RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Wonder Wheat

A new wheat variety that yields a whopping 18 tons per hectare was announced this month at a conference in New Delhi held by Mexico's International Wheat and Maize Improvement Center (CIMMYT). The advance could dramatically boost world wheat production, although experts worry that the fertilizer-hungry plant might worsen pollution from crop runoffs.

Wheat production around the world now averages 2.7 tons per hectare, although some varieties can yield up to 12 tons, according to CIMMYT director Timothy Reeves. Any further gains, he says, have been stymied by the plant's basic architecture. But now the "yield barrier" has been broken by a sturdy new large-eared breed that CIMMYT researchers have spent almost 20 years developing. "The plant has a robust small stem and three times as much grain-bearing capacity" as old high-yield varieties—that is, it holds up to 200 grains per stalk, says CIMMYT wheat researcher Sanjaya Rajaram. The yet-unnamed breed combines many traits, including branching capability from *Polonicum* wheat and hardiness from wild goat grass. What's more, says Reeves, "the whole plumbing system of the plant had to be overhauled so that it could partition more resources into grain" as opposed to stalk.

CIMMYT

Earful. CIMMYT's supergrain.

But some experts worry that the new wheat may not be practical. "How are you going to feed the plant? Does it mean massive inputs of chemical fertilizers?" asks geneticist M. S. Swaminathan, director of the M. S. Swaminathan Research Foundation in Chennai (formerly Madras). Indeed, in the first trials in Chile, the 18-ton yield was achieved under optimal conditions and with extremely intense fertilizer use. Because wheat generally needs 25 kg of fertilizer per ton of yield, this breed requires 400 kg per hectare.

CIMMYT says they are working on a technology called "bed planting" that may cut fertilizer input by 30%. And "we still need to incorporate disease resistance genes," says Reeves. But he thinks the new plant may be ready for deployment in 5 years. Just where it can grow awaits the result of multicountry trials yet to begin.

Radish Rhubarb Over *E. coli*

Japanese and U.S. officials are squabbling over whether kaiware daikon radish seeds imported from the United States were a source of recent outbreaks of *E. coli* food poisoning in Japan.

A rare but sometimes fatal strain of *E. coli*, dubbed O157:H7, first captured Japanese attention in 1996 when scores of schoolchildren in Osaka Prefecture got sick, some apparently from radish sprouts in their lunches. Since then, the bug has periodically reappeared, killing 15 and sickening nearly 20,000. Japan's Ministry of Health and Welfare last year traced a handful of cases to a radish sprout grower who had used seeds imported from Oregon.

R. KNAUFT/PHOTO RESEARCHERS

Toxic? Sprout.

Last May, samples were sent for analysis to 11 labs in the United States and Japan. One of the labs, at the International Medical Center of Japan Research Institute in Tokyo, detected genes from shigella-like verotoxins that are produced by O157, as well as a suspected O157 antigen. In a 30 March report, the health ministry found that because the epidemiological evidence points to radish sprouts and because sprout-growing facilities, water, and personnel in Japan have been found to be clean, the seeds must have been contaminated with O157.

U.S. scientists dispute the finding, arguing that the particular strain—O157 with the H7 antigen—has not been isolated. And, says George Jackson, a microbiologist with the U.S. Food and Drug Administration in Washington, D.C., the toxin genes can be found in nonpathogenic strains of O157. To prove the seeds were infected with O157:H7, Jackson says, "they would have to actually culture the organism, and that they did not do." The director of the institute that found the gene, Yoshifumi Takeda, calls that objection "a very minor point," as O157 is usually of the H7 variety.

Both sides say they would like to discuss the scientific questions. Although U.S. officials maintain they have asked the health ministry for a discussion, a ministry official says "we haven't had any contacts from the American side."

The health ministry admits that sprouts have been implicated only in a small fraction of cases. Nonetheless, the demand for kaiware daikon sprouts has dropped by 70%, according to a Japanese trade association, and there were no imports of U.S. radish seeds last year.

Lemelson-MIT Prize

Donors of this year's $500,000 Lemelson–Massachusetts Institute of Technology Prize for innovation didn't have to look far: They settled on MIT biomedical engineer Robert S. Langer, a pioneer in the development of biomaterials, drug delivery, and tissue engineering. Langer, who holds 320 patents, is best known for developing polymer membranes that allow precise delivery of medications intravenously. That work formed the basis for the $14 billion drug delivery device industry, the committee said. Langer's latest endeavor is to combine microchip technology with drug delivery systems to automate self-treatment for people on complex drug regimens.

Double-Checking Doomsday

To prevent the next asteroid sighting from becoming another on-again, off-again story, asteroid and comet watchers who get support from NASA have agreed to notify colleagues before releasing news about any more potential close calls.

Scientists met to draft publicity guidelines on "potentially hazardous objects" (PHOs) last month after asteroid 1997 XF11 hit the press (*Science*, 20 March, p. 1843). The initial prediction that the kilometer-wide object might collide with Earth sparked front-page headlines. The next day, data from archived pictures led to a drastic revision: The rock would come no closer than 950,000 kilometers.

The guidelines require that NASA get 24 hours' notice of any public report of a PHO. And the Minor Planet Center of the International Astronomical Union in Cambridge, Massachusetts, will keep scientists current with a nightly PHO update.

The publicity goof didn't hurt funding for asteroid watchers. NASA plans to double its spending on near-Earth objects this year to $3 million and set up a special office to coordinate such research.