

# Top tips for grain stores

Grain store cleaning ahead of harvest is a job pest controllers repeat year after year. But are their efforts going to waste because key areas are being missed? Ken Black, the rural hygiene manager from Bayer, explains how best to tackle this task.



A K-Obiol treatment will deal with stored insect pests for two months

Grain store preparation is a crucial job. It must be done meticulously to make sure that grain is kept in the best possible condition so as to ensure it has the least chance of being destroyed by insects.

More farmers are turning to pest professionals for help in protecting the huge investment they have to make to produce the grain, so opportunities are opening up for professional pest controllers.

### Through cleaning essential

To keep the harvest safe it is crucial that storage conditions are perfect, before the grain goes into the store. Thorough cleaning is therefore essential. This, combined with the use of a product like K-Obiol EC25 to combat the risk of insect infestation, will give the grain the best possible protection.

K-Obiol, which contains deltamethrin, is an effective way of treating stores and it gives two months protection against most key insect pests. Stored product pests controlled include, grain weevils as well as flour and saw toothed grain beetles, bean weevils and flying insects such as warehouse and grain moths.



Saw toothed grain beetle



Bayer's Ken Black

### Three areas to watch for

Ken Black explains that there are three key areas most often missed when cleaning grain stores which, if included in the cleaning preparation process, will minimise the chance of insect infestation:

#### 1 Roof space

Dust can build up in the rafters and joists in the roof. Insects live in this dust and can survive over winter. As the temperatures rise in the spring, it's an optimal time for insects to breed and lay eggs, and in this scenario, before the grain goes in, the insects are already established.

#### 2 Under the floor

The space below the flooring needs to be blasted with air and cleaned because the dust provides an additional breeding site for crop storage pests such as mites and weevils.

#### 3 Sticky traps

Once the store is cleaned thoroughly, sticky traps must be used to monitor the level of insect activity in the store.



## FEATURE

Grain protection

Often, not enough traps are put down. It's important to put traps in all key areas, and make sure they are easily accessible for frequent checking.

Good store hygiene is key to keeping out insects. Monitoring and prevention of insect activity in store is crucial to an integrated pest management strategy.

"Identifying and treating at an early stage is so important. If prevention is not made before the grain goes in, the only option is to apply an insecticide to the grain – which is a very costly and time consuming," says Ken.

Pest professional, Peter Crowden, from

Northamptonshire-based PCS, works with 86 farms and, so, knows all too well the areas that can be missed when cleaning grain stores.

### A quick spray won't do

Peter comments: "When the stores are empty, some farmers go in and do a quick spray with a knapsack sprayer and they can miss key areas, like the roof space. Then they shut the doors until just before harvest.

"Because the insects haven't been treated properly, they can become a real problem inside the store, breeding and laying eggs. Numbers can be high just before harvest if the correct preventative measures haven't



Peter Crowden advises his farmer customers to monitor stores with sticky and pitfall traps



Pay attention to conveyors as they provide ideal harbourage for insect pests

been made, because the store temperatures can be ideal to encourage breeding."

### Fast breeding weevils

Beetles can produce 200 eggs at a time, and it's estimated that two weevils in the right conditions can multiply to 90 million in 12 months and have the potential to destroy 50 tonnes of grain. When they've finished their demolition work, secondary insects are attracted and this increases the likelihood of fungus and moulds.

Peter always advises his customers about

## British technology benefits stored grain

Technology, developed by Winchester-based Exosect has been shown to allow successful lower dose treatments to control stored grain pests. Speaking at the IOBC conference on Integrated Protection of Stored Products in Zagreb, Croatia at the end of June, the company's chief technology officer, Dr Aoife Dillon, explained how a series of studies had proved that an Entostat formulation provided successful insect control using half the rate of pyrethroid found in conventional formulations and without the usual synergists required for a pyrethroid.

Two formulations were tested, one containing the active substance deltamethrin and the other containing pirimiphos-methyl. Entostat is an electrostatically charged micro-powder. Because it readily gains an electrostatic charge, it adheres to a range of surfaces such as insects and building fabrics giving

it the potential to deliver active ingredients at reduced application rates with equivalent or improved efficacy.

Dr Dillon said: "Tools for the Integrated Pest Management of stored grain are limited. Our work delivering lower concentrations of pyrethroids added to earlier developments with *Beauveria bassiana* (a natural fungal parasite of many arthropod species currently undergoing EU regulatory review) has significant potential to benefit the sector."

In a further development, Exosect has gained US approval to import *Beauveria bassiana* to assist in the development programme of a formulation of this biological control for insect pests in grain and stored commodities in the USA.

The company has been working on this biological formulation for grain and stored commodities as part of a European development programme for nine years.



© Exosect

the importance of checking the corn when it is *in situ*, by monitoring with sticky traps and pitfall traps. I don't want to teach them to suck eggs, but it's important to be on top of best practice.

"Checking grain, keeping temperatures below 10°C, if possible, and ensuring low moisture levels (below 15%) is absolutely paramount," says Peter.

Dust can gather underneath grain store ventilation flooring, because it gets into gaps between galvanised strips covering air ducts that are spaced apart.

### Temperature control

Bringing the temperature down as soon as crops are in store is important because insects won't multiply if the temperature is below 10°C.

"Keeping humidity low is also crucial to controlling mites as they only thrive in humid conditions. Ensuring grain is dried and cooled correctly will keep them out.

"As soon as crops come into store, and the blowers go on to bring the temperature down, the air must also be extracted from the store.

"This is because when you blow new air through the corn, it forces up stale air into the roof and this causes condensation, that drips down onto the grain. If you don't extract the stale air you could make conditions perfect for the hairy fungus beetle (*Typhaea stercorea*)."

"Finally, stored grain should be checked once a week for insects, using bug pit sticky traps and a good quality temperature probe," concludes Peter.



*A telescopic lance with a wide angle, high-output nozzle ensures good spray coverage and provides access to hard to reach areas*



*Monitoring traps are an essential part of good grain store management*

## Top tips for top class storage

- Remove all debris and dust from the cracks and crevices in the floor, walls and roof space;
- Don't forget to clean machinery and conveyors as they provide ideal harbourage for pests;
- Monitoring insect activity with sticky traps inside the store is a key essential;
- Ensure the building is waterproof and that all doors are well sealed to prevent rodents accessing the store;
- Ensure that there will be adequate space above the grain for ventilation;
- Ensure that when air is blasted through the store for cooling, that the stale air is extracted from the store to prevent condensation;
- Consider treating the fabric of the store with a spray application of K-Obiol EC25 several weeks before filling to control any active insect pests.



© Deere & Company