

MLALI VILLAGE GRAIN PROTECTION TRIALS

Farmers throughout Tanzania are known to suffer serious losses to their stored produce due to insect damage. For many people these losses can threaten household food security. Other householders may be able to afford commercial pesticides, but these are costly and may be harmful to health (and if contaminated may be ineffective).



Insect damaged maize

The 'Small-scale farmer utilisation of diatomaceous earths during storage' project has been designed to explore and identify safe, effective and affordable treatments for rural householders. To do this the researchers will first test and compare the effectiveness of a number of different grain protectants at protecting grain from insect damage during storage. These initial comparative tests are being run for the 8-month storage season from July 2002 - March 2003.



Admixing grain protectants

Those grain protectants that are found to be most effective, affordable and safe - will then be further tested by farmers in their own trials during the next storage season. This will not only confirm their effectiveness when used by farmers, but will also establish that they meet the farmers' wider requirements (e.g. their use does not involve unrealistic amounts of work or time, or effect seed viability etc).

In this way the 'Small-scale farmer utilisation of diatomaceous earths during storage' project hopes to realise its longer term aim, which is to reduce the vulnerability of small-scale producers by improving householders food security and their control over the marketing - timing and scale - of their grain.



Marketing maize

The project believes in team-work and participation, and involves collaboration between: the Tanzanian Ministry of Agriculture and Food Security; the UK's Natural Resources Institute; the communities of Mlali village in Dodoma region, Mwama karanga and Kishapu villages in Shinyanga region, Arri and Singe village in Arusha region; and the NGOs - Africare, Farm Africa, Care, Oxfam, World Vision and the Catholic Dioceses of Shinyanga Agriculture Programme.

The project is also working in Zimbabwe with the University of Zimbabwe; the Institute of Agricultural Engineering; AGRITEX; and EcoMark Ltd.



Winnowing maize grain prior to mixing protectants



Admixing grain protectants



Adding the traditional ash protectant



Analysing the samples

For more information about this project please contact:

-your local extension officer,

-or William Riwa, Plant Health Services Division, Ministry of Agriculture and Food Security, POBox 9071, Dar Es Salaam, Tanzania. Tel: 022 865 642/3, Fax: 022 865 641/2, E-mail: <wilriwa052@yahoo.com> ,

-or Tanya Stathers, Food Management and Marketing Group, Natural Resources Institute, Central Avenue, Chatham Maritime, Kent, ME4 4TB, UK. Tel: +44 1634 883734, Fax: +44 1634 883567, E-mail: <t.e.stathers@gre.ac.uk>

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Detailed summary of the Mlali village grain protection trials

Many people in Mlali village already use traditional protectants to protect their grain e.g. ash from animal dung or the kitchen fire mixed with their grain, or dried sunflower heads mixed with their grain. Some people purchase Actellic Super dust a synthetic chemical pesticide which can be mixed at a concentration of 100g/ 90 kg of grain. In this trial we also included two diatomaceous earth grain protectants called Protect-It and Dryacide, which are not yet available in Tanzania but are sold in other countries for protecting stored grain.

Diatomaceous earths, are soft whitish powders formed from the fossils of tiny organisms (planktons) which live in oceans, rivers and lakes. When diatomaceous earths come into contact with insects they absorb the wax from the skin of the insect, the insect then loses water, dehydrates and dies. By mixing diatomaceous earths with grain, we can kill the insects that try and attack the grain. Although the diatomaceous earths, Protect-It and Dryacide come from America, diatomaceous earth deposits can also be found in Dodoma and Kagera regions in Tanzania. Later in this project we will be testing samples of Tanzanian diatomaceous earths to see how effective they are. Diatomaceous earths have extremely low toxicity to mammals and are therefore very safe to mix with food.

The treatments used in this trial were:

- Protect-It (a diatomaceous earth) mixed at 100g per 100kg of maize grain (A)
- Protect-It mixed at 250g per 100kg of maize grain (B)
- Protect-It mixed at 100g per 100 kg of maize AND permethrin 2%a.i. (a synthetic insecticide) mixed at 10g per 100kg maize grain (C)
- Actellic Super dust (a synthetic insecticide) mixed at 100g per 90kg of maize grain (D)
- Dryacide(another diatomaceous earth) mixed at 250g per 100kg of maize grain (E)
- Animal dung ash mixed at 1.5kg per 100kg of unwinnowed maize grain (F)
- Untreated control - just maize grain (G)

Each treatment was set up four times, to make sure that the result of the treatment could be repeated and wasn't just a 'one off'. The grain treatments were then stored in sacks at different houses in the village.

After every 8 weeks, the researchers visit and take samples of the maize grain from the different treatments, they then count how many of the grains in each sample are damaged by insects and how many insects are present. This information is then drawn up as a graph. During the storage season these graphs will be added to this noticeboard so you can see which treatments are protecting the maize grain from being damaged by insects.