



NIGERIAN STORED PRODUCTS RESEARCH INSTITUTE (NSPRI)

GUIDE

**THE MANAGEMENT AND CONTROL OF INSECT INFESTATION OF
STORED PRODDUCE**

P.M.B. 1489, Ilorin

Tel: 031222143 ; 031/223912

**Increasing Nigeria's Agricultural self- Reliance through adequate post-harvest
loss prevention**

GUIDE ON THE MANAGEMENT AND CONTROL OF INSECT INFESTATION OF STORED PRODUCE.

Introduction

One of the major problems encountered during storage of agricultural products especially grains and grain legumes is insect infestation. Control of insect infestation in stored produce prolongs the shelf life of the stored produce.

There are two major methods of controlling insect infestation in stored produce viz. traditional non chemical method and chemical method.

1. *Traditional/Non chemical Methods*

Several methods are carried out by farmers and traders to control insect infestation in stored food crops.

These include:

- a. **Solarization:** Adult insects fly away from produce when such produce is exposed to hot sun rays and they are agitated. In some cases, solar heat also affects the developmental stages exposed larvae and pupae. More regular exposure to sun will reduce considerably the level of insect infestation in a commodity. This method is ideal for small consignments.
- b. **Smoking:** smoke from fire promotes further drying of unthreshed heads of grain. E.g maize cobs etc. hung from the rafters of dwelling houses. This helps to prevent insect infection.
- c. **Through drying of produce:** Most stored grain insects cannot survive and develop at very low moisture levels. Dry your produce to recommended safe storage moisture content level to protect it from insect attack and development.
- d. **Choice of Produce for Storage:** Avoid damage to seed and produce during harvesting, processing and handling. Damaged commodities are easily attacked by insects wholesome ones.
- e. **Stored and Produce Hygiene:** Store hygiene is one of the effective pest control measures.

To ensure good store hygiene, the store keeper should:

- (i) Sweep thoroughly and wash store floor
- (ii) Brush down walls and roof
- (iii) Mend cracks and crevices on walls and floor

- (iv) Wash, clean and white wash wooden pallets.
 - (v) White wash store walls; before accepting produce into store.
 - (vi) Clean harvested grains thoroughly to remove impurities which could promote insect infestation.
- f. **Regular Inspection of Produce Store** : Inspect your produce store regularly to remove infested grains to save uninfected ones and also apply appropriate control measure before **Admixture with local herbs**: Some herbs are suspected to have a repellent effect upon insects and when admixed with food grains , achieve some measure to insect control on stored food grains. E.g. Dry seed powder admixed with grains before packaging in bags storage reduces the incidences of insect infestation in the stored grain.
- g. **Hermetic Storage**: In airtight storage conditions, reduced oxygen and increase carbon dioxide, this will reduce insect development. Use only clean dry containers with appropriate lids, to store clean dry produce.
- h. **Low Temperature**: insects are eliminated from produce if such produce is exposed for some time to freezing.

2. Chemical control

Chemicals (insecticides) presently remain the most widely used and relatively the most effective means of controlling insect infestation in stored produce. Two main types of pesticides are used in insect infestation control in stored viz.

A. Contact insecticides and

B. Fumigants.

- a. Contact insecticides can be applied in solid forms as dusts or liquid forms as wettable powders (WP), emulsifiable concentrated. (EC) or oil miscible liquids (O.M.L.).
- b. **Fumigants** Are pesticides that are particularly effect in gaseous forms. The most common fumigants widely used now in Nigerian is Phosphine gas marketed under the following trade names – Phostoxin, detia, Gastoxin, Celphos, PhostexQuickphos and Protex.

Reasons For the Use Of Insecticides

1. To kill insect pests that is damaging produce i.e. as a curative agent.
2. To kill insects on storage facilities and structures e.g. bags, crops containers, stores etc.

Insecticides are highly poisonous chemicals that are hazardous to both animal and man. Care must therefore be taken when applying insecticides.

The following rules are helpful:

- a. Read label on the bottle of insecticides before use.
- b. Have within immediate reach, plenty of soap and water in case of accident.
- c. Check for the efficiency of your applicators e.g. sprayers.
- d. Mix sprayer liquid in the open air-not in the store.
- e. Avoid direct contact with insecticides, use hand gloves.
- f. Use clean slides or rods in mixing insecticides do not use hand.
- g. Avoid inhaling insecticides.
- h. Do not blow into blocked sprayer nozzle with mouth.
- i. Wear protective clothing while spraying.
- j. Do not spray against wind flow direction or apply dust during windy periods.
- k. Do not eat, drink or smoke while working with insecticide.
- l. Do not pour away over spray (insecticide) mixture; use it to spray walls empty pallets or bags.
- m. Bury empty containers of insecticides.
- n. Wash all materials used for spraying e.g. the sprayer.
- o. Use protective clothing, hand gloves, face mask, etc
- p. Wash yourself thoroughly after using insecticides.
- q. Do not consume commodity freshly treated with insecticide.
- r. Do not fumigate commodity within living environments.
- s. Above all, seek the services of trained personnel.

How to Apply Insecticides

Highly standard of hygiene of storage structure environment and produce is very essential for a successful use of insecticide. Do not leave your produce until

insects are many before treating it with recommended insecticide. For effective use of insecticides.

1. Use insecticides recommended by NSPRI e.g. Actellic, liquid pyrethroid, coopex, phosphine.
2. Use only liquid types of insecticides to treat surfaces before storage.
3. Prepare spraying liquid in bucket and not directly in the sprayer tank.

To prepare insecticide for application

- Pour the required quantity of water in a bucket.
 - Measure out the required quantity of insecticides as recommended by manufacturers.
 - Add insecticide to water.
 - Mix thoroughly with a stick.
4. Spray the store in the following order:
 - a. Wall
 - b. Roof
 - c. Produce stock
 - Treat upper surface first
 - Spray space between bags
 - Spray underneath the pallets
 - d. Floor – Treat the floor last starting from back of store towards the door.
 5. After spraying, wash the sprayer immediately with clean water and take special note of the nozzle.

For Fumigation

Select appropriate fumigant.

Calculate the volume of space or quantity of produce to be fumigated.

Calculate the quantity (dosage) of fumigant to be used.

Seal after operation. Check for gas leakage and seal up any possible leakages point

Put warning sign.

For further information contact:

Nigerian Stored Products Research Institute

(Headquarters)

Km.3, Asa Dam Road,

P.M.B. 1489, Ilorin.

Tel: 031 – 222143, 224043, 226000

Sub-Stations

Ibadan

Onireke (Near Red Cross Office)

P.M.B. 5044,Ibadan.

Tel: 02-2412180, 2413122

Kano

Hadejia Road,

P.M.B. 3032, Kano

Tel: 064-623216, 648371

Lagos

BarikisuIyede Street,

Yaba

P.M. B. 12543,Lagos.

Port-harcourt

Elechi Beach,

P.M.B.5063, Port-harcourt,

Tel: 084-335403

Sapele

124 Izu/Lawrence Road,

P.M.B 4065, Sapele,

Tel: 054-42602