

## Vaccinating Catfish Before They Hatch!

Each year, U.S. catfish producers have to absorb an estimated \$50-70 million in losses from waterborne diseases such as enteric septicemia and columnaris. To help keep catfish healthy, researchers invented vaccines for immunizing this valuable food fish against the two diseases. After studying the best way to administer them, they concluded that these vaccines can be given simultaneously—24 to 48 hours before hatching—during what's called the "eyed-egg" stage of development. Current practice is to vaccinate newly hatched catfish, about 10 days old, while aboard the trucks that'll deliver them to farm ponds for release.

It takes workers just 10 to 15 minutes to treat the not-quite-hatched eggs with the two vaccines. And tests have shown that vaccinating catfish at this eyed-egg stage could provide immunity lasting at least 140 days.

The patented vaccines have been licensed to Intervet International, of Boxmeer, The Netherlands, and are commercially available in the United States. *Phillip H. Klesius and Craig A. Shoemaker, USDA-ARS Aquatic Animal Health Research Unit, Auburn, Alabama; phone (334) 887-3741, e-mail pklesius@msa-stoneville.ars.usda.gov, cshoemaker@msa-stoneville.ars.usda.gov.*

## Get a Fix on Flavonoids

If you've been wondering about the flavonoid content of foods in your diet, you now have an easy way to check it out. Why should you bother? Research has shown an association between consumption of foods rich in flavonoids and a reduced risk of cancer and heart disease. Good sources include red grapes, white onions, and black-eyed peas—as well as green and black tea. Now an updated database with details on 26 selected flavonoid compounds in 385 foods is available online at [www.ars.usda.gov/nutrientdata](http://www.ars.usda.gov/nutrientdata).

To compile this nutrient data update, analyses were performed on nearly 60

representative fruits, nuts, and vegetables obtained through nationwide sampling. Data on the flavonoids in new foods were also collected from about 100 scientific papers. The expanded flavonoid database supplements the more extensive National Nutrient Database for Standard Reference, known as "SR19," which is widely used by researchers and nutrition professionals. *David B. Haytowitz, USDA-ARS Nutrient Data Laboratory, Beltsville, Maryland; phone (301) 504-0714, e-mail haytowid@ba.ars.usda.gov.*

## Cotton That Clothes and Feeds Us!

Genetic technology under development may one day make it possible for cotton plants grown around the world to feed—as well as clothe—millions of people! That's because, in addition to the comfortable, durable textiles that can be spun or woven from the fluffy fiber surrounding cotton's seeds, a high-quality protein can be processed from the seeds themselves. The problem is, cottonseed also contains considerable amounts of a natural toxin, gossypol. That's why only multistomached animals like cattle can safely consume the protein-rich cottonseed or the meal that remains after the cottonseed oil has been removed.

But researchers working with the Institute for Genomics and Biotechnology, at Texas A&M University-College Station, have shown that it is possible to use RNA interference technology in combination with a seed-specific gene promoter to interrupt biosynthesis of gossypol in the seed. This allows a normal amount of gossypol and related compounds to be produced in the foliage—where they protect the plant from attack by insects—while only trace amounts of gossypol form in the seed. Estimates are that about 9 million metric tons of edible protein could be derived from the 44 million metric tons of cottonseed produced worldwide each year. *Robert D. Stipanovic, USDA-ARS Cotton Pathology Research Unit, College Station, Texas; phone (979) 260-9232, e-mail rstipanovic@cpru.usda.gov.*

## Peanut Flour: Suiting the Kind to the Job

Not only does peanut flour add protein and flavor to processed foods such as baked goods, nutrition bars, and snacks, it also functions as a dependable thickener in sauces and dressings. The flour is simply the dry powder that's formed after partial extraction of oil from roasted peanut seed. And while peanuts themselves are about 25 percent protein, peanut flour is about 50 percent. It's sold at different fat levels—generally 12 or 28 percent—and as light-, medium-, or dark-roast flour. So how do food processors decide which of these flours will give their various products the best texture?

Since rheological tests often relate to consumer perceptions of texture, researchers have run a variety of tests to discover the effects of different kinds of peanut flour on flow behavior and form changes in model systems under controlled heating conditions. They found that lower fat, light-roasted peanut flours promoted more viscosity, ounce for ounce, than other types. Depending on the product application and consumer expectations regarding texture, higher or lower viscosities may be good or bad. The test data will help food processors optimize texture in both existing and new products containing peanut flour. *Jack P. Davis, USDA-ARS Market Quality and Handling Research Unit, Raleigh, North Carolina; phone (919) 515-6312, e-mail jack\_davis@ncsu.edu.*

