



CWFS
Central West Farming Systems

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GRAIN STORAGE

Unfortunately given the seasonal conditions, not a great deal of grain will be harvested this year. Much of what is harvested however, will be kept for seed to be sown next year and therefore it is vital that it is stored correctly.

Grain quality can decline in storage through insect infestation, infection with moulds and rots, loss of germinability and changes in grain colour. Good practices during pre-harvest, harvest and storage can prevent damage to grain during storage.

PRE-HARVEST

Grain residues can harbour insects so it is vital that storage sheds, silos, headers, trucks, elevators and planter boxes are all thoroughly cleaned out prior to harvest.

Following cleaning, the harvester and empty silos should be treated with a protectant insecticide registered for structural treatment at label rates. There are a number of registered products available including Alfacron® for long term effectiveness, or mixtures of carbatyl with fenitrothion, Reldan® or Actellic®. Dryacide® dust is slower acting but is suitable for organic grain. Where grain is to be stored in part-filled silos, the carry-over grain should be disinfected prior to the addition of the new grain. It is also important to ensure storage areas are kept water-tight. Be sure to repair any structural faults that could let water penetrate.

HARVEST

Moisture content and grain temperature will greatly affect grain quality. Increased moisture content greatly increases the reproduction rate of stored grain insects and can lead to mould and fungal development. Safe moisture levels for wheat is 12.5%, barley, oats and triticale 12% and canola is 8%. A moisture meter can be used to monitor the moisture content of the grain prior to harvest.

At harvest, set drum speeds to minimise grain damage and fan speeds to minimise the retention of admixture. Large amounts of trash, fines and dam-

aged grain will favour insect infestation in storage. Damaged grains are also more likely to be a source of disease during storage. Additionally, the presences of admixture will reduce the evenness of air flows, limiting the effectiveness of aeration cooling for both insect and disease prevention.

STORAGE

Chemical protectants

These insecticides are sprayed directly onto cereal grain as it is being augured into the silo. They protect un-infested grain from insects during storage but are not intended for control of infestations that have already developed. Grain treated at the full label rate for 6-9mths may have a withholding period of 3mths before being fed to livestock or sold. Where possible, use alternate chemicals for repeated treatment to prevent insects developing resistance.

Protectants are not registered for use on canola, other oilseeds or pulses. These grains must be protected by residue-free methods such as aeration or fumigation. Malting barley may only be treated with a limited range of protectants.

Sealed silo fumigation

Phosphine gas is best used in sealed silos for controlling all stages of stored grain insects in cereals and oilseeds. Phosphine gas is generated naturally from aluminium phosphine tablets or sachets and is distributed through the bulk by convection currents. If tablets are used they should not be placed in the grain, they should be spread out on a tray (a disposable aluminium tray is generally adequate) either on the surface of the grain or suspended in the headspace. This method leaves no powdery residues on the grain and minimises insect resistance.

It is important to test that the silos are airtight prior to storage and use of fumigation products. Pupae and eggs are unlikely to be controlled in poorly sealed silos, resulting in reinfestation and resistance. Other storage methods such as silo bags are treated the same as sealed silos.

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Aeration cooling

Grain aeration is a useful, residue-free method of reducing insect infestation and can slow down insect growth and development by lowering the temperature of the grain. Aeration is an excellent way of managing grain when the silo cannot be sealed. A typical system consists of an externally-mounted fan and motor which directs air to perforated ducting on the inside cone or base of the silo.

Aeration should commence with the coolest air available for about 8hrs/day for 10 days; then reduce to 2-3hrs/day. Use an automatic controller if possible. The target temperature is about 20°C for wheat at a moisture content of 9-11%. Aeration should be reduced during winter to avoid possible condensation around the duct or in the headspace.

Finally, remember to check the condition of stored grain regularly and be prepared to take remedial action if required.

Further information can be found in the following. They include further details on each of the treatment methods listed above, full lists of the commercial insecticides available for both silo and grain treatment (including rates and suitable grain types) and characteristics of key insect pests. For a copy please contact Jodie Dean on 6895 1015 or email jodie.dean@dpi.nsw.gov.au

- NSW DPI Winter Crop Sowing Guide 2007

- NSW DPI Summer Crop Production Guide 2007

Acknowledgments:

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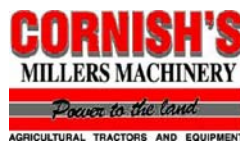


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