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Nigerian Irrigation Technician workforce development project
a pragmatic model for field scale water and food security
NCTA Key Characteristics:

1. Two-year residential college
2. Agriculture and related disciplines
3. 380 students, 18 faculty
4. Closely tied to industry and employers
5. Practical, applied, experiential academic activities
6. Strong working relationship with land grant university
7. Located in a small rural community – population of 800
Can we feed an additional 2 billion people by 2050?

World Population Growth

Thomas Malthus
Principle of Population
• sooner or later population growth will be checked by famine and disease

Norman Borlaug
The Green Revolution
• Saved 1+ billion people from starvation through modern plant genetics and production techniques.
• Awarded the Nobel Peace Prize in 1970 in recognition of his contributions to world peace through increasing food supply
Causes of increased farm output shifted from more inputs to more efficiency. From 2001-10, improvements in productivity accounted for more than 75% of the total growth in global agricultural output.
The level of U.S. farm output more than doubled between 1948 and 2011 while inputs remained constant.

U.S. agricultural output, input, and total factor productivity, 1948-2011

Indices, 1948=1

Africa missed the Green Revolution

Water is key to African food security


- “Only 4 per cent of (sub-Saharan Africa’s) total cultivated area is irrigated … It is far from achieving its irrigation potential, which is estimated at 42.5 million ha.” Ibid

- “…. (I)rregation alone could increase (agricultural) output by up to 50% in Africa.” Dr Kanayo F. Nwanze, President of the International Fund for Agricultural Development, 2013
Irrigation Technician Program

**Goal**: develop a workforce trained to construct, operate, maintain and repair center pivot irrigation systems in Nigeria.
Borno, Nigeria - project site
Nigeria – some statistics

- Africa’s most populous nation (177 million people)
- Africa’s largest economy
- Economy growing 7% per year driven by agriculture, telecommunications, services
- 62% live in extreme poverty
- 50% Muslim, 40% Christian
- Workforce: 70% agriculture, 20% services, 10% industry
Intended outcomes

• Enhance African food security
• Facilitate economic development in Nigeria and Nebraska
• Improve participant quality of life
• Enhance NCTA student global awareness
• Provide cultural enrichment for Curtis, Nebraska
Key Program Components:

- Project funded by the Nigerian government ($1.9M)
- All participants live together on campus with coordinator
- Six-week sessions, 7 cohort groups of 50 students
- Student selection conducted by US Consulate, Nigerian government, NCTA, private sector partner
- Curriculum customized for Nigerian student needs
- Two faculty dedicated to program
- Community involvement – “humanitarian opportunity”: cultural night, clothes drives, soccer league
Private/public partnership

- Curriculum
- In country support
- Supplies
- Political support
- Funding
- Student selection
Required coursework:

- Mechanized irrigation systems
- Introduction to electrical code
- DC circuit analysis
- AC circuit analysis
- Industrial safety
- Mathematics
- Sales communication
- Human relations
- Welding
## Costs

<table>
<thead>
<tr>
<th>Activity per student</th>
<th>$ per student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition, 6-weeks</td>
<td>$2,151</td>
</tr>
<tr>
<td>Application Fee</td>
<td>$20</td>
</tr>
<tr>
<td>Course Fees</td>
<td>$100</td>
</tr>
<tr>
<td>Tools (owned by student)</td>
<td>$275</td>
</tr>
<tr>
<td>Books</td>
<td>$200</td>
</tr>
<tr>
<td>Room, $1103 per semester/2, Traditional Dorm</td>
<td>$552</td>
</tr>
<tr>
<td>Meals, $2205 per semester/2, 21 meal plan</td>
<td>$1,103</td>
</tr>
<tr>
<td>NCTA International program coordinator</td>
<td>Included</td>
</tr>
<tr>
<td>NCTA program coordinator travel and per diem</td>
<td>Included</td>
</tr>
<tr>
<td>Transportation, graduation, cultural nights, Reinke Manufacturing Company, Inc. tour, UNL tour, Denver tour, etc.</td>
<td>Included</td>
</tr>
<tr>
<td>Round-trip airfare from Nigeria to Denver to be covered by sponsor.</td>
<td>Not included</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$5500</strong></td>
</tr>
</tbody>
</table>
Pragmatic issues

- Budget transfer
- Timeline
- Health concerns – Ebola
- Terrorism – Boko Haram
I want to make a career out of my green thumb.

I want a career that combines business and agriculture.

I'd like to own my own ranch or farm.

I want to help animals.