

The world's first Biosecurity Blitz (2015) – Lessons learned about reporting plant pests for the WA grains industry.

E-surveillance team¹ and Nicolas Garel², ¹Department of Agriculture and Food, Western Australia, ngperceptive²

Key messages

- The Department of Agriculture and Food, Western Australia carried out the world's first Biosecurity Blitz from 18 – 30 September 2015. Data are being collated and will be used to confirm Australia's freedom from exotic pests to maintain access to overseas grains markets.
- New pest reporting technologies make it easy for anybody who has access to a smartphone or computer to help defend the WA grains industry from harmful exotic pests. Personal rather than organisational reporting appears to provide the quality data needed for confirming industry freedom from pests. Reporting by keen individuals within the industry would significantly help to improve the spatial coverage of data thereby quality.
- The E-surveillance team plans to carry out another Biosecurity Blitz from 18 – 30 September 2016 and is encouraging everyone to participate by monitoring their 'backyards' or paddocks and sending in pest reports.

Aims

The Western Australian (WA) grains industry generates more than \$4 billion (5 year average) for the WA economy each year, making it the largest agricultural sector in the State, and the fourth largest export industry overall. Effective farm biosecurity practices help to underpin the quality of WA grain and have the potential to deliver the surveillance data required to demonstrate country or regional area freedom from pests, and support trade negotiations. Continued productivity depends on access to new and existing grains markets and this hinges on being able to provide quality evidence of freedom from certain harmful pests.

Smart 'apps' and mobile technologies can offer growers advanced diagnostic capabilities to help document pests or quantify the spread of insecticide resistance. Since 2014, the E-surveillance team from the Department of Agriculture and Food, WA (DAFWA) have been working to deliver new tools for pest surveillance to the WA community. DAFWA has developed a suite of free mobile and online pest reporting tools to help send a report of a pest (insect, weed, disease or animal) to the department. Initial trials held at field days and feedback from the public show the technology to be effective, with two species new to WA being reported previously. Now we report on a full-scale trial of the technology in the world's first biosecurity blitz, an event aimed at meeting the demand for E-surveillance technology and collecting data to support 'pest area freedom' for growers.

The aim of this paper is to report the first results received and lessons learned for greater engagement with the grains industry when undertaking future E-surveillance.

Method

In September 2015, DAFWA invited the Western Australian community to engage and use one of the department's free reporting tools (Table 1) to send a report of a pest (weed, disease, insect or other animal) to the department thus officially launching the first ever Biosecurity Blitz on the 18th September 2015. The surveillance period closed on 30th September 2015 and ran continuously for two weeks.

The event was promoted through grains industry networks and the wider community, along with a number of other partner organisations (Table 2). The target audience consisted of GGA, GIAWA, CBH, WA Farmers, WALGA, Community Resource Centres and Local government members as well as schools, colleges and universities where agribusiness classes take place. The project actively sought media coverage in external industry publications and encouraged other organisations to write their own Blitz articles and publish in their own newsletters resulting in widespread coverage of the event with a relatively small budget (<\$5 000).

Table 1. Tools developed by DAFWA for reporting plant pests and each of their key features

'Smart' tools	Key features
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MyPestGuide Reporter	<p>A simple and easy <u>photographic reporting tool linked to a map</u> developed for everybody to make reports to the department. This mobile app is free to download, works offline, and:</p> <ul style="list-style-type: none"> • Captures an image using your phone's camera • Includes the date and a time stamp, your email and phone number if supplied • Adds the geographic coordinates + accuracy associated with the field observation • Submits your report to a team of experts who verify it and reply back by email as well as to your device with any relevant information e.g. control advice • Works alongside the MyPestGuide Crops, Diseases and Grapes guides (see below) • All MyPestGuide apps work on iPhone and Android platforms but not Windows • Enables other organisations (e.g. Natural Resource Management groups) to carry out their own targeted surveillance for pests and receive regular downloads of their submitted pest reports.
MyPestGuide Crops MyPestGuide Diseases MyPestGuide Grapes	<p>A simple <u>diagnostic guide</u> for anyone interested in understanding more about pests in Western Australia.</p> <ul style="list-style-type: none"> • Each app can focus on a particular industry as the built-in framework is modular. • Crops = pests of grain crops; Diseases = diseases of grain crops; Grapes = pests and diseases of table grapes and wine grapes. • Each app includes a comprehensive guide with supporting images and content. • Species of quarantine concern are included in each guide for comparison. • When a user makes a report the Reporter app opens alongside each guide. • Using the "MyPestGuide Reporter" tool provides consistent and better quality data. • Separating the guides from the reporting tool allows content developers more time to produce better quality information and ensures end user needs are met.
MyPestGuide Online	<p>An <u>online website</u> where users can make a pest report.</p> <ul style="list-style-type: none"> • A simple and easy way to report pests following the same format as the app • Includes an interactive, real time, online map to view all shared reports as well as keep private any personal reports. • Developed for users without access to a smartphone • Useful for industries where staff cannot use mobile phones on-site • Lets users add professional photographic images from their own camera. • Increases knowledge of pests for those interested to learn about the organisms. • Reports are verified and approved by DAFWA experts before public release to ensure any submitted reports are followed up on, if deemed a market access issue.
MyCrop Wheat MyCrop Barley MyCrop Canola MyCrop Pulses MyCrop Online	<p>A <u>comprehensive diagnostic tool</u> that uses Lucid software to enable growers to correctly diagnose a constraint in their crop. After diagnosing a problem the user can report their observation which is submitted to the PestFax database and added to PestFax Map (see below).</p> <ul style="list-style-type: none"> • Wheat and barley apps include a variety selector based on WA sowing guides. • Online, users can estimate whether they are reaching their wheat yield potential as determined by rainfall with the wheat yield constraint calculator. • Works on iPhone and Android platforms but not Windows
PestFax Reporter PestFax Map	<p>A mobile <u>app and linked map for reporting</u> pests, abiotic disorders and other agricultural or horticultural problems associated with growing commercial plants.</p> <ul style="list-style-type: none"> • Includes an online reporting system that allows a user to make a report online and displays real time reports made by the agricultural community or growers, agronomists, consultants and landowners. • Users can filter data based on the host, disorder and time periods and view occurrences of pests reported on a map. • Includes all data reported via MyCrop apps; data may eventually be merged with MyPestGuide data for the public to view and query in future if public demand increases. • Works only on iPhone but is expected to work on Android in March 2016.

Table 2. Promotional activities undertaken for Biosecurity Blitz 2015

Medium	Communication activities
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Presentations	<ul style="list-style-type: none"> • 4 field days and 8 group presentations were delivered in person
Print	<ul style="list-style-type: none"> • 3 posters were printed • 1 ministerial and 2 media statements; AgBrief article resulted in 178 hits, • 7 magazines and newsletters, including the South West AgMemo August edition.
Electronic	<ul style="list-style-type: none"> • Announcements in monthly e-newsletters; AgWeb, GGA • Email announcements sent to all GIWA members; CBH email list of 2300 recipients • Email announcements sent to all growers lists during the Biosecurity Blitz • Articles published in InterSector , PS online and VegetablesWA newsletters • Invitation to participate in the Biosecurity Blitz was sent to 66 Community Resource Centres in WA on the 11th and 18th September. • Article published in the WA Local Government Association newsletter. • Letters were sent to 11 development commissions seeking support • Wheat belt commission sent the blitz information to their networks.
Social media	<ul style="list-style-type: none"> • 26 tweets were issued on the DAFWA twitter account. The most successful tweets all had bug images attached. The Blitz message was re-tweeted in Spain and the United States. • Radio interview on the Sabrina Hahn Show generated the most articles following a discussion about citrus gall wasps forming distinct galls on the stems of citrus plants.

Results

The Biosecurity Blitz ran from 18-30 September 2015 and aimed to increase adoption of reporting tools and generate pest surveillance reports. A total of 513 reports were submitted with 402 reports generated by MyPestGuide users and 113 reports generated by PestFax/MyCrop users. The greatest number of reports (N=180) was generated on week 39, mid-way through the blitz period (Figure 1), with a weekly average of 37-42 reports submitted per day to experts for verification.

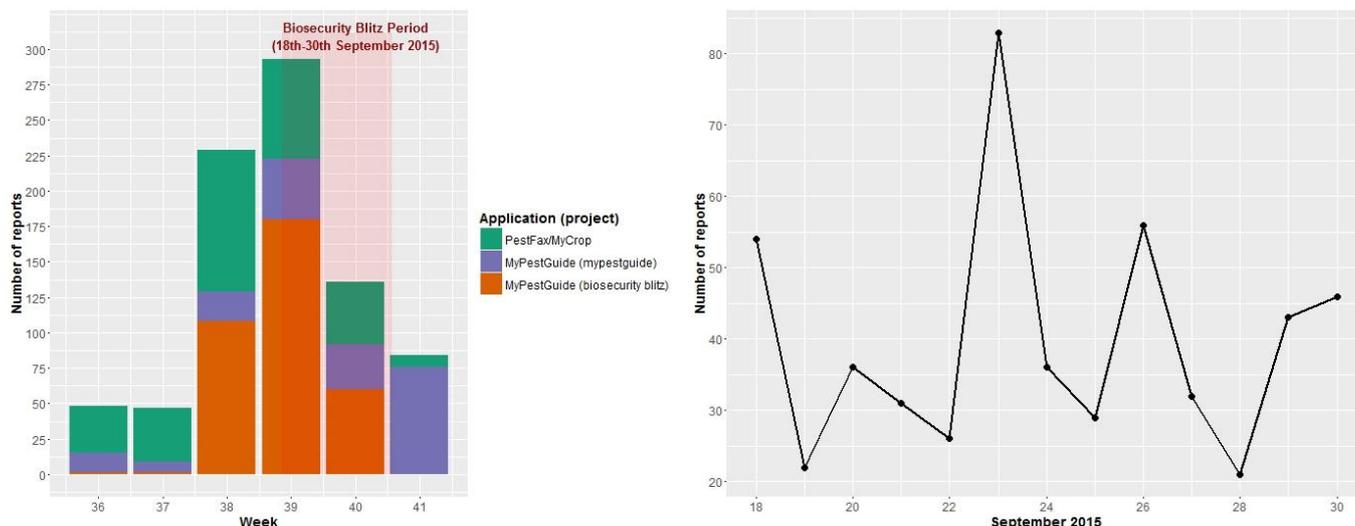


Figure 1. Number of reports generated the weeks before, during and after the Biosecurity Blitz 2015 event by app and by project (left) and the number of reports submitted per day during the event (right).

Forty-one percent of the reports submitted could be identified to species level by the photograph. The most common reports submitted included agricultural and non-agricultural pests which are capable of impacting crop yield through sucking behaviour or chewing plant material as well as reports of crop diseases (Figure 2). No reports of 1st records for WA were received during this period however a report of Citrus gall wasp (*Bruchophagus fellis*) was submitted immediately following a radio interview and appropriate control information was supplied. In addition two species of weeds of biosecurity importance, Paterson's curse (*Echium plantagineum*) and Milk thistle (*Silybum marianum*) were reported and followed up accordingly by DAFWA staff with individual reporters through the unique app interface.

The majority of reports were generated within the metro area with very few reports coming from agricultural areas, indicating comparatively low adoption from the agricultural sector. The average number of reports submitted from repeat users during the Blitz varied from 2-15 reports over the two week period. In fact, one repeat user reported 55% of the observations, highlighting the impact one individual can have on freedom data collection within an organisation. Similarly, more personal reports were made compared to partnering organisations, suggesting industry is not participating at the organisational level as would have been expected.

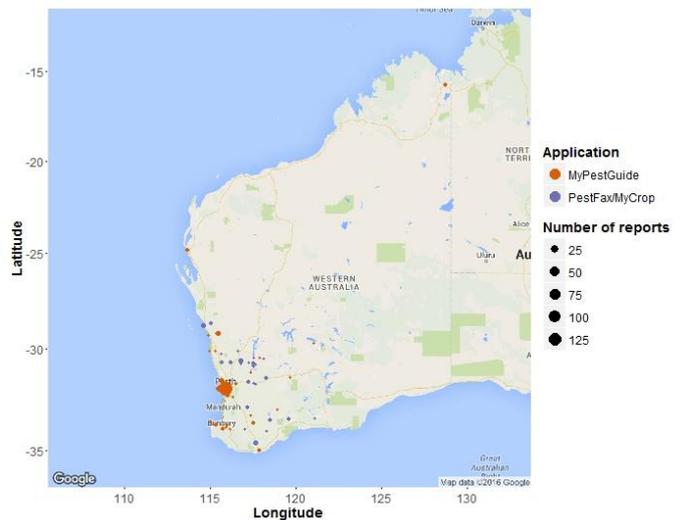
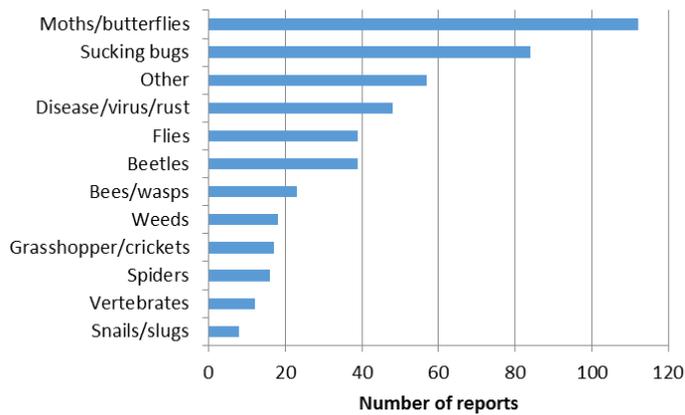


Figure 2 (left). Total number of reports by pest group submitted to experts from 18-30 September, 2015.

Figure 3 (right). Distribution map of observations reported in Western Australia during Biosecurity Blitz 2015.

Conclusion

There is a requirement now to engage with industry and communities to ensure the importance of surveillance and the need to collect surveillance data. Traditionally, our model of biosecurity has deemed the government to be responsible for pest surveillance, but this is quickly changing into a model of shared responsibility for biosecurity – or in other words ‘biosecurity is everybody’s business’¹. Adoption of this biosecurity surveillance model means that everybody is responsible for collecting surveillance data. The development of the MyPestGuide suite of tools permits everybody to collect this data and the aim of the world’s first Biosecurity Blitz in 2015 was to engage with the wider public to gather the pest surveillance reports required to help defend the Western Australian grains industry from harmful exotic pests.

The project received strong support from social media however the majority of reports came from the metro area. Work is needed on developing engagement strategies for the regional/farming sector therefore future engagement will attempt to encourage repeat users as well as new users via specific industry focused events. The Biosecurity Blitz is just the first step to increasing community and industry-based pest reporting and achieving the intent of Recommendation 3 in the National Plant Biosecurity Surveillance strategy¹.

Biosecurity Blitz 2016 will run from 18-30 September and everyone is encouraged to send in reports continuously throughout the year. To download a free reporting app, or for more information about how to participate in the Biosecurity Blitz 2016, please visit the [Biosecurity Blitz webpage](#) on the [department’s website](#).

Key words

Exotic plant pest, mobile app, citizen science, market access, community surveillance, quarantine, biosecurity blitz.

Acknowledgments

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¹ The National Plant Biosecurity Surveillance Strategy. Downloaded November 2015 from <http://www.planthealthaustralia.com.au/wp-content/uploads/2013/04/National-Plant-Biosecurity-Surveillance-Strategy.pdf>

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