



# PURDUE IMPROVED CROP STORAGE

**APRIL 10-12, 2012**

**ACCRA, GHANA**

**PICS**  
Purdue Improved Crop Storage

**45 IITA**  
1967-2012 *Research to Nourish Africa*

## **Technical Committee**

**Baoua Ibrahim**

**Dieudonné Baributsa**

**Jess Lowenberg-DeBoer**

**Larry Murdock**

**Tahirou Abdoulaye**

## **Conference Coordinators**

**Heather Fabriès**

**Katy Ibrahim**



Purdue Improved Crop Storage

WORKSHOP AGENDA

**Monday, April 9, 2012**

16:00—18:00 Registration

**Tuesday, April 10, 2012**

8:00—9:00 Registration

9:00—10:00 Opening Remarks

**Moderator: Jess Lowenberg-DeBoer**

*Welcoming remarks* A.B. Salifu  
Larry Murdock  
Dana Boggess  
Robert Asiedu  
Baoua Ibrahim

*Charge to Participants* Jess Lowenberg-DeBoer

10:00—10:30 Break

**Development and Country Experiences**

**Moderator: Dieudonné Baributsa**

**Rapporteurs: Sodba Gonne and Yakubu Umar**

10:30—11:00 Development of the Purdue Improved Cowpea

L.L. Murdock

11:00—11:15 Purdue Improved Cowpea Storage (PICS) – How it Works

L.L. Murdock, I.B. Baoua and V.M. Margam

11:15—11:30 The Triple Bagging Story in Rural Areas of Niger:  
Answers to Questions Asked by Farmers and  
Extension Agents About Technology

I.B. Baoua, L. Amadou, L.L. Murdock

## Development and Country Experiences (continued):

- 11:30—11:45 Large-scale Promotion and Dissemination of PICS bags in Benin, Cameroon, Nigeria and Togo: Challenges and Opportunities**  
A. Tahirou, D. Baributsa, O. Coulibaly, B. Ousmane, A. Abifarin, O. Anyebe, S. Gonne, R. Alamanso, M. Djaje and J. Lowenberg-DeBoer.
- 11:45—12:00 Expérience Efficace de Diffusion de la Technologie PICS au Burkina Faso, Leçons et Perspectives**  
C.L.Dabiré-Binso<sup>1</sup> A. Sanon<sup>1</sup>, M.N. Ba, D.Baributsa<sup>3</sup> et J. Lowenberg-DeBoer
- 12:00—12:15 Extension of PICS Technology in Middle Belt States of Nigeria: Challenges and Opportunities**  
A. Abifarin, A. M. Bolaji, T. Abdoulaye, H. Garba, C. Dusu and J. Lowenberg-Deboer
- 12:15—12:30 Purdue Improved Cowpea Storage (PICS) Technology: The Experience of Gombe State,**  
  
R. Y. Yakubu and A. Benjamin
- 12:30—12:45 Innovations in the Cowpea Sector of Northern Nigeria: Research into Use (RIU) Nigeria Programme**  
G. Jokthan, U. Ugbe and A. Sanni
- 12:45—13:00 Les Leçons Apprises dans l'Exécution du Projet sur le Stockage Amélioré du Niébé (PICS) au Togo**  
K. Djade, P. Batana, E. Sanvee, A. Fantchede, A. Gonh-Goh, T. Abdoulaye, D. Baributsa et O. Coulibaly
- 13:00—14:00 Lunch**

## Development and Country Experiences (continued):

Moderator: Clémentine Dabiré

Rapporteurs: Amina Aminu Idriss and Raymond Allamasso

- 14:00—14:15 Diffusion de la technologie du triple ensachage au Cameroun : Un exemple d'approche efficace et de renforcement des liens recherche-partenaires de développement au profit des acteurs de la filière niébé  
G. Sobda, C. Lontchi, I. Sadou P. Mbolda, B. Nyomo, O. Boukar, A. Tahirou, D. Baributsa et J. Lowenberg-DeBoer
- 14:15—14:30 Les Résultats et Leçons Apprises de la Vulgarisation et Commercialisation des Sacs Triple Ensachage pour la Conservation Hermétique du Niébé au Mali  
Bakary Thiero et Mamary Bagayoko
- 14:30—14:45 Implementation of Purdue Improved Cowpea Storage (PICS) Technology in Benin  
R. Allomasso, O. Coulibaly, C. Aitchédji, T. Abdoulaye and D. Akplogan
- 14:45—15:00 Evaluation de la technologie du triple ensachage PICS pour la conservation du niébé (*Vigna unguiculata L. Walp*) en milieu paysan au Sénégal  
I. Sarr, D. Baributsa, C. Faye et J. Lowenberg-DeBoer
- 15:00—15:15 Utilisation des Sacs PICS pour le Stockage du Niébé par les Commerçants des Régions de Maradi, Zinder  
B. Haboubakar, D. Baributsa, I.B. Baoua
- 15:15—15:30 Disseminating and Sustaining PICS Bags Distribution in Northern Ghana  
H. Addor, J. Adu Kumi, M.K. Amankwah, E. Korankye, D. Babayara
- 15:30—16:00 Break

## **Tuesday, April 10, 2012 (continued)**

16:00—17:00 Breakout Groups

**Facilitators:** Ayo Abifarin, Antoine Sanon, Ousmane Coulibaly, Hippolyte Affognon, Germaine Ibro, Shehu Musa

**Rapporteurs:** Christophe Lontchi, Raymond Allamaso, Onu Anyebe, Theodore Nouhoheflin

17:00—18:00 Poster Session

**Consumer Preferences for Maize in Malawi: A Stated Preferences Approach Correcting for Attribute Non-Attendance to Evaluate Impact of Insect Damage, Variety, and Mold**

M. Jones, C. Alexander, J. Ricker-Gilbert, N. Olynk, J. Lowenberg-DeBoer

**Aspects of the Physiology of Cowpea Bruchids in Relation to Hermetic Storage using Triple Plastic Bags**

V. M. Margam, I.B. Baoua, and L.L. Murdock

**Evaluation de l'Utilisation des Technologies de Stockage par les Commerçants du Niébé au Burkina Faso**

D. Baributsa, K Sawadogo and J. Lowenberg-DeBoer

**The Fate of Triple-Layer Plastic Bags Used for Cowpea Storage in Africa: Are they an Environmental Problem?**

D. Baributsa, K. Djibo, J. Lowenberg-DeBoer, B. Moussa and I.B. Baoua

**Side by Side Comparison of GrainPro and PICS bags for Post-harvest Preservation of Cowpea Grain in Niger**

I. B. Baoua, L. Amadou, J. D. Lowenberg-DeBoer, L.L. Murdock

**The Benefits of Training Stakeholders Across the Grain Value Chain – Lessons from a Capacity Building Effort in Ghana**

K. E. Ileleji, G. P. Opit and S. McNeill

**Control of *Prostephanus truncatus* and *Dinoderus* spp. in Stored Cassava Chips in Benin with Purdue Improved Cowpea Storage (PICS) Bags**

K. Edoh Ognakossan and K. Hell

17:00—18:-00 Poster Session continued

**Baseline Survey of Cowpea Storage Practices in Ghana**

M. Abdulai, A.N.Wiredu, D.Baributsa, J.Lowenberg-DeBoer

**PICS Supply Chain Study in Benin/Togo**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

**PICS Supply Chain Study in Ghana**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

**PICS Supply Chain Study in Cameroon/Chad**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

**PICS Supply Chain Study in Burkina Faso**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

**PICS Supply Chain Study in Mali**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

**PICS Supply Chain Study in Nigeria**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

**PICS Supply Chain Study in Senegal**

J.Coulibaly, T.Nouhoheflin, C.Aitchedji, S.D'Allessandro

Evening

Free Time

**Wednesday, April 11, 2012**

**Adoption and Supply Chain**

**Moderator: Tahirou Abdoulaye**

**Rapporteurs: Christiana Dusu and Laouali Amadou**

**8:-30—9:00 Adoption of Hermetic Storage for Cowpea by Farmers in West and Central Africa 2012**

B. Moussa, O. Coulibaly, T. Abdoulaye, D. Baributsa and J. Lowenberg-DeBoer

## **Wednesday, April 11, 2012 (continued)**

- 9:00—9:15 **Analyse de l'effet sur les femmes des activités de diffusion des triples sacs : Cas du Burkina Faso, Niger, Nigeria**  
G. Ibro, A. Idriss, M.C. Sorgho, J. LowenbergDeBoer, D. Baributsa
- 9:15—9:30 **Capacity Building of Local Entrepreneurs to Improve the Distribution of PICS Bags in West and Central Africa**  
D. Baributsa, J. Lowenberg-DeBoer, T. Abdoulaye, M. Shehu, C.
- 9:30—10:00 **Mainstreaming Agricultural Innovations: The Experience of PICS bags in West and Central Africa**  
J. Coulibaly, T. Nouheheflin, C. Aitchedji, S. D'Allessandro, D. Baributsa and J. Lowenberg-DeBoer
- 10:00—10:15 **Improving Cowpea Seed Quality through Hermetic Storage**  
T. Remington
- 10:15—11:00 **Panel Discussion**
- Facilitator:** [Stephen d'Alessandro](#)
- Rapporteurs:** [Moise Djade, Balla Haboubakar, Sunusi Yakubu](#)
- 11:00—11:30 **Break**
- Other Crops**
- Moderator:** Ibrahim Baoua
- Rapporteurs:** [Abdulkadir Abdullahi and Issaka Sankara](#)
- 11:30—11:45 **Purdue Improved Cowpea Storage (PICS) – Potential for Application in West Africa?**  
K. Hell, K. Edoh Ognakossan and O. Coulibaly



**11:45—12:00 Potential of PICS Bags for the Control of Larger Grain Borer (*Prostephanus truncatus*) - An Integrated Approach**

Affognon H., A. Njoroge and L. Murdock

**12:00—12:15 Quality Changes in Hermetic Stored Corn at Immediate Moisture Levels under Subtropical Conditions**

N.K. Addae-Mensah and K. E. Ileleji

**12:15—12:30 Measuring Profitability of On-Farm Storage Pest Management in Developing Countries: The case of PICS and Maize in Africa**

M. Jones, C. Alexander, J. Lowenberg-DeBoer

**12:30—12:45 Development of Purdue Improved Drying Stove (PIDS) for Grain Drying**

K. E. Ileleji, C. Alexander, T. Okoror, M. Dutta and J. Ricker-Gilbert

**12:45—13:00 Questions**

**13:00—14:00 Lunch**

**Other Crops (continued)**

**Moderator: Joe Huesing**

**Rapporteurs: Hassana Garba and Palakiem Batana**

**14:00—14:15 Evaluating PICS for Groundnut Storage**

H. Sudini, C.L.L. Gowda, V. Margam and L.L. Murdock

**14:15—14:30 Insect Problems of Stored Agricultural and Food Products in Niger: Possible New Uses for PICS bags**

I.B. Baoua, L. Amadou, L.L. Murdock

## **Wednesday, April 11, 2012 (continued)**

**14:30—14:45 Profitability of Hermetic Purdue Improved Crop Storage (PICS) Bags for African Common Bean Producers**

M. Jones, C. Alexander, J. Lowenberg-DeBoer

**14:45—15:00 Hermetic Storage as a Solution for Prolonged Storage of Seed**

T. de Bruin

**15:00—15:15 Evaluation du taux de germination du Niébé conservé dans les sacs PICS : cas de la variété VITA-5 à la ferme agro-sylvo-pastorale Florence Cavillac de Barbina dans le département de la Dodjé (Tchad)**

S. K. Kouma, J. Ngontoloum et J. Dingamreou

**15:15—15:30 Questions**

**15:30—16:00 Break**

**16:00—17:00 Breakout Groups**

**Facilitators:** [Kerstin Hell](#), [Hari Sudini](#), [Corinne Alexander](#),  
[Venu Margam](#), [Klein Ileleji](#), [Ibrahima Sarr](#)

**Rapporteurs:** [Mike Jones](#), [Sobda Gonne](#), [Amina Aminu Idriss](#), [Casimir Aitchedji](#), [Saturnin Kouma](#)

**19:00 Banquet Dinner**

## Thursday, April 12, 2012

9:00—9:45 Presentations of Rapporteurs

Facilitator: [Tom Remington](#)

9:45—10:15 Questions

10:15—11:00 Panel Discussions

Facilitator: [Klein Ileleji](#)

11:00—12:00 Closing remarks

Achieved Original  
Objectives: [Larry Murdock](#)

Achieved PICS  
Objectives: [Dana Boggess](#)

Next Steps? [Jess Lowenberg-DeBoer](#)

## Extension Partners

Purdue University  
IITA - International Institute of Tropical Agriculture - Nigeria, Cameroon, Togo and Benin  
WVI - World Vision International - Ghana, Mali, and Niger  
CSIR/SARI- Council for Scientific and Industrial Research/Savanna Agricultural Research Institute - Ghana  
MOFA- Ministry of Food and Agriculture - Ghana  
INRAN - Institut National de Recherche Agronomique - Niger  
INERA- Institut de l'Environnement et de Recherches Agricoles - Burkina Faso  
RIU- Research Into Use - Nigeria  
ICAT- Institut de Conseil et d'Appui Technique - Togo  
ITRA- Institut Togolais de Recherche Agronomique - Togo  
ITRAD- Institut Tchadien de Recherche Agronomique pour le Développement - Tchad  
ADP- Agricultural Development Programme - Nigeria  
IER- Institut d'Economie Rurale - Mali  
CRS- Catholic Relief Services - Niger  
IRAD – Institut de Recherche Agricole pour le Développement- Cameroon  
PROGREEN– Initiatives for the Promotion of Green Resources- Nigeria  
PNVRA- Program Nationale de Vulgarisation et de Recherche Agricole - Cameroon  
CeRPA– Centre Régional pour la Promotion de l'Agriculture- Benin  
ISRA- Institut Sénégalais de Recherches Agricoles - Sénégal  
ANCAR- Agence Nationale de Conseil Agricole et Rural - Sénégal  
CADEC- Conseil des Associations de Développement Communautaire - Sénégal  
CECADEC- Centre Chretien D'Appui au Développement Communautaire - Tchad  
ASSAILD- Association d'Appui aux Initiatives Locales de Développement - Tchad  
Bayero University of Kano- Nigeria  
Media, more than 100 radio and TV stations- Nigeria, Ghana, Mali, Niger, Burkina Faso, Senegal, Cameroon, Togo, Benin and Chad

## Supply Chain Partners

### **Manufacturers**

Lela Agro, Kano- Nigeria  
COFISAC, Dakar- Sénégal  
EMBALMALI, Bamako- Mali  
Emballage Miankala, Koutiala- Mali  
Fasoplast- Ouagadougou- Burkina Faso  
Polytank, Accra- Ghana

### **Distributors**

GIC DEMRI, Garoua- Cameroun  
Entreprise Agricole Husa'a, Dosso- Niger  
FASOKABA, Bamako- Mali  
AGRISAHÉL, Segou- Mali  
Wumpini Agrochemicals/GAIDA, Tamale- Ghana  
Simple Prince Enterprise/GAIDA, Bolgatanga- Ghana  
BOUTAPA/AGRODIA, Ouagadougou- Burkina Faso  
Ets. Gansou et Fils, Cotonou- Togo and Benin  
Ets. Martin Kongobe, Moundou– Tchad  
Ets. Gandar Joseph - Tchad  
Ets. Momar Syll, Louga- Sénégal