

AgPest

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Summary AgPest (www.agpest.co.nz) is a website that was conceived and designed by AgResearch weed scientists and entomologists in collaboration with farmers and farm consultants. The website provides a decision support system, with relevant, up-to-date and independent information for endusers on the identification and control of pasture weeds and pests in New Zealand. There are currently 101 pages on AgPest, comprising 33 pest and 68 weed pages, with information on the biology, control and management for each weed and pest, and pictures that assist in their identification. A tool, based on descriptions of plant characteristics, insect pest characteristics and insect pest damage, enables the weeds and insect pests on AgPest to be identified. Additionally, a free subscription service disseminates region-specific email and text alerts on weed and pest threats that reduce the need for ‘fire-fighting’ decisions and enable pre-emptive action to minimise weed and pest damage. In this paper we summarise why and how AgPest was developed, highlight issues encountered when developing AgPest, and outline plans for its future.

WHY WAS AGPEST DEVELOPED?

Weeds and insect pests severely limit pasture and live-stock production on New Zealand farms (Bourdot *et al.* 2007, Zydenbos *et al.* 2011) and information on their control is often fragmented and difficult for farmers to access. Fact sheets on weed and pest management are available but they become out of date, or lost. In addition, while there is significant knowledge on the control of key pasture weeds and pests within AgResearch, the Crown Research Institute with a mandate to improve productivity of New Zealand’s pastoral sector, there was concern that valuable scientific knowledge would be lost as key scientists retired.

These issues provided a catalyst for scientists, farmers and farm consultants to collaborate and apply for funding to develop a website for the benefit of the pastoral industry that provided independent information on the control of pasture insect pests and weeds. The hosting group for the application and a driver of the project was the Otago Beef+LambNZ Monitor Farm Group, which was concerned about this industry-critical issue.

HOW WAS AGPEST DEVELOPED?

Government and industry funding was granted to build a pilot website over two years. The steering group, comprising farmers, scientists and rural professionals from throughout New Zealand determined the scope of the site. There was unanimous agreement that the website should:

- provide independent and farmer-friendly information on the biology, control, impact and identification of pasture weeds and pests,
- provide information that assisted farmers and consultants in making pre-emptive pest management decisions, leading to better control and increased pasture productivity,
- enable pest and weed control solutions to be more readily available to farmers and industry professionals, and
- be a supplementary, easily accessible source of information for farmers to use alongside other existing sources (such as consultants and rural retailer employees).

Based on these aims, a pilot website was developed, which contained a small number of weeds and pests. The steering group, and in particular the farmers, tested the pilot website and provided feedback on its ease of use. The site was fine-tuned to ensure it was farmer-friendly when it went live. The website, now known as ‘AgPest’ (www.agpest.co.nz), contained six major weeds and pests when it was launched at the National Agricultural Field Days at Mystery Creek, Hamilton, in the North Island of New Zealand in June 2011. The Field Days provided an excellent setting for its launch, as thousands of farmers from throughout New Zealand attend these field days each year. Feedback was positive.

Additional funding was granted, and this allowed the addition of 20 weed and pest species over a further three years. Species were chosen in consultation with key farming, industry and research personnel. The information provided in the pages was based on peer-reviewed scientific literature and contextualised for regional conditions by the AgResearch weed scientists and entomologists. The pages were written and reviewed by scientists. An alert function, available by free subscription, was developed. This enabled

farmers to receive free region-specific emails or text alerts about outbreaks or potential outbreaks of insect pests and to a lesser extent weeds, along with recommendations for their management. This service has been used by the New Zealand government to alert farmers and rural professionals about black grass (*Alopecurus myosuroides*) and velvet leaf (*Abutilon theophrasti*), which have been recent biosecurity incursions. In addition, social media such as Twitter and Facebook have been launched, posting information about weeds and pests.

A search function was developed and expanded with each new weed and pest page, enabling users to search AgPest by the weed or pest name or easily identifiable plant and insect characteristics. Once the weed or pest is identified, links enable the user to access the information on its biology, impact and management. The series of pictures of each weed and pest assist in its accurate identification.

The website is interactive and allows users to text, email, or use the direct web enquiry tool to ask for information on identification and control of pasture weeds and pests.

ISSUES ENCOUNTERED

A number of issues were encountered while developing AgPest. The major issues and solutions developed are discussed below.

Choice of the hosting platform A difficulty faced by all websites is ensuring their maintenance and longevity. Originally, AgPest was hosted by an industry body. To ensure that the website could be easily upgraded and that changes could be easily made, the website was transferred to a domain under the jurisdiction of AgResearch. This has allowed scientists to rapidly update the site and has harnessed the skills of personnel in the AgResearch Communications Team. These personnel are critical for ensuring that enduser's queries are rapidly directed to the relevant weed scientists and entomologists who can answer the queries.

Intellectual property To overcome intellectual property issues, trademarking was necessary. This ensured that the name 'AgPest' was not accessible to another company which could potentially stop us from using the 'AgPest' brand.

Commercial sensitivities AgPest provides information on novel endophytes of perennial ryegrass, which differ in the protection that they confer against insect attack (Anon. 2012). As there are commercial sensitivities regarding the ownership of particular endophytes and the protection that endophytes provide,

industry-agreed on protection levels are used in any AgPest endophyte communications.

Another commercially sensitive issue pertains to chemical control options. Given that tradenames can frequently change, AgPest provides information on the generic active ingredient rather than the tradename. The enduser can then take this information to their agchem technical representative and rural retailer who can suggest the appropriate commercial product.

Fielding questions Some of the queries received regarding weeds and pests are outside the scope of AgPest, which is focused on serving the New Zealand pastoral industry. There are a growing number of questions being referred via AgPest and so if the question does not relate to agricultural weeds and pests the enquirer is directed elsewhere, such as to the National Herbarium. It is also important to determine the country of origin of the query to prevent scientists' time being spent on answering questions from other countries with no relevance to the New Zealand pastoral sector.

Funding There has been strong industry and local council support for AgPest, which has been critical for its success. From its inception, the sheep and beef industry, represented by Beef+LambNZ, have been strong advocates of AgPest. Beef+LambNZ have also had a critical role in disseminating text alerts, email alerts and tweets. Industry collaboration is imperative for AgPest maintenance and future development.

The role of advertising to provide funding for AgPest has been discussed at length by the steering group, in response to requests from agri-chemical companies for advertising space. The steering group have taken the approach of no advertising, to maintain the independence of the site and the information presented. We believe this is to the advantage of the whole pastoral industry.

Continued promotion There can be a large turnover in industry technical staff, including beef, sheep and dairy industry agronomists, who are key users of AgPest and who inform farmers of how to use AgPest. Therefore continual promotion of AgPest is needed to inform industry professionals and farmers of its presence and of new weeds and pests that have been added. Promotion has included speaking about AgPest at field days and rural professional training days, and featuring AgPest in articles disseminated via rural media.

AgPest is now recognised across the New Zealand pastoral sector as the premiere online weed and pest information source for New Zealand farmers. This is

demonstrated by AgPest being cited as an authoritative information source by major New Zealand seed companies and rural retailers, being used by the Ministry of Primary Industries for alerting farmers to biosecurity threats, and promotion by key industry bodies, such as Beef+LambNZ and the Pasture Improvement Leadership Group.

FUTURE DEVELOPMENT

While the most damaging pasture insect pests are now on AgPest, we aim to add five new weeds to AgPest each year over the next five years. Updating of the site will be on-going, given changes in chemical registrations for weed and pest control, changes in weed and pest prevalence and the sporadic nature of weed and pest outbreaks, new biosecurity incursions (from outside and inside New Zealand) and the development of new weed and pest management strategies.

Further work is required to simplify the identification key. As part of this initiative, more photos have recently been added to assist endusers in accurately identifying weeds and pests. A mobile app. is being discussed, which will enable farmers to use AgPest when out on the farm. This will assist in weed and pest identification and pre-emptive action to achieve more rapid control, reducing the impact of weeds and pests.

From its inception eight years ago, AgPest has grown to comprise information on over 100 weeds and pests and is successfully serving the pastoral sector.

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