

An Integrated Pest, Disease and Weed Management Program for the Australian Apple and Pear Industry

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16 August 2018

AGRICULTURE VICTORIA

Horticulture
Innovation
Australia

apal
APPLE & PEAR AUSTRALIA LTD

Topics covered

- **AP15001: Integrated Pest and Disease Management Phase II**
 - **Codling moth**
 - **Behavioural control**
 - Mating disruption
 - Mass trapping
 - **Biological control**
- **AP16007: An Integrated Pest, Disease and Weed Management Program for the Australian Apple and Pear Industry**
 - **Bringing it all together: pests, diseases, weeds**
 - **Training**
 - **Case studies**
 - **Digital tools**

Pome fruit pest control

Mass-trapping

Pupal parasitoid



Mastrus



Pupa of a pupal parasitoid



Mastrus larva in cocoon



Adult Codling moth



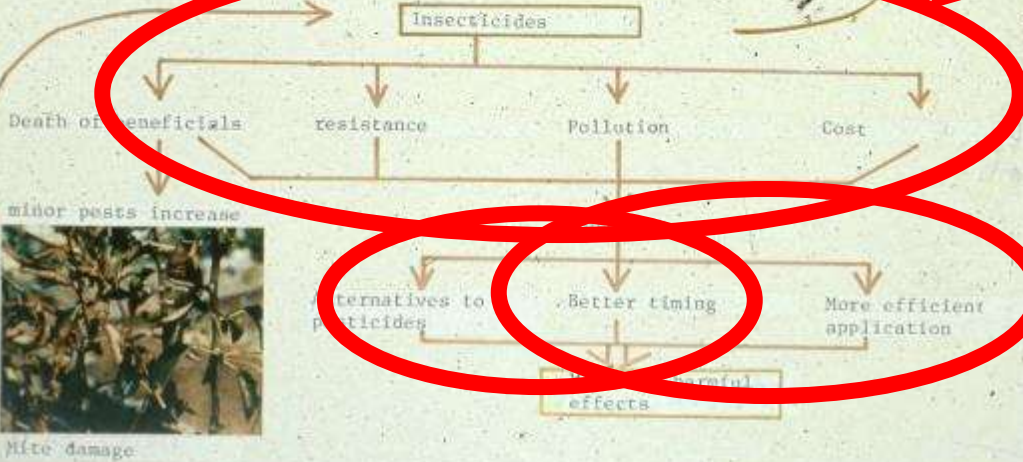
Codling moth damage to apple



Larva in fruit



Eggs



Mating disruption

Trichogramma

pesticide

Virus

Previous research effort

Mastrus releases

Location	State	Year	Mastrus
Merrigum	Vic	2014	50,000
St Germain's	Vic	2016	10,000
Stanthorpe x2	Qld	2016	38,000
Orange x2	NSW	2017	50,000
Batlow x2	NSW	2017	50,000
Young	NSW	2017	9,000
Grove	Tas	2017	32,000
Ashton	SA	2018	16,000
Loebethal	SA	2018	16,000
Total			271,000



Impact of pesticides on Mastrus

Pesticides		Direct toxicity	Fertility of survivors	Fertility of offspring from survivors
Fungicides	Chorus	Green	Yellow	Green
	Ziram	Green	Yellow	Green
	Dithane	Green	Yellow	Green
	Rubigan	Green	Yellow	Green
Miticides	Sorcerer	Green	Yellow	Green
Insecticides	Cormoran	Yellow	Green	Green
	Altacor	Green	Yellow	Yellow
	Avatar	Red	No survivors	No survivors
	Samurai	Red	No survivors	No survivors
Risk category		Low	Low-Moderate	Very High

IPDM manual

“...while there was a high level of awareness of IPM and the tools required for growers to use IPM effectively were available, grower and advisor confidence in IPM could be improved by developing a better understanding of, and gaining experience with, the integration process.”

Improve the ability and capacity of the apple and pear industry to develop and sustain a pest resilient farming system.

- **Update the industry IPDM manual & include weeds**
- **Greater focus on the integration.**
- **Account for Regional differences in pest and disease issues**
- **Include potential impacts of exotic incursions.**
- **Flexible format**

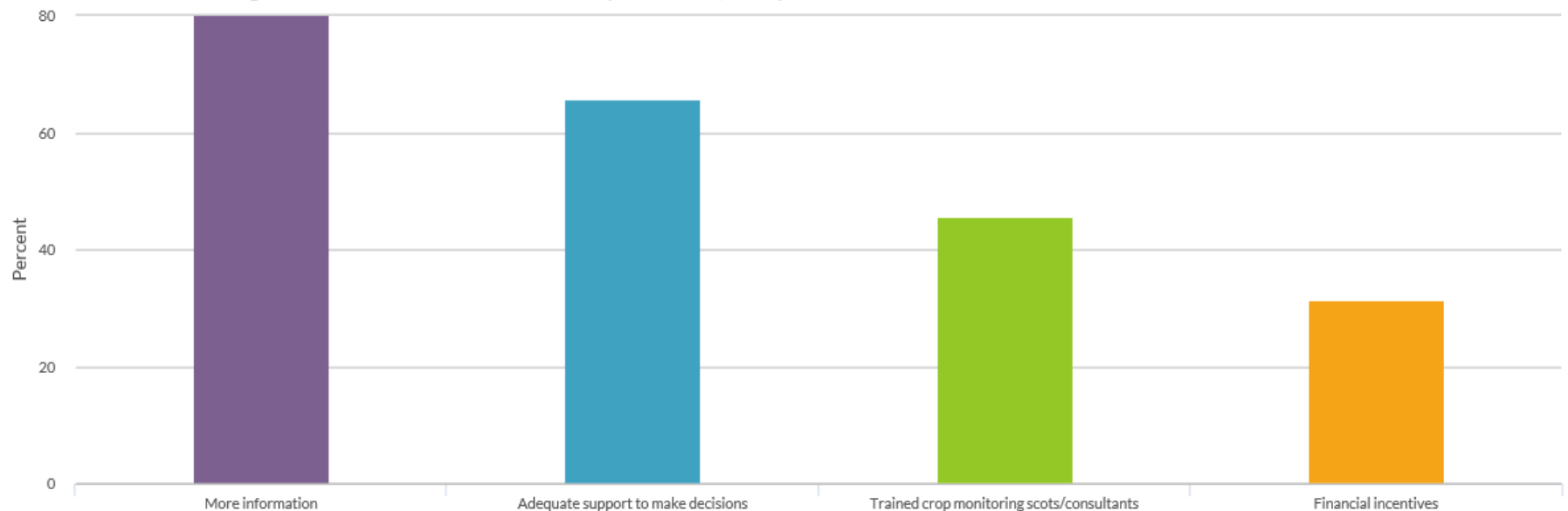
Apple & Pear Integrated Pest Disease Management Industry Survey





- Survey purpose - **provide understanding of grower/pest management scout and advisor IPDM experience** in the apple and pear industry, **engagement with IPDM practices, pest priorities and barriers limiting uptake.**
- 90+ responses so far - majority growers and a few advisors
- High response rate will mean better tailored project work – focus on what is *really* needed by industry:
 - targeted delivery of region-specific guidelines
 - training for growers and advisors
 - support the adoption of IPM tools and practices.

The survey will take less than 15 minutes to complete at <https://bit.ly/2L1sHJh>. Closes Sept 13

Survey responses- what is needed to reduce pesticides

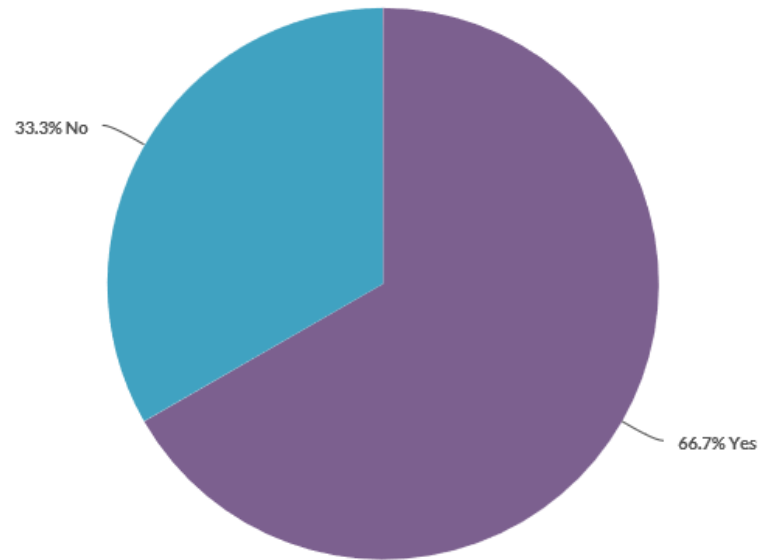
18. Which of the following are needed to reduce reliance on pesticides (multiple answers allowed)?



Value		Percent	Responses
More information		80.0%	28
Adequate support to make decisions		65.7%	23
Trained crop monitoring scots/consultants		45.7%	16
Financial incentives		31.4%	11

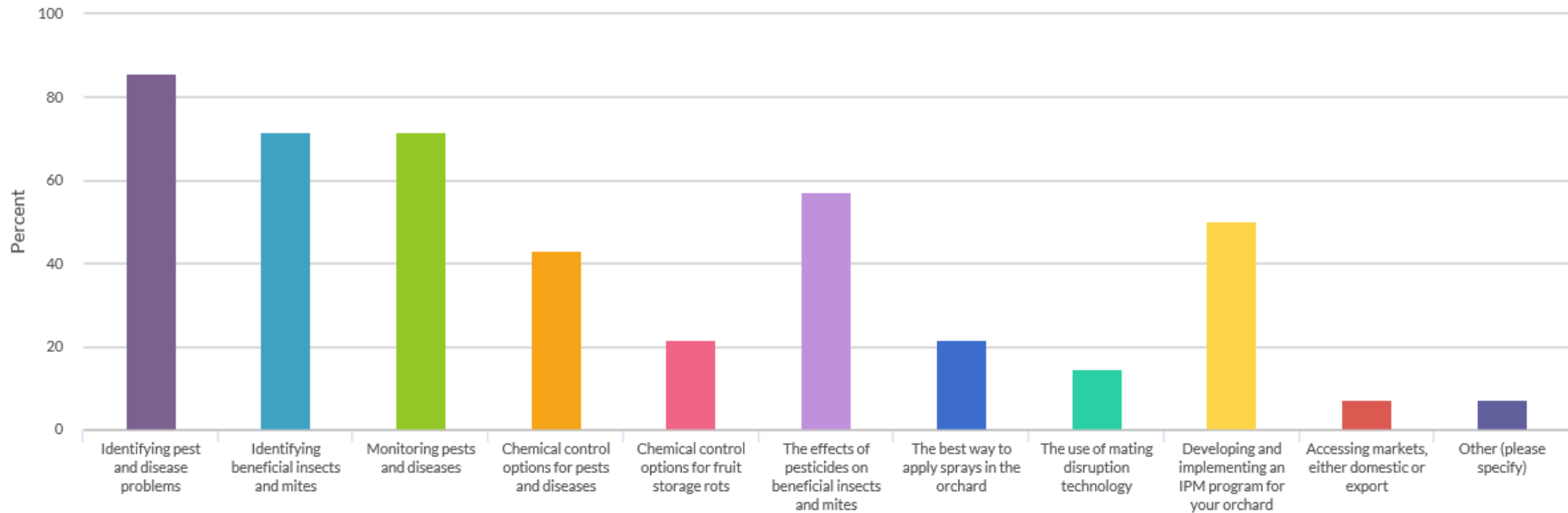
Survey responses- awareness of IPM manual

28. Are you aware of the IPM manual titled 'Integrated Pest Management for Australian Apples and Pears'?



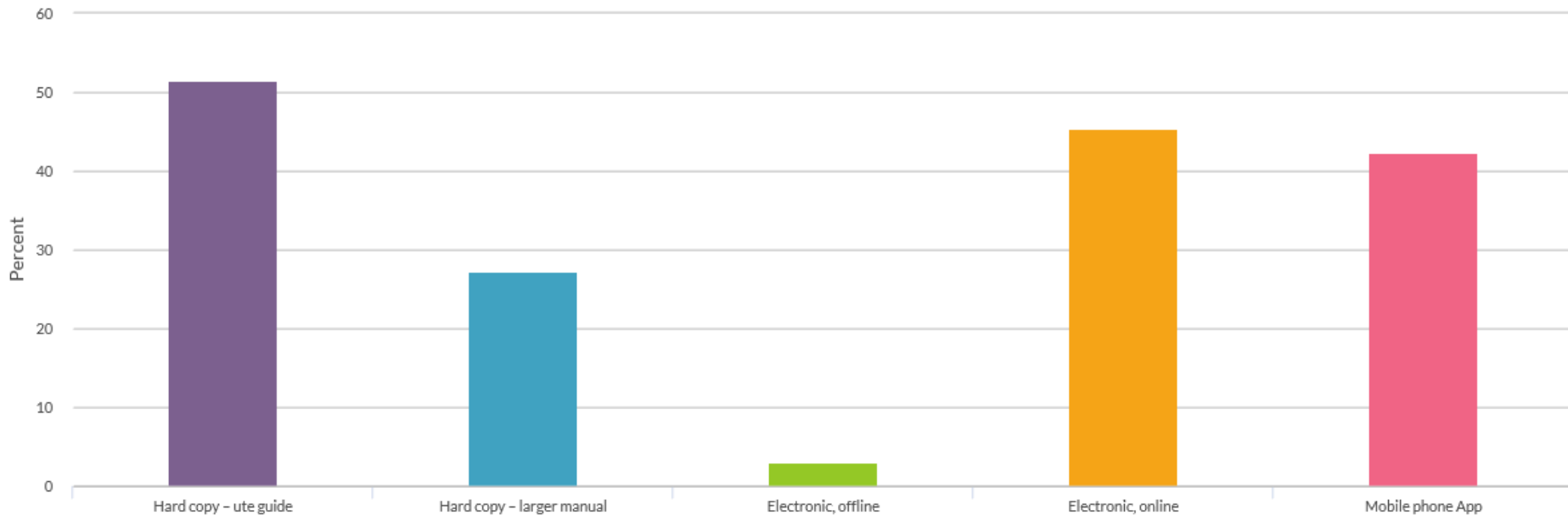
Survey responses – how IPM manual is used

30. Select any of the following options that describe the way you use the IPM manual (multiple answers allowed) As a guide to:



Survey responses – preferred format for identification and managing pests & diseases

31. What format do you most prefer for information for identifying and managing pests & diseases (select 2 only)



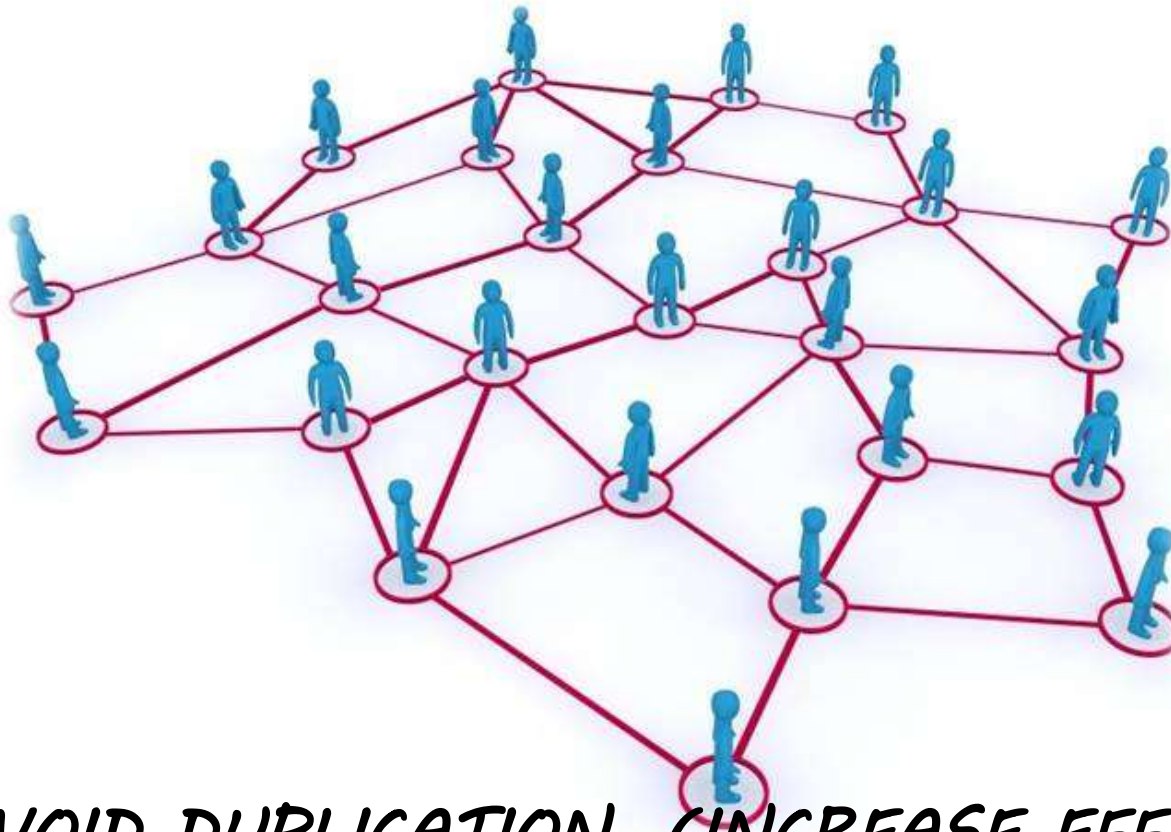
Harnessing technology



In 2017 we each typically will have 5 internet devices (24/7/365 connectivity)

OVERCOME ISOLATION

Geographic, or across & within/between industries, organisations & individuals



AVOID DUPLICATION, (INCREASE EFFICIENCY)

It enhances, it doesn't
replace traditional learning
approaches

Do you:

- * know your apple and pear pests and diseases?
- * have a plan for the 2018-19 season?
- * want to upskill your team in Integrated Pest and Disease Management (IPDM)?



Don't wait for pests and disease to take a bite out of your bottom line.
Get on the front foot with entomologist **David Williams**, recognised nationally and internationally for expertise in IPDM development and adoption

Victoria

21 August, 12pm-3.30pm - Agriculture Victoria, Tatura

22 August, 10.30am-2pm – Agribio, Bundoora

Tasmania

23 August, 9am-12.30pm – Campbell Town

South Australia

28 August, 8.30am –12.30pm – Lenswood

Western Australia

29 August, 11am-3pm – Balingup

30 August, 11am-3pm – Walliston

New South Wales

4 September, 1pm-5pm – Batlow

5 September, 1pm-5pm - Orange

Queensland

6 September, 2.30pm-5.30pm – Applethorpe

To register and more info visit: trybooking.com/eventlist/ipdm

What is extensionAUS™?

A nationally coordinated extension system providing timely access to credible research from across Australia, responsive to seasonal conditions.



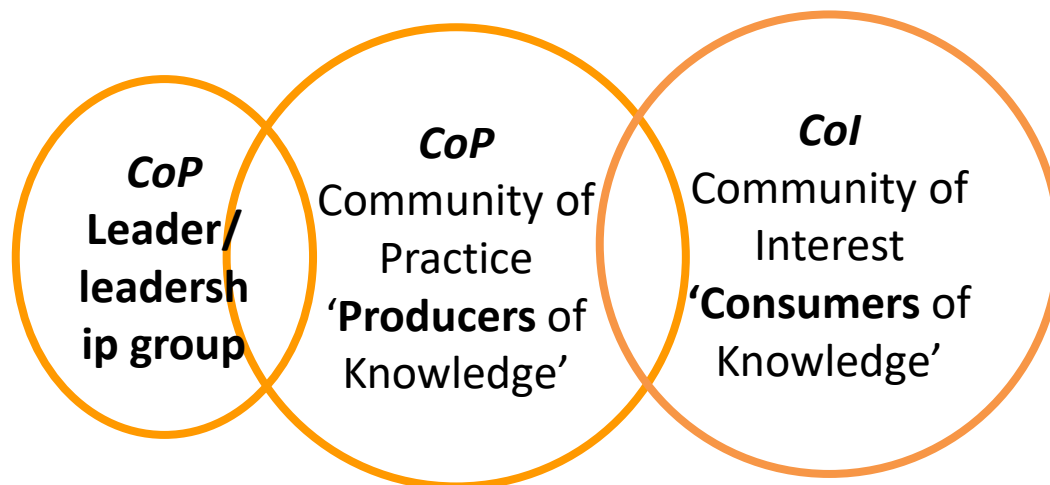
Why extensionAUS™?

Benefits

1. **Enable** – provides the platform for experts and users to interact instantly
2. **Empower networks** – audience demand driven and valued relationships
3. **Provide timely and relevant information** – through real time, high availability service
4. **Overcome isolation/fragmentation** – collaborate across geography and organisation
5. **Improve reach** - to target markets
6. **Increase efficiency** – increase awareness and avoid information duplication
7. **Harness existing capacity** – new technology opportunities, i.e. social media
8. **Provide accessibility** – send information and expertise where the people are
9. **Future Proof** – technology routinely updated to provide the best tools and features

What is a Community of Practice (CoP)?

- A group of people who share common expertise and are actively engaged in learning together from each other.
- Focused on users and interactions with them to ensure their needs are being met.
- Capitalizes on the resources at its disposal, including user contributions, to develop products and address emerging topic relevant to its users.
- Engages in sense-making of information through working in online social spaces i.e. webinars, social media
- Explores all options for potential funding while simultaneously remaining flexible, attentive, and responsive to its users.



extensionAUS™ is the 'platform' (both technology and capability) which supports the establishment of CoPs to respond to identified audiences (Communities of Interest) and to the needs of their CoP members

extensionAUS™ Homepage



Homepage
'tiles' leads
to
individual
CoP sites.

ExtensionAus Community of Practice Site

extensionAUS is a national internet-based **Learning Network** where experts exchange research-based knowledge to solve real challenges in real time



Community of Practice

Social media monitoring

Ask an Expert

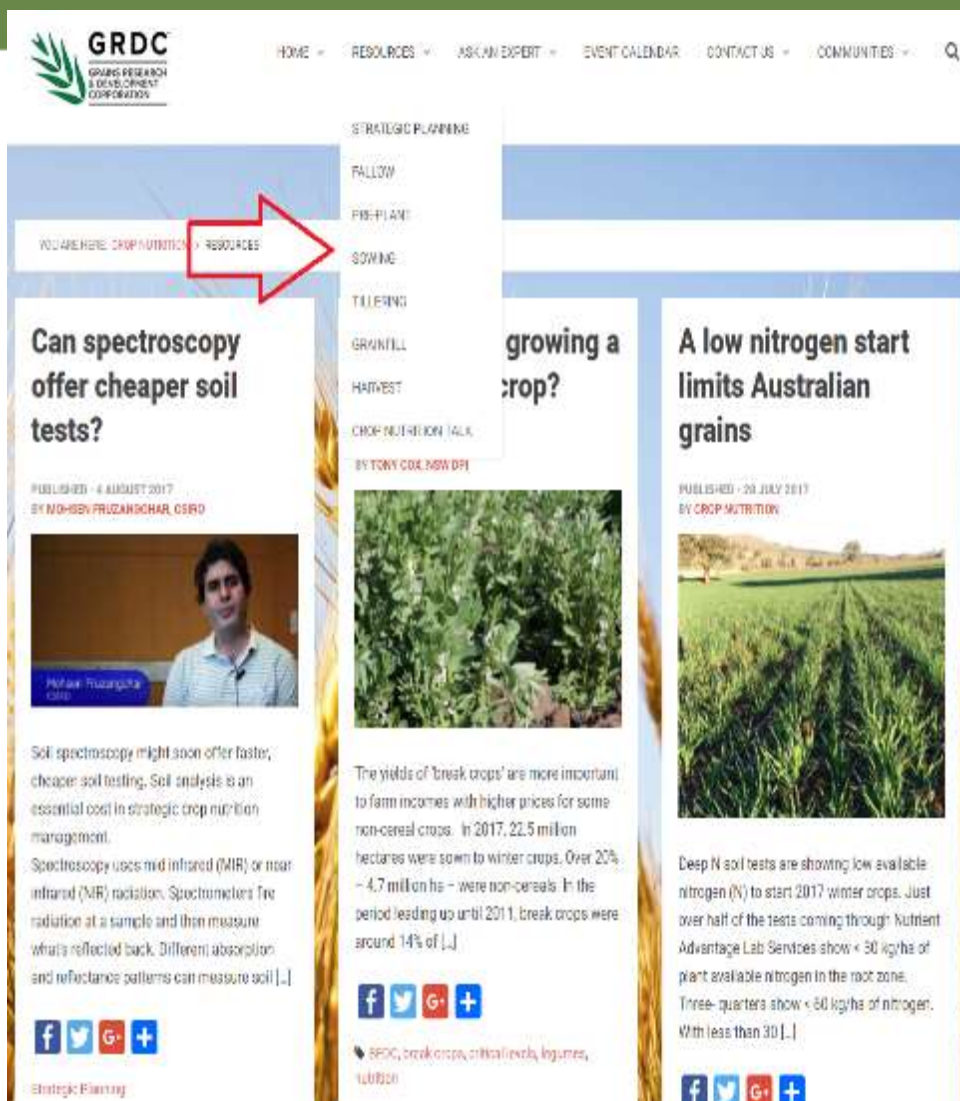
A screenshot of the 'Field Crop Diseases' website. The top section is titled 'Field Crop Diseases' and features three columns of images with text overlays: 'Latest on Cereal disease', 'Latest on Pulse disease', and 'Latest on Canola disease'. Below this, there are three article cards. The first card is titled 'Getting the timing right to manage Yellow Leaf Spot in wheat' and includes a red play button icon. The second card is titled 'Blackspot Manager for field peas' and includes a small image of a leaf with black spots. The third card is titled 'Plan and budget for chickpea Ascochyta in advance' and includes a small image of a chickpea plant. Each article card also includes a 'PUBLISHED' date and the author's name.



What's the best tool for the job?

Ongoing interaction, engagement and feedback

Resources



The screenshot shows the GRDC website's 'Resources' page. At the top left is the GRDC logo (Grains Research & Development Corporation). A navigation menu includes 'HOME', 'RESOURCES', 'ASK AN EXPERT', 'EVENT CALENDAR', 'CONTACT US', and 'COMMUNITIES'. A search icon is on the right. A dropdown menu is open under 'RESOURCES', listing categories: STRATEGIC PLANNING, FALLOW, PRE-PLANT, SOWING, TILLERING, GRAINFILL, HARVEST, and CROP NUTRIENT TALK. A red arrow points from the 'RESOURCES' menu item to the 'RESOURCES' link in the breadcrumb trail 'YOU ARE HERE: CROP NUTRIENT > RESOURCES'. The main content area features three article cards:

- Can spectroscopy offer cheaper soil tests?**
 - Published: 4 August 2017
 - By Mohsen Fruzangchar, CSIRO
 - Author photo: Mohsen Fruzangchar, CSIRO
 - Text: Soil spectroscopy might soon offer faster, cheaper soil testing. Soil analysis is an essential cost in strategic crop nutrition management. Spectroscopy uses mid infrared (MIR) or near infrared (NIR) radiation. Spectrometers fire radiation at a sample and then measure what's reflected back. Different absorption and reflectance patterns can measure soil [...]
 - Tags: f, t, G+, +
 - Category: Strategic Planning
- growing a crop?**
 - Text: The yields of 'break crops' are more important to farm incomes with higher prices for some non-cereal crops. In 2017, 22.5 million hectares were sown to winter crops. Over 20% - 4.7 million ha - were non-cereals. In the period leading up until 2011, break crops were around 14% of [...]
 - Tags: f, t, G+, +
 - Text: SPOC, break crops, critical levels, legumes, 1408920
- A low nitrogen start limits Australian grains**
 - Published: 29 July 2017
 - By Crop Nutrition
 - Text: Deep N soil tests are showing low available nitrogen (N) to start 2017 winter crops. Just over half of the tests coming through Nutrient Advantage Lab Services show < 30 kg/ha of plant available nitrogen in the root zone. Three-quarters show < 60 kg/ha of nitrogen. With less than 30 [...]
 - Tags: f, t, G+, +

Articles

Analytics – article viewed 216 times, with an average time on page of 4 mins 23 seconds

Feedback provided to author/researcher

Monitor blackleg severity to ensure return on fungicide application

PUBLISHED - 17 JUNE 2017
BY STEVE MARGROFT, MANCROFT GRAIN PATHOLOGY

During 2015 and 2016 the blackleg fungus overcame the blackleg resistance of some Group A cultivars. These cultivars dropped from Moderately Resistant (MR) to Moderately Susceptible (MS) and all updated ratings are available in the [2017 Autumn Blackleg Management guide](#). In the lead up to the 2017



season, fungicide application was recommended to protect MS cultivars sown in medium to higher rainfall regions – where blackleg risk was higher. However, seasonal conditions in 2017 have not been conducive for the blackleg fungus in many regions.

Blackleg likes continual wet conditions for spore release and germination, which is why blackleg severity on seedlings was so high in 2016 (Figures 1 and 2). In contrast, in 2017 a large area of southern Australia has received rainfall in only a couple of major events and drier conditions in between these events. Consequently blackleg lesions are only starting to occur now (mid June).

If your crop is already past the vulnerable seedling stage (1-4 leaf) and has no or few lesions it will most likely not develop severe crown canker and may not

Search



Recent Posts

Protect wheat from *Septoria tritici* this spring

Proactively manage barley disease in 2017 – interview with Mark McLean

Top 3 diseases to watch for fungicide resistance

Lupin growers to keep an eye out for Lupin anthracnose

Spot the difference – identifying fungal diseases on canola

Recent Comments

Rachel Geller on [New weapon in the arsenal to fight barley powdery mildew](#)

Johanna Couchman on [canola discoloration](#)

Embed videos

Focus on nitrogen and biomass for better canola

PUBLISHED · 13 AUGUST 2017
BY ROHAN BRILL, NRM2PI



Not enough nitrogen is the most common limit to canola yield. The current key messages on nitrogen (N) for canola crops are:

- biomass is the biggest driver of canola yield
- low N limits biomass
- low biomass limits water and nutrient uptake

Recent Posts

Nutrient Performance Indicators for your paddocks

Build up nitrogen with clover in Western Australia

Recent Comments

realbates1.com on Forms of sulfur

Stephanie Alt on Forms of sulfur

Archives

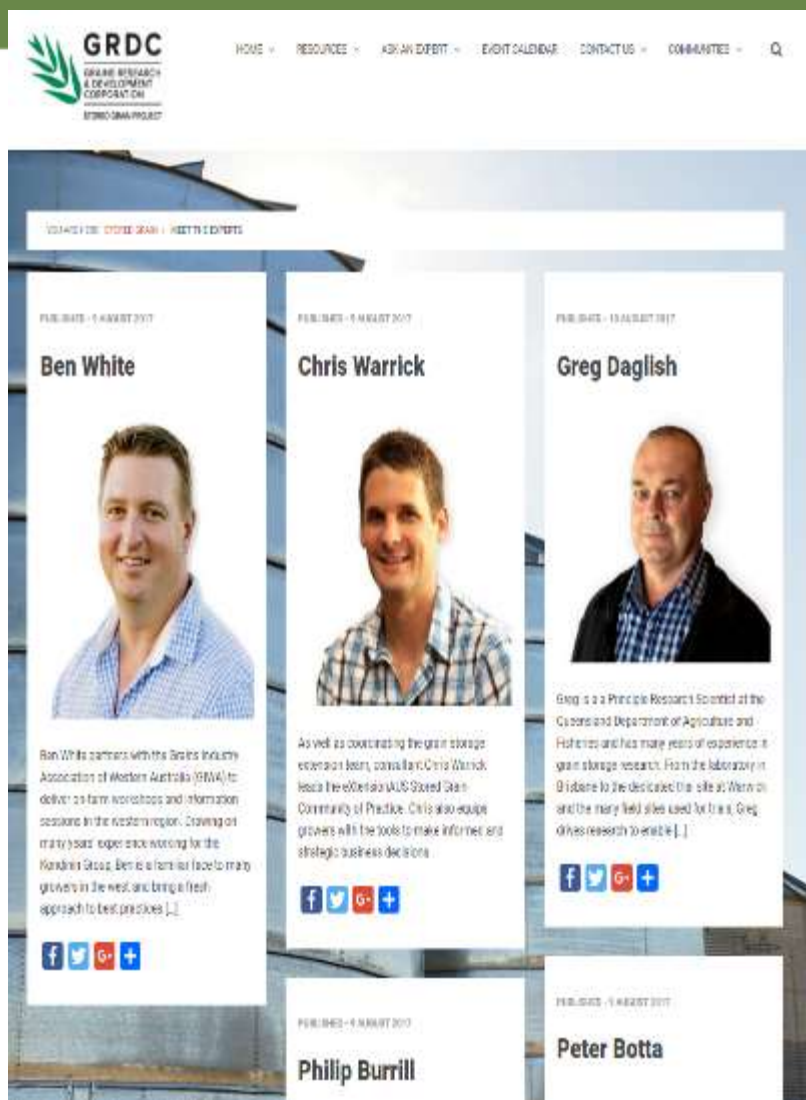
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MEET THE EXPERTS

PUBLISHED - 1 AUGUST 2017

Ben White




Ben White partners with the Grains Industry Association of Western Australia (GIWA) to deliver on farm workshops and information sessions in the western region. Drawing on many years' experience working for the Randwick Group, Ben is a familiar face to many growers in the west, and brings a fresh approach to best practices [...]

[f](#) [t](#) [G+](#) [+](#)

PUBLISHED - 1 AUGUST 2017

Chris Warrick




As well as coordinating the grain storage extension team, chairman Chris Warrick leads the extension AUS Stored Grain Community of Practice. Chris also equips growers with the tools to make informed and strategic business decisions.

[f](#) [t](#) [G+](#) [+](#)

PUBLISHED - 13 AUGUST 2017

Greg Daghish



Greg is a Principle Research Scientist at the Ceres and Department of Agriculture and Fisheries and has many years of experience in grain storage research. From the laboratory in Brisbane to the dedicated trial site at Werribee and the many field sites used for trials, Greg always research to enable [...]

[f](#) [t](#) [G+](#) [+](#)

PUBLISHED - 1 AUGUST 2017

Philip Burrill

PUBLISHED - 1 AUGUST 2017

Peter Botta

Q & A

View Our Most Recent Questions

What do you want to know?

Filter: All Open Resolved Closed Unanswered My questions My activities

- Compass barley without foliar sprays**
Asked by [Zack](#) 1 year ago
- Control disease**
Asked by [Zack](#) 1 year ago
- Selections maintaining in the Malles and Wimmera**
Asked by [Zack](#) 1 year ago
- Barley affected by?**
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- Leaf rust issues**
Asked by [Zack](#) 1 year ago
- Meeting nematode free requirements for export - cobstock export**
Asked by [Zack](#) 1 year ago
- Disease ID**
Asked by [Zack](#) 1 year ago

Zack Zweck @Zack17

@AusCropDiseases Am I correct in calling this on Leaf Rust, even though it appears on the stem? #rust



10th PM - 31 Aug 2018

Crop Watch SA @CropWatchSA - Aug 31
@Zack17 @AusCropDiseases Yes that is leaf rust. It is actually on the leaf sheath and not on the stem itself.

Ask an Expert

Ask Our Experts

Got a question? Ask our experts.

Title

Visual Text

b i link b-quote del ins img ul ol code more close tags

B *I* U

“ Upload

Status

Public

[Zack Zweck](#) asked 1 year ago [Subscribe](#) [Edit](#) [Delete](#)

Hi There, Compass barley, hasn't had any foliar sprays yet. Any ideas? thanks Zack Location: Saddleworth SA



[Facebook](#) [Twitter](#) [Google+](#) [+](#)

Question Tags: [barley disease](#) This question is: [Open](#)

Answers

1 Answers

[Johanna Couchman](#) answered 7 weeks ago [Edit](#) [Delete](#)

Answer from [Hugh Wainwork](#) SARDI
That looks like a saprophytic pathogen. In other words not a damaging disease so it should not be a problem. Send a sample to us in SARDI if you want confirmation.



The Australian Apple & Pear IPDM online networking platform has customised functionality combining the best of all networking technologies

1. The Australian Apple & Pear IPDM Community of Practice network will be **Customised** for to suit apple and pear IPDM advisors and growers that will happen over time, though a basic set of tools and features will be live from the start.
2. T.E.A.M. – **Together Everyone Achieves More**. There is a real advantage in being networked for learning and continuously improving individual knowledge, understanding and personal capacity.
3. The Australian Apple & Pear IPDM network will incorporate social media tools



What is the risk of not taking action...

The image shows a screenshot of the ExtensionAUS website. At the top left is the logo for ExtensionAUS, which includes a circular graphic of leaves and the text "extensionAUS" with the tagline "Science. Collaboration. Change." below it. To the right of the logo are navigation links: "HOME", "CONTACT US", and "COMMUNITIES", along with a search icon. Below the navigation is a large banner with the text "ExtensionAUS" in the center. Underneath the banner are several featured content tiles. One tile on the right is highlighted with a green background and contains the text "Australian Apple & Pear IPDM" above a red apple icon. Other visible tiles include "New annual magazine" with a photo of a woman, "Managing horticultural crops with less water" with a photo of trees, "Extension Practitioner", "Irrigating Agriculture" with a photo of an irrigation system, "Victorian Food Innovation Network" with a photo of a field, and "Victorian Rural Women's Network" with a photo of a sunset. A large, green, stylized watermark reading "Coming October 2018" is overlaid across the bottom half of the page.

Acknowledgements

The research into mass-trapping was funded by Hort Innovation using the apple and pear R&D levy, nashi industry contributions and contributions from participating orchardists, plus funding from the Australian Government.

The introduction of *Mastrus ridens* was funded through the Hort Innovation Apple and Pear Fund, using the apple and pear R&D levy, contributions from Plant and Food Research Limited New Zealand and funding from the Australian Government. Likewise, **AP15001: Integrated Pest and Disease Management Phase II**, the distribution and establishment of *Mastrus ridens*, is funded through the Hort Innovation Apple and Pear Fund using the industry levy and government contributions.

AP16007: An Integrated Pest, Disease and Weed Management Program for the Australian Apple and Pear Industry is funded through the Hort Innovation Apple and Pear Fund using the industry levy and government contributions.

In each of the above projects the Victorian Government provided additional funds, not managed by Hort Innovation, through the Agriculture Victoria Research Division of its Department of Economic Development Jobs Transport and Resources.



Economic Development,
Jobs, Transport
and Resources

