

Battles Sprout Over World Seed Supply
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Two new battles in the world's "seed wars" will break out this month -- battles over who controls the world's supply of seeds and how it is controlled.

The wars are over plant seeds, and they have been waged with varying intensity for years. They feature not only the paper fights between international bureaucrats and politicians, but tales of seed spies, smuggling, and bonanzas such as the billion-dollar seed found in a Mexican backyard.

There is the tale of the great barley-storage boondoggle: the world's main bank of barley seeds lay untended in paper bags in an Ottawa lab, while the country where the barley came from, Ethiopia, had a gleaming new high-tech, low-temperature storage facility sitting largely empty.

In this month's battles, the Agriculture Department here is being sued for allegedly failing to protect the precious hoard in its seed banks.

And in a U.N. meeting in Rome later this month the United States and a few allies will be under siege for their "genetic imperialism" in taking seeds from other nations and exploiting them for their own profit.

The seed wars have intensified greatly in the past few years as nations have begun to realize the value of the genes carried in seeds and other rootstocks and cuttings -- together called "germplasm."

Within each plant, there is an array of genes that give it certain traits -- amount of yield, resistance to drought, resistances to various diseases. What one variety of wheat may lack, another may contain in its genes.

So it is in traits hidden in seeds that the great commercial value of crops resides.

An ad hoc group of plant breeders in North America recently estimated that seeds from one seed bank, when used to improve the spring wheat crop, boosted the value of the crop by \$500 million. They said 50 percent of the crop used material from the bank.

As one expert put it, seeds are like oil, but far more important to the future of the race, beyond the power and profit involved in controlling them.

In Washington, nine international groups and individuals led by social activist **Jeremy Rifkin** plan to file suit today in federal court. They charge in their complaint that the U.S.

Department of Agriculture is violating the law and damaging the environment by not taking proper care of the hundreds of thousands of seed varieties under its control. Nor is there a great enough variety of the world's plants kept in the bank, they allege.

In Rome, beginning Saturday, the United States and a few allies will do battle with a hundred nations, most from the Third World.

In this fight, the Third World bloc threatens to seize control of the seed banks now supported by the United Nations Food and Agriculture Organization (FAO) and the World Bank. They charge the developed nations with "genetic imperialism" for hunting useful seeds in other nations, breeding and using them, then perhaps even selling the altered seeds back to farmers on the land where the seeds originated.

The bloc wants the seed collection and banking system put under the control of a new body, with new rules that will effectively abolish patents on new seed varieties bred by companies, universities or nations.

The United States, for its part, is threatening to cut off its contribution to the FAO -- 25 percent of the organization's budget -- if the present seed banking system is not preserved. The present international seed banking system may also simply leave the U.N. offices and continue work on its own.

Officials of the State and Agriculture departments say the charge of imperialism against the international system is not true because all nations can, and many do regularly, freely withdraw seeds from both the U.S. and U.N.-sponsored seed banks.

The basic issues in the seed wars start from a single germ of fact: The United States and the developed world have no primary crops native to them. But the tropics and the Southern Hemisphere have large numbers of useful crop seeds.

So, as with oil and other resources, the West, for more than a century, has plucked off germplasm freely from the rest of the world -- until recently. Now there have been attempts to pass plant technology to the less-developed nations and angry demands by the Third World that the "genetic imperialism" stop.

Importing crop seeds has been going on since colonial times; Washington and Jefferson were farmers and wrote about the problems of obtaining good seed. Teams sent to explore and bring back seeds to bank began in 1898, and the first item bagged was a Russian cabbage seed.

In the suit to be filed against the Agriculture Department today, the plaintiffs -- including Rifkin, Pat Roy Mooney, an expert on germplasm; the National Farmers Union of Canada, and several international environmental groups -- are demanding that the department be ordered to do an environmental impact statement to determine whether its alleged failure to run a broad and well-organized seed bank system has made the nation vulnerable to crop failures and economic damage.

"This country and the entire world face a crisis because of the eroding plant gene pool," says the complaint. "The agricultural system of the U.S., in particular, is supported by an extraordinarily narrow genetic base, a situation viewed with alarm by those who have studied the system"

The complaint charges that the current system fails in several ways: The funding is extremely low; the USDA cannot even name all the seed collections around the country much less systematically collect seed from them; there is no attempt to collect seeds of anything other than commercial crops; and the system cannot guarantee that all the seeds are still viable because of inadequate storage.

Agriculture officials do not disagree with some points in the suit. Paul Fitzgerald, a deputy administrator of the Agricultural Research Service; George A. White, head of the plant introduction office in the germplasm research laboratory, and Lewis Bass, head of the National Seed Storage Laboratory, all agreed that the work of getting all their samples labeled, stored, and evaluated was hampered by lack of funds for people and facilities.

Bass said storing only commercial seed is a matter of philosophy. "If the USDA were to assume the responsibility for all of the things people would like to have saved, we would need many, many times the budget and facilities that are available at the present time," said Bass. "It would be nice to preserve all these things. But we need to preserve first those things on which the life of people depends, the food crops particularly."

On the adequacy of storage, White said that while he had not visited all the collections, at the ones he had visited the storage "was quite good at some, and just adequate" at others. He said that much material in the system lacks labeling.

Experts agree that the heart of the international seed wars is national pride and a desire to gain the ability to store and breed seeds as the developed countries do.

Seeds collected, for example, on a hillside in Peru have crucially important traits and "are priceless in some vague sense," said one expert. "They are worthless commercially until they are bred and cross-bred and finally drop out of the other end of the pipeline" as salable seeds.

A State Department official familiar with the FAO battles said the current system is "an incredibly open system in terms of exchange." Most nations can get seed to work on, but simply don't have the technology to make them worth paying for in the marketplace.

In fact, the countries with the tightest restrictions on their germplasm are those of the Third World. Cuba forbids the export of tobacco seed, Ethiopia forbids export of coffee seed. Brazil and other Latin-American nations have some restrictions.

Experts on differing sides say that Third World nations want to have a fair value placed on their plant resources, and help to do better breeding of their own.

"One man in the Middle East said to me, 'How is it that we as farmers spent 10,000 years cultivating and breeding our plants, then someone else from the West works on it for 10 years, and only then is it called "intellectual property" and becomes patentable,' " said Mooney.

Mooney said that it is not always the case that seeds before crossing are valueless. He said a family in Mexico discovered a perennial that was an ancestor of corn. Because corn is an annual plant that must be reseeded every year, the gene in that ancestral plant that makes it a perennial could have been a billion-dollar gene if the farmer who found it had realized he could sell it.

But the problem with the international system as Third World nations see it is that it benefits chiefly the developed nations while using resources of the Third World.

A State Department official describing the situation said the difficulty is not really with the operation of the current system but with the desire of the Third World "to gain political control over the system It is obscene that while people are dying of hunger in Africa these peoples want to spend money in more apparatus . . . in setting up another system."

The international system is run by a group called the International Board for Plant Genetic Resources, funded by the FAO, the U.N. development program and the World Bank. Critics charge that the group is "in the pocket of the West."

In 1983 the Third World tried to dismantle the system and set up its own within the United Nations but with different rules. That effort failed, but what resulted was an "undertaking," or set of nonbinding principles about the running of an international system, to which U.N. countries were asked to add their signatures.

The undertaking said that germplasm should be held as "a common heritage" shared by all. Third World nations sought to get not only original seeds but also wanted to "share" seeds that companies have developed by breeding.

The final version has such a clause, allowing access to strains being developed or already patented by companies around the world. About 100 nations have signed the undertaking, though many signed with strong reservations expressed. The United States and a few other nations did not sign.

In the meeting that is to begin Saturday, the Third World nations are expected to press for the undertaking to be made a legal document, not just an agreement in principle.

State Department officials said the Third World efforts will be vigorously opposed. The United States may ignore the new system if it is approved, or end its support of the FAO altogether, State officials said

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