Insecticides for Stored Grain

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for
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Topics to Cover

- Residues for Stockfeed manufacturers
- Residues for Containerized grain
- Insecticides for stored grain
  - How resistance is increasing
  - What poor husbandry is the cause
  - What are the on-going treatment options
- Potential changes to Chemicals available for use

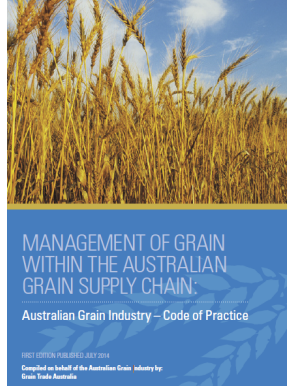
Residues for Stockfeed – NRS 14/15

Commodities	Samples Assessed	Compliance Rate (%)
Milled grains	387	99.7
Stock feed	208	95.7
Oilseed crushers	89	92.1
Food processing	34	97.1
Feedlots	35	97.1
Total	753	97.5

Residues for Containers – NRS 14/15

Commodities	Samples Assessed	Compliance Rate (%)
Wheat	846	99.5
Barley	169	100.0
Sorghum	142	97.2
Other Cereals	119	98.3
Oilseeds	39	89.7
Pulses	719	98.5
Total	2,034	98.8

Market Residue Issues



- Compliance high and excellent record
  - Grain sourced direct ex farm is problematic
- In-crop chemical use increasingly detected in recent years for some commodities (e.g., haloxyfop, flutriafol)
  - Also contamination via storage structures
- Requires increased vigilance and use of appropriate tools
  - Such as CVDs
  - QA Programs
  - Chemical Stewardship systems
  - Compliance with industry Codes
    - Grower Guide
    - Post-farm gate Management of Grain

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Insect Resistance - Protectants

Protectant	Lesser grain borer	Red flour beetle	Rice weevil	Sawtoothed grain beetle	Rusty grain beetle
Pirimiphos-methyl e.g. Actellic ™			✓	R	✓
Fenitrothion e.g. Fenitrothion 1000 ™		✓	✓	R	✓
Chlorpyrifos-methyl e.g. Reldan ™		✓	✓	R	✓
Methoprene e.g. IGR ™, Rizacon™	R	✓		✓	✓
Spinosad	✓				
Deltamethrin + Pip But e.g. K-Obiol™	?	?		✓	✓

Insect Resistance – Fumigants

- There is phosphine resistance
  - All major insect species
  - Both weak and strong resistance
- Sulfuryl fluoride (Profume)
  - Not great control on eggs
  - Does control Ph3 resistant insects

Resistance – what are some causes

Dust up: *Apply diatomaceous earth aiming for an even coat on the roof, walls and base.*

- Poor Hygiene & not using structural treatments
- Not using non-chemical control measures where needed
- Using incorrect protectants, and poorly
- Use of phosphine/fumigants in unsealed/poorly sealed storages (not gas-tight), and under-dosing (CxT)
- Repeated fumigations
- Not monitoring fumigations
- Not rotating fumigants/protectants
- Protectants are protectants, fumigants are disinfestants

i.e., Non-compliance with PH3 Resistance Management Strategy

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Ongoing Chemical Challenges

- CCPR review of old chemicals
  - Phosphine, Chlorpyrifos-methyl, BRM
  - Review of toxicology, global diets
- Regulatory pressure in overseas markets
  - Continual (re)evaluation of toxicity
  - Leading to reviews here
- Domestic Regulatory Reviews
  - Phosphine by APVMA in 2016 (WH&S)
  - Phosphine Label
- Greater use of increased detection technology
- New chemicals under Stewardship programs
- In-crop chemical options
  - Reduced availability & increased scrutiny

When in Doubt

- Attend the National Working Party on Grain Protection meeting in Melbourne, 23-24 June 2016

http://www.graintrade.org.au/nwpgp

- Come along or have input into the CCPR meetings

- Get further information and talk to the Grain Storage Extension Team

http://storedgrain.com.au/

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As an Aside – Flutriafol treated Fertiliser

- No agreed industry cleaning procedure (despite knowing what to do!)
- Flutriafol residues in excess of MRL picked up dom/exp for several years on grain by NRS/companies
  - On various grain commodities
- Despite warnings residue violations continue
- GTA received DAWR funding to develop industry agreed cleaning procedure to reduce risk of violations
- Conducting trial to review impact of carrying fertiliser on grain subsequently handled
  - Using varying cleaning options
- Goal is to include in Code of Practice

As an Aside – Flutriafol treated Fertiliser

* Swab

Load Treated Fertiliser

* Discharge *

Discharge

Discharge

* Sweep, blow

* Procedure – Industry agreed, Code of Practice *

* Sweep, blow, Hot Wash etc

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