"Since then, ARS scientists have worked with the University of Arkansas at Pine Bluff and at Fayetteville on carefully controlled consumer taste panels," reports Freeman. "We've also done preference testing in England."

More than 60 percent of U.S. taste-test participants have preferred the taste of canned bighead carp to tuna and said they'd pay at least as much for that product as for tuna. Freeman notes that not only is the product tasty, but it's healthful, too. The canned carp is less than 2 percent fat, loaded with calcium and protein, and has an impressive fatty-acid profile, with about 40 percent of the fats found to be the desirable omega-3 acids linked in some studies to reduced heart disease and to other benefits.

Farmers won't find bighead carp sluggish: Their growth rate is about four times that of catfish, and they can tip the scales at 6 pounds in a year, Freeman says.

"With a pond fish such as this, you can control the environment and what the fish eats," he points out. And at the end of the line, there is a canned product that's firm, visually appealing, and easily adaptable to flavorings such as hickory-smoked or teriyaki.

"Fish farmers are already growing these and shipping them to fresh markets, so production won't be a big learning experience for them. But creating a canned product gives the farmer a way to expand that market and have a longer lasting product to sell."—By **Sandy Miller Hays**, ARS.

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From Bread to Blocks—

Starch-Based Building Material

Wheat starch may yield an inexpensive, lightweight aggregate for the concrete in tomorrow's homes. The wheat-based concrete could be used for roofing tiles, insulation, flooring, or soundproofing. Or it could be used to make insulated patios and sidewalks or the water-resistant backing for shower stalls in place of gypsum board.

Wheat starch, says ARS plant physiologist Gregory M. Glenn, can form an aquagel that acts as a durable aggregate for mixing with cement.

Glenn is conducting experiments with this unique use of wheat in his laboratory at the ARS Western Regional Research Center in Albany, California. And he will be working with an independent testing laboratory to check density, strength, and other key properties of the new concrete. He says wheat-based aquagels offer several advantages over some other lightweight aggregates. The aquagels would likely require less energy and labor to produce than aggregates derived from some other sources.

Glenn's tests indicate that the concrete's density "will remain uniform when poured to considerable depths. That's not the case," he says, "with lightweight concrete made from foams or foaming agents. If they're poured too deep, the weight of those mixes will compress the bubbles, yielding concrete that is denser at the bottom than the top."

The simple, straightforward method he developed begins with heating a mixture of wheat starch and water, then pouring it into a mold and cooling it to form a gel. Next, the gel is air-dried, making it hard, transparent, and brittle. It is then milled or ground into shiny white particles about the texture of coarse sand.

The little particles are soaked in water for several hours, then rinsed and drained. The result: a tough, rubbery aquagel aggregate. Composed of about 25 percent starch and 75 percent water, it won't disintegrate during the shearing action of the cement mixer.

With a few modifications, the process yields durable aquagels from other sources. Each aquagel can either serve as the sole aggregate used in a concrete or be mixed with other aggregates—By **Marcia Wood**, ARS.

For more information on U.S. patent application serial number 08/515,502, "Aquagel- Based Lightweight Concrete," contact Gregory M. Glenn, USDA-ARS Cereal Product Utilization Research Unit, Western Regional Research Center, 800 Buchanan St., Albany, CA 94710; phone (510) 559-5677, fax (510) 559-5936, e-mail gmg@pw.usda.gov ◆