during the menstrual cycle.

Still, researchers have a great deal of work to do to find out what all the genes identified by the Kinzler-Vogelstein team do in normal angiogenesis, and whether any will be suitable targets for drug therapy. But the Hopkins workers are likely to have lots of help. "This paper will no doubt set off a flurry of work by other investigators," predicts Folkman. **–JEAN MARX**

MARINE CONSERVATION

Virginia Gets Crabby About Harvest Limits

Virginia is at odds with other Atlantic coastal states over a plan to protect horseshoe crabs. Virginia officials have refused to accept a quota on their harvest, arguing that it's not based on good science. Now, the Department of Commerce has scheduled a moratorium, to go into effect next month, that is aimed at preserving what many believe is a dwindling population.

The horseshoe crab is not really a crab at all, but a distant relative of spiders. Birdwatchers prize horseshoe crabs because their eggs provide nourishment for hungry migratory birds. Medical companies use crab blood to test injectable drugs for contamination. And the fishing industry uses crabs as bait for conch and eel. As demand from the growing conch fisheries has increased, crab harvest has skyrocketed, growing from 500 tons in 1990 to 3000 tons in 1997.

Ebb and flow. States disagree over how to protect horseshoe crabs.

The Audubon Society and other conservation groups fear that this demand may account for what appeared to be a sharp decline in horseshoe crab populations, originally noticed by volunteers in 1992. In response, Delaware and New Jersey officials in 1997 instituted stringent restrictions on their harvest. When fishers began landing their crabs in Maryland to avoid the restrictions, that state imposed its own 75% cut. That shifted the trade to Virginia, which now accounts for about a quarter of the harvest. In 1998, Maryland, Delaware, and New Jersey decided a coastwide management plan was needed, so they asked the Atlantic States Marine Fisheries Commission (ASMFC) to design one.

The scientists charged with the task soon realized that there was a lack of good data on horseshoe crab populations, says Jim Berkson, a fisheries scientist at Virginia Polytechnic Institute and State University in Blacksburg who participated in the stock assessment committee. But they were alarmed by the still-increasing harvest, fearing long-lasting effects on a species that takes 9 to 11 years to reach sexual maturity.

In February, ASMFC voted for a 25% reduction of the average harvest levels from 1995 through 1997. This was a compromise between the 50% cut desired by Maryland and other states and the status quo sought by Virginia. Virginia officials objected to what they said amounted to a 75% cut in what the state's conch industry needed. They argued that state laws require them to base their decisions on good science—which, they said, was absent here. State officials also argued that the problem needed to be quantified before a quota was established.

That position didn't pass muster with the commission, which saw it as a delaying tactic. In May, it found Virginia "out of compliance" and asked the Department of Commerce to shut down Virginia fisheries for not adhering to the commission's quota. "The bottom line is that decisions are made with whatever information is available," says Dieter Busch, director of ASMFC's Interstate Fisheries Management Program. Virginia's Marine Resources Commission has since reduced the legal harvest in half, to 355,000 crabs. But that still isn't good enough for federal officials. Last week the Department of Commerce proposed a moratorium for September, the start of the fall harvest.

Virginia hopes to convince the Atlantic commission at a meeting next week to ease its quota, and the fishing industry is watching closely. "We're hopeful," says Rick Robins, who runs Chesapeake Bay Packing in Newport News, Virginia, the largest exporter of conch. "But we're prepared to seek an injunction," he says, if the commission stands firm.

–ERIK STOKSTAD

AGRICULTURE

Variety Spices Up Chinese Rice Yields

The results of Chinese field trials reinforce the accepted scientific wisdom that planting different varieties of a crop in the same field holds down the spread of certain diseases and improves yields. And this time researchers seem to have convinced farmers, too.

Zhu Youyong, a plant pathologist at the Phytopathology Laboratory of Yunnan Province at Yunnan Agricultural University in Kunming, China, and colleagues report in the 17 August issue of *Nature* on a 2-year experiment that involved mixing two varieties of rice in the same field. Their work, involving thousands of local rice farmers, found an 18% rise in overall productivity, including greater profits for a premium-priced variety that is particularly susceptible to rice blast from a fungus.

Mixing it up. Monocultural plantings of rice, common in Yunnan Province and elsewhere, are more vulnerable to disease.

Most Yunnan farmers plant one variety of hybrid rice, with a few devoting some land to a more glutinous rice used for desserts and other regional specialties. Following Zhu's suggestion, however, farmers planted a single row of glutinous rice in the middle of a group of either four or six rows of hybrid rice. The experiment started on 812 hectares in 1998 and expanded to 3342 hectares in 1999. Monoculture control plots were grown at 15 small sites throughout the region.

The results show the power of variety. Researchers calculated that it would take an average of 1.18 hectares of monoculture cropland to produce the same amounts of hybrid and glutinous rice produced in 1 hectare of mixed crops. The most striking change was for individual glutinous plants grown in a mixed environment: They yielded up to 89% more rice than their monocultural cousins. What's more, because the glutinous rice fetches a premium price, the value per hectare of the mixed fields was 14% greater than the hybrid monoculture plots and 40% greater than the glutinous monoculture plots. In both years, blast destroyed about 20% of the glutinous rice grain in the monoculture plots but only 1% in the mixed plots. Blast damage in the hybrid rice, although much lower in general, also dropped, with a grain loss of only 1% in the mixed plots versus 2.3% in monoculture plots. The damage from blast was so reduced in the mixed plots that farmers stopped their periodic fungicide spraying. "The farmers are very happy," says Zhu.

Christopher Mundt, a plant pathologist at Oregon State University in Corvallis and a co-author of the paper, explains that different types of rice blast attack different varieties of rice. In a monoculture field of rice,

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