

PICS

NEWSLETTER

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Purdue Improved Crop Storage

One Year Into the PICS3 Project

by Dieudonné Baributsa

The Purdue Improved Crop Storage (PICS3) project has completed its first year of activities. Efforts to commercialize the PICS technology in Sub-Saharan Africa to reduce storage losses have progressed well. PICS activities were implemented in Nigeria, Ethiopia, Tanzania, Uganda, Burkina Faso, and Malawi. The PICS3 project is partnering with government and international research organizations, and local and international NGOs including IITA in Nigeria and Ghana, INERA in Burkina Faso, NCBA CLUSA in Uganda, Sasakawa Global 2000 in Ethiopia, NARI Naliendele and LZARDI in Tanzania, and CRS in Ethiopia, Tanzania, and Malawi. About 800 extension agents were trained to implement PICS village activities in all these countries of which 27% were women. Demonstration activities reached 3,868 villages in the seven PICS3 countries. More than 160,000 farmers attended PICS demonstration activities with 44%



Photo by Tom Campbell

being women. PICS bags are being manufactured and supplied to PICS3 countries by local or regional plastic manufacturers. More than 1.3 million bags were produced and sold during the 2014 season. To date more than 5 million PICS bags have been produced and sold by the private sector in Africa.

Several crops are now being stored in PICS bags including maize, sorghum, Bambara nuts, groundnuts, millet, wheat, common beans, green gram, hibiscus seed, rice, cowpea, soybean, pigeon pea, shea nuts, sesame, sorrel seed, etc. Maize was the predominant crop stored in PICS bags by pilot farmers during the

PICS bags are used by farmers to store several different types of crops

CROP STORED BY FARMERS IN PICS BAGS	PERCENT OF EACH GRAIN STORED IN PICS BAGS BY FARMERS DURING PICS DEMONSTRATION ACTIVITIES IN 2014 AND 2015 IN WEST AND EAST AFRICA					
	Nigeria	Burkina Faso	Uganda	Tanzania	Malawi	Ethiopia
TOTAL NUMBER OF BAGS STORED	7,148	4,458	1,844	1,103	808	617
Maize	52%	60%	79%	83%	98%	90%
Cowpea/beans*	29%	3%	14% [†]	2% [†]	1% [†]	4% [†]
Sorghum/wheat [^]	11%	11%	5%	7%		6% [^]
Groundnut/chickpea [*]	2%	2%	1%	5% [*]		
Rice Paddy/millet ⁺	2%/2% ⁺	7%/5% ⁺				
Bambara nuts/soybean [@]		5%			1% [@]	
Sesame/ Pigeon pea [§]		4%	1% [§]	3% [§]		
Other crops or products	2%	3%				

Other crops or products in PICS bags include: Hibiscus seed, shea nuts, African locust bean (nere), Baobab seed, Acacia seed, potato chips, cassava (gari), yam, ground bean, dried pepper, macadamia nut and mucuna bean.

first year of the project – in Nigeria (7,148 bags)- 52%, in Burkina Faso (4,458 bags) – 60%, in Uganda (1844 bags)- 83%, in Tanzania (1,103 bags)- 83%, in Malawi (808 bags)- 98%, and in Ethiopia (617 bags)- 90%. Prices of crops varied significantly from the time of the bag demonstration to the open-the-bag ceremonies (OBC). For example, in Uganda, the average price increase from demonstration to OBC in 300 villages in three districts (Apac, Dokolo and Kiryandongo) Year One are: beans 27%, maize 11%, sorghum 75%, pigeon peas 33%, ground nuts 48%, soybeans 140% and millet 0%. Farmers are adopting the PICS bags for several reasons including food security, income and health benefits (consumption of chemical-free grain).

Thanks to the support of the Bill & Melinda Gates Foundation to commercialize PICS bags under the PICS3 project, farmers are being empowered to reduce post-harvest losses of stored grains. This is improving food security and increasing incomes of millions of smallholder farmers. In addition, this, the PICS initiative is providing the opportunity to attract the private sector to invest in manufacturing, distribution and sales of PICS bags. Goal is to create a self-sustaining supply chain.



A PICS bags vendor in Bobo-Dioulasso, Burkina Faso.

The Miracle Bag - Kenya

by Robert Gichunge

Late March, 2014 in the remote village of Miuine, Igembe North district brought the most unlikely visitors. Ninety-year-old Magret Muleo and her neighbors were even more surprised to hear the news they brought with them. Officers from the social development arm of the Catholic Diocese of Meru-Caritas organization spoke of an unlikely and unbelievable way to store grains, which would protect the grains from insect damage without the use of pesticides. "But how?" and "It can't be!" were the responses that came from Magret Muleo and her neighbors. They were quick to dismiss the idea but willing to listen to what the Caritas officers had to say and watch their demonstration.

Igembe North is a relatively dry region of Kenya with erratic rainfall. This unpredictable precipitation combined with the lack of a single river flowing through the region often results in food shortages for the area. The rainy season had not brought much in the way of moisture to the farmer's fields had resulted in a very meager harvest.



Magret Muleo gets her first look at the maize she stored in a PICS bag as a pilot farmer for the program in Igembe North, Kenya.

Muleo had not been spared from the season's poor harvest and was skeptical as she listened to the Caritas officers' proposal. They asked Muleo and 4 of her neighbors to take part in the PICS bag program by agreeing to be pilot farmers for the area. She wondered what would become of her family of 10 if the "miraculous bag" damaged the grains she had managed to collect from the poor

harvest. "If I store my grain and after three months it's all devoured by the weevils, I will march to your offices and camp there until you provide for my family," she warned them. Purity Nadegi, a field officer, closely guided Muleo through the process of securing her maize inside a PICS bag. After the demonstration and special attention from Nadegi, Muleo reluctantly agreed to store her grains in the PICS bag as a pilot farmer.

As far back as she could remember, Muleo had always purchased pesticides to kill weevils and other pests but the results were never what she hoped for. "Sometimes I choose not to use anything at all because some of those pesticides we use are not effective at all and I lose so much. If it is true that these bags are chemical free and highly effective as you say, then you have lifted a big burden out of me as I will be assured of longer and safer storage of my grains," she said.

Three months later in July, a rather long wait according to Muleo, the community gathered to witness the opening of the bags. The pilot farmers congregated at Miuine market with other community members to finally see just how well these "miracle bags" worked. When the PICS bags were opened, there was much singing and clapping from the joyful crowd. The onlookers couldn't believe their eyes. "The bags actually worked!" exclaimed Muleo. "The few weevils visible during storage are all dead and my grains are so clean! This is truly a miracle!" The joyful crowd watched in elation while many inquired about the bags and how to get them.

In the next few weeks, Marget Muleo received numerous visitors, many of whom were neighbors who were not present at the bag opening ceremony; they wanted to see the miracle bag for themselves and learn how it works. "I am telling you," Muleo insisted, "these church people have [saved] us from grain destruction by pests and those cancerous chemicals. We will store our crops without worrying at all!"



Pilot farmers gather with community members to take part in the Open the Bag Ceremonies in Igembe North, Kenya.

Purdue/Catholic Relief Services Farmer to Farmer East Africa Small Farm Conferences Link Up With PICS in Ethiopia, Kenya, Uganda & Tanzania

by Tamara Benjamin

November 23, 2015

For the past six months, Dr. Tamara Benjamin from the Purdue Extension Small Farms Team has been working with Catholic Relief Services' (CRS) East African Farmer to Farmer (F2F) in Ethiopia, Kenya, Uganda, and Tanzania. She was able to travel to each country to support their individual conferences in September and October. She focused on how to better engage farmers in the development of their specific conference, encourage farmer driven content for the sessions, offer suggestions for activities that match farmers' learning styles (demonstrations, trade show activities, other farmer's experiences), as well as increase farmer networking opportunities. Small Farm Conferences (SFC) have sprung up all across the USA in order to help farmers learn from each other since many come from diversified farming systems and can be challenging to find conferences that support the variety of enterprises found on these farms.



First Small Farm Conference in Adama, Ethiopia with PICS bags lining the background.

The first conference she attended was held in Adama, Ethiopia. What a surprise to find Purdue PICS bags at this first SFC first Small Farm Conference! CRS in Ethiopia had reached out to Michael Alazar from the Shayashone SPE Company to bring PICS bags to the conference to demonstrate how the bags can be utilized and the importance of using the bags in post harvest storage. The three bags were then given out to the participants who were able to answer correctly some questions about the use of PICS bags. The participants were excited to be able to learn about the bags and find out where they could be obtained. Even though these conferences were being planned by the Farmer to Farmer program in conjunction with the Purdue Extension Small Farms Team, PICS bags found their way to the conference and were a hit among the participants because they were

able to show the importance to local farmers and the ease in which they can be used. Kenya held their SFC in November and also had a demonstration of PICS bags. Uganda will host their SFC in December and Tanzania in February next year, each with a PICS representative demonstrating the importance of post harvest storage for local farmers in each country.



Clean grains fresh from a PICS bag at an Open the Bag Ceremony.

PICS CRS/Purdue Seed Storage project in Sierra Leone

by Dieudonné Baributsa

A special PICS effort was launched in Sierra Leone to help farmers store their seeds and grain after markets had been disrupted due to the Ebola crisis. This effort was funded by CRS Sierra Leone. Purdue partnered with Catholic Relief Services, Cordaid, and local NGOs to promote PICS bags. Community awareness was created through short message services (sms) and, radio programs and advertisements. Given the quarantine, PICS trainings were conducted in small groups and also using mobile phone videos and posters. Ten thousand (10,000) PICS bags were imported from Mali into Sierra Leone. Twenty technical trainers received training that they relayed to 128 field agents. About 3,728 farmers received 2 PICS bags each. Among these farmers, 56% stored rice grain, 36% stored rice seed, and the remaining stored cowpea, maize, gari and dried cassava. The PICS bags put farmers in charge in responding to disaster, making them more resilient to the Ebola crisis.

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A PICS bags vendor in Po, Burkina Faso.

Highlights of the CRS/AGRA MISOCO Project in Niger

by Caroline Agalheir and Mahamadou Amadou

The Reinforcement of Millet, Sorghum and Cowpea Value Chains (MISOCO), is a project funded by the Alliance for a Green Revolution in Africa (AGRA). Since March 2013, MISOCO has worked to improve the incomes of 15,000 farmers in 150 villages through the establishment and strengthening of value chains for millet, sorghum, and cowpea in Maradi, Dosso, and Tahoua regions. Catholic Relief Services (CRS) has partnered with Purdue University, INRAN, and two local producer federations (Sa'a and FUMA Gaskiya of Maradi). The project has worked to empower local producers' organizations to add value to agricultural commodities and enhance their collective bargaining power through training in agricultural marketing. In addition, the project helped reinforce women's capacities and develop their revenue generating activities by empowering them through Savings and Internal Lending Communities (SILC).

In 2015, MISOCO field agents conducted training activities on post-harvest storage technology (including PICS bags) for 194 POs and SILC groups. Out of the 6,365 participants 53% were women. Out of the 150 producers' organizations that developed business plans, 8 received US \$30,000 in loans from microfinance institutions allowing them to invest in seeds, fertilizer, and pesticides to increase their production. The project successfully facilitated the sale of agricultural produce to the World Food Program and grain traders in 2013 and 2014 harvest seasons. The WFP purchased a total of 729.8 tons of millet and cowpea for US \$434,212. Wholesalers, mostly from Nigeria, also bought 583.91 tons for \$235,818. In total, the producer organizations sold grain valued at US \$670,030 in both years. POs are preparing for even larger group sales following the 2015 harvest.



Women producers being taught how to process millet into degué and cowpeas into beroua. (Chaibou Naroua)

Following training of community radio announcers, CRS signed agreements with radios for collecting and broadcasting agricultural products' prices. Since the 2014 harvest, this has helped farmers choose the best moment to sell (or continue to store) their stock. "In October, we bought cowpeas for 20,000 FCFA and stored them in PICS bags until the month of May for sale - without any losses during storage! We were able to sell them for 36,000 FCFA in the market, bringing us a profit of 16,000 FCFA per bag." say Ali Alkassoum, Secretary General of the "Yarda da Fusa'a" producer organization of Tounfafi (Madoua).

Awards

[Corps of Engagement Award presented to the PICS Team by the Purdue University Office of Engagement](#)

[Larry Murdock named Distinguished Professor](#)

[Clémentine Dabire received a special recognition plaque from the Purdue Department of Entomology](#)

[Larry Murdock received The Scientific Award for Excellence in a Feed the Future Innovation Lab from BIFAD \(Board for International Food and Food Agriculture Development\)](#)



Larry Murdock and Dieudonné Baributsa. Professor Murdock receives a BIFAD award for his work with the PICS projects.

Upcoming Events

- [Pan African Grain Legume & World Cowpea Conference](#)
Livingstone, Zambia; Feb. 28-March 4, 2016
- [12th Fumigants & Pheromones Conference](#)
Adelaide, Australia; March 6-9, 2016

Community Voices



[Ibrahim's Story](#)



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