

# PURDUE IMPROVED CROP STORAGE SUPPLY CHAIN WORKSHOP



## BOOK OF ABSTRACTS

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**PICOS**3  
Purdue Improved Crop Storage

**PURDUE**  
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## **Purdue Improved Crop Storage Supply Chain Workshop**

Purdue University is working with the private sector and partners to commercialize the Purdue Improved Crop Storage technology ([www.picsnetwork.org](http://www.picsnetwork.org)). The goal of the program is to reduce post-harvest losses using hermetic technologies. For the last nine years, PICS bags have been promoted in more than 23 countries in Africa and Asia—Ethiopia, Tanzania, Uganda, Nigeria, Burkina Faso, Ghana, Malawi, Kenya, Rwanda, Zambia, Mali, Senegal, Togo, Benin, Cameroon, Niger, Sierra Leone, D.R. Congo, Burundi, and Chad, Nepal, Afghanistan and India.

The PICS activities are focused on creating the demand and making the technology available to farmers by developing a supply chain. Demand building includes awareness creation through village and market demonstrations, and media activities (radio, TV, posters, and cellphones). PICS works with the private sector including plastic manufacturers, inputs distributors and vendors to produce and sell bags to smallholder farmers. The demand for the PICS bags has steadily increased in various countries but availability in rural areas remains a major challenge.

The goal of this PICS Supply Chain Workshop is to plan for growth in order to meet the demand for PICS bags by farmers. The workshop will review and harness the successes, challenges, and lessons learnt, and explore opportunities to improve the availability of PICS bags in rural areas. Participants will include manufacturers, distributors, vendors, partners who are funding and/or promoting PICS bags, and PICS3 project business and media consultants. This booklet provides a synopsis of the current state of PICS activities in different countries.

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## Supply Chain



### **PICS SUPPLY CHAIN DEVELOPMENT IN GHANA**

*Alex Bokuma, PICS Business Consultant*

PICS commercialization efforts in Ghana started in 2010 through a partnership between Purdue University and World Vision Ghana. In 2015, IITA and four local NGOs partnered with Purdue to scale-up commercialization. Demand creation was achieved through village sensitizations, demonstrations and open-bag ceremonies. To date, 193,118 people in 3,300 villages in five regions have been reached. These efforts are supported by business and media consultants tasked with developing a sustainable supply chain and to deepen awareness and marketing drive respectively.

The bags are distributed by three licensed distributors; Simple Prince Enterprise, Ganorma Ltd and Agyaaku Farms Ltd who are selling through 96 outlets. Marketing is also carried out through radio and TV broadcast, cell phone messaging, press publications and texting to short codes for feedback. These increased sales to 61,000 PICS bags in 2016 despite Ghana's potential of about 400,000 bags per year.

The major challenge is the high cost and limited access to credit. Consequently, manufacturers are unwilling to give a credit line to distributors who in turn hold the bags in their shops in the cities. Distributors also have limited sales personnel, are unwilling to adopt aggressive sales techniques such as market-to-market delivery, and overly rely on big NGO buyers. The high cost of PICS bags vis-a-vis availability of cheaper hermetic bags such as GrainPro and Spanish Fly remains an emerging challenge. Awareness is still an issue. To address these challenges, distributors must be able to access affordable credit, manufacturers must provide credit lines to trustworthy distributors, distributors must recruit more sales personnel and outlets must begin to push the bags and scale up awareness efforts.

## **PICS SUPPLY CHAIN DEVELOPMENT IN SIERRA LEONE**

*Robert Chakanda, AgroVentures - SL*

AgroVentures is a Sierra Leone-based agricultural company that invests in multiple agricultural ventures, whose primary undertakings include seed production. The company engages farmers along the value-chain of its principal crops, and enhances their capacity through training and technical support. Catholic Relief Services introduced PICS bags in Sierra Leone in 2015. PICS activities involved the training of over 5,000 farmers and technicians on the use of bags. In 2016, the Milla Group, a plastic company in Sierra Leone, signed a licensed agreement with Purdue Research Foundation to produce the bags locally. However, Milla is not currently able to produce the outer woven bags. These have to be purchased and branded with the PICS logo separately. AgroVentures-SL has signed an agreement with Milla to conduct promotion, technical assembly of the bags, wholesale distributorship and training. NGO's order PICS bags from AgroVentures-SL and distribute to their farmers (businesses and a number of farmers). Between November 2016 and February 2017, 7,200 bags have been sold to NGOs. Agroventures plans to establish retail outlets with agro-business centers and local dealers throughout the country, and link up with the government to include PICS into their programs. Further, there is an existing potential market for PICS in the sub-region – Guinea and Liberia remain to be tapped and are estimated to have potential sales of 50,000 to 100,000 bags per year.

## **PICS SUPPLY CHAIN DEVELOPMENT IN MALI**

*Maimouna Coulibaly, Faso Kaba*

Faso Kaba is a small Malian seed company. Faso Kaba received a grant from AGRA to implement a project with the following objectives a) Educate and inform farmers about the importance of improved technologies (seed, fertilizer etc.); b) Increase availability of improved seed to smallholder farmers (below current market cost, in appropriate quantities and in locations that are easily accessible to poor and under-served farmers ); c) Demonstrate that there is a demand for improved seed that will support a sustainable distribution system to alleviate hunger and poverty. Despite many variety releases by national and international research institutions in Mali, only a few are in the hands of the farmers. This low adoption is explained by a seed sector that is poorly developed and the informal seed market accounts for nearly all the seed used. During the 2015 and 2016 harvest seasons, Faso Kaba ordered and sold 25,490 PICS bags in three regions where cowpeas are produced. Faso Kaba used 1,000 used to store seeds of all types including rice, pearl millet, sorghum, maize and cowpea. More than 30,000 farmers have been reached and 150 agrodealers were trained on PICS. PICS bags provide a good business opportunity given its ability to store all types of grain and processed dry food. However, there is a need to manufacture small size bags (e.g. 25 and 50 kg) for some customers who cannot handle 100 kg bags. These sizes will be more convenient to some farmers (women, older individuals, etc.) and will probably increase the PICS bag sales.

## **PICS SUPPLY CHAIN DEVELOPMENT IN RWANDA**

*Wenceslas Habamungu, Ecoplastic*

Ecoplastic is a private company created in 2010 and is involved in the production of recycled products such as rubbish bags, roofing material, mushroom seed covers and PICS bags. Ecoplastic has the capacity to produce 255,000kg of various plastic products each year. PICS bag products make up about 30% of the company production. Since 2013 until the end of 2016, Ecoplastic has sold 115,335 bags.

Year	2013	2014	2015	2016
PICS Bags Sold	15,199	17,407	70,013	12,716

Ecoplastic targets agro-dealers and farmer's groups that are working with NGOs such as CARANA, AMDO, IFDC and CRS as PICS bag vendors. Ecoplastic has implemented several activities to create awareness of PICS bags including radio broadcasts, talk shows, demonstration for farmer's groups, and training for PICS bag vendors. According to MINAGRI, there are almost 300,000 farmers who need to use the PICS bags each year. There is a big market in neighboring countries, especially Burundi and eastern DR Congo. Ecoplastic foresees growth in sales of between 30,000 and 40,000 bags per year according to the potential demand. Challenges include lack of resources to create awareness and demonstrations across the country; the high cost of raw materials - raw material is purchased in small quantities thus increasing the cost of the product to farmers; low agricultural production in the 2nd term of 2016 was also a challenge. The interest of government and development partners in addressing postharvest storage losses and growing interest from farmers and others in chemical-free storage technologies present some opportunities for increased growth in PICS bags sales.

## **PICS<sub>3</sub> PROJECT ACTIVITIES IN BURKINA FASO**

*Sankara Issaka, PICS Business Consultant*

A strategy centered on building a strong existing network and the improvement of the availability of the bags allowed to sell 38,193 PICS bags in 2016 compared to 30,346 bags in 2015, an increase of 25,8%.

The following activities have helped us achieve these results:

- Integration of several partners into the PICS network: NGOs that are supporting farmers' organizations in agricultural production and postharvest, and school feeding programs (primary, high schools and , universities);
- Communication via interactive discussions using on average ten local radios per year throughout the country, distribution of flyers and posters to government agencies in particular;
- Demonstrations of PICS technology in major rural markets and in remote communities;

Partnerships with major NGOs such as the World Food Program (WFP) and the Research and Action Group for Development (GRAD) have resulted in the training of 15 agrodealers and 14 farmers' unions who have adopted PICS bags. Challenges to increased sales include counterfeit, ineffective distribution network, price of the bags, and the distribution of free bags to producers by government and NGOs.

## **PICS SUPPLY CHAIN DEVELOPMENT IN MALAWI**

*Barnabas Komakoma, PICS Business Consultant*

The PICS3 project has established a broadly spread supply chain in Malawi. The bags are manufactured locally by Polypack Co Ltd based in Blantyre. Distributors are engaged in the sale of PICS bags. Currently there are two main distributors: Agora in the Southern region and Farmers World, serving the Central and Northern regions. However, there is a need to develop and expand this chain to reach greater numbers of farmers. The Export Trading Group, which has 81 outlets dotted across Malawi, will start distribution of PICS bags in 2017. PICS bags sales are expected to improve tremendously in 2017. A bumper harvest is expected in the coming season due to prevailing good weather conditions. Numerous NGOS involved in postharvest management have shown interest in working with PICS3 Project. They include World Food Program Malawi Office, One Acre Fund, Malawi Improved Seed Systems technology (MISST), Farm Income Diversification Program and Catholic Health Commission among others. Regionally, Zimbabwe, Mozambique and Zambia have shown interest in PICS bags and have begun buying them. Regional sales are expected to grow in the coming year. Seed companies have shown interest in PICS bags but they require further research to convince them of the effectiveness of the technology in seed storage.

## **PICS SUPPLY CHAIN DEVELOPMENT IN NEPAL**

*Rasmila Maharjan & Gautam Maharjan, NAF Seeds Pvt Ltd*

NAF Seeds Pvt. Ltd has served the agriculture sector for the last 18 years. NAF Seeds has the latest technologies in agriculture including modern greenhouses, drip Irrigation systems (Netafim), Zero Energy Water Lifting pumps (Papa Pump of UK and Barsha Pump of Netherland) and the PICS Bag, a hermetic grain storage technology. NAF Seeds specialists provide after-sale services, training and an awareness program for small holder farmers and women cooperative groups in the villages. Post-harvest losses in Nepal range from 22-25%. In 2014, NAF Seeds obtained the license from Purdue University to manufacture PICS bags. In 2016, 150,000 bags were sold. The bags are supplied to farmers through local dealers. Training and demonstrations are conducted to promote and create awareness of the bags. In an effort to reach as many farmers as possible, the company is negotiating with the government to have PICS bags included in government programs. To scale up the adoption of PICS bags by farmers and to improve the availability of bags, a concerted effort by the government, non-governmental organizations and the private sector is needed. Through its efforts, the company is contributing to the reduction of post-harvest losses and hunger in Nepal.

## **PICS SUPPLY CHAIN DEVELOPMENT IN TANZANIA**

*Bernadette Majebelle, PICS Business Consultant*

The PICS3 project was introduced in Tanzania in 2014. Pee Pee (T) Ltd (PPTL) signed a trademark and license agreement with the Purdue Research Foundation for manufacturing, distribution, and sale of PICS bags in Tanzania. The PICS3 Project inception was in July 2014 and was piloted in six regions: Lindi and Mtwara in the Southern Region and Mwanza, Mara Kagera and Simiyu in the Lake Zone. Fifteen-hundred PICS bags were distributed in 240 villages. From April 2015, the project was scaled up by the Catholic Relief Services (CRS) in 9 regions covering 3,400 villages. In collaboration with extension officers through a Training of Trainer program, CRS implemented village activities.

PPTL has established a network of large distributors in the Northern, Lake, Eastern and Southern Highland Zones. Sales of PICS bags in Tanzania has increased from about 137,000 bags in 2015 to 380,000 bags in 2016 - about 175% increase. PPTL has also exported 497,000 PICS bags to neighboring countries (Kenya, Burundi, Rwanda, and the DRC). It is projected that 3 million PICS bags will be distributed by December 2017. The distribution of PICS bags has been supported by retailers, vendors and a number of super-dealers (13 super-dealers in 2016). While in 2015 there were 22 vendors, by December 2016, there were 122 vendors using more than 350 retail outlets for PICS bag distribution.

The PICS3 Project is working with partners in the dissemination of the technology; these include district councils, FAO, WFP, One Acre Fund, Tanganyika Farmers Association, Helvetas, Brac, Village Community banks (Vicobas), AGRA, RUDI, BRiTEN, SACCOS, farmer groups and Nafaka. Awareness creation has reached only a small number of all villages in Tanzania. Distribution to remote areas has been very costly due to poor road infrastructure and this has resulted in high retail price of up to TZS 4,500. PICS technology in Tanzania is well accepted and has been successful wherever it has been tried. It is cost effective and easy to adopt by smallholder farmers compared to other hermetic technologies.

## **PICS SUPPLY CHAIN DEVELOPMENT IN UGANDA**

*Peter Mugisha, PICS Business Consultant*

In Uganda, PICS activities started in 2014 with a partnership between Purdue University and NCBA CLUSA to build awareness through training farmers on the use of PICS bags. By the end of 2016 training activities reached a total of 3,500 villages in 21 major grain growing districts. Awareness building has created interest from public and private organizations including government departments (National Agricultural Advisory Services, Operation Wealth Creation, Ministry of Agriculture, Uganda Prisons and many others), World Food Programme, Palladium-NU-TEC Market Development, Chemonics, Sasakawa Global 2000, CRS, Samaritan's Purse, agro input dealers, farmer organizations, produce buyers and many others. This awareness has resulted in an increase in demand but the farmers and other stakeholders have found it difficult to access the PICS bags. Currently all the major PICS activities in Uganda are focused on the development of the supply chain so that all stakeholders can access the bags in shops and local markets in their communities.

Since 2014, more than 140,900 PICS bags have been sold to farmers and other users in Uganda. Over 51% have been sold in the last 5 months. Increased involvement of the NGOs and other organizations like World Food Programme, in the awareness creation and supply chain development will increase availability of the bags to the farmers. There is an opportunity for government uptake through NAADS, Operation Wealth Creation and government extension services. The inability of vendors to obtain PICS bags on time due to financial challenges has been a drawback and demoralizes farmers who are willing to use the technology. Expansion of the supply network to reach farmers in rural areas is a challenge. There is a need to protect the distributors and to provide them with the opportunity to build the supply chain. Volume based sales by the manufacturer can provide room to the distributors to grow their networks.

## **PICS SUPPLY CHAIN DEVELOPMENT IN KENYA**

*Leah Muriuki, Bell Industries Ltd*

Bell Industries Ltd was incorporated on 26th August 1991 as a Limited Liability Company to carry on the business of trading and dealing in agro- & industrial chemicals, fertilizers and other products among other objects of the incorporation. The Company is a family-owned business. The PICS bag system was introduced to Bell in November 2013. Since then, the uptake by farmers has continued to increase over the years with remarkable improvement on year after year with sales reaching over one million bags since November 2013. To date, Bell's marketing activities have been through farmer education platforms during field days, open-the-bag ceremonies at village markets, national agricultural shows, print media and vernacular local radio stations. Adoption has largely been driven by partnering with non-governmental organizations (USAID-KAVES) and linking distributors to these organizations. Bell has also leveraged its activities with the Ministry of Agriculture and county government programs. PICS bags mainly reach the farmers through selected agro dealers and stockers all over the country. There are still untapped markets for the bags and reaching out more would create sales opportunities. We have formidable competition from other upcoming hermetic bags in the market, some of which have not undergone efficacy trials and thus are a big challenge to the PICS business.

## SUPPLY CHAIN DEVELOPMENT IN ETHIOPIA

*Yared Sertse, Shayashone PLC*

PICS bags are being promoted in Ethiopia by Catholic Relief Services (CRS), Sasakawa Global 2000 and Shayashone in partnership with the Ministry of Agriculture. The bags were first introduced in 2014 as pilot demonstrations in 100 villages. Within the pilot year, over 9,000 bags were sold. The project scaled up in 2015 & 2016 reaching more than 4,000 villages through demonstrations. More than 110,000 bags have been sold during the 2016/2017 harvesting season. An additional 40,000 bags order from WFP and other local NGOs is in process. Discussions are ongoing with FAO, Federal Cooperative Agency, ICRISAT, EIAR, and ATA for large-scale institutional purchases.

The PICS supply chain in Ethiopia adopted two models: private and cooperative models. In the private model the supply chain is as follows: manufacturer to distributors to vendor to reseller to farmers. The cooperative model is as follows: manufacturer to union to cooperatives to farmers. As of today, there are five national distributors selling PICS bags through 70 active vendors across the country. In relation to the cooperative model, there are 9 cooperative unions directly buying from the factory and distributing PICS through 60 primary cooperatives. There is strong interest in PICS bags by government as well as development/donor organizations. Over 10 Woredas/districts have scaled-up PICS on their own by floating tenders for PICS bag supply. The key challenges thus far have been the limited capacity of the manufacturers and demand by vendors for consignment delivery.

## SUPPLY CHAIN DEVELOPMENT IN AFGHANISTAN

*Abdullah Sidiqi, Karwan E. Sabz*

Karwan E Sabz (KES) is a private company created in 2013 that is involved in agricultural activities including selling post-harvest technologies such as PICS bags. Karwan E Sabz is the licensed distributor of PICS bags in Afghanistan and has the capacity to sell PICS bags throughout Afghanistan. PICS bag accounts for about 30% of the company's business. From 2013 to 2016, Karwan E Sabz has sold more than 225,000 PICS bags.

Year	2014	2015	2016
PICS Bags Sold	33,000	67,000	125,000

Karwan E Sabz targets agro-dealers and farmer's groups that are working with NGOs such as RADAP (N,W,S), World Vision, CRS, ACTID, DACCAR, NHLP, FAO and UNDP to commercialize PICS bags. Karwan E Sabz has implemented several activities to create awareness of PICS bags including radio broadcasts, talk shows, demonstrations for farmer's groups, and trainings for PICS bag vendors. Karwan E Sabz sales records and projections shows that there are about 165,000 farmers who need to use the PICS bags each year. The Islamic Republic of Afghanistan is a landlocked country located within South Asia and Central Asia. Afghanistan shares land borders with 6 countries: Iran, Turkmenistan, China, Pakistan, Tajikistan, and Uzbekistan. There are currently no PICS bags markets in these countries and Afghanistan is the first country among these whose farmers are using PICS bags since 2013. Karwan E Sabz foresees growth in export sales of between 45,000 and 50,000 bags per year. Challenges include in expanding PICS markets include: security issues, farmer's economic constraints, lack of resources to create awareness and demonstrations across the country, and the high cost of importation of raw materials from neighboring countries. Sometime the transportation costs of PICS bags across the country can also be very high, especially during winter and spring months, when most of the roads are closed due to snow and rain.



## **SUPPLY CHAIN DEVELOPMENT IN NIGER**

*Ibrahim Zanguina, Husa'a*

Established in 2010, Ets Husa'a is active in the agricultural sector with a focus on quality seed production and marketing. In June 2010, Husa'a became the distributor of PICS bags in Niger. The company has leveraged its existing sales distribution network to accelerate the commercialization of PICS bags in the country. Introduced in Niger in 2007, the PICS bag manufactured by Lela Agro in Kano, Nigeria has been widely adopted by Nigerian farmers through awareness building including village demonstrations and media. From 2009 to 2015, sales of PICS bags increased significantly from 21,000 to more than 100,000 bags per year.

As a national distributor, Husa'a needs to access financial facilities to order more PICS bags from the manufacturer. Linkages with financial institutions such as banks are therefore essential. This is still a challenge that the company faces. For the 2016-2017 harvest campaign, Husa'a has already ordered and distributed 33,000 PICS bags. Three orders were made with pre-payment. Among the constraints to increase the adoption of PICS bags are: (1) timely stock availability - which requires access to financial resources on time; and (2) competition that occurred this year because of the fall of the Naira where Nigerian PICS vendors stormed the Niger markets.



## **Media Activities**



## **PICS MEDIA ACTIVITIES IN GHANA**

*David Babayara, Nu Image Communications*

The story of the PICS bags in Ghana is being told using a mix of media channels and strategies aimed at making the PICS bags a household product in the country. Radio messaging in the form of spot advertisements (jingles and Live Presenter Mentions (LPMs)/announcements) and in-depth discussions are being used to create much-needed awareness. This information on the efficacy of the bags is made available to the public thereby increasing sales volumes in the country tremendously. In 2016, twenty-five radio discussion programs took place on eighteen different radio stations located in six regions in Ghana. A total of over three thousand six hundred adverts were aired on twenty radio stations.

Television advertising has also been used to provide audio-visual messages to the public about the effectiveness of the PICS bags in Ghana. In total, three TV stations have broadcast PICS messages which have been in the form of short documentaries, advertising spots and LPMs. During the period under review, about eighty spot adverts, forty LPMs and twenty-four short documentaries have been aired on three different television stations in Ghana. During this period approximately two newspaper and two online stories about the effectiveness PICS bags have been published as well.

We worked with a data services management company to develop and host a short code service for PICS broadcasting in Ghana. During the process, a short code (1406) was advertised, people text the word “SGS” to the code number and, in return, receive a list of all major PICS vendors and their locations and contact details. This service has enhanced the impact of media activities in Ghana.

## **PICS MEDIA ACTIVITIES IN TANZANIA**

*Joseph Malika, PICS Media Consultant*

Four national radio stations and eleven community radio stations have been used to promote PICS bags in Tanzania. The stations broadcasted jingles, adverts, news stories and talk shows. Two national television stations and one local television station based in Morogoro have also been used to create awareness of PICS bags. Television programs aired countrywide have helped to demonstrate how to use PICS bags effectively. The benefits of the bags are also explained to farmers and other audiences during the programs. In 2016, eleven talk shows were conducted and the bags continue to draw the interest of farmers and other stakeholders. At Radio Free Africa, the talk shows attracted one hundred phone calls and more than two hundred text messages. Telephone calls and text messages were recorded on an ICT platform. There are one thousand five hundred farmers who have made enquiries through the ICT platform. A documentary on the launch of the PICS bags has been developed. The launch was held in June 2016 at the parliament buildings in Dodoma and attended by Members of Parliament, the deputy speaker, the deputy Minister for Agriculture, the Minister for Industry and other stakeholders. The event was covered by many media outlets, helping to spread the PICS message to a wide audience including Government officials who are increasingly interested in PICS bags. A WhatsApp group was created to improve the flow of information between the manufacturer, vendors, farmers, partners, media and other interested people. It has been a useful tool in relaying messages on the availability of PICS bags. Farmers can quickly send information when they cannot access the bags and the concerned party can respond accordingly. This platform has been useful in directing farmers to vendors who are stocking the bags.

## **PICS MEDIA ACTIVITIES IN MALAWI**

*Guma Mbalule, Creative Multimedia*

Radio, TV stations, newspapers and social media have been used to create awareness of PICS bags in Malawi. Television jingles, programs and news features have aired on Luso TV, MBC TV, Zodiak TV and Luntha TV. The Nation and Globe newspapers have covered PICS training activities. A WhatsApp group (PICS Media hub) was created and has linked farmers, extension workers, journalists and distributors to the manufacturer. The group has served as a useful platform for sharing information and this has contributed to the improvement of the availability of bags in rural areas. The lack of bags in certain areas is quickly reported on the platform and action can be taken by the distributors and manufacturer. Farmers and other stakeholders are informed of PICS training activities through the group. Vendors who are interested in selling PICS bags have used the platform to express their interest to the manufacturer and distributors. Press briefings and talk shows have also been held to promote the bags. Media houses have responded positively to PICS bags with some of them offering free slots for PICS messages in their programs. These media activities have also drawn the interest of organizations working in the agricultural sector. Some organizations have expressed interest to include PICS bags in their programs. The full impact of these media activities is expected in 2017 and will be assessed through improved sales and other indicators.

## **PICS MEDIA ACTIVITIES IN ETHIOPIA**

*Yared Sertse, Shayashone PLC*

PICS media activities in Ethiopia have three pillars: radio jingles, talk shows and news articles. Radio talk shows and commercial messages are aired in four different languages. The radio jingles are prepared in four local languages and are aired on 8 community radio stations that reach over one third of the country. The radio talk shows are a mix of live and recorded sessions. During the live talk shows, farmers hear testimonies from individuals who have used PICS bags and their accounts on how well the bags preserve their grain and keep their seed fresh. Experts from the Bureau of Agriculture, PICS bag vendors and lead farmers take part in the radio talk shows. The media activities are supported by ICT - farmers are given a short code after each commercial radio spot to call for the address of nearby vendors. Potential distributors also make inquiries through the short code system. Incoming SMS messages are kept in a database and each week over 50 farmers receive phone calls from our office to check the status of their SMS request. Radio commercials are run for 30 days, during which five radio talk shows are held. Over the 30-day period, a total of 1,500 SMS inquiries were received from farmers asking for vendor contact information and also seeking vendorship opportunities. Media activities including ICT are helping to improve the availability of PICS bags.

## **PICS MEDIA ACTIVITIES IN UGANDA**

*Frank Namudenyi, PICS Media Consultant*

Since 2014, the PICS3 project has been implemented in Uganda. Much of its success has been due to media campaigns to build awareness among farmers and, promote manufacturers, distributors, vendors and retailers. These media campaigns have evolved into partnerships with national radio stations like the Uganda Broadcasting Cooperation (UBC), Bukedda and 10 community radio stations. Talk shows have been hosted weekly on these radio stations and the audiences engage with the vendors and farmers who have already used or are selling the technology. Several topics are discussed including the benefits of the bags, how to identify the bags, cost of the bags, and live call in from the audiences for questions and answers. Radio Jingles, adverts, and hourly DJ mentions are aired on several stations. We have partnered with national newspapers like the New Vision and the Daily Monitor on food campaigns like world food day publications. We have also aired news on TV stations like NTV, WBS and UBC TV. Videos detailing local success stories have been produced and broadcasted on TV. A cellphone video that shows the use of PICS bags was developed and translated into the local language to help trainers and vendors to better explain the technology to farmers. Taking advantage of mobile phone penetration in Uganda, we have been using the free dial USSD codes to provide information about the location of vendors to the farmers. Press conferences have helped increase PICS awareness to the public. These media campaigns have not only increased the demand for the bags but have also improved the post-harvest handling practices in the rural communities. Challenges in reaching all farmers in Uganda include limited funding to get the message translated and aired in all local languages.



## **Partners**



## **FACILITATING ACCESS TO CREDIT TO IMPROVE ADOPTION OF HERMETIC TECHNOLOGY**

*Jones Govereh, Alliance for Green Revolution in Africa (AGRA)*

AGRA has established a revolving fund to improve access by SMEs to working capital to distribute postharvest technologies in Tanzania. Equity Bank Tanzania (EBT) was identified as the partner to manage this \$400,000 lending scheme. The product features a 6 - 18 month term at a 0.83% per month interest rate which includes business insurance coverage. The loan ranges from \$2,500 to \$14,000. No additional rates are charged on the product and applicants are expected to transact through EBT accounts. The facility will accommodate up to two cycles of orders. A turnaround time of one month can reduce the cost of the loan to TzSh33/bag leaving the bulk of the margin to cover other costs and yield an attractive return on investment. The loan funds once released to the vendor will automatically be transferred to the manufacturer.

The target market is technology vendors distributing hermetic bags, metal/plastic silos and cocoons. By targeting this segment, the revolving fund will develop a pull-effect on the rest of the supply chain. The revolving fund is not for start-ups. Eligible SMEs need to have been in business for at least two seasons. Co-guarantee for the loan applicant is a requirement. Personal character and ability to repay are important factors when determining loan recipients. Manufacturers are expected to collaborate and assist with monitoring of stocks and to share data to ensure loan repayment and stock levels are in sync.

A series of trainings are scheduled in 2017 for credit officers and vendors. During regularly scheduled refresher training courses, EBT will invite technology manufacturers to train credit officers. The Bank plans to train vendors on financial literacy and entrepreneurship.

## **A CASE STUDY ON COMMERCIALIZING HERMETIC STORAGE TECHNOLOGY (HST) IN KENYA**

*Steve New, USAID-KAVES*

A maize value chain study for Kenya, carried out by USAID-KAVES in 2013, confirmed that postharvest losses of up to 15% (previously reported by FAO and the MOA) were common during home storage of maize, and that specific interventions to reduce this waste would have a significant impact on overall value chain efficiency.

To test the cost-effectiveness of hermetic storage bags in reducing losses, KAVES embarked on an independent field trial with small scale farmers to test 2,500 PICS bags. Results confirmed that the bags were more than 95% effective in reducing losses and that the cost of the bags could be recovered within one year. Prior to this test phase, knowledge of the technology and commercial sales were negligible, with NGOs and development projects as the only buyers.

To encourage adoption of the bags, increase market awareness and collect more information on the long-term value of hermetic storage, KAVES initiated and funded an awareness campaign with Bell Industries, the national distributor of PICS bags. Farmer trainings, demonstrations, field days, and media messaging led to massive adoption within six months with a commercial momentum at the small-scale farmer level being observed. No significant technical or cost problems were encountered. County, national governments and regulatory agencies endorsed the product as fit for use.

Sales of PICS bags increased dramatically, and by January 2017 more than a million units of PICS bags have been sold in Kenya with a farm gate value of USD 2.6 million and storage capacity of 103,000 tonnes of grain. The end users are almost exclusively smallholder households, but schools and other institutions are rapidly adopting the bags.

This potential new market also attracted new manufacturers and distributors who are driving commercialization and adoption. Competition between different brands including PICS, AgroZ, GrainPro, Elite Bags, and Zerofly Hermetic have kept prices to around KSH 200/- per bag (\$2.00) and new promotional incentives provided by commercial companies are accelerating sales in 2017. The PICS brand has retained a market share of 70-80%.

## **ADDRESSING INTRA-REGIONAL TRADE CHALLENGES IN EAST AND SOUTHERN AFRICA**

*Diana Ngaira, Food Trade East & Southern Africa*

FoodTrade Eastern & Southern Africa (ESA) is a five-year trade enhancement and promotion program funded by the UK Government with a focus on staple food crops. FoodTrade ESA operates in nine East and Southern African countries, and works with private sector and relevant institutions to improve storage, inputs and service markets, information and coordination mechanisms and policy and regulation, with the aim to get more people trading in regional staple food markets. To reach our vision of 'unlocking trade across borders and across the region to get more food to more people' two instruments are utilized: a Challenge Fund and a Development Fund. The funds are catalyzing lasting changes that enable efficient trade in staple foods across the region to improve the lives of farmers, suppliers, service providers, traders, retailers, and consumers. The Challenge Fund is targeted at private sector investments and the Development Fund is targeted at other development partners.

To stimulate private sector investment and strengthen the development of regional staple food markets, the program focuses on three main outputs: (i) Improved post-harvest markets; (ii) Improved input markets; (iii) Improved trade environment and reduced uncertainty. We support initiatives that promote Women's Economic Empowerment (WEE) and participation in regional trade in staples, reduce the impact of climate change within the sector and improve the nutrition of consumers.

Food production and marketing systems throughout East and Southern Africa perform far below their optimal levels. A wide range of barriers to trade have resulted in the fragmentation of markets for both agricultural products and inputs. This has led to a high level of price volatility and contributed to food insecurity. These problems extend further down the value chain to key inputs and services that food systems need. Using the pioneering 'making markets work for the poor' approach, FoodTrade ESA looks at the ESA region as potentially one market system, and facilitates changes within the sub-market systems to contribute to effective functioning of the food market structure. Put simply, FoodTrade ESA is taking a systemic approach to addressing intra-regional trade challenges in East and Southern Africa through partners like PeePee Tanzania Ltd.

## **TAKING IT TO SCALE - OPTIONS FOR HERMETIC STORAGE**

*Brett Rierson, World Food Programme*

There have been pilot programs in over 40 countries to reduce post-harvest losses, by a variety of international agencies. With the exception of Post-Cosecha in Latin America, most have shown that hermetic storage reduces losses, yet almost all fail at the most crucial stage: taking a technology beyond an academic conversation and growing it to scale.

Looking at the challenge from a supply chain perspective and leveraging its deep field presence, the World Food Programme (WFP) in the last 3 years in Uganda has successfully scaled to over 110,000 farmers who have chosen to participate and purchase hermetic storage, with private sector manufacturers and distributors a central element of the success. Farmer incomes have tripled, farming families have their own stored food during the lean season, and aflatoxin levels have plummeted. Yet, this is just the first step. The Ugandan government has asked WFP to collaborate closely with its Ministry of Agriculture to lead a nation-wide effort to reach 2.5 million farmers before 2025.

In 2016, WFP introduced PICS bags into its list of hermetic storage options to be made available to participating farmers. Each farmer that ordered the PICS bags was entitled to 4 bags and 1 plastic tarpaulin. WFP subsidised the cost of the tarpaulin by 50%, however, no subsidy was provided for the bags as this might have distorted the market price as PICS had already developed a market network across the country.

A total of 68,000 PICS bags were procured and provided to WFP distribution agents for delivery to farmers at full cost recovery. This was in addition to 12,000 plastic and 2,500 metal silos that were provided at a 50% subsidy to farmers. The results of the above intervention have been significant. There has been a 98% reduction in post-harvest storage losses among participating farmers translating into increased incomes as well as food and nutritional security. Furthermore, there has been development of a hermetic storage production and distribution industry which did not exist before 2014.

WFP has used the knowledge gained in Uganda to establish similar initiatives in a number of African countries including Rwanda, Tanzania, Sudan, Burkina Faso, Zambia, Burundi, and Mali. Also, WFP has set up a Post-Harvest Knowledge and Operations Centre to assist with packaging and dissemination of available knowledge and experience on hermetic technology to various countries in Africa and Asia.

# PICS

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