

Education & Development

Alice N. Pell, Cornell University


University education for development at local and university levels

Education for the Future

- In 25 years, will > 90% of people in Southern Sudan be involved in agriculture?
  - What skills will be needed by agriculturalists?
  - What skills are needed for transition to other sectors?
- Innovative teaching methods
- Cooperation between adult, 1^{ary}, 2^{ary} & 3^{ary} education






Complex Dynamic Systems Require Integrative Skills

Crops

Crop Residues

Trees

Animals

Soil

Manure

Pasture

Fuel

People (income, education, health, etc.)

Remittances Off-farm employment

Students as Trees

- Learning trees with disciplinary depth (trunk) & academic breadth (branches)
  - Practitioners and researchers
  - Scientific excellence
- Cross-cultural education and research
- Research/education to address persistent and important issues

Education, the Environment and Development in Ethiopia

MPS Program in Bahir Dar

- Cornell MPS program entirely in Ethiopia funded by the World Bank
  - MPS for development practitioners (19 students in group 1 and ~20 in group 2)
  - Integrated watershed management (interdisciplinary): hydrology, soil science, education, economics etc.

Problems in the Lake Tana Basin

- Erosion

- Water Quality

- Poverty

- Low Crop Yields/Soil infertility/Variable rainfall








Food Security

Cornell-Ethiopia Master's Program
Bahir Dar, Ethiopia

Cornell /Bahir Dar Courses

- Watershed design, measurement & planning
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-
-
-
- and waterborne pathogens
- Livestock in highland farming systems
- Methods in community
- systems
- Seminar/ Proposal prep.

24 course credits and 6 project/thesis credits

Courses complete by July, 2008

Field work complete by December

Projects complete by April-May 2009

Graduation July 4, 2009

Bahir Dar Research Projects

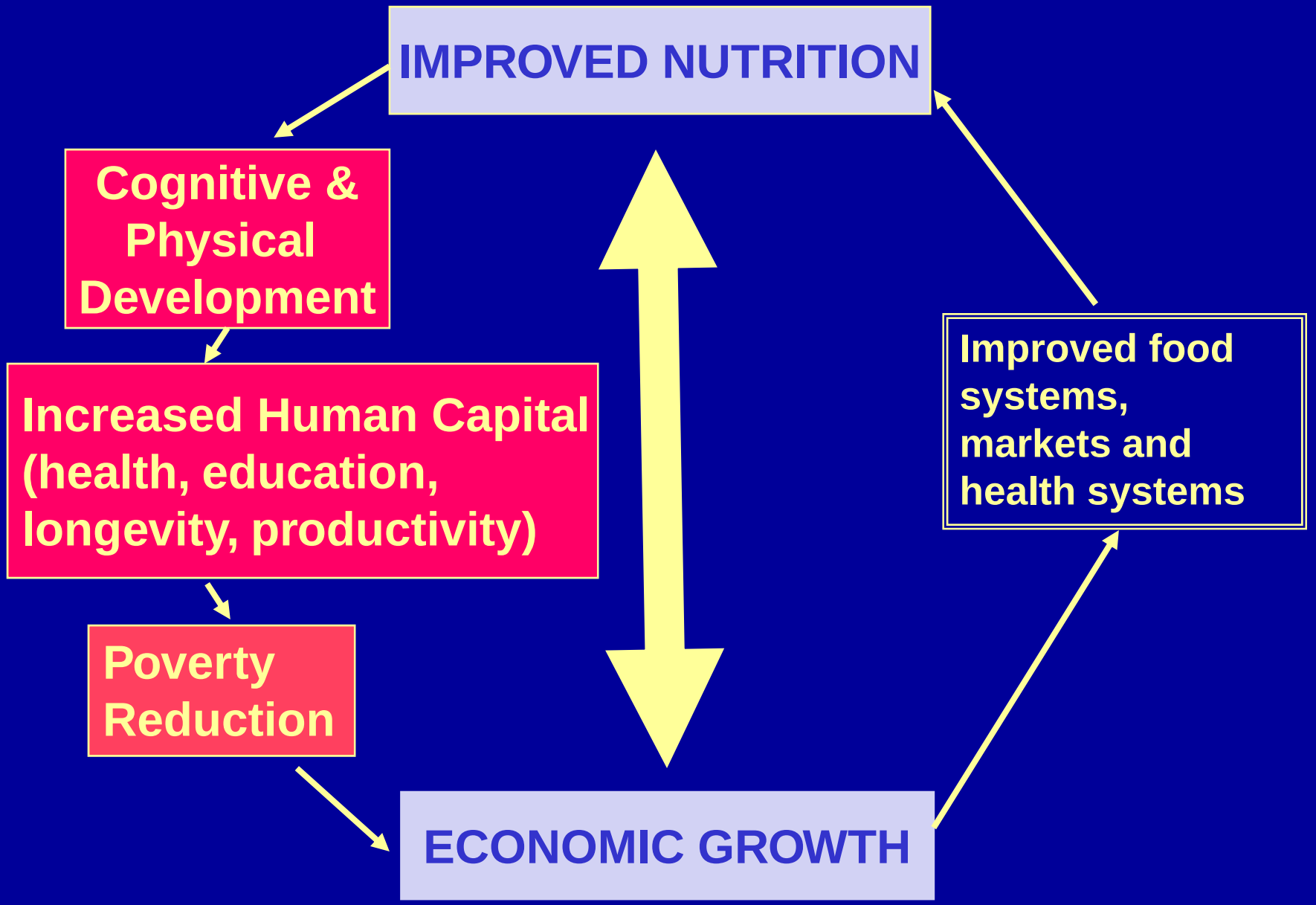
- Hydrogeological investigation for effective use of groundwater in areas surrounding Lake Tana
- Gully formation
- Environmental challenges and socioeconomical and institutional issues at Lake Hayq, South Wollo, Ethiopia
- Impact of land use and land cover changes on soil erosion
- Rural water supply and sanitation: Community-managed supply and sustainability assessment

Bahir Dar Program Future

- Transition from Cornell to Bahir Dar program after cohort 2 or 3
- Network of African universities working on water issues (Ethiopia, Sudan, Kenya, Tanzania)
- Involvement of Ithaca-based Cornell graduate students (3 this summer)

Field Education

CRS-Cornell-African University Program on Smallholder Market Engagement



Martorell, 1996

Connecting Farmers to Local Markets

Training in business, leadership and organization, marketing and agricultural production to permit smallholders to participate in formal markets


Are Traditional Leafy Vegetables (TLVs) nutritious and profitable?

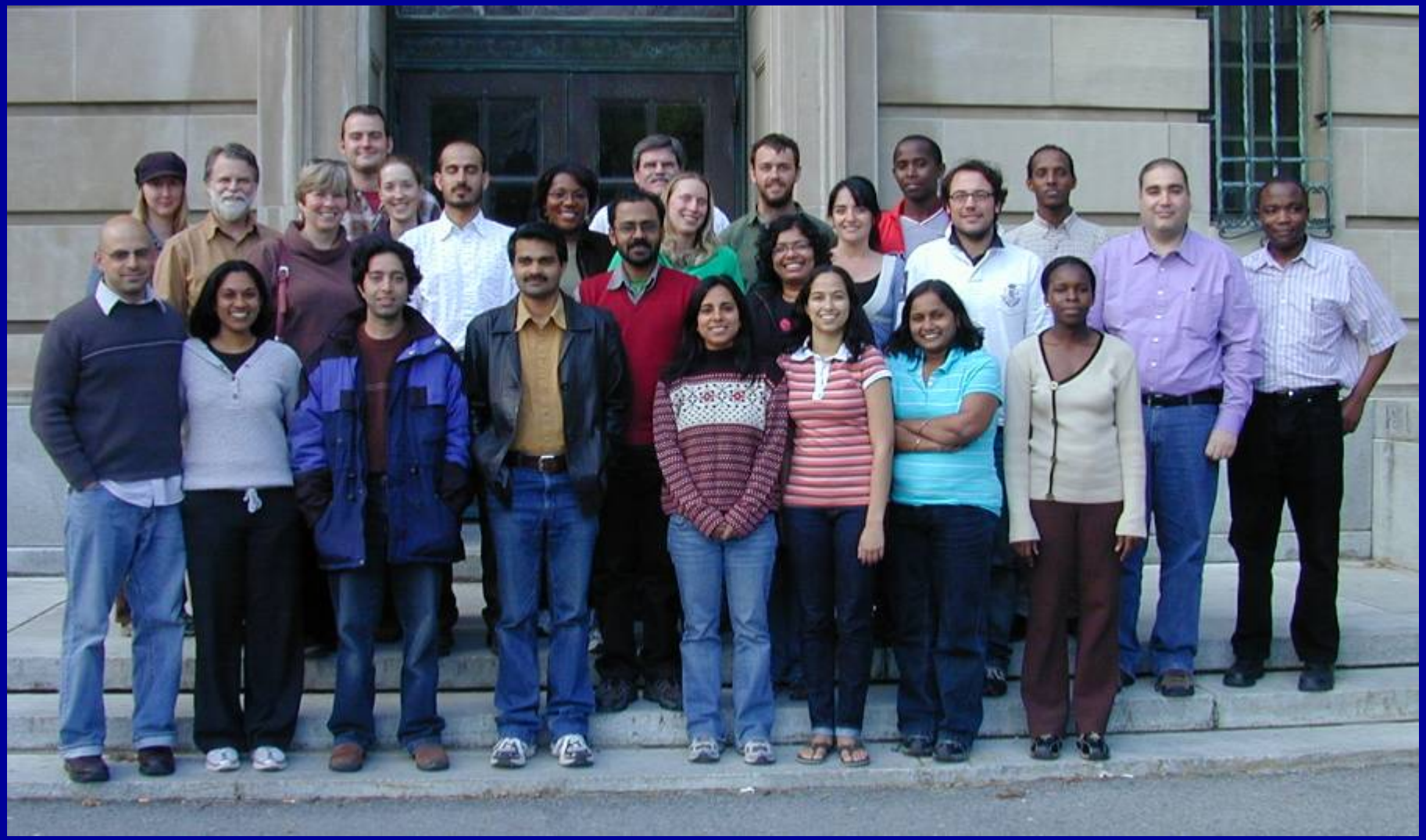

Anna Herforth

Cornell Class & Trip

- 3-credit course to develop materials for smallholder farmers to increase market access (21 Cornell graduate students)
- 4 MPS students worked with Catholic Relief Services farmers' groups and NGOs to improve skills for market access

Original plan included U. of Nairobi students

Cornell IARD 694 Students & Faculty



Modules on group management, business skills, natural resource management & innovations

70 training sessions in 2 locations in W. Kenya
4 extensive revisions of materials

What's Next?

- Complete evaluating and refining materials for publication as book
  - To be distributed globally by CRS
- Parallel projects with CRS, local universities and Cornell in Senegal, Ethiopia & Guatemala

- Many thanks to Al Kaneb '60 whose generous gift made this project possible

AguaClara

Sustainable, Gravity Powered, Municipal Scale Drinking Water Treatment for Surface Waters

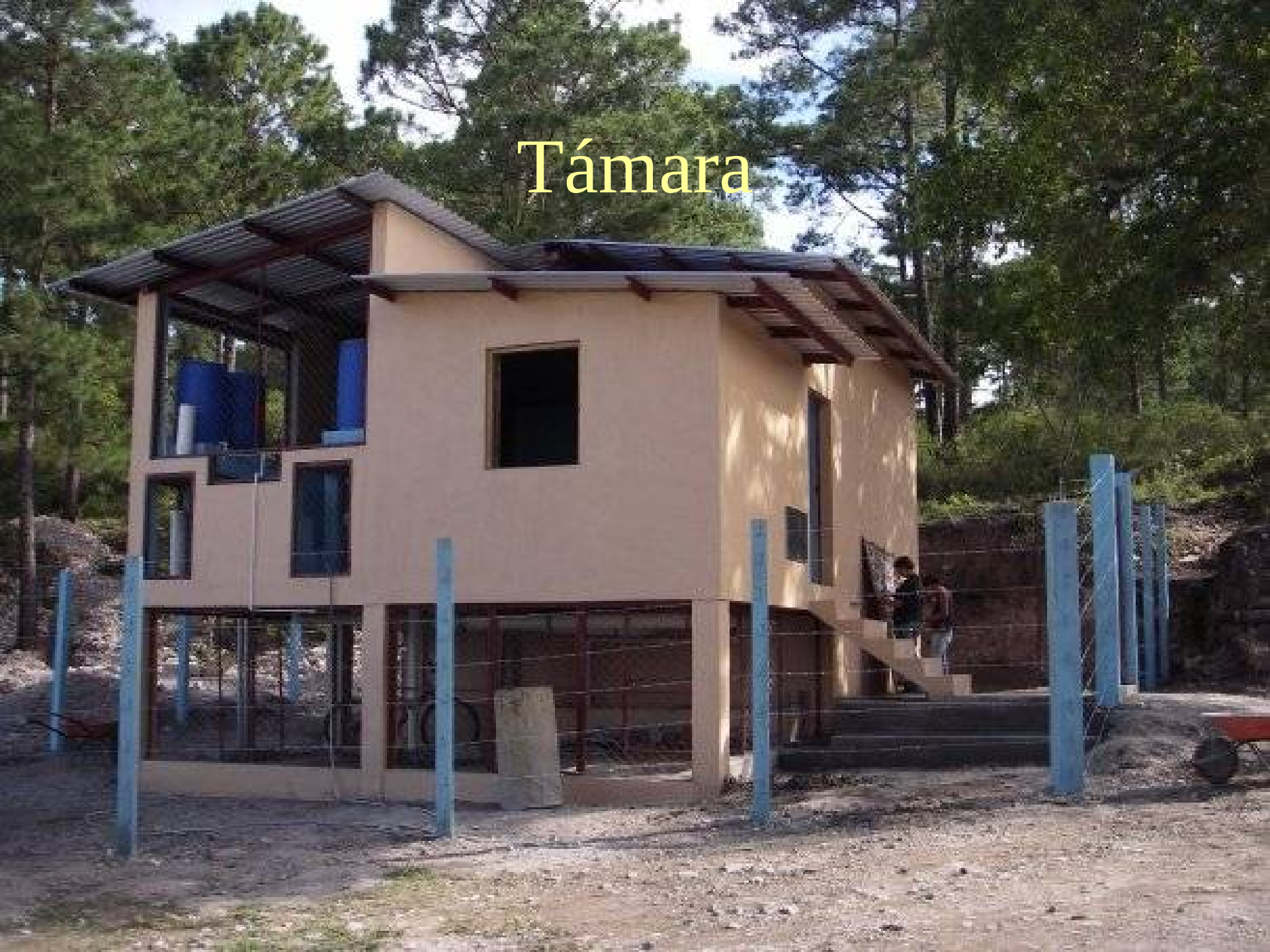
Monroe Weber-Shirk
Senior Lecturer
Civil and Environmental Engineering

What problem are we trying to solve?

- Surface water source used for drinking water
- Preexisting water distribution system
- Inadequate water treatment
- Small communities (1000 to 50,000 people)
  - 27% of Hondurans live in these communities
  - $20 per person per year

What does AguaClara provide?

- Robust sustainable technology through research (bench scale, pilot scale, **full scale**, and computational fluid dynamics)
- Reactor designs
- Capacity building
- Open Source Engineering
- Web-based design tool


Támara

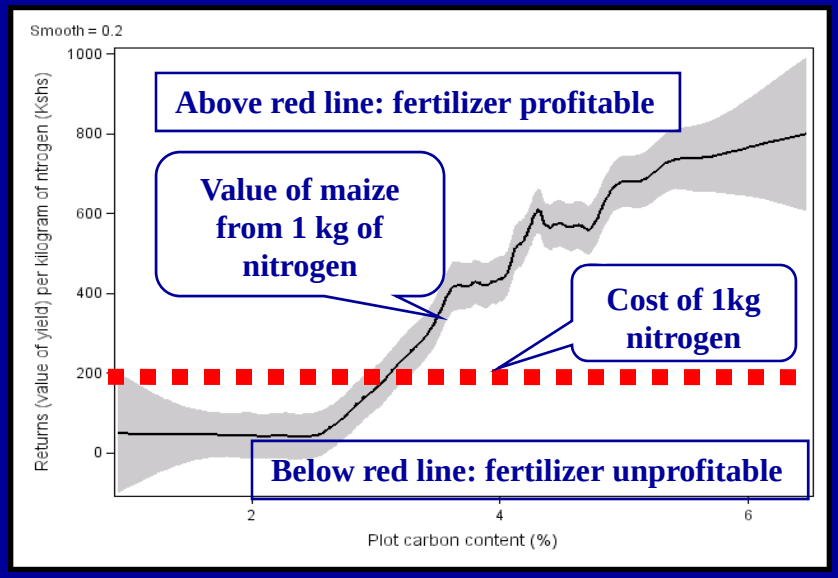
Poor Kenyans

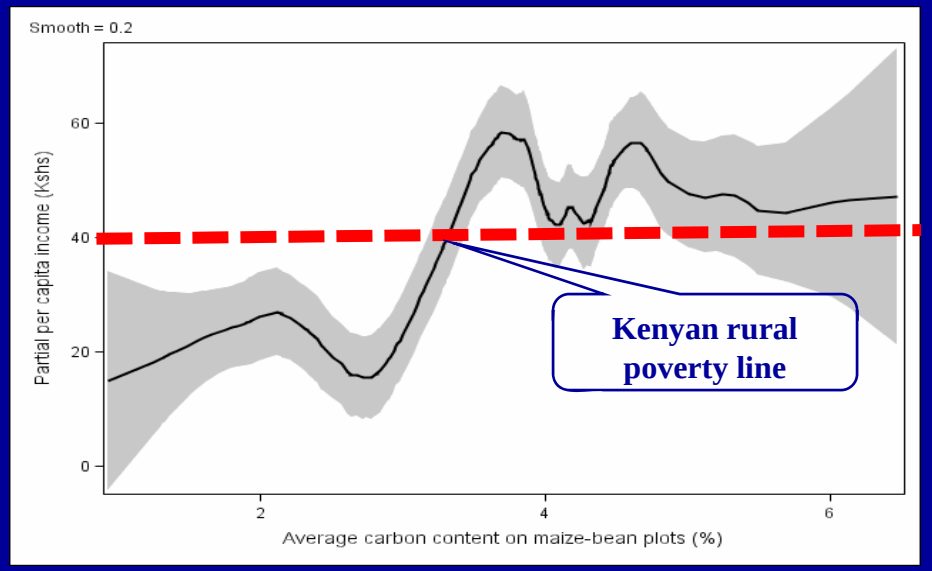
Cornell University

Soil Poverty Traps

Research to identify root causes of problem and prospective solutions:

- **Marginal returns to fertilizer application low on degraded soils and poorest farmers are on the most degraded soils**
- **Need integrated (organic + inorganic) soil fertility management to address; role for organic matter, crop-livestock integration, etc.**





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Thank you for your time, comments and support!