Innovation Lab for Soybean Value Chain Research

Foundations for Soybean in Africa

USAID
FROM THE AMERICAN PEOPLE

Soybean Innovation Lab
Feed the Future Innovation Lab for Soybean Value Chain Research

Soybeans in Africa:
The Soybean Innovation Lab

PI: Peter Goldsmith,
Ag. Economist, University of Illinois

University of Missouri

Mississippi State University

University of Georgia

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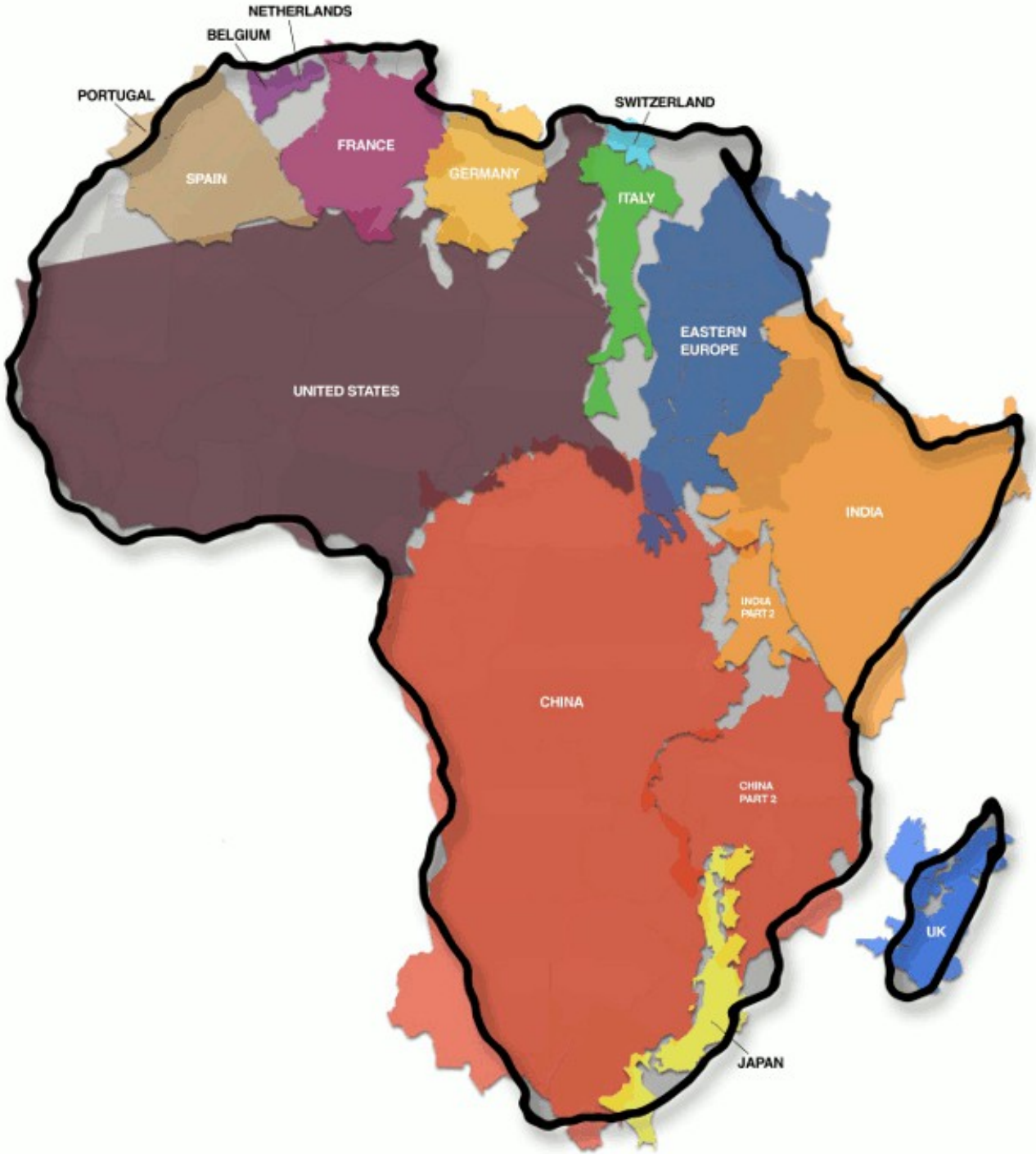
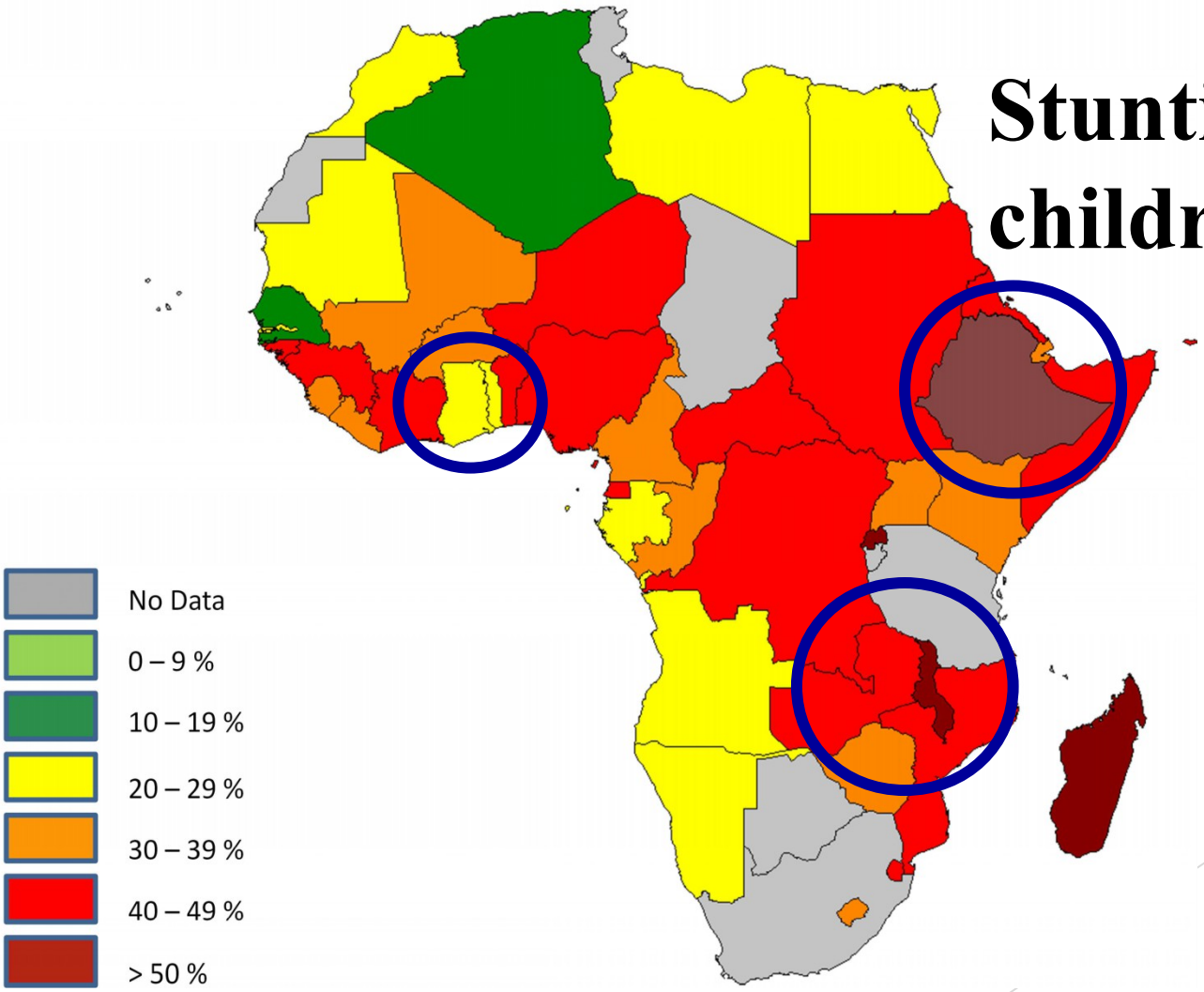

NETHERLANDS
BELGIUM
PORTUGAL
SWITZERLAND
FRANCE
SPAIN
GERMANY
ITALY
EASTERN EUROPE
UNITED STATES
INDIA
INDIA PART 2
CHINA
CHINA PART 2
UK
JAPAN

Why sub-Saharan Africa?

Nutritionally insecure



Stunting in children under 5

Why sub-Saharan Africa?

Low production

90% from small farms

Lack of inputs

Lack of good varieties

Lack of markets

Soybeans in Africa:

The Soybean Innovation Lab

- Plant Breeder Education
- Grain and Seed Quality
- Seed Production
- Utilization for Human Nutrition
- Utilization for Livestock
- Economic Impacts
- Gender Impacts
- Environmental Impacts

Soybean Innovation Lab
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Soybeans in Africa:
The Soybean Innovation Lab

Production:

Dan Reynolds and George Awuni

Mississippi State

Plant Breeding:

Brian Diers and Randy Nelson

University of Illinois and USDA-ARS

Soybean Innovation Lab

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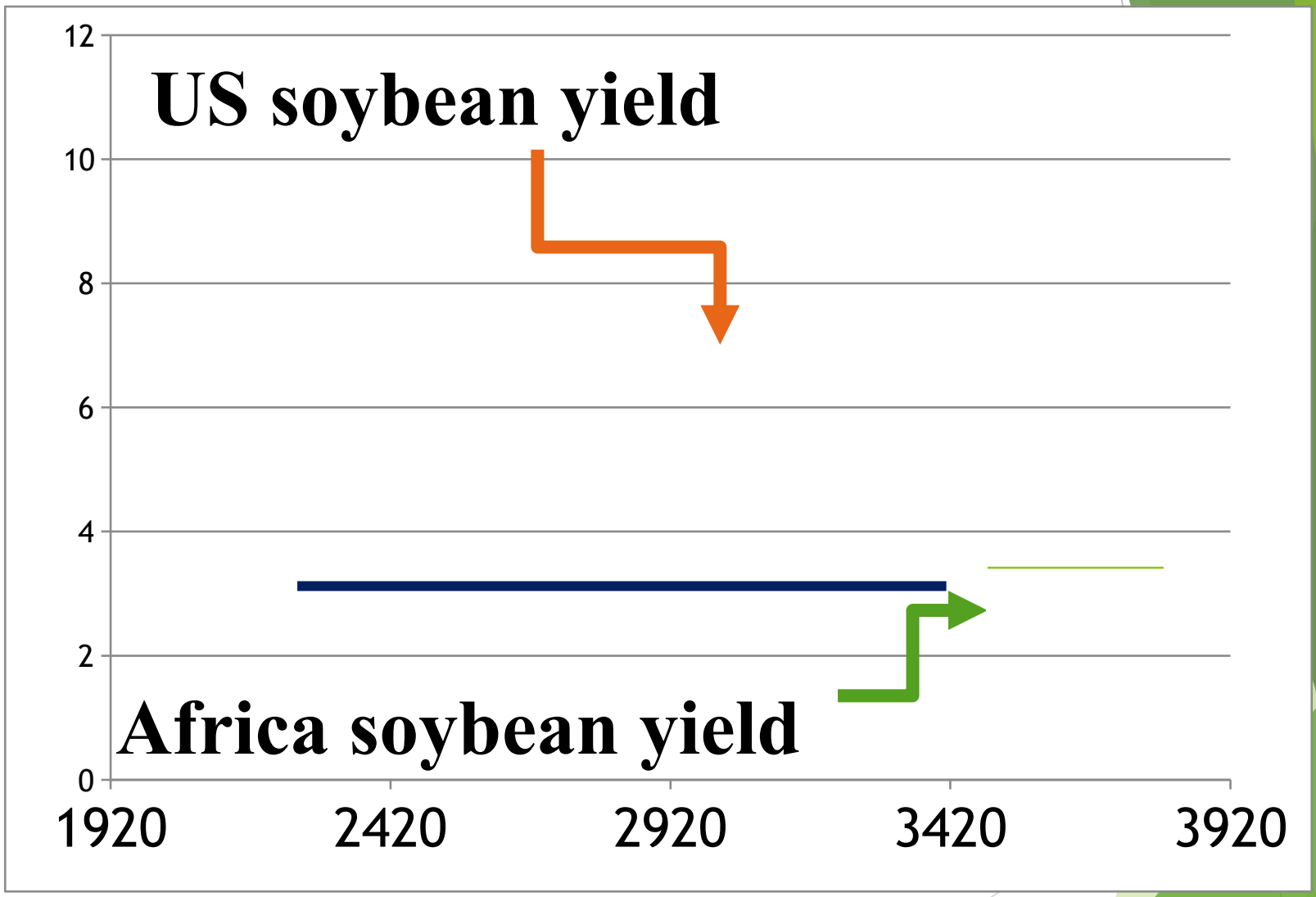

Soybean Innovation Lab
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Mediterranean Sea
Morocco
Tunisia
Algeria
Libya
Egypt
Western Sahara
Red Sea
Mauritania
Mali
Niger
Chad
Sudan
Eritrea
Senegal
Guinea
Burkina Faso
Nigeria
Benin
Togo
Sierra Leone
Ivory Coast
Ghana
Liberia
Central African Republic
South Sudan
Ethiopia
Cameroon
Somalia
Gulf of Guinea
Gabon
Congo
Uganda
Kenya
DR Congo
INDIAN OCEAN
ATLANTIC OCEAN
Tanzania
Angola
Zambia
Malawi
Mozambique
Zimbabwe
Namibia
Botswana
Madagascar
South Africa

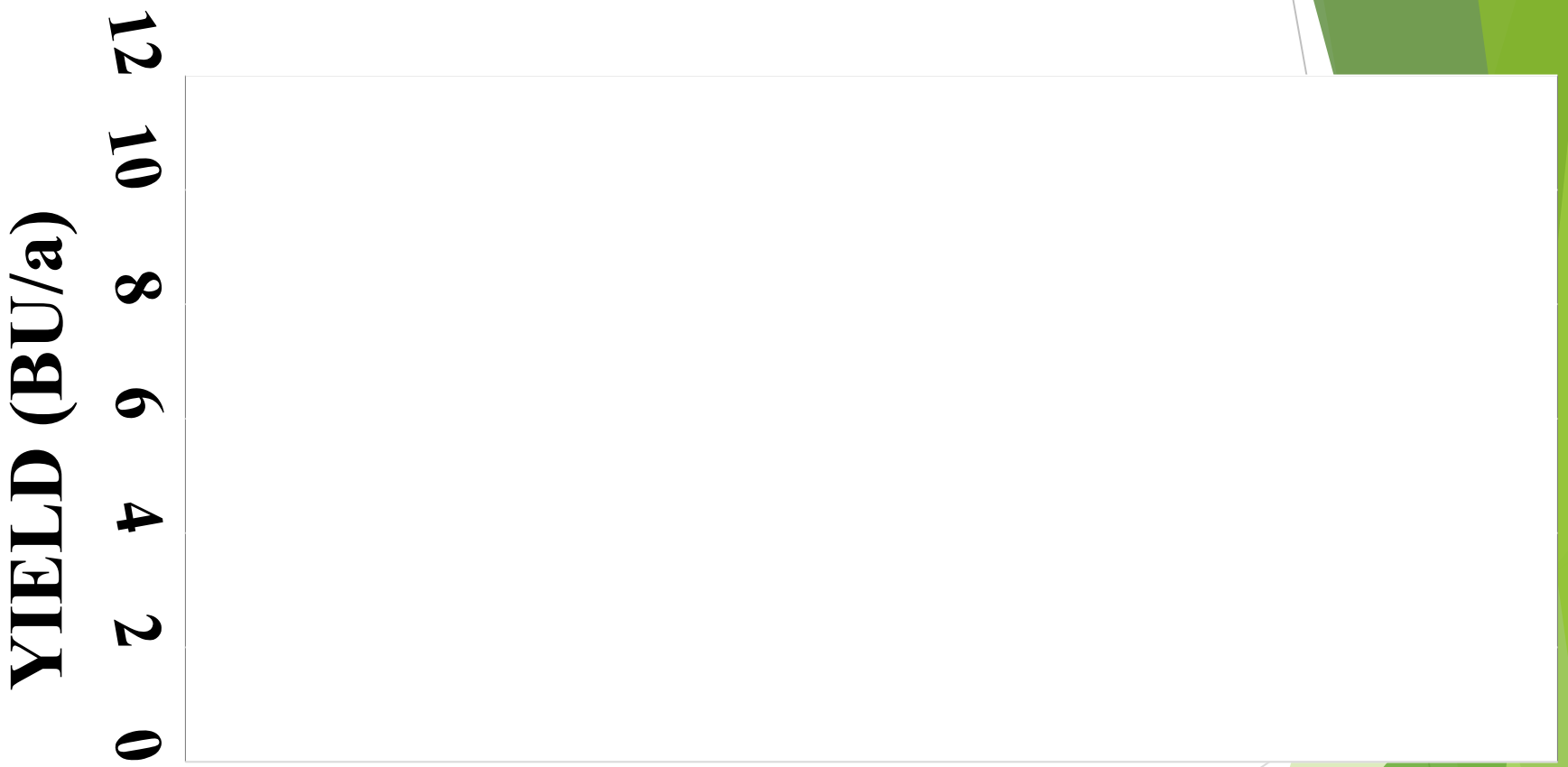
The SMART Farms Soybean Management with Appropriate Research and Technology

Research

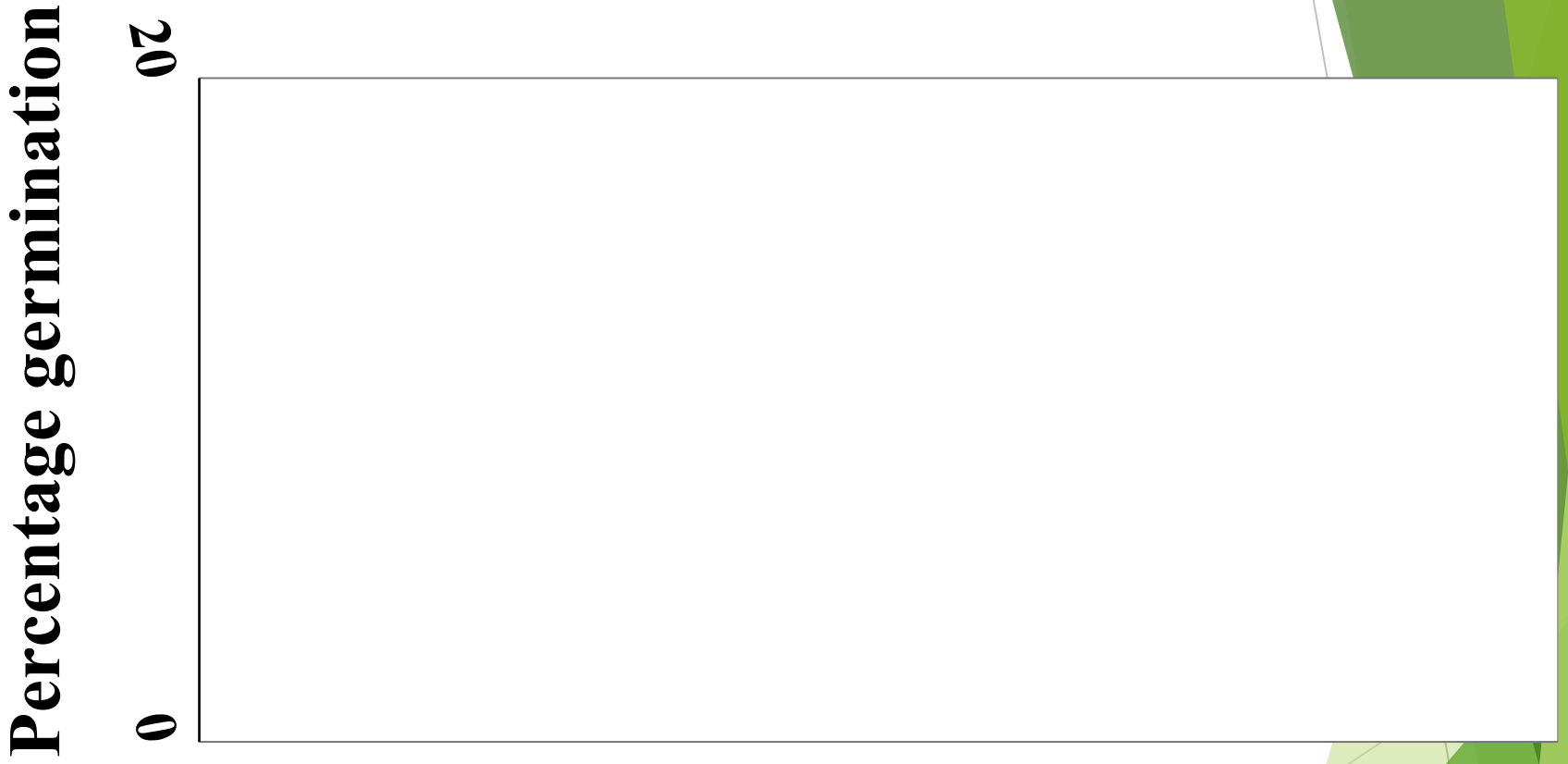
- **Planting date**
- **Varieties**
- **Soil amendments**
  - **Phosphorus**
  - **Inoculum**
- **Planting methods**

Yield-Phosphorus/Inoculum

Click icon to add picture



Seed Germination Test

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Madagascar
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IITA is a major partner

- Developing experimental lines
- Testing experimental lines
- Lack of continuity

Current limitations

Few breeding programs

Small breeding programs

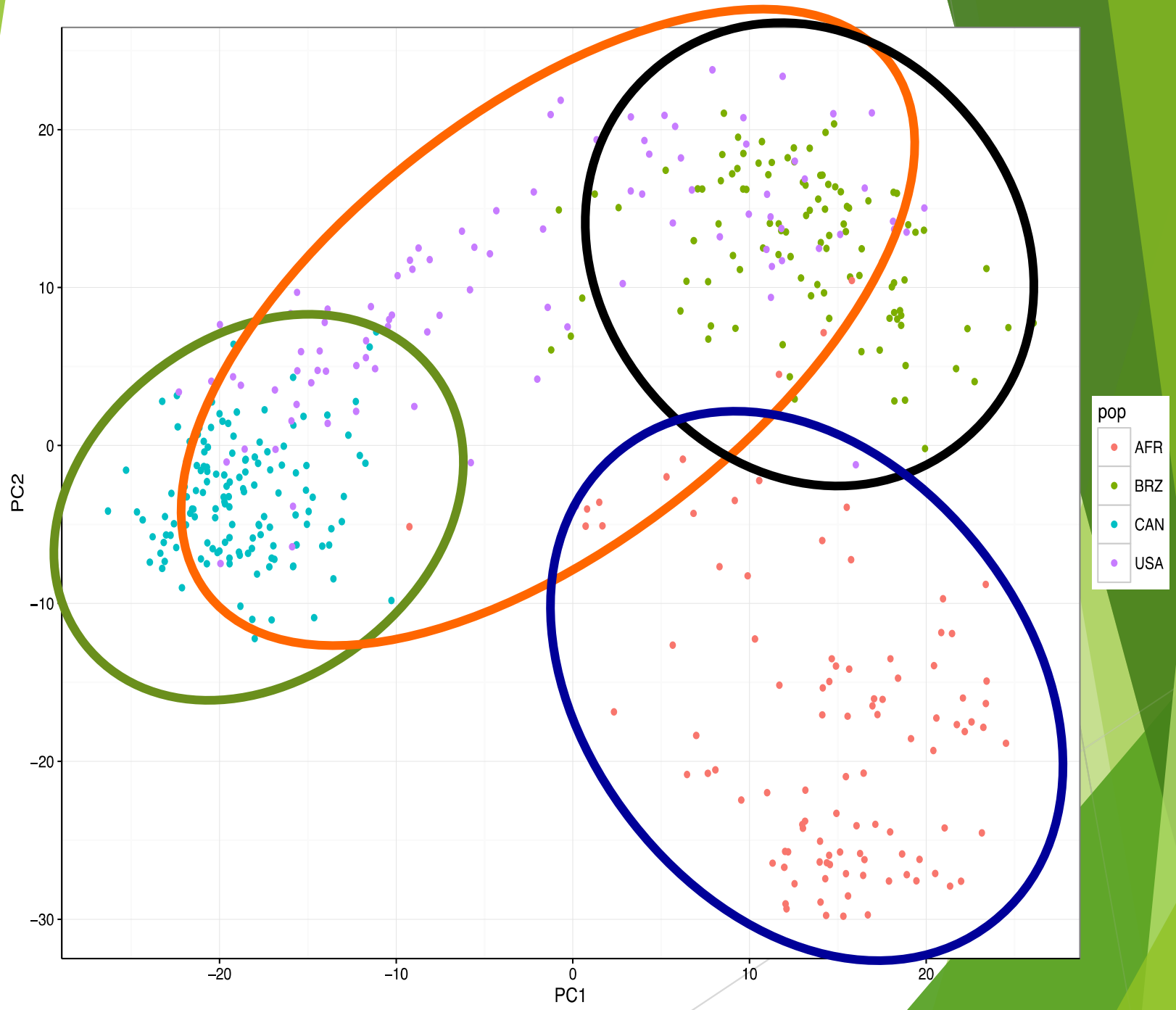
Lack of experience

No mechanization

Few basic supplies

Little coordination

Germplasm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Progress in Breeding Programs

- **Evaluation of germplasm provided**
  - **U.S., Brazilian, and Chinese varieties**

Performance of US Germplasm in Ethiopia

Variety	US MG	Days to Maturity	Days to Flowering	Plant Ht.	Yield (t/ha)
5002T	V	141	53	69	4.6
Ozark	V	123	50	60	4.3
Motte	VIII	118	46	50	4.1
KS4895	IV	123	48	51	4.0
Delsoy 4710	IV	117	39	57	3.9
AFGAT	Chk	140	70	90	3.8
KS3494	III	116	41	48	3.7
Clark 63-K	Chk	136	69	62	3.6

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Progress in Breeding Programs

- **Evaluation of germplasm provided**
  - **U.S., Brazilian, and Chinese varieties**
  - **Rust resistance germplasm**
  - **Resistance to stink bugs**
  - **F2 populations from U.S. /African crosses**

Inoculum persistence study

Hot, dry off-season in Ghana

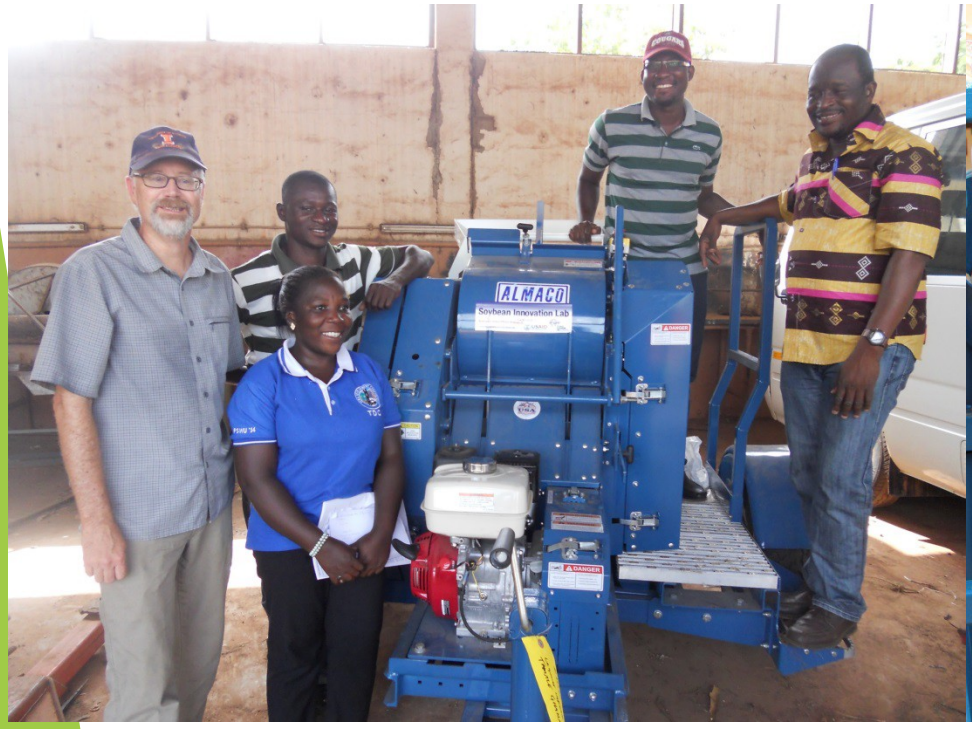
- Ghana and US varieties
  - Inoculum
    - Commercial
    - 5 selected USDA strains
    - No inoculum
- Non-inoculated cowpea variety
- Rotation
  - Continuous soybean
  - Soybean/corn/soybean

Progress in Breeding Programs

- Number of parents increased
- Number of crosses increased
- Working to increase population size
- On-site, off-season nurseries / irrigation

Progress in Breeding Programs

- **Effective use of threshers**
- **Understanding thresher capabilities**



Progress in Breeding Programs

- **Experience in Missouri and Illinois**
- **Changing perceptions**
- **Creating an international team**

Partnerships

- **Syngenta Foundation for Sustainable Agriculture**
- **SeedCo, Zimbabwe**
- **USAID Missions**

What is our job?

- **Learning with our partners**
- **Assisting program development**
- **Developing self-sufficiency**

http://soybeaninnovationlab.illinois.edu

Twitter: @tropicalsoylab

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