

## Blogs about bugs: Embracing Web 2.0 to communicate with grains industry clients about integrated pest management issues

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**Abstract:** 'The Beat Sheet' is a blog about insect pest management written for grain and cotton growers and their advisors in Australia's grain-growing regions of Queensland and northern New South Wales. This team blog is frequently updated by entomology staff from Queensland Primary Industries and Fisheries. A blog (or 'weblog') is a type of website, maintained by an individual or group, featuring regular entries of commentary, descriptions of events, or other material such as graphics or video. We originally started the Beat Sheet in parallel to a long-running newsletter emailed to subscribers approximately bi-monthly. However, following a six month trial and extremely positive feedback from industry on the accessibility and timeliness of the blog articles, the newsletter format was dropped and the blog became our key tool for providing written pest alerts, advice and research results to industry.

### Introduction

Agricultural production remains subject to various external forces such as climate and pest invasions. While we can do little about the former, pests can often be successfully controlled if there is an early warning of their presence and potential impact. Rapid transfer of information about pest issues is therefore critical to avoid crop losses and inappropriate management.

In the past, the field crops entomology team from Queensland Primary Industries and Fisheries communicated pest issues through fortnightly newsletters and irregular grower meetings. Urgent pest issues were dealt with by direct contact through email, phone and sometimes media releases. However, media releases were often subject to publication delays of up to several weeks, something outside of our control.

These communication methods often result in a product that is temporary, easy to misplace and time consuming to deliver. There was clearly a need to be able to respond faster and more effectively to pest issues making information easily accessible to anyone who went looking for it.

So what could be an appropriate tool to communicate with clients? With many of the target audience regularly using email and internet, a web-based tool was chosen.

A blog was selected as a way of quickly publishing detailed information, in a format that was readily available to a wide audience. Other reasons for choosing a blog were the number of free options available, the feedback facilities for the readers to respond, and access to user statistics.

The first entomology blog, the Beat Sheet blog, went live on the internet on 11 July 2007. The name Beat Sheet refers to a tool used to sample crops for pests and beneficial insects. This tool provides information about insects in the crop and the Beat Sheet blog aims to do the same.

### The Beat Sheet blog

To understand where the Beat Sheet blog fits as a communication tool for entomology, we need to consider some past communications and challenges.

In the late 1990's the northern grain and cotton region experienced a pest outbreak that threatened sustainable production (Murray et al. 2005). This posed a major challenge to managing pests and identified a need for more and better information on pest management. The pest management crisis was the impetus for the entomology team to conduct a range of communication activities. The two main activities were the establishment of area wide management grower groups and a newsletter called Heliopsis Hotline. Entomologists worked extensively with the grower groups and regularly disseminated information to the industry via the newsletter. After the crisis, many of the grower groups dissolved but the newsletter remained as an important communication tool. Heliopsis Hotline was replaced by the Beat Sheet newsletter in 2005, with a wider brief, and in 2007 the Beat Sheet blog was created.

The activities by the entomology team during and after the pest crisis had a significant bearing on the viability of the blog. Extension activities during this period resulted in strong links and interaction with industry and helped build the reputation for the entomology team as a group you could rely on for pest management advice and information. This high level of recognition and strong foundation of communication with the grains and cotton industries has meant that new communication methods such as the blog are more readily accepted (Starast 2005).

When the Beat Sheet blog was created, it initially ran parallel with the fortnightly Beat Sheet newsletter but when the newsletter ceased, there were no requests to continue the newsletter format.

The Beat Sheet blog is not posted regularly as posting frequency is dictated by pest incidence in crops. This means that there may be several blogs a week during the main cropping seasons in spring and summer but fewer during winter.

### What is a blog?

A blog (or weblog) is a type of website maintained by an individual or group. A typical blog combines text, images, and links to other blogs or web pages and is regularly updated with new content. The ability for readers to leave comments in an interactive format is an important part of blogs. A post is the term used for each new entry added into a blog's chronological series of content.

Blog or blogging can also be used as a verb, meaning to maintain or add content to a blog while bloggers do the blogging. The total number of blogs on the internet is thought to be approaching 200 million with 73 million of these in China (Appleyard 2009).

Plate 1. The front page of the Beat Sheet blog

The screenshot shows the front page of the Beat Sheet blog. At the top, there is a search bar and navigation links: "SEARCH BLOG", "FLAG BLOG", and "Next Blog". On the right side of the header, there are links for "Create Blog" and "Sign In". The main heading is "THE BEAT SHEET". Below this, a short description states: "The Beat Sheet is a blog about insect pest management issues relevant to Australia's northern grain region of Queensland and northern New South Wales. This team blog is updated by entomology staff from the Queensland Government's Department of Primary Industries and Fisheries. Their contribution is supported by funding from the grains and cotton industries." A filter bar shows "Showing posts with label NPV. Show all posts". The date is "Thursday, January 15, 2009". The main article is titled "New Helicoverpa thresholds in vegetative soybeans". The text discusses the new economic threshold of 8 larvae per square metre, replacing the old 33% defoliation threshold. It mentions field trials by John Rogers and notes that the new threshold is based on maximum defoliation (33%) that can be tolerated without reducing soybean yield. An image shows a soybean plant with a yellow beat sheet. The text explains that the reason yield loss occurs below 33% defoliation is due to Helicoverpa's feeding behavior. A sidebar on the right is titled "The Beat Sheet in action" and includes a photo of a person using a beat sheet. Below this is a "Topics" list with various pest and crop-related items.

**THE BEAT SHEET**

The Beat Sheet is a blog about insect pest management issues relevant to Australia's northern grain region of Queensland and northern New South Wales. This team blog is updated by entomology staff from the Queensland Government's Department of Primary Industries and Fisheries. Their contribution is supported by funding from the grains and cotton industries.

Showing posts with label NPV. [Show all posts](#)

Thursday, January 15, 2009

**New Helicoverpa thresholds in vegetative soybeans**

The new economic threshold for Helicoverpa in vegetative soybeans is 8 larvae per square metre and replaces the old 33% defoliation threshold. The new threshold is based on field trials conducted by John Rogers (formerly with DPI&F at Kingaroy). These field trials show that approximately 7.5 larvae per square metre can be tolerated with no yield loss, but that severe yield losses can occur once this critical population (the inflection point) is exceeded.

The new threshold (8 larvae/m<sup>2</sup>) is based on the maximum number of larvae that can be tolerated before there is an economic reduction in yield. The closeness of the threshold and the inflection point is a measure of the severity of the yield losses that can occur once this critical population is exceeded.

Previous thresholds were based on the maximum defoliation (33% and widely cited in the scientific literature) that can be tolerated without reducing soybean yield. In John Rogers' trials, Helicoverpa populations equivalent to the new threshold (8/m<sup>2</sup>) inflicted significantly less than 33% defoliation. Note that the threshold may be influenced by crop size, with fewer larvae tolerable in very early or very small crops, and more larvae acceptable in larger more vigorous late-vegetative crops.

The reason yield loss occurs below 33% defoliation is because of Helicoverpa's feeding behaviour - they are not called budworms for nothing. As well as feeding on leaves, they also feed on the soybean plant's vegetative terminals and auxiliary buds, the latter which are the precursors to floral buds.

Previous vegetative thresholds allowed for vegetative terminal loss (tipping) with 25% terminal loss the cited critical level above which action was required. The new thresholds are below the old terminal-loss guidelines as populations of 8 larvae/m<sup>2</sup> destroyed fewer than 25% of terminals in John Rogers' trials.

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**The Beat Sheet in action**

The beat sheet is a useful tool for gaining information about the insects in your crop (same goes for this blog!)

**Topics**

- Admiral (2)
- aphids (2)
- armyworm (1)
- barley (1)
- blue oat mite (1)
- brown mirid (1)
- bunchy top (1)
- Chickpeas (4)
- compensation (1)
- Cotton (7)
- cotton crc (1)
- crop mirid (1)
- cut out (1)
- cutworms (1)
- diapause (1)
- diapause tool (1)
- economic thresholds (1)
- fleabane (1)
- General (1)
- green mirid (1)
- greenhouse whitefly (1)

### Benefits of a blog for publishers and audience

The use of the Beat Sheet blog as a communication tool provides many benefits for both creators and audience. These benefits include; timeliness, ease of use, control over content and feedback, accessibility and a means of storing information.

#### Timeliness

The major benefit of using the Beat Sheet blog as a communication tool is the quick turn around time between issues emerging and information being available. Pest problems can arise quickly and notification of such issues requires rapid dissemination of information. The blog also serves as a quick reminder of potential problems for example early season pests or highlight variations in pest complexes that may be crop or climate driven.

Timeliness in client access to the information is facilitated by the electronic mail of a direct link to new postings as they are published. Without this link to the blog, many clients would be unaware of important pest information.

### ***Ease of use***

The blog format is easy for the publishers to use, making posting of information a quick and simple process; particularly important during periods of peak research and extension demands. Once an article is written, the text and pictures can be imported into the blog format and published immediately. The Beat Sheet blog regularly uses colour images to assist with identification of pests and the damage they cause. Links to other website or information sources are also added where needed. Blog postings can also be quickly updated when more information becomes available, or when feedback indicates that clarification of content is required.

Ease of use also extends to the user. When accessing the blog, the user will automatically come to the most recent page. Previous postings can be accessed via topics or dates of publications. Comments and questions can be left by clicking onto the 'post a comment' section at the end of the blog article.

### ***Control***

The blog has an interactive facility which allows readers to communicate with the bloggers and the wider audience. Interaction can be in the form of comments, questions or sharing pest management experiences.

Comments are not posted automatically to the blog. Instead, feedback goes to the blogging team first. Comments can then be screened and moderated, if needed, to avoid inappropriate or unrelated comments on the blog. All blog content including user feedback relates only to pest management. The blogging team aims to address all comments and questions quickly (within 24 hours) as many of these require timely responses. All the comments and responses posted on the blog can be viewed by users of the blog.

Despite availability and ease of use, the interactive facility on the Beat Sheet blog is not used very often. Instead, responses are more likely by phone. If follow-up questions or comments, made by phone, are worthwhile reporting, the bloggers will add these to that particular blog.

Most of the comments sent to the blog concern feedback about the blog as a medium rather than about pest issues. One example of such a comment provided after the first blog was posted, sums up audience sentiment about this form of communication.

'A lot more exciting than a pdf newsletter. It's like studying a live insect in an insectary compared to a preserved museum specimen'.

### ***Accessibility***

The blog is a website and can be accessed from anywhere in the world. However, the Beat Sheet blog was set up with a target audience in mind. This audience consists of Australian producers, consultants and researchers involved in field crop production in northern New South Wales and Queensland. Many of these people were subscribers to the Beat Sheet newsletter and they now receive the blog via an email notification. Since the inception of the blog, this email list has grown and it currently contains around 250 subscribers.

Every time a blog is posted, the blog link is sent to all subscribers on the email list. This link to the blog is also regularly forwarded by agribusiness subscribers to other consultants in the agribusiness sector. This sector, which makes up a large part of the target audience, has a large turnover of advisors that are often inexperienced in pest management issues. Statistics show that nearly 50 per cent of all users access the blog via referral sites such as GRDC or find the blog through search engines.

While current distribution focuses on email notification, future changes in the form of automatic subscriptions and RSS (Really Simple Syndication) feeds are being considered.

### ***Repository of information***

All blog postings are archived on a monthly basis and the information contained in the blogs can be retained for future use. This is important since a number of entomologists are approaching retirement and the knowledge they have needs to be captured. While the blog is one means of capturing information, the entomology team also started an integrated pest management (IPM) website. This too serves as a repository of information with topics such as A-Z list of pests, A-Z list of natural enemies and crop specific pests.

The website provides links to the blog and vice versa. As two sources of information, the website and blog work well together. The website provides concise information about pest management. The blog can be used as a medium to expand on this information, discuss applications and adapt information to specific situations.

**Blogging in a state government web environment**

The Beat Sheet blog uses a blog site that is external to the Queensland state governments department of Primary Industries and Fisheries website and this caused some initial problems. As with many other state government agencies, publications need to be checked and approved before they are circulated to the public. The Beat Sheet blog was side stepping these checkpoints and content was distributed directly to the world.

Despite some strong opposition to this form of communication from the information technology section within the organization the blog was allowed to operate. Management acknowledged the benefits of the blog but it remained subject to an annual review process. The grains and cotton industry voiced strong support and enthusiasm for the blog. Two years after the first blog appeared, the Beat Sheet blog has now been formally recognized by the Queensland Minister for Primary Industries and Fisheries.

**Evaluation**

The Beat Sheet blog uses a Google blog site. The advantage of using this site is that it allows you to use Google Analytics, a program that provides statistical data about blog usage. Statistics are presented as a quick overview of site usage but more detailed information can also be obtained.

Of specific interest to the bloggers are the number of visitors, visitor loyalty, the number of pages viewed per visit and the top content pages. Where the visitors come from can also be determined to some extent. Larger companies such as Elders have their own networks and this allows us to see the amount of traffic coming from this particular site.

Between July 2007 and June 2009, 42 blog postings were made. During this time the blog received more than 6,500 visits with around 60% of these return visitors. Most visitors viewed more than 1 page per visit. Visitors who accessed the blog directly (those receiving email notification and link) made up 52% of total visitors (Figure 1). The remainder accessed the blog via search engines (26%) or referring sites (22%). Some 22% of readers still use dial up connections to access the blog.

**Figure 1. An example of how statistics about the Beat Sheet blog are presented for the period of June 2008 – June 2009\*.**

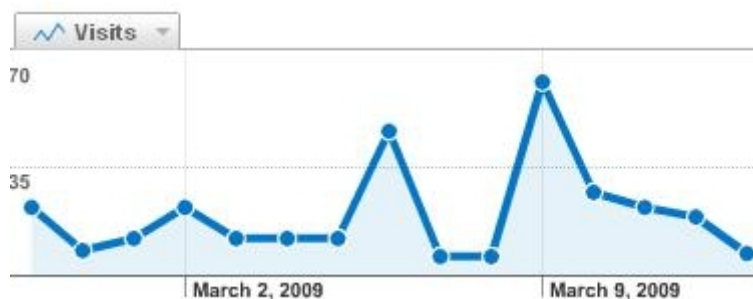


Source: Google Analytics 2009

\* The table and graph show how users accessed the blog. Direct traffic refers to those users who have knowledge of the URL or who went sent a direct link to the blog site via email.

While such statistics are all very interesting, they only provide us with quantitative data about usage. Questions of relevance and meeting client needs adequately can only be extrapolated from the quantitative statistics. For example, we note significant spikes (increases) in access to the blog soon after email notifications about a new blog are sent out (Figure 2). This indicates that those receiving the notification are quickly accessing the information – implying the information is relevant and potentially useful. Qualitative data is critical to providing insight into where we might take future communication with the industry. To date, no formal qualitative evaluation has been undertaken.

**Figure 2. An example of how statistics about the Beat Sheet blog are presented. Email notifications about a new posting were sent out on the 6<sup>th</sup> of March\*.**



Source: Google Analytics 2009

\* The spikes in the graph show user response to notification of a new blog posting.

### Future of communication

With the accessibility of the blog, entomologists are now able to refer relevant enquiries directly to the blog for detailed technical information, saving considerable time in responding to enquiries. However, the blog is not a substitute for personal and phone contact. Such contact must be maintained to ensure the reputation and relevance of the blog.

One of the challenges we face with the blog is the annual cycling of information. Currently we aim to adequately cover current situations and limit the repeat of basic information by referring to archived pages. As the archived list grows, it may become harder to find relevant information. Integration of the IPM website and the blog is increasingly important. In the future, the website may be the archive of comprehensive management information, and the blog address seasonal aspects of pest outbreaks and management.

The field crops entomology team is now predominantly using electronic means of communication and information. It is therefore important that we support our clients in using our web-based sources of information.

Discussion of how to access this on-line information must be incorporated into face-to-face extension activities such as IPM courses and grower/adviser meetings.

It is important that our information transfer does not remain static and that we continue to look at new technologies that can be used to better deliver our message. Currently under investigation is the use of video in training courses and on the IPM website. For example, video links can provide more information about pest identification as well as demonstrate monitoring and management techniques.

Other considerations concerning the blog involve broadening the content to the blog. Other crop protection teams, including the plant pathologists and weeds scientists are keen to use the blog to communicate with growers and advisers. This could mean more regular postings that all revolve around crop protection – a constantly updated site that is a one-stop for growers and consultants seeking the latest information on pest outbreaks and management advice. Limited advisor feedback shows strong support for a single internet site that contains all crop protection information.

The Beat Sheet blog is available from URL: <http://www.thebeatsheet-ipmnews.blogspot.com> [Accessed 26 June 2009]

The IPM website is available from URL: [http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26\\_3510\\_ENA\\_HTML.htm](http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26_3510_ENA_HTML.htm) [Accessed 26 June 2009]

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