel fissuring.
- **Turkey time.** Modern turkeys get off to a quick start — too quick for their own good. Bred for fast growth, they're strong enough to break out of their eggs before their organs are mature enough to sustain them. Many of them die, and others grow slowly after they hatch. **North Carolina State** found that if they fed female turkeys a tiny amount of iodine, a natural thyroid hormone, they could boost turkeys' posthatching survival rate by 50 percent, and young turkeys would grow significantly faster.
- **Nutty processor.** **Oklahoma State** researchers started out looking for a way to extend the shelf life of pecans. They ended up inventing an oil extraction process that enabled them to produce the first-ever reduced-calorie pecans and a heart-healthy pecan salad oil, giving birth to a new business for Oklahoma.



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