

Grain storage in metal silos against insect pests

Recognize the problem

Major storage pests include the common maize weevil (also called the greater grain weevil, Busumpe in Tonga language and Impese in Bemba language) and the larger grain borer (also called Chidonkola mapwe). These pests eat lots of cereal grains when they have been in storage for six months or longer. Some grains have feeding holes when examined. Where grain is stored in bags, a powder is seen outside the bags. When a hand is passed through the damaged grain, powder will stick to it.

Stored grains with visible feeding holes caused by insect pests. (Photo by IITA, via Flickr)



Background

The use of metal silos can prevent or kill the insect pests that damage the grain. A metal silo is a cylindrical container in which the air required by insect pests can be restricted (hermetically closed conditions). The capacity varies from 100 – 1000 kg. The silo has both an inlet on top and outlet at the bottom that can be tightly closed with a lid tied with rubber bands to prevent the entry of air.

This technology reduces the need for insecticides. Silos are cheap as they do not require constant maintenance, and can be easily moved when shifting from one area to another.

Well-closed metal silo to store grains. (Photo by Gilson Chipabika)



Management

- Close the outlet tightly with a lid and tie with a rubber band
- Load clean and dry maize into the silo. Maize is dry when it has a moisture content of 13% or less. This occurs when the maize is fully mature and has been hanging on the plants or in a shelter for a few weeks in dry weather.
- After filling the silo, a candle is placed inside the silo on a small tray, to avoid wax from getting on the grain. Then the candle is lit to use up all of the air (oxygen) in the silo. The size of the candle depends on the size of the silo but a 10 cm candle can suffice for 100 – 500 kg capacity.
- The inlet is then covered and tied with rubber band to avoid air getting into the metal silo.
- The burning candle inside the silo will go out as soon as all of the air is used up by the candle. This may take 5 – 20 minutes depending on the size of the metal silo. Do not move or shake the silo during this period.
- Insects will die due to the lack of air available for them to breathe.

Scientific name(s) > *E.g. Sitophilus zeamais, Prostephanus truncatus*

The recommendations in this factsheet are relevant to: Zambia



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