

How eXtensionAUS used integrated online tools to provide a national extension platform for Beet Western Yellows Virus

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Abstract. Based on the US eXtension model, eXtensionAUS aimed to deliver expert information efficiently by working across state and jurisdictional boundaries and using a range of integrated online media tools. At the beginning of 2014 two learning networks were developed in the area of Field Crop Diseases and Crop Nutrition. eXtensionAUS is designed to complement the Grains National RD&E Strategy, a resource efficient national approach to grains research. To match this Australia needs a nationally coordinated approach to extension to streamline the capture and transfer of knowledge from research to practice. In June Beet Western Yellows Virus (BWYV) struck down canola crops in South Australia and started to infect crops in Victoria and New South Wales. The conditions that led to the unprecedented outbreak were described as a 'perfect storm' but it was also the perfect opportunity to test the fledgling eXtensionAUS e-eXtension pilot project.

Keywords: e-extension, network, internet, social media, technology transfer, collaboration

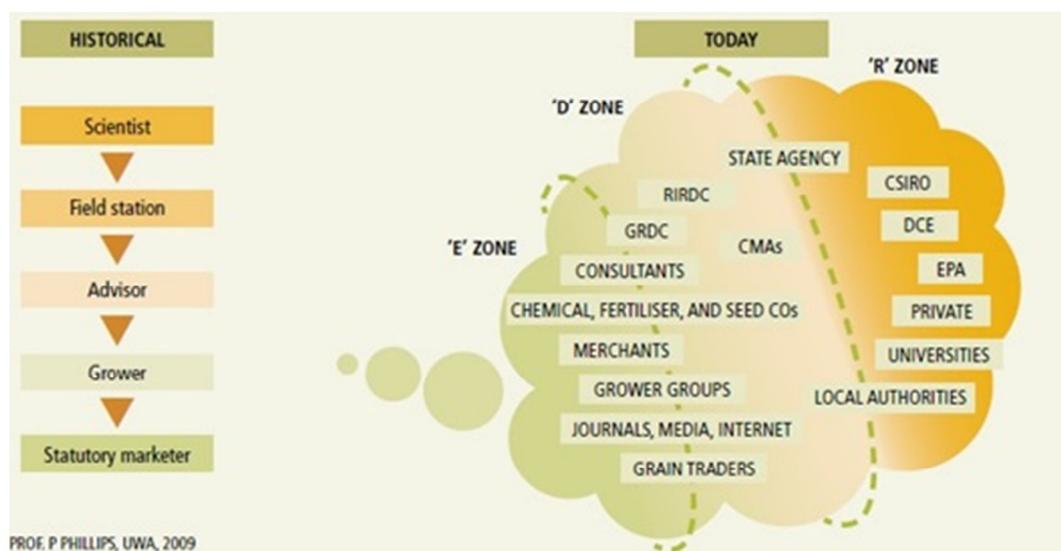
Background

eXtensionAUS piloted a national e-extension platform during the Beet Western Yellows Virus (BWYV) outbreak of 2014. This paper describes the reason for the development of eXtensionAUS, the approach taken and the successes and challenges in the implementation.

Why national extension?

The National Grains Research, Development and Extension (RD&E) Strategy was developed to deal with a number of issues including declining public funding, increased privatisation, and the change from a linear hierarchy of public sector RD&E to a complex matrix of public and private sector providers (Figure 1, Primary Industries Standing Committee 2011).

Figure 1. Historical and current model of RD&E



Source: Prof. P Phillips, UWA 2009. Reproduced from Primary Industries Standing Committee 2011

Mick Keogh, Executive Director of the Australian Farm Institute, puts the challenge into perspective in conversation with Beilharz (2014):

It's particularly noticeable in the grains sector, but really right across agriculture, that since about '97 or '98, the rate of productivity growth, even taking into account the centennial drought, has slowed. The difficulty is that we've moved away from a public extension model, to one that's now ostensibly a private one. So if we look at the cropping sector, for example, there's around about 2,500 private agronomists and advisers working with farmers around Australia, but only 50 public sector agronomists or advisers. So we've switched across, and in doing that, I think we haven't thought fully about what's an effective communication channel. We still do a lot of research in the public sphere, so how do we get that information from a public institution into a private sector?

National RD&E means that networks based on location are no longer sufficient. Face-to-face technology transfer only reaches a limited audience. With the increasing impact of these trends there is growing pressure on research staff to take on an information delivery role both for their own research across a broad geographic area and also to interpret other research for their local situation. Researchers, extension professionals and others need an efficient way to access and share information across time and space.

To take full advantage of the National RD&E Strategy we need a nationally networked approach to extension. Free e-extension social media tools like Youtube and Twitter provide new opportunities to supplement traditional extension tools like factsheets, newsletters and grower meetings. While many state based agencies are using these tools to improve distribution of their own information they have yet to embrace a nationally connected approach to shared learning that will enhance both the understanding and distribution of information.

What is eExtensionAUS?

eExtensionAUS is based on the US Extension Foundation model that brings Universities together to connect knowledge consumers with knowledge providers. The US model is based on the idea that people want to solve challenges with answers in real time and do not care who provides the answers so long as the information is reliable, understandable and applicable to their situation (Vines et al. 2013).

The eExtensionAUS pilot project was funded from January 2014 for 15 months. It aimed to bring Australian experts together to build a research-based network of people to learn and share information using electronic tools for collaboration and extension. The pilot tested two learning networks: the Field Crop Diseases network led by Victorian DEDJTR and the Crop Nutrition network led by NSW DPI. This paper focuses on the Field Crop Diseases network.

How was eExtensionAUS established?

eExtensionAUS had its origins in the Victorian Government's visiting fellows program. In the period April 2012 to late November 2013, a substantial collaboration developed with the eExtension Foundation in the United States. The Victorian Government was keen to understand how the eExtension US model worked and what challenges might be expected if Australia was to adopt such a model. Through this time a collaboration emerged firstly with the GRDC and then through GRDC with DPI NSW. In the establishment of the pilot substantial liaison occurred with representatives of the Grains National RD&E Implementation Committee in order to build interest in the project and get buy-in at the top levels of the relevant state departments of Agriculture. At the same time, the Victorian project managers talked directly with leading experts in Field Crop Diseases to identify those who would be interested to participate in the pilot.

The project gave us access to the in-house electronic tools built by the US Extension Foundation and a training program or 'bootcamp' used to establish US learning networks. At the end of January 2014 the GRDC and the Victorian and NSW departments collaborated to bring foundation members of the pilot learning networks together for a 3 day 'bootcamp'. The agenda included learning about the eExtensionAUS project, the e-extension tools (both in-house and publically accessible) and to develop a Scope of Work including a list of Quick Wins. Participants were tutored in how to engage in face to face meetings using online tools, collaborative document authoring, social media and online learning. Google accounts to aid collaboration were established as were twitter profiles. Importantly, participants and their organisations signed a Contributor Agreement that gave them a *licence to operate* across state and jurisdictional boundaries.

One of the purposes of the boot camp was to equip experts to work together electronically to create new information products and to interact online both with each other and also with people with an interest in the nature of this work – known as the Community of Interest.

Following the bootcamp a leadership team consisting of members representing each geographic location and each industry (cereal, oilseed and pulse) met on a roughly monthly basis to identify and discuss topical disease issues, information needs and how they could be met. Meetings were run using google hangouts to enable face to face contact, particularly useful in facilitating better interaction.

Beet Western Yellows Virus - a perfect storm

As the project partners were getting their head around eXtensionAUS, farmers in south-eastern Australia were sowing their crops. Many were sowing into good moisture reserves and mild warm conditions that saw crops leaping out of the ground.

However in June-July crop experts were alerted to substantial damage to canola crops in the Lower North and Mid North of South Australia. The cause was identified as an unprecedented outbreak of Beet Western Yellows Virus (BWYV) spread by a large population of Green Peach Aphids enjoying the mild conditions. The news led to widespread panic with two effects - a high demand for testing of canola samples and a high demand for information.

At this point the networks established prior to eXtensionAUS swung into action with state departmental experts collating information through their existing networks, arranging community meetings, updating on the disease in regular newsletters and responding to media queries. A standard Powerpoint presentation was developed to provide the basis for presentations across SA, Vic and NSW.

Members of the community supplied canola samples to their local state department to be tested for BWYV. All testing was done at the Victorian DEDJTR with results supplied back to the each state department and onto individuals. As media coverage grew so did the number of samples to be tested.

BWYV - A perfect opportunity?

BWYV was first confirmed in South Australia, but also detected across large areas of Victoria and New South Wales. With testing conducted in Victoria and the main expert on BWYV based in Western Australia there was a need to establish cross-state collaboration quickly. While there was already good collaboration between the states for research and information gathering, this was the perfect opportunity to test whether a national extension program could add value to the information flow.

The eXtensionAUS Field Crop Diseases network had launched a twitter account @AusCropDiseases at the end of January as part of the training 'bootcamp'. This was intended to be the first of many integrated electronic extension tools all revolving around a website hub. Unfortunately, with the inevitable delays experienced in finalising and launching the new eXtensionAUS website, BWYV hit the media before we had functioning website. We launched the website at the end of June and soon developed an informative webpage covering the BWYV outbreak, links to relevant management information and information on how to access testing.

At this point eXtensionAUS had not done anything different to anyone else. If anything we were adding to the noise. While plant sample test results were useful for individuals to understand what was happening in specific paddocks, the growing data sets held by each state had potential to provide more information about the extent of the disease. eXtensionAUS experts identified the potential to use the geographic data provided with plant samples to map the distribution of BWYV test results and provide a clearer picture of the spread.

While all disease testing was completed in Victoria, each state only had access to their own results and individuals who submitted samples only had access to the results for their samples. A map of the distribution across South Australia and Victoria was initially published on the website. New South Wales and Western Australian experts saw the benefits of the map and supplied their data to confirm the spread into NSW and to demonstrate that BWYV was not an issue in WA. The map was published on the eXtensionAUS website and regularly updated, soon becoming the most visited page on the site with over 1,500 hits. The map both encouraged better collaboration with NSW and WA and also provided better feedback on disease incidence to those who had submitted samples and to the larger community of interest.

The eXtensionAUS Diseases twitter account, [@AusCropDiseases](https://twitter.com/AusCropDiseases), was used to highlight BWYV information from eXtensionAUS and other agencies and to provide alerts on newsletter articles, media and community meetings. The tweet that achieved the highest level of engagement at this stage was a notification sent in late July about a DPI NSW community meeting on BWYV to be held at Wagga Wagga the following week.

Given this meeting was held in a single location in NSW it provided an excellent opportunity to collate resources to be made available to others using e-extension tools. eXtensionAUS worked with the presenters to prepare a video interview to publish on the eXtensionAUS Field Crop Diseases YouTube channel (bit.ly/1k7aciV) and to collate the slidedecks from both NSW and SA to publish on Slideshare (www.slideshare.net/AusCropDiseases/presentations). These were embedded on the eXtensionAUS website with links to help users to navigate between Youtube, Slideshare and the eXtensionAUS website.

As with any major issue the number of different places providing information can become overwhelming and difficult to navigate. A key role of eXtensionAUS was to 'curate' resources to assist information users to navigate the maze of information. Field Crop Diseases used Scoop.it! (www.scoop.it/t/beet-western-yellow-virus), an online scrapbook, to collate key management resources, news articles and related issues into a single resource for people who wanted to understand the breadth of the issue. Over time this grew to a collection of 37 resources selected for what they could add to the BWYV story with minimal repetition for users.

The response to eXtensionAUS resources was excellent particularly given that the peak of the BWYV incident was only within the first two months of the eXtensionAUS website launch. With the outbreak of BWYV, the visitor numbers per day doubled to peak at 523 page views on 23 July 2014.

Outcomes

The BWYV incident demonstrated that eXtensionAUS and its tools can be used to augment existing national collaboration and to share information quickly in times of crisis. It was also able to facilitate the sharing and collation of data across state boundaries in ways that added great value to a wide range of stakeholders. While many messages were targeted for specific audiences in specific locations, it was noted that people outside the affected area (such as in WA) were keen to access this trusted information about the outbreak.

The @AusCropDiseases twitter account sent over 300 tweets and gained over 600 followers in 14 months. Numbers were similar for @AuCropNutrition. Together the two learning networks had posted 29 videos on Youtube with over 1,360 views. The eXtensionAUS website attracted over 25,000 page views from just under 5,000 users in the nine months from the website launch to the end of the pilot in March 2015.

What worked?

The connection with US eXtension Foundation was valuable in providing a ready built model, tools and support in developing the Australian learning networks. Having the US staff train our pilot network provided a solid understanding of the technology given that the Australian project leaders were only a few months ahead of the members. The project team also took the opportunity to visit the US three months into the project, attend the National eXtension Conference and ask practical questions of their US counterparts. The US team have remained involved throughout the pilot and have provided extraordinarily helpful information resources, as well as running webinars tailored to Australian needs.

The coordinated US e-extension toolbox provides learning network members with access to a range of tools including Create - an online authoring system, Ask an Expert - a question and answer widget, and Learn - a webinar/learning environment. One login provides access to all of these facilities and a linked Google account.

Feedback from disease experts across Australia has shown that they appreciated the value of the learning network in providing linkages to other professionals in their industry and in providing a forum for the exchange of ideas. The improved connections and linkages made it easier for the experts to access information and to share it through their networks both within eXtensionAUS and beyond. They also appreciated the opportunity to undertake professional development in the area of e-extension tools and social media with many sending their first tweet during the 'bootcamp'.

In terms of information delivery the ability to publish information using a variety of electronic platforms made for flexible and fast deployment of trusted information. For example, resources that were created for a single event, such as a community meeting, could be shared electronically to a broader audience overcoming the barriers of time and distance. Linkages between the different resources allowed users to navigate from one resource to another.

Importantly, the eXtensionAUS framework and the Contributor Agreement made it possible to publish information, such as the BWYV map, across state and jurisdictional boundaries. The linkages provided in developing and providing the BWYV map as a resource to others assisted in

developing the goodwill that allowed eXtensionAUS to access and share workshop resources through Youtube and Slideshare.

What were the challenges?

Challenges fell into two categories - people and electronic tools.

People There is a need to customise information for each audience and delivery vehicle. In particular Search Engine Optimisation (SEO) will penalise a website that does not provide unique content. This makes it challenging to determine the best niche for eXtensionAUS. In general we have steered closer to the latest news than the repository.

While there was a lot of goodwill from learning network members and a willingness to give eXtensionAUS a go, workload remained the most important issue. To quote one member, 'When there is a new disease issue I need to write something for my own newsletter, my own agency, my funding body, my local media and other national bodies that I work with. Plus eXtensionAUS. And it all has to be unique content.' This is an ongoing challenge.

While unique content can be necessary when there is new information, members of the user community often struggle to navigate an large range of content and to decide what is the most relevant, recent and useful. A useful niche for eXtensionAUS can be the curation of collections of the reliable, research-based information. We have attempted to do this with the Scoop.it! tool for the BWYV outbreak but it is expensive to embed this into the eXtensionAUS website, which either adds substantially to the cost or forces users away from the eXtensionAUS website. The Field Crop Disease network has experimented with Paper.li as a weekly summary of the latest news. There are many curation tools publically available but it is difficult to find one that can provide an ongoing and editable resource that displays well when embedded on a web page. This leads us to the second challenge.

Electronic tools The e-extension tools developed by the US Extension Foundation were licenced to the Australian project. The US online authoring system, 'Create', had many benefits such as allowing authors and reviewers to be documented. However, there were some difficulties in ensuring that US and Australian content did not become entangled and that Australian content was published to a separate Australian website (with the .au URL). This delayed the launch of the Australian website by approximately three months and added an extra step to the publication process increasing the workload for the project team.

The US makes use of Google tools including Google Hangouts and Google Docs. Hangouts allow face to face online meetings of up to 10 people at no cost and the Docs can be simultaneously edited by multiple people. The project team made extensive use of these tools during project development and found them very valuable. The learning networks initially used these tools, but there were technical problems with accessing Google via government computers. Many had out-of-date web browsers as the default installation and in some cases Google tools were blocked by IT departments.

There was initial concern by the experts that the Ask an Expert tool would result in an unprecedented flow of questions overwhelming their ability to respond. This was a significant barrier in recruiting participants. The US assured us that the number of questions would not be high and would just replace other forms of questioning (such as phone calls). Members were please to find that this was the case. Some believed that Ask was not needed because 'most people know who to contact', however it is more aimed at young professionals who may not have fully developed networks and at those who prefer to ask a question anonymously.

Key learnings

The most important part of developing a network is people, relationships and trust. It takes time to build relationships and even longer to build trust. If you have these elements then people will work together regardless of other obstacles.

By working with agency leaders to share the vision and get an agreed *licence to operate* in place we provided members with the freedom to contribute their time and their intellectual property.

When estimating the time it takes to develop a website - plan on the longest timeframe you think it can possibly take - then double it.

The future of eXtensionAUS

Despite the obstacles described in this paper, eXtensionAUS has demonstrated there is value to be gained from adapting the US eXtension model to suit the needs of an Australian development and extension context in the grains industry. All project stakeholders have agreed there is merit

in continuing the funding for a further three years. The GRDC has flagged an intention to expand the number of learning networks to other topic areas.

At the project level we intend to increase the critical mass of expert members and to explore ways to better enable recognition of their contribution within their own organisation. We will also work with other extension providers, such as GRDC communicators and Farming Systems Groups, to make it less onerous for experts to contribute to diverse content. We will continue to encourage experimentation with new and evolving online tools for collaboration and to assist experts with intelligence gathering, monitoring, evaluation and sharing.

The current project based approach to RD&E provides a challenging backdrop for the development of well-functioning learning networks. The project team will continue to liaise with agricultural departments across Australia to advocate for a more integrated model for the grains industry and beyond. There is some hope that through advocacy with the national signatories to the RD&E Framework we can build a truly joined up approach. If this way of working becomes part of the way of doing business within the overall funding system then experts will not feel as if contributing to an extension learning network is just one more thing to do.

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