PROFESSIONAL PEST MANAGER

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EDITOR'S WORD

FIONA FRASER



Summer is well and truly here, with recent bushfires attesting to the incredibly hot, dry conditions being experienced across the country. Whilst both rain and heat are the ingredients for a bumper pest season, the hot, dry heat will drive cockroaches and ants indoors looking for moisture, and of course flies are always part of the summer scene.

In termite news, Australia has seen the first report of structural infestation by the western drywood termite in a residential property in Sydney. A collaborative effort quashed the infestation but it highlights the need for us all to remain vigilant and knowledgeable about invasive species.

On the subject of invasive species, our Ants insight segment examines the status of invasive ants. **Jay Turner** provides some tips on how to get the best from your ant treatments and we share the latest research on ant behaviour.

In the first of a two-part article on product testing, we first look at how manufacturers test their products. What testing do they need to in order to register a product and make a performance claim? Our second, in the next issue, will give some tips as to how pest managers can evaluate product performance.

Flying insects are the blight on outdoor pursuits. In this issue we have a closer look at the annoying: flies, and the dangerous: wasps. Our Flies & Wasps insight segment takes a look at *Vespula germanica*, and there's also the launch of a new natural, drain-clearing product from Ensystex.

With potential hazards on every job, it goes without saying that safety is paramount in the pest management industry. In our Workplace Health & Safety insight segment we take a look at insurance, and for those who undertake bird management work, or who are considering expanding into the area, there's some incredibly useful information on how to keep safe when working at height.

At *Professional Pest Manager*, we care about what you think. Our recent survey invited readers to give us their thoughts on the magazine and we share the results here.

We hope you enjoy this latest issue. From all of us at *Professional Pest Manager* magazine, we wish you a safe and enjoyable holiday season and all the best for the new year ahead.

Fiona Fraser

NEWS

RIFA FOUND IN WA

An incursion of red imported fire ant (RIFA) has been detected at Fremantle port – the first time this invasive ant has been detected in Western Australia.

Six nests were found in mid-November and were destroyed by the Department of Primary Industries and Regional Development. Efforts are now focused on surveying the port and surrounding areas for any additional nests. Pest managers who spot potential fire ant nests should leave the nest undisturbed and contact the department.

RIFA is considered one of the most serious and invasive ant pests due to its painful bite and ability to rapidly colonise areas, making it a serious threat to people, agricultural native flora and fauna, and recreational activities.

Genetic analysis has confirmed that this is a new incursion and is not connected with the large incursion in southeast Queensland. The source of the incursion has not be determined.

SHERWOOD CHEMICALS OPENS ITS DOORS

Following on from its successful factory open day in 2018, Sherwood Chemicals is opening the doors of its manufacturing facility in Thailand once more. In July 2020, Sherwood Chemicals will run a full day visit and a tour of its formulation facility in Bangkok.

"This is a great opportunity for pest managers to see how a quality, specialist formulation company develops and manufactures pest control products," said **Elton Ardene**, ANZ business manager. "Previously, attendees have appreciated actually seeing research and development in action, rather than just hearing about it in supplier presentations."

This year's factory visit will be expanded to include other pest managers from across Asia and a half day conference with guest speakers to provide additional learning experiences.

The event will take place on July 9, 2020. Pest managers interested in attending should contact Sherwood Chemicals for more information. Booking your spot early is recommended as places will be limited due to transport.



Sherwood's 2018 Bangkok factory tour was a great success

PEST CONTROL IN EUROPE – DRIVING PROFESSIONALISM

With the current Australian Government review of pest control industry training underway, CEPA, the European pest management services trade association, has announced an initiative to professionalise the industry across Europe.

CEPA represents businesses in 23 European countries in a challenging regulatory environment. As reported in its industry publication *The GoodPest Manager*, "there are still many countries where the provision of pest management services is entirely unregulated and unsupervised with no market entry requirements or operational standards" yet the European Union Biocides Directive is driving towards an agricultural and pest control market that minimises pesticide use.

With this in mind, CEPA aims to encourage companies to operate using an IPM (integrated pest management) approach – prevention and non-chemical management techniques as a first approach, with chemical use as a last resort. "CEPA now wants to encourage users of pest management services to work exclusively with pest management firms that abide by an integrated pest management approach, on the basis that such operators are better qualified and more sustainable."

This initiative takes the form of a Memorandum of Understanding between CEPA and the member pest associations and the European and national associations that represent the sectors that use pest management services.

The main premise of the Memorandum is that CEPA will promise that its members, who obtain CEPA certification to confirm they meet the IPM standards set down by the European Standard EN 16636, will deliver high standards of professionalism. In return the partner association members will encourage their members to only use pest management companies with this CEPA certification.

CEPA believes this is a key initiative to drive professionalism, and meet the changing customer expectations and challenges of a more restrictive regulatory environment. For those 'certified pest professionals', it should be good for business too!

READERS' SURVEY 2019

Since our last survey, we've implemented a number of changes at *Professional Pest Manager* magazine. The website has undergone a major upgrade, which includes the searchable library of nearly 1000 articles, and paid subscribers can now access all magazine issues back to 2015. We also launched the *Professional Pest Manager* Pest E-News.

It's always important to get feedback and review performance and *Professional Pest Manager* magazine is no different. We've just completed our 2019 Reader Survey, so what did we learn?

Overall rating

Well the good news is that we received an overall rating of 4.25 out of 5, marginally up on last year, with nearly 89% of respondents giving a rating of very good or excellent. There were a couple of readers who rated the magazine as 'needing improvement' and one rating it as 'poor'. These readers gave some useful feedback, and hopefully the content in this article will address some of their questions and concerns.

Favourite segments

Readers were asked to indicate which magazine segments they liked (they could like more than one segment). The results were almost identical to last year – the most liked segment was the product news, followed closely by the termites segment, general news and the feature segments.

This year saw the launch of a lawn care segment in the magazine – identified as a potential growth opportunity for pest managers. Although 30% of readers weren't interested in lawn care, some 60% of readers found it somewhat or very interesting and useful. This may not remain as a segment in every issue in 2020, but *Professional Pest Manager* magazine will continue to provide information on lawn care to support those businesses wishing to expand into this area.

Respondents also provided some good ideas on new segments and content and we will be implementing some of these as we progress through 2020.

Printed magazine or online?

Magazine readers continue to show a strong preference for reading the printed magazine, across all age groups, with nearly 70% of respondents indicating they only read the printed version. This mirrors global trends where specialist printed magazines continue to perform well as readers find it easier and more engaging to read a printed magazine. Of course online versions of the magazine are great when you're on the road and the website's online library and search function allows readers to find individual articles back to 2015.

Readers continue to spend over two hours reading the magazine, with 85% keeping back issues of the magazine and three quarters of readers revisiting back issues sometimes, often or all the time. These are all good indicators that overall our readers find the content interesting and show the magazine is appreciated as a valued reference material.

How does the magazine work?

Professional Pest Manager magazine is an independently owned publication and relies on advertiser support and subscriptions.

Although Product & Services News is the most popular segment (with 73% of respondents identifying this as one of the segments of most interest), there were a couple of comments suggesting there were too many adverts and that the articles were too biased. Hopefully by understanding that it is only through the generous support of our advertisers that we can produce the magazine, those who have raised this concern will appreciate that the inclusion of advertising is necessary.

In terms of bias in the articles, supplier editorials will obviously focus on their products, but our editorial process ensures that all performance claims are supported. In terms of the number of articles from the various suppliers, we welcome all advertising and supporting editorial content. So if you want to see more from a particular supplier, just let them know.

Importantly, the magazine has a target to include at least 50% non-commercial material, to educate our readers on all aspects of pest control. In this regard your subscription fees help us meet this goal. So a big thank to our paid subscribers. We exist to provide information to the industry and your feedback is vital to make sure we provide the information and services you require – we want to be 'Your Pest Control Knowledge Centre'.

The future

In 2020 *Professional Pest Manager* will expand its offerings to help technicians on the road and to help owners grow their businesses. We can't really spill the beans just yet, but we think they're pretty exciting developments. We've listened to your feedback, so we think you'll like what's coming. Thanks again for your continued support.

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TERMITES

FIRST AUSTRALIAN REPORT OF STRUCTURAL INFESTATION BY THE WESTERN DRYWOOD TERMITE

Martin Horwood, *Senior Plant Biosecurity Officer, Greater Sydney Local Land Services*

Termite professionals will be aware of drywood termites, although most will not have seen them in the field. However, pest managers need to be on the lookout for drywood termites as their behaviour means traditional termite prevention techniques do not work. Drywood termites directly colonise the wood on which they feed – they do not access buildings through the soil – so traditional soil treatments for subterranean termites will do nothing to prevent an infestation of drywood termites.

Although native drywood termite species are of minimal economic importance, invasive species are a different matter. The West Indian drywood termite, *Cryptotermes brevis*, is one of the world's most destructive termite species. It has been present in Australia for decades and is frequently detected in many locations along the east coast, with Queensland subjected to the highest rates of infestation.

Mid-way through 2019 another species of invasive drywood termite was detected in structural roof framing of a home at Kingsgrove in suburban Sydney. The species, *Incisitermes minor* or western drywood termite, is a common structure-infesting drywood termite in the southwestern United States and northwestern Mexico. The termite has spread across the USA as far as Florida and internationally to Canada, China and Japan largely due to the commercial transportation of wood products. Even though western drywood termite has previously been detected in Sydney in a range of portable timber items including furniture, crates and pallets, the Kingsgrove detection was the first infestation found in structural timber in Australia.

The homeowner raised the alarm after discovering frass pellets (faecal matter) on her bedroom windowsill. These had emerged from a hole in the upper panel of the window frame (Figure 1). Flick-Anticimex was contacted to investigate the cause of the timber damage. The subsequent inspection by **Shannon Vicary** and **Paul Georgiadis**, field supervisors from the Homebush branch, discovered large masses of termite frass and termite alate wings in the roof cavity (Figure 2). Realising the magnitude of the potential threat posed by invasive drywood termites, Flick-Anticimex contacted NSW Government biosecurity authorities. A Greater Sydney Local Land Services (GSLLS) plant biosecurity officer visited the home to look for soldier specimens needed for morphological species identification.

With the assistance of Flick-Anticimex, several soldiers were collected and taken to a laboratory where they were identified as *Incisitermes minor* (Figure 3A). The soldiers of western drywood termite and West Indian drywood termite are highly dissimilar. Western drywood termite soldiers have protruding dark mandibles and long, smooth heads with parallel sides and a cone-shaped third basal antennal segment (Figure 3A). West Indian drywood termite soldier mandibles are short and bowed. The head is rough, has frontal lobes and is constricted behind the lobes (Figure 3C).

The source of the infestation was likely to have been timber imported from the USA. The homeowner indicated that while the house was over 50 years old, the rear part was constructed 20 years ago. It was in the roof of this section where evidence of termites and damaged timber were most common (Figure 4). Also, whereas the original structural timbers were hardwood, the newer portion was mostly comprised of softwoods including radiata pine and oregon.

The western drywood termite is a significant pest in the USA, with an estimated annual economic cost of US$250 million. A variety of treatments are available for eradicating drywood termite infestations, including fumigation (methyl bromide or sulfuryl fluoride), thermal treatment (heat or cold), electrocution and chemical treatment. Fumigation is considered to be the only 'whole-structure treatment' because of its ability to achieve synchronized and widespread eradication in all wooden members and difficult to access infestations. Given the economic risks, this approach has been the only control option used in Australia for buildings infested by drywood termites to date.

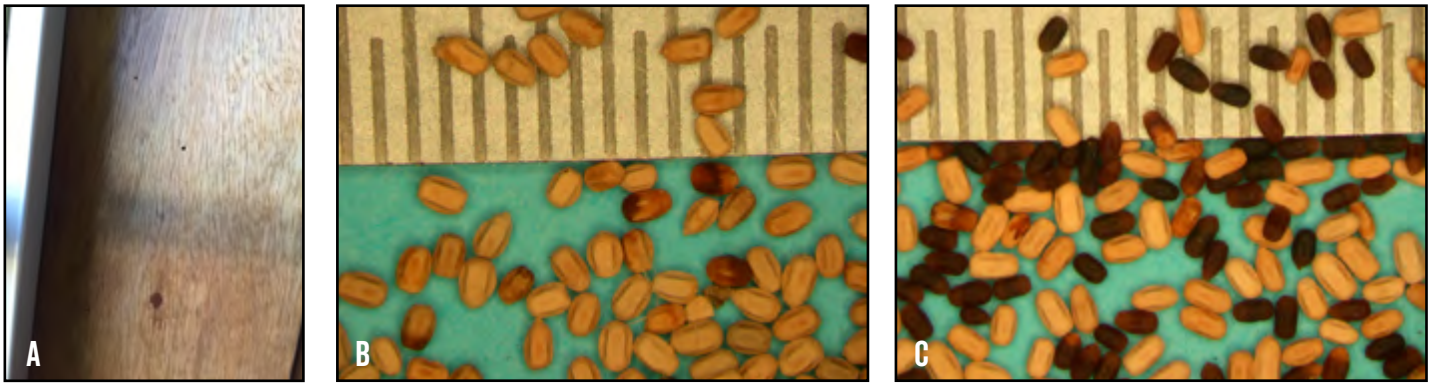


Figure 1: A) Holes in household timber panel infested with western drywood termite. While all termites leave intact an external layer of timber on which they are feeding, drywood termites produce holes in various locations from which they expel frass pellets. B) Western drywood termite frass (divisions on ruler 0.5 mm). C) West Indian drywood termite frass



Figure 2: Western drywood termite frass pellets accumulated in the roof of the Kingsgrove house. The cone-shaped pile of frass is characteristic of drywood termites



Figure 4: Western drywood termite damage to timber. Undamaged superficial timber was removed to search for termite soldiers upon which to base the species identification

Fumigation with sulfuryl fluoride was the chosen treatment method for the Kingsgrove house. This was undertaken by Rentokil. Household fumigation involved removing certain items such as pets, plants and food, installing fumigant emission pipes and detectors, surrounding the house with a gas-tight layer of plastic sheets or 'tenting', pumping gas inside and maintaining concentrations at efficacious levels for a sufficient period of time. Once the gas was released and the 'tent' removed, the house was aerated and monitored to ensure it was safe to be reoccupied.

Post-fumigation inspections of the roof were conducted by GSLLS and Rentokil. Results were positive, with dead termite workers and alates being found in several locations. As a further measure of treatment efficacy, frass pellets and alate wings were removed by vacuuming. The reappearance of these items in subsequent inspections may be an indication of ongoing infestation and the need for retreatment.

Further measures as part of ongoing surveillance included the inspection of the roof spaces of adjoining properties and the deployment of sticky traps near lights to detect any termite alates. Thus far nothing has been found. A letter box drop saw an information pamphlet being delivered to local residents apprising them of the risks posed by western drywood termites, informing them of what to look out for and who to notify in the event of suspected detection.

A consequence of the massive increase in imports from overseas, the western drywood termite remains a constant threat and will inevitably be an ongoing cause for concern. Biosecurity is everyone's responsibility and it is essential businesses and the general public remain alert and report any suspected sightings of this insect, especially in high risk circumstances such as when timber items are imported from overseas.

Pest managers who think they may have seen a western drywood termite should contact the Exotic Plant Pest Hotline on 1800 084 881.



Figure 3: A) Western drywood termite soldiers (with mandibles), psuedergates (aka workers; white) and an alate (with wings). For comparison, B) West Indian drywood termite profile. C) West Indian drywood termite head

BUSINESS MANAGEMENT

RUNNING YOUR BUSINESS AS IF YOU COULD SELL IT TOMORROW: PART 1

Andrew Usher, *Director, Catand Advisory*

What if you were approached by someone saying, "I will pay you top dollar for your business, providing you can demonstrate the true value of your business." Could you pull that information together easily?

Somewhere along the line we all think about retirement or selling our businesses (for the right price). All businesses should be run as though someone could walk in at any time and be presented with the facts about the true value of the business.

What then does 'true value' mean to an acquirer? This doesn't just mean the figures relating to finances and underlying profit but also the value in how the business operates, including IT systems, procedure manuals, training material, people and culture. There's also the question of whether this value will hold once you have exited the business.

Here in part one of this article we will look at the financial aspects.

Accounting records

Are your accounting records in good order? A typical small-to-medium enterprise (SME) will run in a very tax-effective accounting manner whereby personal expenses such as running a vehicle and trips away may be run through the business.

There are instances where the books are meticulously kept, however even these pest management businesses may not have set up their books in a manner whereby they can be benchmarked against other pest businesses or industry averages (more on this below).

In this regard, taking simple steps to ensure certain costs are compartmentalised provides a prospective acquirer with a very clear understanding of these costs, which they can then benchmark against their own business or others in the industry. Figure 1 is a simple overview of how the finances should be structured. Looking at your books, would an acquirer be able to follow the financial flow from sales and revenue through to profit? The answer should of course be yes.

Sales/Revenue	Invoiced income excluding GST
Cost of Sales	Includes all costs to deliver the service: technician wages, chemical and equipment costs, technician vehicle costs
Gross Profit	(Sales less Cost of Sales)
Expenses	All other expenses, excluding personal costs
Operating Profit	(Gross Profit less Expenses)
Depreciation	Only on true business assets
Earnings Before Interest and Taxation (EBITA)	Interest is ignored because typically debt will not transfer to an acquirer Taxation is also ignored as each business has differing tax implications

Figure 1: Example financial structure

Three key areas of expenses to compartmentalise are payroll, personal costs and synergies.

Payroll

If we were to look at payroll, do you categorise the wages you pay according to role, such as technicians, administration, accounting, sales, management and directors/owners? Technicians are directly related to production, i.e. income generation and would be deemed a 'cost of sale' expense, so should be categorised separately. Wage cost as a percentage of revenue is an important indicator for an acquirer to determine how productive or efficient your business is and technicians are.

Excluding personal and one-off costs

Are personal or non-business costs clearly identified within your accounting system? There are many ways to clearly earmark these costs in modern accounting systems to enable an acquirer to easily identify and exclude them. For instance, in MYOB, an owner could use



the Jobs function to assign a job code to an expense item that is personal. This means that they could easily run a report based on that job code for all costs assigned to it. The same could be done for the write off of low value assets, which in a larger corporation would be a capital expense i.e. not a profit and loss expense.

Synergies

Costs that an acquirer may not need to bear going forward, and therefore disappear on acquisition are known as 'synergies'. It is one of the benefits of acquiring a business – you expect there to be synergies to make the combined or merged businesses more profitable. Identifying potential synergies such as accounting functions or director/owner wages are equally important to identify and compartmentalise, as this reveals the true underlying profit of the business.

Benchmarking

Do you benchmark your business against industry standards? The ATO provides benchmarks for pest control businesses. For a business with revenue over $400,000, the ATO outlines the following:

Benchmark Ratio	% of Revenue (excl GST)	Average % of Revenue (excl GST)
Cost of Sales/ Turnover	10-18%	Average: 14%
Labour/Turnover	26-38%	Average: 32%
Motor Vehicle Expenses/Turnover	4-6%	Average: 5%

Using the ATO's benchmarks, you would calculate that a typical pest control business with revenue in excess of $400k would have a gross profit of 49% on average. This gross profit is calculated by adding the average percentages of revenue (14% + 32% + 5%) and deducting that sum (51%) from 100%. From industry knowledge and experience, I would state that this is quite low and that the average should be between 53-55% or slightly higher.

When it comes to benchmarking, pest managers in the US have done it right. In 2015, the National Pest Management Association in the US ran a benchmarking exercise across nearly 9,000 pest management businesses to determine a number of averages across the pest industry including revenue growth, profitability and profit improvement, expenses as a percentage of revenue, the pests that are driving business growth, and employee costs as a percentage of revenue to name a few.

The sharing of this information across the US enables SME pest organisations to benchmark themselves and challenge or share key financial statistics for the betterment of the industry. It is my belief that the Australian pest industry would benefit from a similar exercise. Until this happens, Figure 2 provides some key industry averages to benchmark yourself against based on my own knowledge and experience.

Part two of this article, which will appear in the Feb/Mar issue, will look at people and culture, asking the question of whether your business could continue to be successful without you if it were sold tomorrow.

Organic Revenue Growth	~4% growth from new customers, price increases and increasing scope of services (*Ibisworld states that the industry is growing at 4.6% per annum*)
Gross Profit Percentage (Sales less Costs of sales)/Sales x 100	52% and above using the definition of Cost of Sales as provided in Figure 1
Earnings Before Interest and Taxation (EBITA)	20% and above using the definition of EBITA as provided in Figure 1 and typically excluding directors' fees
Revenue Per Technician Per Day	$1,000-$1,500 per day and above excluding GST (*calculated on a weekly or even monthly basis as you will have high and lower days*)

Figure 2: Industry benchmark averages



TAKING INSPIRATION FROM OUR US COUNTERPARTS

Attending conferences can provide opportunities for education, development, networking and a great deal of fun. After travelling to San Diego to attend the recent Pestworld conference, Marshall Blacklock of CDI Pest Management in Toowoomba, QLD, realised it could also present an opportunity to learn outside of the confines of the convention centre.

Mr Blacklock realised there would be a lot to be gained from chatting to an American pest manager, particularly a business owner, who could share insights and tips about the industry from an entirely new perspective. "I thought there would be great value in spending some time with a pest management business of a similar size to ours in the US," said Mr Blacklock. The question was, how to go about it?

Initially, Mr Blacklock approached **Eris Hess** of Agserv, who suggested that he speak to Bell Labs. Bell's Australian technical representative **Samuel Wood** made contact with his US colleague **Nick Branca** in Southern California and explained the situation. "Nick really went above and beyond. He asked a few questions about what sort of business was of interest to Marshall, and then knew exactly who to speak to," said Mr Wood.

Mr Branca set up a meeting with **Garrett Thrasher** of Thrasher Pest and Termite Control for the Monday before the conference started. It promised to be a valuable experience for Mr Blacklock and CDI operations manager **Jessica Prentice**. Not only did Bell Labs organise the meet-up, but Mr Branca also chauffeured Mr Blacklock and Ms Prentice to the meeting. "We really weren't expecting so much. Nick was an amazing host, including a tour through downtown San Diego. I told him that he's really set a high bar for his colleagues in Australia," commented Ms Prentice.

Spending time talking openly with a non-competitive business provided great insight for Mr Blacklock. He explained, "It was interesting to see the difference in how work was planned. For example, we book our jobs on a 12 monthly basis, arranging a particular day and time with the client, who is most often at home during the treatment. Whereas Thrasher Pest carry out a lot of routine pest services by just planning a route and then letting the client know they will be there that day. Pest services are often done on a monthly or quarterly service plan.



Marshall Blacklock and Jessica Prentice of CDI Pest Management, QLD, meeting with Garrett Thrasher of Thrasher Pest and Termite Control, San Diego, USA

"Productivity, team performance and sales planning and growth were very closely monitored by Thrasher Pest Control and we will look to adapt some of these practices for our own business. They also have similar issues with getting skilled staff, training and retaining them, as we do.

"The other standout observation was that termites were not a huge part of the business. Being located in California, a state that has strict environmental laws, pursuing other work with fewer restrictions was sometimes more profitable. This has prompted me to take another look at our business service sectors and see what is more or least profitable.

"Obviously, some of the challenges we face in Australia are different to those in the US, but overall it was a very positive experience. It allowed us to see some things that we could improve upon in our business, and also showed us that we're already doing some things really well. I'm so grateful to Bell Labs for arranging the meeting, and particularly to Garrett Thrasher for making the time and being so open to sharing with us."

Mr Wood commented, "I'm really happy that Bell Labs was able to facilitate such a valuable interaction for our customer. I can't thank Nick enough for his help, he really typified Bell Labs' approach to customer service."

Mr Branca said simply, "It was awesome. And now I have some new friends in Australia!"

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Phil Ridley, *Director, Bug Doctor Media*

So you want your website to have the number one position in the Google organic search results, for high traffic, commercially relevant keywords? Who doesn't? But no matter what the less scrupulous SEO agencies may promise, alas, there can be only one number one!

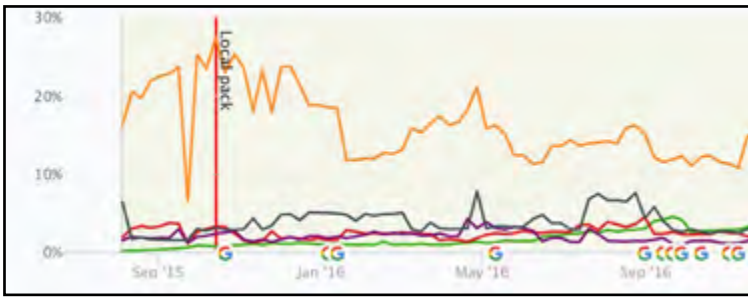
So what are your chances of reaching the number one position? In locations with a lot of competition, the answer is 'very small'. After all, it's a competition and there can be only one winner, but that doesn't mean you shouldn't try. So what should you, or your SEO agency, be doing to get you to the number one position... or at least on the first page?

Firstly, let's look at the website basics.

Your website setup is critical to success. Unless you have this basic foundation in place, you will always be facing an uphill battle. There are a whole host of big and small technical components that need to be correct, which will be missed by the majority of businesses that manage their own website. You should not assume that some of the off-the-shelf options (Wix, Squarespace, etc) will manage all this for you. They are quite good for the basics, but you still need to have expert knowledge to optimise them correctly.

One key aspect of website performance is load time. Around 75% of users will typically bounce as a page load time passes the three-second mark (source: dotcom-monitor.com). This means every second is critical, even moving from a one to two second load time will lose customers. With Google using 'mobile first' to rank websites and load time being a key factor, this is critical.

The age of your website is also a key factor in ranking. It is simply unrealistic to expect a new website with a new domain name to rank anytime soon for a highly competitive keyword. A new or upgraded website for an existing domain name, with existing pages, provides a better starting point.



Larger websites also tend to rank higher and better – larger sites tend to be older sites and therefore have more backlinks (important for ranking) and more content (as long as it's good content).

How authoritative is your website?

Your website's authority is a key ranking factor used by Google. Is it seen as an authoritative source of quality pest control information? One of the key measures Google uses to assess authority is the number and quality of the backlinks.

Ahref provides a free tool to assess your website's authority (ahrefs.com/website-authority-checker). Your website's domain authority provides a good indication as to how easily pages on the website will be ranked for targeted keywords. The domain authority number is driven by backlinks. The maximum score is 100, but the critical point is to understand how your website's domain authority compares to that of your competition. If your domain authority is 14 and your key competitors are over 50, you are simply going to struggle to gain a higher ranking.

Whilst we are talking about competition, it sounds obvious but the amount of competition has a big impact. For example for rural areas, where there may be only a couple of pest control businesses, you will end up on the first page of results almost by default. Whereas on the Gold Coast where there are over 300 pest control companies, even getting on the second page (which is still almost invisible to customers), is still an achievement.

So when the question is asked "How long will it take for my site to rank on the first page or at number one, for a particular keyword?" the answer will be, "It depends."



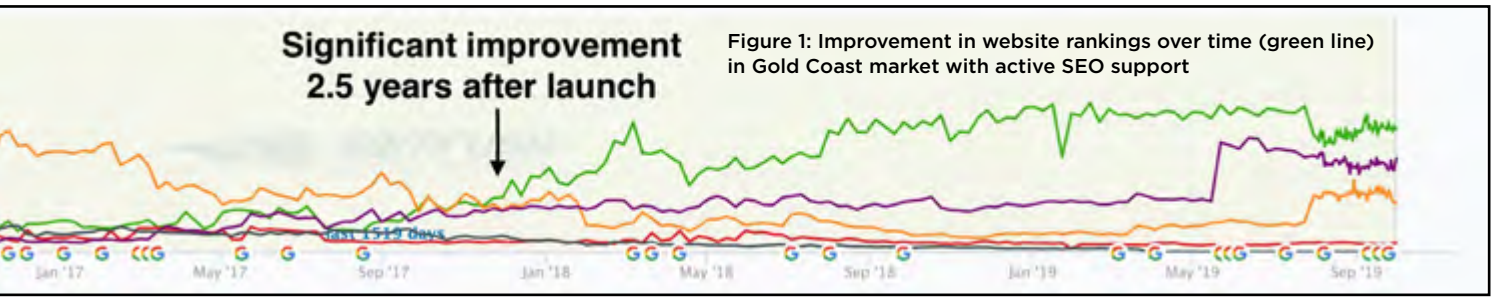


Figure 1: Improvement in website rankings over time (green line) in Gold Coast market with active SEO support

There is simply no way of knowing. However, investing in good SEO is a good medium to long term play.

And it often means you need to invest to get the results – good technical SEO, good content (regular updates) and active backlinking all takes time and skill. The more you invest (as long as it's with someone who knows what they're doing), the quicker you will hit your targets. However, it is still a competitive market – if a competitor is spending more on SEO and has a bigger, better, faster website, it's going to be difficult to out compete them. Furthermore, even if you are doing everything right, improvements can still take time.

Bug Doctor Media set up a new website, with a new domain name, for a new pest control company on the Gold Coast – a highly competitive pest control market! Launched back in August 2015, it wasn't until four months later that the first low competition keywords appeared on the first page and not until a full year after launch that these low competition keywords were ranked number one. But these weren't driving a lot of traffic. It took until two and a half years after launch for the site to gain numerous first page and number one ranking positions for high traffic keywords and become one of the leading websites on the Gold Coast (Figure 1).

The investment in the early years would not have delivered a significant return on investment. But as of today the value of the clicks alone (if they were paid for by Google ad clicks) is estimated at $2,600 per month; far more than the monthly SEO fees and of course that excludes the significant business that has been generated as a result.

So, SEO is not a short-term play, it's an investment. But if you get it right, you will get a significant return on your investment and it will drive your business success. However, while you wait for your rankings to improve, you will need to look at short-term advertising strategies to get the phone to ring.



IMPORTANT CHANGES TO PERSONAL/CARER'S LEAVE

Personal/carer's leave forms part of the National Employment Standards (NES) that applies to all employees covered by the national workplace relations system, regardless of any award, agreement or contract of employment.

A recent decision has clarified the way personal/carer's leave accrues and is taken under the Fair Work Act 2009. Even though the decision has been appealed and may consequently change in the future, if your business engages full-time or part-time employees, the current decision still stands and it means you will need to review how you accrue and pay personal/carer's leave.

What is personal/carer's leave?

There are two instances when an employee might take personal/carer's leave.

The first is when the employee is unfit for work because of their own personal illness or injury (including pregnancy-related illness). The second is when the employee needs to care for or support a member of their immediate family due to illness, injury or an unexpected emergency.

When paid personal/carer's leave is taken, the employee must be paid at their base rate of pay for the ordinary hours they would have worked during the period. For example, If they were due to work four ordinary hours, you pay four hours. If they were due to work 12 ordinary hours, you pay 12 hours.

In additional to paid leave entitlements, an employee is also entitled to two days of unpaid carer's leave for each occasion when a member of the employee's immediate family or household requires care or support because of a personal illness, injury, or an unexpected emergency. Casual employees also have the right to take this unpaid carer's leave, although they have no paid personal/carer's leave entitlement.

What are the changes?

Full-time and part-time employees are entitled to ten days of paid personal/carer's leave for each year of service. This leave is not prorated for part-time employees; they are entitled to the full ten days per year regardless of how many days or hours they work per week. Rather than being accrued and paid in hours, this leave must now be accrued and paid in days, or part days.

An employee who takes a full day of paid personal/carer's leave is entitled to be paid for all ordinary hours falling on that day and should have one day deducted from their balance.

Employees who are entitled to accrue a greater number of personal/carer's leave days, through an industrial instrument, contract or policy provision, will continue to receive this greater entitlement.

As a business owner, what do you need to do?

To begin with, update your HR/payroll system so that personal/carer's leave balances are shown in days and part days, not in hours.

From now onwards, ensure that both full-time and part-time employees accrue ten days of personal/carer's leave per year of service. The accrual rate is calculated as one day of personal/carer's leave for every 5.2 weeks of service.

When an employee takes paid personal/carer's leave, pay the employee for all ordinary hours they were rostered to work that day. For one day of paid personal/carer's leave taken, the employee should be deducted one day from their balance.

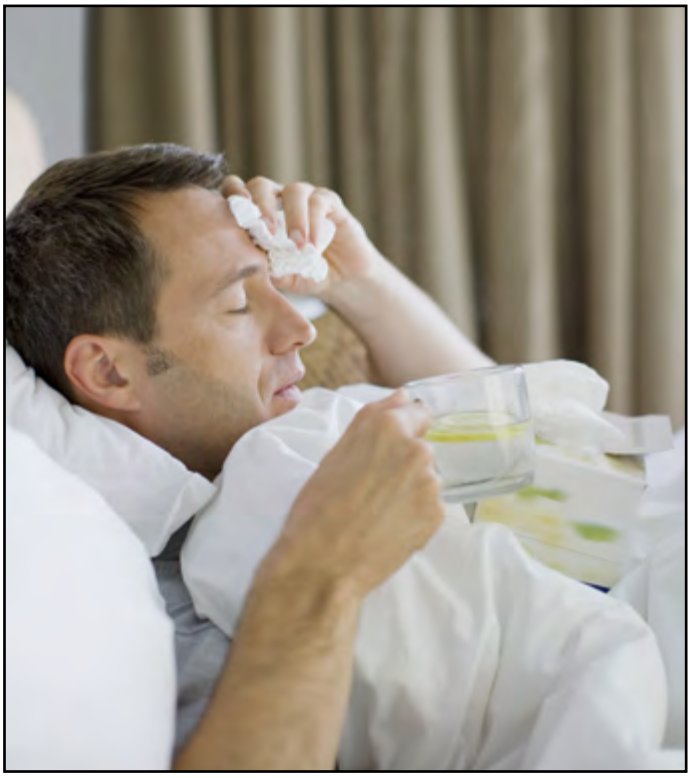
Points to note

Any unused personal/carer's leave in a year carries over into the next year. It can be 'cashed out' as long as the employee retains a balance of at least 15 days of untaken paid personal/carer's leave, provided certain conditions are met.

Unused personal/carer's leave is not paid on termination of employment, unless specified in an applicable industrial instrument, contract or policy.

These changes apply to employers and employees who are covered by the Fair Work Act 2009; it does not apply to state system employers.

Read the fact sheet about the changes to personal/carer's leave on the Fair Work Ombudsman website (fairwork.gov.au).



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LAWN CARE

CATERPILLARS, WORM OR GRUBS – WHAT'S EATING MY LAWN?

When it comes to insects that cause damage to lawns, they are often given the generic name 'lawn grubs'. To be honest it's probably not a bad generic name, in that they live in the lawn and invariably it is the larval stage – the grub – that causes the damage. But it doesn't really help in identifying the culprit and applying the correct treatment.

Broadly speaking there are two main types lawn grub: beetle larvae, which are the white curl grubs that live in the soil and feed on the root systems, and moth larvae, the caterpillars that live both below and above ground and eat the stems of the grass. Just to confuse things further these larvae or caterpillars are commonly called 'worms' – cutworms, webworms and armyworms.

The various 'beetle' pests, including African black beetle, Argentinian scarab, Billbug and Argentine stem weevil, can be challenging pests to control and have their own unique life cycle and treatment methods. However this article focuses on the moth caterpillars, which although vary in species, can all be dealt with using the same treatment technique.

Armyworms

Much of the literature on the internet focuses on the fall armyworm (*Spodoptera frugiperda*) as it is a significant problem in the US, sub-Saharan Africa and parts of Asia, but it has yet to be reported in Australia. In Australia, a number of armyworm species are found across the country, where they cause damage to cereals, pastures and turf. In the lawn situation, the most prevalent species are the common armyworm (*Leucania convecta*), the day-feeding armyworm (*Spodoptera exempta*) and the lawn armyworm (*Spodoptera mauritia*).

Although they have different life cycles – common armyworm, three generations a year including winter and spring generations; day-feeding armyworm, one generation a year; lawn armyworm, 2-3 generations during summer and spring – the appearance of adult moths around light sources in September and October is a warning of a potential outbreak later in the year. When numbers explode and food sources become depleted, the caterpillar can be seen marching into neighbouring fields and pastures to find food – the behaviour from which they take their name.

Armyworms are the larval stage of night flying moths. Eggs are laid in the grass, sometimes in synchronised waves that can give rise to the sudden outbreaks. They are also prolific, with a single moth laying around 300 eggs per night! Although the colour of the caterpillars may vary – green, brown or yellow – all species of armyworm can be readily identified by the three white



Figure 1: Three white stripes behind the head identify the armyworm caterpillar

parallel lines found behind the head, which can continue the length of the body (Figure 1). The caterpillars will reach up to 40 mm in length before pupating in the soil.

The caterpillars feed on the leaves and do not damage the plant crown or roots. So, if a lawn suffers damage, it should readily recover with a bit of TLC. The caterpillars mainly feed during the night, resting at ground level under vegetation during the day. As such they can be quite easy to spot, with their frass – 1-2 mm green pellets – being another sign of their presence.

Cutworms

There are several species of cutworm (*Agrostis* spp.) in Australia: common cutworm, black cutworm (Figure 2), brown cutworm and pink cutworm. Like the armyworm, cutworms are the larvae of night flying moths – the common cutworm is the Bogong moth.



Figure 2: The black cutworm moth (photo credit/Caroline Harding, MAF/Wikipedia CC)

The adult moths lay their eggs in the soil. Upon hatching, the caterpillars remain in the ground, only coming above ground at night to feed. They only feed at ground level, cutting plants at their base, which gives rise to their name. They will eat weeds, seedlings and soft fruits such as strawberries, as well as grass. The caterpillars look similar to armyworms but lack the three white stripes (Figure 3).



Figure 3: The black cutworm (*Agrostis ipsilon*) lacks the white stripes of armyworm caterpillars

With the different cutworm species having different periods of maximum activity, damage to lawns can occur year round. In lawns, their activity can be more easily spotted than that of armyworms, as each caterpillar creates a circular spot devoid of grass – they come out of their burrows at night, cut the plants nearby, and retreat to their burrows. Typically they tend to be more active after rain.

Webworms

There are four species of pasture webworms (*Hedonta* spp.) in Australia, and despite their name actually cause more damage in cereal crops than in pastures. For homeowners it's the sod webworm (*Herpetogramma licarsisalis*) that is more likely to cause damage to lawns.

The adult webworm moths are most active at dusk, when they may be disturbed when walking across the lawn or when watering (Figure 4). The females lay their eggs on the wing, flying low over the grass, dropping eggs as they go. The caterpillars hatch in 1-2 weeks and live in the thatch, coming out to feed at night. Their presence can also be readily noticed at dawn, as they leave a silky web on the grass, which is more visible when dew is present. Mainly confined to the east coast, peak population numbers occur during summer.

Treatment

In addition to picking up the early signs of damage, the level of adult moth activity around light sources can also provide an indication of the level of infestation. All treatments target the larval stage and a range of products, both pyrethroids and non-pyrethroids, are available.

The caterpillars themselves are easy to kill, it is just a bit of a challenge to get the treatment to where the caterpillars are hiding. However, as they are all nocturnal, spraying in the late afternoon or evening when they start to come out to feed will deliver the best results. Also, as cutworms live in burrows and webworms in the thatch, watering in the treatments well after application will ensure the insecticide reaches its target.

Cluster caterpillar

Although not a pest of lawns, the cluster caterpillar (*Spodoptera litura*), also called the tobacco cutworm, is commonly encountered by pest managers (Figure 5). Pest managers or their clients may notice clusters of young caterpillars that feed in groups and can defoliate plants, or spot their egg masses, which can be laid on the underside of carport and pergola roofs, or indeed inside the home (Figure 6). Treatment involves treating any caterpillars and egg masses directly.



Figure 5: *Spodoptera litura* produces the cluster caterpillar (photo credit: Birgit E. Rhode/Landcare Research New Zealand)



Figure 4: Webworm moths have slender bodies and snout-like projections



Figure 6: Pest managers will commonly see the egg mass of the cluster caterpillar (photo credit: A. Carmichael /PaDIL CC)

TACKLING FLEABANE

Fleabane (*Conyza* spp.) is a summer annual that often occurs in lawns or springs up between pavers, in garden beds, driveways and undisturbed areas. It is an extremely difficult to control weed and if it's not taken care of and allowed to flower prolifically, homeowners will have a perennial problem.

There are three main species of fleabane in Australia: flaxleaf fleabane (*Conyza bonariensis*), tall fleabane (*Conyza albida*) and Canadian Fleabane (*Conyza canadensis*).

Young fleabane plants appear as flat weed, with slighted serrated leaves in a rosette formation. However, it is actually a tall-growing weed reaching up to one metre in height (two metres in the case of tall fleabane), developing a woody stem and significant taproot as it grows.

As the plant matures it develops small pale flowers, which do not fully open until the seeds have ripened and are ready for dispersal. Each plant can produce 120,000 fluffy seeds, which are readily dispersed by wind and on contact.

Whilst most homeowners would reach for a glyphosate product (such as Roundup or Zero) as they would to tackle most weed problems, glyphosate is not particularly effective on fleabane. Although glyphosate has the best chance of success on young seedlings (less than a month after germination), once the plant starts to elongate, glyphosate becomes less effective – at best you may get some browning of the leaves and stunted growth. Indeed with glyphosate resistance being detected in some fleabane populations on the east coast, glyphosate is generally not the best option.

Fleabane is definitely one of the weeds where a selective herbicide delivers better results. A range of selective herbicides are labelled for fleabane, many of which include a combination of MCPA and dicamba, sometimes with the inclusion of clopyralid (a herbicide that is very effective on fleabane). When using these products on fleabane, the inclusion of a wetting agent (adjuvant) can significantly improve performance, as it allows superior penetration into the hairy leaves. Although a better option than glyphosate, targeting the young weeds (certainly before they start to elongate), also provides the best results.



Young fleabane plant in between pavers, showing the hairy leaf coverings, and the slight browning of an ineffective glyphosate treatment



Once fleabane plant start to elongate they become difficult to control

When using herbicides containing clopyralid, it is important that grass clippings are not used for mulch around garden beds or for composting. This is because clopyralid has a long residual activity and the product remains in the leaves after mowing. If the clippings or compost are used around other plants as mulch, the herbicide may still be active, causing a detrimental effect to the non-target plants.

As with any selective herbicide, if you are to tackle fleabane or other weeds in lawns, it is important to confirm whether the product is compatible with the grass type(s) in the lawn.

BITING ANTS IN LAWNS

Finding biting ants in the lawn is a very common occurrence in both residential and commercial accounts. As such, offering services to eliminate biting ants from lawns represents a potential regular source of income for pest managers either as an upsell or stand-alone service. With a range of good product options available, pest managers should be confident in delivering the goods.

Perhaps the most common biting ant found in lawns across Australia is the green-head ant, *Rhytidoponera metallica*, also known as the green ant or metallic pony ant. Nests will be found in the middle of lawns, along the sides of paths and driveways, and in garden beds under rocks and logs. They are typically single-nest, multi-queen colonies, although occasionally you may see more than one 'nest' in close proximity – although these are probably multiple entrances to the same nest. The queens look very similar to the workers and will also forage. However, the queens are of less importance in the green-head ant species, as the workers are gamergates, which means they can mate with winged males to produce young.

The green-head ant is generally only seen foraging when the sun is shining. It has a preference for protein (other arthropods, dead or alive), although will forage on seeds and honeydew as well. The green-head ant is known for its particularly painful sting and the itching that may continue for days afterwards. It is known to cause anaphylactic shock in some, so keeping the lawn clear of green-head ants has very real safety benefits.

If you come across fast moving black ants in the lawn they are likely to be one of the tyrant ant (*Iridomyrmex*) species. They are aggressive, but the bite is only a mild nip with no lasting effect. However, they can be very annoying. The various tyrant ant species have not been fully characterised but multi-nest, multi-queen colony structures are probably the more common.

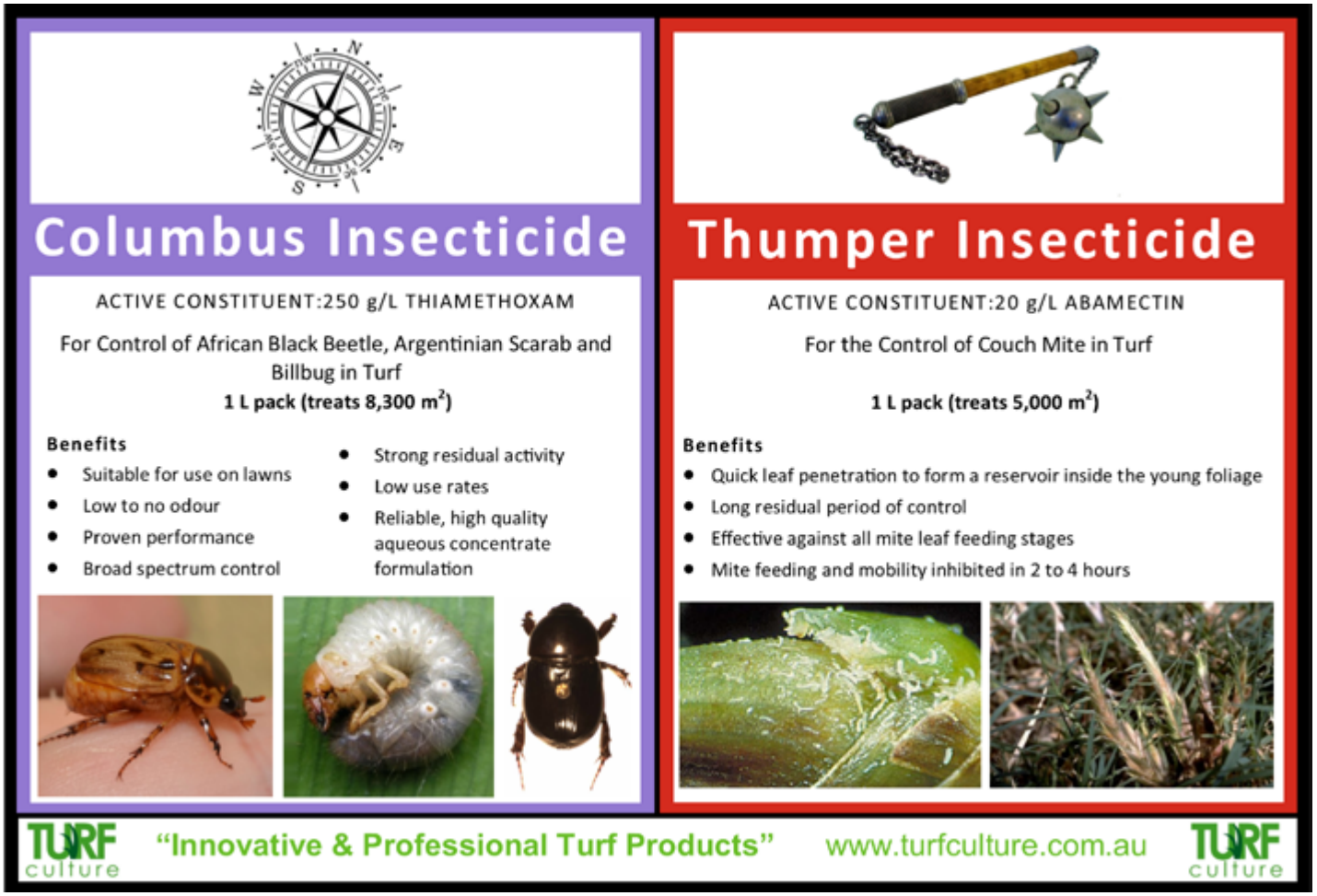
Of course in southeast Queensland, there is also the battle to control RIFA, the red imported fire ant (*Solenopsis invicta*). Should RIFA become established in Australia, it will no doubt become the number one biting ant pest managers have to deal with in lawns.

The good news is that all of these species can be dealt with using a similar range of products. From a baiting point of view, they will all accept protein and/or oil-based baits, so many of the granular baits on the market will eliminate the nests from a lawn within a 1-2 week period. Granular insecticides and insecticide sprays labelled for treatment of ants in lawns are also an option, but some don't necessarily deliver colony elimination (especially pyrethroid-based products) and spraying lawn areas with insecticide may not always be desirable. On the other hand, a number of these granular and liquid insecticides labelled for lawn use will also control additional insect pests in lawns, whereas the bait products will only work on ants.



The green-head ant, *Rhytidoponera metallica*

The bottom line is that homeowners want to enjoy their outdoor areas, and if they have children and pets they are particularly keen for the lawn to be a safe area to play. With the products available, eliminating biting ants from lawns is an easy upsell, a service that can be delivered with confidence.



PRODUCT TESTING

HOW DO MANUFACTURERS TEST PRODUCTS?

What data do manufacturers require in order for them to make a performance claim? With discussions about which products are the best and the conversations in some online forums about products that don't work or fail to meet expectations, it's worth a look at what testing manufacturers undertake during the development of their products to make sure they do indeed work as claimed.

The key point to note is one of law – that a manufacturer can only make performance claims regarding a registered product that are consistent with the approved label. As part of the (very costly) registration process the registrant has to submit a comprehensive set of efficacy data to support their proposed claims. The regulatory authority – the APVMA (the Australian Pesticides and Veterinary Medicines Authority) – then reviews the data to make sure it supports the proposed claim. If it does, it becomes an approved claim; if it doesn't they will go back to the registrant to ask for clarification or more data.

The APVMA provides comprehensive guidelines for product efficacy testing. The basic requirement is that efficacy data is provided for all the insects claimed on the label. In some cases the use of laboratory test data is deemed satisfactory, in other cases field trials are also required. The data may be carried out by the applicant themselves, although the APVMA does have a preference for at least some of the data to be generated through independent testing from a suitably qualified testing company or institution. The APVMA will accept data generated overseas, especially for laboratory trials, but for field trials they will often require Australian supporting data.

Going into the methodology of the trials, manufacturers are required to specify the application method and rate, and normally provide data over a range of application rates. The trials should also include an 'industry standard' – a registered product that is generally recognised as an established product in the market. The testing of products in different locations can also be required. For products such as termiticides it is necessary to carry out the trials in different locations (climates/soil conditions) and surface sprays need to be challenged on a variety of surfaces.

The design of these trials is important, so that clear conclusions can be drawn. Within each trial a suitable number of replicates needs to be carried out and often trials themselves need to be replicated. Statistical analysis also needs to be applied to the data to demonstrate that the product to be registered delivers a level of control significantly better than the control/no treatment regime and at a level similar to or better than the industry standard.



In many cases field trials are required by regulatory authorities to support the data from laboratory trials

However, although two different products may make the same claim, it may be that they don't deliver the same level of performance. There are three potential reasons for this.

Firstly, there is no standard testing procedure. The registrant simply has to carry out trials using a methodology that is scientifically valid. An example where variation typically occurs is in the generation of residual data for surface sprays. Different types of surfaces both porous and non-porous are treated with product and stored for various lengths of time to determine the duration of protection. However, the conditions under which the treated surfaces are stored and the duration of time the insects are confined to the treated surface will likely vary between protocols. Whether an insect is confined to a surface for five minutes, one hour or 24 hours, will obviously have a big impact on the performance achieved.

Secondly, when manufacturers submit a registration they are appointed a reviewer within the APVMA. Even though the reviewers follow guidelines, how these guidelines are applied does vary between reviewers. Furthermore, over time the APVMA changes regulations such that claims that were allowed on previously registered products can no longer be made on new registrations, even if the performance of the new product matches or exceeds the previously registered product.

Thirdly, the APVMA allows 'image registrations'. This is where a manufacturer submits a registration for a product that has a very similar formulation and the same claims as a product already on the market. As part of the registration package the registrant does not have to submit a complete efficacy data package – they have to demonstrate bioequivalence through a reduced data package. The formulations must have exactly the same actives and must be close to identical in other aspects for the registrant to avoid submitting the full data package. The more differences in the formulation, the more data required.

It is also important to consider the wording used in the claim; elimination, control and suppression all have different meanings and indicate decreasing levels of control. Similarly a product that delivers control for 'up to 6 months' is different to one that delivers control for 'at least 6 months'. The APVMA typically uses 90% mortality as a cut off for making a claim of control.

In short, suppliers carry out a robust regime of efficacy testing before the product can be registered, such that if applied correctly, it will deliver the performance claimed on the label. Suppliers are normally pretty open in sharing the data in literature and at conferences and roadshows. So if you really want to understand the performance of the products you are using, don't fall asleep during those conference PowerPoint presentations! Make sure you understand the data being presented and the testing methodology used.

In the second part of this series on product testing in the next issue, we will consider how pest managers can do their own product comparisons in the field.

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ANTS

MY TEN TIPS FOR TREATING ANTS

Jay Turner, *Owner, Laguna Pest Control*

Killing ants you can see is easy; killing ants you can't see is the tricky part. And as we know, for every ant we can see there are potentially thousands that we can't see! Below are my top ten tips for treating ants so you can get the most out of your ant treatments.

1. Get to know your local species

You will typically only have a handful of pest ant species in your area. Make the effort to spend time learning about them and find out their food preferences. Do they have favourite food trees, their preferred nesting sites? Are they single nesters or multi nesters? Do they have single queens or multiple queens? Ant behaviour can also be very localised as well – the same species of ant will behave very differently in the southern parts of Australia compared to how it would behave in the northern parts of Australia. Get to know their behaviour. (Remember that the most successful anglers are locals that have taken the time to learn about the behaviour of each individual fish species in their area!)

2. ID your ant

Before any sort of treatment plan is put together, ID your ant accurately first. For example, there is no such thing as just a 'common black house ant'! Common black house ant is a catch-all term to describe several different black ant species. Identify exactly which black ant species you are dealing with.



Iridomyrmex sp. feeding on Vanquish Pro Ant Bait



A ghost ant nest in a DVD case

3. Don't rely on just one product

Avoid using just a single product in your treatment plan in the hope that it will work. Use a combination of products and formulations. And by that, I mean use a combination of dust, bait, and liquid to achieve a more thorough treatment.

4. Focus on straight lines

Ants are short-legged little creatures that will utilise paths of least resistance. Concentrate your residual surface spray treatments on fence railings, the edges of footpaths, garden edging, building corners and even garden irrigation piping.

5. Look for the food trees

Some ant species will have preferred trees or plants where they will 'farm' those honeydew-producing, sap-sucking plant pests such as mealybug, scale and aphids. These include citrus trees, palms, and camellias just to name a few.

6. Lure them out

Clients will often report sporadic ant activity in certain areas such as around kitchen benches, but they are nowhere to be found whenever you are there. Try deliberately luring them out with one of their favourite foodstuffs. For example, place several dots of honey or jam on and around the bench to create an ant trail. Remember, baiting is a numbers game – the more ants you have to work with, the greater the chance of success. You can even engage the client and ask them to do it before you arrive. A bonus of deliberately luring them out is that you can often lure them into a more suitable spot to bait. Luring them out with the actual active bait tends to have limited success. It's important to place the bait near sites of maximum activity – you need that trail of ants for the transfer effect.



Tyrant ant *Iridomyrmex* sp. (photo credit: Tony Eales)

7. Match your ant bait to your target ant

Ant baits come in all different types of formulations with different actives. No bait will perform equally well on all ants and some baits just perform better on certain ant species. For example, very runny liquid baits tend to work better than viscous gel baits on smaller ant species such as ghost ants. Ants will sometimes also change bait preferences at certain times of the year. It pays to have an arsenal of bait types on hand. If you are unsure of which bait they prefer, place dots of several bait types along an active trail – you will soon see which they prefer.

8. Don't skimp, be thorough

Basically, ants are very tenacious and will exploit any weakness in your treatment. Put together a well thought-out management plan.

9. Follow it up

I like to revisit my larger ant treatments a month later, to give it a touch up where required and to measure the overall success of the treatment. It's easier and cheaper to knock 'em off completely when their numbers are at their lowest rather than letting them build back up again. We are dealing with many variables so not all treatments will perform equally every time.

10. Price it right

Finally, don't cut your throat to get the job – price it to allow for any extra servicing that may be required.



White-footed house ant, *Technomyrmex* sp. (photo credit: Tony Eales)

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THE FIGHT AGAINST INVASIVE ANTS

Garry Webb, *Sumitomo Chemical Australia*

Australia is an ideal environment for the introduction and establishment of invasive animals and plants. As an isolated island continent, Australia abounds in ecological niches that invasive species can take advantage of – look no further than feral rabbits, cats, foxes, pigs, deer, camels and even the iconic brumby. But these are the big ticket species. Think a little smaller and we have just as many problems from invasive agricultural pests to something of interest for professional pest managers. We don't think twice about it but most of the common pests we deal with, such as American and German cockroaches, cat fleas and a range of other species are invasive insects – they don't originate here in Australia. The good old coastal brown ant (aka African big-headed ant) has been here for over 100 years and we call it our own.

There are five ant species on the world's most invasive species list[1] and Australia is home to all five of them – Argentine ant, African big-headed ant, yellow crazy ant, little fire ant (electric ant) and red imported fire ant (RIFA). Along with these we have the tropical fire ant, which is widespread in northern Australia, and very recent introductions of the browsing ant *Lepisiota frauenfeldii* at Perth Airport, Darwin and now at the port of Brisbane. There is also a range of ant species of cosmopolitan but uncertain origin including pavement ant (*Tetramorium*), white-footed house ant (*Technomyrmex*), ghost ant (*Tapinoma*), black crazy ant (*Paratrechina*) and various species of *Monomorium*, some which are invasive (e.g. Singapore ant and pharaoh ant) and others



The browsing ant, *Lepisiota frauenfeldi*, was first detected in Perth in 2013 (photo credit: Eli Sarnat/antweb.org CC)



The yellow crazy ant, *Anoplolepis gracilipes*, is no longer considered eradicable

that are also very likely to be invasive species. Only two of these species are now considered to be of national significance – RIFA in Brisbane and electric ant in Cairns. The status of yellow crazy ant, *Anoplolepis gracilipes*, has been downgraded from federal to state and now local significance because it is no longer considered to be eradicable. The rest are the forgotten invasives that attract little or no attention at any level of government.

An endless stream of container ships arrive at Australian ports from all over the world and we will continue to be challenged in the fight against establishment of invasive species. Luckily we caught the incursion of RIFA into port Botany in Sydney in 2013 and it is now eradicated. The recent port of Brisbane incursion of browsing ant will require a variation on theme because standard bait products are not effective. There is no silver bullet for invasive ant species; they all have different nest biology, reproductive potential and food requirements. A very recent study by James Cook University[2] has highlighted some of the problems associated with baiting yellow crazy ant – today's food preference is a reflection of food availability in the past. Following a diet of predominantly protein, they prefer sugar. So standard bait products may not always be effective.

Red imported fire ant (RIFA) was discovered in Brisbane in 2001 and since then the joint federal and state task force has spent in excess of $350M in attempting to eradicate it. To a large extent the endeavour has been successful, with RIFA eliminated from the core areas of infestation, but has been less successful in limiting its outward expansion and re-infestation of past infested areas due to operational difficulties in limiting the movement of soil, plants, building material and earthmoving equipment. Nevertheless, the Brisbane program has been the most successful eradication program worldwide, with the exception of the elimination of a small infestation in New Zealand and recently the port of Botany infestation.

RIFA is the big ticket item in the invasive ant world, largely because of its human health impacts and its potential to affect agricultural, urban and natural environments. However, the impacts of other invasive ant species should not be ignored. Their impacts are largely ecological but some still do impact people

and agriculture directly. The sting of tropical fire ant is no less painful than red imported fire ant but its distribution (northern Australia) overlaps less with human occupation. Hence it receives less attention from biosecurity authorities. Yellow crazy ant is now much more widespread and has become a more significant pest of urban areas, particularly in northern Queensland. The ants' ability to spray formic acid onto sensitive skin causing painful 'burns' and into the eyes of pets and livestock sometimes causing blindness is of concern. Singapore ant is not of medical concern but it is another invasive species that seems to be on the move, spreading to new areas in Queensland. As they spread, some of these invasive ants are becoming urban pests and entering the orbit of the pest management profession. These new invasive species complicate the process of selecting appropriate treatments.

Synergy Pro was developed primarily for the control of invasive ants with the aim of being a broader spectrum bait. Synergy Pro combines the effects of the ATP inhibitor hydramethylnon with the IGR pyriproxyfen to target all life stages and deliver complete colony control. With many of the invasive ant species being oil/protein feeders, the two different food granules (one protein, one oil), make Synergy Pro ideally suited for targeting these ants. As invasive ants are primarily outdoor species, the granule format also makes it easy to treat large, infested areas.

However, as with all ant management programs, in many cases a combination of products should be used. Certainly when dealing with invasive ants the use of non-repellent sprays in combination with Synergy Pro should be considered, especially in situations where there are large numbers of invasive ants. Sprays can be very useful to reduce population numbers and protect buildings while Synergy Pro can deliver the colony control.

[1] Lowe S.J., Brown M. and Boudjelas S. (2001). 100 of the world's worst invasive alien species. Aliens: The Invasive Species Bulletin 12: 1-14.

[2] Lach L., Volp T.M. and Wilder S.M. (2019). Previous diet affects the amount but not the type of bait consumed by an invasive ant. Pest Management Science, https://doi.org/10.1002/ps.5365.



The black crazy ant, *Paratrechina longicornis*



THE LATEST INNOVATIONS IN ANT BAIT STATIONS

Liquid and gel ant baits have long been great tools for eliminating ant nests, especially for sugar-feeding ants. However, they can be messy or unsafe for pets and children if they aren't contained properly. Adding bait stations to an ant treatment plan is an ideal solution, allowing pest managers to deliver a professional and safe ant treatment with less worry for homeowners. Bait stations also have the added benefit of giving improved performance of ant control programs and can even save you money.

Innovative Pest Control Products' bait station range offers pest managers a number of novel bait stations designed for a variety of different use situations. Many pest managers are familiar with the original Ant Café on the Australian market, but there are several other bait stations on the market in the US.

The original Ant Café was developed to hold liquid, gel, and granular ant baits. Its unique design allows it to be placed vertically or horizontally, although it should only be placed vertically when used with liquid baits. As a refillable container, it protects the bait from desiccation and contamination, ensuring bait palatability for an extended period.

The new Ant Café Pro has greater volume and a design that allows the bait station to be used for small and large ants, as well as German cockroaches. The pre-formed hole, which is sized for small ants, can be doubled in size if targeting large ants or German cockroaches, by simply inserting a pen into the hole. Like the original Ant Café, Ant Café Pro can be locked with its moulded locking mechanism.

For those looking for a single bait station option for both ants and cockroaches (large and small), the Bug Bar Insect Bait Station is an attractive option. Able to accommodate liquid, gel, or granular bait, the clever design allows the bait to be refilled with gel or liquid even when closed, through the port on the top of the bait station. Ribs on the entry way make it easy for cockroaches to gain access.

Although the Ant Cafés can be positioned outside with the cable tie fixing system, an alternative option for outdoor areas is the Antopia bait system. Capable of holding granular, gel or liquid baits, the large reservoir (holds up to 400 ml) and UV protective design means it is ideal for use outdoors over an extended period. The Antopia bait system opens up new opportunities for the use of baits outdoors, which also could involve their inclusion in maintenance programs and to intercept ants from neighbouring properties, all with minimum input from the pest manager.

Bait stations are a must for pest managers, not only demonstrating professionalism and awareness of safety concerns, but they deliver a range of performance benefits and can deliver cost savings. Colony elimination avoids the necessity of return visits due to lack of control or to top up bait stations. Bait stations help reduce the number of costly maintenance visits by ensuring the bait remains palatable for an extended period, allow placement of an increased quantity of bait to combat larger nests, and allow homeowners the flexibility to move the bait station to new areas of activity if required.

"Innovative Pest Control Products has developed a range of ant and cockroach bait stations for a wide variety of situations," commented **Sarah Bernard**, technical director. "The key to achieving ant control is to ensure elimination of the queen and this can only be achieved by delivering sufficient bait to the colony. Our ant bait stations have large reservoirs or refill options to ensure sufficient bait is available and remains palatable over an extended period. With a small investment in our reusable bait stations, pest managers can deliver superior results more efficiently and with greater safety. And of course the professional look and professional results will help referrals."

Innovation Pest Control Products is encouraging pest managers to contact their distributor for more information on its range of bait stations.



Ant Café





Bug Bar Insect Bait Station

Antopia is a large bait station for outdoor use that features a 400 ml reservoir



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ANT IDENTIFICATION IS THE KEY TO CUSTOMER SATISFACTION

Wendell Arnett, *Territory Sales Manager, Bayer*

When it comes to ants, customers have good reasons for relying on professional pest managers to resolve the issue. They may have tried and failed to deal with the ant infestation themselves, or are simply overwhelmed by the scale of the problem. Whatever the reason, a thorough and effective ant control job will ensure customer satisfaction, build business and enhance your company's reputation.

With hundreds of ant species in Australia, each with their own behaviours, it can be challenging to get on top of ant problems, especially if you are new to ant management. Correctly identifying the species and so appreciating their specific characteristics and behaviours will allow the correct treatment regime to be implemented.

Understanding the anatomy of an ant is the first step to identifying the different types of ants.

Take a close look at the characteristics of the pest species. What colour are they? Do they have a shiny appearance? Are there any unusual features? Use this information to narrow down the likely species. One of the key physical features that can be used tell species apart is the petiole. All ants will have either one or two nodes on the petiole, which is the slender 'waist' between the abdomen and thorax (although the shape can vary between species). Figure 1 groups some of the common species into one-node or two-node ants.

Observing the ants' behaviour is the next task. Ants are often split up into groups according to their food preference: sugar-feeding ants, protein-feeding ants,

One-node ants	Two-node ants
Argentine ant (*Linepithema humile*)	Big-headed or coastal brown ant (*Pheidole megacephala*)
Black house ant (*Ochetellus glaber*)	Pavement ant (*Tetramorium caespitum*)
Carpenter ant (*Camponotus* spp.)	Pharaoh ant (*Monomorium pharaonis*)
Ghost ant (*Tapinoma melanocephalum*)	Red imported fire ant (*Solenopsis invicta*)
Black crazy ant (*Paratrechina longicornis*)	Bull ant (*Myrmecia* spp.)
Odorous house ant (*Tapinoma sessile*)	
White-footed ant (*Technomyrmex albipes*)	
Meat ant (*Iridomyrmex* spp.)	
Green-head ant (*Rhytidoponera metallica*)	

Figure 1: Some of the most common species of ants found in Australia



White-footed ants were attracted to the Maxforce Quantum gel bait

fat/oil-feeding ants. Finding out the food preference of the pest species is essential for successful baiting and can be easily worked out by placing different food types in areas of ant activity.

Attempting to locate the nest is an important part of the puzzle. Depending on the species, ant colonies can consist of millions of ants and may have a single nest (monodomous) or many nests (polydomous). The nests can be found in walls and voids of a house or building, under pathways, and inside trees. There are many different species of ants; each is unique in terms of nesting sites, habits, characteristics and feeding preferences. If the nest location can be identified, a direct nest treatment may be possible, but even if it can't, understanding the potential nest locations and behaviours of the ant species in question will impact your treatment regime.

Once you have identified the ant species, a range of different products are available to control ants including baits, sprays, powders and granules. Understanding the traits of different active ingredients, the types of pesticide formulations available, and the pesticide label directions, application techniques and ant biology, will result in effective ant control and more importantly, customer satisfaction.

When **Paul Kennedy** from Wise Pest Control in Sydney received a call asking him to deal with black ants in a sensitive site, he knew that identification was the first step to control.

"We recently went out to a customer's home with ongoing black ant issues. Upon arrival we identified white-footed ants (*Technomyrmex albipes*) throughout the interior of the dwelling, including in the cat food," said Mr Kennedy.

"We made the identification by observing the behaviour of the ants and their characteristics. The ants were small, dull and cloudy black, with a pointed gaster. They had a

single node which was hidden, so we knew it wasn't a black house ant, which has a visible node. We only saw one worker size, too. We were sure they were white-footed ants, which we confirmed using an old Bayer ant identification reference book that I keep in my truck.

"The customer was very concerned about the use of conventional sprays or dusts in the home, so we used Maxforce Quantum Ant Bait from Bayer. We explained to the customer that it could take as long as eight weeks to eradicate the ants without doing a spray treatment in conjunction with the gel baiting, which they accepted.

"The customer's cat was removed from the area, then Maxforce Quantum was placed in areas of ant activity. Within minutes the ants preferred the bait over the cat food, so we knew we had hit the nail on the head. Four weeks later, we returned to the property and no further ant activity had occurred.

"I have been using Maxforce Quantum for a while now and will not use any other product. I get great feedback from my customers, especially those that don't like the idea of chemical sprays and dusts in their homes," he added.

Maxforce Quantum includes the active ingredient imidacloprid, making it a suitable choice for gaining control of ants, even difficult to manage species such as white-footed ants and Argentine ants.

Professional pest managers who would like to know more about effective ant control can complete one of Bayer's free, online training courses available through the Bayer Amplify program.



White-footed ant has a single-node petiole, which is often hidden (photo credit: antweb.org / CC)



Red imported fire ant, a two-node ant

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PLANTS FEED ANTS FOR PROTECTION

Nectar is normally produced by plants to attract insects, birds and mammals to help pollinate the flowers. However, some plants have extrafloral nectaries that are not connected to pollination; they are used to attract predatory insects in order to help protect the plant from herbivorous arthropods. But do the predatory insects only receive payment in carbohydrate or are there additional benefits of the relationship?

If a plant needs protection from arthropod herbivores, it makes sense that they have evolved ways to attract predatory insects to act as bodyguards. Furthermore, the more aggressive the predatory insect, the better the level of protection. Extrafloral nectaries, which offer a free carbohydrate feed, would appear to be an attractive food source for such predatory insects. However, attraction is all relative. In an environment where there are plenty of other food sources, the level of attraction provided by extrafloral nectaries may not be sufficient to attract enough predatory insects to keep herbivores at bay.

A group of Brazilian researchers have tested this hypothesis by investigating whether the frequency of attendance by more aggressive ants and the efficacy of plant defence by ants is higher in environments when the general availability of carbohydrates and/or proteins is low.[1]

By mapping ant activity across various plots varying in available carbohydrate (active extrafloral nectaries) and protein (biomass of soil arthropods), the researchers concluded that neither carbohydrate nor protein availability influenced the probability of interacting with the more aggressive ant species.



Extrafloral nectaries on a wild cherry tree



Golden spiny ant, *Polyrachis* sp., feeding at an extrafloral nectary

However, in a series of experiments where the researchers added the larvae of the peanut beetle, *Ulomoides dermestoides*, to plants with extrafloral nectaries, they observed that more of these larvae were removed from the plants by the predatory ants in plots with lower soil arthropod biomass. The researchers concluded that overall ant aggressiveness towards other arthropods increases in protein-poor sites. In such situations the benefits of plants having extrafloral nectaries to aid with protection against herbivorous arthropods becomes more obvious.

These observations from the natural world provide some good reminders about some of the considerations required during an ant baiting program. Firstly, before starting a baiting program take time to observe what the ants are currently feeding on, how big the food resource is and what other food resources are in the area. Secondly, in choosing a suitable ant bait, it should obviously be attractive to the ant species in question. But if it is different to the food currently available (protein or carbohydrate), it may provide an attractive alternative as a food type that is lacking in their environment.

Most of the leading ant baits are very attractive, but if there are larger and equally attractive food resources elsewhere, it can make it harder to get them to feed. So when pest managers observe an ant species not feeding on a bait that they had previously accepted, it probably isn't due to a manufacturing problem with the bait. It is most likely down to either a change in feeding preferences due to changing food requirements of the colony and/or the impact of competing food sources in the surrounding area.

[1] Felipe C S Passos, Laura C Leal. Protein matters: ants remove herbivores more frequently from extrafloral nectary-bearing plants when habitats are protein poor. Biological Journal of the Linnean Society, 2019; 127 (2): 407 DOI: 10.1093/biolinnean/blz033.

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The termite queen is at the centre of the colony's universe. Her subjects exist only to feed her and she isn't shy about asking for seconds. As a result, workers work hard. Dethroning the queen is essential to destroying the colony. Or … destroying the colony workers is an essential part of starving the queen. Fortunately, the Sentricon system is scientifically designed to do both.

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ANTS, THE MASTERS OF TRAFFIC MANAGEMENT

Along with humans, ants are one of the rare animals whose collective movements are two-directional. Yet unlike humans, ants are masters of traffic management. Maintaining a smooth flow of traffic along the trails linking food sources to the nest is no easy feat when colonies can number in the tens of thousands of ants. Yet they move with great efficiency, without passing each other or overtaking, to form a steady flow of traffic. Unlike humans, ants do not get stuck in traffic jams when a large number of individuals circulate in the same space.

To uncover the secret of how ants manage movement so effectively, scientists at the Université Toulouse in France, Arizona State University in the US and The University of Adelaide set up an experiment to find out whether ants can maintain their steady stream of traffic when their path to food gets more crowded. This involved manipulating the density of ants using a combination of different sized colonies (ranging from 400 to 25,600 Argentine ants) and changing the width of the bridge connecting the ants to the source of food. The experiment was repeated 170 times, and data was visually recorded on the density of traffic flow, speed of movement of the ants, and number of collisions as the ants commuted between their nest and the food source.

The findings, which were published in October 2019 in *eLife*, have demonstrated that ant colonies circulate easily, even in situations of extremely dense traffic. Ant colonies solve the main challenge of transportation by self-regulating their behaviour.

In human behaviour, the flow of movement – whether pedestrians on foot or car traffic – will slow down if occupancy levels (the amount of the road surface area covered by cars) reach over 40%. Whereas in ants, the flow of traffic showed no signs of declining even when bridge occupancy reached 80%.

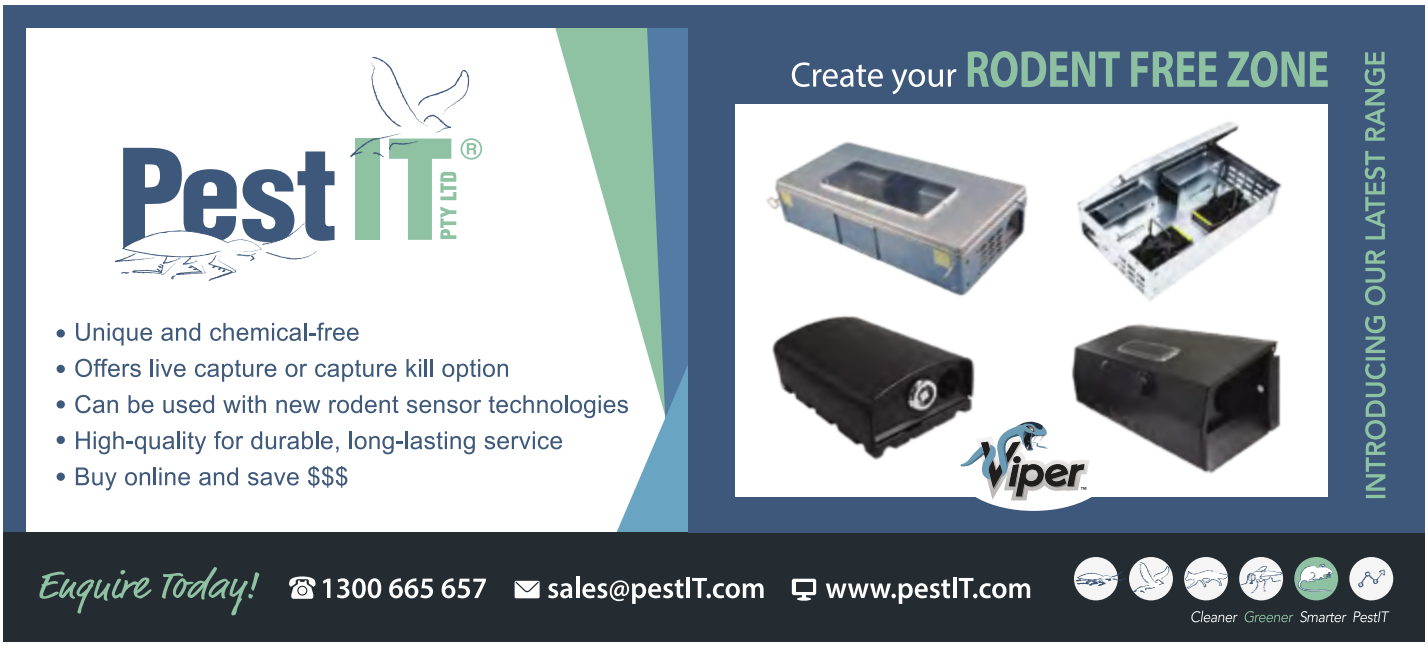
When the density increases, ant flows (measured as the number of ants covering a given distance per unit of time) swell and then become constant. Human traffic, on the other hand, slows to zero flow and causes a jam. So how to ants do this?

The experiments revealed that ants do this simply by adjusting their behaviour to suit their circumstances. They accelerate until a maximum flow or capacity on the path is reached. So when the density of traffic is at a low level, the ants can speed up. When traffic becomes too dense and causes collisions between ants, they change tactics. Although the ants are protected by their exoskeleton and are not afraid of collisions, the ants will hang back, and avoid entering overcrowded trails to avoid collisions.

The reason why they do this is simple. Ant colonies share a common goal: foraging, which needs to be carried out effectively regardless of density. Furthermore, ants can keep the traffic flowing even with regular contact (for communications purposes) with other ants. However, keeping the interaction time short is vital to maintain traffic flow. In contrast, when driving, humans are responding to their own selfish requirements, even though advertising always asks for consideration of other road users!

The tactics ants employ to manage great volumes of traffic have long been studied by scientists. Looking to the future, ant behaviour will have relevance for scientists developing autonomous vehicles, which will need to mimic the cooperative and efficient behaviour of ants.

Further reading: Laure-Anne Poissonnier, Sebastien Motsch, Jacques Gautrais, Jerome Buhl, Audrey Dussutour. Experimental investigation of ant traffic under crowded conditions. eLife, 2019; 8 DOI: 10.7554/eLife.48945



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FLIES & WASPS

NO MORE DRAIN FLIES

Drain flies or the small filth flies are a serious pest often encountered by professional pest managers. Also known as moth flies, sink flies, filter flies and sewer gnats, these pesky insects thrive in unhealthy drains. They belong to the family Psychodinae, order Diptera. The larvae are highly resistant to boiling water and cleaning chemicals, including bleach, and it is almost impossible to reach the larvae with traditional pesticides as they thrive deep in the biofilm of drains. Given recent studies on fruit flies, *Drosophila* spp., it is also likely that they are capable of transferring *Escherichia coli*, *Salmonella* and *Listeria* to surfaces and relocating *E.coli* from a contaminated source to fresh, ready-to-eat food.

Eggs are laid and the larvae thrive in the biofilm in drains and similar areas of food processing plants, kitchens and bars. This biofilm consists of a layer of microorganisms that forms on different surfaces immersed in fluid with a water to air interface. The biofilm structure is complex and consists of microorganisms living in an aggregate state and immersed in a matrix of a varied nature, made up mostly of polysaccharides and protein constituting a base of extracellular polymeric substances (EPS).

This is generally enriched with greasy and oily substances as well as other substances of various origins that find it an ideal substrate on which to accumulate. Inside this layer, the microorganisms implement the decomposition of organic substances such as food residues, dead skin, hair and other materials that can end up in urban sewage, leading to bad smells.

Steve Broadbent, regional director of Ensystex advises that the only solution for drain flies is to create a healthy drain by removing the biofilm, so the many associated problems disappear, including drain flies, bacteria, moulds and unhealthy smells.

"With increasing concerns over the use of harsh chemicals, which generally fail to resolve the problem anyway, Ensystex has developed a pure and natural solution for healthy drains, which removes the accumulated biofilms and their associated smells and drain fly infestations in an environmentally responsible manner. Ecothor Active Nature Turbo Active Natural Detergent for Drains cleans and sanitises due to the strong power of its all-natural ingredient," explained Mr Broadbent.

"Turbo Active is an oil-gel natural product that has been subjected to rigorous scientific *in vitro* tests to confirm its effectiveness, ensuring the dynamic release of the active components for optimal bioavailability and stability.



Drain fly



Ecothor Active Nature Turbo Active Natural Detergent for Drains

"Best of all, it is a totally natural, plant-derived product. An extract of the European olive tree (*Olea europaea*) is used to produce our proprietary active component, Matrice UB, which is produced from the vegetation water coming from the grinding of the olives (less than 5%) together with maceration water from the olive leaves (the remaining 95%). Specifically, they undergo a decanting process and the formed deposit is separated from the supernatant, which becomes the Matrice UB. This is combined with two natural vegetable surfactants that have the function of degrading the fats that compose the obstructing mass, allowing the enzymatic lipases of the Matrice UB to enhance the degradation and solubilisation of the biofilm, which is consequently washed away. A eubiotic plant fragrance blend, that releases a long-lasting perfume, contributes to creating a healthy drain," explained Mr Broadbent.

The natural plant extracts used are all cold extracted from the fresh plants, harvested in the 'balsamic moment', just as the flowers begin to open, which provides the purest extracts. Matrice UB production is subject to control and analysis by the Division of Chemistry and Microbiology of the Institute of Analysis and Research, Labor Chimica Srl, in collaboration with the Department of Chemistry of the University of Siena in Italy.

Mr Broadbent added, "A study by the above institute confirmed the efficacy of Turbo Active on heavy biofilms (Figure 1). In further field trials with drains heavily colonised with biofilms and drain flies, after seven days the biofilm was removed, and the drain flies disappeared. The premises remained free of infestations thereafter."

Bacterial species:	Before treatment	After 15 days
Mesophyll bacterial charge at 30°C	980,000 CFU/cm^2	400 CFU/cm^2
Pseudomonas spp	17,000 CFU/cm^2	18 CFU/cm^2

Figure 1: Efficacy of Ecothor Active Nature Turbo Active Natural Detergent for Drains on heavy biofilms

[1] E. P. Black, G. J. Hinrichs, S. J. Barcay and D. B. Gardner. 2018. Fruit Flies as Potential Vectors of Foodborne Illness. Journal of Food Protection 81:3, 509-514.

FLIES AND THE REAL COST OF FOOD SAFETY

In November 2019, a cheese company in Adelaide was forced to recall an entire range of products due to potential *E. coli* contamination. The previous month saw a recall of stock by a pre-packaged frozen meal company for possible *Salmonella* contamination. In March 2018, six people died after contracting listeriosis from contaminated rockmelons. Sadly, these preventable incidents are far from isolated cases.

E. coli, Salmonella and *Campylobacter* are among the most common pathogens that cause foodborne illness in Australia. These bacteria (and others) are responsible for around 5.4 million cases of food poisoning and 120 deaths per year in Australia alone, at a cost of $1.25 billion to the economy (source: Australasian Science). Houseflies play a major role in the transmission of these pathogens.

Flies breed and grow exclusively in unsanitary conditions. They must lay their eggs, usually in batches of 120-130 at a time, in organic material and generally breed in decomposing animal and vegetable matter. Densely populated areas provide ideal conditions for fly breeding, and the presence of large numbers is a reliable indicator of improper hygiene and sanitation practices.

A single fly can carry up to 1.9 million pathogens on its body and up to 33 million in its gut. It is a known vector for at least 65 diseases that affect humans, including *E. coli*, *Salmonella* and hepatitis A. There's virtually nothing a fly won't feed on, from human or animal faeces, rotting vegetable matter, blood and animal remains, to food intended for human consumption. Since they are only able to ingest food in liquid form, they secrete a digestive enzyme in their saliva to dissolve solids. During this process, large quantities of microbes present in their guts are transmitted to the food and vice versa. They move often from one source of food to another, picking up and dropping off pathogens at every stage.

Managing potential fly problems begins with good hygiene. Potential breeding sites should be identified and cleaned thoroughly. Waste must be segregated and discarded properly. Organic wet and dry waste should be converted into compost and garbage areas should be sanitised regularly.



Brandenburg Genus Fli insect light trap



Brandenburg Genus Fli is suitable for food handling areas, such as bakeries

Stagnant water and drainage areas often contain organic debris, which make them ideal places for flies to breed and multiply. Phorid flies prefer damp, moist areas in which to lay their eggs. Water must not be left to stagnate in wet areas and drainage should be checked and cleaned regularly.

Practicing the measures mentioned above consistently will certainly reduce fly numbers, but the hardy nature of flies combined with their ability to travel extraordinarily large distances in search of food and breeding grounds makes them almost impossible to eliminate entirely.

It is wise to reinforce traditional sanitation methods with technological remedies such as insect light traps, which turn the fly's affinity for UVA light against it. Brandenburg's Genus range is engineered for rapid fly catch and has a fly trap to suit all purposes – high voltage fly killers for non-food handling areas, HACCP-compliant glue board fly catchers for back of house areas, and discreet fly catchers for customer-facing areas.

"With light traps a significant expense, making sure you make the correct call on the type of trap for your situation is important to ensure the performance meets your customer's expectations. Agserv staff can provide advice on light trap selection and the Brandenburg range, both in store and over the phone," said **Jason Green**, Agserv general manager.



Brandenburg Eclipse Ultra insect light trap featuring customer branding

VESPULA GERMANICA, THE EUROPEAN INVADER

Their colony structure, division of labour and sheer numbers have made social insects very successful invaders and difficult to eradicate or control. Three species of social wasp from the genus *Vespula* have established outside of their native range of Europe and temperate Asia to become pests: the German wasp or yellowjacket (*Vespula germanica*), the western yellowjacket (*V. pensylvanica*), and the common wasp (*V. vulgaris*). In Australia, it is *Vespula germanica*, sometimes known as the European wasp, which presents the most issues to homeowners and subsequently the most frequent calls to pest managers. Why are these aggressive invaders so successful in establishing themselves in new continents and what can we do to control them? In a 2019 article published in *Annual Review of Entomology*, academics from New Zealand shared their insights.

Vespula wasps have proven themselves to be excellent travellers. Of the invasive species, *V. germanica* is the most widespread, establishing in areas as wide-ranging as southern Patagonia, South Africa and Iceland. *V. germanica* was first reported as having established outside of its native range of Europe and temperate Asia in 1945 (in New Zealand) and Australian populations were first seen in 1959 in Tasmania and on the mainland in 1976. The invasive *Vespula* species travelled to these new regions via the international movement of goods (such as sawn timber) which contained mated, hibernating queens.

Vespula wasps typically produce new queens and males each autumn, with queens leaving the nest to mate before finding an overwintering site to hibernate. The queens emerge in the spring to establish a colony, which grows over the summer from the single queen to nests often consisting of several thousand workers. In milder climates, the wasp season can stretch as long as six months. In particularly warm conditions, the nest may survive the winter, becoming large and perennial. Some perennial nests can contain as many as half a million wasps. These huge nests pose a significant risk to human health – particularly to pest managers tasked with destroying them!



Around 80% of European wasp nests are found in the ground, often in raised banks



Invasive *Vespula* wasps have a very broad diet, but find soft drinks very attractive

The problem with wasps

Vespula spp. emerge in the early summer, with numbers increasing steadily well into the autumn. Known for their aggressive behaviour and venomous sting, these invasive wasps frequently spoil outdoor activities and are dangerous not only for their sting, but for causing accidents as people seek to avoid them. A 2017 study found that of the 199 per 100,000 people admitted to hospital in Australia for envenomation (over a 12-year period) 31% of incidents were caused by contact with wasps or bees.[1] Anaphylaxis from insect stings in general occurs in approximately 3% of cases and may even be fatal on the first sting – an Australian study estimated 2-3 deaths occur as a result of wasp stings each year.

Their aggressive behaviour is not only directed at the humans swatting them away; they are aggressive foragers too. *V. Germanica* has been observed killing bird chicks in nests, presumably attracted by the scent of the eggs. Some social wasps even work together to steal food from ants, with some wasps preventing the ants from leaving their nest while other wasps plunder the food source. With *V. germanica* having a broad diet that includes honeydew, insects and carrion, it is a sad fact for humans that everything from fizzy drinks to barbecued meats are considered attractive food sources.

Why have they been so successful?

The predatory success of invasive *Vespula* can be attributed to what is known as behavioural plasticity (adaptive behaviour) together with their cognitive abilities. They locate food sources and prey using their visual, auditory, and olfactory senses, and can learn to follow pheromone scents to find prey. These wasps quickly learn to associate cues with food resources and can return to food resources even if those cues are moved. Incredibly, the common wasp (*V. vulgaris*) even has the ability to resolve complex tasks that include the recognition of different human faces.[2] Coupled with the fact they are omnivores with a broad diet – honeydew, nectar, other insects and spiders, vertebrates and carrion – they are very adaptable and can exploit whatever food source becomes available. In short, they are excellent foragers.

In their natural habitats, predators would normally keep populations in check. Small wasp nests are very susceptible to predation during this development phase, particularly from parasitic wasps. In the US, the rate of parasitism is estimated at anywhere between 23-65%. Large wasp nests are pretty resilient although they will be attacked by large vertebrate predators such as bears and badgers that are looking to feast on the larvae. But in new locations, they have few, if any predators. Birds have been noted as eating wasps occasionally, but at a rate unlikely to have any significant effect on wasp populations.

Control efforts now and in the future

To date, methods of wasp control have included the killing of hibernating spring queens, destroying nests, insecticidal baiting, trapping, electric grid devices, contact insecticides, preventative measures, biological control, and integrated pest management. Pest managers who receive a call to control wasps at a property will typically reach for an insecticide (dust or aerosol) and treat the nest and immediate area.

Controlling invasive wasps at a national level has proven incredibly challenging. Wasps carry a diverse array of potential pathogens, so biological control – unleashing a particular pathogen to attack wasps – is one option that has been explored. However, attempts at biological control of *Vespula* have so far been largely ineffective, with non-target effects being high (particularly to ants and honeybees).

Another potential control option is the use of artificial pheromones, in the form mating disruption or attractants. Mating disruption pheromones could be used confuse the males' ability to find receptive females, but it would likely be expensive to execute this on a large scale. Much more research is needed into wasps' sex pheromones before this would even be feasible.

What about baits? Insecticidal baits are most likely the answer for future, wide-scale control.

Tests have shown fipronil-based baits to be the most effective method to reduce populations of *Vespula* and other social insects. Fipronil has been shown to successfully reduce wasp activity by up to 99.7%.[3]



Invasive *Vespula* wasps are a significant problem in some soft fruit crops

The largest area study that tested wasp control was undertaken in 2017 in New Zealand. Bait stations were set up on a grid at 300 × 50 m apart in areas of up to 2,000 hectares, using one application of Vespex containing 0.1% fipronil. Wasp traffic declined by up to 97% between 20-38 days after baiting. This indicates that baiting is a highly effective method for controlling invasive wasps over large areas, however reinvasion is likely from queens in the following autumn and spring. Eradication is unlikely where wasps are widespread, but insecticidal baits may be an option for eradicating isolated pockets of *Vespula*. What's more, non-target effects can be reduced if the baits have limited carbohydrate content (and are therefore not attractive to bees).

Gene drives are a hot topic and a possible method for eradication but the technology is still in the relatively early stages of development. In the case of *Vespula*, this could see male wasps being genetically modified to produce non-viable sperm, leading to reproductive failure and control at the nest founding stage. The fact that *Vespula* have little genetic diversity in areas where they have invaded means that the development of a variation enabling resistance would be unlikely, making gene drives an exciting possibility for future control.

Climate change

There is already evidence that climate change is influencing *Vespula* distribution and dynamics. Milder temperatures are allowing distribution to expand into areas that were previously too cold (e.g. Finland). In addition, milder temperatures can increase abundance and nest size, with perennial nests becoming more common. On the flip side, some areas will become too warm for nest survival, providing some balance to the overall picture.

Further reading: Lester, P. and Beggs, J. (2019). Invasion Success and Management Strategies for Social *Vespula* Wasps. Annual Review of Entomology. 64. 10.1146/annurev-ento-011118-111812.

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WORKPLACE HEALTH & SAFETY

REACHING NEW HEIGHTS OF SAFETY IN BIRD MANAGEMENT

Peter McCarthy, *Director, Pest IT*

By implementing a bird management strategy for your client, you are almost immediately improving the workplace health for the facility. Fewer pest birds means a reduction in the hazards associated with them. There's the impact of the birds themselves – their nests, feathers, faeces, bacteria and pathogens they carry – as well as other potential risks. These include the risk of being attacked by swooping magpies, the slip and fall hazards caused by their faeces, damage to surfaces and issues associated with food safety. All of these impact the health and safety of your client and their employees.

But let's consider how bird management work itself impacts pest managers. Ask yourself, when undertaking bird work, are you and your team safe?

Having worked in the area of bird management for over 25 years, I am grateful to say that I, my colleagues and teammates are still here, alive and safe. While there have been a few roof falls, near misses and rescue missions needed, we as an industry have learned so much about the practical elements of bird control.



Decibel-testing phone apps will help you assess the decibel reading of the site and your tools. Nail guns often register well above 110 dB, resulting in permanent hearing damage



Working in close proximity to pigeons, nests, faeces, bacteria and pathogens is hazardous, so appropriate PPE is a must

However, it should be noted that bird management by its very nature is a dangerous sub-branch of the pest management industry. While not an exhaustive list, here are the issues to consider when planning your next bird management project.

Access equipment

Working at height or on roofs is fraught with risk. Negotiating your clients' facilities on elevated work platforms (EWPs) including scissor lifts, knuckle booms and the like, means the correct use of harnesses is essential for keeping safe. Use the appropriate personal protective equipment (PPE) and remember to be mindful of hazards during your initial inspection. Developing a strong relationship with your local equipment hire company will be vital for having the correct work platforms for your project.

When netting, the work platform is only centimetres from the building, so danger is very close. Keep your fingers off the EWP rails and keep your arms within the confines of the unit to avoid pinching or worse. Using gloves will protect you from cuts and the abrasive nature of handling netting, not to the mention the bacteria-loaded surfaces in a bird-infested area.

Permits

When developing a plan for bird management, your initial task is to ascertain which permits are required for your state. These include a High Risk EWP Permit, Working at Heights Permit, Roof Safety Permit, and any site-specific or local council permits. More than likely, your client will have a list of inductions and prerequisites before work commences, so remember to consider these and include them when planning your time and costs.

Personal protective equipment

From a PPE perspective, there is no end of variations needed. Be aware that hazards associated with birds will impact the human respiratory system, hence your respirator will offer exceptional value in providing safety and comfort. The danger associated with inhaling the fine particulates of dried bird faeces – as well as the bacteria

and other potential pathogens – is somewhat underestimated by our industry. PPE must be worn both for installation of systems and during the site clean-up.

Hearing protection is vital. Tools such as propane-powered nail guns register a decibel reading above 110 dB, and then there's the ambient noise of the facility you are working in to take into consideration. With permanent hearing deterioration commencing from 85 decibels and above, high quality earmuffs should always be in use. Download a free decibel testing app on your smartphone. Test the decibel reading of your site and tools to ascertain the hearing protection required.

Electrical safety

One of the more frightening experiences I recall is seeing a colleague electrocuted. Thankfully, they lived to tell the tale and this confirmed my rule since day one – only use manual, battery, gas or air operated tools when working on elevated work platforms. This is a moving plant (EWP), working with cables and fixed objects, and being electrocuted is as simple as there being a damaged electrical cord or a faulty facility circuit breaker. Remember, no 240v corded tools at height!

Working alone

Many of the tasks involved in bird management are unavoidably dangerous, especially when working from a roof. New legislation introduced this year in some states prohibits working on roofs or at height (above 1.2 metres in some states) alone. This isn't only due to the dangerous nature of the task at hand, but heat, dehydration, time pressure, stress in the home, mental health and other external factors can amplify issues associated with work safety. Working as a team ensures the job is carried out safely and efficiently, which in turns means the project is likely to be completed in a more timely fashion, and on budget.

Would you know what to do if something went wrong on the job? When working at height, your team must have a rescue plan. All team members should know what role they play in the event of emergency.



Keeping clear of your team is important. A spotter on the floor assists with this potentially hazardous exercise



It's a long way up! Working at height during a large bird netting project

Ladder safety

Can a ladder ever be safe? Rule number two in my book is: avoid ladders! In most commercial instances an elevated work platform is a safer option. When working from a ladder, tying off, harnesses, footing stability, having three points of contact and common sense are just some of the considerations before starting. Avoid working on ladders alone, wherever possible.

Safety documentation

At all commercial sites, the completion of Workplace Health and Safety (WHS) documentation is now a prerequisite. Yes, the paperwork is painful, but it is designed to keep you and your team alert to the hazards. Reading these and signing off prior to commencing work is a tremendous reminder to even experienced team members. A Safe Work Method Statement (SWMS) and a Working at Heights document is a minimum and should be completed by a professional. Alternatively, ask your bird management equipment supplier for templates that you can modify, specific to your project and client facility.

On-site training

Above are just some of the areas of discussion when organising your bird management project. At Pest IT, our most sought after and comprehensive form of training remains 'on the job'. On-site training is where a member of our qualified team, backed by more than 20 years of experience and thousands of hours installing and training in bird management, trains bird management companies on-site. Generally, this involves the installation of netting or other forms of complex bird management systems. We provide the training, supervision, tools and the guidelines to ensure that the installation is completed safely, professionally and efficiently.

The 'hands on' nature of this training is excellent for new and experienced members of the bird management industry. Our clients learn how to plan and complete the installation while also receiving instruction in the safe use of the latest tools, equipment and elevated working platforms. Professional tuition on the job will eliminate some of the trial and error associated with the installation of sophisticated bird management systems.

REDUCE YOUR RISK, REDUCE YOUR EXPOSURE

James Wallace, *Director, Wallace Risk Solutions*

The pest control industry is fraught with risk. The use of hazardous chemicals, power tools and the physical nature of the work mean that businesses need to be covered in case of accident or injury.

Whilst many businesses look to insurance to cover their property, and take out public liability and professional indemnity policies, there is also risk at the individual, employee level. Any persons directly or indirectly working for the business are also 'exposed', meaning they could be at risk of accident or injury and could sue if work is not carried out in a safe environment. Personal safety is paramount and the penalties for pest managers failing to comply with mandatory practices, as outlined by Safe Work Australia and industry bodies, can be significant.

The work cover exposure – the risks faced by individuals in their daily jobs – in the pest management industry can be considerable. These risks include the handling, transportation and storage of chemicals and the operation of machinery, including chemical exposure. Manual work including heavy lifting, digging or climbing and working from heights in all kinds of environments is risky. The weather and type of premises (i.e. domestic, commercial) are also risk factors, as well as the type of work being carried out, whether working alone or with others. Working at your client's premises also presents risk, as some clients may not adhere to high standards of health and safety for themselves and their workers.

Please note that worker compensation (work cover) policies vary depending on your location; it is not a national scheme and insurers usually are appointed for administration and claims handling.

Providing a safe work environment is every employer's responsibility, basic safety plans should be available and conveyed to employees. This includes the washing of exposed body parts after a treatment, having an emergency response plan, training in the identification of hazards and the handling and transportation of chemicals. Failure to comply with any of the above means the business is open to litigation.

There are several ways to reduce your exposure as an employer. Education is the key here.

All new employees should go through an induction process that outlines the safety procedures for the safe handling of chemicals, operation of machinery, correct use of PPE, emergency procedures and Safe Work Australia practices. Understanding environmental contamination is a must, as this can carry heavy penalties, which may not be covered by insurance.

Provide ongoing training to employees ensures that they have the mindset to approach hazardous situations with due care and diligence. Any employees handling chemicals must know how to safely move, transport and mix chemicals. In the event of an incident, employees must be aware of which emergency services to contact and have access to appropriate medical kits and training in how to use them. Full, well maintained PPE is essential, and employees must be well schooled in the use of respirators. Employees should be continually educated about new chemicals entering the market, and have information available to pass on to clients.

Insurance policies such as income protection or accident and illness can cover part of the exposure. This coverage can be complex especially for sole traders who may income split or have tax reduction in place, so it is best to use an advisor.

As always, avoiding an injury through preventative action is always better than taking a reactive approach. Injury claims can cost businesses money, as well as significant reputational damage.

Workplace safety is paramount no matter the size of your business. You and your employees are the best assets a business has, so it pays to protect them.

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WHY IT PAYS TO PLAY IT SAFE ON THE JOB

Gary Byrne, *Industry Support Expert, Rapid Solutions*

At its core, work health and safety (WHS) is concerned with installing systems and processes that ensure you and your team are constantly on the lookout for risky situations. It emphasises the need to consider the wide range of potential consequences of any action. A weighty responsibility.

Business owners wear many hats in any given week – CEO, financial controller, customer service officer, equipment operator, reporting specialist, marketer and more. It can be tempting to move the business aspects you are less comfortable with to the backburner. But when it comes to work health and safety it is important to resist that temptation. Otherwise, Australia's next WHS insurance claim could easily involve your business.

Recent WHS facts

The Australian Bureau of Statistics reported that during the 2018 financial year (July 2017 to June 2018) 563,600 Australians experienced a work-related injury or illness – that's more than 4% of the workforce.

Of that total, 87% were employees and three quarters of them had paid leave entitlements. This represents not just significant downtime spent in recovery, but a serious burden on business owners.

Tellingly, 'technician/trades worker' was the occupation most likely to experience a work-related injury or illness (Figure 1). The most common injury was sprain/strain (28%), followed by chronic joint or muscle condition (18%) and cut/open wound (16%). Lifting, pushing, pulling or bending is the most common cause, at 24%. Next is hitting or being hit/cut by an object or vehicle (18%) and via a fall (15%).

Rapid Solutions has seen all kinds of claims relating to WHS. Experience leads the national insurer to stress to business owners the importance of understanding what potential hazards to look out for, teaching your team to be equally as aware of them, and ensuring your business is protected with public liability insurance (PL).

PL is designed to help cover the costs of liability claims made against your business by a third party, for personal injury (including to visitors and employees) and property damage.

How to play it safe – off-site

WHS discussions amongst team members should be a part of daily work life.

For example, many businesses conduct 'toolbox talks' every morning to uncover potential risks in the day's jobs and discuss ways to manage them. This not only assists the employee assigned to the job, but the shared knowledge sees everyone improve their skills of recognising and mitigating potential hazards.

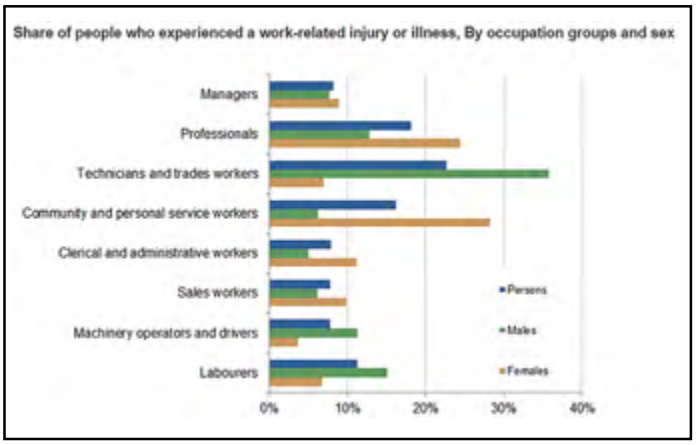


Figure 1: Work-related injury or illness by occupation (source: ABS report 6324.0)

Team meetings are also a great forum to openly discuss incidents that have been lodged or hazards that have been avoided over the past 24 hours. Team members can share ideas on how these could have been better managed.

Business owners can also lead the discussion on WHS more formally, for example by focusing on one particular aspect of WHS for the week/fortnight/month, using real-life examples to help make hazardous situations real and relatable. You could also ask your team for suggestions on how to improve overall operational safety – even anonymously via a suggestion box so they are more forthcoming.

If you have a regular internal communication platform such as a staff newsletter, it is a good idea to make WHS an ongoing topic.

Another tactic is to monitor your team's sick days and create regular reports to track work-related illnesses and injuries. Could a reduction in accident-related sick days be a team goal, with a reward for an agreed reduction by a set date? Driving your team towards this shared target could be key to reducing the impact WHS issues have on the business.

Importantly, place emphasis on maintaining personal protective equipment such as face masks, boots and safety harnesses. Your equipment needs to be faultless to ensure you don't become a statistic.

How to play it safe – on-site

At the core of WHS-relevant on-site activity is the question "What do I need to watch out for as I complete this job?"

When entering someone's home, firstly scope the area with a keen eye and a comprehensive checklist to identify and assess present and potential hazards. For example, does the customer have pets? Does the area being inspected (such as a roof void) look safe to enter? Implement the most effective control measures possible for these hazards then continue managing and reassessing as you complete the job.

The main potential hazards are around access to inspection areas – subfloors, roof voids, and other confined spaces, which includes ladder safety. Roof voids can conceal a number of serious hazards such as exposed or loose electrical wiring or components and loose insulation (potentially asbestos). Confined spaces also make great hiding places for dangerous animals, including snakes.

Chemical spills and/or contamination also present a daily hazard. At Rapid Solutions, personal injury is a common source of claims, particularly through overspray. For example, an employee might slip and fall due to a water spill not being cleaned up properly or a homeowner may slip after a chemical spray treatment.

Another point to note is that you are only insured for the job at hand, so Rapid Solutions recommends resisting doing good deeds outside your professional capacity. It might be tempting to assist a homeowner with a simple task but if you are not qualified, your helping hand could have seriously debilitating consequences, financially, physically and more.

Consider this situation: a pest control technician attempts to access a ceiling void and finds the manhole framing loose and dangerous to access. He says to the homeowner "Don't worry, I'll fix it," does so, then completes the inspection. All appears fine and the client is very pleased with the work. However, sometime later the homeowner decides to access the roof void, only to have the repairs give way. The owner is seriously injured and claims damages.

How this situation could have been avoided: the pest technician should have advised the owner to have the manhole professionally repaired before arranging to return and safely inspect the roof void.

Protect your investment

Given so many WHS issues are unexpected and out of a business owner's control, it is wise to cover yourself with public liability insurance. Rapid Solutions combines both general and public liability insurance into the one policy type and business owners can choose between coverage limits.

When considering limits, assess several factors including the nature of your business, its size including turnover and size of clients you provide advice/service too.

Arming yourself with knowledge as well as insurance is vital to a healthy WHS environment. Read over and use the resources of your state/territory's WHS regulator, which enforces such laws and investigates workplace incidents. They are a goldmine of information and advice for business owners who can use the material to better educate themselves about safety risks and mitigation strategies.

Protect yourself by making effective WHS processes a key element of your daily operations and a well-nourished area of your team's mindset.



WORKWEAR THAT'S GOOD FOR YOUR MENTAL HEALTH

BugROff Pest Busters in Horsham, VIC, is proud to be a part of a 'conversation starter' initiative to raise awareness of men's mental health issues and male suicide. The idea came about in August 2019 when office manager Rebekah Pfeiffer attended a workshop at Rapid EduCON about mental health led by Ed Ross and Dan Allen. Mr Ross shared his personal account of losing a close friend to suicide in 2016, an event that led him and Mr Allen to launch TradeMutt, a workwear brand with a difference.

TradeMutt offers a range of brightly coloured shirts, designed for those working in trades, that feature the tagline 'This is a conversation starter'. Mr Ross explained, "Our loud and vibrant shirts act as a catalyst to starting the conversation around mental health in men, a topic that has been hard to approach in the past for blokes, mostly due to the attached stigmas and perceived weakness."

Inspired by Mr Ross's moving presentation, Ms Pfeiffer took the idea back to the BugROff Pest Busters office and suggested that owner **Steve Olver** and the team adopt TradeMutt workwear. Now, every Friday, the team sports orange and yellow TradeMutt shirts in the hope of starting conversations with whoever they may come in contact with. The whole team supports the cause, with the techs wearing the brightly coloured shirts out in the field and around the community while the admin staff wear the black versions.

"These tops certainly start conversations as they are so bright and different, people can't help but ask what they are about," said Ms Pfeiffer. "Since we started wearing them in September, the number of questions and conversations these shirts have sparked has been great. The aim is to bring the topic of mental health into everyday conversation, making it an easier subject to talk about. It really is something quite simple yet can have a huge impact.



The TradeMutt shirts openly invite people to ask questions



The BugROff Pest Busters team (owner Steve Olver far right)

"Here in Horsham and the surrounding towns there are many people who have been personally affected by suicide and have felt the impact as one of those who are left behind.

"These bright shirts are worn with pride and we take the time to talk to people about mental health when the opportunity arises, which for us is at the least every Friday. We would certainly encourage other pest managers to take on the initiative."

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PRODUCT & SERVICES NEWS

BUSHFIRE AND PEST PROTECTION IN ONE

"Is your home bushfire ready?" It's a common public service announcement at the start of every bushfire season. Pest managers can now do their bit to help their customers protect their homes from bushfire, as well as pests, with the Protector Weep Hole Screen from Weepa.

Following some of the major bushfire disasters in Australia over the last 20 years, the various inquiries have increased our understanding of bushfire behaviour. In the Canberra firestorm of 2003, where 500 mainly urban homes and four lives were lost, the evidence indicated that 50% of the homes destroyed "in the suburbs came from ember attack directly out of the neighbouring forests." Furthermore, CSIRO research "showed that houses with vents that were not protected by a metal mesh with holes smaller that 2 mm were more likely to be destroyed during a bushfire."

As a result of these findings, building specifications for homes in bushfire areas are quite specific and detailed in Australian Standard AS3959:2018 – Construction of Buildings in Bushfire Prone areas. This includes the requirement for weep holes to be protected from ember attack. Furthermore, all areas of Australia have a bushfire risk rating which determines the level of protection required by new constructions in each area. These Bushfire Attack Levels (BAL) are referenced in NCC:2019 Australian Building Code and published as AS3959:2018.

This standard certainly benefits the owners of new buildings, but how do owners of older homes prevent entry of embers through their weepholes, thus protecting their home from possible ember attack?

Weepa has developed a stainless steel protector, the Protector Weep Hole Screen, which can be retrofitted to existing buildings to prevent ember attack through weep holes.

Developing such a product is not so straightforward. Yes, it needs to prevent embers entering the weephole, but of course it mustn't stop the weephole meeting its normal function – to allow moisture out and air in.

Australian Standard AS3959:2018 specifies the materials and design of construction elements in order to comply with the standard. The Protector Weep Hole Screen meets the highest level of bushfire protection and is compliant with all Bushfire Attack Levels: BAL-LOW, BAL-12.5, BAL19, BAL29, BAL-40 and BAL-FZ.

Weepa also carries out rigorous airflow and drainage assessments of all its products, something not all manufacturers do. Independent testing by Griffith University demonstrated that Weepa products do not significantly impact airflow and allow water to drain freely.

Of course, as pest managers will know, weep holes are a common entry point for many pests: mice, spiders, cockroaches, bees and wasps. The Protector Weep Hole Screen effectively excludes all these pests, so installation is a great supplementary service to your general pest treatment. Don't forget to apply it to first- or second-storey weep holes for complete protection!

The use of the Protector Weep Hole Screen provides pest managers with a great upselling opportunity. Suitable for all buildings with weep holes, its pest exclusion properties mean it's not just an option for bushfire prone areas, but whether property owners are worried about bushfire or pests, the Protector Weep Hole Screen provides an obvious physical barrier, for that important peace of mind.

The Weepa Protector Weep Hole Screen and new Weepa Termite Protector are available through Globe Pest Solutions.



Figure 1: Protector Weep Hole Screens are easily inserted using the adapter



Figure 2: Protector Weep Hole Screens fit all standard weep holes

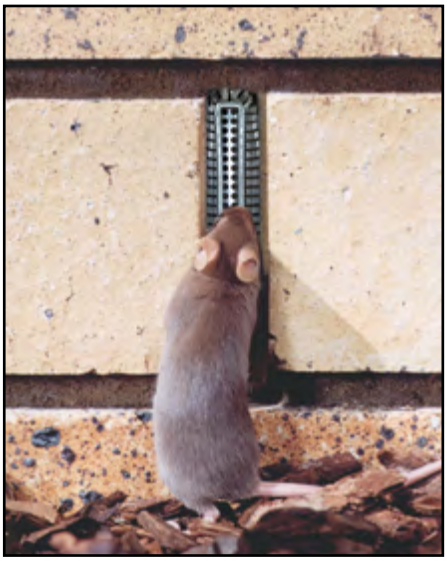


Figure 3: The stainless steel screens keep out pests as well as embers

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A TERMITE SYSTEM THAT'S EASY TO HANDLE

Brock Pearson of Pearson Pest in Tamworth, on the North West Slopes of NSW, has been using Sentricon for many years. As a second generation pest manager, he has seen Sentricon go through its evolution from wood monitors and compressed cellulose baits to the durable solid termiticide and above-ground station that it is today. Even in the 'old days', he still had a preference for Sentricon as it didn't involve exposure to chemicals.

Safety for himself and his team is paramount to Mr Pearson, who has young children of his own and a team of technicians to manage. Ensuring they can do their job effectively, efficiently and safely is a core value of his business. "For us, Sentricon AlwaysActive is easy to use. We don't need to have any specific PPE gear apart from some latex gloves, so when we're handling the rods we don't contaminate them."

This is a big advantage for the product in hot climates such as Tamworth where wearing overalls, elbow-length PVC gloves, chemical resistant footwear and/or dust masks in mid-30 to 40°C heat makes for a very uncomfortable day.

With his pest control business operating out of relatively new facilities in the industrial district of Tamworth, Mr Pearson had to review the physical requirements of housing chemicals. "There are no specific storage requirements for Sentricon. You don't need to have big bundy pits or anything like that, because of the nature of the product."

The fact that the active ingredient in Sentricon AlwaysActive rods is safely locked in the bait matrix means it is easily and safely moved between sites. When transporting the rods to customers, there are no transport or segregation requirements with Sentricon – a box of rods can sit on the front seat of the truck, allowing for quick and easy access.

Just as important for today's market, however, is safety to the customer and the wider environment. "From a consumer point of view, they love Sentricon because it is an unscheduled product. Once you educate the customer about how Sentricon works, the homeowner absolutely loves it," said Mr Pearson. "There are no chemicals where you have your family, your kids and pets. It's a really good product in that regard, being so safe to use and it works incredibly well."

The need to control termites whilst minimising the amount of chemicals in the environment was a major focus for researchers in the 1990s. This resulted in the development of the Sentricon Termite Elimination System, which introduced the concept of a bait and monitoring system. The 2000 US EPA Presidential Green Chemistry Challenge Award went to Sentricon as it "delivers unmatched technical performance, environmental compatibility, and reduced human risk" (US EPA). Reducing the volumes of chemicals in the environment was a huge incentive for researchers and a large part of why Sentricon was awarded this prestigious environmental award.

That wasn't enough, however, and research continued to develop an 'always active' system that combined the effectiveness of hexaflumuron with the safety aspects of the Sentricon system and would also eliminate colonies from day one. This project involved a multi-disciplinary team, many prototypes and took 17 years of development; perfecting a matrix that was highly desirable to termites whilst incredibly durable in all environmental conditions. Sentricon AlwaysActive was the outcome of that project and is considered by many researchers to be as close to 'ideal' as possible.

For Mr Pearson and his team in Tamworth, Sentricon AlwaysActive has been a game-changer. "Sentricon AlwaysActive has really accelerated our growth in this area of our business. This comes down to how consumer friendly it is, how adaptable it is, the safety of the product and the track record of Sentricon in eliminating termite colonies. For us, nothing else comes close."

Safety is no longer a desirable aspect of a product; it is an essential requirement for any product entering the consumer market. It must also be a core value of every pest management business, as employees are relying on their managers to provide a safe workplace with minimal exposure to pesticides.



Brock Pearson of Pearson Pest, NSW

WHAT IS MOSQUITO CONTROL WORTH TO YOUR BUSINESS?

With the long, hot days of summer upon us, the Australian mosquito season is reaching its peak.

As urban pests, mosquitoes can cause significant headaches for commercial businesses and residents alike – not to mention the health risk they pose as carriers of diseases such as the Ross River virus, or dengue fever in the north of Australia. When the problem becomes too difficult to solve with a dose of citronella, customers start searching for an effective solution – they call their local professional pest manager.

The excellent revenue versus cost profile of mosquito treatments makes them a great addition to your service offering, with the potential to upsell the service to the homeowner while you are already on site doing other treatments. Adding a mosquito treatment to a general pest control package is a great way to take advantage of this seasonal demand and maximise your return per customer. It could even lead to ongoing work; a 2004 study by the University of Kentucky, in the US, found homeowners who experienced a 73% reduction in mosquito exposure through treatment were willing to pay for that service on a regular basis.

For managers of public spaces – for example, councils in charge of amenities and landscaped public areas – the need to eradicate mosquitoes is even greater. Pest managers who can offer high quality, long-lasting control are worth their weight in gold.

However, managing customers with close neighbours who don't follow a mosquito management program can be challenging. Mosquitoes need standing water sources in which to lay their eggs when breeding. Because of this, it is always good to ask customers to discuss eliminating possible stagnant water sites with neighbours. This helps ensure they understand the scope of your treatment, not to mention possibly adding another client to your list.



Stephen Nash of Strategic Pest Services spraying Demand Insecticide on foliage for residual mosquito control

One choice of insecticide on the market is Demand, Syngenta's residual barrier insecticide spray, delivering long-lasting control against mosquitoes, flies, spiders and a wide range of other insects. Its versatility means it can be applied outdoors or indoors, to foliage, on ornamental plants and shrubs, on hard surfaces like outdoor furniture, under decks and in plant pots.

Demand Insecticide uses iCap technology to extend its residual effect. iCap packages Demand's active ingredient, lambda-cyhalothrin, in dual-walled, multi-sized microcaps. When a surface is treated, more than 64,000 microcaps per square metre stick to the treated surface. As insects land, the microcaps attach to their waxy cuticles. The smaller microcaps release the active ingredient quickly, resulting in fast knockdown. The larger microcaps remain intact longer, releasing the active ingredient for up to 90 days. This is what gives Demand its long-lasting effect, minimising the potential for callbacks and retreatments. If used correctly, mosquitoes and other insect pests can be controlled with reapplication intervals of no more than ten weeks.

Its wide range of uses (that includes ornamental foliage) and long-lasting results make Demand an effective solution for the problem of mosquitoes. Customers will be able to enjoy spending time in their backyards this summer, while you enjoy the additional revenue that comes from adding a simple spray treatment to your usual service offering.

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SMOKE 'EM OUT, KNOCK 'EM DOWN

Professional pest managers have used smoke generators in Australia for many years. A tried and tested part of the pest manager's toolkit, they play a useful role in gaining control of flying and crawling insects, especially in situations where the pests are difficult to reach and treat directly.

Jon Renton from Renton's Pest Control Services, Gunnedah, NSW, is a long-time user of Liphatech's Imperator Smoke Generator. Mr Renton said, "Integrated pest management requires an assortment of tools in your kit that are effective and reliable. Dad (**Ken Renton**) started the business 50 years ago and for me it's been 25 years – a very long time – that Imperator's been part of our go-to range of products. We use it in conjunction with liquid sprays to deliver our professional pest services."

Smoke generators offer some unique advantages over other insecticide treatments such as liquids and dusts, the most obvious being their ability to penetrate hard to reach pest infestations, for example in roof voids, wall cavities, sheds and garages, and inside tall structures. Pesticide smoke particles are much smaller than spray droplets or dust particles and thus reach areas not penetrated by conventional treatments.



Imperator being used in a residential home to treat spiders in a raked ceiling



Renton's Pest Control technical team (Jon Renton second from left, Ken Renton second from right)

Mr Renton continued, "Imperator gives a pest knockdown with no residual effect. It's small, convenient, effective and very easy to use and covers a good 200 cubic metres, which makes it very cost effective. We use Imperator in a number of situations such as commercial kitchens, houses, industrial sheds and places that have cathedral or vaulted ceilings.

"Imperator is a really good flushing agent on American cockroaches – it really knocks them down in those hard to get to cracks and crevices. We also use Imperator in sensitive areas, especially in offices and computers rooms, where there is a lot of electrical wiring."

Imperator Smoke Generator is a permethrin-based product registered in Australia for controlling a range of public health pests including cockroaches, ants, flies, fleas, silverfish and spiders. Prior to treatment, people, animals, fish and birds should be removed from the area and smoke detectors turned off. The smoke generator unit should be placed on a fireproof base, on a protective floor covering or inside a metal bucket. Packaged in a plastic canister, Imperator comes ready to use – simply remove the plastic cap from the canister and, using a match or lighter, light the exposed fuse. A large cloud of fine insecticide smoke is released to penetrate all the cracks and crevices and with its low odour, there is no lingering smell.

"Imperator has a faint odour when activated but after you follow the settling period and then carry out the ventilation period there is no odour left at the end of the day," commented Mr Renton.

One 31 g canister of Imperator can treat a space of 220 cubic metres in general pest situations in commercial, industrial, domestic and public services areas or when treating caterpillars, aphids and weevils in glasshouses and small agricultural buildings. However when treating ants and flies in large agricultural buildings, including animal housing, one canister of Imperator is sufficient to treat 440 cubic metres.

Mr Renton added, "We are always careful to follow the label instructions – we make sure the client puts away any food, children's toys, and pets and we cover up any fish tanks. We always carry a metal plate in our vehicles for using Imperator as the canister must be placed on a fire retardant surface as the base gets very hot.

"We also place a note on the customer's front door to advise anybody that may arrive at the property to be aware of the smoke treatment, for health and safety reasons. It also says that the smoke does not mean there is an internal fire!"

Especially if you're trying Imperator for the first time, remember to always read and follow the label directions for application and use.

Imperator is available from Garrards, Globe and Agserv.

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PPC
(Professional Pest Controllers) Live
March 11
Harrogate, UK
bpca.org.uk/Upcoming-Events

JUNE

ICUP
(International Conference on Urban Pests)
June 29 – July 1
Barcelona, Spain
icup.org.uk

AUGUST

Pestech
August 3-14
Various locations across Australia

SEPTEMBER

AEPMA Conference
September 16-18
Gold Coast, Australia
aepma.com.au

FAOPMA/Pest Summit
September 23-25
Manila, Philippines
faopma-ps2020manila.org

OCTOBER

Pestworld
October 13-16
Nashville, USA
pestworld2020.org

NOVEMBER

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November 18-20
Paris, France
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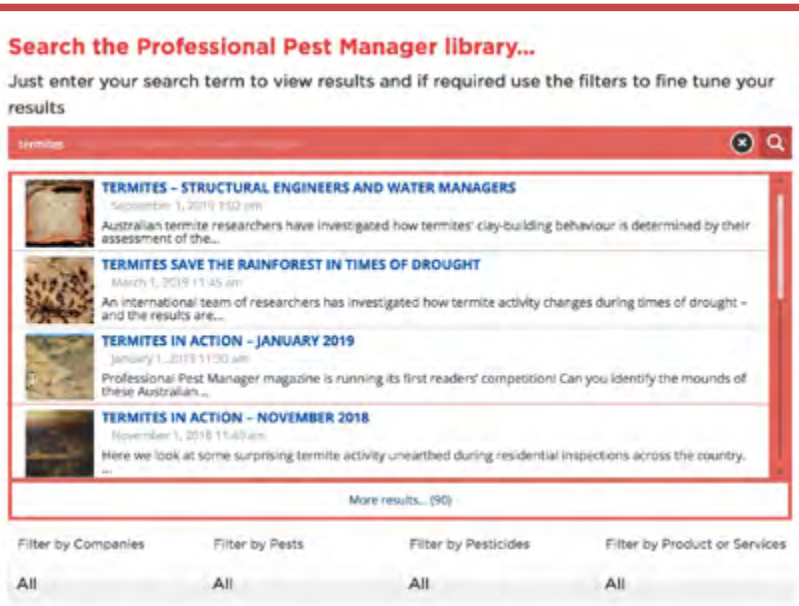
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