

# **Ravindra Shrestha and Klein Ileleji**

# Rationale



Figure 1. Equatorial Africa



Figure 2. **Open air** drying of maize in Ghana

- Post-harvest losses (PHL) estimated at over \$2 billion annually in Africa alone
- Health problems related to aflatoxin contamination
- The yield potential in grain is inhibited by high PHL
- No alternative technology to sun drying yet available



Figure 3. Conventional cooking practice



# Human-Centered Design of Crop **Drying Solutions for Smallholder Farmers**

# **Objective**



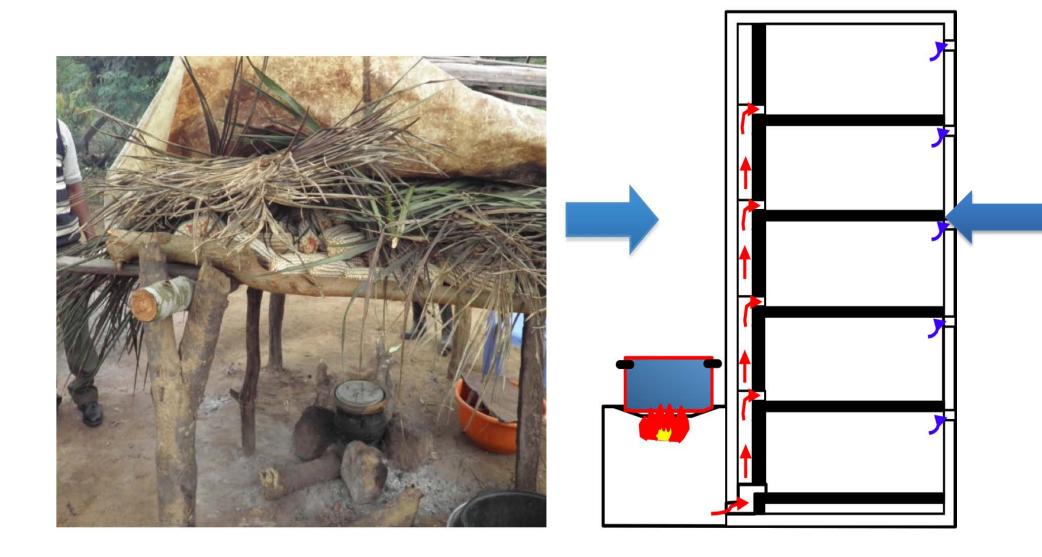


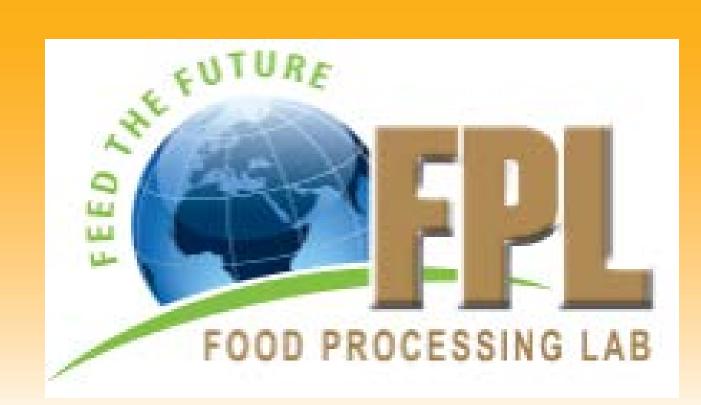
Figure 4. Integrating drying with cooking

# **Technology Development and Deployment Framework**

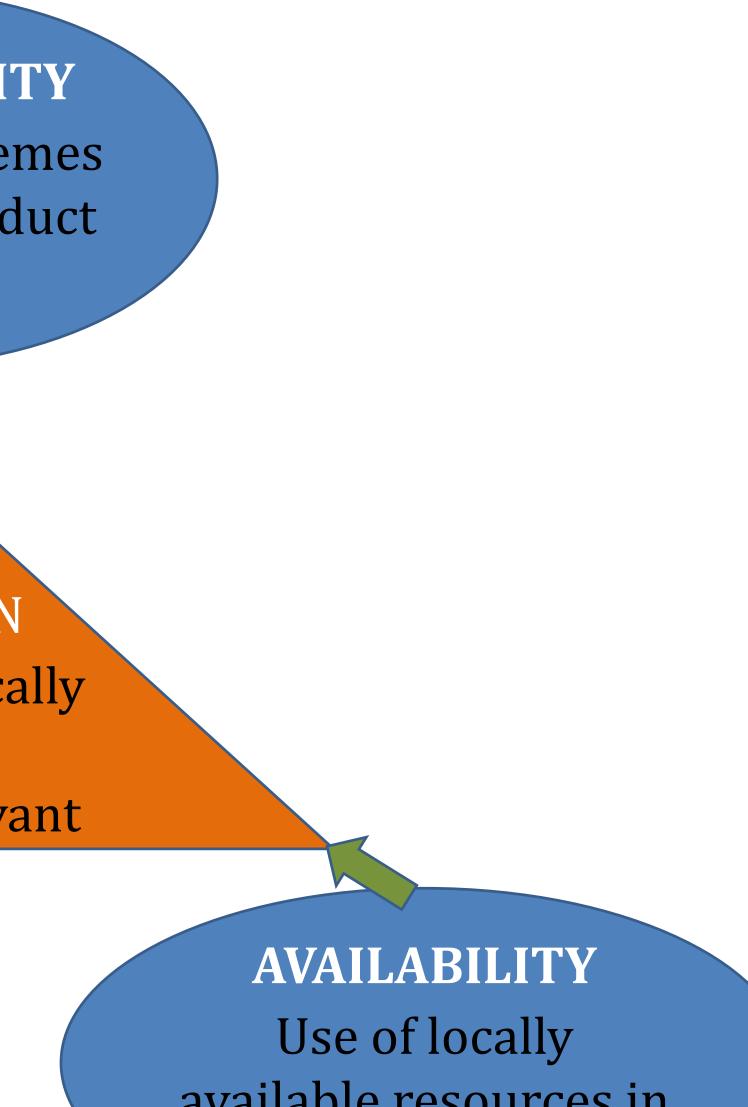
**AFFORDABILITY** Purchasing schemes that enable product acquisition

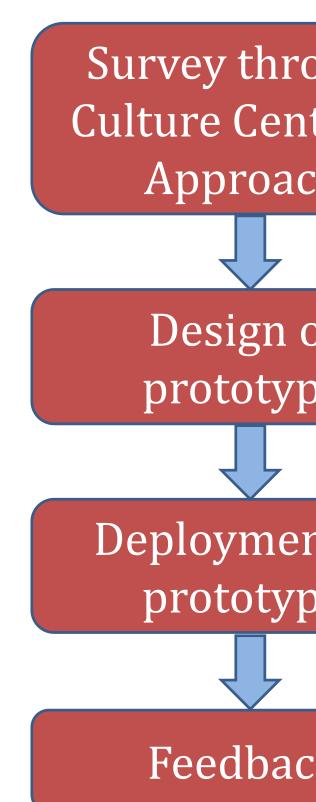
### INNOVATION Simple, technically sound and culturally relevant

ACCESSIBILITY Marketing schemes must take into account where customers live









# **Tests to be conducted**

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available resources in product development

### **PURDUE AGRICULTURE** PURDUE UNIVERSITY



# **Development of Design**

ough tered ch	Collect info on weather, traditional practices and needs of targeted communities
of De	Using CFD analysis and experimental study to validate the design
nt of De	After conducting proper testing and analysis
k	Reevaluate the design as per the feedback

• Heat and temperature distribution (Target drying temperature of 70°C) • Test two types of fuels (wood and corn

• Corn drying rate using lab study • Control of smoke and flame • Corn quality (by smell and product) • Evaluate particulate release • Energy utilization and efficiency Document dryer operation

# Acknowledgments

