

SEARCH CRITERIA

Model	Model C: Technological Development Model
Industry	Grain
Focus/Level	Industry
Purpose	Testing available knowledge
Outcomes	Development of a management practice
Special Interest Groups	Other
Design and Implementation	Designed and managed by researchers/experts

1.PROJECT TITLE:

Heliothis Regional Management Strategy Project – Darling Downs Pilot Study: Area Wide Management Groups in the Cotton Industry

2.FUNDERS:

GRDC, CRDC, QDPI

3.PROVIDERS:

Department of Primary Industries Queensland (QDPI) – Project leader, entomologist, technical officer, extension development officer. Growers, consultants, agronomists

4.KEY CONTACTS:

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5.INDUSTRY/ISSUE/GEOGRAPHY:

Queensland – Darling Downs.

Primary focus on two pilot study areas centred on:

The Jimbour Flood Plain – principally dryland grain production with some dryland cotton, and a small area of irrigated cotton (approx 15 x 15 km)

The Brookstead-Cecil Plains region – principally irrigated cotton production with some irrigated grains, dryland grains and a small area of dryland cotton and winter horticultural production (broccoli) (approx 15 x 15 km).

Extension activities involving grower groups outside of these pilot study areas, principally on the Downs, St George, McIntyre.

The project aimed to address the sustainability (primarily economic sustainability of growers, but also considered ecological and environmental sustainability of pre-existing pest management approach) of crop production on the Darling Downs in the face of high heliothis pressure. Introduced the concept of managing a major, highly mobile insect pest on a regional rather than a field-by-field and farm-by-farm approach.

6.PROJECT CONTEXT:

The 1997/98 cropping season in southern Queensland was characterised by a severe and sustained and damaging outbreak of *H. armigera*. The insect attacks most crops (both cotton and grain) in the farming systems of the Darling Downs making control difficult. The over-reliance on insecticides had led to declining efficacy of registered insecticides. The impact of this season highlighted the need for a concerted regional approach to addressing the control of *H. armigera* (eg across cotton and grain farms). The grains industry was considered most under threat because it is highly dependant on 'old' insecticides.

.The pilot phase of the project commenced in 1 July 1999 and went to June 2001. The research and extension program was designed to support and evaluate the implementation and impact of the regional management strategy.

.Phase 2 of the project commenced in July 2001 and will go until June 2004. It has a broader mandate and is expected to have less intensive extension (group support) effort.

7.PROJECT NICHE (SPECIFIC OBJECTIVES):

The overall project objective was to...develop a regional approach for the management of *Helicoverpa* species on the Darling Downs and monitor its implementation and effectiveness. The project specifically worked with grower groups to encourage adoption of key strategies, monitor the impact of changes and to make formal research more relevant to grower needs.

Specific goals were:

- reduce the size of the local *H. armigera* population, and as a consequence the pressure on susceptible crops in a region (grain & cotton)
- as a result of lower *H. armigera* pressure, create an environment in which IPM tactics are viable means of managing *H. armigera* ie. Use of 'soft' insecticides including biopesticides (NPV, Bt), and the contribution of natural enemies. [under moderate-extreme heliothis pressure many of the 'soft' options will not reduce the pest population sufficiently to prevent significant crop losses]
- evaluate the implementation of the HRMS, in terms of: (a) grower/consultant involvement, acceptance and practice (b) impact on target pest population
- HRMS objectives compliment those of numerous projects investigating the potential of natural enemies and biopesticides to contribute to pest control in both cotton and grain crops.

8.PHILOSOPHY/APPROACH – TECHNOLOGY DEVELOPMENT MODEL/GROUP FACILITATION-EMPOWERMENT MODEL.

Initially the project linked in with existing landcare groups or facilitated the establishment of geographical groups. Project staff took on the role as group leader/facilitator, in the majority of groups, and provided technical input and support. Later in the project, the onus was put back on groups to organise meetings and drive their own learning.

9.RESOURCES, MANAGEMENT AND STAFFING STRUCTURES:

Project funded from July 1 1999- June 30 2001 with funding from QDPI, GRDC and CRDC. Total annual budget of approximately \$900,000.

QDPI staff = project leader (20%), research entomologist (100%), technical officer (100%), extension development officer (50%). QDPI paid salaries of the project leader and extension development officer.

Participants = approx 200 growers; 20 consultants and agronomists.
Area = two study areas each of around 25000ha, total area = 50000ha

Flow on – total of around 45 groups of growers across all cotton-growing regions indicating that they have some involvement in AWM.

10.PROCESS/METHODS USED:

A **group approach** was used – using both existing (landcare) and newly formed groups. New groups were formed after public meetings to gauge interest and support. Interested individual growers were contacted and new groups were based around them. Initially project staff provided a lot of support to groups – including organising meetings, developing the agenda, meeting facilitation, technical input, monitoring/collating figures from participating farms and region (eg bug checking and spraying data). Later in the project the onus was put back onto groups to organise their own meetings and invite project staff to have input.

On-farm research was undertaken as well as **on-farm monitoring** related to issues being addressed by the groups. In group meetings participants were able to refer to their on farm data. **Group discussions** at meetings included issues of concerns to growers and pooling experiences on how others tackled problems. This appears to have followed a strong **action learning** framework.

A **newsletter** is sent around monthly to participants and others (update of research, technical issues, what's on etc).

11.IMPACTS TO DATE (AND EVALUATION APPROACHES USED):

Technical recommendations have been evaluated through field trials and on-farm monitoring. Bug-checking and spraying information has been collected and analysed in project areas on an annual basis over the length of the project. Notes of meetings, discussions and activities were kept and maintained by project staff.

People involvement: The Pilot Project final report states that the key project achievement has been to secure and maintain a high level of grower and consultant involvement in the Heliothis Regional Management Strategy (HRMS). The project is reported to having spawned a large number of groups – 39 as at June 30 2001.

Changes in Knowledge Attitude, Skills Aspirations: It is reported that involvement in the HRMS project (and the low heliothis pressure) has given many growers confidence to experiment with alternative management options that were previously thought non-viable. It is further reported that change in grower attitude to heliothis management, and insect pest management in general, as a result of involvement in the project has been dramatic.

Changes in practice: Growers in both study areas have been reported to continue to implement the recommendations of the HRMS – components such as spring trap cropping and pupae busting have been adopted...on the majority of farms in the pilot study areas.

Industry/regional changes: The project reports that has been more difficult to evaluate the impact of HRMS on the local heliothis population. Three indicators proposed to demonstrate progress were: lower pressure in the pilot study areas relative to areas not implementing HRMS; a delay in the build up of the local population during the season compared to the 97/98 season; and a decrease in the level of insect resistance in the local study area populations of *H. armigera*.

Other benefits: The project team reported that one of the major flow-on benefits of the project, as described by grower participants, has been the opportunity for increased grower to grower communication within the groups that meet regularly. The HRMS was seen to provide a good framework within which to talk about their pest management issues.

12.EFFECTIVENESS:

As well as the impacts shown, the extension effort is reported to have extended beyond the immediate study areas through information in the media and newsletters.

The achievements made through this project have been largely attributed by the project team to have been as a result of the ongoing, supportive extension program of regular group meetings and discussion, newsletters and technical information made available through the project. The continuity of project staff involved in extension (EDO, entomologist, project leader) was important in developing strong relationships with individuals and groups.

With the withdrawal of intensive extension support for groups, approximately three-quarters of groups were estimated to have stopped meeting regularly. Whether this is due to the lack of ability, resources or motivation to continue organising meetings – or a result of most individual needs being met over the life of the pilot – requires further investigation.

13.PROJECT DOCUMENTATION AVAILABLE:

Miles, M & Ferguson J (2001) *Heliothis Regional Management on the Darling Downs: an overview and evaluation of the project*, in Proceedings of CCA Production Seminar 20-21 August Goondiwindi Queensland.

Miles M, Bodington J, Murray D & Bull T (1999) Area-Wide Management – Challenges & Opportunities – delivered at CCA Seminar August 1999. DPI-FSI Toowoomba Q.

Final Report CRDC Project Number DAQ85C 30/6/01, Cotton Research and Development Corporation, Narrabri NSW

14.ISSUES:

- Widespread adoption of AWM as a term to describe practically any group meeting to discussing insect pest management issues – perhaps more appropriately called Pest Management issues groups. In other words, any group comprised of a number of growers from across a local region may be called an area-wide group. AWM is now synonymous with coordination of insecticide use, IPM, benchmarking etc.
- Widespread adoption of tactics promoted as components of the HRMS, beyond the pilot study areas- meant there was no possibility of having a 'control' area.

- Unexpected flow-on benefits of the project involved increased communication amongst growers, and to some extent capacity building in relation to their ability to communicate about contentious issues that would have previously gone undiscussed. This capacity has been achieved through familiarity in a 'supervised' meeting environment as well as the development of common knowledge in relation to pest management issues.
- Demands on the project team to talk about the project and provide support to groups outside the study areas was extremely demanding on the human resources.
- Stakeholder direction that the groups should be 'weaned' off the high level of organisational involvement of the project team resulted in the demise of a large number of groups that were not ready or equipped to drive themselves. Additional facilitation support may have avoided this outcome.
- This project was funded as a research project but had a strong extension component. The project team felt that this was a major factor in its success. The time and resources spent in supporting extension activities is an on-going issue for the post-pilot phase of the project.
- The non-continuation of a large proportion of groups established for the project needs to be further explored – particularly in the light of whether there is a need for external facilitation support for groups to sustain them.

15.COMMENTS/CONCLUSIONS:

- Exceeded expectations in terms of acceptance of the concept as a viable and desirable approach to heliothis management across the cotton-growing regions of Qld and NSW. Exactly what it is about the AWM concept that 'grabbed' the imagination of growers is still unclear. For many they were prepared to implement tactics based on good faith rather than as a result of convincing empirical data.
- AWM potentially has application across a range of industries, and for the management of a range of pests. Research is needed on the ecology of each species to determine the applicability of such an approach, and to develop key tactics to impact the population. Perceivably AWM has application for both pest species (suppressing the local population) and natural enemies (building the local population), not only in broadacre crops, but in horticulture as well.
- The project demonstrated the value of extension support for growers and the role of groups in assisting dialogue and discussion between growers-and consultants.

16.REVIEW METHODS:

- Review of available documentation.
- Interview with project leader – who made the first cut at putting project information under framework headings.
- Circulate to wider project group for comment.