

were met, based on the representative 13 cluster diets utilised by Codex as a global dietary intake benchmark.

From 2002 through to 2008 there was a need for direct, ongoing consultation with the manufacturer, the generation of additional information, the need for industry consultation through the National Working Party on Grain Protection (NWPGP), and coordination of national grains industry meetings to determine responses to issues.

This coordination and representation on the Australian Delegation to Codex was undertaken through the GRDC project 'Coordination of Regulation of Grain Storage Chemicals'. There was extensive input into the process by the NWPGP and a range of grains organisations which were concerned that the international MRL might be lost.

It is extremely difficult to establish MRLs and it is most important to ensure that they are not lost through lack of support. The post-harvest grain-storage sector has determined, through ongoing industry consultation, that it will not apply grain protectants and fumigants to stored grains destined for export unless those chemicals have international MRLs established through the Codex process.

Dr Raj Bhula, of the Australian Pesticides and Veterinary Medicines Authority, played a most important role in assisting the grains industry in this matter, as she has done with previous Codex issues. Dr Janis Baines, of Food Standards Australia New Zealand, provided dietary intake support; Kevin Healy, of the National Residue Survey, supplied residue monitoring data; and GrainCorp's Phillip Clamp and Matt Head made a major contribution on behalf of the NWPGP. These participants and the Australian delegation to the Codex Committee on Pesticide Residues, led by Ian Reichstein, of the Department of Agriculture, Fisheries and Forestry, provided essential elements that helped achieve the successful result in 2008.

It is essential that all users of fenitrothion and other grain-storage chemicals understand that it is extremely important to ensure that chemical residues are within national and international levels and below levels established in particular markets. Pesticide residue violations in the international marketplace can cause severe market disruption, financial penalties, loss of commodity reputation and even loss of a specific market.

Irresponsible use resulting in residues above MRLs, or above market contract requirements, would quickly make the hard work of the delegation worthless and again put pressure on the ability of the Australian grains industry to deliver hygienic grain to the market. □

GRDC Research Code WJM00003

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An integrated approach to grain hygiene research

The addition of the Post-Harvest Grain Integrity program to the CRC for National Plant Biosecurity strengthens Australia's ability to ensure market access is maintained

BIOSECURITY IS A two-way street. In one direction there is the importation of pests and pathogens that threaten Australia's agricultural and horticultural industries; in the other direction there is the export of pests and pathogens that can limit market access. However, the terms import and export are not limited to international borders, as issues of biosecurity relate equally to the movement of grain between farms, stores and domestic markets.

The Cooperative Research Centre for National Plant Biosecurity (CRCNPB) is the central coordinating body for plant biosecurity research across all Australian states and territories. Established in 2005, this CRC brings together partners from research, government, education and industry to provide a non-competitive platform for the development and delivery of solutions in the field of plant biosecurity.

In 2007, following an approach from the GRDC and three key players in grain storage and handling, ABB Grain, CBH and GrainCorp, the Post-Harvest Grain Integrity program was established.

"The grains industry felt a new model was needed for managing grain hygiene and saw the CRCNPB already had participation from the key research organisations involved in this area," says Dr Simon McKirdy, chief executive officer of the CRCNPB.

Dr McKirdy believes the integration of the existing partners with commercial players who work across the value chain is good for the development, delivery and adoption of biosecurity solutions, as well as for maintaining market access.

"This integrated approach helps Australia maintain its clean, green image and meet this market expectation," he says. "It also means investment in stored-grain research has doubled. We have the largest budget that has ever been available to work on stored-grain hygiene challenges, from the farm gate to the market."

The increasing resistance to phosphine in stored-grain pests and the potential loss of this cost-effective,



PHOTO: CRCNPB

Dr Simon McKirdy, CEO of the CRC National Plant Biosecurity: integrating work on stored-grain hygiene challenges into the CRC has enabled investment in this area to be doubled.

THE INCREASING RESISTANCE TO PHOSPHINE IS THE GREATEST THREAT TO GRAIN HYGIENE THAT THE INDUSTRY FACES

easily administered product, which is widely accepted by overseas markets, is considered the greatest grain-hygiene threat faced by the industry. Consequently much of the CRCNPB's investment is focused on methods to maximise the life of this product and to develop new technologies to control pests in the supply chain, helping to ensure the continued supply of quality, clean grain to the market.

These grains projects are undertaken through the five science and technology programs of the CRCNPB, including the Post-Harvest Grain Integrity Research Program, and are reported in this *Ground Cover* supplement.

The CRCNPB has seven programs. The first five focus on innovative science research activities, while the sixth develops education and training programs in plant biosecurity. The seventh program facilitates the delivery and adoption of the CRCNPB's science and technology outputs. □

GRDC Research Code NPB00004

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PLANNING FOR THE WORST

BY SHARYN TAYLOR

Australia's geographic isolation has, in the past, provided a degree of protection from exotic pest threats, and the grains industry is free from many pests that affect agriculture in other countries. However, rapid growth in trade and movement of people is increasing the risk of new pests becoming established in our crops.

One of the key tools an industry has in preparing for an incursion of exotic pests is the development of contingency plans specific to each pest. These plans provide detailed information on life cycles, potential distribution, survival strategies and methods for surveillance and sampling. Contingency plans form the basis of the development of response plans in the event of the detection of an exotic pest, assisting with the rapid response, eradication, containment or management.

Contingency plans are being developed through the Cooperative Research Centre for National Plant Biosecurity with funding from the GRDC. These plans will target key pest threats based on the overall risk rating identified in the National Biosecurity Plan for the grains industry and also on the value of crop production. This will ensure that all high-risk pests of major grain crops will be covered by a contingency plan, enhancing preparedness of the grains industry for potential biosecurity threats.

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Unwelcome to Australia

A single incursion of khapra beetle highlights the range of contingencies and responses required for containment and eradication By Rob Emery

HAVING A HOUSE shrink-wrapped to aid fumigation was just part of the response that was required for an incursion of khapra beetle, found in April 2007 in a suburban home and personal effects of a family that had migrated to Perth, Western Australia, two weeks before the discovery.

The khapra beetle (*Trogoderma granarium*) is one of the most serious pests of stored grain and is a regulated quarantine pest in most countries. It is nominated as one of the 100 worst invasive species

worldwide, and infests grain and cereal products, particularly wheat, barley, oats, rye, maize, rice, flour, malt and noodles, although it will feed on almost any dried plant or animal matter.

Khapra beetle's importance lies not only in its capacity to cause serious damage to stored commodities, but also the impact it has on trade for countries that have established infestations. The Australian Bureau of Agricultural and Resource Economics (ABARE) estimates that the potential economic impact of khapra beetle in WA alone would range between \$46 million and \$117 million a year due to lost market access.

While Australian Quarantine and Inspection Service (AQIS) port inspectors regularly intercept khapra beetle in vessel holds, the

KHAPRA BEETLE: A SERIOUS PEST OF ALL STORED GRAIN

The khapra beetle is classified as a high-risk exotic pest by the National Grains Industry On-Farm Biosecurity Program, impacting on market access and production costs.

Main issues with khapra beetles:

- adults have wings but do not fly;
- insects are spread in infected grain;
- insects are only 2 to 3mm long;
- it can damage up to 30 per cent of grain before it is noticed;
- phosphine fumigation is not very effective;
- larvae can survive more than a year without food; and
- its existence reduces the number of overseas markets.



Perth incursion was the first on the mainland. This made the discovery of greater concern and the need for total eradication essential.

The khapra beetle incursion was initially reported because the family was disturbed by the presence