

## Feed the Future Research Strategy Legume Research Investments & HICD



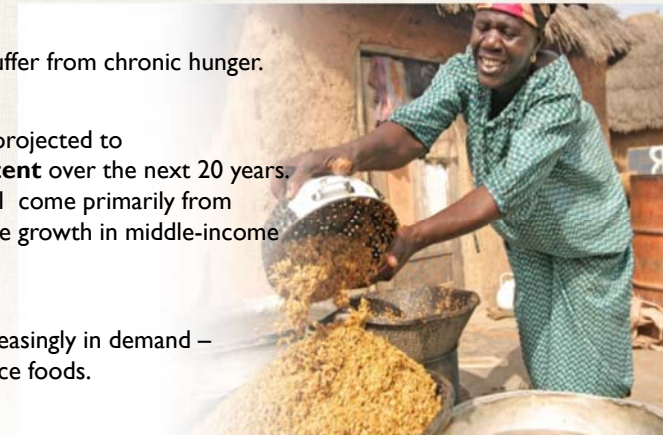
**Tracy Powell, PhD**  
**Bureau for Food Security**  
Legume Innovation Lab Global PI Meeting  
May 12-16, 2014

## The Global Challenge: Achieving Sustainable Food Security

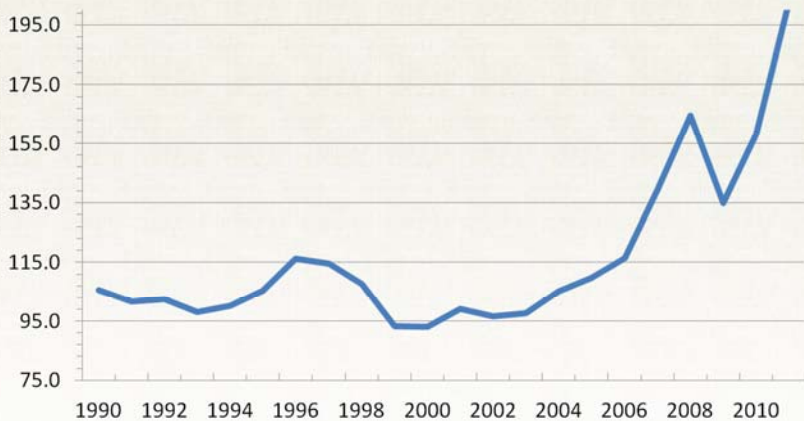
•925 million people suffer from chronic hunger.

•Demand for food is projected to **increase by 50 percent** over the next 20 years. Increased demand will come primarily from population and income growth in middle-income countries.

•Diversified diets increasingly in demand – especially animal source foods.



## Global Food Prices



Source: FAO

## Our Response

### Feed the Future

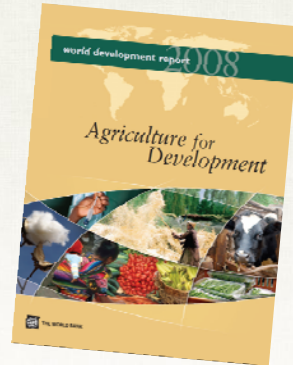


Photo: Borlaug Foundation

- ✓ Announced in 2009 at G-8 Summit in L'Aquila, Italy, with \$3.5 B investment (\$18 B total)
- ✓ Objectives: reducing poverty and improving nutrition
- ✓ Country-owned, country-led
- ✓ Agriculture-led economic growth strategy, staples focus
- ✓ S&T for development

## Why Agriculture?

“GDP growth originating in agriculture is **at least twice** as effective in reducing poverty as GDP growth originating outside agriculture.”



1. *Help farmers produce more*
2. *Help farmers get more food to market*
3. *Support Research & Development to improve smallholder agriculture in a changing climate*
4. *Strengthen Regional Trade*
5. *Create a better Policy Environment*
6. *Improve Access to Nutritious Food and Nutrition Services*



## Focus Countries



## New Alliance for Food Security & Nutrition

- ✓ African countries commit to **policy changes** to increase private investment
- ✓ More than **140 companies (African and international)** have committed over **\$3.75 billion**
- ✓ Ten countries involved: **Ethiopia, Ghana, Tanzania, Benin, Burkina Faso, Côte d'Ivoire, Malawi, Mozambique, Senegal, and Nigeria**

## S&T for Development

- Feed the Future Research Strategy
- Food Security Innovation Center
  - USAID's implementation of the Feed the Future Research Strategy

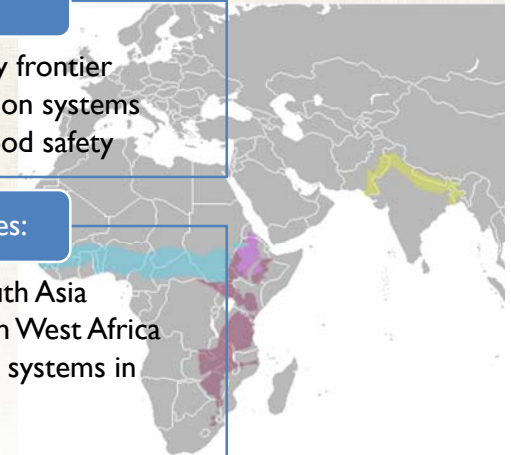
### Overarching Goal: Sustainable Intensification

#### Three research themes:

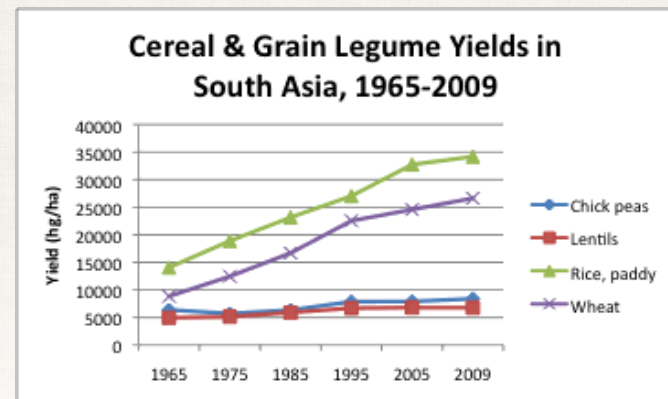
- Advancing the productivity frontier
- Transforming key production systems
- Improving nutrition and food safety

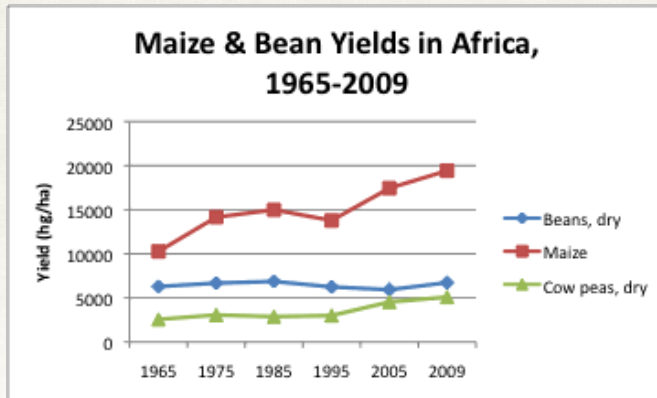
#### Anchored by key geographies:

- Indo-gangetic plains in South Asia
- Sudano-sahelian systems in West Africa
- Maize and livestock mixed systems in East and Southern Africa
- Ethiopian highlands



### Cereal & Grain Legume Yields in South Asia, 1965-2009





FAOSTAT database. 2011

## The Case for Enhancing Grain Legume Productivity

Integrates sustainable intensification goals with **nutrition** and **income** objectives of FTF

- **Human nutrition:** provide essential amino acids (lysine) and micronutrients (Fe, Zn) in the diet
- **Sustainability:** >40 million tons of atmospheric N fixed by legume crops annually (Smil, 1999)
- **Income:** N<sub>2</sub> fixation in soybean > 300 kg/ha/yr; leading to \$6.6 billion in the Brazilian economy as soy contributes up to 94% of total plant N.

Source: CGIAR Grain Legumes Research Program

## Program for Research on Legume Productivity

**Goal:** Increase productivity and availability of legumes

### Context

- Global reach: 195M ha of legumes under production
- Demand expected to grow 1% per year through 2020

### Challenge

- Abiotic stresses decrease legume yields by up to 40%
- Pests and diseases decrease yields by up to 35%
- In South Asia, current cereal:legume ratio 9:1, ideal ratio 2:1
- In West Africa, N depletion in the savanna maize-based systems ~36-80 kg N/ha/yr



## Program in Legume Productivity

- Elevate legumes as major investment area under the research strategy
- Tackle yield, climate resilience and biotic stresses for staple legumes
- Engage private sector and ARIs capacity in transgenic and emerging genomic tools
- Legumes must be integrated to reduce further depletion and improve system productivity

Source: CGIAR Grain Legumes Research Program

## Innovation Labs

### 1. Program for Research on Climate Resilient Cereals

- Sorghum and Millet
- Climate Resilient Wheat
- Applied Wheat Genomics
- Climate Resilient Millet
- Climate Resilient Sorghum

### 2. Program for Research on Legume Productivity

- Grain Legumes
- Peanut Productivity and Mycotoxin Control
- Climate Resilient Cowpea
- Climate Resilient Beans
- Climate Resilient Chickpea
- Soybean Value Chain Research

### 3. Program for Advanced Approaches to Combat Pests and Diseases

- Rift Valley Fever Control in Agriculture
- Genomics to Improve Poultry

### 4. Program for Research on Nutritious and Safe Foods

- Nutrition in Africa
- Nutrition in Asia
- Aquaculture & Fisheries
- Adapting Livestock Systems to Climate Change
- Horticulture
- Post-Harvest Loss

### 5. Program for Sustainable Intensification

- Sustainable Agriculture and Natural Resources Management
- Integrated Pest Management
- Small-Scale Irrigation

### 6. Program for Markets and Policy Research and Support

- Assets and Market Access (AMA)
- Food Security Policy

## Human & Institutional Capacity Development

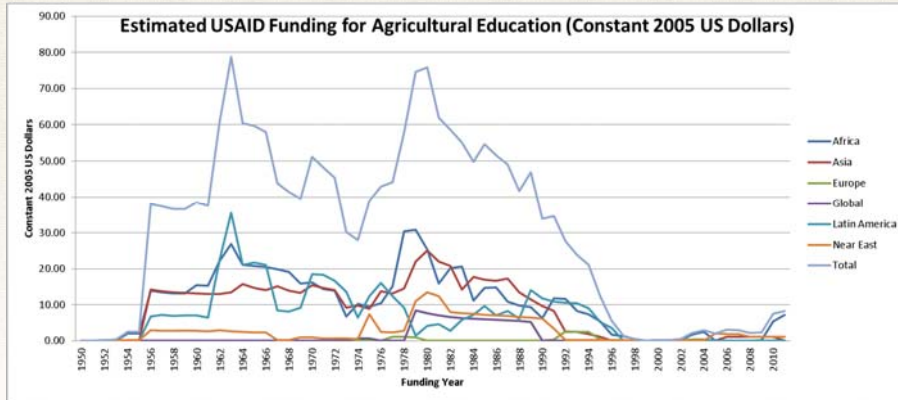
- ✓ Centrality of capacity development to FTF
- ✓ History and impacts
- ✓ Changing environment
- ✓ Capacity development approach
- ✓ Key programming
- ✓ Future guidance

## Centrality of Capacity Development to FTF

- Capacity development is needed for effective performance across the sector
  - Research, extension, agribusiness, universities, policy institutions, ministries, and others
- New capacities are needed for developing countries to address opportunities and challenges in agriculture
  - Globalization, new markets, new technologies, climate change
- Capacity creates the conditions where aid is no longer necessary in the countries where we work

## History and Impacts

- **1950s:** Early programs established ministries, extension services, agricultural banks, marketing systems, land tenure agencies, universities, etc.
- **1960s & 70s:** Investments in long-term training, public sector strengthening
  - National Ag Research Systems (NARS) support; degree programs
- **1990s & 2000s:** Declining investments in universities and NARS, increasing support to private sector
  - Emphasis on primary education; parallel deterioration of in-house agriculture capacity
- **Late 2000s:** Renewed interest in human and institutional capacity development and agricultural education and training



## Supportive Environment for Capacity Development

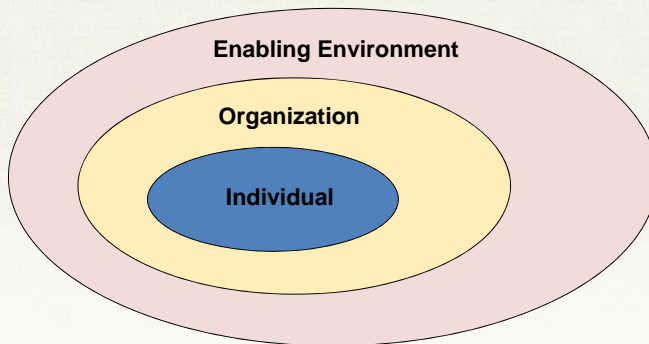
### USAID changes:

- **2008:** Agency-wide HICD policy
- **2010:** USAID Forward (IPR2)
- **2011:** Administrator's charge to BIFAD
- **2011:** USAID Education Strategy
- **2012:** Gender Equality and Female Empowerment policy

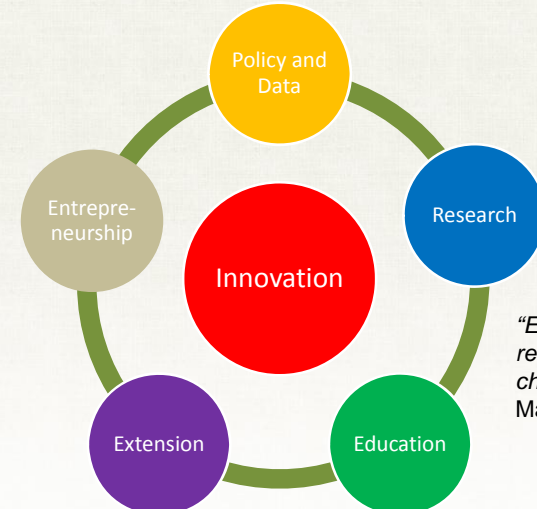
### External processes:

- **2010:** CAADP/Kampala Ministerial

## Multiple Levels of Capacity Development



## Approach – Investing in “Change Levers”



*“Everything is the result of a change.”*  
Marcus Aurelius

## Capacity Development in Research

### Research

#### Women-focused

- African Women in Agricultural Research & Development (AWARD)

#### Long-term Degree Training

- Borlaug Higher Education for Agricultural Research & Development (BHEARD)
- Borlaug Leadership Enhancement in Agriculture Program (LEAP)

#### Degree Training for U.S. Students

- US Borlaug Fellowship in Global Food Security

#### NARS Strengthening Planning

- March 2013 Expert Roundtable and June 2013 Ag Sector Council



## Capacity Development Programs Target "Change Levers"

- **Research:** AWARD, Borlaug LEAP, BHEARD, US Global Fellows
- **Education:** InnovATE and TEAM Africa
- **Extension:** Modernizing Extension and Advisory Services (MEAS), mFarmer
- **Agribusiness/Entrepreneurs:** Africa LEAD, Cooperative Development Program (CDP)
- **Policy and Data:** USDA capacity building of national statistics services (NASS/ERS); Enabling Agricultural Trade (EAT), Program for Biosafety Systems (PBS)

## Borlaug 21<sup>st</sup> Century Leadership Program



Photo: Borlaug Foundation

- New 5-year Feed the Future program
- Strengthens human & institutional capital base to promote innovation
- Critical entry points:
  - Educational institutions
  - Developing researcher capacity

## Purdue US Borlaug Fellows Program

Center for Global Food Security

**U.S. Borlaug Fellows Program**  
About Dr. Norman Borlaug  
Graduate Research Fellowship Grant Program

- Request for Applications (RFA)
- How to Apply
- Application Evaluation

Summer Institute on Global Food Security  
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FOOD SECURITY

**The U.S. Borlaug Fellows in Global Food Security Program**

The U.S. Borlaug Fellows in Global Food Security program is funded by the United States Agency for International Development (USAID) to expand the pool of U.S. food security professionals who have the scientific base needed to effectively study and manage the global landscapes in support of sustainable food systems. The program is comprised of two key elements: a Graduate Research Fellowship Grant Program and a Summer Institute on Global Food Security.

The intended objectives of the U.S. Borlaug Fellows in Global Food Security program are:

- To help train a new generation of interdisciplinary U.S. scientists with fluency in global food security and the skills to strengthen the capacity of developing countries to apply new innovations and technologies,
- To support the key research themes of the Feed the Future initiative and increase understanding of the links between agricultural production, nutritional status, natural resource conservation, and development,
- To foster cross-cultural understanding and dialog and the kinds of long-term relationships that are developed through on-the-ground collaborative work, and
- To work with international partners to sustain a growing global learning community.

**Please See our Feed the Future Website**



**Thank You!**

[www.feedthefuture.gov](http://www.feedthefuture.gov)