



Don't let grain income slip through your fingers

K-Obiol[®] EC Combi grain protectant for use on-farm

Benefits

- + Can be used in any type of storage, sealed or unsealed
- + Suitable for all cereal grains, including malting barley, rice, sorghum and maize
- + Group 3A mode of action
- + Can be used in all grain storage systems

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Change your chemistry and protect your grain income

K-Obiol® EC Combi (“K-Obiol”) is a synergised grain protectant for use on un-infested cereal grain. A “protectant” (sometimes also called “contact pesticide”) protects grains from insects rather than killing insects once they have infested the grain. If the grain is already infested it will need to be fumigated or treated to kill the live insects.

K-Obiol can be used on all cereal grains including malting barley and sorghum. It is not suitable for oil seeds or pulses. K-Obiol can be used in any type of storage, sealed or unsealed, providing the K-Obiol can be evenly distributed on the grain as the grain is fed into the storage.

Active Ingredient

- > The active constituent is deltamethrin. Piperonyl butoxide is added as a synergist; meaning it increases the effectiveness of the deltamethrin.
- > K-Obiol should always be tank mixed with an additional registered grain protectant of a different mode of action.

K-Obiol is effective on many stored grain pests

All cereal grains are at a risk of infestation and damage from insects. In Australia there are six or seven insect pests which are commonly found in stored cereal grains. These insect pests are small, about one third the size of a grain of wheat, and each one can cause damage to grain and cause a loss in value.

Grain protection

- > If the storage is not gas-tight, the only insecticide option is to use a contact pesticide like K-Obiol.
- > Fumigants give no residual protection.

Application

- > A pump with a variable output that matches the grain loading rate.
- > A flat spray nozzle fitted at the low end of the auger that delivers the spray as evenly as possible to the grain should be used.

PRODUCT MATRIX														
Insecticide Group	Product/Active Ingredient	Rate / 100L	WHP	End Use Market					Target Pest					
				Malt Barley (Domestic)	Feed Barley (Domestic)	Milling Wheat (Domestic)	Feed Wheat (Domestic)	Wheat - Starch / Gluten (Domestic)	Lesser Grain Borer	Rice / Granary Weevil	Flour Beetle	Saw-toothed Grain Beetle	Flat Grain Beetle	Moths
Organophosphate Group 1B	Maldison	2.7 L	90 days											
	Fenitrothion	1.2 L	90 days	✓										
	Fenitrothion	600 mL	Nil		✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
	Chlorpyrifos Methyl	1-2 L	Nil	✗										
Insect Growth Regulator Group 7A	Rizacon	0.2 L	1 day	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✗
Synthetic Pyrethroid Group 3A	K-Obiol	2.0 L	Nil	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓
IGR Group 7A & Spinosad Group 5	Conserve Plus [#]	1.0 L	Nil	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗
Fumigants [#]	Phosphine		3 days	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Profume		1 day	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Allow additional time required for ventilation requirements

^ Always refer to label for details before use



Suitable for all cereal grains

Application of K-Obiol to grain

Application timing: Apply K-Obiol as a protectant to all un-infested cereals at time of storage.

Equipment needed for application:

- > A tank to hold the solution of K-Obiol.
- > A pump with a variable output that matches the loading rate of the grain
- > A nozzle at the low end of the auger. A flat spray nozzle that delivers the spray as evenly as possible to the grain should be used

Application rate: There is only one rate of application for K-Obiol and it is easy to remember; 1 L treats 50 tonne BUT it must be diluted to apply.

- > 1 litre of K-Obiol is diluted in water to 50 litres.
- > 1 litre of the dilution is used per tonne of grain.

Rate of K-Obiol solution application

1 L per 1 tonne

Duration of protection

9 months

Measures to avoid resistance

Some naturally occurring insect biotypes resistant to K-Obiol may exist through normal genetic variability in any insect population. It is recommended K-Obiol is used in combination with another registered grain protectant product.

- > Always use a combination of products, registered in your state, incorporating more than 1 mode of action.
- > Avoid using the same mode of action each season.
- > Rotate mode of action groups regularly.

Integrated Approach

Use in combination with non-chemical options:

- > Hygiene
- > Cooling
- > Use of correct chemical controls

Regular Monitoring

- > Always maintain regular monitoring.
- > Utilise insect traps to detect if insects are present.
- > Use tools to identify the species present and adjust control measures to suit.

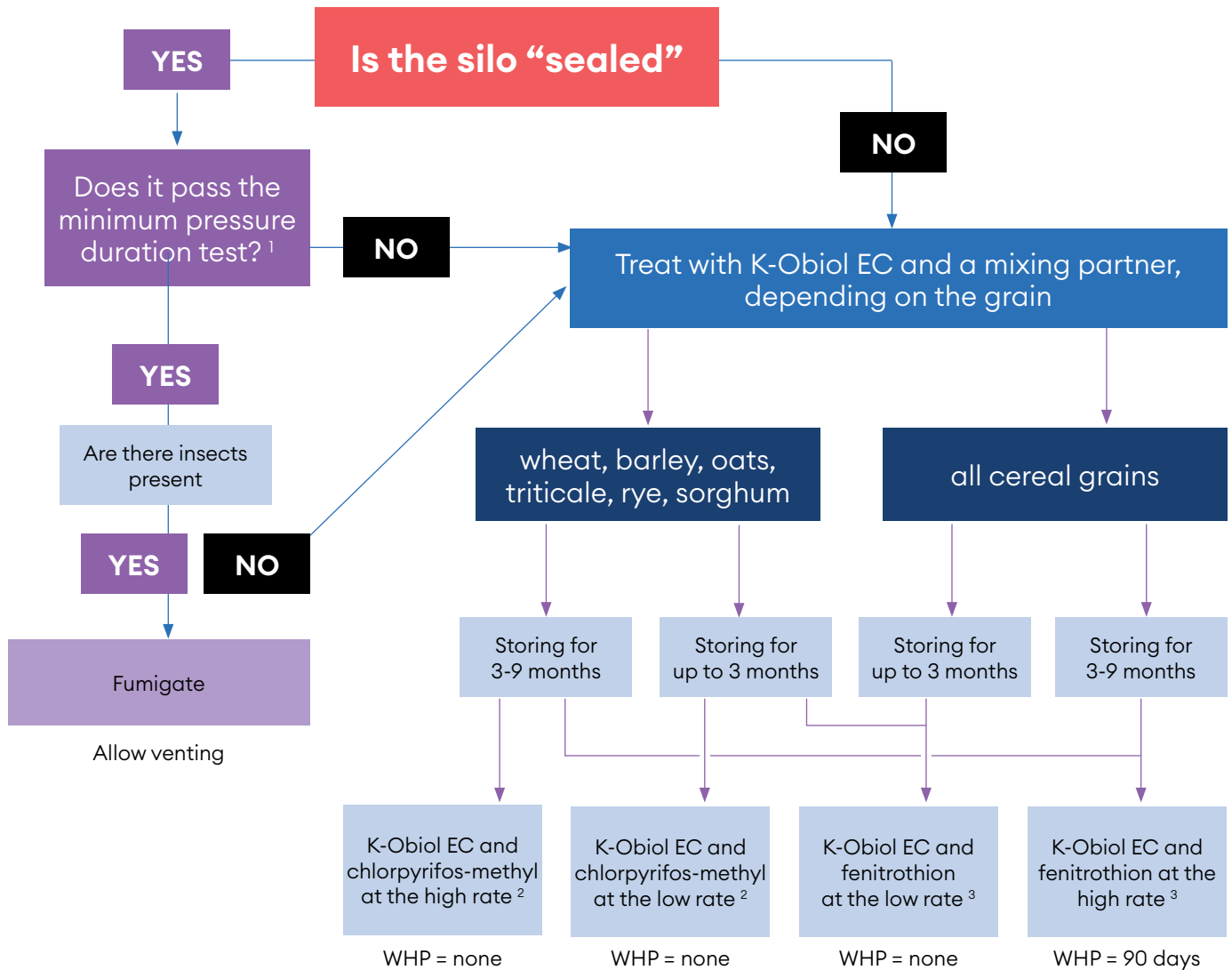
K-Obiol Training

Envu has developed a training program that covers all you need to know to apply K-Obiol correctly and to avoid creating problems for yourself, your staff, or the buyers of your grain. The correct use of K-Obiol is important to ensure exported grain does not have unaccepted levels of chemical residues or end up in storages destined for PRF (Pesticide Residue Free) markets.

To support K-Obiol and the industry, Envu has created a collection of supplemental information to promote safe and effective use. These resources can be found at www.au.envu.com/stored-grain and include instruction videos, online stewardship training & stewardship/technical manuals.

[Learn More →](#)





Notes

1. Pressure duration test – AS 2628
2. Chlorpyrifos-methyl – NOT suitable for malting barley, rice or maize
3. Fenitrothion recommended at the high rate unless ABSOLUTELY certain grain will be used within 3 months

WHP = Withholding Period

Rotate mode of action each season to avoid the build up of resistance

Common Stored Grain Pests

Flat Grain Beetles

Cryptolestes spp.



A primary pest of grain in Australia. It will also infest and damage stocks of nuts, oilseeds and dried fruit.

Lifecycle: Up to 9 months

Eggs: 200-1,000 per female

Saw Toothed Grain beetle

Oryzaephilus surinamensis



The primary insect pest of grain storage. Also infests processed cereal product, dried fruit, oilseeds, nuts and rice. Heavy infestations in storage can cause the grain to heat.

Lifecycle: 6-10 months

Eggs: Up to 400 per female

Lesser Grain Borer

Rhyzopertha dominica



A primary insect pest. Adults feeding cause flour deposits which gives a distinctive matted look to the infested product. These are known to cause allergic reactions and respiratory complaints.

Lifecycle: Up to 10 months

Eggs: 300-500 over 3 weeks

Red-Rust Flour Beetle

Tribolium castaneum



A secondary insect pest which breeds rapidly at very low relative humidity and can fly at higher temperatures. They are a major pest of all broken grains, flour and cereal products (not infesting whole grain). An odour may be detected in high infestations.

Lifecycle: Up to 4 months

Eggs: Up to 450 over 3 months

Confused Flour Beetle

Tribolium confusum



This insect is very similar to the Red Rust Flour Beetle but is unlikely to fly. To identify both insects, the Confused Flour Beetle does not have a 'brow' over the eyes and the Red Rust Flour Beetle has three distinct segments on

the end of its antennal club.

Lifecycle: Up to 100 days

Eggs: Up to 1000 per female

Grain Weevil

Sitophilus granarius



A primary insect that has a true 'weevil' snout that enables them to drill a hole (cavity) into whole grains to deposit their eggs. Generally obvious to spot on grain as ragged entrance/exit holes can be seen. Infestation

may cause hot spots. Grain weight and quality reduced by heavy infestations.

* K-Obiol is not registered for *Sitophilus* spp.

Lifecycle: 9 months

Eggs: Up to 200 per female

Tropical Warehouse Moth

Ephestia spp.



A major pest of mills and all dried and growing foodstuffs. Adults do not feed, however, their larvae causes considerable damage to product and packaging, insect waste and webs will clog material and may damage machinery.

Lifecycle: 6-9 months

Eggs: Up to 300 per female

Did you know?

1 weevil per tonne of grain at time of storage will grow to approximately 1 weevil per kg of grain in 10 months*





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