Adoption of IPM

Dr Paul Horne

IPM Technologies Pty Ltd

IPM

- Advantages well known
- Promoted by many agencies
- This Symposium too.

- Levels of adoption?
  - **Slow**
  - **Low**

IPM Technologies Pty Ltd

- Australia - base
- Help farmers to adopt IPM strategies
- Develop and Implement IPM strategies as needed
  - Invertebrate Pests
  - Horticulture
  - Cropping
  - Pasture
  - *www.ipmtechnologies.com.au*

IPM TECHNOLOGIES PTY LTD

Advantages and Disadvantages of IPM

- **Advantages of IPM**
- Reduced dependence on pesticides
- A slower development of resistance to pesticides
- Increased safety to farm workers, spray operators and the community
- Reduced contamination of food and the environment
- Improved crop biodiversity

- **Disadvantages of IPM**

Advantages and Disadvantages of IPM

- **Advantages of IPM**
- Reduced dependence on pesticides
- A slower development of resistance to pesticides
- Increased safety to farm workers, spray operators and the community
- Reduced contamination of food and the environment
- Improved crop biodiversity

- **Disadvantages of IPM**
- More complex than control by pesticide alone and requires a shift in understanding
- Requires a greater understanding of the interactions between pests and beneficials
- Requires a greater understanding of the effects of chemicals
- Increased time and resources
- Level of damage to the crop may initially increase during transition to an IPM programme, in some horticultural crops

Pesticides vs IPM

Bajwa and Kogan 2003

- **Pesticides**
- Compact technology
- Easily incorporated into regular farming operations
- Promoted by private sector
- Aggressive sales promotion supported by professionally developed advertising campaigns
- Results of applications usually immediately apparent
- **Consequently: pesticide technology was rapidly adopted**

- **IPM**

Pesticides vs IPM

Bajwa and Kogan 2003

- **Pesticides**
- Compact technology
- Easily incorporated into regular farming operations
- Promoted by private sector
- Aggressive sales promotion supported by professionally developed advertising campaigns
- Results of applications usually immediately apparent
- **Consequently: pesticide technology was rapidly adopted**

- **IPM**
- Diffuse technology with multiple components
- At times difficult to reconcile with normal farming operations
- Promoted by public sector
- Promoted by extension personnel usually trained as educators not as salespersons
- Benefits often not apparent in the short term
- **Consequently: Adoption of IPM technology has been slow**

How do we change this?

- The answer is available
- Proven
- Scientifically sound
- 3 examples from 2 countries in vastly different crops here

IPM TECHNOLOGIES PTY LTD

How to achieve rapid adoption

- Pesticide (Insecticide) applications familiar, locally proven, offer immediate (or quick) results
- IPM needs to be demonstrated to be easily used, proven locally and give results within the life of a crop
- **That is, make IPM as easy as pesticide use**

IPM TECHNOLOGIES PTY LTD

3 Examples of Rapid Adoption

- Strawberries in Victoria, Australia – 100% adoption in 4 years (entire industry)

- Arable crops – Victoria, Australia– 2 projects – 100% adoption over 3 years (all participants)

- Arable crops – New Zealand – 2 projects – 100% adoption over 3 years (all participants)

IPM TECHNOLOGIES PTY LTD

1. Strawberry Crops
Victoria, Australia

- ***Crisis***
- Western flower thrips and two-spotted mite
- Other minor pests
- Pesticide based strategy

IPM TECHNOLOGIES PTY LTD

How to control all pests?

- Need agreed framework
- What are the Pests?
- Set of beneficials
  - Commercial
  - Natural
- Cultural options
- Compatible chemicals
- Try it out and Refine!

IPM TECHNOLOGIES PTY LTD

IPM
TECHNOLOGIES
PTY LTD

WHAT WE DID

- Looked at all pests and all pesticide inputs
- Worked with interested growers
- Identified a range of beneficial species
- Looked at releasing commercially produced beneficials
- Looked at cultural controls
- Looked at compatible pesticides
- Implemented IPM during development phase

IPM TECHNOLOGIES PTY LTD

Cultural Control Options

- Includes:
- Canopy management
- Grassy rows
- Remove leaf material (1st Year of IPM only)

IPM TECHNOLOGIES PTY LTD

Chemical Sprays

- What is compatible?
- Use as Support, Not Primary Control
- Almost all sprays disrupt some beneficials
  - Rate and Frequency of Sprays
  - Type of Spray Equipment, speed of tractor

IPM TECHNOLOGIES PTY LTD

IPM Strategy

- 100% Adoption in 4 years (entire industry)
- growers

IPM TECHNOLOGIES PTY LTD

Australian Model -
Spain, Canada, Denmark interest

IPM
TECHNOLOGIES
PTY LTD

2. Arable Crops, Victoria, Australia

- ***No Crisis***
- Pesticide based strategy

- Find participating growers
- Identify range of pests
- Try out an agreed strategy on a paddock

IPM TECHNOLOGIES PTY LTD

IPM Strategy

Pest	Beneficial	Cultural	Chemical

IPM Strategy for Canola

Pest	Beneficial	Cultural	Chemical
RLEM			
L. Flea			
Slugs			
Plutella			
Cabbage White			
Aphids			

IPM Strategy for Canola

Pest	Beneficial	Cultural	Chemical
RLEM	Pred. Mites Pred. Beetle		
L. Flea	Pred Mites		
Slugs	Pred. Beetles		
Plutella	Wasps Damsel bugs		
Cabbage White	Wasps Damsel bugs		
Aphids	Wasps BLW		

IPM Strategy for Canola

Pest	Beneficial	Cultural	Chemical
RLEM	Pred. Mites Pred. Beetle	Weed control	
L. Flea	Pred Mites	Weeds	
Slugs	Pred. Beetles	Time of Planting	
Plutella	Wasps Damsel bugs	Flowering brassicas	
Cabbage White	Wasps Damsel bugs	"	
Aphids	Wasps BLW	Brassica weeds	

IPM Strategy for Canola

Pest	Beneficial	Cultural	Chemical
RLEM	Pred. Mites Pred. Beetle	Weed control	Gaucho seed dressing
L. Flea	Pred Mites	Weeds	Seed dressing
Slugs	Pred. Beetles	Time of Planting	EDTA
Plutella	Wasps Damsel bugs	Flowering brassicas	BT
Cabbage White	Wasps Damsel bugs	"	BT
Aphids	Wasps BLW	Brassica weeds	Pirimor

Adoption of IPM in Arable Crops

- Year 1 – 5 to 13% of area of farm
- Year 2 – 5 to 13%
- Year 3 - 100%
- *Participating farmers*

IPM TECHNOLOGIES PTY LTD

3. New Zealand – Arable Crops
No Crisis

IPM TECHNOLOGIES PTY LTD

Demonstrating the feasibility of IPM in arable cropping systems in NZ.

- (Abie Horrocks Poster)
- Pesticide based approach

- 6 Sites (farmers)
- Paired paddocks at each site
- South Island New Zealand

IPM
TECHNOLOGIES
PTY LTD

IPM in NZ Arable Crops

- Agreed strategy to test on the range of pests nominated
- No broad-spectrum insecticides
- Advice when required

IPM TECHNOLOGIES PTY LTD

Small group: Each visited the others farms – Trial Blocks

Uptake

- First year: ½-1 paddock IPM
- Third year: 85 – 100% of paddocks IPM

Site	2008-09	2009-10	2010-11
A	½ paddock	50% of farm	90-100% of farm
B	½ paddock	50% of farm	90-100% of farm
C	½ paddock	50% of farm	80–100% of farm
D	1 paddock	80% of farm	90-100% of farm
E	1 paddock	80% of farm	90-100% of farm
F	½ paddock	50% of farm	80–100% of farm

IPM TECHNOLOGIES

Participatory Research

- Who is the research for?
- Entomologist?
- Farmer?
- Research and Extension together

IPM TECHNOLOGIES PTY LTD

Rapid Adoption of IPM?

- Be willing to work with and develop solutions that are tailored for individuals
- Be realistic, many solutions that may control pests are just not practical.
- Advisors often more cautious than farmers

IPM TECHNOLOGIES PTY LTD

Rapid Adoption of IPM?

- ***Answer***
- Collaboration between farmer and entomologist from the start of any project
- Entomologist to provide immediate advice on any farmer question about pests
  - ***If the entomologist cannot advise then why expect the farmer to change?***

IPM TECHNOLOGIES PTY LTD

Acknowledgements

- Jessica Page
- Abie Horrocks (NZ)

- www.ipmtechnologies.com.au