AGRICULTURE

Reseeding Project Offers Aid To Strapped Afghani Farmers

Drought and war have crippled agriculture in Afghanistan. But an international plant-breeding network is trying to improve a desperate situation

The people of Afghanistan have survived a generation of political turmoil and civil war, but they now face an even more relentless enemy: famine. Agriculture has been almost wiped out in parts of the war-torn, drought-plagued country, and many farmers lack one of the most basic tools to revive it: seeds for their traditional crops. Help, however, may be on the way, thanks to a fortuitous deposit in a seed bank in nearby Syria.

A few months ago, researchers at the International Center for Agricultural Research in the Dry Areas (ICARDA) in Aleppo, Syria, dipped into the subzero temperatures of their "gene bank" to retrieve about 200 samples of chickpeas, barley, lentils, and fava beans collected decades ago in the marketplaces and mountainsides of Afghanistan. Transplanted to the red earth of northern Syria, seeds from these botanical remnants of Afghanistan's past are being returned to their native land this month in the first stage of a long process to rebuild the country's agriculture. "Right now the seed situation in Afghanistan is critical," says Adel El-Beltagy, the center's director-general. "We believe the majority of the country's seed was lost when farmers planted the 2001 crop. When the rains failed for a third year in a row, it put an end to their ability to stay on the land."

The picture is not uniformly dire. Even last year, Afghan farmers grew 1.5 million metric tons of wheat. This harvest, half of the amount needed to feed the country's 22 million people, came almost exclusively from irrigated areas where "improved varieties" common across Southwest Asia are grown. There's plenty of such seed in Pakistan and Iran, and ICARDA plans to deliver about 3500 metric tons of it to Afghanistan within the next week.

Far more difficult, however, will be recreating the diversity of agricultural production in areas that rely on rainfall. Those regions once grew not just wheat but also nutrient-rich legume crops, millets, fruits, and nuts such as pistachios. Plant breeders have long neglected such crops to focus on high-yielding wheat or rice for irrigated land. As a result, farmers continue to rely heavily on traditional varieties, called landraces, that are specifically adapted to their local conditions, and seed of these varieties is in very short supply.

Geoff Hawtin, director-general of the International Plant Genetic Resources Institute in Rome, traveled throughout Afghanistan during the 1970s collecting seed for use by crop breeders in Afghanistan and elsewhere. "We were setting up breeding programs for the West Asia–North Africa region," recalls Hawtin, then at the Arid Lands Agricultural Development Project based in Lebanon. "You need genetic variability to breed new varieties of these crops, and Afghanistan was a kind of treasure house of genetic diversity. The furthest thing from our minds was that it would ever be used for this purpose."

Fresh start. Nasrat Wassimi, standing second from left, works with local farmers to help restore crop diversity in Afghanistan.

Today's news reports that describe Afghanistan as barren ignore the country's genetic riches in crops such as barley, wheat, and chickpeas. Over many centuries, Afghanistan's farmers tailored these plants to the country's stupendously varied landscape, selecting for taste or yield and, in the process, creating a multitude of local strains. "They knew that on this hillside they'd grow this particular variety, but it didn't grow very well on the other hillside," he says. "Or they'd have types for certain cooking preparations."

Hawtin's timing was providential, coming just a few years before the Soviet Union invaded Afghanistan and touched off a civil war. Although he and his colleagues left duplicate samples in Afghanistan's national gene bank, the facility was destroyed in 1992. The war and drought have decimated many of the agricultural areas Hawtin visited, and desperate refugees may have eaten the remaining stocks of seed. Indeed, ICARDA, which inherited most of Hawtin's collections, may be the sole repository for some local varieties.

"We're talking about tiny quantities ... grams," says Willie Erskine, assistant director-general for research at ICARDA. Even with two growing seasons a year, it will take years to create enough seed for widespread planting of these local varieties. In the meantime, ICARDA will distribute tons of seed—from varieties created by its plant breeders—that it can produce quickly in large quantities.

Some Afghan farmers, however, will have a chance to compare the results of planting such improved varieties with the harvest from traditional varieties preserved in ICARDA's gene banks. Several aid agencies are planning to organize a set of field trials later this year in which Afghan farmers will grow many different varieties side by side. "It'll be a combination of landraces and improved varieties," says Erskine. "In the end, it's the people there who will decide what they're going to grow."

Nasrat Wassimi, a U.S.-trained Afghan scientist, returned to Afghanistan last week to lend a hand to the reseeding effort. In the 1990s, while based in Pakistan, Wassimi coordinated field trials by local farmers of many different crop varieties. "What's amazing is that they were able to do this under such difficult circumstances," says John Dodds, ICARDA's Washington, D.C., representative. About half of the country's irrigation canals have been destroyed or abandoned, according to some observers; ICARDA hopes that remote-sensing data from satellites will provide a better picture.

Wassimi left the region 2 years ago and settled with his family in Tucson, Arizona, but he has agreed to spend up to a year helping reestablish agriculture in his native land. He believes that many traditional varieties of crops have survived, with Afghan farmers planting traditional rain-fed varieties in irrigated fields during the drought to ensure a future supply of seeds. But water scarcity and lack of security may be harder obstacles to overcome. "Even some of the rivers have dried up," he says. "And the people with guns, they're still there."

—DANIEL CHARLES

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