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The U.S. Government's Global Hunger & Food Security Initiative

Ghana PHLIL: Progress and Future Plans

Date: 4/25/2015

Location: Manhattan, KS

USAID
FROM THE AMERICAN PEOPLE

KANSAS STATE UNIVERSITY

Major Season Maize Post-Harvest Losses in the Middle Belt of Ghana

Activity	% Loss
Field (Over-Maturity, Harvesting, Heaping)	5.0
Shelling or Threshing	1.5
Drying	0.5
Storage (Mold)	15.0
Storage (Insect Pests)	8.0
Total	**30.0**

Minor Season Maize Post-Harvest Losses in the Middle Belt of Ghana

Activity	% Loss
Field (Over-Maturity, Harvesting, Heaping)	6.0
Shelling or Threshing	1.0
Drying	0.2
Storage (Mold)	2.0
Storage (Insect Pests)	10.0
Total	**19.2**

Key Accomplishments in 2016 and 2017

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Jagger and Ahmed Visited Ghana — June 27–30, 2016

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Postharvest Loss Mitigation Workshop — January 10–12 2017, CSIR-Crops Research Institute and PENS Food Bank

Postharvest Loss Mitigation Workshop — January 2017

- A three-day workshop in the Middle Belt.
- Four US Institutions of Higher Education, USDA-ARS CGAHR, KNUST, PENS Food Bank, a representative from SAWBO and the Ghana ICC conducted the workshop.
- The 43 participants were personnel from Ministry of Food and Agriculture Extension, Non-Ministry Extension (ADRA), Private Company Extension, and Traders.
- Thirty-eight of the participants documented their sex on the evaluation, 12 were women and 26 were men.

Lecture-Type and Hands-On Instruction Indoors

Field Training on PHL Mitigation Technologies in Ejura

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Field Training on PHL Mitigation Practices in Ejura

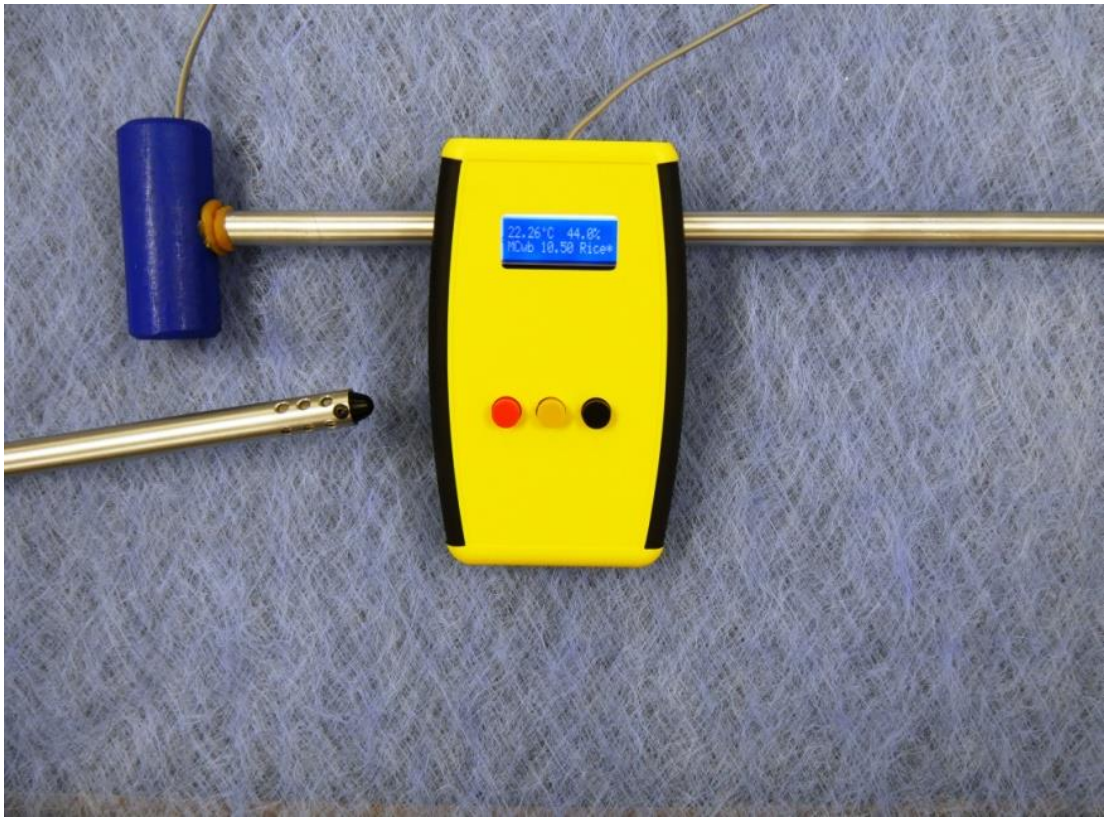
Solar Biomass Hybrid Dryer (SBHD)

- Two new 5-MT solar biomass hybrid dryers (SBHDs) constructed in Wenchi and Jamasi by Mr Joe Akowuah, KNUST Agric. Engineer.
- Wenchi SBHD funded by the USDA-FAS Scientific Cooperation Research Program (SCRP); Jamasi SBHD funded by Assisting Management in the Poultry and Layer Industries by Feed Improvement and Efficiency Strategies (AMPLIFIES) project
- Two prototypes of 1-MT portable SBHD produced by Mr Joe Akowuah and Mr. Peter Evans Nsiah.
- The GIZ-funded Green Innovation Center has submitted a procurement request, awaiting approval formalities by the Ghana Government, for the construction of 20 mobile 1-MT SBHDs.

Wenchi Dryer — 2016

Jamasi Dryer — 2017

PHL Moisture Meter



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PHL Moisture Meter

- Title of manuscript submitted to ASABE — Development and evaluation of a low cost probe-type instrument to measure the equilibrium moisture content of grain
- 20 PHL moisture meters have been ordered by the Ghana Grains Council.
- The GIZ-funded Green Innovation Center has submitted a procurement request for 30 PHL moisture meters, awaiting approval formalities by the Ghana Government.
- To meet these orders, KNUST will start producing PHL meters locally, with training from Paul Armstrong (USDA-ARS CGAHR).

First All-Africa Post-Harvest Congress and Exhibition

(March 28–31, 2017
Nairobi, Kenya)

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First All-Africa Post-Harvest Congress and Exhibition Conference

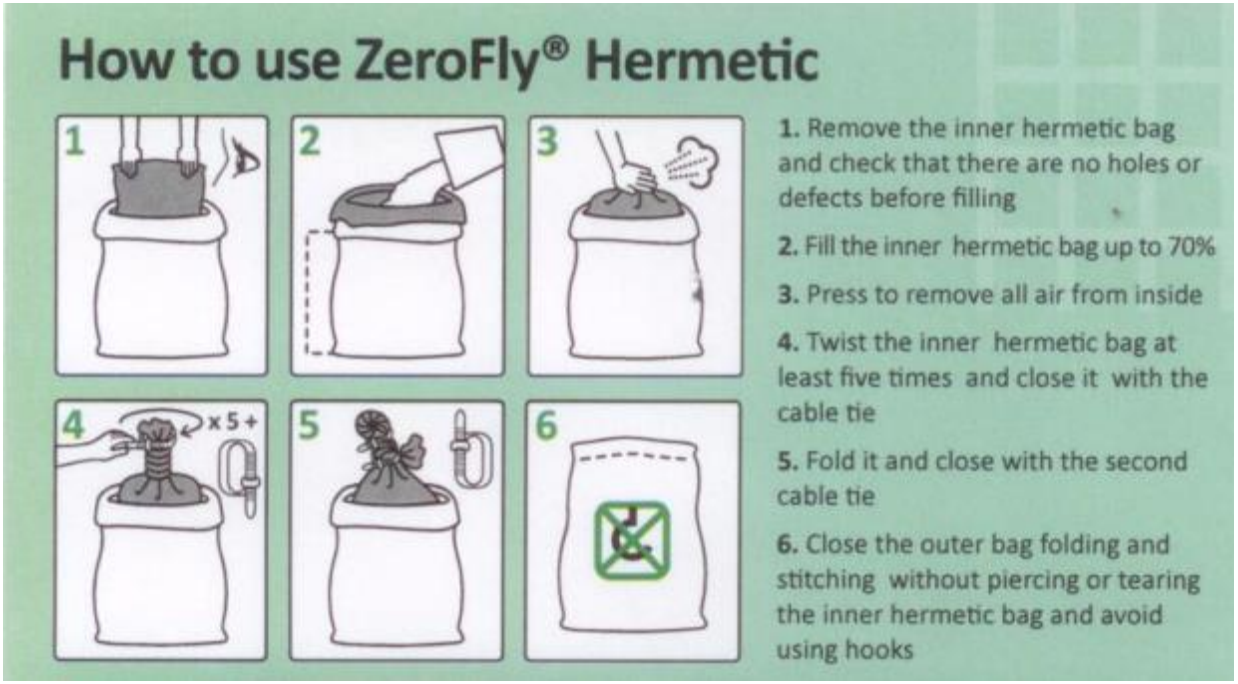
Enoch Osekre, Samuel McNeill, George Opit, and Jagger Harvey attended.

1. Influence of moisture content on insect pests and mycotoxin levels of maize in farms in the Northern Region of Ghana.
2. Moisture content, insect pests, mycotoxin levels in maize in three districts in the Middle Belt of Ghana.
3. Population dynamics of stored maize insect pests in warehouses in two agro-ecological zones in Ghana.
4. Development of a low-cost moisture meter for the grain trade.

Publication of Research Data

- Two publications in peer reviewed journals.
- Three publications currently submitted to peer reviewed journals.
- Seven manuscripts in preparation.

Collaboration with Vestergaard Frandsen has helped produce a new generation of more effective ZeroFly bags, the ZeroFly® Hermetic bag



Two MPhil in Entomology students successfully defended their theses at Kwame Nkrumah University of Science and Technology — Ms. Naomi Manu and Mr. James Kofi Danso

Theses Titles

Naomi: Insect infestation, Moisture Content and Mycotoxin Levels of Maize (*Zea mays* L.) in Four Districts in Northern Region of Ghana

James: Insect Pests and Mycotoxin Levels of Maize (*Zea mays* L.) On-Farm, in Markets and Stores in the Middle Belt of Ghana

Assisting Management in the Poultry and Layer Industries by Feed Improvement and Efficiency Strategies (AMPLIFIES) PHL Mitigation Training (TOT) CSIR-CRI, Kumasi, March 21–23, 2017

Ghana PHLIL training materials used as blueprints for the training and AMPLIFIES training manual preparation

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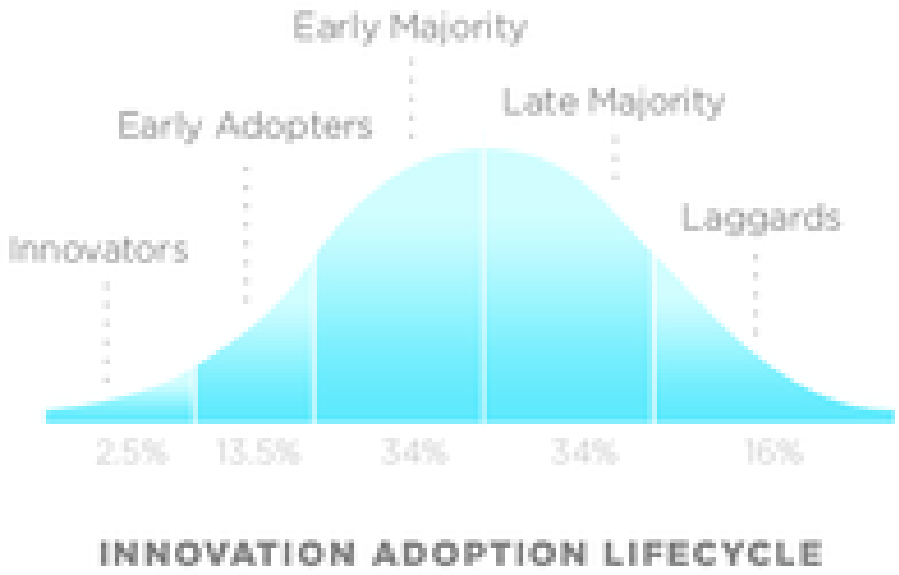
Past and Current Challenges

- Lack of successful collaborations with other USAID-funded projects operating in Ghana.
- Existing supply chains for some of the PHL mitigation technologies not working as well as desired (PICS, ZeroFly Hermetic, GrainPro SuperGrain Bags, and ZeroFly Storage Bags.
- Lack of supply chains for technologies such as the PHL meter and SBHDs (1- and 5-MT).
- Lack of resources for identifying and engaging innovators and early adopters of the PHL mitigation technologies that have been proven practical.

Plans for 2018

- Conduct a postharvest loss mitigation workshop in January 2018.
- Publication of all manuscripts.
- Continue to work with the Green Innovation Center and others to increase awareness and adoption of PHL mitigation technologies.
- Efficient assembling of PHL moisture meters at KNUST.

The **technology adoption lifecycle** is a sociological model that describes the adoption or acceptance of a new product or innovation

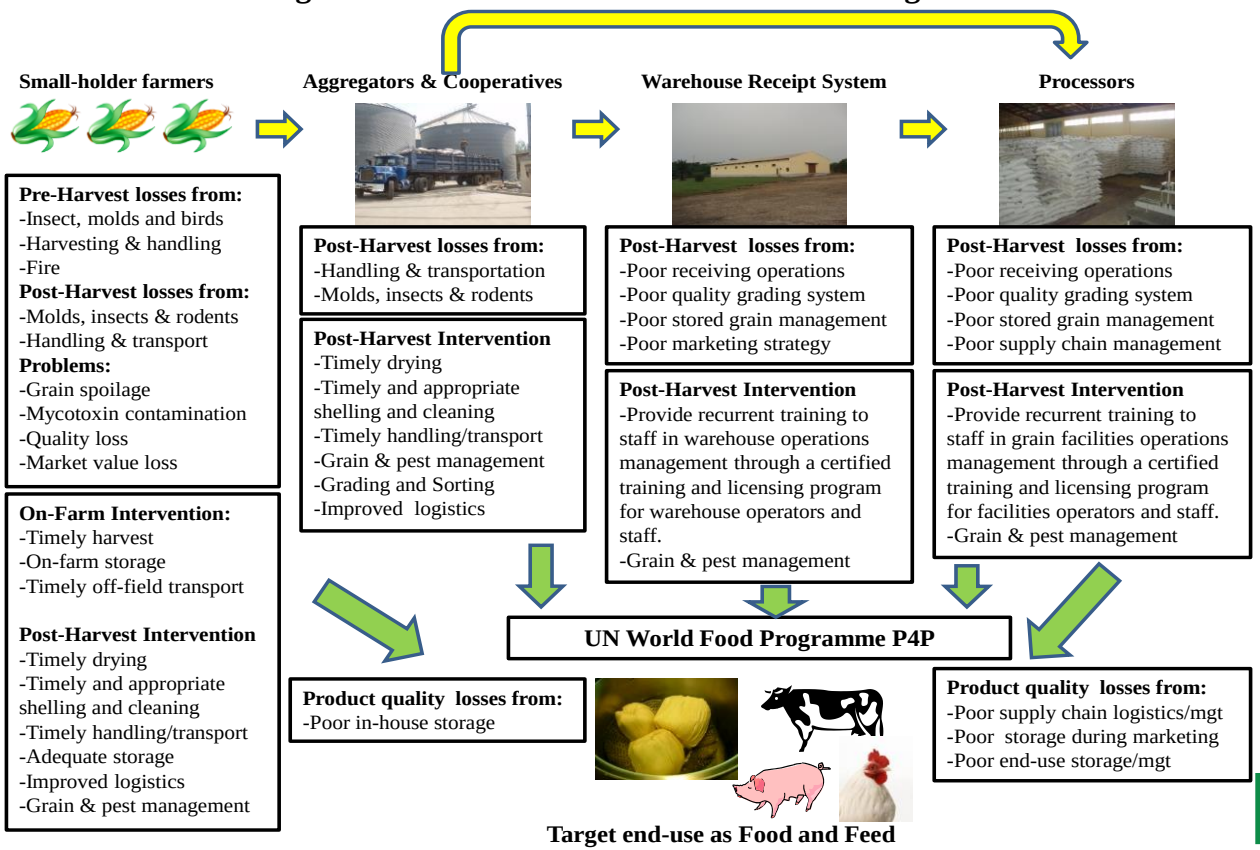


The model indicates that the first group of people to use a new product is called "innovators," followed by "early adopters".

- Innovators – had larger farms, were more educated, more prosperous and more risk-oriented
- Early adopters – younger, more educated, tend to be community leaders, less prosperous

Focus Areas for Potential Greatest Impact After 2018

Figure I-1. Ghana: Post-Harvest Loss and Mitigation



Sustainable recurrent capacity building that targets all stakeholders along the maize value chain

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Focus Areas for Potential Greatest Impact after 2018

- Increasing adoption of the PHL mitigation technologies identified as practical and most impactful.
- Facilitation of data collection, increased awareness, and ultimate widespread adoption of Aflasafe and Aflasafe-based integrated aflatoxin management.
- Continue to build collaborations with the public and private sectors.

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Acknowledgements

- Ghana PHLIL team.
- KSU leadership team.
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