Bed Bug Special 2016

pest

The independent UK pest management magazine

Scent secrets

Issue 46
August & September 2016

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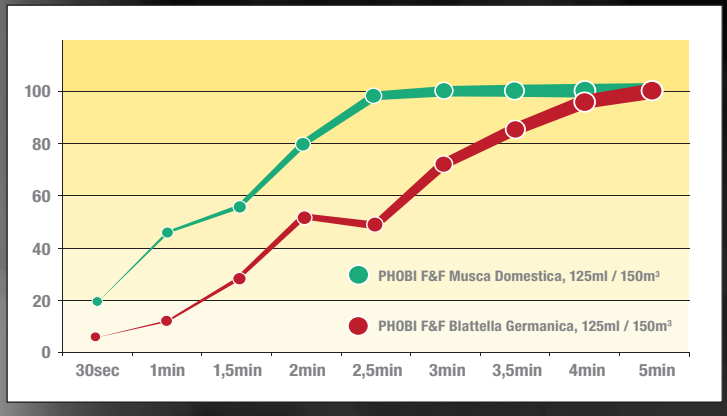

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1min	45.5%	11.1%
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2 min	80%	51.1%
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Pest is published six times a year

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Helen Riby *Frances McKim*

Aims

As the industry's only independent magazine, ***Pest*** aims to deliver a mix of unbiased news, impartial advice and topical technical features. We are committed to being as inclusive as possible covering every sector of the pest management industry.

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Use pesticides & biocides safely. Always read the label and product information before use.

Contents

UK pest professionals remain positive

Provided they work in the private sector, the mood of those on the frontline of UK pest management remains as positive as ever. And that's official, as the results of the 2016 National UK Pest Management Survey are now in.

Local authority pest control specialists however, are far less confident about their future. Hardly surprising, as the end to this period of unprecedented economic austerity still seems pretty elusive. You can read the full report from this year's survey on pages 9 to 11.

It is positive too to be able to report on some excellent new bed bug research findings in this, our sixth annual bed bug special. The work in Australia on bed bug resistance is particularly revealing and there are articles on new research from the USA on bed bugs and colour, as well as on the compounds that produce that sweet musty smell pest controllers know means bed bugs!

What's not so positive is that we have had to look outside the UK for all these research articles. It seems that the UK has turned its back on original research into many urban pest problems or, maybe, the researchers are holding back their findings ready to reveal all at the International Conference on Urban Pests in Birmingham next July. You can hope! Enjoy your read.

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Matt gets certified

PestFix company director, Matthew England, has become the first in the UK to be qualified by the Bird Control Group from Holland to conduct Agrilaser Autonomic installation courses. This will enable Matt to train pest control professionals to become fully qualified installers of the Agrilaser Autonomic laser system.

New online pest control supplier

Aimed at the professional pest control, as well as the home & garden market, is Deeval – a new online shop. Put together by Russell IPM, who has been involved in the distribution of Dismate for over 10 years, Deeval is now widening its reach to include its own range of products, as well as other brands in the coming months.

As managing director, Dr Shakir Al-Zaidi, explains: "The new online shop will stock a range of products that aim to support the new approach to pest control where non-toxic and environmentally friendly products can play a major role in integrated pest management strategies."

deeval Pest Control Specialists

www.deeval.co.uk

CEPA certification marches onwards

Herefordshire-based Positive Environmental is one of the most recent companies to achieve the European Standard for Pest Management Services EN 16636.

Manchester City Council was the first council in Europe to achieve this status.

read more on the web WWW

James Ostler of Positive Environmental receives his certificate from Jessica Morgan, CEPA product manager for Bureau Veritas UK

Budget cuts threaten Natural England

Documents leaked to Greenpeace and shared with *The Guardian*, reveal that Natural England faces a budget cut of 27% and a reduction in headcount of 20% by 2020 due to reduced funding from the Department for Environment, Food & Rural Affairs (Defra). Internal sources say this amounts to using its powers less and to agreements that "compromise wildlife."

If true, this is not good news for professional pest control. Natural England plays a vital part in such issues as the General licences for wildlife management, which includes bird licences, and the prosecution of those who use or store pesticides illegally.

Brexit blues

Since the announcement of the EU Referendum result in June, the UK seems to be getting its head around the outcome. At the time, ***Pest*** asked several industry leaders for their opinions as to what this might mean. Although the comments were recorded only days after the result, not much has changed. Certainly for the foreseeable future, it's business as usual.

Read what they had to say on the ***Pest*** website.
www.pestmagazine.co.uk/en/news/posts/2016/june/brexit-good-or-bad-for-uk-pest-control

read more on the web WWW

Whoops! Correction

Sharp- eyed readers have spotted two errors in the previous edition of ***Pest*** magazine, notably ***Pest*** issue 45: June and July 2016.

On page 16 as part of our article on moths, it reads ..... Clothes can be bagged and placed into freezers for two weeks at temperatures below -10°C. As expert Dave Pinniger pointed out, this cannot be guaranteed to kill all eggs, larvae and pupae. It should be two weeks at -20°C or a week at -30°C.

And on page 35 in the letter sent in by Nigel Cameron from Wildlife Management Services regarding the removal of foxes, the Abandonment of Animals Act 1960, as mentioned in the letter, was repealed and replaced by the Animal Welfare Act 2006. We thank Paul Cantwell, Species Enforcement Specialist for Natural England, for pointing this out.

Clive gets into Top Gear!

Long-term supporter of the charity The Children's Trust at Tadworth Court, Cleankill Environmental Services director, Clive Bury (below), volunteered at a recent Super Car event aimed at raising funds. As part of the day he had the chance to meet The Stig.

Acquisition and merger mania

Maybe the summer temperatures have gone to the heads of the captains of industry, but there has been a recent spate of company news – the big just get bigger!

The proposed merger of equals – that is DuPont and The Dow Chemical Company – continues its route through the required regulatory clearance. Having had its offer of a friendly acquisition rebuffed, it is reported that Bayer is heading for a hostile take-over bid of Monsanto. This follows the sale of Syngenta to ChemChina earlier in the year.

Meanwhile, in July Rentokil significantly increased its presence in the US market with the acquisition of pest control and turf products distribution business Residex LLC for US$30m. This was followed in early August with the acquisition of Ohio-based Hoban Pest Control. But it's not just Rentokil getting in on the USA act, Sweden-based Anticimex, who claim to be the world's fourth-largest pest control company, made its entry into the US pest control market with the acquisition of New Jersey-based Bug Doctor.

These acquisitions have not all been one way, as in June USA-based Rollins Inc announced the acquisition of Kent-based Safeguard Pest Control and Environmental Services. This is the company's first, but unlikely to be its last, acquisition in the UK.

read more on the web WWW

It's landed – the Asian hornet

In ***Pest*** issue 44: April & May 2016 it was predicted it was only a matter of time before the Asian hornet (*Vespa velutina*) arrived on our UK shores. Well, it has! The first one was spotted by Jamie Laband of States Works Department and Technical Services. It was then identified by Dr Matt Davies, entomologist and divisional technical adviser at Killgerm. Keep your eyes peeled for any more.

Dawn returns to Agrisense

Having left Agrisense for pastures new at Woodstream Europe in 2013, Dawn Heptinstall-Bolton re-joined the AgriSense business in early July as sales manager.

She worked for Agrisense for six years from 2007 and was invited to rejoin the company by general manager, Dave Avery.

Just like Dawn, Dave is another who has returned to the Agrisense scene having most recently worked for the B&G Equipment Company, the new owners of this business.

Both Dave and Dawn are well versed with the Agrisense products, customers and market so should make a good team.

New head of customer service at Mitie

Gary Morris has been appointed head of customer services for Mitie's pest control business. Gary will oversee all customer service functions from the customer helpdesk, to the service co-ordination department and the key account team. He heads up a team of 30, including the three department managers who are responsible for pest control service delivery all over the UK.

Gary joined Mitie in August 2013 on the pest control helpdesk as a service co-ordinator. Within six months he became the department manager and he now heads up the entire team.

PestFix expanding

Sussex-based PestFix continues to expand, such that two new staff have joined their ranks.

Matt Hamilton joins as key accounts executive, so watch-out for him at shows and training events. His will provide one-to-one customer service to PestFix's trade customers – a task he previously performed in fleet car management. Look out he's a speedy soul, having recently completed not only a marathon, but also the London to Brighton cycle ride.

Known for being a bright and bubbly individual, Elaine Bliss has joined the team as sales office administrator and will be most people's first point of contact on the phone. Elaine is well versed in technical sales, having come from a sales liaison role in a precision engineering company.

She is a keen gardener and also a great baker so the PestFix office team now enjoys the added bonus of a cake every now and again!

Ben to market BPCA

Ben Massey has joined the British Pest Control Association (BPCA) as its new marketing and communications manager. Ben's appointment follows the recent release of BPCA's 2016-18 strategic plan aimed to increase the professionalism, profile and profit for the association and its members.

Ben previously worked in marketing for membership, charitable and social enterprise organisations in the construction and sport & leisure sectors and, most recently, in the higher education sector for the UK Council for Graduate Education.

New chairman at SOFHT

The Society of Food Hygiene and Technology (SOFHT) has appointed Ian Booth as its new chair following the end of a two-year tenure by Alan Lacey, operations compliance manager at Asda.

Ian is quality director UK and Ireland for Martin Brower, the global end-to-end supply chain management specialist within the quick service restaurant sector.

Ian has been an active member of SOFHT for 15 years and is the longest standing member of the council. He originally joined as a student member and has been vice chair for the last two years.

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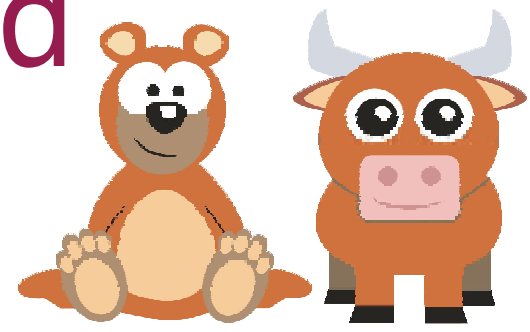
The National UK Pest Management Survey 2016

Future in pest control still pretty good



What an optimistic bunch those of you in the pest management business are. The most recent BASF/*Pest* survey, conducted in the spring this year, measures, amongst other things, the mood of UK pest professionals. As has been the case across all six years that the survey has run, the majority of pest control specialists continue to see plenty to be positive about.

The BASF/***Pest*** National UK Pest Management Survey 2016, which took place amongst ***Pest*** readers at the sharp-end of pest control this spring, predicts a rosy future for pest management.

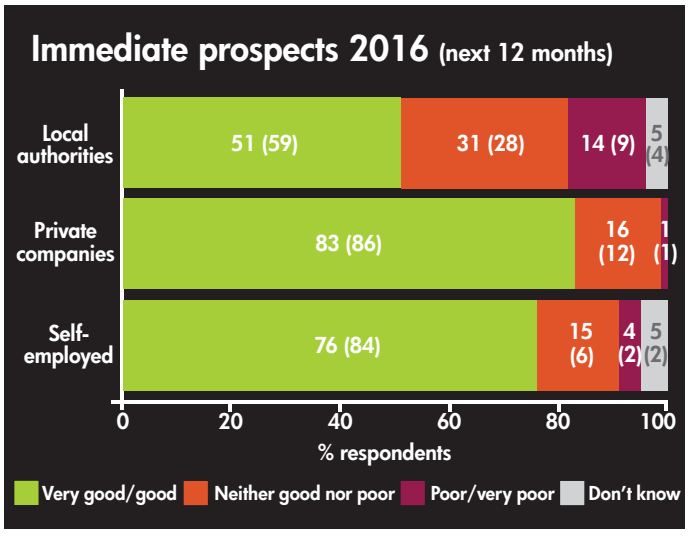
The euphoria of the 2015 survey, which saw self-employed pest controllers, those working in pest control companies in the private sector and local authority staff, all recording their most optimistic scores since the survey began, has been tempered. However, as the charts clearly demonstrate, predictions for the immediate and five-year term are just a little below the 2015 survey findings (2015 results shown in brackets). The mood is still one of huge optimism.

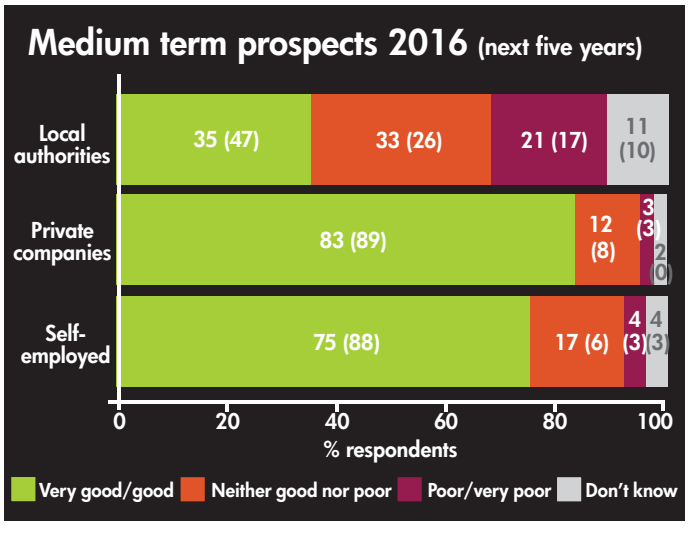
Whilst the survey was held before the Brexit vote and its subsequent additional uncertainty for the UK economy, we expect Brexit will have had little, if any, impact on the mood of the industry. Despite all the threats facing pest management, such as possible product losses, increasing resistance and, now, the extra economic dangers that Brexit might produce, pest management ranks pretty high on the list of 'stuff that is essential for modern life'. This means that whilst there may be pressure on prices, demand for pest control services remains pretty constant, whatever the economy is doing.

Understandably, local authority staff continue to be the most pessimistic group. Compared to the other groups, those in the public sector, have very little control over their destiny. For them doing a good job has little influence on whether they keep their job.

In terms of profitability, 2015 was the best year yet for companies, with 58% reporting profits up and just 6% experiencing a downturn. This group has seen a steady improvement over the six years of the survey. In the first year only 31% reported improved profits.

Self-employed pest controllers also did well, but not quite as well as the previous year. The number reporting increased profits dropped back from 51% to 44%. However profitability is still much improved when compared to the early years of the survey when fewer than 20% were reporting profits as being up.





Thank you for taking part in the 2016 survey

There has been another great response to the National UK Pest Management Survey which is jointly organised by BASF and ***Pest***. Only those at the sharp-end of pest control are invited to take part. The 2016 survey was the sixth year that readers at the sharp end of pest management were asked to tell us what they do, where they do it and how the feel about the future of UK pest control. A big thank you to all those who took time out to complete the online survey. The number taking part, at 291, was once again good and the survey continues to be representative in terms of the split between our three groups – self-employed pest controllers (31%), pest management companies (41%) and local authority pest control units (28%). There was also a decent geographical spread, although participants from Wales and Northern Ireland were few in number. Almost a third of those taking part were based in London or the South East.

Rats and mice are top pests

Rats and mice continue their domination as top pest species making up just over half (53%) of the average pest professional's workload in the 2016 survey.

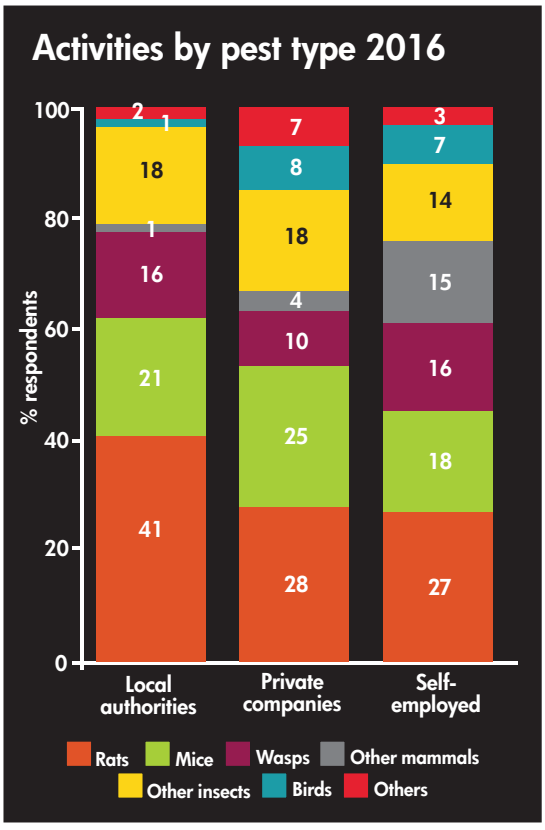
Rats accounted for 31% of pest management activity with mice making up a further 22% of the workload. In third place was wasp management which takes up a further 16% of a pest controller's time.

If anything, rodent control has increased in importance over the six years the survey has been running. Back in 2011 it represented an average of 48%.

Of course, averages can hide a multitude of sins and there are differences between the three groups as the chart shows. But, with the exception of two participants, everyone who completed the 2016 survey undertook some rodent control work in the previous year.

The chart shows that for self-employed pest professionals work to solve problems caused by other mammals – foxes, rabbits, moles and so on – is as important as their wasp control activities, making up 15% of this group's workload in the 2016 survey.

Within the 'other insects' category both local authorities and pest control companies identify 6% as bed bug work. For local authorities this is an increase from 4% in the previous year. When asked about which pests are increasing, local authorities more than any other group has consistently identified bed bugs as a pest that is increasing. Whilst they may be increasing bed bugs are still a long way behind rodents in terms of the proportion they make up of a pest controller's workload.



Other interesting findings

- The survey found that there had been a big fall in the number of local authorities offering some free pest control services to householders. In previous years the proportion offering at least some services free had always been in the high 40s. In the 2016 survey this fell to just 30% so less than a third. Those charging at least some of their work at full commercial rate to householders rose to almost a quarter (23%).
- Three quarters (75%) of local authorities in the survey work in teams of five or fewer. When the first survey was conducted in 2011 almost half (47%) worked in teams of more than five people.
- It is not only local authorities that are working in smaller teams. 63% of pesties in private companies also reported they were in teams of five or fewer. In contrast in the 2013 survey only 41% worked in such small teams.
- For the first time self-employed pest controllers have reported that more than 60% of their commercial work is done 'on contract'. Last year things were much more hand-to-mouth with a 50:50 split between contracts and one-off jobs.
- Almost three-quarters of commercial pest management work completed by companies was contract business, up from 65% in the 2015 survey.

More time spent on household pests

Interestingly, in 2016 all three groups reported an increase in the proportion of their work that took place in domestic dwellings. Local authority's domestic work was up three percentage points to 79%, companies reported a similar three percentage point increase to 28% and self-employed pest controllers recorded a six percentage point leap to 53%. Does this indicate that householders are more prepared to pay for pest control work, or is it a reflection of yet more local authorities abandoning pest control altogether? Sadly, we suspect, it is probably the latter!

In round terms however, pest control work continues to be split roughly 50:50 between domestic and commercial locations, with around 10% of work being on commercial farms. But there are some big differences between the sectors:

- Companies are much more into commercial business (72%). 11% of this is on farm, up from just 9% in the previous year. Is this a sign of more farms starting to employ professionals in anticipation of the restrictions on product access that the Rodenticide Stewardship Regime will impose?
- Self-employed pest controllers saw their commercial work increase from 43% to 54% in the 2015 survey, but this fell back to 47% in the 2016 study. 14% of this work is on farms, down from 17% the previous year.
- The main focus for local authorities is domestic dwellings. They now spend 79% of their time working in this sector (up from 76% last year) and just 19% on commercial work, down from a peak of 26% in the 2012 survey.

Main rodent control issues identified

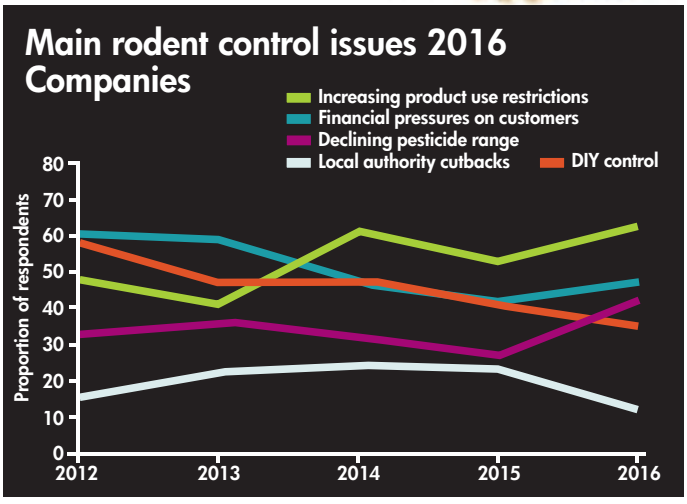
By far the biggest threat to the future of effective rodent control in the UK is 'increasing product use restrictions'. That's the overwhelming view of survey participants who work for UK pest control companies.

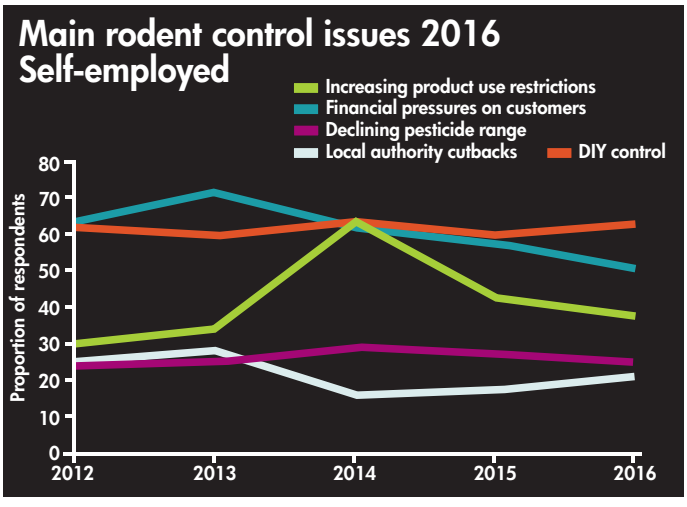
Their counterparts in local authorities don't agree as, not surprisingly, they still view 'local authority cut-backs' as the biggest threat to their activities in rodent control. However, local authority staff do identify 'product use restrictions' as a threat of increasing importance.

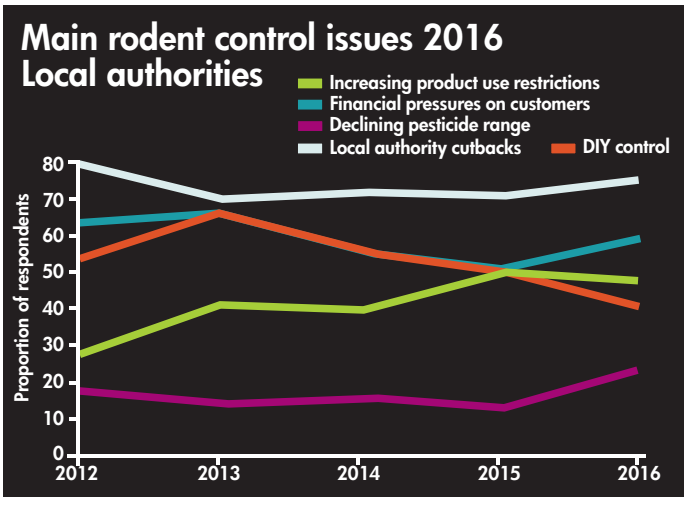
Companies and local authorities also concur that 'financial pressures on customers' are starting to rise, following falls in the 2014 and 2015 surveys. These two groups also both see 'DIY control' as less of a threat than they used to be.

In contrast, self-employed pest controllers hold opposing views. They identify 'product use restrictions' as a threat that is receding. They see 'DIY control' as the number one threat to effective rodent control and believe that it is a theat that is increasing. They also rate 'financial pressures on customers' as a declining issue.

As the graphs show, those working in pest management companies also identified 'declining product range' as an emerging threat.







Threats to insect control

When it comes to insect control, the top two threats were the same two identified in 2014 and 2015 namely:

- Financial pressures on customers;
- DIY control.

However, 'poor professional pest control practitioners', which, up to now, has occupied third position, was overtaken by 'declining pesticide range' and 'increasing product usage restrictions', most probably reflecting all those Article 95 products that had to be withdrawn from 1 September 2015.

Pest control companies raised 'declining product range' to second in their ranking, just ahead of 'poor professional practice', 'increasing product use restrictions' and 'DIY control', which were all pretty similarly ranked. Top of the companies list was 'financial pressures on customers'.

Local authorities put 'local authority cut-backs' and 'financial pressures on customers' at the top of their list. concerns about 'DIY control' were third, but these are declining, whilst 'increasing product use restrictions' and 'declining product range' are both on the up.

Self-employed pest controllers continue to put 'financial pressures on customers' and 'DIY control' at the top of their list, but both are becoming less of a threat, whilst 'declining product range' and 'product use restrictions' are both rated as growing concerns.

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Stewardship practice
pest
supporting safe use of anticoagulant rodenticides

Evidence that rodenticide practices are changing?

In the 2016 National UK Pest Management survey, organised jointly by BASF and ***Pest*** (see pages 9-11 in this issue), participants were also asked about their rodenticide practice.

The results provide a snapshot of industry thinking in early March 2016.

Across the board, more than three-quarters of respondents reported that they had already made changes. The proportion that had altered their practices rose to 82% among local authority staff and those who worked in pest control companies. Among the self-employed pest controllers, 69% reported that they had made changes.

The chart opposite shows the top three changes each group had made.

More people in every group selected 'thinking about alternatives to rodenticides' as their most important change. However, not everyone agreed.

Eight options were provided and every one was chosen, by at least one person from each group, as their most important change.

	Top three changes made to rodenticide practices		
	1	2	3
Local authorities	Giving more consideration to alternatives to rodenticides	Better surveying and planning rodenticide treatment	Better recording & documenting risk management measures
Companies	Giving more consideration to alternatives to rodenticides	Better surveying and planning rodenticide treatment	More thoroughly assessing non-target species risk
Self-employed	Giving more consideration to alternatives to rodenticides	More thoroughly assessing non-target species risk	Better surveying and planning rodenticide treatment

*Source: BASF/**Pest** National UK Pest Management Survey 2016*

The other options were:

- Taking greater care in bait point design & location;
- Taking greater care in the timing and duration of baiting;
- Giving greater consideration to product choice;
- More thoroughly removing unused bait and dead rodents.

Apodemus sylvaticus, one of the species stewardship aims to protect

Have you completed your stewardship declaration docs?

Anticoagulant rodenticide products carrying the new, legally-binding stewardship labels have started to appear on distributors shelves.

The good news is distributors report that, generally, users have taken to heart the requirement to complete the declaration documents produced by the Campaign for Responsible Rodenticide Use (CRRU) Point of Sale workgroup.

Important paperwork

This paperwork is important because, without it, you will be unable to purchase, or use professional rodenticide products labelled with the stewardship requirements.

So, if you are one of the few rodenticide users who have yet to complete these documents, contact your distributor ASAP.

Key dates for pre-stewardship products are:

- Sold up until 30 September 2016;
- Used before 31 March 2017.

read more on the web WWW

Some good news for rodenticides

Europe's Biocidal Products Committee (BPC) has adopted opinions supporting the renewal of approvals for eight anticoagulant active substances for use in rodenticide products across the EU. These are chlorophacinone; coumatetralyl; warfarin; bromadiolone; difenacoum; brodifacoum; difethialone and flocoumafen.

These actives are all up for review after just five years (normally there is a 10 year approval for a biocide active substance). The early review is because these substances are all categorised as 'candidates for substitution'. In laymen's terms this means that the authorities would prefer not to have to approve these substances but, because there are currently no alternatives that are at least as effective and safer, they allow them to be used.

The BPC is part of the European Chemicals Agency (ECHA) based in Finland. It prepares the opinions on active substance approvals and identifies those it believes are 'candidates for substitution'. Final decisions though are taken by the European Commission.

One of the key parts of this renewal process has been the consideration of a Risk Mitigation Measures (RMM) document and the implementation of most of its recommendations. Certain use requirements (still to be announced) are expected including: refillable tamper-resistant bait boxes and refill packs for amateur use (the previous proposal was for non-refillable tamper-resistant bait boxes only), with maximum pack sizes for amateurs of 300g for wax blocks and 150g for other formulations.

Looking at the official opinion documents for each active substance, which are published on the ECHA website, it is interesting to note that a distinction is made between three types of users: general public, professional and trained professional.

Whilst this 'battle' seems to have been won, the 'war' is most definitely not over. The authorisations for the biocidal products themselves now all have to be renewed, so there is ample opportunity for new objections.

read more on the web WWW

Bait buttons secure ant control

Ant control may not herald the customer acclaim or potential cash income of eliminating nefarious pests such as rodents or wasps. But for commercial premises, quick and clean control remains crucial to demonstrate an effective overall pest control programme.

For Sussex pest controller, Steve Holmes, the incursion of black garden ants (*Lasius niger*) into restaurants has proven the challenge this year. The season started slowly in cool, wet conditions, but a prolonged hot dry spell has seen numbers increase through the summer – at a time when many restaurant diners are moving outside onto patios and paved areas.

"It's amazing how far ants will travel in foraging for sweet foods, particularly to bar areas and kitchens," he reports. "My strategy has been to intercept the movement with strategically placed bait stations, where the foraging ants pick up the indoxacarb-based ant gel (Advion Ant Gel) and take it back to the nest.

"It has given far better long-term control, compared to DIY powders or unsightly single-use liquid bait stations," he adds.

Having taken advantage of a Syngenta and Killgerm offer for Advion Ant Gel with free bait button stations and a TechReach tool for bait placement, Steve has used the small discreet bait buttons to target specific ant nests at the point of entry.

At one restaurant he was able to pull back a carpet and place the bait buttons beneath. In other situations the discreet plain buttons were placed on identified ant movement runs and in a bar cellar to target specific nests where ants were regularly moving up to the servery area.

Steve continues: "With the bait buttons I know exactly where the bait is and that the bait will remain clean and attractive to the ants. It can be cleared away cleanly at the end of the job too.

"Using the small hole in the top of the station to charge the bait avoids spillage and mess and they can be easily replenished with fresh bait if required."

Steve highlights that he's found that initially ant activity may increase around the bait stations, as the colony finds and feeds on the attractive gel. But within a few days the activity declines and soon ceases as the colony is killed off.

"It's important to make customers aware of what they can expect to see and the timescale for the elimination."

He explains how one restaurant was experiencing ant problems every night, but little evidence during the day. "It was only after several visits and discussions that we realised they were lifting their outside topiary planters into the restaurant each evening and back out in the morning before I arrived – only one of the planters had an ants nest in the soil.

"Having found the nest, it was simple to put a bait button into the planter which quickly knocked out the nest without having to remove or damage the valuable topiary plant, or the restaurant customers ever being aware," concludes Steve.

Steve Holmes is getting good garden ant results using Advion Ant Gel in bait button stations

Ant alert!

Lasius neglectus, the invasive garden ant has steadily been gaining ground in the UK. It's now been found in Yorkshire, Cambridge, London and Sussex as well as its original Cotswold stronghold. We asked Clive Boase from the Pest Management Consultancy for an update.

You may remember a flurry of stories in the press back in 2009, about the discovery of a 'new' invasive ant in the Cotswolds. Dubbed in the media as the 'Asian super-ant' or 'Asian fire ant', the official name is now the invasive garden ant, *Lasius neglectus*. It originates from Asia Minor, but has now become established in several European countries.

It appears to be spread from one place to another via colonies in soil, in plant pots, or on the roots of plants.

Since 2009 this ant has steadily gained ground in the UK, with five more populations having since been found in Yorkshire, Cambridge, London and Sussex. The largest of these colonies covers over 10 ha and all of them are causing problems for residents and for pest controllers trying to deal with them.

Impacts

The ants cause two main types of problems:

- For those living in affected areas, the persistent presence of large numbers of ants indoors and on foodstuffs can be a major nuisance. In addition, this ant is attracted to electrical fittings and there are frequent reports of light switches, sockets and security systems being damaged by the ants;
- Outdoors, the ant has a significant impact on local ecology. In affected areas, most native ants are completely displaced, leaving only *L. neglectus*. The ant is very effective at farming aphids, which may then increase and damage host plants.

Reporting suspected sightings

There is now a programme to investigate this ant, involving several organisations including the GB Non-Native Species Secretariat, University of York and others. We are really keen to track down any more populations that are out there, so if you think you may be dealing with the invasive garden ant, then please contact:

Clive Boase, clive@pest-management.com Mob: 07711 017180

All enquiries will be dealt with in confidence.

Lasius neglectus nests in paving

Worker ants, L. niger (left) and the smaller L. neglectus (right)

Neglectus or niger?

So, if you are involved with an ant problem that looks like common black ants, but they are:

- Uniformly dark brown;
- Slightly smaller than common black ants;
- Usually very numerous;
- Usually very persistent, despite treatment;
- Active indoors and out;
- Sometimes active in the winter.

Then they could be the invasive garden ant.

New identification poster

Britain's Non Native Species Secretariat (NNSS) has just published a colourful new poster on *L. negelctus*. It provides identification tips and can be download from the ***Pest*** library. Visit www.pestmagazine.co.uk/en/library

Grahame Turner from Mitie

Reflections on external rodent monitoring

With proactive use of rodenticide externally now prohibited, how can you monitor for external rodent infestation? When the CRRU stewardship requirements were first mooted, Mitie Pest Control considered the options and decided what they termed 'Latent Boxes' was the way forward. Grahame Turner, Mitie's technical and training manager – and also a *Pest* Technical Advisory Board member – reports.

It was considered that replacing the toxic bait with cereal-based non-toxic monitoring blocks would have a negative impact, as these just provide a food source to which passing rodents will be attracted, so increasing the likelihood of them setting up home in the area. We felt this might not only lead to greater levels of infestation in our customer's premises, but the increased time spent on site whilst they fed might also distort the apparent risk.

An alternative would be the new NARA allergen free blocks, which don't provide any nutrition and so would be unlikely to actually encourage rodents to seek out local harbourage. But using these extensively would be an expensive option. Plus, some rodent populations have local food preferences, making the use of NARA ineffective and, perhaps, even giving a false sense of security.

It is known that break-back traps left in external boxes catch non-targets such as toads, grass snakes, garden birds and stoats. So installing traps widely as monitoring agents was also rejected as an option.

Inspiration came with the idea of leaving the boxes empty!

Empty boxes:

- **Provide a monitoring station in the form of a shelter where rodents might let us know of their presence.** Since Mitie implemented this policy two years ago, latent boxes have been found with droppings in, nut shells, hoarded food etc. So it appears rodents are comfortable using them and leaving signs of their activity there without any additional food supply added;
- **Should help reduce the impact of neophobia.** If rats do infest the area, the boxes are already in position ready for bait or traps to be applied.

Another judgement was that technicians would adjust to using their professional skills to detect infestation rather than rely on bait block checking – this is promoted in ongoing technician training. So enhanced monitoring is achieved for the customer combined with making the job more interesting for the technician – a 'win win' situation!

Latent box idea

The term 'Latent Box' was coined to help promote the concept to customers. So that auditors did not think the technicians had just been lazy leaving the boxes empty, special cards were placed in the boxes to inform any auditors who opened the boxes.

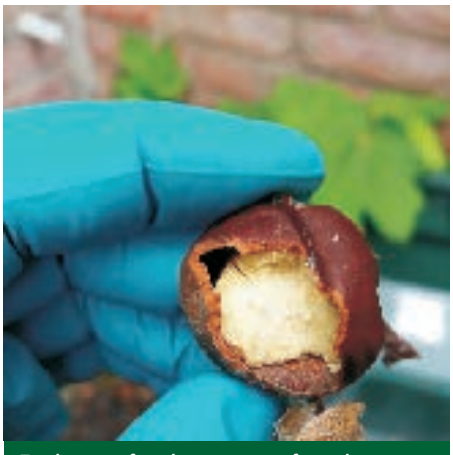
A key element of the success of the latent boxes is that

All the Mitie 'latent boxes' contain an auditor information card

A welcome bonus for wildlife. Robins' nests have been found on several occasions

monitoring blocks do not necessarily give any more evidence of true activity than latent boxes combined with keen observation by vigilant technicians. Not all boxes are latent - whilst traps are broadly not deemed appropriate for permanent installation, siting them in high risk parts of sensitive sites can still sometimes be justified, either short term or long term.

A welcome bonus for wildlife is that robins have also been finding the latent boxes desirable – several have been found with nests in earlier this year!



Evidence of rodent activity found in a 'latent box'

Cleankill agree robins like bait boxes

It's not just Mitie technicians who have found robins' nests in rodent bait stations – obviously a favourite spot for robins.

Daniel Parsons, team leader at Cleankill Environmental Services, was surprised by his find during a routine service visit to an industrial site near to Heathrow airport. Dan explains: "During a regular service visit a robin was pottering around me. When I opened the metal bait station it was full with the robin's nest and eggs. The trap inside had been set off by nesting materials touching it. It's the first time I've come across anything quite like this in a bait station."

Maybe there's a new sales opportunity for bait box manufacturers!

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Bed bug news

Welcome to our annual bed bug special. This is the sixth time *Pest* has produced an extended feature on bed bugs. We begin on this page with a quick round-up of news followed by reports on several new pieces of research. There's information on the new code for canine scent detection dogs and a report on a series of demonstrations organised by Secomak on their new heat treatment device. To round things off – a bit of fun – a look back on bed bugs through the ages.

Your invitation

Returning this year is the Global Pest Bedbug summit. It will be held in Indianapolis, USA between 30 November and 2 December 2016 and will feature the latest bed bug research and control strategies. The event also includes a trade show and a 'Night with the experts' where delegates can mingle and debate questions with the experts. If bed bugs are your thing, this is the place to be! Details from the organisers – the National Pest Management Association (NPMA).

www.npmapestworld.org

Foundation site goes multilingual

Originally launched in English, the Bed Bug Foundation website is now also available in Italian, Dutch, French and Spanish. Masterminding this task has been senate member Dr Richard Naylor who says: "This has been a considerable challenge but we have had invaluable help from individuals from each country. Not only is the site multilingual, but so is the downloadable European Code of Practice and, eventually, the Canine Code too." See page 32.

www.bedbugfoundation.org

What's new in the way of BB monitors?

ClimbUp got slicker

There has been a change in the fabric used to mould the ClimbUp insect interceptor from polyethylene to no-break polypropylene. The mould is now polished to such a high mirror finish that the capture wells will retain bed bugs without having to add talc.

www.insect-interceptors.com
or www.killgerm.com

The use of heat

The use of temperature – heat and/or cold – is one of the effective, non-chemical means of bed bug eradication. With the exception of the larger pest control companies, as well as a handful of companies who specialise in heat, this use has not caught on like it has in the USA.

In a recent bed bug specific survey of its members, the National Pest Management Association (NPMA) asked which treatment methods companies used. As to be expected 95% of respondents mentioned insecticides, yet 40% identified heat treatment of buildings.

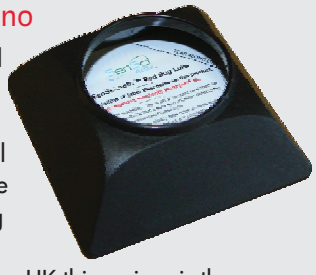
In the same NPMA survey, those responding were asked to identify how many service visits it required to take control of bed bugs. Using insecticides, the average was 2.6 visits compared with an average of 1.3 visits if using heat. The figure of 2.6 visits for insecticide treatment echoes the point made by Clive Boase on page 26 regarding how this frequency has increased in the UK over the last 20 years.

In this special supplement there is a report (see pages 26 & 27) on a series of events put on by Secomak to demonstrate the use of their newly-developed Blue Mantis heat capsule, ideal for treating infested items from areas of primary and core infestation.

However, for more widely dispersed infestations, a whole room approach is needed. Here the use of more industrial sized heaters and blowers is required, so as to raise the room temperature up to a maximum of 70°C. By chance, one company – Thermo-Bug – who manufacturers such equipment had a display stand at Pest-Protect in Germany in March this year. They are currently establishing a worldwide distribution network, and are looking for a UK partner. So if interested in becoming their partner, get in touch.

www.thermo-bug.com

SenSci Volcano



Developed and marketed by USA-based BedBug Central (sponsors of the Global Bedbug Summit) and introduced to the UK this spring, is the aptly named SenSci Volcano. As is the case with the Agrisense Trappit BB Detector Plus, it can be used with, or without, an additional lure.

www.killgerm.com

... and something for the future?

Not to be left out on the rodent market's electronic products rush, Rentokil has been working on an electronic tape which, it is thought, shorts a circuit once a bed bug makes contact and sends a message recording this. This may never see the light of day, or might be for their own use only. Rentokil is being very coy!

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AGRISENSE

Bed bugs

Still a tough nut to crack

If you are still finding bed bugs a difficult pest to control, or you've got a few hardy survivors that refuse to die, you're certainly not alone. Recent research at the University of Sydney's Department of Medical Entomology, Westmead Hospital, Westmead is shedding a light on exactly why this might be. PhD student David Lilly reports on his work completed with help from Westmead's Stephen Doggett and Cameron Webb.

You will have no doubt heard of insecticide resistance being a key reason for the bed bug's resurgence, with the modern bugs able to withstand significantly higher doses of insecticide that would normally kill a susceptible population. This is particularly well established around the world among the pyrethroids (the most widely available group of insecticides), and has also recently been confirmed in the US with the neonicotinoids (a group that includes compounds such as imidacloprid and acetamiprid).

However, when we talk about 'insecticide resistance' it's perhaps an overlooked fact that what might be causing that resistance – the 'mechanism' – could actually be one of several different biological processes within the insect (discussed in full in ***Pest*** issue 28: July & August 2013). Ultimately, insecticide resistance in bed bugs is likely to come down to a combination of up to three resistance mechanisms: kdr-type target site insensitivity, metabolic detoxification or reduced penetration.

So, why does this matter? Primarily, it's because we have so few insecticides left today that are reliably effective and we want to protect them for as long as we can. But, to do so, we have to understand what ▶▶▶

Scanning electron microscope image of Cimex lectularius thorax and head

mechanisms of insecticide resistance are present within the bed bug populations we are dealing with today.

Most resistant strain yet

This was a challenge we faced in Australia recently when, after collecting a field strain of bed bugs from the suburb of Parramatta (within Sydney), we found it to be the most insecticide resistant strain we had ever encountered.

However, we also noticed that, when we forcibly kept the bugs on a recently insecticide-treated surface, some of the bugs would succumb after a relatively short time, some would die after a few hours and some simply wouldn't die at all.

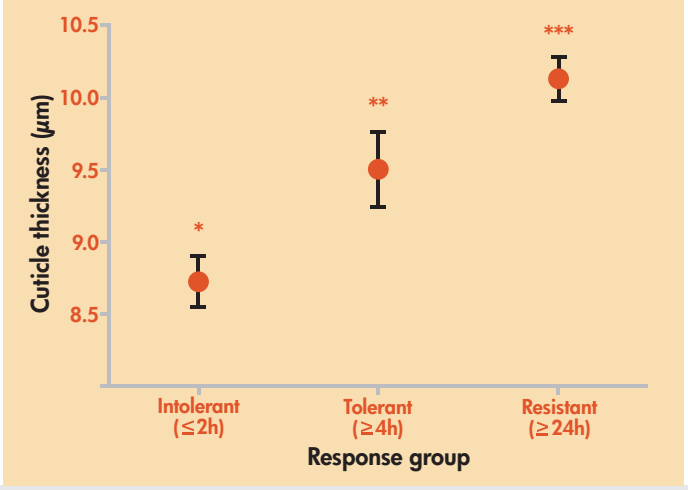
Knowing this, our lab set about investigating what mechanisms may be contributing to the observed resistance.

Firstly, Dr Kai Dang determined that the strain uniformly possessed kdr-type mutations that meant that pyrethroids wouldn't bind to their target site correctly. However, we also had other strains that possessed the same mutation that were not as highly resistant, so something more had to be going on.

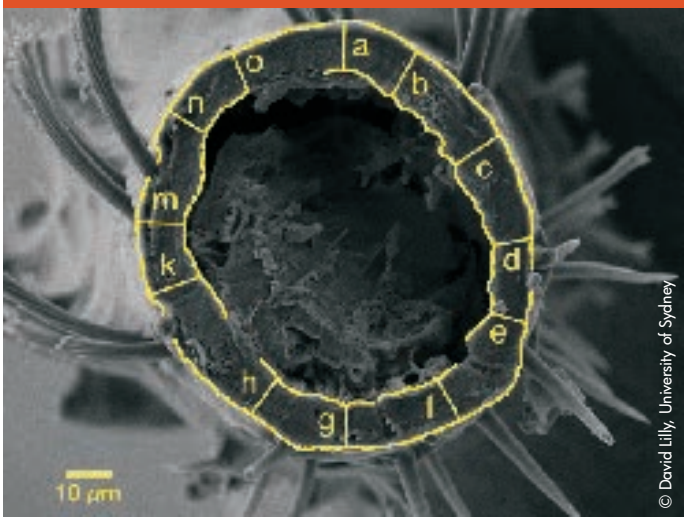
The next step was to examine for metabolic detoxification and, in particular, two types of enzymes that might be breaking down the insecticide before it had a chance to work. These are broadly called 'oxidases' and 'esterases'.

Scanning electron microscope image of a bed bug tibia, used used to determine bed bug cuticle thickness

Mean cuticle thickness (µm) of intolerant, tolerant and resistant response group Parramatta strain *Cimex lectularius* * indicate statistical significance



Transverse section of *Cimex lectularius* (Parramatta strain) middle leg tibia showing the twelve point-to-point cuticle measurements methodology used to determine the cuticle thickness



Beyond knowing that a strain possesses metabolic detoxification, it is useful to know what type of enzyme might be present as each type has the potential to confer cross-resistance to more than one insecticide group. For instance, oxidases detoxify pyrethroids, but may also have the potential to work against neonicotinoids and could explain why resistance to that group has developed so quickly in the USA.

Useful synergists

One way to do this is to use chemicals called 'synergists'. Synergists can inhibit, or lower, the activity of enzymes and by using different types of synergists we can understand which enzymes type is present. One of the best-known synergists is a chemical called piperonyl butoxide, or 'PBO'.

PBO is very useful as it can inhibit both esterases and oxidases, but that ability in turn makes it hard to determine which enzyme type is contributing to any perceived resistance.

However, a new synergist known as 'EN16/5-1' had recently been developed that only inhibits esterases (as opposed to oxidases). This meant that by using both synergists in combination, there was a unique opportunity to investigate the role of metabolic resistance and to determine which enzyme type was responsible.

In addition to the Parramatta strain, a range of bed bug strains originating from cities across Australia were selected for testing. This included two strains from Melbourne (Victoria) and one from Alice Springs (Northern Territory).

Our results indicated that metabolic detoxification played a major part in conferring resistance to our field strains, but also that there appeared to be a mix of both oxidase and esterase dominated strains (two strains each).

The Parramatta strain's resistance could almost (almost…) be 'turned off' by the addition of the synergists, and use of both PBO and EN16/5-1 indicated that esterases were likely to be playing a major part in that strain. However, there still remained the problem of some bugs that we just could not kill – these were the best of the best at resisting insecticides and we needed to know why!

Cuticle thickness investigated

So the final part of our study was to look at the cuticle thickness and examine it for any differences between bugs that died early, versus those that were the hardy survivors within the same strain. To do this we had to carefully age the bed bugs to the same age (cuticle is laid down much in the same way a tree ring is, except daily, so different aged bugs will have different cuticle thickness) to ensure no bias was introduced.

After that, we then repeated the earlier insecticide forced exposure experiment, monitored how quickly they were affected, and then separated them into respective groups of 'intolerant' (died within two hours), 'tolerant' (still alive at four hours), and 'resistant' (still alive at 24 hours).

Some careful manipulating under an electron microscope then enabled us to measure the cuticle thickness in the bed bugs' legs.

The result

Thickness of the cuticle increased with the length of time it took for the bugs to be affected by the insecticide.

When this finding is combined with what we already know about the presence of target-site and metabolic detoxification in this strain, it means that these 'super-resistant' bugs are perfectly evolved to resist most pyrethroid insecticides thrown at them today.

Management implications

The important implication of this is that when attempting control of bed bugs in a field situation, you are likely to be up against some bugs that are just naturally 'super-resistant' compared to all the other bugs in the infestation.

Miss those bugs and they'll either start the infestation anew, or, potentially, spread it to a new location. What's more, these bugs will be even more difficult to control as you will have selected the super-duper bugs!

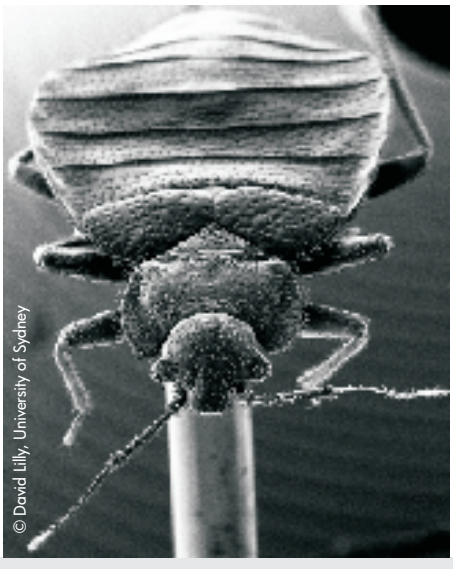


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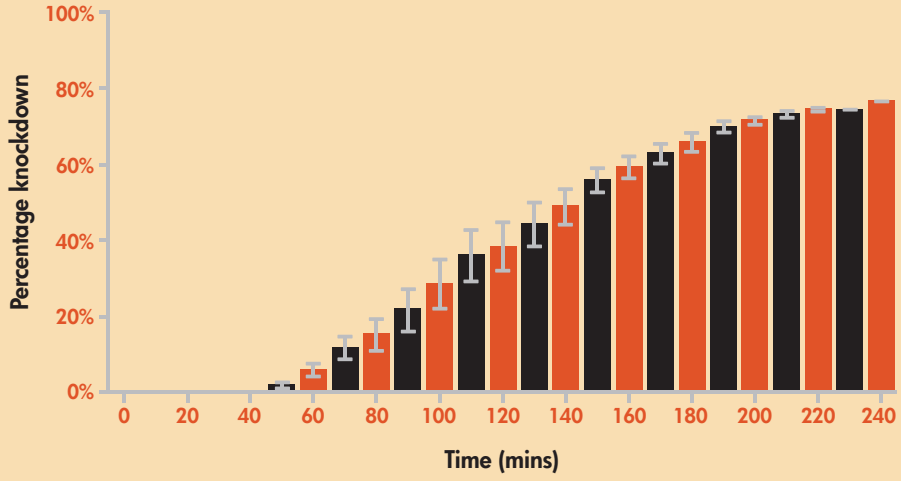
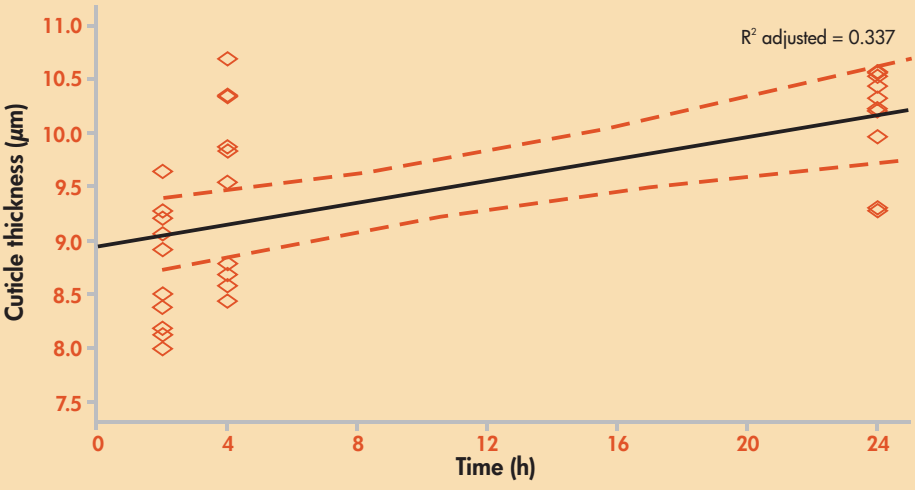
Figure 2: Knockdown over time (minutes) of Parramatta strain *Cimex lectularius* upon forced exposure to pyrethroid insecticide



Positive correlation of time-to-knockdown to mean cuticle thickness of Parramatta strain *Cimex lectularius* upon continuous forced-exposure to pyrethroid



Overcoming super-resistance

Fortunately, there are two main ways to partially overcome this super-resistance.

- The first would be to use non-chemical means (no matter how resistant these bugs are they can't withstand a vacuum!).
- The second is to ensure you are using an insecticide with piperonyl butoxide (PBO), and/or a silicate based product. The PBO will inhibit any metabolic resistance and the silicates are still effective as no resistance occurs to this group.

Both methods significantly improve the effectiveness of control methods, and thus reduce the likelihood of call-backs.

David Lilly is a PhD student at the University of Sydney based at the Department of Medical Entomology, Westmead Hospital, Westmead. He is a recipient of an Australian Postgraduate Award that is generously supported by an Industry Top-Up Grant from Bayer CropScience, Australia.
David can be contacted at davelilly81@gmail.com

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Bed bugs have favourite harbourage colours

Bed bugs don't hide in just any old harbourage, they will select the best place based on colour, according to new research from the USA.

Researchers from two universities in the USA (University of Florida and Union College in Lincoln, Nebraska) set out to discover if bed bugs preferred certain colours for their hiding places.

Their tests consisted of using small tent-like harbourages that were made from coloured card and placed in Petri dishes. A bed bug was then placed in the middle of the Petri dish and given ten minutes to choose one of the coloured harbourages.

A number of variations of the test were also conducted. These included testing:

- Bed bugs in different life stages;
- Bed bugs of different sexes;
- Individual bugs versus groups of bugs;
- Fed bugs versus hungry bugs.

The results showed that the bed bugs strongly preferred red and black, whilst they seemed to avoid colours like green and yellow.

Dr Corraine McNeill, one of the co-researchers from Union College explained: "It was speculated that a bed bug would go to any harbourage in an attempt to hide. However, these colour experiments show that bed bugs do not hide in just any harbourage, rather, they will select a harbourage based on its colour when moving in the light."

Why do bed bugs like red?

She continued: "We originally thought the bed bugs might prefer red because blood is red and that's what they feed on. However, after doing the study, the main reason we now think they preferred red colours is because bed bugs themselves appear red, so they go to these harbourages because they want to be with other bed bugs, as they are known to exist in aggregations."

Petri dish arenas were used for seven-way choice tests which revealed that bed bugs prefer reds and blacks over whites, yellows and greens

Dr Corraine McNeill from Union College, Nebraska, USA

While this is a plausible explanation, many factors influenced which colour the bed bugs picked.

For example, the bugs' colour preferences changed as they grew older and they selected different colours when they were in groups than when they were alone. They also chose different colours depending on whether they were hungry or fed. Furthermore, males and females seemed to prefer different colours.

A possible explanation for why bed bugs avoided yellow and green colours is because those colours resemble brightly-lit areas.

Readers might wonder at the significance of these findings? But should you be developing a bed bug trap or monitor you would be best advised to avoid white, yellows and greens as these colours are disliked by bed bugs.

Turning up the heat

Bed bugs are notoriously difficult to eradicate. The days of a simple single spray approach are long over with a combination of methods now the norm. One approach which seems to have failed to take off in the UK, except among the very large pest control companies, is heat. A company, Secomak, first spotted at PestTech 2015, aims to change all this. *Pest* editor, Frances McKim, went along to a recent demonstration day in Watford to find out what they are up to.

Lest any of those present had forgotten, insect expert, Clive Boase from the Pest Management Consultancy gave delegates a whistle-stop tour of the problem to hand.

Asking the audience to cast their minds back some 20 years, a successful treatment for bed bugs could have been achieved in one visit with both survey and insecticide spray undertaken at the same time on a single day. Fast forward 20 years to 2016 and, this initial treatment on day one would, most likely, be followed by a second treatment a week later and a third treatment another week later – making a total treatment time in excess of two weeks. The main factor in this extended treatment period has been the rise of bed bug resistance to the frequently applied range of insecticides.

Even so elimination is not assured as, by their nature, bed bugs frequently inhabit places hard to reach with sprays including items of a personal nature. In such situations a range of non-chemical techniques can be employed, ranging from vacuum removal and laundering to freezing and heat.

Considering heat specifically, it offers several very important advantages namely: fast action, all stages of the bed bug's life cycle killed (including eggs), effective against resistant bugs and the ability to treat personal items which otherwise may have had to be left to the householder to treat.

The Blue Mantis heater unit which splits into two for easy, single handed transportation to the treatment location

To achieve mortality a temperature of around 55°C is sought, as this will not only kill exposed bugs, almost instantly, but also the heat will penetrate more quickly into those hard to reach nooks and crannies. To raise the temperature of a whole room to this level requires a considerable expenditure of both time and energy.

Heat can also be used in the bed bug battle in a more precise, targeted and easier to use way – and this is exactly what Secomak has been working on with the Blue Mantis system. The work builds on the company's historic understanding of air and heat but, as managing director, David Palmer, explained: "This is the first time the company has developed a product for use in a residential situation where all aspects of safety with heat are critical."

Two types of harbourage

Earlier Clive had made the point that bed bug harbourage zones tend to fall into two types – see photo on page 27. The first, the primary point of infestation, is the bed and, especially the bed head itself – places that offer protection to the bugs with easy access to a human meal. Away from this area there can be secondary harbourages, frequently overlooked by a technician upon inspection. These are areas the bed bugs have migrated to, often due to either population pressure when an infestation builds to gigantic proportions, or where they have, in effect, been 'driven to' following the use of

Who is Secomak?

Founded in 1930, Secomak is a privately owned company based in Elstree, Hertfordshire with 30 employees. As managing director David Palmer explains: "Our whole business is based around an understanding of air and heat."

Simple as this might sound, the use of these two elements is extensive ranging from using air to dry beer bottles and cans prior to labelling, to hush-hush military uses. One amazing claim to fame is that Secomak made the hand operated air-raid sirens used in World War II. So bed bugs make unusual bed fellows for Secomak. However, before embarking down this route for themselves, the company has been producing machines for a major pest control company for nearly 10 years. As with all its other products, Secomak uses its tried and tested philosophy of design, develop and deliver. So feedback from delegates at these events was particularly beneficial.

Speakers on the day. From left: Secomak's Jeremy Smith and managing director David Palmer with Clive Boase of the Pest Management Consultancy

insecticide spays, especially if those had been in any way repellent to these insects.

Taking-up the story, Jeremy Smith, director of sales at Secomak, explained that the company was originally approached by a national pest control company in 2007 to create a system for them using heat for bed bug elimination. Today, they have some 25 of these machines operating mainly in the south east of the UK. Their feedback led Secomak to refine and further develop the system, so creating the Blue Mantis – a system designed to tackle items from within the primary harbourage areas as part of a multi-weapon approach.

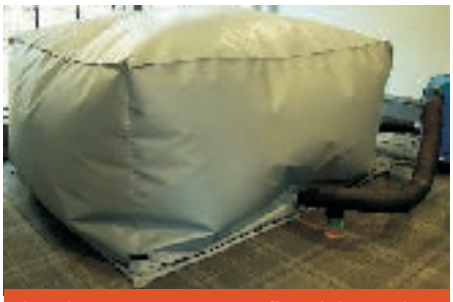
"We set ourselves the task of developing a system that was large enough to accommodate a super king-sized bed, could easily be used by one person on their own, was quick to assemble and reach its operating temperature and all working off regular 13 amp sockets routinely found in buildings," Jeremy detailed.

"With the Blue Mantis we have a achieved a thermally insulated drop-over hood, meaning the carpet or floor beneath is also treated, all ducting is connected by bayonet fittings, it runs from three 13 amp sockets and the heater splits into two, meaning one person alone can use and transport it. The hood reaches its target temperature – 55°C within 20 minutes – with eradication taking 60 minutes.

"To prevent bed bugs escaping from the heat, we developed the patented Heat Barrier which runs along the fringe of the hood. This has its own separate power source to maintain the temperature at 70°C – some 15°C hotter than the hood," concluded Jeremy.

The presentation over, it was time for delegates to get down to the part they really enjoy – getting their hands on the kit. Without exception all seemed impressed and, as is the way with inventive pest controllers, use for numerous other applications were thought of – perhaps the most common one being for the treatment of high value items of designer clothing for clothes moths eradication.

The fact a single-handed technician could use this piece of kit on their own, for example discreetly in a domestic setting or hotel bedroom, was much appreciated. The one down side for a small company is the price. At £12,995 it is a big investment. To assist on this front Secomak had on hand a finance consultant who explained the benefits of scheduling payments over time. For a larger pest control company this certainly seems a very valuable addition to the armoury, to be used alongside and in conjunction with, the more familiar control techniques.



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Long lasting scent secrets

If a sweet musty smell greets a professional pest controller as they enter a room it more than likely means one thing – a large infestation of bed bugs.

Now researchers in the USA at the University of California, Riverside have discovered that it's not just the live adults that smell, but also the shed skins of bed bugs that retain this 'obnoxious sweet' smell.

Bed bugs shed their skins, known as exuviae, as they grow. Four pheromone compounds known as aldehydes are consistently found in the shed skins.

The UC Riverside researchers found that the shed skins retain those compounds in the glands and gradually dispense them over time.

They also found that living bed bugs are likely to settle down in the vicinity of the shed skins by sensing these compounds.

The findings back-up the thoughts of the pest management industry, which aims to use some of the chemical/mechanical characteristics of the bed bugs' shed skin to develop small, inexpensive monitor traps to catch living bed bugs at their early stages of infestation. It is also possible that it is these scents bed bug dogs are trained to detect.

Bed bug on an exuvia (shed bed bug skin)

"This could be a key development in the search to find new methods to detect bed bugs," said Dong-Hwan Choe, an assistant professor of entomology and an assistant co-operative extension specialist at Riverside.

The experimental work fell into two stages.

- First, the researchers placed shed skins obtained from bed bugs at different points of their development in small vials. They then analysed the airborne compounds in the vials and found that the four aldehydes of interest were consistently detected regardless of the developmental stage;
- Second, they collected shed skins from bed bugs kept in the lab, divided them into three groups and 'aged' them in the open air for either seven, 45 or 99 days. Then they crushed the shed skins and analysed them for the presence of the four aldehyde compounds.

They found that the amounts of the aldehyde pheromones dropped as the aging period increased, but that even after 99 days the compounds were still present in the shed skins.

Hungry bed bugs easier to kill

Researchers from Rutgers University, USA found that bed bugs that were allowed to feed after being treated with insecticides either had greater rates of survival, or they took longer to die than bed bugs that were not allowed to feed after being treated.

Their results indicated that post-treatment feeding significantly reduced, or slowed down bed bug mortality. In one case, bed bugs that were unable to feed after being sprayed with an insecticide had a mortality rate of 94%. But bed bugs that did feed after being sprayed with the same insecticide had a mortality rate of just 4% after 11 days.

This difference is important because most experiments that test the efficacy of insecticides against bed bugs are performed in labs where the bed bugs can't feed after insecticide exposure – so are likely to give results with enhanced mortality levels. However, in the field, bed bugs can feed after being treated, so are more likely to survive.

Some would say – nothing new

The concept of the use of a pheromone lure with a bed bug trap is exactly what is employed with the very popular Trappit BB Detector Plus from Agrisense – the trap comes accompanied by a vial containing what Agrisense refers to as 'advanced bed bug pheromone lure technology' with optimum performance for two weeks – a far shorter timeframe than the 99 days in the Riverside trial. Likewise, the SenSci Vulcano also offers and optional lure.

These findings also underwrite an informal procedure recommended by some pest controllers – namely to take cast bed bug skins, wrap them in a tissue and place them in your monitor to act as an attractant – that is after having frozen the cast skins first to make sure no live eggs are inadvertently transported.

Bed bug bites through time

With all the media fuss about bed bugs you could be forgiven for thinking they are a new pest. But that's far from the case, as bed bug expert Stephen Doggett from the Department of Medical Entomology at Westmead Hospital in Sydney, Australia, explains.

Bed bugs have long been associated with humans, they have even been found in occupation sites from the time of the Pharaohs dating back to c.1350 BC. In fact bed bugs were once very widespread, and extremely prevalent, with estimates of up to 70% of British homes in the past having an active infestation.

Perhaps then it is not surprising that anecdotal stories through history involving bed bugs are quite common. The following is a small selection.

It was claimed by John Crannell in 1873, that when Nero set fire to Rome, it was due to bed bugs. Apparently the emperor spent a wretched night on his lectulus (his bed – note the similar name to the species *lectularius*), woke and found a bed bug on his pillow. In an attempt to burn the insect, he set fire to the mosquito netting, and so the fire began.

A new Viagra?

According to *A New Manual of Homoeopathic Practice* by F G Snelling published in 1860, one of the side effects of bed bug bites includes the production of frequent erections in the morning. Perhaps bed bugs will become the new Viagra!

A common product used to kill bed bugs was *Rough on Rats* with adverts in newspapers beginning in Australia and New Zealand around the early 1880's. The poison contained arsenic and it quickly became the chemical of choice for those with a desire to commit suicide.

There were at least 25 deaths between 1885-1898 from the product and numerous accidental poisonings. Eventually *Rough on Rats* was placed under the Poisons Act 1898 which regulated the sale of toxic chemicals and no further deaths ensued.

In the late 1890's, a traveller in the US was writing his name in the hotel register when a bed bug appeared. It is claimed that he said "…I'll be darned if I was ever in a place before where bed bugs crawled over the hotel register to find out where your room was!"

Early social media?

Scenes and cartoons depicting people hunting for bed bugs on postcards were quite common during the late 1800's to around the 1940's. Some are pictured in this article. The question lost to history is why? Were these a simple piece of silly fun, or an early form of social media to warn others that a particular establishment was infested?

During the 1930's, there was a religious sect in Tokyo who treated bed bugs (and other insects) as gods. We now call them 'Entomologists'!

In 1933, a wealthy businessman in New York filed for divorce as he found bed bugs in his bed; blaming his wife as the cause hence the basis of the divorce. Not surprisingly, he lost his court case (and hopefully his wife found a more sensible husband).

There was a town called *Bed Bug* in the US, it is now known as Ione in California. Plus there was (and still is) a *Bed Bug Island* in New Jersey, a *Bed Bug Hill* also known from the same state, and there was a *Bed-bug Alley* in Rhode Island.

The Russian, Vladimir Mayakovsky, wrote a famous play in 1928 called *Klop*, which translated means *The Bed Bug*. This was a satirical piece on Communist society and was shortly banned, with the author committing suicide soon after. The director was sent to one of the infamous gulags where he subsequently died.

Bed bug torture

Perhaps the director of Klop was subject to a infamous torture used in the Gulags; a coffin was filled with bed bugs into which the victim was placed. I am sure the USSR regimen of the time would have enjoyed the irony in this.

Klop was also the name given to the father of the famous actor, Peter Ustinov. Klop Ustinov was a British spy, who would bed women in order to obtain government secrets and hence the nickname. Naturally

this was all done in the service of the King!

The term *bedbug hauler* was used for removal van drivers in the US, while in Australia, a *bedbug* was a boy who lived in a boarding school during the 1950's. *Crazy as a bed-bug* was a common term used during the 1930's in the US.

During World War II, prisoners of war had portions of their liver removed to develop a bed bug poison.

In 1951, the State of Maryland (USA) taxed professional hotel bed bug hunters, by making them take out licences. This made considerable money for the state.

In 1951, a lady doctor painted flies with iodine to make them look like bed bugs. This was to prevent a refugee family from moving into her apartment complex.

Bed bugs in music

You probably know the song *Rum & Coca-Cola* made famous by the Andrew Sisters. But did you know that the author of the song, Rupert Grant, wrote a piece in 1953 called *The Reincarnation*? In it he sings about being reincarnated as a bed bug to bite 'big fat women'!

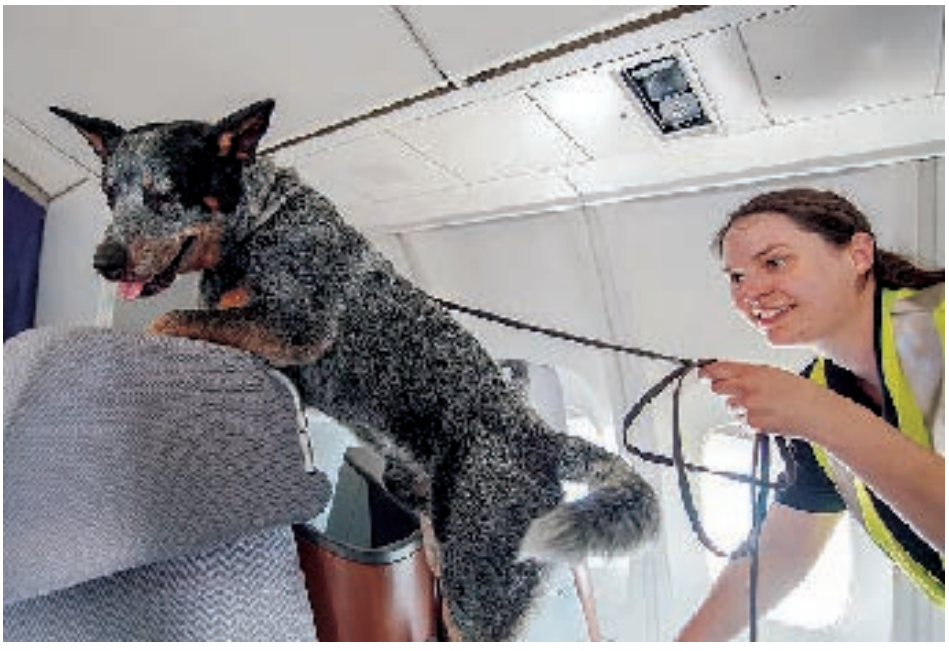
During the early 1970's it was noticed that bed bug infestations increased after continual spraying of DDT for anti-malarial campaigns. Perhaps this provides an insight into the origins of modern resistant bed bugs?

Red Symonds from the Australian rock band Skyhooks composed a piece of music for a play relating to bed bugs, which was performed in the early 1980's. The play was a tribute to Mayakovsky's *The Bedbug* mentioned above.

This article is just a small selection of anecdotes relating to bed bugs through history. Many more can be found in a chapter on Bed Bugs in Popular Culture in a new bed bug textbook called *Advances in the Biology and Management of Modern Bed Bugs*, due for release in mid-2017.

Canines get their own code

Larry Hansen has been instrumental in pulling together the new 'canine code' which will reassure customers



The Bed Bug Foundation is a not-for-profit organisation dedicated to raising awareness of bed bug management through improved communication and education. Having written and published the *European Code of Practice for the Management of Bedbug Infestations*, the Foundation has now turned its attention to bed bug scent detection dogs.

Scent detection dogs are increasingly used throughout the world for the screening of bed bug infestations. When trained and used professionally, they provide a speedy, accurate and cost-effective means of checking for bed bugs.

But, in some circles, their use has come into disrepute, as like most pest control activities, the use of dogs requires specialist training and handling – it is not simply a case of taking your 'pet pouch' out to work with you. So, the Foundation has now produced an industry standard – a *Canine Scent Detection Code of Practice* – which will shortly be available to download from the Bed Bug Foundation (BBF) website.

As Larry Hansen, one of the BBF senate members, who also has extensive explosive detection dog training, explains: "The Foundation receives a large number of questions on how good bed bug dogs are and where a professional handler can be found. So we set out to produce a code of practice which would define the standards, plus a certification process for handlers and their dogs. This would provide reassurance to customers that those who pass are operating to a recognised standard.

"Our aim is very much to ensure these are standards set by the industry, for use by the industry and are achievable for those who want to work with their dogs. Those who gain their certification – both handler and dog – will be listed on the website for anyone who may be looking for this service to see."

Continuing, Larry explained that because the BBF is a charity, a charge of Euro 170 (£150) is made to cover certification, an ID card, inclusion on the BBF website and a one year membership of the BBF. If a handler wants to certify more than one dog, the cost for each additional dog is Euro 65 (£55).

Germany has taken the lead

The aim of the BBF is to roll-out the code and the certification process across Europe. Larry is based in Germany, so it is not surprising that the majority of activity has taken place there. Training the assessors is step one. Sessions were undertaken in Germany during the spring. To date, nine dogs have been certified and the German pest control trade association (Deutscher Schädlingsbekämpfer Verband) has recommended that all members use only certified dogs. Plans are also in hand for France and the Nordic countries.

As for the UK, there are now two certified assessors, both from Kent-based LAPA Canine & Security. Jim Cameron from LAPA explained that the company now has its own assessment centre and plans are afoot to gear-up to start assessments very soon.

For further information on this new canine bed bug initiative, or if you would be interested in becoming an assessor, contact Larry Hansen at email: larry@bedbugfoundation.org

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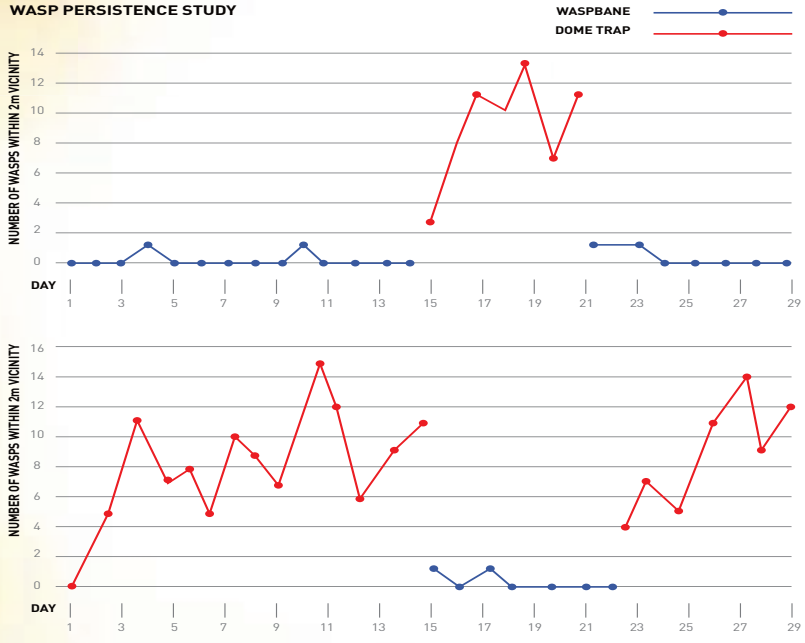

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WIN a handheld Agrilaser in our competition

What caused this damage?

Our thanks to Dave Archer from DKA Pest Control in Devon for sending in this picture of extensive damage to a Devon longhouse wall. He asked us if we had any idea what might have caused it, we hadn't. We were amazed when he explained so we thought we'd test our readers' knowledge.

What caused this and what action would you recommend?

Send your answers to: editor@pestmagazine.co.uk and be sure to include your name and a contact telephone number and/or email address. Entries must be with the editor by midnight on 30 September 2016.

Distributors PestFix have kindly donated a handheld Agrilaser for the winner. And there are six dynamo ***Pest*** torches on offer for the runners-up. All correct entries will be put into a prize draw. The winners will be announced in the next issue of ***Pest*** magazine.

Withdrawal of bird gel repellents

Having become a successful part of the pest management bird scene in the UK, it came as something of a shock to hear the news that all of the bird repellent gels are to be withdrawn from the UK market – hopefully only for a short time.

The four products involved are Bird Free, To Nature Bird Free Gel, Ornaway Bird Gel and Avigo Chilli Pepper Gel. These will be available for sale up until 30 October 2016 and must be used up by 30 April 2017.

The reason for this withdrawal is regulatory. Up until now they have been sold via a derogation under the Biocidal Products Directive but this has now expired. The products must now be re-registered as part of the EU-wide Review Programme of the Biocidal Product Regulation.

As readers are aware, achieving this requires a significant investment of time and money. Whilst predicting any timeframe which involves regulatory clearance is fraught with uncertainty, Barrettine, the manufacturers of Ornaway Bird Gel, predict registration this autumn, whilst Killgerm mention a relaunch later in 2017 for Bird Free.

Is this a one-off?

David Lodge from south London-based Beaver Pest Control sent in this amazing picture taken by one of the company's technicians, Marius Amariei. What's the chance of two field mice being caught simultaneously in the same trap? Certainly this is proof that the NARA non-toxic lures are attractive.

By way of background, David explains that this photo was taken at the site of a bakery in Ham, south west London that backs onto fields and the river Thames. Beaver had been looking after the site for six months. Unfortunately, the customer would not follow advice to fit brush strips to the bottom of the doors to a store. Field mice were continuing to gain access and contaminating the store.

David commented: "I think that the practice that we have used here proves that being in line with the CRUU Code does not hinder control whilst protecting the environment and non-target species. Had we used rodenticides the field mice were likely to have died outside and potentially contributed to secondary poisoning."

Rodenticide stewardship: Views from the sharp end

Stewardship practice supporting safe use of anticoagulant rodenticides

Now that we're more than half way through the transition period into the rodenticide stewardship era, the Campaign for Responsible Rodenticide Use asked members of its Supporters Club 'what d'ya think of it so far?' More or less verbatim and in full, here are three noteworthy submissions from Martin Rose, Peter Stewart and Tony Smith, who all operate at the coalface of pest control.

Contributors:

- Martin Rose-King, Bounty Pest Control and Environmental Services, Ashford, Kent; BPCA and NPTA member.
- Peter Stewart, Aberkil, Aberdeen; NPTA member.
- Tony Smith, All Aspects Pest Control, Reading, Berkshire; NPTA member.

Question 1: What changes have you introduced into your own working methods arising from rodenticide stewardship?

MR-K, Bounty PC&ES: "Having become aware of rodenticide stewardship in 2013, we began to implement a non-toxic monitoring policy on all contracts from January 2014 onwards. Since 1997, when Bounty was established, we have had a firm belief that integrated pest management (IPM) is the best way forward and rodenticides are the last resort. Customers have always been pleased with this approach and we firmly believe this type of service has enhanced our reputation."

PS, Aberkil: "We are using more trapping to reduce our use of rodenticide."

TS, AAPC: "None – I came into the world of pest control prior to retiring from the Fire Service. I had qualified with the RSPH and purchased a very large quantity of poisons, traps, boxes and equipment. On reading the rodenticide labels, I realised that a few weeks spent studying the material alone, then a two-hour exam, hadn't really equipped me to go out into the community as a professional pest controller.

"From the Fire Service background, we are very risk-aware and risk assessments are a key feature to my working day. I attended the CRRU Wildlife Aware course in the very early days and used their guidance as a template for all future treatments."

Question 2: When you've discussed the implications of rodenticide stewardship with clients/customers, what have been the most commonly occurring responses?

MR-K, Bounty PC&ES: "We always positively promote a non-toxic approach, explain why stewardship is in place, and reassure customers that we are very responsive to call outs should they have a rodent problem. By following the product labels, we can control any rodent problems safely and efficiently at no extra cost to the customer."

PS, Aberkil: "Customers have been pleased with our responsible attitude."

TS, AAPC: "Customers seem to be very impressed with the direction I'm coming from and, because most people enjoy the spectacle of the red kites, they are very mindful to keep an eye out for dead or dying rats. I regularly hear that customers have either cleared away a dead rat or have placed it under a bucket and are waiting for me to collect it.

"If baiting in a garden, I go to great lengths to put rodenticide down in a safe, secure manner. Customers often ask about this and then, at the next visit, are impressed with the way the rodenticide has been consumed as predicted."

Question 3: Have you been asked yet to show proof of competence when buying rodenticides? If so, how did you find this experience?

MR-K, Bounty PC&ES: "Yes, this is a simple process and any responsible operators should embrace the opportunity to demonstrate professionalism."

PS, Aberkil: "Suppliers have asked for copies of our certificates."

TS, AAPC: "All purchases are online and I have had to send a written declaration about my qualification."

Question 4: From your knowledge of rodent control practice across the board (i.e. other companies/contractors and DIY control methods employed by customers), what are the main improvements you see being necessary for the success of rodenticide stewardship?

MR-K, Bounty PC&ES: "My main concern is policing. We still come across pest controllers who are unwilling to conform, and keep finding evidence of permanent external baiting. In the most part, I have found people from other firms, whom I meet at CPD events and meetings, taking stewardship seriously. My concern is rogue

Tony Smith (TS, AAPC)

Martin Rose-King (MR-K, Bounty PC&ES)

Peter Stewart (PS, Aberkil)

sole traders who perhaps obtained qualifications some time ago that are still recognised by the stewardship scheme, with the holders claiming to be 'too busy' for CPD or refresher courses. These individuals are undermining customer confidence if they still offer a 'rodenticide first' option. Admittedly, there are fewer of them than there used to be, but nonetheless some are still operating."

PS, Aberkil: "We need ongoing education and publicity to inform the public of our changing (i.e. improving) practice."

TS, AAPC: "Restrictions on online sales of large quantities of rodenticide will be a good thing. The majority of my work is urban infestations and it's all too common when speaking to a set of neighbours who share a rat problem that someone in the group will purchase their own rodenticides and then attempt to distribute it amongst the affected houses. Once they start to get decomposing rat carcases, they expect me to enter their loft and clear them out."

Question 5: If rodenticide residues in sentinel species (principally the barn owl) are found not to be reducing under the stewardship regime, what possible consequences do you fear the most?

MR-K, Bounty PC&ES: "I am concerned that, because of inadequate policing, rodenticide residues will continue to be found and professional companies that have embraced the policy so that we can continue to provide safe and efficient pest control by using rodenticides when they are essential will find themselves in a position where they are no longer able to do so."

PS, Aberkil: "We would be concerned that the rodenticides would be banned."

TS, AAPC: "If rodenticide residues don't come down in these species, the obvious outcome is that we will have a ban on the outdoor use of any rodenticide.

This is something that I feel has mixed blessings. As an industry, it would create opportunities for proofing and clearance. Even tighter controls on the sale and use of rodenticides could create opportunities to gain employment as a result of much restricted DIY availability."

Question 6: Are there any other comments you would like to offer in support of stewardship being taken seriously by pest controllers?

MR-K, Bounty PC&ES: "Stewardship is an excellent scheme and one that we should use to promote professionalism in our industry. Not only should we all be concerned with residues in wildife, but this environmental approach is refreshing to see. At every CPD event and meeting I have attended, other companies are pleased with the scheme and seem more than willing to comply. Our rodenticide supplier is also very proactive in promoting stewardship."

PS, Aberkil: "I think stewardship is being taken seriously by the industry, and pest controllers should use stewardship to promote their services."

TS, AAPC: "I think it's a great achievement. If we can reduce the amount of rodenticide in circulation, then ultimately there will be less in the environment. There is research taking place to see whether it is having an effect on human reproduction. The consequences of further restrictions and product withdrawals could put pest control back into the Victorian era.

No excuse for turning a blind eye: See bad practice, please report it

On the crucial matter of policing raised by Martin Rose-King of Bounty Pest Control and Environmental Services, CRRU chairman Dr Alan Buckle emphasises the value of shared responsibility. "Our responsibility is to develop and implement the regime, a crucial element being point-of-sale procedures, for example, that all three correspondents report having encountered," he says.

"Individually and collectively, it is expected that all pest controllers are taking stewardship seriously. This operates on at least three levels: In one's own daily practice, in setting a good example to colleagues and in having the courage to report misuse or abuse to HSE."

For a number of years, there has been a procedure for reporting incidents and Dr Buckle advises that this should be the first port of call. It is a website page operated by HSE at www.hse.gov.uk/biocides/reporting.htm (with an associated telephone hotline on 0300 003 1647). The web page offers a link to an online *Concerns Form*', which can also be accessed directly at:
http://webcommunities.hse.gov.uk/connect.ti/concernsform/answerQuestionnaire?qid=594147

"If, for any reason, you have a problem making a report though this formal route to HSE, please let us know via the *contact us* page on the CRRU website," Dr Buckle concludes.

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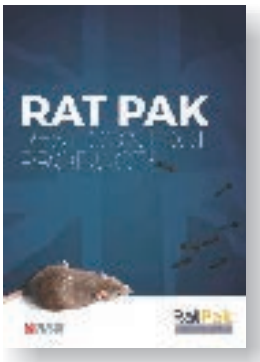

Having only started to offer a product distribution business at the beginning of the year, Rat Pak Pest Control Products has brought out its own products catalogue.

The range now includes products from most of the main manufacturers as well as a wide selection of electronic flying insect killers. Request your copy today to add to your collection!

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House Guests, House Pests

In this charming and witty book, the author (Richard Jones who is self-styled as 'Bugman' Jones) tells the intriguing story of the animals in our homes.

He explains how our houses, our food, our belongings, our very existence are under attack from a host of invaders eager to take advantage of our shelter, supplies and tasty soft furnishings.

He identifies the dichotomy of the great British public who love nature – so long as it remains outside their home. Once inside it becomes a pest – or as the author describes it – our guest. This book helps readers identify which 'guest' or 'guests' they have in their homes, but it leaves them to decide for themselves whether they are friend or foe. Should their next port of call be a professional pest controller?

Bloomsbury Press ISBN 9781472921857

Flies only!

In addition to their regular catalogue and website, 1env has developed a flying insect specific website and a 24-page brochure on the company's complete range of electronic fly killers under the Eradisect range. The EFK catalogue includes details of all machines, glue board replacements, tubes and ancillary items.

www.1efk.com

Pesticides Forum 2015 Report

The Pesticides Forum's 2015 report provides an overview of where, why and how pesticides are used and the impacts of this use. Although coverage is primarily of the agricultural sector, the report warrants attention as it clearly illustrates the very similar path trod by the professional pest control industry, for example in training, certification, usage (including illegal use), packaging and waste.

An interesting fact is that since March 2014 a total of 3,610 people (up until the end of 2015) have completed the basic e-learning pesticides course for retail staff in garden centres – the very people who will be dealing with DIY pest control products. Copies at www.hse.gov.uk/pesticides or the ***Pest*** library.

Tick procedures manual

This is a 12-page booklet in the Chartered Institute of Public Health's National Pest Advisory Panel's series. It provides information for pest control technicians, environmental health practitioners and others who are required to respond to queries about ticks and tick-borne diseases.

Copies from www.cieh.org/policy/pest-control-procedures-manual-ticks.html or the ***Pest*** library

Flying Solo

A new addition to the Bower Products Fly Shield Solo range is the Solo Plus. Specifically designed for discreet insect control in both domestic and commercial situations, Fly Shield Solo Plus comes with two identical glue boards, back and front, so making it reversible.

Light and easy to handle, it is constructed from anodised aluminium and comes with stylish two tone mounting and a 20w energy saving UV lamp.

www.bower.co.uk

Two new little Rascals

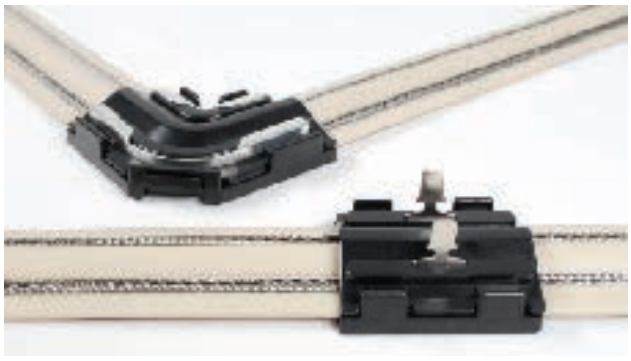
The popular brodifacoum-based Rascal pasta bait is now additionally available in a tube for application via a caulking tube for rat and mouse control.

Also new, is a smaller sized Rascal brodifacoum contact gel, available in 35ml tubes. This ready-to-use gel can be applied using a hand-held bait applicator for indoor mouse control.

www.1env.co.uk

Shocking for birds

PestFix has added Bird Shock Flex Track bird dispersal system to heir range. Manufactured by Bird Barrier in the USA, it is a low-profile ledge deterrent system effective against all species of pest birds utilizing the principle of fear and flight, conditioning birds to stay away.



Its low-profile electrified track comes in a variety of colours, is hard to detect, is flexible, humane and long lasting says PestFix.

www.pestfix.co.uk

Special immobilising coating

Barrettine is launching a new version of its Oa2Ki products with improved knockdown.

Both sprayable products come with an enhanced liquid polymer which, when applied to the insect, rapidly coats and immobilises it, and as a secondary consequence of this immobilisation, the insect dies.

Barrettine has made a video showing this activity. View it at https://youtu.be/s56gP5C9_0o

www.barrettine.com

Broad spectrum insecticide

New from PelGar comes Alphaban Super. It is a multi-action insecticide formulated as an oil in water emulsion which allows for a homogeneous distribution of the active material through the tank, ensuring that concentration levels remain constant throughout treatment.

Containing cypermethrin and tetramethrin with PBO, it gives both rapid knock down and flushing effect along with potent residual insect killing activity. It is suitable for both flying and crawling insects for treatment of surfaces where insects rest.

www.pelgar.co.uk

Squeaky clean!

Steri-7 XTRA is a biocidal disinfectant cleaner which helps prevent further re-infection and destroys up to 99.9999% of harmful pathogens at source, giving customers peace of mind explains Edialux. It comes in two sizes; a ready to use 5 litre and a 1 litre concentrate that can be applied in the form of a spray, mist or simply wiped onto infected surfaces.

www.edialux.co.uk

One Shot is all you need!

Coming from the Phobi range of products from Lodi UK is Phobi F&F One Shot aerosol fogging device. Simply press and twist the nozzle to release and all pests will be controlled in minutes – for example flies within three minutes and German cockroaches within five – claims Lodi.

Containing both imiprothrin and cyphenothrin, one aerosol treats an area of 375 cubic metres. One Shot can be used indoors against flying and crawling insects.

www.lodi-uk.com

Wall out those rats

Ratwall is a robust, stainless steel unit that stops rodents from entering a property via pipes. It includes an external hinge and curved flap, so there is no restriction of flow in the pipe, and is easy to fit with no silicone or securing cable required. Ratwall is available in two sizes, 100mm and 150mm.

www.edialux.co.uk

Pest Test 46

Now also online

BASIS has made two PROMPT CPD points available if you can demonstrate that you have improved your knowledge, understanding and technical know-how by passing the ***Pest Test*** and answering all our questions correctly. so read through our articles on Ant alert (page 15), Bed bugs still a tough nut to crack (pages 21 to 23), Bed bugs have favourite colours (page 25) and Turning up the heat (pages 26 & 27) in this issue of ***Pest*** and answer the questions below.

SEND COMPLETED QUESTIONS to: ***Pest*** Magazine, Foxhill, Stanford on Soar, Loughborough, Leicestershire LE12 5PZ.

We will mark your ***Pest Test*** and, if all answers are correct, we will enter the results onto your PROMPT record held by BASIS.

1 What is the size of the largest *Lasius neglectus* colony yet discovered in the UK?

- ☐ a) Just under 10 ha
- ☐ b) Over 10 ha
- ☐ c) 10 ha precisely
- ☐ d) More than 15 ha

2 Which of the following is **NOT** listed by Clive Boase as a means of identifying a *Lasius neglectus* infestation?

- ☐ a) Uniformly dark brown ants
- ☐ b) Ants that are slightly smaller than *L niger*
- ☐ c) Very aggressive ants
- ☐ d) Ants that are active indoors and out

3 Which of the following is **NOT** recommended by David Lilly as a means of overcoming super resistant bed bugs?

- ☐ a) Use non-chemical treatment like a vacuum cleaner
- ☐ b) Use an insecticide with piperonyl butoxide
- ☐ c) Double the dose of your chemical treatment
- ☐ d) Use a silicate-based product

4 Which colours do bed bugs prefer?

- ☐ a) Reds and blacks
- ☐ b) Reds and yellows
- ☐ c) Reds and whites
- ☐ d) Reds and greens

5 Why do the scientists think bed bugs were attracted to red colours?

- ☐ a) Red is the colour of blood
- ☐ b) They like all bright colours
- ☐ c) They liked the smell of the red card
- ☐ d) They associate red with the presence of other bed bugs

6 What temperature do you need to reach to kill all stages of the bed bug's life cycle?

- ☐ a) Around 45°C
- ☐ b) Around 55°C
- ☐ c) Around 65°C
- ☐ d) Around 75°C

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Diary dates

5-7 September 2016

2nd Euroasian Pest-Management Conference
Technopark SLAVA, Nauchny Proezd, Moscow, Russia
www.pestmanagement.su/english/

14-16 September 2016

27th FAOPMA Conference 2016
Sea World Resort and Conference Centre, Gold Coast, Australia
www.aepma.com.au/Conference

27-28 September 2016

2016 CIEH Annual Conference: We can be heroes
East Midlands Conference Centre, Nottingham NG7 2RJ
www.cieh.org/annualconference2016/

18-21 October 2016

PestWorld 2016
Washington Convention Center/Sheraton Seattle Hotel
Seattle, Washington State, USA
www.pestworld2016.org/

2 November 2016

PestTech 2016
National Motorcycle Museum, Birmingham B92 0EJ
www.npta.org.uk/pesttech

16-18 November 2016

Parasitec 2016
Paris Event Center, 20 Avenue de la Porte de la Villette, 75019 Paris, France
www.parasitec.org/

30 November to 2 December 2016

Global Bed Bug Summit
JW Marriott Indianapolis, 10 S West Street, Indiana 46204 USA
www.npmapestworld.org/education-events/upcoming-events/global-bed-bug-summit/

Will you get involved in ICUP 2017?

The next International Conference on Urban Pests (ICUP) will be held in the UK in July 2017, in Birmingham to be precise. For many pest professionals in the UK, Birmingham is a pretty easy place to get to. Indeed, 80% of the UK population can reach Birmingham in 90 minutes, so there's really no excuse not to be involved this time.

Many people wrongly believe that the ICUP is purely for the scientists and technical wizards, but that's not the case. Experience from the sharp-end of pest control can be just as enlightening as work completed in the lab. So, if you've got some interesting experiences from the field as well as some data to go along with this, and you would like to present your findings at the conference, don't be shy. The ICUP 2017 organisers want to hear from you.

Go to the website at www.icup2017.org.uk click on Call for Abstracts on the menu on the lefthand side, where you will find full instructions on how to submit your idea. Abstracts must be submitted by 15 September 2016.

ICUP 2017 will take place from 9 - 12 July 2017 at Conference Aston, which is based on the University of Aston campus in central Birmingham It only comes around once in three years so the chances are it will be a long time before it's on our shores again. Make the most of it and visit the ICUP 2017 website.

This highly popular, non-profit, event aims to address the importance of both traditional, and also emerging, pests in urban environments from around the world.

Sessions will cover:

- Hygiene pests, such as cockroaches, ants, bed bugs and houseflies;
- Structural and museum pests;
- Vertebrates including rats, mice, birds, rabbits and deer;
- Invasive species, particularly mosquitoes and ants;
- Medical entomology and acarology;
- The future for pest management;
- Biocidal and regulatory challenges accompanied by stewardship initiatives;
- Chemical control using both synthetic and natural compounds;
- Physical methods within pest management;

If you can't, or don't want to, offer a paper, then you should think seriously about attending the conference. Full delegate registration details will be available on the website this autumn.

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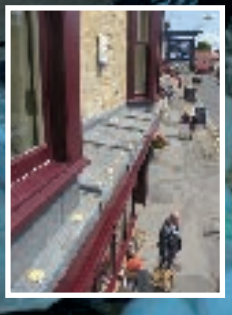

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