Drying Cowpea Seeds

Good cowpea cultivation techniques are, unfortunately, insufficient in eliminating the cowpea weevil ***Callosobru-chus maculatus*** at different stages of development: egg, larvae, pupa and adult (Fig. 1). Grain reserves are constantly destroyed by ***C. maculatus*** if proper drying techniques are not applied. This factsheet attempts to present good practices for drying cowpeas in order to stop the destruction of seeds by post-harvest parasites.

Choice of drying methods

Several cowpea drying methods can be used by farmers:

- Drying by direct exposure to the sun on clean and dry areas to avoid loss of seeds and mixing with sand;
- Quick thin layer drying on a plastic sheet under the sun. This drying method is more efficient as it eliminates eggs, larva and adult weevils.

Solar dryer for cowpeas

After peeling cowpea pods, the seeds still contain impurities. It is necessary to sort the grains and dry them before storage. The purpose of solar drying is to eliminate eggs, larvae and adult post-harvest cowpea pests. The guiding principles for solar drying are given below:

- To avoid condensation, the dryer is placed on a layer of a dry straw which prevents loss of heat to the ground (Fig.3).
- Seeds can also be dried and disinfected within a shorter time, from a few hours to days depending on the existing moisture content and level of exposure to the sun. The seeds dry faster if the harvest takes place at the beginning of the dry season.
- This dryer can reach temperatures of 65°C or more. According to IRA/CRSP researchers, a temperature of 57°C is sufficient to kill eggs, larva, pupa and adult weevils.

How to make and use a solar dryer

Solar drying is a method of direct drying which uses sun rays to reduce the water content in cowpea seeds and the number of cowpea weevil before storage. Solar drying allows you to disinfect seeds, reduce post-harvest losses and provide a dry product as well as a better quality market commodity.

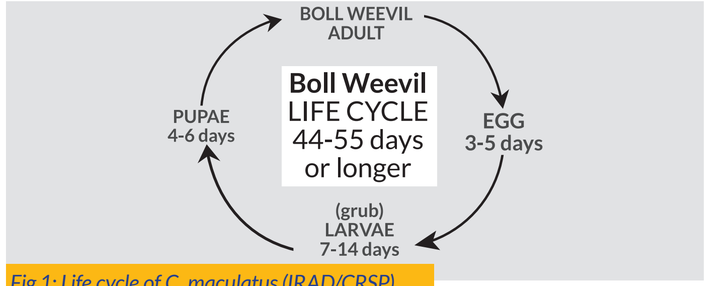

Fig.1: Life cycle of C. maculatus (IRAD/CRSP)

Fig.3: Mulching and laying the black plastic sheet

Fig. 2: Clean cowpeas for storage and preservation

Fig. 4: Black plastic sheet in place

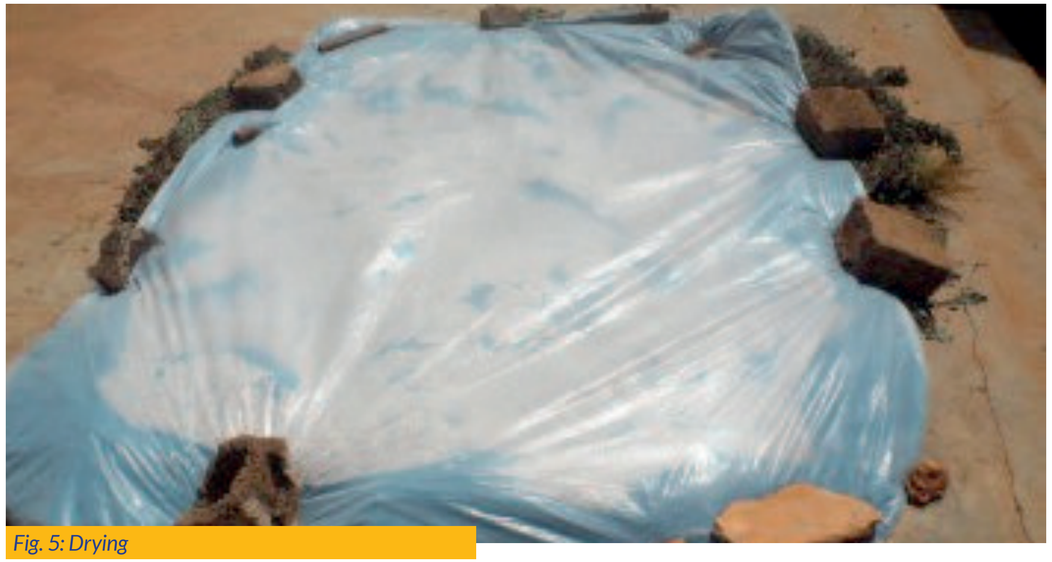

Fig. 5: Drying

Materials used

The device is made up of an insulator like layer of straw and two polyethylene sheets, a black one below and a transparent one above. Sun rays penetrate the transparent sheet, are absorbed and transmitted to the cowpea seeds. The black sheet conserves the heat produced by the sun rays. This drying method may affect the viability of seeds, and is therefore recommended for foodstuff.
A solar dryer, which is made up of two plastic sheets; a transparent one which is resistant to the sun and a black one meant to absorb heat from the sun, eliminates weevils and dries the cowpeas. The greenhouse effect in between the two plastic sheets lowers the moisture content of the grains, destroying eggs, larva and adult weevils that are within the seeds (Fig. 4 & 5).

Steps for solar drying

The process of solar drying (Fig. 5) is as follows:

1. Spread the dry straw on the ground.
2. Spread the black plastic sheet out on the straw to conserve heat.
3. Spread out the seeds to be dried onto the black plastic sheet.
4. Cover the seeds with a transparent plastic sheet which lets the sun rays through (solar energy).
5. Fold the edges of the two plastic sheets.
6. Keep the edges in place using stones or pieces pf wood.
7. Leave it to dry from 11 a.m. to 1 p.m (when the sun is directly overhead).
8. Repeat the solar drying 2- 3 times before storing the seeds.

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