

seed," says Edward B. Knipling, associate deputy administrator for ARS. Some 200,000 seed varieties are stored at Fort Collins, with another 100,000 stored at other facilities around the country. Virtually all of them are identified in some manner, he notes. "The problem is that we are not taking full advantage of what we have. We are losing germ plasm that has not been captured and preserved as the environment is being destroyed," observes Knipling.

The primary cause of the seed bank's problems is a low budget, which now stands at \$14.5 million annually. "We just have not had the resources, manpower, and even science tools to grow them out," says Knipling. He estimates that the department needs an annual budget of \$50 million—and a one-time capital infusion of \$50 million for new equipment—to put the seed bank in order. But with looming budget deficit pressures, he says, ARS is not expecting its budget to rise dramatically.

"When they say they don't have the money," notes Rifkin, "it is just a matter of priorities—and this has got to be a priority." He notes that the department has been aware of problems at the seed bank for years—at least since 1981 when the General Accounting Office conducted a review. Since then the department has conducted several other internal reviews, Rifkin adds.

While the complaint brought by the foundation and an alliance of other national and international farm interests on 4 November focuses on ARS's management failures at the seed bank, the ramifications of this legal action could be much broader. Rifkin sees the issue as a springboard for dealing with the question of who should control these genetic resources. Rifkin favors the establishment of localized seed banks in countries where various seed varieties originate.

The aim is to make it easier for Third World countries to access and maintain stocks of native and bred seed varieties. So far about 100 Third World countries have endorsed the idea, which was slated to be taken up in late November at the United Nations Food and Agricultural Organization conference in Rome. To set up such a system an estimated \$100 million is needed.—**MARK CRAWFORD**

Education: Beginnings of Japan-U.S. Cooperation

While the United States is looking to Japan for lessons in industrial productivity, both countries are seeking new solutions when it comes to precollege science education.

So far, there has been little in the way of joint Japanese-American educational activities other than research. But in November the National Science Teachers Association convened a meeting, believed to be the first of its kind, where educators from the two nations discussed such matters as teacher training, curriculum development, and computerized instruction.

In some respects, the problems are quite different. In Japan, for example, computerized instruction is virtually nonexistent, in large part because teachers are wedded to their old ways and tend to regard computer games and simulations as "not serious lessons," according to one speaker. Also, observed meeting chairman James Gallagher of Michigan State University, "We put computers in schools and then figure out what to do with them. The Japanese want to figure it out first."

But despite their radically different cultures, the two countries have in common the need to revamp tradition-bound education systems to facilitate and sustain their evolution into the world's leading high-tech societies. "They are in a position to teach each other strategies of change," said Gallagher. Among common challenges mentioned at the meeting were the need for courses on science and society, better teacher training in the sciences, and additional attention to the gifted and to reading skills for the less able. Various measures were proposed to implement communication and information exchange, including a new center for collaborative research, if a foundation could be induced to fund it.

Another sign of increased mutual interest in education are two cooperative studies, launched a year ago, being conducted by the National Institute of Education and the Japanese Ministry of Education, Science, and Culture. Each country is conducting a detailed survey of the other's education systems, which in the American

case includes a study of Japanese industrial training programs. The first reports are due the fall of 1986.

Meanwhile, the Japanese are forging additional links through the establishment of industry-funded foundations in this country. The Sony Foundation for Science Education, which is running teacher exchanges, 2 years ago set up a branch in Los Angeles. The Matsushita Electric Corp. last year provided \$10 million for an educational foundation to be located in Secaucus, New Jersey; and last month saw the establishment of the Hitachi Foundation, which will put about \$1 million next year into such activities as a literacy program in the Southeast and a joint study on the impact of new technology.

—**CONSTANCE HOLDEN**

Senate Okays Nuclear Trade Pact with China

The Senate by voice vote on 22 November approved the proposed "Agreement for Nuclear Cooperation" with the Peoples Republic Of China. The trade package, which has been portrayed as vital to the interests of American nuclear technology companies, was passed as amended 2 weeks ago by Senator Alan Cranston (D-Calif.). Under the provision, China must submit further written assurances to the President that U.S. technology will not be transferred to third parties for weapons purposes.

As originally proposed, critics argued that the trade pact did not contain sufficiently strong nuclear safeguard language. Senator John Glenn (D-Ohio), says the pact sets a precedent that makes it difficult to impose tougher restrictions on nonnuclear nations in the future. Glenn declined to put forth a stronger amendment on the floor when the measure came to a vote, fearing that extended debate might delay a vote beyond 11 December and void the Cranston amendment. The agreement automatically would take effect then as originally crafted in the absence of Senate action. Glenn regards the Cranston provision as inadequate and administration officials say it is harmless. House approval of the trade agreement is expected soon.—**MARK CRAWFORD**