

Dry Grain Pulses Collaborative Research Support Program (CRSP)

The Dry Grain Pulses CRSP, which supports collaborative multi-disciplinary research between US universities and institutions in Africa and Latin America, focuses on edible grain legumes (primarily common bean, cowpeas, lima bean and pigeon pea). The Pulse CRSP is funded by the United States Agency for International Development (USAID), through the Bureau of Food Security and the Office of Agriculture Research and Technology, that is investing in research and technology dissemination to achieve Feed the Future goals through the CRSPs and the IARCs.

Technical Themes of the Dry Grain Pulses CRSP

- To increase productivity and reduce risks for enhanced profitability and competitiveness of bean, cowpea and other grain legumes,
- To increase the utilization of bean and cowpea grain and food products so as to expand market opportunities and improve community health and nutrition,
- To improve the performance and sustainability for bean and cowpea value chains, especially for the benefit of women, and
- To increase the capacity, effectiveness and sustainability of agriculture research institutions which serve the pulse sectors and developing country agriculture in Sub-Saharan Africa and Latin America.



Dry Grain Pulses CRSP Participant Countries

- West Africa: Benin, Burkina Faso, Mali, Niger, Nigeria, Senegal
Central Africa: Kenya, Rwanda, Uganda
Southern Africa: Angola, Mozambique, South Africa, Tanzania, Zambia
Latin America: Ecuador, Guatemala, Haiti, Honduras, Nicaragua



Contact Information

Dry Grain Pulses CRSP
Director- Dr. Irvin Widders
321 Agriculture Hall
Michigan State University
East Lansing, Michigan 48824
USA
Email: dgpcrsp@msu.edu
Web: www.pulsecrsp.msu.edu

Dry Grain Pulses - An Agricultural Solution to Global Nutrition and Health Challenges



Dry Grain Pulses Collaborative Research Support Program



What are Pulses/Grain Legumes?

Dry grain pulses represent a diverse group of edible grain legumes including common bean (*Phaseolus vulgaris*), cowpea (*Vigna unguiculata*), lima beans (*Phaseolus lunatus*), and pigeon pea (*Cajanus cajan*).

Why are Dry Grain Pulses/Legumes Important?

1. Grown widely by resource-poor small-holder farmers. Grain legumes are grown on almost 200 million hectares worldwide, and thus are important agricultural commodities in most developing countries in Africa, Asia and the Americas. A high percentage of small-holder resource-poor farmers plant grain legumes because they can be both eaten as well as sold in local markets.

2. Pulses are considered a “women’s crop” in many countries. In certain regions of the world, pulse crops such as beans and cowpeas are principally grown by women due to the ease of culturing pulses, the ability to harvest different plant parts (leaves, immature pods and peas, dry grain) for household consumption, and the opportunity to add-value and market locally to generate needed cash.

3. Enhance sustainability of cropping systems. Grain legumes are vital components of sustainable intensified cropping systems, improving soil fertility and increasing the yields of subsequent crops through biological nitrogen fixation.

4. Reduce vulnerability to climate change. Pulse/grain legume crops have a low water “foot print” for grain and protein production. Certain pulse crops such as cowpea, lima bean and chickpea are among the most heat- and drought tolerant crops. Improved bean varieties have been developed for rain-fed agriculture systems with early maturation traits that enable it to produce a reasonable yield during low rainfall years.

5. Dry grain pulses have high value in domestic and international market. International and domestic market prices in developing countries for dry grain pulses are high both in absolute and relative terms. Domestic market demand for pulse grain is considered strong as almost all developing countries in Africa and Latin America must import grain to meet internal food security needs. With projected future growth in pulse grain demand and the resulting prices of grain, pulses should be profitable to grow for farmers.

Why are Dry Grain Pulses a Solution to Global Nutrition Concerns?

1. Pulses/legumes are “staple” crops that contribute to household food security. Pulses are a dominant “staple” food crop produced and consumed by farmers in association with a cereal or a root crop in many regions of Africa, Asia and the Americas. Traditional diets in these areas include a pulse accompanied by a starchy food. Certain early-maturing pulse crops are highly valued because they also provide leaves, immature pods and “peas” (immature seeds) for household consumption during a “hunger period”, prior to the maturation of the cereal or root crop. Dry grain of pulses can be readily stored for extended periods of time, important for food security during dry or winter periods when crops cannot be grown.

2. Dry Grain Pulses/Legumes are an affordable source of protein in diets. Dry grain pulses are called the poor persons’ meat because they are the principal and most affordable source of protein in the diets of many rural and urban poor in Africa, Asia and the Americas. Typical pulse grain contains 22 - 28% protein (on a dry weight basis) which can be enhanced through genetic improvement.

3. Pulse grain is nutritionally dense contributing to nutritional security. Pulse grain is considered by dieticians to be nutritionally dense containing protein, complex carbohydrates, essential micro-nutrients (Fe, Zn, etc.), dietary fiber, vitamin B and anti-oxidants, important in the nutritionally challenged diets of both rural and urban poor.

4. Pulses promote good health. According to the World Health Organization, the incidences of chronic diseases have reached “pandemic” levels in middle and low income countries. Regular consumption of beans in diets (>three times weekly) has been shown to significantly reduce the risks of chronic diseases including type2 diabetes, cardiovascular disease and some forms of cancer. Pulse-based foods have also been shown to be effective in nutritional rehabilitation of children including HIV+ children.



Future Challenges

1. Substantially increase pulse grain productivity in low-input cropping systems to ensure farm profitability and the availability of grain in the market place at affordable prices for both rural and urban poor.
2. Better understand the nutritional and health promoting attributes of pulses in diets.
3. Link productivity gains of pulses with nutritional outcomes in food insecure countries
4. Promote appropriate grain legume crop species for specific cropping systems in response to climate change projections so as to reduce vulnerability to food and nutritional insecurity.
5. Increase the sustainability enhancing attributes of pulses (e.g., biological nitrogen fixation capacity, etc.) in cropping systems.

Grain Legumes are Important in USAID’s “Feed the Future” Strategy for Global Food Security.

FtF Research Priorities:

- Transforming production systems
- Advancing the productivity frontier
- Enhancing food safety and nutritional value of diets