Part 1 - Summary Project Details

Final Report

Report Due Date: 29-Sept-00

CRDC Project Number: CHEM1C

Project Title:
(< 15 words)

Development of the *ChemCert* Groundrig Spray Applicators Course

Part 2 - Project Contact Details

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(Name of organisation that will be administering the funding)

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(Name of organisation that will be administering the funding)

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Organisation: Secretary, ChemCert Australia
(Name of organisation that will be administering the funding)

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Part 3 - Final Report Format

1. Ouline the background to the project.

A need was identified by the cotton and grains industries for the development of a national, co-ordinated training course to assist those operating groundrig spray application equipment to implement best practice in application of herbicides, insecticides and fungicides, and to meet the many challenges facing farm chemical users.

ChemCert Australia Inc. is the national organisation established by industry to co-ordinate training and accreditation of farm chemical users.

The *ChemCert* Specialist Module "Groundrig Spray Application in Cotton and Grain Industries" is a collaborative project between CRDC, GRDC, *ChemCert* Australia, CSU Qld DPI, and University of Qld - Gatton College (CPAS)

Funding from CRDC enabled commencement of the project. GRDC funding will enable completion.

2. List the project objectives and the extent to which these have been achieved.

The aim was to develop and pilot a coordinated, national *ChemCert* Groundrig Spray Applicators Training course which meets the needs of groundrig spray operators (contract and farmer) in both cotton and grains industries.

Objectives included:
* Development of the framework of the training program and administrative arrangements

* Writing draft workshop/ reference manuals and supporting resources including assessments

* Conducting two pilot courses

* Training presenters

These objectives have been met. Implementation administrative arrangements are in place through the national *ChemCert* organisation; a draft reference manual has been produced; supporting resources are in draft form; assessments have been developed; 8 pilot courses have been conducted and presenters in Qld, NSW, SA and WA have been trained.

3. Detail the methodology and a justification for the methodology used.

ChemCert Australia contracted Charles Sturt University to co-ordinate the development work through the Farrer Centre. John Kent, Senior Lecturer in Agricultural Protection at Charles Sturt University is also Secretary and national co-ordinator of *ChemCert* Australia.

Project development work has involved collaboration between John Kent and Peter Hughes, Senior Extension Officer (Pesticide Application and Mechanisation), Qld Department of Primary Industries; and Nicholas Woods, Director, Centre for Pesticide Application and Safety, University of Queensland, Gatton. Peter Hughes and Nicholas Woods are leading technical experts in pesticide application technology in both cotton and grains industries.

Development has entailed:
* a number of planning meetings
* writing of a detailed briefing paper for wide circulation in industry (industry reference group) for comment on the proposed structure and operation of the training program
* Collation and analysis of the responses
* Writing a draft workshop manual and circulating this widely to industry and training experts for detailed comments
* Collating these responses and finalisation of the manual (still in progress)
* Development and refinement of assessments
* Conduct of 8 pilot courses in Qld (Dalby), NSW (Moree and Wagga Wagga) SA (Melbourne) and WA (Northam). A workshop in Vic (Horsham) is planned.
* Compilation of draft of Instructor resources including Instructor Guidelines and support materials (overhead transpariencies) - still in progress.

Excellent support has been received from Hardi Australia, TeeJet Australasia P/L and other industry groups.

The outcome is a 1 day specialist workshop supported by a comprehensive reference manual and industry publications (nozzle charts). Participants are expected to have completed the *ChemCert* Accreditation training prior to attending, although those who do not have this are not precluded from participating. For those with *ChemCert* Accreditation, successful completion of the Groundrig assessments qualifies them for *ChemCert* Reaccreditation. All workshops and assessments are conducted by trained and authorised *ChemCert* presenters. Co-ordination of workshops is through State *ChemCert* Management Committees.

4. Detail results including the statistical analysis of results

A copy of the draft Manual, workshop program and assessments are attached to this report.

At each of the workshops, both written and verbal evaluation of the workshop was conducted. At all workshops, independant observers also conducted evaluations and provided feedback on content, format and presentation.

A total of 135 people have completed the workshops including 15 *ChemCert* Instructors who have participated to enable them to qualify for ongoing presentation of the training.

The training program has been set at AQF level 4 in the national qualifications framework because it involves competencies required for the management of pesticide application. Formal accreditation is still to be undertaken.

5. Discuss the results, and include an analysis of research outcomes compared with objectives.

The training program takes a practical risk management approach to spray application.

Course content includes:
* Review of current issues in farm chemical management including changes to labels, legislation, industry quality assurance, best management practice, risk management and record keeping.

* Principles of spray application, methods of droplet formation, droplet behaviour and target coverage.

* Targets, timing and techniques: matching sprays to the pesticide to be applied, the target for the spray and the conditions at spraying; nozzle types and characteristics; sprayer adjustments; and desirable features of sprayers.

* Basic meteorology, weather conditions and drift management.

* Risk assessment for a given spray situation.

* Sprayer calibration.

* Decontamination of spray equipment

* Record keeping

A small-group case study approach integrates concepts and reinforces the importance of risk management and accuracy at every step of the spraying process.

Assessment comprises completion of a case study (label interpretation, risk assessment, sprayer adjustment settings) and a take home exercise (calibration of own spray equipment and evaluation of chemical management practices).

The format of the workshop has some flexibility to cater for the needs of individual groups.

Good resources are required.

Participant numbers are kept to less than 20 to enable interaction and small group work.

Some participants have indicated that they think it should be a 2 day workshop. However, the 1 day format has been adopted as a good balance between adequate coverage of technical information and minimisation of costs and time away from work for participants.

6. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. Where possible include a statement of the costs and potential benefits to the Australian cotton industry and future research needs.

This training program is expected to experience a high level of demand because:
* it provides valuable technical information and skills for the effective management and application of herbicides, insecticides and fungicides in cotton and grain crops.

* it enables participants to conduct a risk assessment of each spray operation and to select the best spraying parameters for that situation.

* it leads to *ChemCert* Recaccreditation for eligible participants

* training and accreditation of farm chemical users is becoming more and more important (now mandatory in NSW) and is required for access to restricted chemical products.

The cost of this training program to participants is $200 - $250 (before Farmbi$ subsidy) depending on training provider and location. NSW Farmbi$ have set a nominal course fee of $230 including GST. The course fee covers training, manual, lunches and smokos, assessment and *ChemCert* Accreditation. In NSW, Farmbi$ are supporting (75%) farmer attendees. In SA farmers receive 50% subsidy. Other States are negotiating.

The submission the GRDC estimated the economic impact of this program in the grains industry to be $4.25 per hectare based on a 5% reduction on chemicals input costs (estimated at $50 per hectare for grains) and a 0.5% increase in grain production (estimated to be worth $250 per hectare).

An adoption rate of 20% within 5 years is estimated. This will depend on:

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* The quality of the course, the presenter, and the perceived benefits to producers/ operators
* Regulatory and market (QA) requirements for advanced levels of training and accreditation
* Promotion and marketing of the training program by *ChemCert* and course providers
* Requirements for accreditation by contractor organisations
* Whether accreditation remains voluntary or becomes compulsory.

Future requirements to maintain this program will require an ongoing mechanism of review and updates by *ChemCert* as well as continued support for Instructors. Provision is being made for this through the *ChemCert* organisation.

7. Describe the project technology (e.g. commercially significant developments, patents applied for or granted, licenses, etc).

Delivery of this program to industry will be through *ChemCert* Australia, the industry training and accreditation organisation established by the NFF and Rural Training Council of Australia in 1990 to develop and co-ordinate a national training and accreditation program for users of agricultural, veterinary and related chemicals. Delivery will be on a fee for service basis with a proportion on the fee supporting the *ChemCert* organisation.

8. Provide a technical summary of any other information developed as a part of the research project. Include discoveries in methodology, equipment design, etc.

A simplified calibration worksheet developed by J. Kent is utilised.

9. State the recommendations on the activities or other steps that may be taken to further develop, disseminate, or to exploit the project technology.

The final versions of the Reference Manual and Instructor Guides needs to be completed based on the feeback and experiences from the pilot courses and evaluations conducted.

Formal accreditation through the training sector (VETAB) is required. This will entail ensuring the workshop and assessment is based on endorsed national competencies currently in place, and the new competencies in development and expected to be introduced in 2001.

Further Instructor Training Workshops will need to be conducted to cope with the expected demand.

Course materials (manuals, Instructor Guides, assessments, overheads transpariencies etc) need to be disseminated to State *ChemCert* Management Committees for supply to Instructors. This will be done electronically, or hard copy can be supplied at cost.

Workshops need to be promoted throughout industry.

10. List the publications arising from the research project.

Kent, J. (ed) (2000): *Groundrig Spray Application in Cotton and Grain Industries. ChemCert* Australia Inc. c/- The Farrer Centre, Charles Sturt University, Wagga Wagga. ISBN 1 86467 069 X.

Part 5 - Plain English Summary

You must submit a Plain English Summary of yourcompleted research project that is not commercial in confidence, and that can be published by the Cotton Research & Development Corporation in print or on the world wide web. An electronic copy of the plain English summary must also be forwarded by E-mail (angela@crdc.org.au).

Development of the groundrig spray applicators course has been a collaborative project of Cotton Research and Development Corporation; Grains Research and Development Corporation; *ChemCert* Australia Inc.; the Farrer Centre of Charles Sturt Univeristy; the Centre for Pesticide Application and Safety; University of Queensland - Gatton; and Qld Department of Primary Industries.

The short course has been developed in response to a need for an advanced specialist training program to ensure spray applicators in cotton and grain industries have the knowledge and skills required to implement best practice and to meet the many challenges facing spray applicators.

The 1 day specialist workshop is supported by a comprehensive reference manual and industry publications (nozzle charts). Participants are expected to have completed *ChemCert* Accreditation training prior to attending, although those who do not have this are not precluded from participating. For those with *ChemCert* Accreditation, successful completion of the Groundrig assessments qualifies them for *ChemCert* Reaccreditation. All workshops and assessments are conducted by trained and authorised *ChemCert* presenters. Co-ordination of workshops is through State *ChemCert* Management Committees

In some States, Farmbi$ subsidies are available to farmer participants. Accreditation (at AQF level 4) and alignment with the national training framework is underway.

Workshops take a practical risk management approach to spray application. Course content includes:
* Review of current issues in farm chemical management including changes to labels, legislation, industry quality assurance, best management practice, risk management and record keeping.

* Principles of spray application, methods of droplet formation, droplet behaviour and target coverage.

* Targets, timing and techniques: matching sprays to the pesticide to be applied, the target for the spray and the conditions at spraying; nozzle types and characteristics; sprayer adjustments and desirable features.

* Basic meteorology, weather conditions and drift management.

* Risk assessment for a given spray situation.

* Sprayer calibration and decontamination.

The format of the workshop has flexibility to cater for the needs of individual groups. Participant numbers are kept to less than 20 to enable interaction and small group work.

A small-group case study approach is utilitsed to integrate concepts and reinforce the importance of risk management and accuracy at every step of the spraying process.