A SMART Approach To Sustainable Crop Production In Developing Countries

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Background

• Family Farm
• General Agronomy Background
• Weed Science Background
  – Weed Control Programs
  – Transgenics
  – Remote Sensing
  – Off-Target Deposition
  – Conservation Tillage
Educational Background

• B.S. Agriculture – University of Arkansas @ Monticello
• M.S. Agronomy – University of Arkansas
• Ph.D. Crop Science – Oklahoma State University
International Agriculture

- No Past Experience
- Asked if I wanted to participate on US-AID Project related Soybean production in Ghana
- Lead writing effort for Applied Agronomic Objectives on Proposal
Four Step Approach to a Successful System

- Problem Diagnosis
- Method Evaluation
- Program Selection
- Program Execution
Initial Challenges

• Determining Needs
• Identifying Implementing Partners
Problem Diagnosis

- General Agronomics
- Germplasam
- Use of Soil Amendments
- Use of Inoculums
- Use / Availability of Various Pesticides
- Storage
- Marketing
- Utilization
Program Selection
SMART

- Soybean
- Management by
- Application of
- Research and
- Technology
Program Execution
Realistic Expectations

- Will not immediately solve all problems
  Multi-component approach is generally better than single
  Elimination of one component of a total program will result in another component having to be intensified
- Must have flexibility to change
Goals

- Raising incomes
- Increasing food security
- Improving household nutrition

Through this process the incomes of smallholder farmers will increase and large volumes of low cost, high quality protein and oil will be delivered to rural and urban communities in sub-Saharan Africa.
The approach of the Foundations Project is based on four pillars that comprise the essential components of sustained production, improved household nutrition and sustainable market linkages for soybean farmers.
Four Pillars of Proposal

I. Genetic Improvement
II. Enhanced Crop Productivity and Quality
III. Nutrition
IV. Value Chains and Socio-Economic Research
SMART Approach

The Foundations Project’s architecture is based on an integrated modular design that maximizes collaboration among consortium members and stakeholders with a novel SMART Farm concept (Soybean Management with Appropriate Research and Technology) as its platform.
FUNDING

• 10 Million Hard Funding
• 15 Million available through USAID Missions
SMART Approach

• The modularity allows specific programs to be expanded, extended, and replicated in other regions and countries as additional funding is accessed.

• Expanding the success of the Foundations Project will be achieved through working with our long term partners in the region.
Pillar II, Crop Productivity, Seed Management, and Quality:

• Our research activities and procedures will be demonstrated and disseminated on SMART Farms.
• The first of these SMART Farms will be developed and tested at the Ghanaian Government’s Savanna Agricultural Research Institute (SARI) in northern Ghana.
• Additional SMART Farms can be established as supplementary funds are accessed.
Pillar II, Crop Productivity, Seed Management, and Quality:

• The SMART Farm will be the center for the Foundations Project’s research on best practices, gender equity, and soybean economic and environmental sustainability.

• The SMART Farm will be the region’s only soybean research, extension, and commercialization center.

• The Ghanaian SMART Farm will be a hub for the development, testing and extension of soybean production.
Initial Challenges

- Determining Needs
- Identifying Implementing Partners
Savannah Agricultural Research Institute (SARI)

- Located at Nyankpala
- Near Tamale (3rd largest city)
Implementing Partner (SARI) Nicholas Ninju Denwar
Plan of Work

- Hired George Awuni
- Trained prior to planting season
- Currently on site
Geographical Mandate

41% land mass of Ghana
Experiments

• Germination Test
• Planting Date
• Varieties
• Amendments
  – P
  – Inoculum
• Planting Methods
Seed Quality
Seed Quality
Germination Test
Soil Sampling
Inoculum Usage
Nodulation Evaluations
Phosphorus Sidedress Application
Identified Needs

- Equipment
  - Planter
  - Harvest Equipment (cutters etc)
  - Vehicle (for George)
- Quality Seed Sources
- Inoculum
- Extension Efforts
Identified Challenges

• Proximity (Lack of)
• Costs of shipping & importing equipment
• Infrastructure needs at test sites
  – Work & seed processing area
Thank You!

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