

# NAFSA Global Learning Colloquium for the STEM Fields

*A Case Study in Cross-  
Disciplinary Global Teaching  
and Learning*

NEW HORIZONS  
IN INTERNATIONAL  
EDUCATION



NAFSA  
2015

Annual  
Conference  
& Expo

MAY 24-29, 2015  
BOSTON, MA USA

NAFSA  
Association of  
International Educators

# NAFSA Global Learning Colloquium for the STEM Fields

## ***Practical partnerships and opportunities for impacting the global food security issue in the classroom and through hands-on international experiences***

Paul Weckler, PhD, PE   Associate Professor  
Biosystems & Agricultural Engineering  
Oklahoma State University



# Global Learning - Engaging Students

## ■ Concepts

- Active Learning
- Experiential Learning
- Service Learning
- Hands-on, Learn by Doing
- **Other...???**

# Global Learning - Engaging Students

## ■ Methods

- Involved Faculty — *essential*
- Classroom Activities
  - *e.g. Capstone Senior projects*
- Study Abroad
  - Short term & long term
- Student Organizations
  - *e.g. Engineers Without Borders*
- Independent Study / Grad School
- **Other...???**

# Global Learning - Involved Faculty

There must be incentives for faculty involvement in International activities. **Any suggestions?**





# Global Learning - Involved Faculty

## ■ Types of activities:

- Study abroad instructor
- Fulbright scholar
- NGO advisor/consultant
- USAID *subject matter expert*
- Visiting faculty/scholar
- Summer semester instructor
- Other..???





# Global Learning - Involved Faculty

There must be **resources** available for faculty involvement in International activities. **From where...???**





# Global Learning - Involved Faculty

Faculty must have a passion for **student involvement** in International activities. **Can this be developed...???**





# Global Learning - Engaging Students

## ■ Specific Examples

- Classroom Activities
  - *e.g. Capstone Senior projects*
- Study Abroad
  - Short term & long term
- Grad School

# Global Learning - Classroom Activities

Capstone senior design projects for Water4.org philanthropy





# Global Learning - Classroom Activities

Capstone senior design projects for Water4.org philanthropy





# Global Learning - Study Abroad

College of Agriculture and Natural Resources  
Oklahoma State University



*“Travel and change of pace impart new vigor to the mind.”*  
— Seneca the Younger, Roman philosopher





**New Zealand**



**Italy**



**Honduras**

## Studying Abroad is a Life-Changing Experience



**Australia**



**Thailand**



**Argentina**



**Ecuador**



**Nicaragua**



# OSU College of Agriculture offers study abroad courses in numerous countries

Ecuador  
Guatemala  
Central Europe  
Australia & New Zealand  
China  
Argentina  
Western Europe  
Canada





# 1<sup>st</sup> Approach to Study Abroad: **Short Term**

- Travel during semester Breaks (winter, spring, & summer)
- Trips usually run 10-20 days in length
- Faculty-led
- Three credit hours with “I” designation
- May focus on a particular aspect of agriculture/natural resources, **but open to all majors across campus**

## 2<sup>nd</sup> Approach to Study Abroad: **Semester Exchange Programs**

- Attending a semester or more of formal coursework at a foreign university
- Takes careful planning- you can work closely with your advisor to find courses that maximize your interests and benefit your academic program
- This is for you if you want to be immersed in another culture or want to learn another language



# 3<sup>rd</sup> Approach to Study Abroad: **Independent and Service Learning**

- Usually offered for the summer
- Requires special planning and arrangements
- This program is for you if you want:
  - a program made just for you
  - an independent experience
  - An outstanding reference on your resume

# How does study abroad fit into an academic program?

All of OSU College of Agriculture's study abroad courses carry an "I" designation

They can be used as electives

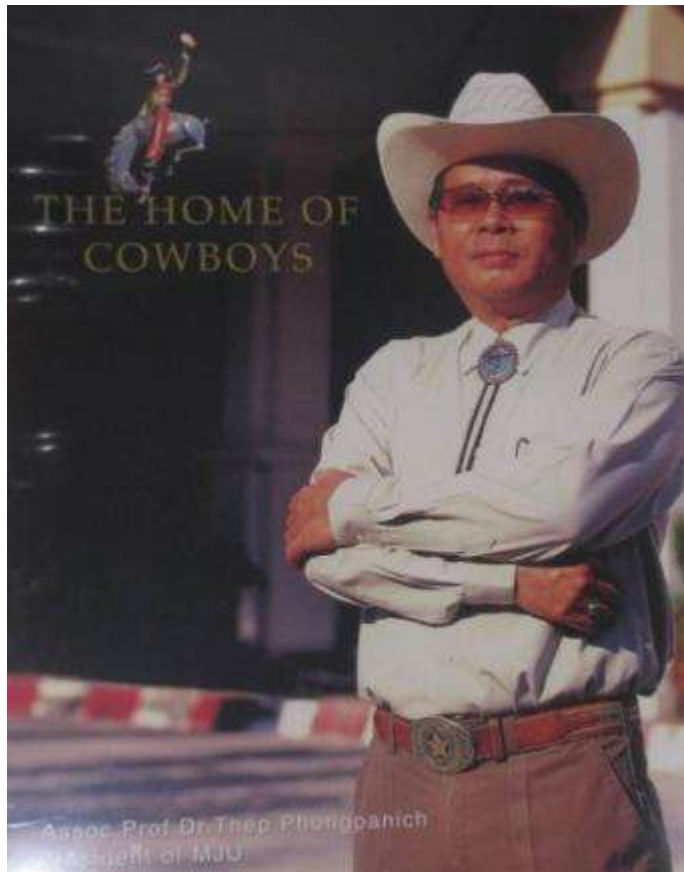
In some cases, it is appropriate to substitute them in other areas of the option requirements

Student planning is important

Advisors can help students to look ahead and plan for study abroad



# Visit with OSU Alumni now serving as university presidents, Drs. Thep, Pongsak & Teravuti





# Experiences of the Oklahoma State University Student Chapter of Engineers Without Borders

**Dr. Paul Weckler**

OSU Dept. of Biosystems and Agricultural Engineering



# Mission

“EWB-USA supports community-driven development programs worldwide by collaborating with local partners to design and implement sustainable engineering projects, while creating transformative experiences and responsible leaders.”

# SO....., What Is EWB?

- Student-Led Organization
- All Majors Welcome
- Community Service
- Engineering-Based Projects
- A great way to make friends & help others



# Engineers Without Borders - OSU

- Founded in 2008:  
5 – 10 members
- As of 2014: 75-80 members
- **International Projects:**
  - Guatemala-HRI 2015
  - Honduras 2008 – 2014
- **Members also involved in trips to**
  - Guatemala (2013-2014)
  - Sierra Leone (2011)



# EWB Project History

## Honduras

- 2009: Pre-Assessment
- 2010: Assessment
- 2011: Implementation
- 2012: Monitoring
- 2012: Implementation
- 2013: Monitoring
- 2014: Pre-Assessment / Monitoring

## Guatemala

- 2013: Pre-Assessment
- 2014 Implementation





# Project Participants

- **Students** - *Over 72 students traveling and numerous more have participated in Stillwater*
- **Faculty** - *Paul Weckler, John Stevens, Dee Ann Sanders, Greg Wilber*
- **Coordinating NGOs**  
*Gathering Hearts for Honduras, [www.gatheringhearts.org](http://www.gatheringhearts.org)*  
*Gary and Cheryl Kuney*
- **Guatemala: Hunger Relief, Int'l**
- **Local partners**
- **Sponsors and Donors**
  - *(very important)*



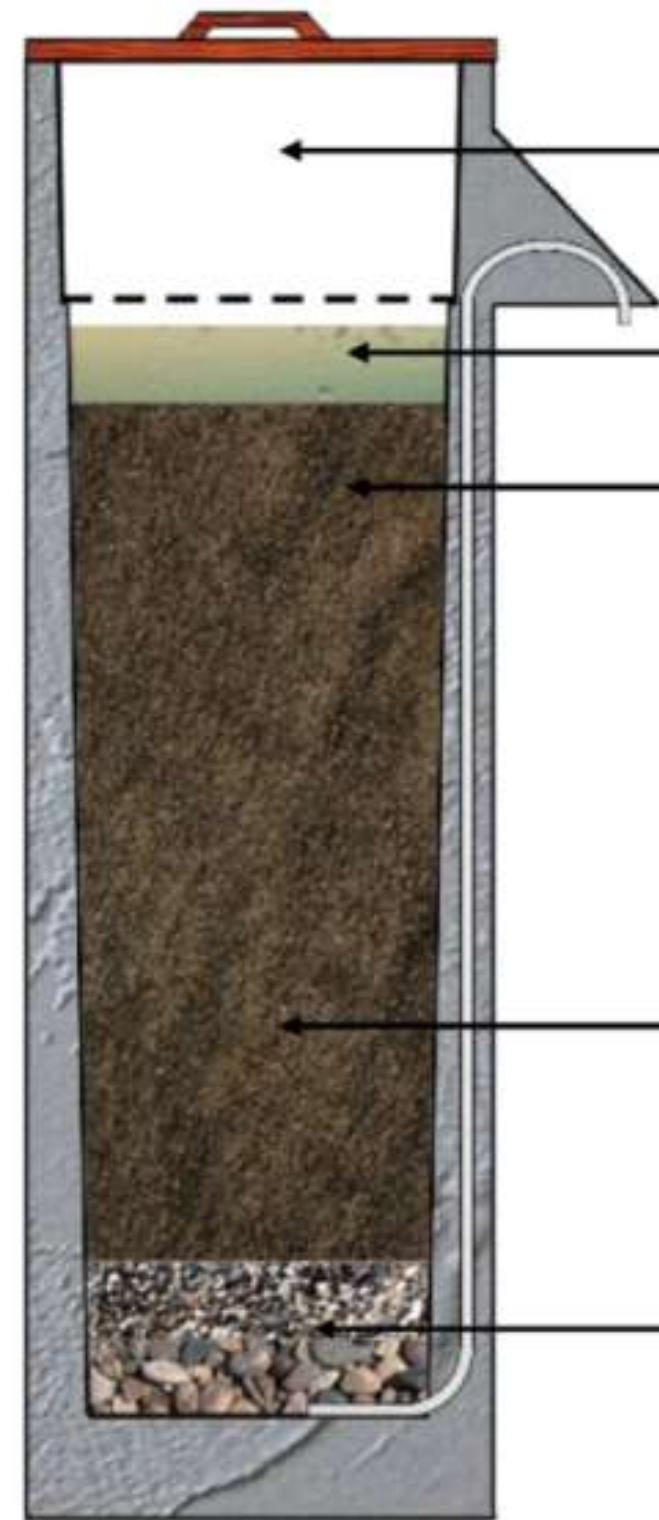
# Location - Seis de Mayo, Honduras



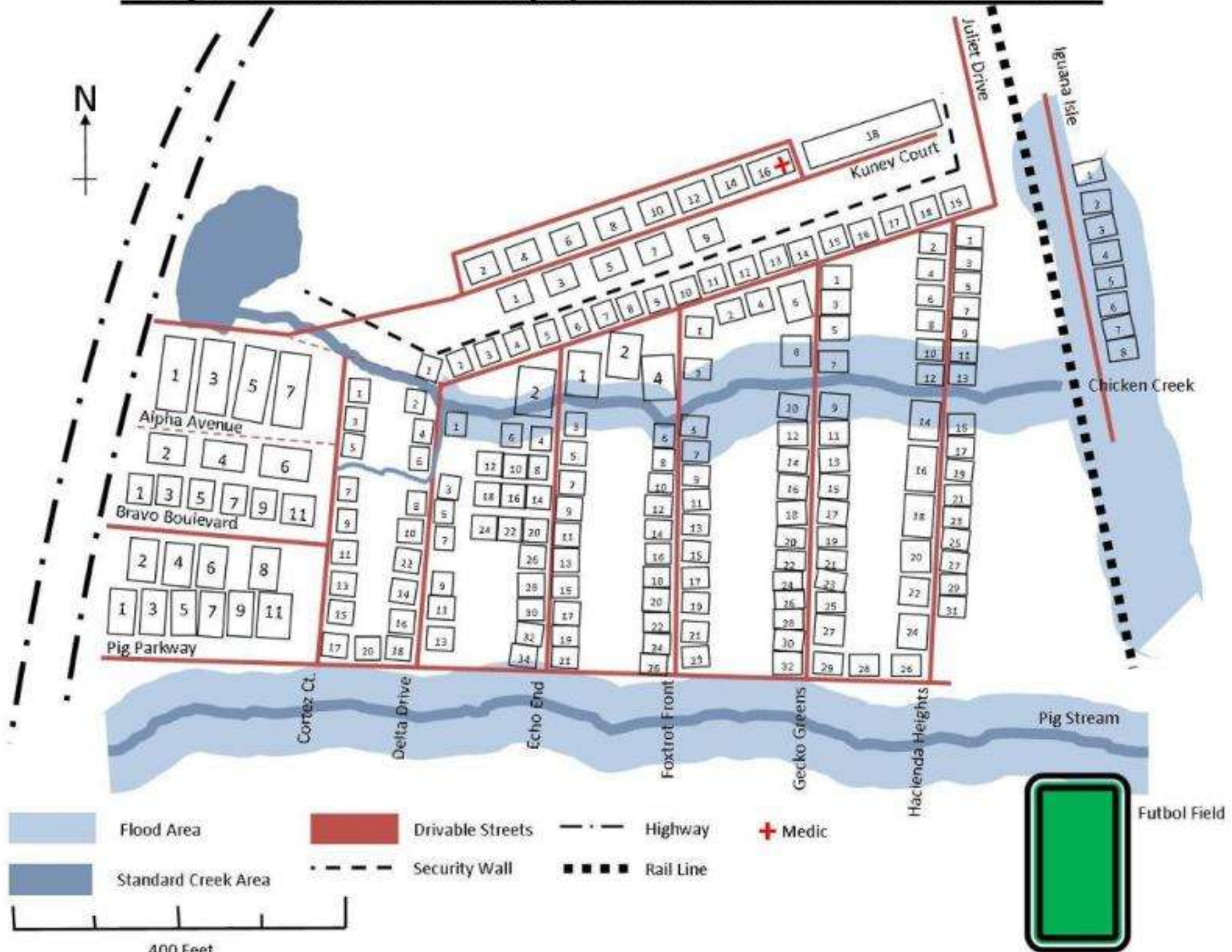


# Project History in Honduras

- **2009 – 2010 - Assessments**
- **2011 - Implementation**
  - Community outreach & education*
  - 9 filters built*
- **2012 - Monitoring**
  - Local business started*
  - Public education efforts*
- **2013 - Post assessment**
  - Over 50 filters distributed*
  - Additional businesses begun*
- **2014 – Post-monitoring**
  - Launched filter business in nearby village*
  - Investigated additional projects*



# Mapa de Seis De Mayo, Honduras Primavera 2010







# Project Successes



- Over 50 filters distributed, most built by local entrepreneurs
- ~ 70% still in use
- High degree of coliform removal
- 3 local businesses in operation



# Organization Successes



- Integrated into the College of Engr. study abroad program in 2010.
  - Gives access to university resources
    - Academic, financial, risk / liability, *not just student club*
  - 3 credit hour class, class meetings before trip
  - Satisfies the “I” Int’l Gen. Ed. req’mnt
  - Must keep journal before & during trip
  - Min. 10 page term paper after trip (w/ revisions req’d)



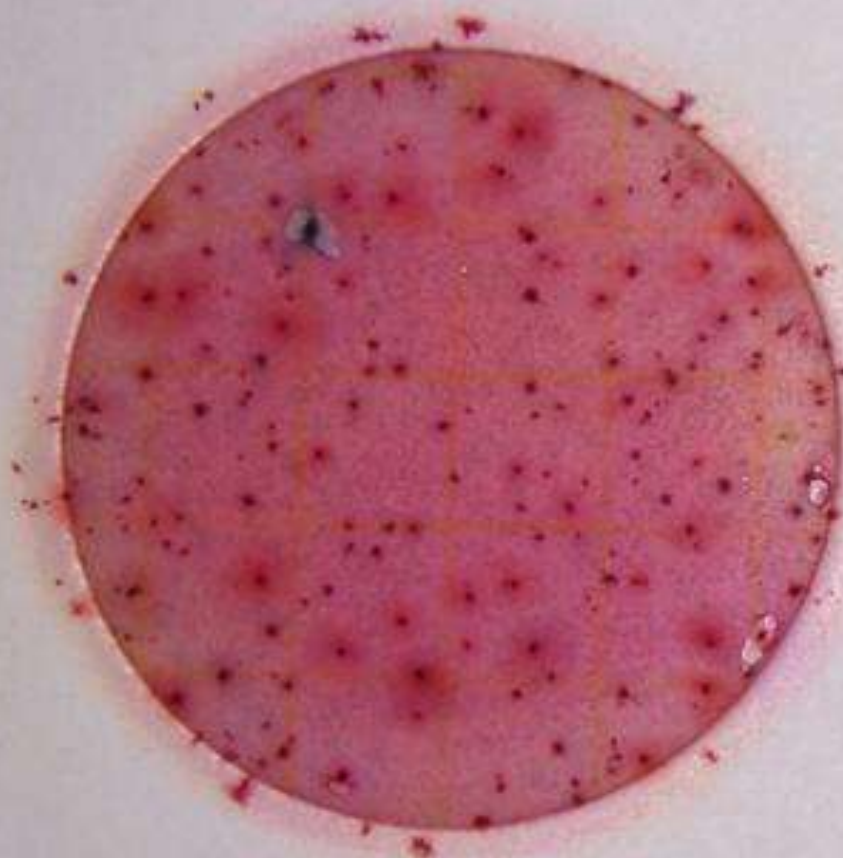




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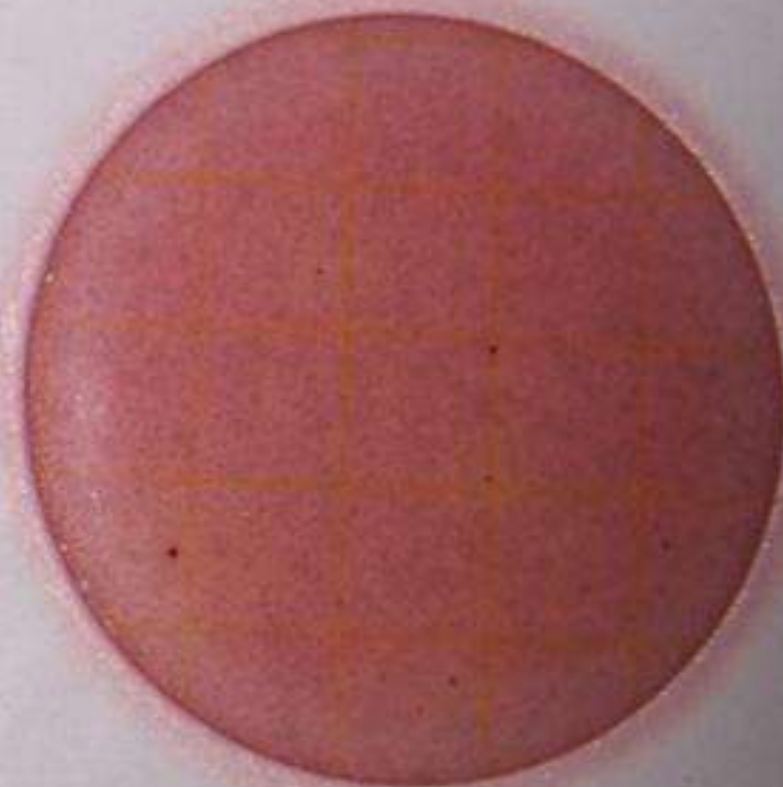
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# Project Successes - Community Participation













# Project Successes - Public Education









# Guatemala Stoves





# Guatemala



# Project History in Guatemala

- **2013 - Assessment**

*Meetings with local residents*

*Initial Stove Construction*

- **2014 - Implementation**

*Additional stoves constructed*

- **2014 – Assessment for new project**

*Water quality and stove quality concerns*



# Guatemala May 2013 Trip

- **Created ties with the community**
- **Built stoves**
- **Discovered design complications**



# Guatemala Spring Break 2014

- **New Stove Design**
- **Lessons Learned**





# Guatemala Spring Break 2014





# Guatemala Spring Break 2014







# Student Impact



- Learning about new cultures via direct observation and participation
- Development of leadership and organizational skills
- Financial planning and management
- Applying their technical skills in the field, seeing what works and what does not
- Participation in local events (Big Event, Habitat for Humanity)



# Udall Scholar – Ariel Leff



- Scholarships are offered by the Morris K. Udall and Stewart L. Udall Foundation.
- The foundation is named for Morris and Stewart Udall who served many years in the House of Representatives.  
**The award amount is \$5,000.**



*Bob Graalman at OSU said the description of Ariel's work for EWB was the primary reason that Ariel got the scholarship*







# Challenges

- Overcoming cultural and language barriers
- Developing systems that enable residents to solve their problems
- Ensuring local participants fully understand their role
- Navigating political and regulatory systems in-country
- Financial and other resources









# Future Endeavors



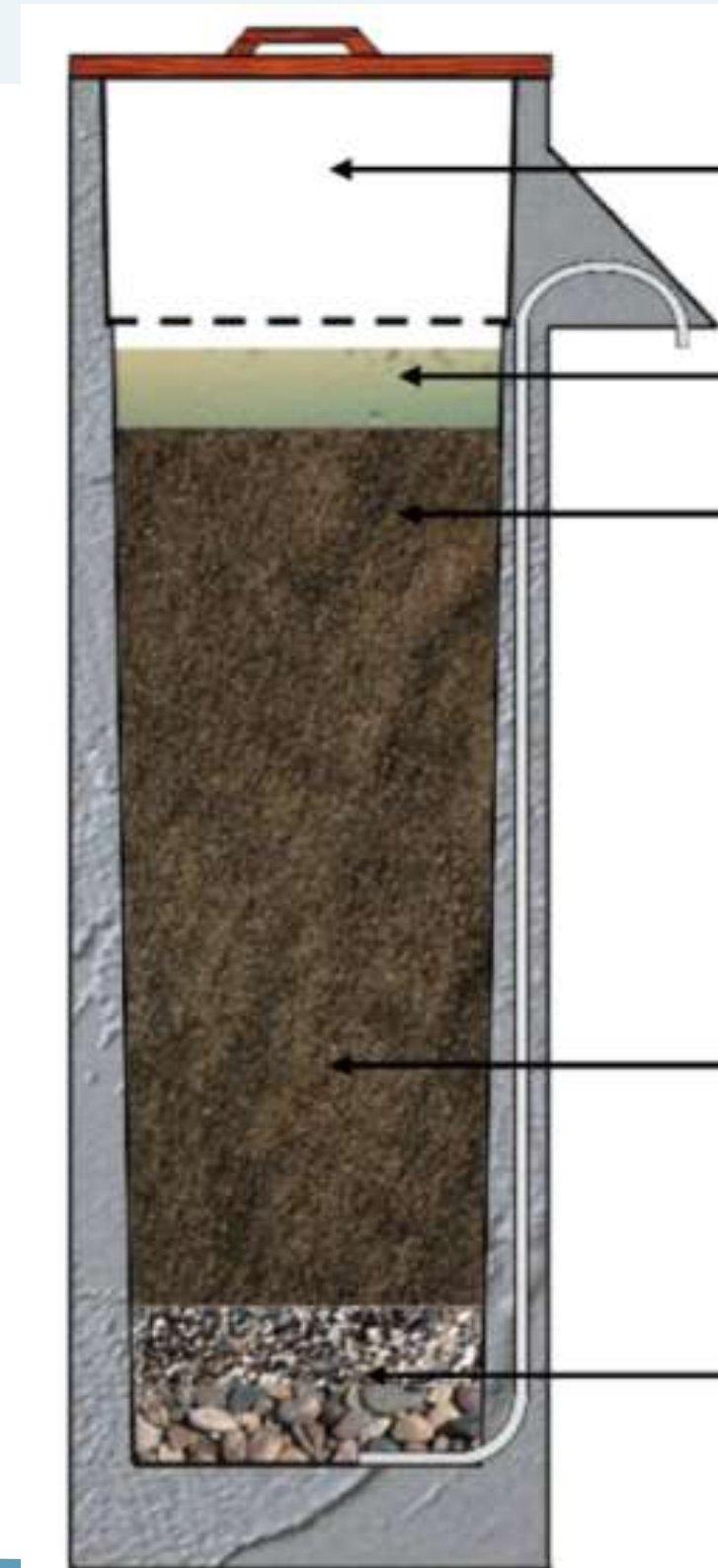
- **May 2015**
  - **Guatemala --- new program approved**
    - Working with Hunger Relief Int'l
- **Local projects**
  - Habitat for Humanity
  - Mission of Hope



# THIS YEAR -- Guatemala 2015

## New Water Project

- Pre-Assessment Trip
  - Tentative Date: May 10<sup>th</sup> -- 16<sup>th</sup>
  - Partnered with HRI





# Global Learning – Graduate School

## Master of International Agriculture Degree Program





# Master of International Agriculture Degree Program

- 8 Colleges at Oklahoma State University
  - **Agricultural Sciences & Natural Resources**
  - Arts & Sciences
  - Education
  - Engineering, Architecture, & Technology
  - Human Sciences
  - Spears School of Business
  - Honors Colleges
  - Graduate College
- MIAP has 60 Current Students, and 117 Graduates *since the first graduates in the Spring of 2009.*

# Master of International Agriculture Degree Program

## ■ Program Highlights

- **Only one of five programs in International Agriculture in the U.S.**
- Great Job Placement
- Largest Master's Degree Program within CASNR
- No set degree plan, instead choose your focus area according to your background, future job plans, & passion.
- **All undergraduate majors are welcome**
  - Agricultural and Non-Agricultural related
- **Multidisciplinary Degree**
  - Allows students to take a wide range of classes throughout campus
- Internship, Creative Component or Thesis option
  - GRE not required



# Master of International Agriculture Degree Program

## ■ Degree Options:

- Thesis
- Formal Report
- Creative Component
  - Domestic Students: International Experience of 4 weeks or longer
  - International Students: (US) Experience or other work-related experience

# Internship / Research / Hands on Experience

- **Select the focus area of your choice**
- Complete an Internship or hands-on experience to the country of your choice.
- Learn about Global Production Agriculture, food marketing, processing technology, and more.



# Master of International Agriculture Degree Program

## ■ Focus Area Examples:

- Sustainability
- Disaster Planning/Management
- Commercial Crops
- Business & Trade





# Master of International Agriculture Degree Program

- **Focus Area Examples:**
  - Education & Communication Outreach
  - Food Animals
  - AgriTourism & Hospitality
  - Agricultural Extension / Adult Ed





# Master of International Agriculture Degree Program

- Focus Area Examples:
  - Rural Entrepreneurship
  - Agricultural Engineering Technology
  - OR..... *Build your own!*





# International Experience or US Internships/Job Shadowing





# Dual Degree Options



- Masters International-Peace Corps Option
  - One year of course work, followed by 27 months of Peace Corps Placement
- Universidad Popular Autónoma del Estado de Puebla (UPAEP)
- Universidad Autónoma Chapingo
  - One year at host university, one year at guest university = 2 degrees



# Questions or Comments?

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