

21 - Best Practice takes the place of Insecticides in dried Tobacco Handling

Kelly, Mike

Acheta Training and Consultancy
5 jBicester Road, Long Crendon, Bucks, HP18 9EE, UK

Abstract

Tobacco remains one of the most valuable, dried, processed, almost-food commodities in the world. As a result manufacturing and storage, including transport, are important elements where serious infestations can occur. By agreement throughout the tobacco industry, and often as a result of national legislation, the "magic bullet" commonly used in the dried food industry against insect infestations – fumigation – is not available after the first processing stages. [Cereal processing is similar – grain and flour can be fumigated, but biscuits and cakes cannot.]

The still unfinished "cut rag" dried chopped tobacco leaves – a very infestible commodity – is widely shipped around the world and frequently subjected to heavy infestation pressures, yet is already beyond the simplest curative method of fumigation.

This paper describes the development, over several years, of effective insect detection systems, allowing hygiene and physical options to chemical control to be tested. The end result was a practical manual of logical systems and options - a fully independently audited system - which has implications for storage, transport and handling of all dried foods, where currently pesticides are used and relied upon.

Introduction

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Comments and Questions during the Symposium: Mainly concentrated on the correctness of maintaining good standardised practices, in hygiene, in trapping/monitoring of beetles, and in fumigation activities. All agreed that getting the senior staff, including the CEO, "on-board" was most likely to lead to success, and many were interested in the codification of the best practices into an extensive practical manual, which also allowed non-technical auditors to look for non-compliances. The manual is called the HIMILO Handbook (Hygiene and Infestation Management In Leaf Operations), published by the Indian Leaf Tobacco Division (ILTD) of the Indian Tobacco Company (ITC) in 2004.

There was also general agreement that even straightforward application of conventional practices can achieve impressive results in minimising storage infestation problems, despite the threats to some commonly used pesticides.

Creating Beetle-free Tobacco Exports with minimum pesticide usage: Creating a beetle-free export tobacco shipment supply line with minimum pesticide usage = "best practice"?

- Year 1 (1997).
- \$360,000 in re-fumigation charges.
- First visit to region to understand the flow of product from farmer to export port.

Tobacco flow chart (see final page).

Farmers' tobacco storage

- Beetles start here.
- Action possible? No!
- Too many farmers over a very wide geographic area.
- No effective extension/advisory service.

Auction platform and warehouses

- More Beetles here.
- Action possible? No!
- Auction is too fast and no-one takes responsibility for infestation.
- No individual one wants to pay - it's an "industry" problem.

Aggregating warehouses

- The real start of professional warehousing.
- Self-closing doors with beetle-proof meshes introduced.
- Floors repaired to permit fumigations.
- Hygiene dramatically upgraded, with competitions introduced between cleaning crews.
- Pheromone traps to a standardised layout and usage (SOPs).

Own GLTs

- Structural improvements in a rolling programme, to agreed standards.
- Areas within GLT "sectioned-off" with hanging deltamethrin-sprayed cloth drapes.
- Press-section - special cleaning and fogging ('press section' = packing).

RDS at GLT

- Pheromone trapping to monthly SOP.
- Leaving doors open a serious offence.
- Daily and weekly counts monitored by supervisor.
- If beetle counts exceed agreed maxima, entire store stock fumigated to agreed standard – fumigation training started – for all staff.

Export rail/containers lorry

- Loading (in open air) only up to mid-day.
- Containers all checked/sprayed prior to acceptance.
- All fumigation measured and monitored by senior staff. New PH3 electronic monitors, Plus micro-perforated poly-liners for tobacco cases allowing gas entry.

Tobacco beetles – a big quality problem in tropical dried tobaccos. Dried semi-processed tobacco shipped from S. Africa to Luanda, but held in Port Customs for 4 months. How many dead on container floor? And how many alive inside the tobacco cases.

Standardised beetle monitoring with pheromone traps

Tobacco beetles. @ 35 – 40°C they increase in numbers x 60 per month. How many on this sticky trap? 4 months in container in Luanda sunshine!

- Tobacco beetles fly.
- Adults chew but don't feed.
- They spread the infestation.
- Larvae chew and feed.
- Trap position painted on warehouse floor.
- Record card held with trap.
- Trap changed monthly.
- Stand-alone Serrico-Trap stand, with position painted on warehouse floor in case it needs to be moved for unloading or loading.
- Strict adherence to monthly SOP.

- Monthly total beetle counts used to trigger fumigations of entire warehouse section stock.
- Pheromone-based Serrico-Trap, used according to strict monthly SOP.

Beetle-proofing

Fully mesh-proofed inspections shed alongside rail loading platform The shed is Serrico trapped continuously to ensure it is beetle-free prior to, and after, each Tobacco inspection by the customer(s). Completely beetle-proofed RDS inspection shed with north light glazed roof. Mangalagiri Warehouse, fitted with beetle-proofed aeration meshes to allow opening swivel windows for dried tobaccos. Note also the proofed outer doors, closed manually, over the internal thief-proof metal doors. Making hard-wood hinged beetle-proofed doors.

Fumigation standardisation – Floors Sheeting, Sandsnakes, Case poly-liners, Gas measuring/recording

- Gas readings with Uniphos PH3 tubes.
- Bedford PH3 readings from stack (now replaced by Uniphos electronic meters).
- Careful gas sampling of cases for final graph of fumigation.
- Successful but disruptive green leaf pre-fumigation.
- Multi-stack coverage with joined sheeting.
- Very neat corners and safety barrier tape.
- Dosage 1.5 gPH3/M3 for 8 days.
- Metal trays for tablet placement.
- Post-Fumigation protection using cotton cloth shrouds and extra sandsnakes.
- Cotton cloth sheeting left on AFTER fumigation.
- Every shipment was fumigated at the export port in sealed containers, for 100% assurance during Year 4 (2001).
- ZERO re-fumigation charges imposed by receiving customers across Europe.

22 - Status and recent development in stored product protection in Denmark

Hansen, Lise Stengaard

Aarhus University, Department of IPM
Danish Pest Infestation Laboratory
Skovbrynet 14, DK-2800 Kgs. Lyngby, Denmark

Abstract

Situated in the northern temperate region, Denmark has relatively few problems with stored product pests. In grain stores the major pest is the granary weevil *Sitophilus granarius*. No recent surveys have been conducted, but it is considered to be widespread throughout the country. Other insect species are occasionally found in grain stores as well. Pests only rarely develop high densities in grains stores, partly due to the fact that grain is cooled to a target temperature of 5°C as soon as possible after harvest. The main problem occurs when live insects are found in grain that has been loaded into a ship prior to export, in which case fumigation is necessary. However, this situation can easily change soon, as the last insecticide for direct treatment of grain, malathion, is no longer available in Denmark. The only options now are fumigation with hydrogen phosphide or treatment with inert dust. In addition, possible future climate change with higher temperatures and higher humidity will probably lead to increased problems due to pests. The pests found in other stored products in the processing chain are similar to the rest of Europe, as temperature and humidity conditions are less correlated with out door conditions.

Introduction

Grain stores: Situated in the northern temperate region with cool, humid winters, Denmark has relatively few problems with pests in stored grain. The major pest is the granary weevil *Sitophilus granarius*. No recent surveys have been conducted, but it is considered to be widespread throughout the country. Other insect species are occasionally found in grain stores as well; *Oryzaephilus surinamensis*, *Cryptolestes ferrugineus*, *Tribolium confusum*.

Pests only rarely develop high densities in grains stores, partly due to the fact that grain is aerated to a target temperature of 5°C as soon as possible after harvest. Good hygienic practice conducted in the stores is also important for the low pest densities. The main problem occurs when live insects are found in grain that has been loaded into a ship prior to export, in which case fumigation is necessary. However, this situation can easily change