

FINAL REPORT

CSE146

Physical and Biological strategies for grain storage and protection - coordination

PROJECT DETAILS

PROJECT CODE: CSE146

PROJECT TITLE: PHYSICAL AND BIOLOGICAL STRATEGIES FOR GRAIN STORAGE AND PROTECTION - COORDINATION

START DATE: 01.07.1998

END DATE: 30.06.2001

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Summary

This coordination project covered projects grouped within the 'Physical and Biological Strategies' major project within GRDC Program 1.8. These five projects were CSE139 (The effect of harvest time, moisture and temperature on the storability, processing and end-product quality of desi and kabuli chickpeas), CSE140 (Novel physical methods for stored grain pest management), CSE141 (Heat disinfestation engineering for grain storage), CSE147 (An evaluation of heat-shock and heat-soak for economically competitive heat disinfestation of stored products) and CSE150 (Aeration field trials for control and model testing). In addition, this project inherited three projects from CSE121 that were unfinished at July 1998 when this project commenced. These were CSE122 (Harvest strategies for farmers), CSE123 (Prediction, monitoring and control options in storage) and VUT7 (Design and selection tools for equipment manufacturers).

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Conclusions

The model provided by this project and its predecessor CSE121 has worked well as a management tool for coordination of complex major projects with a number of interrelated constituent projects. In particular, the meetings between GRDC project management, research leaders of the associated projects and an industry steering group have allowed fine tuning of the projects during their progression, kept the research industry relevant and maximised the opportunities for synergy between the component projects.

Recommendations

It is recommended that a structure is set up, similar to that for this project, where there are a number of similar projects to be carried out as part of a major GRDC initiative.

Outcomes

Expected Outcome (benefits)

Economic Outcomes

Commercialisation strategies were developed for the outputs from CSE140 (grain disinfestation and conditioning machine) and CSE150 (novel aeration control tactics) during coordination discussions.

Social Outcomes

The steering committees that were set up under this project brought together industry leaders in an area not previously serviced (aeration control systems) and resulted in dissemination of information to manufacturers of grain conditioning equipment.

Achievements/Benefits

Project CSE139 was completed on schedule. All other projects required input and coordination through this project to achieve their aims and reach satisfactory conclusions. A number of improvements were made during the course of the projects as a result of discussions within the formal coordination review meetings or in project-specific consultations with selected members of the steering committee. In particular, CSE122 was successfully concluded with renegotiation of the form of the outputs required (CD plus a 'Ute Guide' on grain storage for growers). CSE123 was finalised after detailed technical negotiations that led to changes in the draft CSE150 and, subsequently, successful development and promotion of the novel 'adaptive discounting method' for aeration control. This method is a major advance in aeration control for Australian storage conditions and should lead to substantial savings in running costs of aeration under conditions where typical weather patterns are marginal for the technique. Large data sets were produced from trials carried out under CSE150 for use in model

validation in VUT7 in the form agreed through the coordination project.

CSE141 and CSE147 are the practical embodiment and laboratory studies underpinning heat disinfestation of grain, with emphasis on application at farm level. The technical heat dosage objectives for CSE141 were set on the basis of results from CSE147 with discussions both in coordination and project specific meetings. CSE140 was a 'blue-sky' project structured with a number of review points for coordination committee guidance and input as the outcomes of particular studies were unpredictable. Following the presentation of literature reviews and preliminary studies, the steering committee under CSE146 chose several technologies for further investigation.

CSE146 brought together industry leaders in farm sector grain handling and storage technology, providing a direct interface with researchers in the area, with emphasis on aeration control technology and non-chemical control of storage pests. This approach, first tried under CSE121, led to significant improvements in the research program, as well as an opportunity to strengthen information flow in this fragmented but small industry sector.