Extension of Purdue Improved Cowpea Storage Technology: Impacts and challenges; Case study Plateau State Nigeria

Ayo Abifarin\textsuperscript{1a}, T. Abdoulaye\textsuperscript{2} and J. Lowenberg-Deboer\textsuperscript{3}

Abstract
The Purdue Improved Cowpea Storage (PICS) technology was introduced in Plateau State, Nigeria, to prevent the hazards of using wrong chemicals in cowpea storage and to improve the income of cowpea farmers. In Plateau State, more than 16,000 farmers attended demonstrations of the PICS technology during the pilot and main project implementation phases. Total attendance at the bag opening ceremonies for the two phases was 26,215. The adoption of the PICS technology in the state was very high as 5,625 bags were sold during the main project phase and there was an 80\% price increase between storage and bag opening indicating that cowpea farmers had more money. PICS had a big impact on the students of the Nakam Memorial Secondary School who no longer eat chemically treated cowpea meals because their school has adopted the use of PICS bags. The project put special emphasis on bringing the technology to women farmers as shown by the high number of women who attended the bag opening ceremonies in Plateau State.

Table 1. PICS Project Implementation in Plateau State: Some Data Collected During the Pilot Phase and Main Project.

<table>
<thead>
<tr>
<th></th>
<th>Pilot Phase</th>
<th>Main Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demonstration</td>
<td>Bag Opening</td>
</tr>
<tr>
<td>Number of Villages</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Number of PICS Bags</td>
<td>103</td>
<td>496</td>
</tr>
<tr>
<td>Date Ended</td>
<td>17/02/2009</td>
<td>31/05/2009</td>
</tr>
<tr>
<td>Male</td>
<td>353</td>
<td>732</td>
</tr>
<tr>
<td>Female</td>
<td>175</td>
<td>481</td>
</tr>
<tr>
<td>Children</td>
<td>1,070</td>
<td>1,195</td>
</tr>
<tr>
<td>Total attendance</td>
<td>1,598</td>
<td>2,408</td>
</tr>
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</table>

Figure 1: Distribution of participants at pilot phase and main phase across the state. DEMO = Demonstration. BO = Bag Opening

Figure 2: Number of PICS Bags Sold

Introduction & Methodology
The PICS technology was introduced in 2008 in Plateau State, Nigeria, as a pilot project to address cowpea storage problems without the use of chemicals. The main project was expanded in 2009-2010. Table 1 shows some of the data collected. The photograph below shows a bag-opening ceremony at one of the villages in the state.

Results
- Farmers made a gain of 80\% on average by using PICS bags for 4-6 months of storage (Table 1).
- A female farmer at Bimpo village in Bassa LGA sold her 100-kg bag for N16,500 after 5 months of storage. Cost during harvest was N8,000.
- There was high adoption as shown by the number of bags sold (Table 1 & Fig. 2.).
- Th high percentage of women’s participation is a result of efforts made by PROGREEN and ADP staff (Fig. 1) to include women.

Impact of PICS bag adoption in Nakam Memorial School Panyam Plateau State
In 2008, about 60 students at Nakam Memorial Boarding School in Panyam, Plateau State, had nausea, vomiting, and a bad stomach, after a meal of cowpea that the school bought from the market. Ten of the students were hospitalized for two days. A few months after the incident, the pilot phase of the extension of the PICS technology was introduced to the state. The school was one of the sites where the technology was demonstrated. The school bought a total of 130 bags between 2009 and 2010 for storing their cowpea which is now free of harmful storage chemicals. Both students and staff now enjoy chemical-free cowpea meals, which they eat without fear of sickness.

Conclusion
- The PICS technology has been well accepted in Plateau State and many farmers and cowpea merchants have adopted it for cowpea storage.
- The health and economic benefits are well recognized by all stakeholders in the state.
- The experience of Nakam Memorial Boarding School in Panyam confirms the impact of PICS in the state.
- The profit from the use of the PICS bag ranges from 80\% to over 100\%.
- There is a need for increased investment in the bag supply chain in the state.

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1 Initiatives for the Promotion of Green Resources “PROGREEN” Abuja Nigeria; 22 Nike Lake Street, Maitama, Abuja. Email: loversofgreen@yahoo.com
2 International Institute for Tropical Agriculture (IITA), PMB 5310 Ibadan, Nigeria
3 International programs in Agriculture (IPIA), Purdue University, W. Lafayette, IN (USA)