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PestFax and PestFacts - newsletters successfully facilitating interactive communication on invertebrate pest and disease control in broadscale crops and pastures in southern Australia

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Abstract. PestFax and PestFacts are interactive information gathering and dissemination tools that are used to inform the grains industry across southern Australia of seasonal invertebrate pest and disease issues. They provide regular newsletter updates during the growing season to farmers and agribusiness with advice on what insect pests and plant diseases are currently posing a risk to crops and pastures. A large network of farmers, field agronomists, consultants and industry specialists provide regular input into the service. This interactive input has the advantage of forewarning the grains industry of seasonal or unusual pest occurrences, facilitating effective pest and diseases control with minimal economic loss. PestFax has been in operation under the Department of Agriculture and Food WA since 1996 and has gained widespread adoption and support. Financial support from Grains Research and Development Corporation (GRDC) since 2006, through the National Invertebrate Pest Initiative (NIPI), has enabled an expansion of the service throughout southern and eastern Australian grain growing areas. The new services are known as PestFacts (SA and Western Victoria) and PestFacts South-Eastern (Victoria/NSW). Subscription to the PestFax and PestFacts services are free and there are currently over 3,000 subscribers. Some of these subscribers disseminate the information further, such that there is a flow-on value of the information broadly across the grains industry. The services have provided a consistent point of contact for farmers and agribusiness to engage with researchers and support staff within government and private agencies. This has facilitated a greater flow of pest and disease samples for identification and improved discussion on control options to the mutual benefit of agribusiness and researchers. Three key learnings:

1. Timely use of seasonal information is a powerful ally.
2. Individual field observations can be combined to create a composite picture that is highly valued by a wide readership.
3. Continual data capture of pest occurrences over many years has benefits for assessing long term trends.

Keywords: PestFax, PestFacts, pests, invertebrates, diseases, grain, crops, broadacre, agribusiness, interactivity

Introduction

The sudden appearance of large numbers of insect pests or a disease within a crop or pasture can lead to major production losses within a short space of time. Therefore, information forewarning growers of emerging pest issues, coupled with advice on potential controls, is a valuable extension service. Invertebrate pest or disease information of this type is typically publicised in rural print media, rural radio reports and government and private newsletters (e.g. agronomist clients). The extension of information on outbreaks is often instigated by public or private researchers who have a vested interest in conveying their expert advice and insights on pest and disease management. The news media will broadcast stories on pest or disease occurrences which are perceived to have a widespread impact, for example locust swarms attacking crops and pastures. In these situations reporters will contact government and private agencies and agribusiness for comment and publicise the information. However the majority of common or localised pest and disease situations will not be publicised or recorded, for example district hatching of bryobia mites.

Traditional methods of extending experimental research to growers is principally through conference presentations and written publications (e.g. Agribusiness Crop Updates), and other forms such as field days and farmer group meetings. This is supplemented by responsive information dissemination through media releases to rural press in national, state wide and regional publications. However, these methods are not interactive and do not facilitate a regular interactive exchange of information.

This paper describes the PestFax and PestFacts services which are unique communication vehicles whereby the extension of information to growers is initiated by observations and

reports from its readership. This collective information from individuals in turn encourages further participation from public and private agribusiness practitioners.

Establishment of PestFax in WA

The WA PestFax service commenced in May 1996. It developed from a previous fax service known as "Insect Pest Update" produced by Department of Agriculture WA entomologist Kevin Walden for pulse and canola growers in the northern grains region of WA. The editor of the initial PestFax service, Peter Mangano decided to adopt a team approach by inviting the participation of departmental and private agribusiness to provide reports and to comment on each of the invertebrate pest or disease issues.

This approach for collaboration from a wide array of researchers, extension staff and private agribusiness was unique. The content of early issues came largely from entomologists and plant pathologists that Peter worked closely with or sourced information from. Over time the private agribusiness agronomists (e.g. Elders Ltd and Landmark) and some private consultants gained confidence in the service and commenced to contribute reports and comments. During the period from 1996-2000 PestFax circulation almost doubled from 250 to 490 subscribers and from 2000-2008 it increased three fold to 1,500 subscribers. This included both interstate and international subscriptions.

The "fax" in the name PestFax referred to its initial distribution mechanism to farmers and private industry using a toll-free fax poll number. In 2002 the fax service was discontinued as the vast majority of users opted for subscription via email. The name PestFax was retained as it had gained recognition and acceptance by the WA grains industry.

Expansion of the PestFax concept within Australia

Financial support from GRDC in 2006, through the National Invertebrate Pest Initiative (NIPI), has seen an expansion of the PestFax concept throughout southern and eastern Australian grain growing areas, known as PestFacts and PestFacts South-Eastern. The South Australian Research and Development Institute (SARDI) prepare PestFacts editions for circulation throughout South Australia and western Victoria. The University of Melbourne's Centre for Environmental Stress and Adaption Research (CESAR Consultants) produce PestFacts South-Eastern issues which circulate within Victoria and southern New South Wales. These two services currently provide information to over 1,400 recipients.

Details of the PestFax/PestFacts services

PestFax/PestFacts are interactive information gathering and dissemination tools that are used to inform the grains industry across southern Australia of seasonal invertebrate pest and disease issues. The WA PestFax service covers both invertebrate pest and disease subjects whilst the PestFacts and PestFacts South-Eastern editions only cover invertebrate pests. The PestFax/PestFacts newsletters are distributed via email as a free service to subscribers. The services operate during the southern Australian grain industry growing season from approximately May to November each year. Circulation of information is mainly via a portable document format (PDF) emailed to subscribers or by accessing the following websites:

- PestFax website www.agric.wa.gov.au/PestFax
- PestFacts (SA and Western Victoria)
www.sardi.sa.gov.au/pestsdiseases/publications/pestfacts2
- PestFacts South-Eastern (Victoria & NSW) www.cesarconsultants.com.au

The specific home pages on each of the PestFax/PestFacts websites contains back issues for reader reference. The availability of PestFax/PestFacts in this electronic format is well received. The WA PestFax is distributed weekly (on Fridays) and typically has 25 editions for each season. The PestFacts (SA and Western Victoria) and PestFacts South-Eastern (Victoria / NSW) editions are produced on an "as needed" basis with around 10–15 editions per season.

A large network of field agronomists, consultants, industry specialists and farmers voluntarily provide input into the services. Reports from readers into the PestFax/PestFacts services are predominately received via email messages, phone calls and samples submitted for identification. Other contact with the Pestfax/PestFacts services occurs primarily when readers seek advice on pest identification, disease verification or to discuss management options.

This interactive input from PestFax/PestFacts readers provides the content for each newsletter edition. This is divided by subject such as a specific pest (e.g. native budworm) or disease (e.g. cereal rust). Each article usually commences with several reports received from contributors followed by a brief description of a pest or disease and other relevant information such as lifecycle, current research findings, pesticide recommendations and IPM management options.

Web links within each article allow readers to electronically link off to additional support information such as detailed farmnotes, factsheets or images of pests. Web links to supplementary information such as pesticide spray charts, native budworm moth trap records and disease forecasts are also provided.

The PestFax/PestFacts newsletters involve a distillation process whereby the input of lots of current pest and disease reports are compiled into succinct articles with interpretive and supporting information and packaged into a “one stop” outlet for interested readers. Technical information on such things as specific details on identification and management options separate the service from popular media articles which are simplified for a more diverse readership.

Similar packaging occurs for other non-participatory technical newsletters such as the Queensland Primary Industries and Fisheries’ blog, “The Beat Sheet” (www.thebeatsheet-ipmnews.blogspot.com) for invertebrate pests in north-eastern Australian grain regions and the South Australian “Crop Watch” for crop and pasture disease updates (distributed for SARDI through Jon Lamb Communications, jlcom@chariot.net.au).

Timely distribution of information

A major component of the PestFax/PestFacts services is to provide timely news updates to alert grains industry practitioners and farmers of seasonal or unusual invertebrate pests and diseases which may pose a threat to broadacre crops and pastures. Advice on control of these potential threats needs to be put into the context of the changing levels of risk associated with such factors as vulnerable crop growth stages or changing weather patterns. The timely distribution of information by the PestFax/PestFacts services is demonstrated by supportive feed-back comments from some readers; “I think you are doing a great job with this publication as it keeps everyone in the loop as to what is going on around the place and we send it to all stores so we can keep an eye and ear on the environment. It helps us stay one jump ahead of, or at least up with the game.” Bevan Addison, Manager Technical and Professional Services, Elders Ltd, Perth.

Occasionally within rural media/extension outlets there has been unacceptable time lags between a pest or disease outbreak occurring and the publication reaching its audience. In some cases this time delay can mean that the warning of an outbreak is too late for affected farmers to react and take action to minimise crop losses. This particularly applies to print media which suffers from an additional delay during the printing and mailing processes. The electronic circulation of PestFax/PestFacts has the advantage of a minimal lag time between pest issues emerging and information received by readers.

Seasonal variations can encourage a larger than expected effect from minor or less well known disease or pest species. Early reports and identification of these situations into the PestFax/PestFacts service alert farmers to these situations allowing them the opportunity to inspect crops and take the necessary control measures as required. An example of one such infrequent pest is the weed web moth caterpillar (*Achyra affinalis*) which requires a greater rate of insecticide than other commonly occurring caterpillar pests.

Reports of mobile pests with the capacity to spread rapidly, such as stripe rust or native budworm, are highly valued by rural communities. An example was the introduction of the new pathotype of stripe rust into WA in 2002 which created a great deal of uncertainty and fear amongst growers about the potential for the disease to cause crop damage. PestFax provided a valued early warning system with its weekly updates providing the grains industry with locations of new rust outbreaks as they were occurring.

Comparison with alternative information dissemination

Contributors to PestFax/PestFacts are directly “cited” as the source of pest and disease observations together with their specific location and identity within each of the published news articles e.g. “Quenten Knight (Precision Agronomics Aust.) reports finding barley leaf rust at Neridup, 35Km NE of Esperance in Baudin barley sown in early May (PestFax Issue No.8, 19/06/09). This is a departure from other newsletters that have broad non-specific statements regarding pest observations such as “early signs of cereal rust in the Esperance region may threaten crops in southern cropping areas”.

PestFax/PestFacts articles usually have a higher level of technical content such as the use of scientific names and pesticide active ingredients compared to other media stories that cover the same pest or disease issue. They are also less formal and more engaging than rural press articles as they have a targeted delivery to a specific grains industry reader audience. Editors of the PestFax/PestFacts are highly experienced in pest and disease issues. This technical

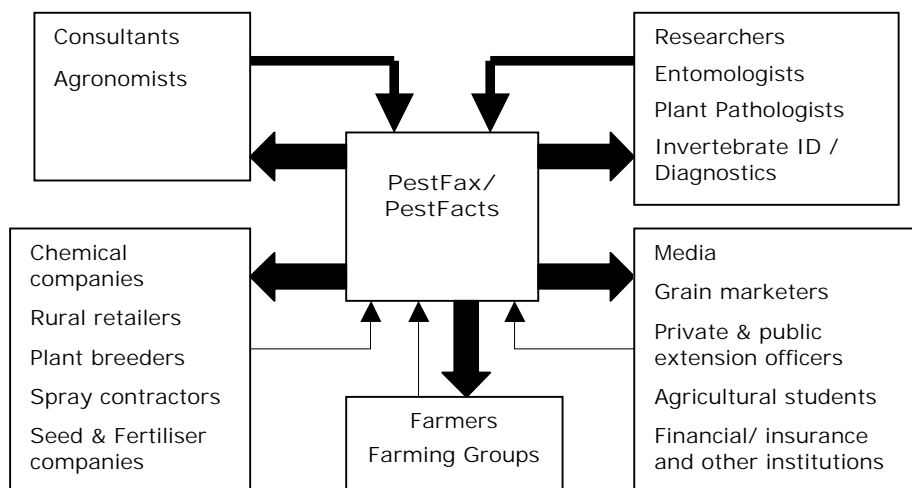
background is important to interpret jargonised and brief observational reports sent into PestFax/PestFacts by experienced agronomists. The editors must then be able to package the information in a form which is easily understood by a more diverse group of readers. This procedure has to happen within a short timeframe (often on the same day) to allow for brief review before the publishing date.

The PestFax/PestFacts services are generally viewed as independent and impartial providing unbiased information to their readership. This contrasts with some alternative information on pests and diseases that has a commercial bias.

Reader participation and involvement

The initial PestFax concept of inviting readership participation has been the key to developing greater interaction. The PestFax/PestFacts services have, over time become increasingly accepted by agribusiness, farmers, research agencies and media outlets. This acceptance and familiarity has the advantage of facilitating a flow of information and an interaction between researchers, agronomists and industry. PestFax/PestFacts provides opportunities for its entire readership to contribute news and receive comment regarding all issues including localised or unusual pests. This in-turn encourages research officers and industry specialists to respond to industry needs for information. Figure one illustrates the flow of information and “levels of participation” from members of the grains industry to and from PestFax/PestFacts.

Figure 1. Flowchart indicating the interactive direction flow of information by the PestFax/PestFacts services.



Arrow line thickness indicates comparative level of information flow.

Motivation for participation

Private agronomists and consultants appreciate the opportunity to pass on their observations and comments during their daily business practice. Many are not averse to having their name published and in some cases gain acknowledgement from their peers or their business practice. Reports directly from farmers are less frequent and most likely indicate their reluctance to have their names published preferring their advisor to take that role. Researchers have extension delivery outcomes for their investigations and often welcome the opportunity to comment or provide recommendations following a pest or disease report.

Chemical company representatives and pesticide retail outlets also contribute information, though direct advertisement of products is not accepted. Chemical company representatives look for reports of insect and disease outbreaks such as locusts and rust in order to predict anticipated chemical requirements and move product to regional locations in advance of demand. Grain marketers and other industry representatives use PestFax /PestFacts as one of a number of sources to look for indicators that may influence change in their grain harvest estimates.

Rural media agencies use PestFax/PestFacts routinely as an updated and timely resource for “news story leads” and information which they can develop into new media material. Established contact between the media and the PestFax/PestFacts services enables the linkage of journalists with agribusiness practitioners for the production of radio talks and media stories.

Motivation for readers to participate and contribute their observations and reports to the PestFax/PestFacts service is an ongoing challenge, as a high proportion of readers do not contribute reports despite being in a situation where they could. Web-based observational reporting forms were introduced by the PestFacts services in 2009 but have had limited success in generating additional readership contributions. Feedback and reports continue to be received mainly by telephone and/or email.

Personalised identification and advice service

PestFax/PestFacts services provide a regular and familiar point of contact on pest and disease issues and frequently invite readers to contribute observations or contact the editors for support on issues such as free invertebrate pest identification or pest management discussions. Invertebrate samples are regularly sent in for identification to PestFax/PestFacts editors. This service is well received as it is provided free to subscribers who previously had to pay a fee to Government Departments in SA, VIC and NSW. All editors of the PestFax/PestFacts services have extensive experience in the field and are able to reply promptly to the sender. This in-turn presents an opportunity to call back the sender to gain more information and compile an article for circulation in the next issue. Increasingly, digital photos of pest or disease situations are being received which also provide opportunity for interaction.

Partnership extension or patronising extension

Some agricultural extension material circulated to farmers assumes they need to be told what to do and “speak” from a position of authority without regard for farmer ‘socio-cultural practice’ (Vancley, 2004). In contrast, PestFax /PestFacts tries to provide a forum for partnership with the grains industry for the expressing of views, counter points and field experience on pest and disease issues. An example of this has been the changing status of an Erythraeid mite, *Balaustium medicagoense* from a previously considered beneficial predatory mite to the current plant feeding pest. Initial reports of *Balaustium* plant damage by farmers and agronomists lead to eventual confirmatory investigations by entomologists. The mites change in behaviour is believed to have been in response to increased chemical use and changes to farming systems.

Excellent customer relations and commitment to the PestFax service and it’s valued extension role to the WA grains industry has been recognised by Peter Mangano being awarded the 2005 WA StateWest Achievement Award (individual category one) and the 2007 GRDC seed of light award for excellence in communication.

Researcher/editor interchange

The editors of the PestFax/PestFacts are experienced entomologists/researchers who are in close contact with other similar professionals with a high level of expertise in their area. This is an important capacity as they are personally able to respond to subscriber’s enquiries and are then able to use the information to write a news article. PestFax/PestFacts editors frequently write articles on behalf of a participating entomologist/plant pathologist or researcher enabling them to publish quickly with rapid review times and confidence in the relationship and integrity between editor and researcher. This is a departure from some media stories that are generated by professional journalists who are less acquainted with the subject material and usually have a much longer review time before publishing articles.

Educational Role

The regular distribution of pest and disease information by the PestFax/PestFacts publications provides an awareness and educational role to the grains industry. Readers of PestFax/PestFacts develop increased awareness and confidence over time in the recognition of beneficial invertebrates, pest and disease monitoring techniques and an improved understanding of the role of integrated pest management (IPM). This has helped to shape attitudes towards pesticide usage and IPM principals such as recognition of the role of beneficial predatory invertebrates (e.g. hover fly larvae feeding on aphids).

Younger or inexperienced agronomists commencing work in the grains industry benefit greatly from the educational role provided by the PestFax/PestFacts service. This particularly applies when they work alone in regional areas and need rapid support via phone or email to make immediate agronomic decisions, sometimes from the farmer’s paddock or on the road between visits. The educational role of PestFax/PestFacts is also valued by as a medium for the distribution of information on minor pests or related issues such as slime mould appearing as mystery insect eggs. These “less spectacular” or commonplace non-economic issues are not usually circulated in scientific literature, newspapers or Departmental AgMemo articles.

The PestFax/PestFacts services complement pest and disease training courses currently provided to the grains industry. Invertebrate pest identification training courses, financially supported through NIPI/GRDC, have been running in WA, SA, NSW and Vic since 2007 and longer in Qld/northern NSW (Bellati et al. 2009). Plant disease identification workshops have also been running in WA and other states (Wright D and McKay A 2009, pers. comm. 26 June). The pest and disease training courses combined with the PestFax/PestFacts services are providing an important role in the initial adoption phases of IPM and integrated disease management (IDM) in the grains industry.

Biosecurity awareness

PestFax/PestFacts articles include advice on endemic pests that have a similar appearance to “look-a-like” exotic pest threats to Australia. The regular, familiar and established connection that grains industry representatives have with the PestFax/PestFacts services encourages the reporting of unusual pests or possible new biosecurity introductions into Australia. Increased familiarity with common endemic pests and diseases by agribusiness consultants and farmers enables them to be more effective at spotting something new or unusual.

Data capture and historical value of reports

The capture of field reports of pest and disease occurrence and location over many years has been collated into a database at DAFWA. The database is useful for comparisons of pest and disease incidence between seasons and geographical locations and is likely to be valuable for modelling the changing influence of some pests in order to gain better understanding of influences such as seasonal weather patterns, changing farming systems and pesticide use patterns.

Information from the PestFax database has been used in conjunction with other researchers to discuss the changing role of pest invertebrates in Australia (Hoffman et al. 2008). A comparative seasonal review of WA pest invertebrates has also been presented in the WA GRDC Agribusiness Crop Updates (Mangano and Severtson 2008).

Summary

The PestFax/PestFacts services have proven to be a valuable and impartial resource to the grains industry as evidenced by the continual increase in subscriptions and widening circulation throughout Southern Australia. The regularly updated reports provide an alert system to the grains industry to minimise pest and disease losses and maximise grain production. The interactive partnership from the services provide benefits to the grains industry through an improved educational role, assists biosecurity awareness and preparedness, and enables the collection of data on the occurrence and distribution of pests and diseases through time.

The PestFax/PestFacts service demonstrates one way that participatory extension principles can be applied to newsletter formats. This contrasts with some extension newsletters that are seen as delivering “expert” opinions from a narrow range of sources such as a government researcher’s perspective. PestFax/PestFacts in contrast, has sought to give its readers their own voice, and in doing so has provided a vehicle for them to share their own observations and insights.

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