



*Know-how for Horticulture™*

**Integrated pest  
management  
'Research to  
Practice' for  
brassicas**

Anita Chennell  
VIC Department of  
Primary Industries

Project Number: VG99006

## **VG99006**

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# Integrated Pest Management for Brassicas

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## Final report

Horticulture Australia Pty Ltd

Project No. VG 99006



Department of  
Natural Resources  
and Environment



Horticulture Australia



October 2002

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# **Integrated Pest Management for Brassicas**

**Final Report, Horticulture Australia Project Number VG99006**

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## **Report Purpose**

This report details the outcomes and outputs achieved from the implementation of the Integrated Pest Management for Brassicas project. Specifically, this report describes the development process of two innovative multi-media products that bring together the existing research knowledge of Brassica pest and disease management. In addition, the distribution process, industry feedback regarding the products and recommendation for future work to assist the Australian Brassica industry is provided.

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- Nancy Schellhorn - South Australian Research and Development Institute (SARDI)
- Alan Blakers, David East, Gary Ryan, Ian Ryan and John Ryan - Manjimup, Western Australia
- Ian Fowles - Mt Barker, South Australia
- Shane Gishford, Chris Jackwitz, Kevin Niemeyer - Gatton, Queensland

### **CD contributions by:**

- Members of Horticulture Australia's Diamondback Moth project
- Members of Horticulture Australia's Clubroot project

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# 1 Media Summary

The management of pests and diseases continues to challenge horticultural industries throughout the world. To meet this challenge, Integrated Pest Management (IPM) programs have been implemented in many parts of the world to maximise sustainable chemical and biological control methods for the production of safe foods. In Australia, growers from different regions face a range of pest and disease issues. The understanding and use of IPM to control these issues varies from grower to grower.

The 'Integrated Pest Management for Brassicas' VHS video and CD-ROM are the result of the Horticulture Australia project VG99006. These products were produced to encourage the Australian Brassica industry to adopt best practices in pest and disease management and to assist in the understanding and development of sound IPM programs.

Traditionally, new information has been delivered to the vegetable industry via written publications, field days, discussion groups and to a lesser extent, formalised training workshops. Research shows that growers prefer to obtain information and ideas through face-to-face contact with other growers, researchers and consultants or through practical demonstrations (Kilpatrick et al, 1999). Initial consultation with industry supported this view, with growers suggesting they had little spare time to attend extensive formal training workshops and reading lengthy manuals was tedious.

The 'Integrated Pest Management for Brassicas' video was developed with these issues in mind. The 40-minute video features both leading growers and researchers from around Australia sharing their experience and advice on best practice methods for managing pest and diseases. The CD-ROM, which includes the video, also contains interactive tools and materials to assist growers in developing their IPM programs. The CD-ROM is the first of its kind to deliver such a diverse range of IPM information to the vegetable Brassica industry. Both products are presented in 8 major sections. These are:

- Nursery hygiene
- Identifying diseases
- Monitoring for diseases
- Identifying insect pests
- Monitoring for insect pests
- Biological management
- Resistance management
- Cultural practices
- Gene technology

Approximately 1500 levy paying Brassica growers Australia wide have each received a complementary copy of the CD-ROM. These growers also have access to the VHS version through their State Vegetable Industry Development Officer. Other organisations are also able to purchase the CD-ROM and video. These are for sale through the Department of Natural Resources and Environment, Institute for Horticultural Development, Victoria (ph (03) 9210 9222).

Feedback from growers has been positive. They have particularly enjoyed the way the information has been presented and the mix of scientific and personal experience information. The product has also received wider appeal with requests for the product coming from IPM researchers overseas, secondary schools and extension officers for use in grower discussion groups.

The CD-ROM medium is just one tool used to deliver research and development outcomes to assist growers adopt new ideas and technology. Feedback from growers supports the notion that they will seek further information in this format, as these tools increase in their availability.

Continued adoption of IPM is reliant upon a clear demonstration of the cost/benefit in implementing such programs; to persuade growers there is a real benefit in changing their traditional practices. Also, in some regions there is a need for pest and disease consulting services to alleviate the demand on grower time and skills.

## **2 Introduction**

Clubroot and Diamondback Moth cost the Brassica industry in excess of \$25 million annually. To combat these problems and other pest and disease issues, a large investment of vegetable growers Research and Development (R&D) levy funds supports the development of IPM practices. Yet a grower survey undertaken by Bernard et al (1998), found 56% of growers were uncertain about IPM, over 65% would like more information on IPM and 44% of growers waited to see other people in the industry use IPM before they did.

This indecision regarding IPM and in particular the lack of R&D adoption, is linked to growers uncertainty as to how to use new and sometimes complex technology or information. The interpretation of research results and incorporating them into the farm management process, can at times be difficult and complicated for growers. In addition, the scientific approach of focusing on a specific problem may deliver information in isolation to the rest of the crop production process. Growers are often left to work out how to integrate this new information into their overall management process.

This project was developed in response to growers' needs for more information from R&D programs which work in the field and is presented in a user-friendly format.

The approach taken to meet this need and ensure Brassica growers nationally had access to the outputs of the project, was the development of the 'Integrated Pest Management for Brassicas' video and CD-ROM. These products were produced to encourage the adoption of IPM techniques developed by key R&D programs. They reveal to growers how other growers are implementing IPM on their farms, what research is available to assist them in developing their IPM programs and generally promote the IPM concept.

### **2.1. Project aims**

The aim of this project was to encourage the Brassica industry to utilise the outputs of research and development work they are funding. In particular, to take on board new IPM information and techniques to effectively manage key pests and diseases with reduced reliance on pesticides.

Specific aims of the project were:

- To design and develop resource material that contained 'easy to use' technical information from current research projects and to deliver this information nationally;
- To provide Australian Brassica growers with IPM information that could be implemented on their farms;
- To demonstrate how IPM techniques can be implemented on farm through testimonies from leading growers and scientists;
- To assist Brassica growers enhance their management skills in order to minimise pest and disease impacts for the production of better quality produce.

Overall, this project aimed to help the Australian Brassica industry maximise their investment in R&D programs by developing user-friendly resource tools to assist growers in managing their pests and disease problems.

## **2.2. Project outcomes**

The production of the CD-ROM and video increases the accessibility of outputs from key R&D programs to all Brassica growers. These products ensure the Brassica industry not only becomes familiar with the R&D programs they are funding, but has the opportunity to see how R&D outputs are implemented by growers across Australia.

By viewing the grower testimonials delivered on these products, many other growers will be given the confidence to 'have a go' at implementing IPM techniques developed by R&D programs. This confidence and knowledge is essential, if growers are to develop their own IPM programs for the continued production of safe, quality fresh products.

Adoption of an IPM program will help minimise the risk of chemical contamination, pesticide resistance and poor product quality, which can only help support consumer confidence in Australian produced Brassicas. Ultimately, adoption of IPM in Brassica crops is essential for the \$120 million per annum industry to remain sustainable.

The main outcome will be the increased communication, understanding and adoption of relevant details from vegetable levy funded R&D projects by Brassica growers.



### 3 Project strategy and activities

The development process of the 'Integrated Pest Management for Brassicas' video and CD-ROM is detailed below in chronological order.

1. The video was conceptualised through discussions with key communication/extension people interstate and from reviewing other related videos for ideas. These videos included:
  - Canadian 'IPM for Crucifers in Ontario',
  - AusVeg's 'Australian Vegetable Industry Strategic Development Plan',
  - Agriculture Victoria's 'Integrated Pest Management for Potatoes – Biological control', and
  - the Marion and Mitcham Environmental Education Project's 'Business Water Conservation'.
2. Preliminary research into the requirements for producing a video was undertaken. This included discussion with Swinburne University's Education Unit (Margaret Fraser) and others who had previously produced videos (eg Sarah Barry – DNRE, Dijana Jevremov – SARDI). The budget required to produce a video was indicated to be at least \$1,000 to \$1,500 per minute.
3. The concept of the video was discussed with the Australian Brassica Grower R&D Committee at the annual Horticulture Australia's Diamondback Moth project meeting. The committee was pleased by the concept and gave their support for the video to be developed.
4. Three quotes for the video production were sought from Swinburne University (Hawthorn Campus, Victoria), Filmhouse Pty Ltd (South Australia), TTV Interactive Media (Box Hill TAFE, Victoria).
5. An outline of the proposed video content was drafted. The vision was to develop a product that would:
  - Provide growers with technical information from current research projects,
  - Provide information that growers could implement on their farms and
  - Promote IPM through testimonies from leading growers.

A comprehensive list of the topic areas, possible content and contributors for the video was developed. Preliminary questions were written for growers who would participate in the video. These were based on the topic areas and were to be used as the tool for obtaining key IPM messages from the growers.

6. TTV Interactive Media (Box Hill TAFE) were selected for the filming contract. They were chosen on the basis of cost, enthusiasm, previous work examples and proximity to our work location at the Institute for Horticultural Development, Knoxfield (Victoria).
7. Arrangements were made for key Brassica growers to appear in the video. This involved discussions with extension officers and researchers from other Horticulture Australia projects across Australia to find the most suitable candidates. Criteria for selection of candidates was based on growers adoption of various IPM practices and their overall enthusiasm and passion for IPM.
8. Questions for selected grower participants in Queensland and Western Australia were refined.
9. Filming dates were finalised with growers in Gatton, Queensland.
10. Letter of agreement was finalised and signed by TTV Interactive Media and the IPM for Brassica project team. It was agreed that one camera man and director would travel interstate. Footage was captured on BetaCam (professional quality film), which was later transferred to VHS for editing.
11. Notes regarding the management of the filming process:

*Script creation* – A pure script was not developed until after filming. Instead, the approach was to allow the growers and researchers to build the basis of the story in their own words, prompted by questions from the project team. The final video script was created during the footage editing process. The final script was divided into the topic sections and contained the detail of grower and researcher stories selected from the footage. Where there needed to be a link between speakers or topics a voice over script was written.

*Footage editing* – There was a total of 10 hours of footage shot. This was reviewed numerous times to select the best footage. Initially footage was rated in terms of content, relevance,

suitability, sound, visual effects and length and then divided into the relevant topic areas. The content of each sentence and paragraph spoken on film was typed into the computer. This assisted in the review and editing process. The jig-saw of cut footage for each topic area was then massaged into a script which told the 'story'. For example, all suitable footage that contained reference to beneficial insects was cut and put onto one tape. This footage was then reviewed and prioritised. The final footage mix of growers and researchers linked to tell the 'story'. During this process each topic area was treated separately.

12. Filming of two Brassica growers and one consultant commenced in Gatton, Queensland. Participants included Kevin Niemyer, Chris Jackwitz and Shane Gishford. One full day was spent filming. Growers were not provided with the established questions prior to filming. We believed this allowed their responses to be the most natural and honest.
13. Filming of four Brassica growers and one nursery manager commenced in Manjimup, Western Australia. This included David East, Ian Ryan, Gary Ryan, John Ryan and Alan Blakers. Approximately one and a half days was spent filming.
14. Approximately six weeks was spent editing Queensland and Western Australian footage and developing a preliminary script.
15. Filming of Caroline Donald (scientist) in the field at Winchelsea. Additional footage was captured at Werribee, Victoria with assistance from local growers (Mason family) and a chemical re-seller (E E Muir & Sons). One full day was spent filming.  
  
Scientists that appeared in the video were selected on the basis of the level of their expertise and ability to speak clearly and concisely about their topic area. Each scientist was briefed on the topic areas we wished him or her to cover.
16. Filming of three scientists (Robert Faggian, Nancy Endersby and James Hutchinson) in laboratories at the Institute for Horticultural Development (IHD), Knoxfield (Victoria). One day was spent filming.
17. Filming of Ian Fowles (Brassica grower) and Nancy Schellhorn (scientist) took place in the field at Mt Barker and Virginia plains, South Australia. One full day was spent filming.
18. Footage was roughly edited and the 'first cut' was viewed.
19. During the video production, it became evident that there was a lot more useful information and practical tools that were not possible to put into a video format. It became evident that the product needed to be interactive as well as visual, which could be achieved in a CD-ROM format. This development would also fulfil a wish expressed by the Brassica Grower R&D Committee to have the 'Field Guide to pest, diseases and disorders of vegetable Brassicas' (Donald et al 2000) developed onto CD-ROM.
20. Once footage sequence had been established, a 'second cut' was made. This took three 12 hour days of solid editing in a professional editing suite and included mixing of visual footage with a draft voice over.
21. Key extension staff, scientists and managers from IHD, Knoxfield were asked to view and critique the 'second cut' version of the video. Feedback was sought and adjustments made to any footage or voice over script where necessary.
22. A professional voice over for the video was taped in the Box Hill TAFE studio.
23. A list of all animation and graphics to appear in the video was established.
24. Examples of interactive CD-ROMs were reviewed for ideas on style and appearance. A 'wish-list' for the CD-ROM's design and content was established and included an outline the various sections, pdf files, photos, internet links, contact details, references and other text.
25. An initial meeting with The Edit Shop (South Melbourne, Victoria) was held. This meeting discussed what the IPM for Brassica project wanted to achieve in terms of animation for the video and the production of a CD-ROM.

26. Content material for the CD-ROM was gathered and modified or developed. Editing, reviewing of the CD-ROM content, including finalisation of animation and graphics continued.
27. A video and CD-ROM slick cover was developed by The Edit Shop.
28. Jonathan Eccles (Horticulture Australia) officially launched the video and CD-ROM at IHD, Knoxfield. All those involved in the production of the video and CD-ROM, the Australian Horticulture Providers Network and prominent growers were invited.
29. The duplication of 250 videos was completed. The video was mailed to Western Australian growers who participated in the production and Rachael Lancaster (Western Australia Department of Agriculture, extension officer) who required the video for a growers' workshop.
30. The duplication of 1,500 CD-ROMs was completed.
31. An official mail out of CD-ROMs to Australian Brassica growers was undertaken with assistance from the State Vegetable Industry Development Officers. A grower questionnaire was included with each CD-ROM in order to gain feedback regarding the value of the product and if it encouraged growers to implement a change.  

The number of CD ROMs sent out to each state:  
 Vic – 466; Qld – 120; NSW – 400; Tas – 120; SA – 65; WA – 240.
32. Each state Vegetable Industry Development Officer received 20 copies of the video. This was so those growers, who did not have access to a computer with a CD-ROM player, could still view the video by contacting the IDO in their state.
33. Media articles were released during production of the video and after the official launch, to alert growers' attention to the upcoming products. The purpose was to stimulate growers' minds so that when the video and CD-ROM were launched growers would be aware of the products and hopefully be motivated to find out more about them. A further media release ran after the official mail out of the products to make sure all levy paying Brassica growers had received the product. To date there have been a number enquires, from growers and other sectors, that have come from the release of these articles.
34. A poster was presented at the Australian Society of Horticultural Science (AuSHS) conference, in Sydney – October 2002. This was to promote the CD-ROM and Video to those involved in horticultural science.
35. A paper was presented at the Horticulture Conference at the Institute for Horticultural Development to Department of Natural Resource and Environment staff from around Victoria.
36. To date the Video and CD-ROM have been used in grower workshops around Australia.

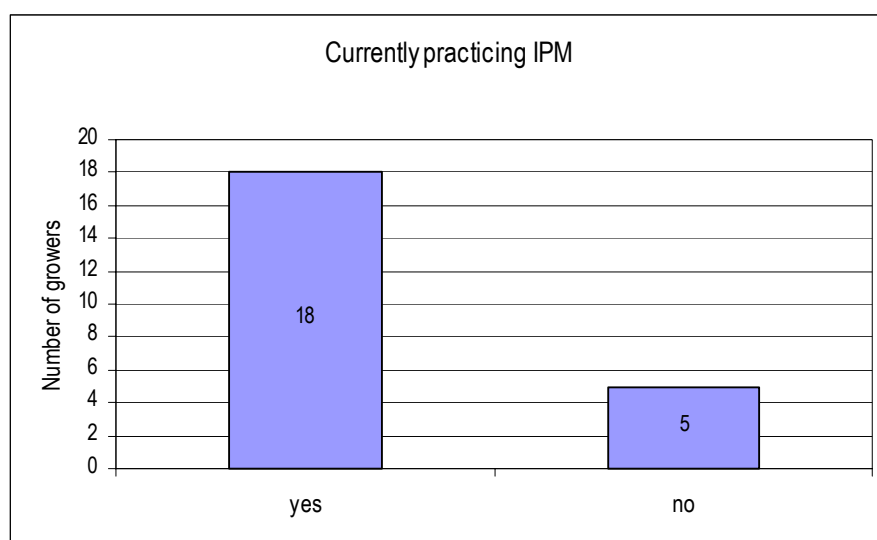
## 4 Evaluation of impact and adoption

A questionnaire (Appendix 2) was sent out with the CD-ROM to each grower across Australia. The purpose of this was to evaluate the acceptance and use of the product. A total of 25 responses were received from Victoria, South Australia, Tasmania, Western Australia and Queensland. Of these responses, two were received from growers who did not have access to a CD-ROM. It should be noted that due to unforeseen circumstances, not all growers received the CD-ROM by the time this report was written.

The results from this questionnaire provide an overview, with the enthusiastic and very positive response being consistent amongst growers. Overall the respondents found the CD-ROM format appropriate and the information contained in the CD was useful to their business and the development of the IPM programs. This is further detailed below.

It is recommended that further evaluation work needs to be carried out to fully determine the level of acceptance and use of this type of product and the understanding and implementation of the information it contains.

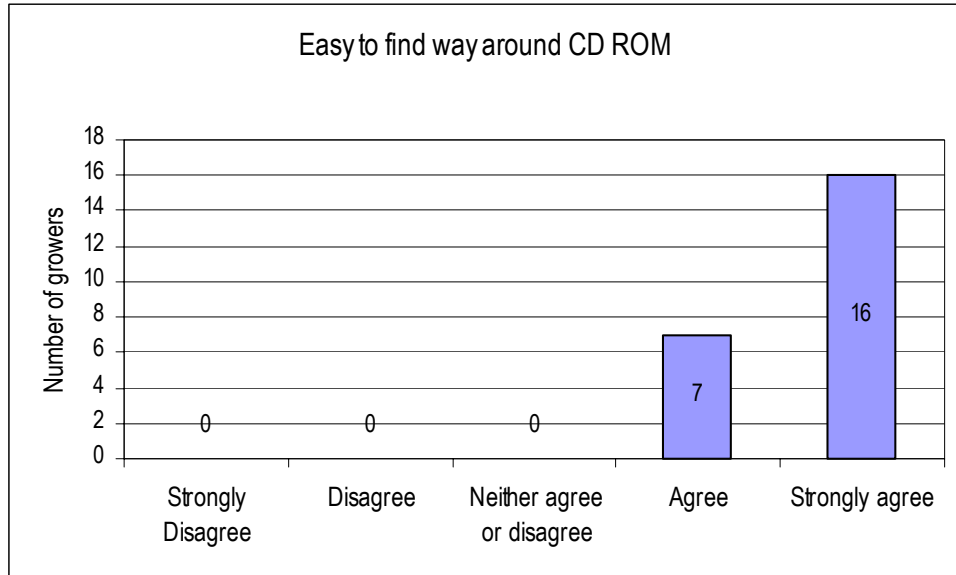
The majority of growers who responded to the survey claimed that they were currently practicing IPM (Figure 1). Of those who were not practising IPM (5), these growers rated the information on the CD-ROM highly and agreed that it had encouraged them to try something different in terms of pest and disease management practices.



**Figure 1.** The number of growers who responded to the questionnaire who claimed that they were (18) or were not (5) currently practicing Integrated Pest Management for pest and disease control.

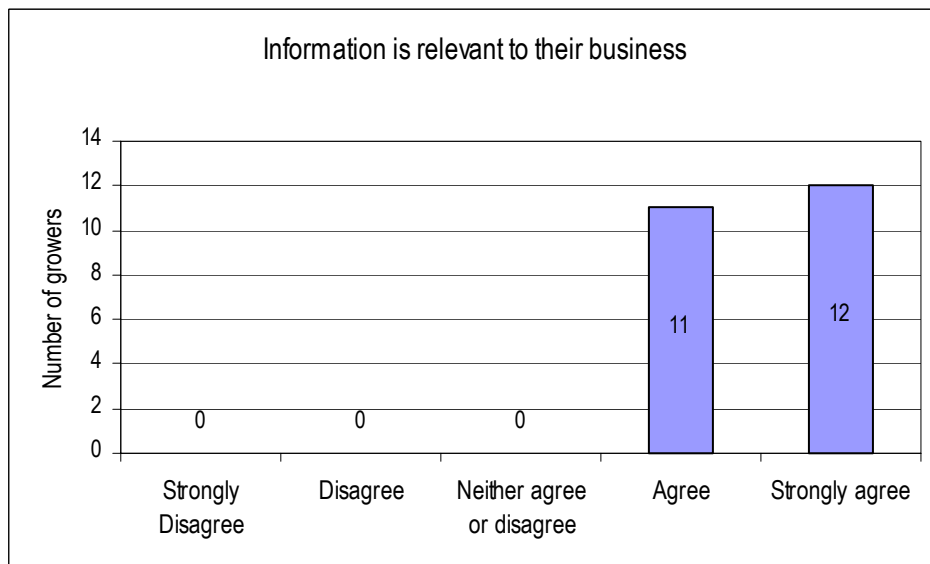
The questionnaire asked growers to rate the 5 statements in terms of the extent to which they agreed or disagreed. The response rate to each of these statements is given below.

All respondents agreed (7) or strongly agreed (16) that the CD-ROM was easy to navigate their way around (Figure 2).



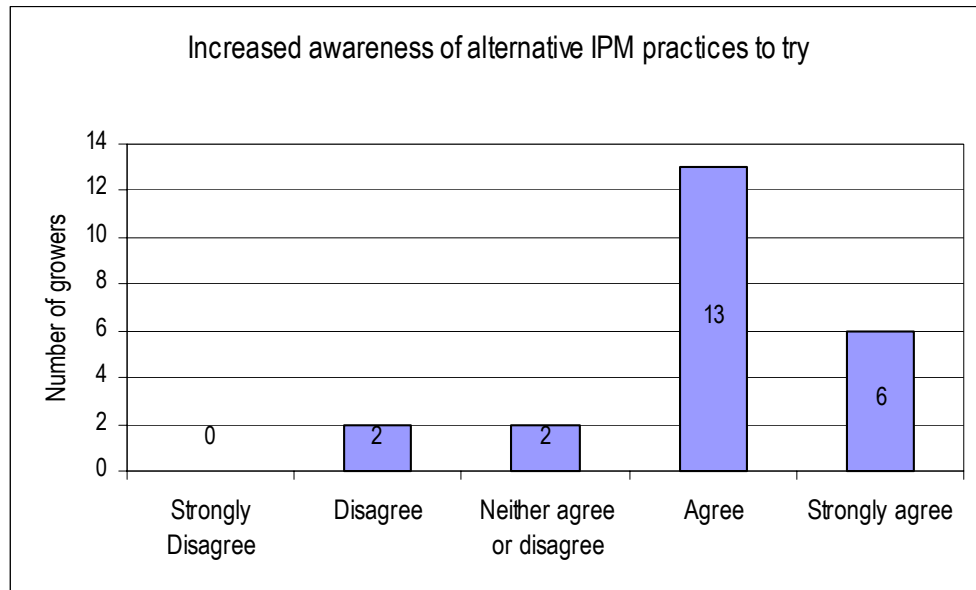
**Figure 2.** The level of agreement of growers who responded to the questionnaire with the statement “I found my way around the CD ROM easily”.

All respondents agreed (11) or strongly agreed (12) that the information in the CD-ROM is relevant to their business (Figure 3).



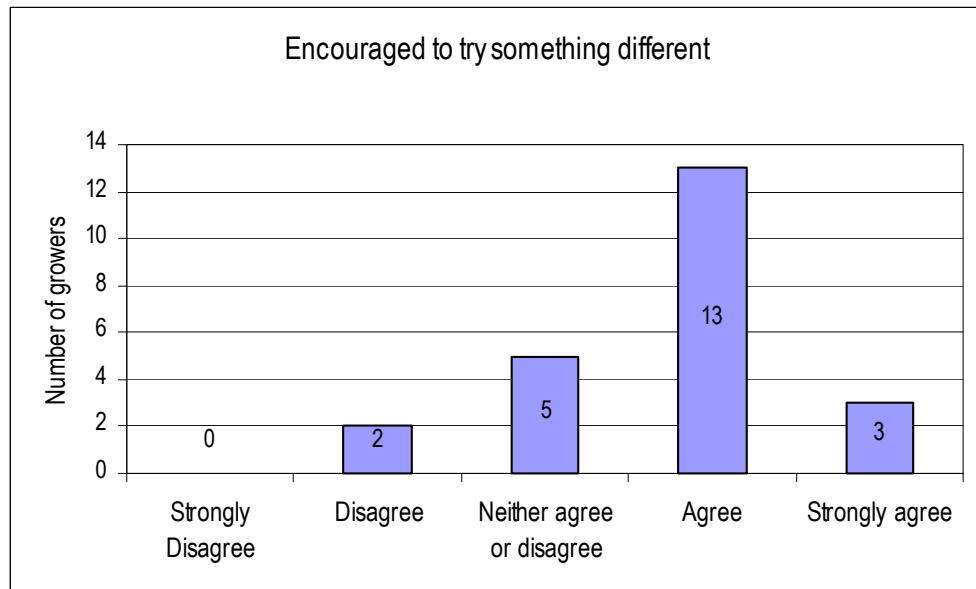
**Figure 3.** The level of agreement of growers who responded to the questionnaire with the statement “The information in the CD-ROM is relevant to my business”.

Overall the CD-ROM increased respondents awareness of alternative IPM practices that they could implement. Two growers disagreed with the statement, which could be interpreted that they were already aware of the IPM practices presented on the CD-ROM, or that they were unable to implement what they saw onto their farm (Figure 4).



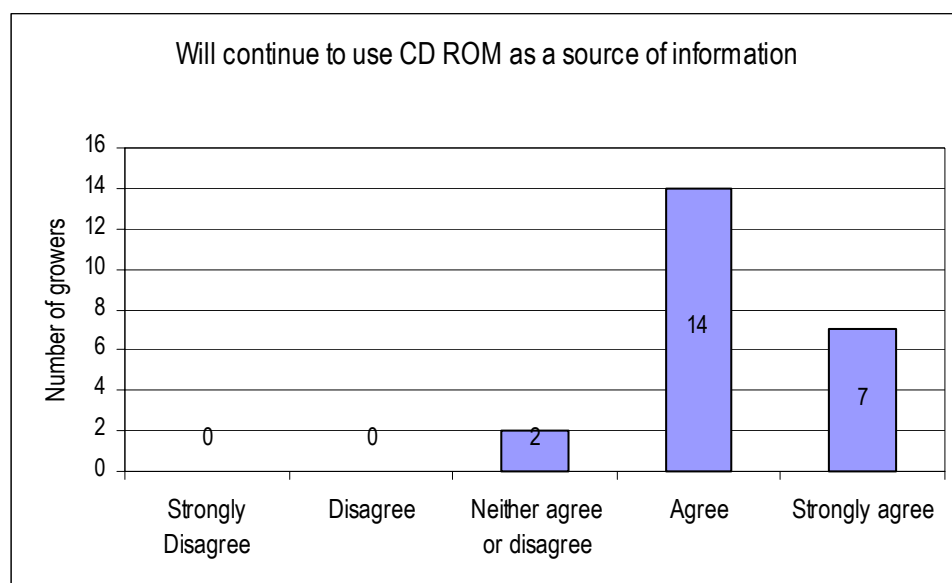
**Figure 4.** The level of agreement of growers who responded to the questionnaire with the statement “The CD ROM has made me aware of alternative IPM practices that I could try”.

The CD-ROM has encouraged the majority of respondents to try something different in terms of their pest and disease management practices. Two growers felt they were not encouraged to try something-new (Figure 5).



**Figure 5.** The level of agreement of growers who responded to the questionnaire with the statement “The CD ROM has encouraged me to try something different”.

The majority of growers claimed that they would continue to use the CD-ROM as a source of information, two growers were unsure (Figure 6).



**Figure 6.** The level of agreement of growers who responded to the questionnaire with the statement “I will continue to use the CD ROM as a source of information”.

Qualitative data was also collected from the questionnaire. Respondents were asked to describe in their own words what they liked most or disliked about the CD-ROM and the information it contained. In short, the majority of growers commented that the CD-ROM was easy to use, liked the visual presentation of information, found the content useful and had no dislikes. In addition, respondents were keen to see the production of similar CD-ROMs that contained various growing information, in-particular chemical use details.

Comments received is as follows:

➤ **What I liked most about the CD ROM and why..**

- Quick and easy
- Well explained, fantastic, great with video on site
- Easy, self explanatory, user friendly
- Excellent production, definitely raised the bar compared to other horticultural CD-ROMs
- Easy to navigate.
- No long winded explanations – clear and concise
- So much information on one small disk
- Was easy to run
- Crop scout recording sheet – will be implemented here
- Visual, easy to use
- Information on Clubroot
- Clear and precise
- Nicely produced
- It worked on the computer, clear explanation
- ALL !!! Congratulations, Excellent.
- Informal
- Being able to go from one topic to another with a single click

- Video and audio worked well together
  - Very informative, lots of information (in depth)
  - Good source of reference
  - Easy to understand
  - It was very clear (sound and video)
  - Told me things I already know
  - Clear and informative
  - I could relate to the information
  - The TV type approach, that is no reading and hearing grower stories
  - Training, pest identification, beneficials
  - Talking video
  - Clubroot – awareness
  - Being able to print forms
  - I could watch it in my own time & select just the information I wanted
  - Amount of information supplied for no cost
- **What I disliked about the CD-ROM was and why..**
- None
  - Nothing
  - Nothing. When is the next one coming out?
  - No dislikes
  - NOTHING !!!
- **Are there any areas not covered in the CD-ROM that you think are important in managing IPM on your farm?**
- No
  - Nothing
  - Maybe some info on bait and adjuvants (stickers & pH considerations) with Bt's and naturalytes.
  - Better understanding of DBM, lifecycle, feeding behaviour, mating behaviour etc
  - Details or specifics on sprouts (ie brussel sprouts)
- **Further information presented in CD format**
- Harvesting procedures
  - A general information CD for chemicals to use in vegetable growing
  - One for each major vegetable crop would be great
  - Chemicals – selection, use, combinations of, how it works, when to spray again, registered list for Victoria, trial outcomes etc.
  - Good way
  - Some more information on Clubroot ie. What to treat plants with prior to planting to try to eliminate it
  - Yes, sprouts and insects – spray time for sprouts.
  - Yes, anything that can help us growers
  - Spray technique
  - Yes, other fields (lettuce)
  - Yes, any information that can improve production
  - Yes
  - Weed control. Herbicide/cultivation practices
  - Upgraded recording sheets when available
  - Other information on other crops such as capsicums and cucurbits



## 5 Discussion

In the early phases of the project, extensive consultation with the Brassica industry was undertaken to ensure delivery of useful outputs. In particular, discussions with members of the Brassica Grower R&D Committee and researchers from key Brassica R&D projects were regularly held to minimise duplication and to find effective means to communicate important R&D results.

Kilpatrick et al (1999) suggest that farmers select learning sources according to their particular needs. It is therefore necessary to provide a range of extension material and deliver in various formats in order to meet the different learning needs of growers. The CD-ROM format provides a collection of information delivered in various styles. For example, written material, videos for visual and verbal explanation and interactive material. This also appeals to the informal learning style of growers. For growers who like a more social learning situation, the CD-ROM and video can be used in workshops, which has been the case in Manjimup, Western Australia.

It is often suggested that electronic media does not appeal to growers. This can be the case for the Internet, where accessing specific and useful information can be daunting (Kilpatrick et al, 1999). The IPM for Brassicas CD-ROM provides links to relevant Internet sites and therefore acts as an indexing system. This saves growers time, frustration and effort spent in looking for relevant and useful information.

The development of CD-ROMs as an extension tool has been limited in the past, based on the assumption that growers are reluctant to use computers. However, computers are an integral part of business management. It is therefore possible to extend their use to other aspect of the farm operation and production. The authors of this report theorise that the lack of interesting, easy to use and informative interactive products, such as CD-ROMs (eg. IPM for Brassicas and Forming and Managing Supply Chains in Agribusiness – Learning from others), discourages the wider use of computers.

Understandably, growers are only interested in training and information if it will provide a solution to their problem. In order for the CD-ROM and video to have wide grower appeal it needed to meet the needs of all growers at different stages along the IPM continuum. One way the video component sought to do this was to feature leading growers demonstrating their IPM practices and talking about their motivation for adoption. For example, facing extreme pest pressure, availability of crop consultants, cost structure, markets, size of operation, peer support through grower groups and willingness to take risks. In addition, the use of case studies and testimonies in the video and CD-ROM, highlights grower innovation and ingenuity. Other growers can build upon this and avoid reinventing the wheel.

While the method by which important R&D information, in particular IPM techniques, changed during the course of the project, the focus of delivering this information in a user-friendly format remained unaltered. The outputs of the project were well received and endorse the use of multi media products to deliver grower information.

While industry response has been extremely positive, the evaluation of the multi media products has had limitations due to time constraints. It could be assumed that those growers who have responded to the questionnaire have enjoyed the CD-ROM the most. In this case, it is possible that the evaluation has not captured the growers who have been less motivated to try the CD-ROM and their reasons why.

## 6 Recommendations

The authors of this report have made the following recommendations for future research and extension needs:

- It is recommended that further evaluation is undertaken to gain a better understanding of the key drivers for IPM adoption. For example, who adopts what, when, where, how and why? This would assist to strengthen insight into the way industry should target its messages to achieve the best result toward IPM adoption.
- The scientific approach to focusing on a specific problem may deliver information in isolation to the rest of the crop production process. Growers are often left to work out how to integrate this new information into their overall management process. It is recommended that a better understanding of how to integrate various IPM strategies is gained and understood by extension and research personnel. For example how to integrate all pest and disease management strategies along with other farm management practices. This would be the 'big picture' solution rather than focusing on a specific pest or disease solution. To achieve this a better understanding of the complexity of production is needed. This information would help researchers advise growers so that they can make better informed management decisions.
- Based on grower feedback, it is recommended that more CD-ROMs are developed and produced for other sectors of the industry. These would bring together a wide spectrum of research and information into an integrated package. In addition, grower feedback has recommended the production of CD-ROMs that focus on specific topics such as chemical application and use.
- It is recommended that further evaluation is required to gain a broader understanding and perspective of growers use of computers and CD-ROMs as a source of information. This would assist in the future development and targeting of such resources.
- As this project evolved, it became evident that one major barrier to grower adoption of IPM is lack of support services. Growers identified that they do not have the time or expertise to undertake detailed pest monitoring and associated control. Therefore in some regions the lack of consultants such as crop scouts severely hindered grower adoption of IPM. This is an issue that the industry needs to address if it is to go forward in unison.
- It is recommended that further work be undertaken to gain a better understanding of the 'economics' to implement IPM strategies in commercial Brassica production, as well as other agricultural crops. This information would provide the industry with more reason to adopt the IPM approach, rather than relying on individual grower and researchers perspective.
- It is recommended to anyone undertaking a similar project to continually consult with growers as they often have the clearest ideas and view of where their industry is going. In addition, working in a team environment to create ideas and networking with industry players across Australia has helped form a better understanding of the industry.
- It is recommended that future extension projects that are to deliver outcomes from key research programs be developed in conjunction with these programs. This way a clear understanding of what the extension project is to deliver is conceptualised and formed well in advance of its implementation.

## 7 Conclusion

All growers are searching for new ideas and technologies that they can integrate into their business. It is not always an easy process to take new research ideas and put them into practice.

At the beginning of the project we set out to produce a video that would encourage all Australian Brassica growers to strive further with their Integrated Pest Management (IPM) programs. There are many levels and components to IPM, and each grower needs to develop a program that best suits their business. However, knowledge and confidence can be gained by all through the sharing of ideas and experience.

We filmed a total of 8 Brassica growers and 1 consultant in Queensland, Western Australia and South Australia, as well as 5 researchers working on national projects. The 40-minute video brings together their insights and experiences on IPM.

Highlights of the video includes:

- the importance of resistance management strategies,
- farm hygiene,
- crop scouting and
- how to utilise natural alternatives for pest and disease management.

In particular, it documents how growers are improving their businesses, the environment and the health of their families. These growers are testimony to the long-term success of IPM.

To provide growers with additional information and tools, the video has been produced in a CD-ROM form that can be accessed by personal computer. The CD-ROM is interactive and the viewer can easily go to the section they're interested in. It also includes extra information and tools to assist growers in their decision making process.

Such tools include:

- calculations to calibrate spray equipment,
- list of registered chemicals,
- steps on managing Clubroot,
- Diamondback Moth resistant management strategy for all States,
- pest and disease identification and control tips and
- links to key contacts

Every Brassica grower around Australia received a complementary copy of the CD-ROM and have access to the video through their states' Vegetable Industry Development Officer.

We would like to especially thank those who made the production of the video and CD-ROM possible:

- Growers and consultants, who had their patience tested as they became 'instant movie stars' and lived through many retakes. We thank them for openly sharing their experiences with us.
- For the researchers for allowing us to invade their laboratories and field trials. We are very grateful for the wealth of information they willingly imparted, particularly members of the Diamondback Moth and Clubroot teams.
- We thank TTV Interactive Media (Box Hill TAFE), for the crash course in film production, script writing, directing, editing and sound engineering.
- Many thanks to Paul Drane and team from The Edit Shop, for their creative talents in developing an easy-to use, practical and imaginative CD-ROM.
- Finally thanks to the Department of Natural Resources and Environment and Horticulture Australia for funding the project.

The journey through this project and the development of these products has been one that we will never forget.

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## **Appendix 1 – Media releases**

## **Article for WA Vege-Link (David Ellement)**

### **'Manjimup Growers feature in IPM Video'**

by Anita Chennell & Emily Tee

'Lights, Camera, Action' .....not the normal words you hear spoken in amongst a cauliflower crop, but recently David East and John, Ian and Gary Ryan from Manjimup had the chance to tell their 'story' on film.

David and the Ryan family showed what practices they have adopted in managing their pests and diseases. Featured was a novel banding machine, developed for the control of Clubroot by the Department of Natural Resources & Environment, Knoxfield. This machine has been modified by growers in Manjimup and Rachel Lancaster (WA Agriculture) to deliver fertiliser more effectively and this is dramatically giving seedlings a better start and improving crop growth. In addition, the Ryan's are trying their luck with bait crops to help manage the impact of Diamondback Moth in their brassica crops.

Their stories, along with other growers from around Australia, will feature in a video about Integrated Pest Management (IPM) for brassica crops. The video will also include current research and information on pest and disease management.

The video is being produced as part of the National IPM for Brassicas project, funded by Horticulture Australia Ltd and is aiming to be launched in 2002. For further information contact Anita Chennell or Emily Tee from Department of Natural Resources and Environment on (03) 9210 9222.

### **‘IPM for Brassicas’ CD-ROM now out**

A CD-ROM entitled ‘Integrated Pest Management for Brassica’ was recently produced with support from the vegetable industry levy, Horticulture Australia Limited and the Victorian Department of Natural Resources and Environment. Approximately 1500 of the CDs have been posted to levy-paying brassica growers across Australia.

Feedback from growers who have viewed the CD-ROM has been positive. Comments from a survey about the CD have included: “clear and precise”; “terrific reference”; “quick and easy”; “well-explained, fantastic”; and “very informative”.

Growers who have used the CD-ROM rated it as being easy to use and agreed that it has encouraged them to try something different in their pest and disease management practices.

If you are a levy-paying brassica grower and have not received the CD-ROM, or you would prefer to view the ‘IPM for Brassicas’ video, please contact your Vegetable Industry Development Officer.

Feedback on the CD-ROM is important to help future projects and products to meet your needs, making your levy funds work harder for you! Those growers who have received the CD and had a chance to use it are asked to fill in the enclosed feedback form and return it in the reply-paid envelope supplied.

Non levy paying growers can purchase copies for \$30 (CD-ROM) and \$25 (video) by contacting Anita Chennell or Emily Tee at the Institute for Horticultural Development, Knoxfield; phone (03) 9210 9222.

# Media Release



30 January, 2002

## IPM in brassicas - from grower to grower

When it comes to advice about new crop management methods, there's nothing quite like getting it from someone who's tried it.

A new video about Integrated Pest Management (IPM) in brassica crops will feature first-hand accounts from brassica growers who have used various IPM techniques.

The video is currently in production by Anita Chennell and Emily Tee, from the Victorian Department of Natural Resources and Environment's (NRE) Institute for Horticultural Development. It is part of a national project funded by the vegetable growers' levy, Horticulture Australia Limited and NRE.

Ms Chennell said that the brassica growers they had visited to date had been most cooperative and enthusiastic about passing on their knowledge of IPM.

In Queensland, two prominent Gatton growers, Kevin Niemeyer and Chris Jackwitz, talked passionately about their experience in implementing IPM and maintaining a balanced ecosystem on their properties. They described the use of alyssum plantings and strip spraying to encourage beneficial insects to help manage diamondback moth, cabbage centre grub and other insect pests.

A critical component of their IPM program is the use of a crop consultant. Both growers use the services of Shane Gishford, who plays a key role in monitoring their crops and working with the growers to identify the 'softest' option for controlling the pests.

Mr Gishford said that the main component of IPM is to have someone in the field to identify everything - the predators (beneficials) and the pests - and to then identify what product (spray) is going to do the job. "We start with the softest option every time, and if we have to go in with a harder option, we try to minimise the times we have to do it, or use strip spraying through the farm so that we do not knock all the predators out at once."

Mr Niemeyer links IPM to running V8 Supercars. "All I am is the driver of IPM, the one that gets the limelight at the end of the day," he said. "There is a team behind it; the pit crew, the tacticians that win the race - it's not the driver on his own. I couldn't do it on my own; we needed help, with Department and other associated people right throughout the world - all that information comes to us and gives us the opportunity to implement it and make it a success. Therefore I'm the winner!"

On the other side of the country, David East and John, Ian and Gary Ryan from Manjimup in Western Australia showed what practices they have adopted to manage pests and diseases in their crops. These include the use of a banding machine developed by NRE for control of clubroot. The Manjimup growers have adapted the machine to deliver fertiliser more effectively, giving seedlings a better start and improving crop growth.

The Ryans are also trying the use of bait crops to help in managing diamondback moth. Like the Queensland growers, they are employing crop scouts to monitor pests and diseases and advise on the most effective times to use pesticides. John Ryan said that they had got their money back more than twice through savings made on chemical use as a result of crop monitoring.

As well as advice from growers, the video will include current information from researchers on. It will also introduce some of the future issues for pest and disease management in brassicas.

The video is scheduled for release in the second half of 2002.

For further information, contact Anita Chennell or Emily Tee at NRE Knoxfield; phone 03 9210 9222.



# Media Release

25 July, 2002

## On-screen boost for brassica pest management

Producers of vegetable brassica crops can improve their knowledge of pest management from the comfort of home, following the launch of a new video/CD-ROM product.

The focus of the video is to provide information to brassica growers on Integrated Pest Management (IPM) techniques. It has been developed as part of a national project funded by the vegetable growers' levy, Horticulture Australia Limited (HAL) and the Victorian Department of Natural Resources and Environment (NRE). The adoption of IPM techniques provides economic, social and environmental benefits for both growers and the community, through reduced pesticide usage and improved sustainability of production.

Jonathan Eccles, Vegetable Program Manager for HAL, officially launched the product at NRE's Institute for Horticultural Development, Knoxfield (IHD). He said that making research outcomes available to industry in a practical format was crucial to the success of research programs. Media such as video and CD-ROM add great flexibility and effectiveness to the delivery of research outcomes.

The video's producers, Emily Tee and Anita Chennell, from IHD, said that the product is presented in six major sections:

- Nursery hygiene
- Identifying and monitoring pests and diseases
- Beneficial insects
- Chemical resistance
- Spray application
- Cultural practices.

Ms Tee explained that, in each of these sections, research scientists present advice on best practice methods, while brassica growers talk about their experiences in implementing IPM techniques and their reasons for adopting them.

"We filmed a total of eight brassica growers and one consultant in Queensland, Western Australia and South Australia, as well as five researchers working on national projects," said Ms Tee. "These people deserve great credit, because they have devoted considerable time to the project and have willingly shared their thoughts and practices in a clear and concise manner."

Ms Tee said that the video runs for about 40 minutes. "The CD-ROM includes all of the video footage, but has additional information and tools to assist growers," she said. "It is also interactive, so the viewer can easily choose the sections of interest."

The CD-ROM will be distributed free of charge to all levy-paying vegetable brassica growers in Australia, with the assistance of industry development officers in each State. For further information, contact Emily Tee or Anita Chennell at IHD Knoxfield; phone (03) 9210 9222.

### *Photo caption:*

At the launch of the IPM video/CD-ROM (l to r) IHD Director John Field-Dodgson, producers Emily Tee and Anita Chennell, and HAL Vegetable Program Manager Jonathan Eccles.

## IHD launches an IPM rocket (*NRE NEWS*)

A new video/CD-ROM product, launched last week at the Institute for Horticultural Development, Knoxfield (IHD), is set to provide economic, environmental and social benefits through improved pest management in vegetable brassica crops (broccoli, cabbage, etc.).

The focus of the product is to provide information to brassica growers on Integrated Pest Management (IPM) techniques. The main topics are nursery hygiene, monitoring pests and diseases, beneficial insects, chemical resistance, spray application and cultural practices.

IHD's Anita Chennell and Emily Tee, who produced the video/CD, explained that, for each of these topics, research scientists present advice on best practice methods, while brassica growers talk about their experiences in implementing IPM techniques and their reasons for adopting them.

"We filmed a total of eight brassica growers and one consultant in Queensland, Western Australia and South Australia, as well as five researchers (four from NRE) working on national projects," said Emily. "All of these people deserve great credit, because they have willingly shared their thoughts and practices in a clear and concise manner."

IPM techniques are based on monitoring pest problems and applying control measures only at the most effective times. This leads to reduced pesticide usage and improved sustainability of production.

The product has been developed as part of a national project funded by vegetable growers, Horticulture Australia Limited (HAL) and NRE. Jonathan Eccles, Vegetable Program Manager for HAL, officially launched the video at IHD and said that products such as this added great flexibility and effectiveness to the delivery of research outcomes.

The CD-ROM will be distributed free of charge to all levy-paying vegetable growers in Australia. It includes all of the video footage, as well as several additional features, and is interactive, so the viewer can easily choose the sections of interest.

### *Photo caption:*

At the launch of the IPM video/CD-ROM (l to r) IHD Director John Field-Dodgson, producers Emily Tee and Anita Chennell, and HAL Vegetable Program Manager Jonathan Eccles.

## **Appendix 2 – Grower questionnaire**

**Integrated Pest Management for Brassicas CD-ROM - Evaluation Form.**

Your response to this questionnaire will assist in developing future extension projects that best meet industry needs. Please circle or tick the appropriate response and expand on your answers where required. Please return this questionnaire in the reply paid envelope by **October 10<sup>th</sup> 2002**.  
Thankyou

- |   | Yes                      | No                       |                    |
|---|--------------------------|--------------------------|--------------------|
| 1. Do you have access to a computer with a CD-ROM drive?                            | <input type="checkbox"/> | <input type="checkbox"/> | ← If No, Stop here |
| 2. Were you able to view the CD-ROM without any problems?<br>If No, what were they? | <input type="checkbox"/> | <input type="checkbox"/> |                    |
| 3. Do you currently practice IPM ?  | <input type="checkbox"/> | <input type="checkbox"/> |                    |

Of the following statements, tick the appropriate box based on your level of agreement

- |  | Strongly Disagree        | Disagree                 | Neither Disagree or Agree | Agree                    | Strongly Agree           |
|--|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| 4. I found my way around the CD easily.                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. The information in the CD is relevant to my business.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. The CD has made me aware of alternative IPM practices that I could try. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. The CD has encouraged me to try something different.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. I will continue to use the CD as a source of information.               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. What topic did you find the most useful in the CD?                      |                          |                          |                           |                          |                          |
| <input type="checkbox"/> Nursery hygiene                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Identifying insect pests                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Resistance Management (incl. Spray application)   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Gene Technology                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Identifying diseases                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Managing diseases                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Managing insect pests                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> |

10. What I liked most about the CD-ROM was and why....  
.....  
.....

11. What I disliked most about the CD-ROM was and why....  
.....  
.....

12. Are there any areas not covered in the CD that you think are important in managing IPM on your farm?  
.....  
.....

13. Would you like further information presented in this CD format? If so, what?  
.....  
.....

- |  |                                 |                                |
|--|---------------------------------|--------------------------------|
| 14. Would you be interested in a follow-up group discussion to explore IPM issues further? | Yes<br><input type="checkbox"/> | No<br><input type="checkbox"/> |
|--|---------------------------------|--------------------------------|

If YES, what region or town do you live in?