



Innovative Research Benefits U.S. Producers and Consumers of Beans

USAID-sponsored research on beans generates innovations that benefit U.S. producers and consumers of beans. Farmers in the United States grow nearly three million acres of dry beans and related crops, such as lentils and chickpeas, in the pulse family. American consumer demand for pulse-based food products, such as hummus, has grown from \$10 million in the late 1990s to \$700-\$800 million in recent years.

USAID has long supported a bean research program at several American universities whose scientists have developed most bean varieties grown commercially in the United States. The program, originally known as the Bean/Cowpea Collaborative Research Support Program (CRSP) (1978-2012) and now known as the Feed the Future Innovation Lab for Legume Systems Research (2013 to present), is based at Michigan State University.

From the perspective of the U.S. bean industry, an important function of the bean research program is the collection of germplasm from around the world. The germplasm collection provides the bean researchers with an expanded range of genetic options for breeding beans with desired characteristics. Using this germplasm, the researchers have developed new high-yielding bean varieties with resistance to economically important bean diseases. USAID's long-term support of the bean breeding program has resulted in the development of 40 bean varieties now commercially grown in the United States, all with one or more parents from the program. Among these new varieties, the Zorro variety accounts for an estimated 35 percent of total U.S. black bean acreage, while the Zenith variety accounts for 20 percent of the acreage. These varieties are attractive to farmers because of an estimated yield gain of 10 percent over other black bean varieties.

State and national dry bean industry associations in the United States (Michigan Bean Commission, US Dry Bean Council, and American Pulse Association) composed of growers, traders, and processors are strong supporters of the USAID-sponsored bean research program because of research and specific initiatives that have contributed to the growth and future viability of the bean industry. Funding for bean research is scarce, and no other federal agency provides this level of support for public-university bean research in the United States. The USAID funding has enabled administrators of U.S. universities to make strategic faculty hires who support the dry bean industry in their regions while enhancing the international engagement of the universities.

At least 13 common bean varieties and 2 blackeye pea varieties were developed by researchers in the USAID bean program, registered as intellectual property, made available to growers, and are being commercially grown in the U.S. (beans in Michigan, Minnesota, Nebraska, North Dakota and cowpea in California).



U.S. foreign agricultural assistance stimulates export of agriculture-related services

PICS Global, Inc., is an American company that manufactures and distributes postharvest technologies targeted to smallholder farmers. The company's primary product is a low-priced grain storage bag originally developed by Purdue University and partially funded through the CRSP bean research program. USAID funds supported field research in Cameroon on weevils that destroy stored beans and laboratory research at the Purdue University campus in Indiana on hermetic plastic bags designed to kill the insects through oxygen deprivation. To design bags that were effective and yet as inexpensive as possible, the researchers developed an ultrasonic device capable of monitoring insect activity inside the sealed bag. After the technology was perfected, the university began licensing manufacturers to produce and distribute the Purdue Improved Crop Storage (PICS) bag. In 2017 PICS Global, a private company that describes itself as a social enterprise, was formed to handle the technology licensing and to provide technical and marketing services to the licensees. Currently, PICS bags are produced by seven companies, sold annually to three million farmers in 58 countries, and used to store many crops including beans, corn, sorghum, rice, and coffee.

U.S. foreign agricultural assistance investments bring substantial economic, health, and security benefits to the United States. This brief highlights a report commissioned by the Board for International Food and Agricultural Development (BIFAD) on how the United States benefits from agricultural and food security investments in developing countries. The full report is available for download at: <https://doi.org/10.2499/p15738coll2.133419>

This report was prepared for the International Food Policy Research Institute by David Kraybill and Stephanie Mercier under the direction of Joseph Glauber.

This report is made possible by the generous support of the American people and through support provided in part by the Bureau for Food Security, United States Agency for International Development (USAID), under agreement AID-OAA-A-14-00031 to the Association of Public and Land-grant Universities (APLU). The author's opinions expressed in this publication do not necessarily reflect the views of USAID, the U.S. Government, APLU, or IFPRI.