

Cowpea storage without chemical using PICS Bags

The Purdue Improved Cowpea Storage (PICS) Project is a regional project for West and Central Africa. By 2012 it aims to achieve storage of 50 percent of the cowpea in the region using the nonchemical, hermetic storage PICS bags.

Cowpea suffers heavily from insect attack, both in the field and in storage. *Callosobruchus maculatus*, also known as the cowpea weevil or cowpea bruchid, is the major storage pest of cowpea in West Africa. Infestations start in the field on pods and the population grows rapidly when eggs are laid directly on the seeds.

The adult female lives 5-10 days and lays 40-60 eggs, which she glues to the cowpea seeds. Bruchid larvae feed and develop inside the seeds and emerge as adults after about 3-4 weeks. The adults mate and produce another generation, and the cycle begins again. Since each female lays so many eggs and there are multiple generations, even a small infestation at harvest can lead to almost a total loss of stored cowpea after a few months.

The initial infestation of the cowpea by bruchids takes place in the field before harvest. At harvest the seeds look healthy but already contain larvae and eggs of the bruchids. An initial rate of infestation of 3 to 5% is often reported before storage.



Storage in triple layer bag

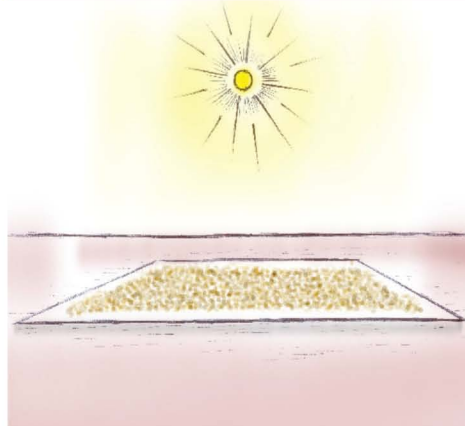
The triple layer bag consists of two polyethylene plastic bags that are 80 microns thick (inner bags) and a third sack (outer bag) made of woven polypropylene.

- Inside bag: HDPE 80 microns
- Middle bag: HDPE 80 microns
- Exterior bag: woven polypropylene



Buy PICS bags from approved merchants.

Procedure



1 Ensure that your cowpea is completely dry and clean. Remove all the debris from the cowpea grain. Drying before storage may help to reduce the initial rate of infestation.



2 Take the three PICS bags apart and check the two inner bags for holes and tears. Do not use a bag that has holes or tears.



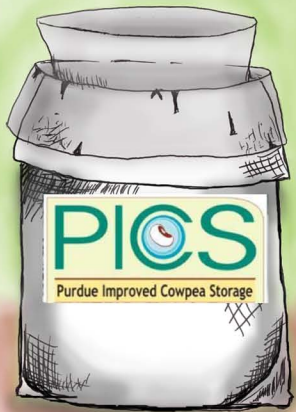
3 Pour a small amount of cowpea into the inner bag, starting gently. This will help to easily insert the first bag into the second.



4 Insert the first polyethylene bag into the second polyethylene bag. Make sure there are no air pockets at the bottom.



5 Insert the two Polyethylene bags into the woven polypropylene bag.



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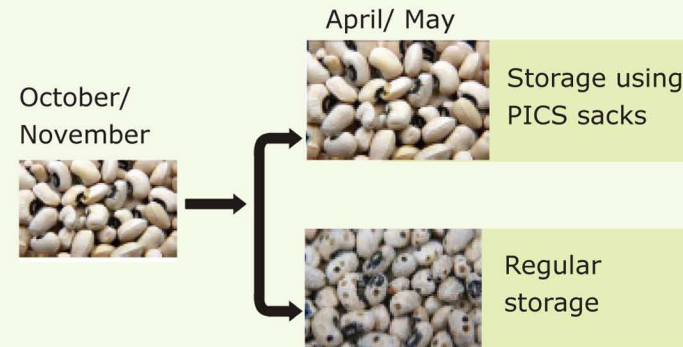
Fold over the top of the woven polypropylene bag. Do the same for the second polyethylene bag.



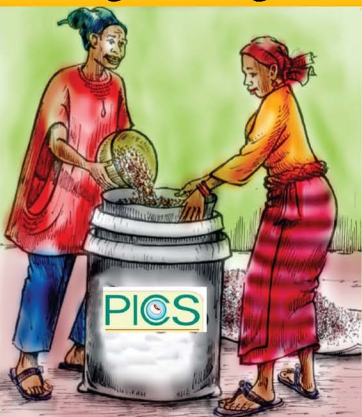
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Pull the middle bag up over the first one so that it completely surrounds it. Twist the lip shut, fold over and tie, as before. Follow the same steps for the outer bag.

Economics of PICS technology



Filling the Bag



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Fill the inner bag with more cowpea. Shake gently from time to time to reduce the pockets of air. Make sure no grain gets between the bags.

Tying steps



Step 1

Inner bag first

Step 2

Middle bag next

Step 3

Outer bag last

Savings for a farmer selling 100 kg

Option 1: Sell at harvest

Cowpeas sold at harvest time at 50 Naira/kg
 $50 \text{ Naira/kg} * 100 \text{ kg} = 5000 \text{ Naira}$

Option 2: Sell later

Cowpeas sold 4 to 6 months after harvest can be sold for 100 Naira/kg

$100 \text{ Naira / kg} * 100 \text{ kg} = 10000 \text{ Naira}$

Buy a bag at 300 Naira / bag = 300 Naira

Net: $10000 - 300 = 9700 \text{ Naira}$

Advantage

Cowpeas stored in PICS bags for a few months sell 5-10% higher than cowpeas stored with chemicals.



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Fill the bag far enough so that a lip remains for tying. Pack the grain tightly to remove air.

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Twist the lip of the first bag tightly shut. Fold it over and tie firmly with heavy string at the base of the twist and over the folded twist.

Precaution

The triple layer bag is recommended for storing cowpea for a long period (at least 2 months). It is recommended that the bag remain sealed at all times for the duration of the storage. Keep the stored cowpea in a safe and dry place, and out of reach of rodents. Rodents may make holes in the plastic bags. The hermetic triple layer plastic bag technology is easy, effective, and safe.

Contacts

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