



**Cooperative Research Centre
for National Plant Biosecurity**

Final Report

CRC60125

Grain Storage and Biosecurity Training

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1. Executive Summary

Stored grain is subject to major biosecurity problems which have the potential to significantly reduce the quality of the stored grain and to make it unsuitable for both domestic and international markets. The problems include attack by insect pests, rodents, birds and pathogens like fungi, as well as contamination by weed seeds, mycotoxins and pest faeces.

The Grain Storage and Biosecurity Training project was conducted to meet a need expressed by the grains storage industry for an accredited training program to ensure industry personnel managing the storage of bulk grain have the required knowledge and skills to protect and preserve stored grains to meet market demands. The training program developed has built on a Grain Quality Protection Course previously delivered by Charles Sturt University.

The project entailed industry consultation and updating of training materials and assessments to enable the award of a Statement of Attainment for the National Competency Standard: **RTE4008A Maintain grain quality in storage** to successful participants. Note that the Competency Unit RTE4008A is in the process of being superseded by Unit **AHCBAC406A Maintain grain quality in storage**. This change is minor with the knowledge and skills for both units being almost identical.

Training materials have been developed for on-line delivery to enable easy updating and access by participants. A pilot course was conducted at Charles Sturt University Wagga Wagga in March 2011. The pilot course and feedback from the participants has enabled refinement of the training program and its delivery.

2. Aims and objectives

The **aim** of this project is to enhance the capacity of the grain storage industry to prevent and combat biosecurity issues.

The **objectives** of the project were to:

1. Undertake extensive stakeholder consultation to determine training needs, essential content, preferred mode of delivery, and desired qualification outcome.
2. Review existing training programs and materials for suitability for inclusion or linkages.
3. Adapt existing materials and develop new resources as required.
4. Package the training resources into the format required e.g. written manuals and/or web based interactive learning materials and assessments.
5. Establish a cost effective delivery mechanism and on-going management structure.
6. Conduct a pilot course to evaluate the program developed to ensure it meets industry needs.

The **desired outcomes** for industry resulting from the development of the training program are expected to include:

- A workforce with the knowledge and skills required for the protection of grain quality in storage.
- Industry access to nationally recognised and high quality training developed and supported by leading experts.

- Enhanced confidence that best practice in grain storage is being implemented.
- A recognised training pathway and qualification to facilitate career progression of employees in the grains industry.

3. Key findings

Extensive industry consultation was conducted via face-to-face advisory group workshops, individual consultation and email communication to determine the level of support and the desired content of the training program and preferred mechanisms for delivery. Strong industry and government organisation support and direction was received.

Existing training materials were reviewed, modified and updated as appropriate, and formatted for on-line delivery. These materials were reviewed by industry experts. It is expected that each year the content of the resources will need to be reviewed to ensure currency for each cohort of trainees. This will be the on-going responsibility of CSU as part of the program delivery.

A three-day workshop was developed and a pilot course conducted in March 2011. Support from industry for participants was very disappointing. Despite extensive advertising and direct contact, the pilot course had to be rescheduled three times (twice in 2010 and again in 2011) to gain any participants. In the end, only three participants attended in March. Several reasons could account for low participant uptake: inadequate or inappropriate marketing; turmoil and structural changes in the grains industry; lack of support by individuals within industry organisations; cost of the program and level of commitment required by participants.

The participants who did attend were enthusiastic about the course, its content and delivery. They commented a number of times that the knowledge and skills they learnt were highly relevant and focussed exactly on their industry needs and operations. In the words of one of the course participants, "*... the information I have gained has given me the opportunity to see how and where we should make improvements in our Storage and Handling*".

The training and workshop was delivered by experts from Charles Sturt University, Department of Primary Industry NSW, Plant Health Australia and a private consultant.

Industry very strongly expressed the need for the training to be accredited under the Australian Quality Training Framework and for participants to receive a Statement of Attainment. Assessment tasks covering key skills, knowledge and workplace case studies were developed and undertaken on-line, at the workshop and in the workplace as appropriate. Assessments were developed to be as relevant and useful for workplace operations as possible as well as meeting the requirements stipulated for achievement of a Statement of Attainment. Participants who successfully complete these assessment tasks **plus** the assumed and co-assessed knowledge and skills covered in accredited farm chemical user training programs (ChemCert, SmartTRAIN or equivalent) will have met the requirements for the National Competency Standard: **RTE4008A Maintain grain quality in storage.**

Accreditation of the training program and issue of the Statement of Attainment has been formalised through CSU Training the vocational education Registered Training Organisation (RTO) of Charles Sturt University. This will continue. CSU Training will apply for an amendment of scope to replace unit **RTE4008A** with the new competency unit **AHCBAC406A Maintain grain quality in storage**. The changeover is complicated by changes in regulation of the national VET sector. From 1 July a new national regulator, The Australian Quality Skills Authority (AQSA) will be the registering body for RTOs. When this new regulator takes effect and advises of the addition to scope processes CSU Training will apply for the new unit to be added to the scope. This should be a straightforward process and training materials will be rebadged accordingly.

On-going delivery of the program will be undertaken by the School of Agricultural and Wine Sciences of Charles Sturt University in association with CSU Training. The CRCNPB will be acknowledged at all times e.g. inclusion the CRC logo as appropriate.

An electronic copy of the training materials, assessments and administrative documents is attached.

4. Implications for stakeholders

This professional development course is broadly aimed at middle level management/supervisors and operators involved principally in bulk-grain handling, grain merchandising, stock feeds manufacturing, brewing, milling, general rural merchandising, and grain storage. The course is also of relevance to grain transporters, advisers/consultants, marketers and re-sellers of grain protectants and fumigants. Participants who successfully complete the assessment tasks **plus** the assumed knowledge and skills covered in accredited farm chemical user training programs (ChemCert, SmartTRAIN or equivalent) will have met the requirements for the AQTF Level 4 National Competency Standard: **RTE4008A/ AHCBAC406A Maintain grain quality in storage**. This competency standard covers the processes of assessing and maintaining hygiene in grain storage areas as well as monitoring the grain for deterioration of pests and contaminants and defines the standard required to:

- implement pre-determined integrated pest management strategies
- monitor and maintain hygiene
- monitor and control pests and contaminants
- investigate and recommend options for technology, systems or practices that will improve grain quality.

CSU Training will award a **Statement of Attainment** against this unit when assessments are successfully completed by the applicant. This will be a nationally recognised qualification. All participants will be awarded a **Certificate of Attendance**.

Industry organisations and personnel, the community and policy makers will benefit in a number of ways:

- A more competent and adaptable workforce will lead to more cost-effective operations, greater competitiveness and higher profits for industry.
- Employees benefit in terms of potential for promotion, workplace satisfaction, employment and further education opportunities as well as a more professional approach to their duties.

- A skilled workforce will help protect the grains industry from biosecurity threats and assure domestic and international customers of the quality of Australian grain.

5. Recommendations

The following recommendations are made:

1. The Grain Storage and Biosecurity Course continue to be offered annually by CSU. Another course is planned to commence later in 2011 with the workshop in early 2012.
2. Consideration is given to endorsing/licencing other providers to deliver the workshop component to enhance accessibility by industry. This will require a *Train the Trainer* program to be conducted to ensure third party workshop presenters meet the necessary standards.
3. In association with key industry personnel, CSU review and update training materials and assessments as necessary prior to each offering of the course.
4. Consideration is given to adding on to the workshop an optional additional one day for those who wish to attain the required (and assumed) knowledge/skills in chemical use as covered in the accredited ChemCert Chemical User Training Program. This will enable co-assessment of these competencies and enhance accessibility to training and outcomes for participants.
5. CSU and the CRC work closely with industry organisations to encourage them to actively promote the program within their organisations.
6. CSU review the advertising for the workshop to ensure extensive industry awareness.
7. A fee structure is developed to recognise the contribution of CRC members to the development of the program. As part of the development project there were a number of comments by CRC industry partners that because they had contributed financially to the CRC (and therefore to the grain course project) that there should be a reduced course fee for their personnel. A discount fee and advertising of such needs to be considered.
8. Consideration is given to enabling industry sponsorship of the program to minimise costs to participants. An industry company enquired about sponsorship of the pilot course. There are a number of issues with this although there are precedents. Details of any formal proposal need to be looked at prior to accepting such sponsorship. This will be done in collaboration with the CRC.

6. Abbreviations/glossary

ABBREVIATION	FULL TITLE
CRCNPB	Cooperative Research Centre for National Plant Biosecurity
CSU	Charles Sturt University
RTO	Registered Training Organisation
DPI	Department of Primary Industry
CBH	Co-operative Bulk Handling, Ltd
AWB	Australian Wheat Board Ltd

7. Plain English website summary

CRC project no:	CRC60125
Project title:	Grain Storage and Biosecurity Training
Project leader:	Assoc Prof John Kent, Charles Sturt University
Project team:	Dr Jo Holloway, NSW DPI and E.H. Graham Centre for Agricultural Innovation Dr Paul Weston, Charles Sturt University Peter Hughes, Qld DPI
Research outcomes:	<p>Stored grain is subject to major biosecurity problems which have the potential to significantly reduce the quality of the stored grain and to make it unsuitable for both domestic and international markets. The problems include attack by insect pests, rodents, birds and pathogens like fungi, as well as contamination by weed seeds, mycotoxins and pest faeces.</p> <p>The Grain Storage and Biosecurity Training project was conducted to meet a need expressed by the grains storage industry for an accredited training program to ensure industry personnel managing the storage of bulk grain have the required knowledge and skills to protect and preserve stored grains to meet market demands. The training program developed has built on a Grain Quality Protection Course previously delivered by Charles Sturt University.</p> <p>The project entailed industry consultation, development of on-line training materials and assessments to maximise accessibility and flexibility, and conduct of a pilot course and workshop at Charles Sturt University, Wagga Wagga in March 2011.</p>

	<p>On successful completion of the training and assessments participants are awarded a Statement of Attainment for the National Competency Standard: RTE4008A Maintain grain quality in storage. This will change to AHCBAC406A Maintain grain quality in storage when this comes into effect.</p> <p>Ongoing delivery of the training program will be undertaken by Charles Sturt University's School of Agricultural and Wine Sciences and CSU Training.</p>
<p>Research implications:</p>	<p>This professional development course is broadly aimed at middle level management/supervisors and operators involved principally in bulk-grain handling, grain merchandising, stock feeds manufacturing, brewing, milling, general rural merchandising, and grain storage. The course is also of relevance to grain transporters, advisers/consultants, marketers and re-sellers of grain protectants and fumigants.</p> <p>Industry organisations and personnel, the community and policy makers will benefit in a number of ways:</p> <ul style="list-style-type: none"> • A more competent and adaptable workforce will lead to more cost-effective operations, greater competitiveness and higher profits for industry. • Employees benefit in terms of potential for promotion, workplace satisfaction, employment and further education opportunities as well as a more professional approach to their duties. • A skilled workforce will help protect the grains industry from biosecurity threats and assure domestic and international customers of the quality of Australian grain.
<p>Research publications:</p>	<p>Weston, P. and Kent, J. (2011) Grain Storage and Biosecurity on-line training materials/manual. Charles Sturt University.</p> <p>Weston P.A. and Kent, J. H. (2009) Development of a Biosecurity Training Program for the Stored Grains Industry. Poster. CRC National Plant Biosecurity Science Exchange, September 2009.</p>
<p>Acknowledgements:</p>	<p>Paul Weston, Project Officer, Charles Sturt University Jo Holloway, Research Entomologist, NSW Dept Primary Industries Jo Slattery, Plant Health Australia Gerard McMullen, Consultant Jenny King, CSU Training Kamala Anggamuthu, CSU School of Agricultural and Wine Sciences Kirsty Bayliss, CRCNPB Chris Newman, Dept of Agric and Food, WA David Jeffries, CBH Peter Botta, Dept of Primary Industry, VIC</p>

	Stephen Buick, Viterro Robin Reid, Graincorp Operations Ltd Stephen Dibley, Plant Health Australia
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