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every week, but this year we have to do it every other week.”

Like any master of his art, Cram has an array of tools at his disposal and Primo Maxx is a firm favourite. For the technically minded, its active ingredient is Trinexapacetyl, which inhibits gibberellic acid biosynthesis, resulting in decreased cellular elongation and internode length.

In short, vertical growth is slowed and energy is redirected to lateral stems and below ground plant parts.

The redirected energy is used to produce increased food reserves, bigger root systems, and increased lateral stem development for thicker healthier turf. Because the grass absorbs Primo Maxx quickly, it is rain-fast in 3 hours.

It all helps avoid growth during the tournament which is the big no-go.

“The last thing you want is greens to be stimping at 10 feet in the morning and seven feet in the evening, so it is very much a balanced approach with fertilisers to avoid too much upward growth.”

Cram manages his team with a combination of military precision, expert knowledge and unerring

instincts built up over his long career.

“I’m not that technical, but there are a few tricks around that help you out and Primo Maxx is one of those,” is his modest self-assessment.

One of his undoubted strengths is the team spirit and camaraderie he engineers among his staff of 10 full timers, which bumps up to 12 with summer casuals and a further four to six greenkeepers from other De Vere venues who join Slaley in the build-up to the PGA Seniors.

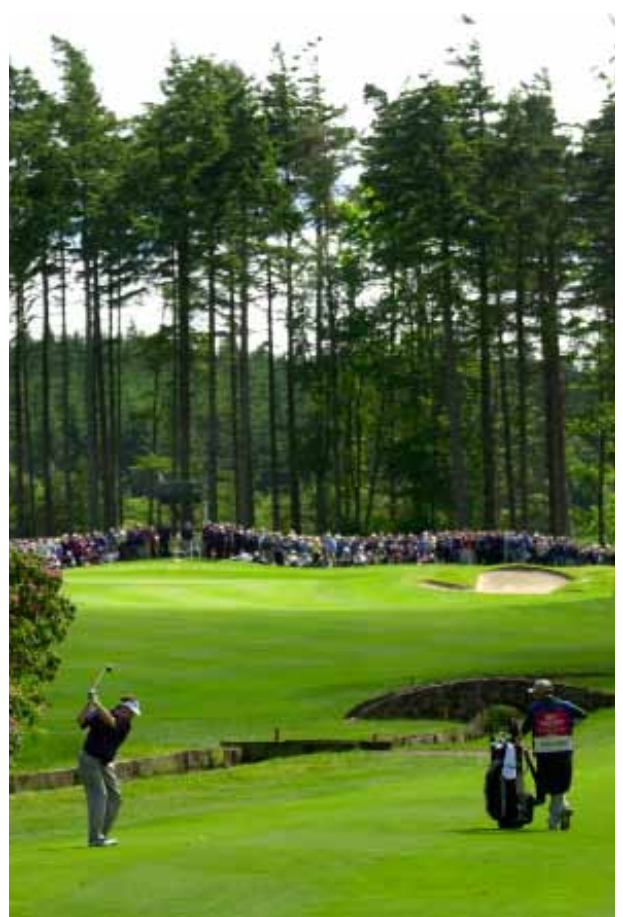
A key approach is giving his team ownership of a particular part of the course – be it fairways or greens.

“From May they will all be on the job they are doing during the tournament.

“There are a couple of reasons, firstly I give them ownership, it is their little bit of the course and that is their responsibility.

“If someone has got the job of doing lines, creating that diamond effect, then it’s his responsibility. I purposely do it because it gives them ownership.

“If I am not happy they will know it, but invariably they will get it right through pride. The team really



responds and I think they appreciate it and get into it.

“This is not just my golf course, it’s theirs too, and by doing it this way they feel part of the tournament, so when the tournament starts they can go out and tell family and friends - I did that, or I look after that.”

Another reason for job allocation is that Cram has to know down to the last minute how long it is going to take to carry out the various tasks of fairway and green cutting during the event itself.

“On Thursday and Friday there are two tee starts, so we have to be in and out without disturbing the players. For example, you can’t cut the 18th when they are teeing off the 10th, which is so close.

“We know exactly how long it takes as we time it in the build-up and know how long it is going to take to get them away before the players arrive.

“But the biggest challenge is the eve of the tournament pro-ams on Wednesday with shotgun start at 8 and then in the afternoon. We have to have all the course cut by 8 in the morning then go back out and cut the greens and do the divots after the afternoon.

“Wednesday is a long day – probably a 4.30am start and 10pm finish.”

By mid-May they are a couple of weeks behind schedule in terms of growth, but Cram is not panicking.

“With two or three days of warm weather we should be back to where we want although ideally I would rather be a couple of weeks ahead.

“The greens are okay but the fairways are just a little bit behind.

“You get used to the climate and we factor that in with our fertiliser regimes, using preferred suppliers, Sherriff Amenity and Everris, liquid feeds and fertilisers.”

If dodging the elements isn’t enough of a challenge, Cram also has to juggle the commercial demands of a busy course that is open to the public up until the Saturday before the tournament.

“The course is not closed until 4pm on Saturday and practice starts on Sunday so we have to work around that,” says Cram.

“We go in ahead of general play. The biggest problem is divots, and four times before the tournament we have a team of 25 volunteers that divot the fairways as we build up to the tournament. At 4pm on the Saturday before the tournament we will divot and rake all the bunkers.”

The ultimate test for Cram and



his team though will be the players’ reaction and they can be pretty demanding taskmasters in their expectations.

“The greens are the most important thing to the guys, particularly the speed. The guys expect it stimping at least 10 feet. They expect it to run smoothly, but not snakey where there is movement.

“In terms of the fairways we cut to 10mm, a lot tighter than for regular play and the same for the tee boxes.

“For bunkers tour players want a maximum of two-and-a-half inches





“The greens are most important, particularly the speed. The guys expect it stimping at least 10 feet. They expect it to run smoothly, but not snakey where there is movement”



Slaley Hall, in all its splendour, on a glorious day is an ideal setting for golf course photography
Images supplied by Professional Sports and The PGA

which is quite firm. They don't like it to plug, so want a firm lie.

“We also have to work with the PGA tournament staff for course set up as they mark-up the golf courses. This involves a lot of strimming because we have a lot of ditches and water.”

It's only when the final putt is drained on the Sunday that Cram and his team can finally relax and enjoy a well-deserved beer and reflect on their efforts.

“It's great to sit down and enjoy a beer because a great camaraderie

has built up between the staff and hopefully everybody has had a good tournament.

“The only downside is the Monday and Tuesday when you feel a bit down because you have been running flat out on adrenaline and the atmosphere of the tournament.

“But there is not too much time to dwell on that because there are still the regular customers to prepare for and you have to pick up and get on with it, hopefully though, without any rain!”



Toro Student of The Year, Matt Perks, reveals all about his trip to the States, the prize for scooping the top accolade in the annual BIGGA competition

A life changing trip

The day after I had won the Toro Student Greenkeeper of the Year award I was sat on the train on the way home with a big smile on my face.

I felt a huge sense of achievement that all the hard work had paid off and that a personal dream had come true. It hadn't dawned on me that all the hard work was going to be eclipsed by the level of education I was about to receive at the University of Massachusetts (Umass).

The next few months passed like a blur. In order to obtain my Visa there was a never-ending stream of form filling followed by an interview with the US Embassy in London. As well as this there was Christmas and New Year to think about besides a busy few months working on the golf course.

However, on January 3, I found myself sat in Heathrow Airport on my own ready to go. I knew partially what awaited me, but no one can really prepare you for the USA and how full on things were going to be at university. After 22 hours of travelling without any sleep I finally

arrived at the Comfort Inn, which would be my home for the next 7 weeks. I set my alarm for early next morning so that I could meet up with some fellow students on the turf management course before going straight to sleep. I wasn't disappointed as I got chatting to everyone straight away over coffee and doughnuts and managed to get a lift to the university.

The first thing that hit me was how big the campus was, it was like a small town with its own basketball and ice hockey arena, bars, restaurants and numerous high rise flats to accommodate all of the students. The place was so big it even had its own Power Station!

We were all expecting a nice and easy first day but had no such luck. After the first hour of orientation we went straight into lectures. There was so much to cover in a short amount of time that every available minute was used. There were the "core" subjects such as Entomology, Disease Pathology, Turf Grass Physiology, Turf Grass Management, Turf Grass Identification,

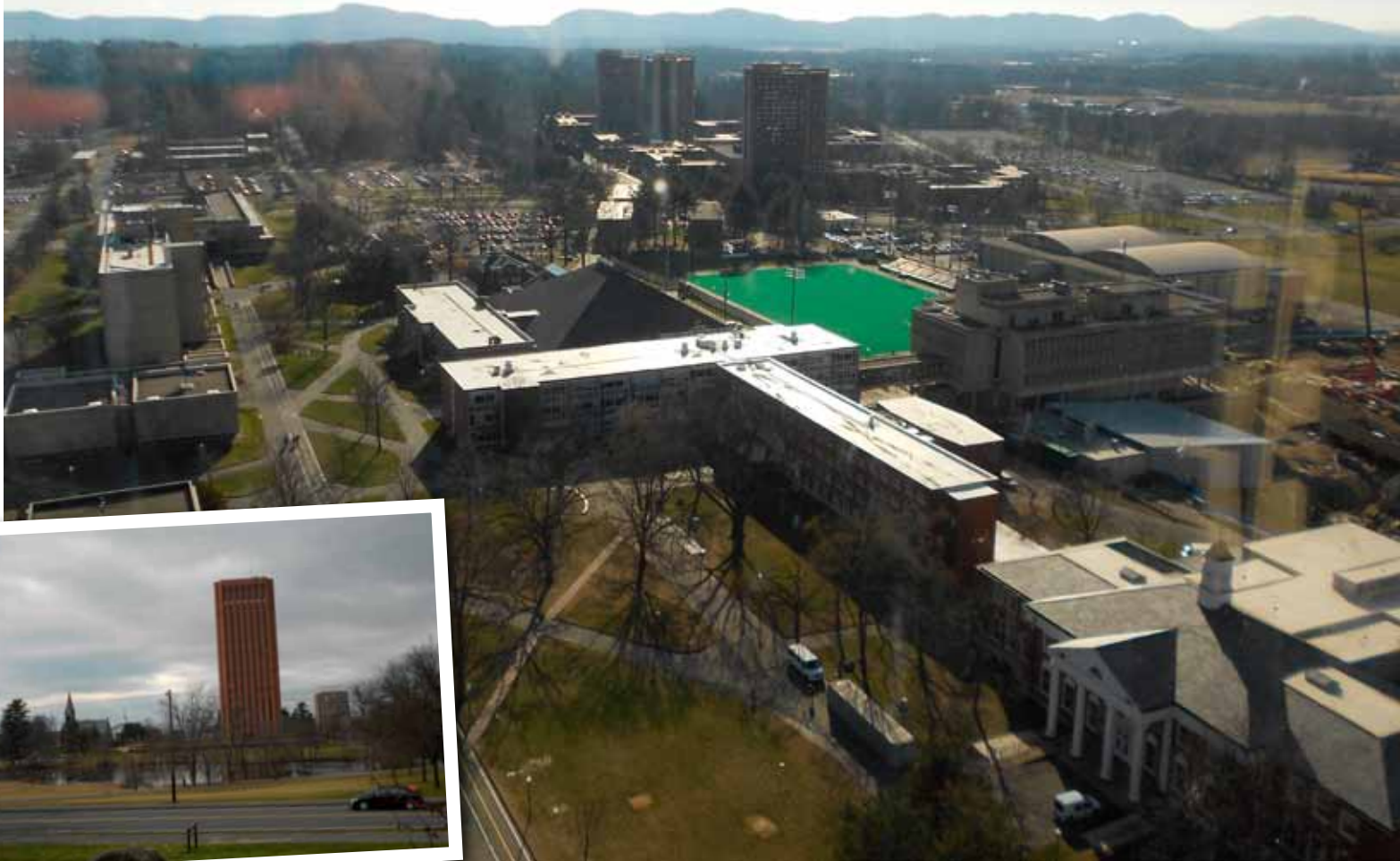
Weed Management, Fertiliser and Chemical Calculations, Soil Physics, Soil Chemistry and Agronomy; these were then interspersed with other smaller, but no less important, lectures on Irrigation, Arbo-riculture, Staff management, Golf Course Design and Architecture. There were also some guest lecturers from the world of golf including Bill Spence from the Brookline Country Club and a USGA agronomist Jim Skorulski.

Of course it wasn't all work, there were plenty of nights when we all went out for food and drinks, to watch Hockey matches and play Ten Pin Bowling. I quite fancied my chances at bowling but quickly realised that I had no chance, as this was one of their many national sports. So, I decided to play some of the locals at Pool, something I fared a lot better at. One night I went for three hours unbeaten before being asked to kindly step aside in order to let the others have a go.

Going to Boston for the weekend was a memorable part of the trip. Chris Swider, one of the guys on

ABOVE: Matt with the graduates outside the Toro offices
BELOW: Matt in a snowy Boston
INSET RIGHT: Umass library, the tallest in the U.S at 26 floors
MAIN RIGHT: View from the top of Umass library





“The campus was like a small town with its own basketball and ice hockey arena, bars and restaurants. It even had its own Power Station!”



the course, was going home for the weekend, so a few of us booked a hotel and he gave us a lift. During the day we went to the New England Aquarium and did the tourist trail and at night we ventured into China town for food and drinks. It was a great weekend but before we knew it we were driving back to the Comfort Inn and Umass for another week of lectures. It felt like the course was never going to end but eventually we were in our final week and counting down the hours until we graduated. All together there were 117 2 hour lectures, plus homework and 32 exams! It was as exhausting as it sounds. The course pushed each and every one of us, including myself, to the limit of what could be achieved,

but achieve we did as every one of the 42 students passed with flying colours. We graduated on a Friday afternoon which gave us chance to say our goodbyes to those who had to travel home, and gave everyone else a chance to get ready for one last night out together.

I had another few days to kill before I travelled to Minneapolis, so I went to stay with a fellow student and hotel resident, Roger Beaulieu, at his place in Connecticut. We played golf and went for some food and a few drinks at his local bar. I met some great people that weekend and was treated like one of the locals. I've got say a big thanks to Roger as he was my taxi almost everywhere while at Umass and he treated me like one of his family and I would gladly call him a friend for life.

Monday morning came and it was time to leave New England behind and head for Minneapolis to see the Toro facilities and factories. I met up with the two Australian winners and the Canadian winner from Umass and we were shown

every inch of Toro's three main sites from the Headquarters, Research and Design and Manufacturing and Assembly. It was great to see how the products were initially conceived, designed and tested before being assembled into the machines we use every day. It was eye opening to see the work that goes into it and how all the staff take pride in what they do; it's no wonder we end up using products with such a good build quality.

Edric Funk was our guide while we were in Minneapolis. He made sure that we had everything we needed and he arranged our evenings out for food and entertainment, the best of which was on the Wednesday when we headed out into Minneapolis city centre. We went to the finest steak house to start off with and had an amazing meal, this was followed by a VIP trip to watch the local basketball team, Minneapolis Timberwolves, play Utah Jazz. We had court-side seats and at half time we went to the backstage bar and met all of the players as they came out for

the 3rd period. It truly was amazing, but that wasn't all, as after the 3rd period had ended Edric had arranged for the TV crew to come and film us and put us up on the big screen in the centre of the court! It was a close game that was won in the final second by Wolves. The arena went completely mad and it was a great end to an amazing night.

Friday soon rolled around and it was time to leave for the final leg of my trip; the Golf Industry Show in Las Vegas. To be honest it really crept up on me as I had been so busy over the previous seven weeks I hadn't even had time to think about going there, but soon I had landed at McCarran airport and was in a taxi on the way to the hotel.

I arrived at night so it was an amazing view driving down the strip with the hotels and shops all lit up. The next day I ventured out and wandered around the endless hotels, casinos and shops and in the evening I met up with Sami, Jim and Andrew from BIGGA. We went out for dinner and chatted about the trip so far and how everything had gone, it was great to see them again.

The next few days were spent at the show looking around the thousands of stands and exhibits. The place was truly gigantic and you definitely needed the map to find your way around. I ran into so many people from the UK while I

was out there and spent hours talking to all of them about the industry and where it is headed. I got a really positive feel from everyone and it was great to see that none of the passion has been lost over the difficult last three years, in fact I think it's made some people even more passionate and determined to succeed in their particular area, whether that be a greenkeeper, machinery supplier, or any one of the many aspects that come from managing golf courses.

Then, before I knew it, Friday had come and it was time to return home, so, I packed my bags and headed for the airport. While I was sat waiting for the plane I had a few hours to reflect on the trip, how much I had learned and how much the experience had changed my life for the better. I can honestly say it was the trip of a lifetime and something I wish I could go back and repeat all over again. I'd like to say a huge thank you to everyone involved with the Toro award, particularly Sami Collins and all of the staff at BIGGA, as well as Pete Mansfield and his secretary Christine Wilson from Lely UK who not only sponsored the award but also made sure that I had everything I needed every step of the way.

This just leaves me to say good luck to this year's nominees and to the eventual winner: get ready for the trip of a lifetime!

New York Hotel, Las Vegas



The Strip in Las Vegas



Umass class photo

TORO

Protecting turfpesticides in the marketplace

A series of articles aimed at a varying readership.

Advanced Level

If you're a Course Manager or Head Greenkeeper, read on...

By Dr Terry Mabbett returns with part two of his high-level analysis of European Turf Threats

Turf pesticides are designed to protect fine grasses from insect pests, plant pathogens and weeds, but could now be in need of protection from themselves and the clutches of increasingly 'dynamic' EU directives issued by Brussels.

Given the short time frame in which apparently safe turf pesticides with long pedigrees of effective use are being withdrawn from the market, or having their wings severely clipped, the greenkeeper might well ask exactly what pesticides are 'safe' and secure in the marketplace.

The short straight answer is that no single chemical pesticide is absolutely secure with an assured future use in professional turf because those issuing the directives are the ones making (or making up) the rules.

As such they decide on the nature and height of the hurdles and position of the goal posts presented to pesticides running the gauntlet of their directives. With sufficiently high hurdles and widely spaced goal posts it is not difficult to find a

chink in the armour of most active ingredients, so contemporary pesticides must present a drum-skin tight profile in every respect from environmental integrity to operator and public safety.

The answer to pesticide protection is in product 'stewardship', an ethic and concept embodying the responsible planning and management of pesticide resources in relation to the environment and public health.

Product stewardship operates at two levels, first with the manufacturer who develops and markets the pesticide product and secondly the greenkeeper who applies the pesticide product according to label recommendations and within a broader best practice turf management programme.

Bio-inspired pesticides

Manufacturers are designing and developing 'new-age' active ingredients based on naturally occurring bio-chemicals produced and deployed by soil based micro-organisms. There is an obvious environmental bonus when using a

pesticide derived from a substance that is naturally occurring and operational in the soil and clearly presenting much less of a risk.

This is the logical place to look for the up and coming generations of bio-founded and bio-foundation pesticides.

For instance, the antagonistic fungus *Trichoderma* with an ability to suppress or kill pathogenic microbes, and used commercially as a bio-control agent, does so not by magic, but through an integrated process of competitive invasion, direct control by synthesis of fungicidal and fungi-static chemicals and the induction of anti-fungal responses in host plants.

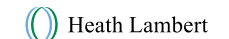
A classic example of a contemporary turf fungicide with microbial origins is azoxystrobin discovered during research on *Oudemansiella mucida* and *Strobilurus tenacellus*.

These small white or brown coloured mushrooms commonly found in Czech forests first attracted scientists' attention due to their remarkable ability to defend themselves by releasing two substances – strobilurin A

ABOVE: New-age bio-inspired fungicides are being used to control Fusarium Patch (Photograph courtesy Syngenta)

TOP RIGHT and INSIDE RIGHT: Golf courses with water courses require extra care and attention when it comes to the pesticide application process. Protecting the many lakes and ponds from pesticide drift and run off is top priority





This article comes to you courtesy of the BIGGA Learning and Development Fund.
Thank you to all our key sponsors



Wild plants at the water margin are another top priority for environmental protection



The Water Framework Directive is proving a pitfall for some herbicides



and oudemansin A – which kept competitor fungi at bay and even destroyed them when in range.

This pioneering work paved the way for the development of a whole range of new fungicides now called the strobilurins, several of which are at the forefront of turf management for control of Fusarium patch and other diseases of turf grasses.

A much more recent entry into the turf fungicide market from this avenue of research is fludioxonil, which Syngenta describes as bio-inspired.

Fludioxonil is a fungicide from the phenylpyrrole group of chemicals derived from the natural antifungal substance pyrrolnitrin produced by *Pseudomonas pyrocinia* soil bacteria.

Greenkeepers will recognise fludioxonil as the active ingredient of Syngenta's Medallion TL, a brand new contact turf fungicide providing targeted control of pathogens responsible for key diseases of turf such as Fusarium patch, anthracnose and leaf spot. Among its many novel and innovative features fludioxonil takes effect not only on the green leaf but also on the thatch and soil surface to pre-emptively hit the fungus *Microdochium nivale* (Fusarium patch) when in saprophytic mode and before it has a chance to infect living grass leaves and damage the turf with symptoms of Fusarium patch disease.

Opportunity for the discovery, design and development of new age pesticides along these avenues and pathways is limitless.

Pesticide profiles

Fast disappearing are the days when mind-sets were focussed on 'dosage' as the amount of active ingredient expressed on a per hectare basis and required to control the target pest, pathogen or weed. Manufacturer's now talk about 'loading' with the environment, now uppermost in mind and consideration. Of related focus and concern following the flood of restrictions and regulations in the 'Water Framework Directive' is the need for new active ingredients to stay where they are placed in the uppermost soil profile, to exert the desired control effect and degrade before any significant leaching of chemical down through the soil profile and into the ground-water can occur.



On-going research into pesticide application involves low drift hydraulic spray nozzles like the Syngenta Turf Nozzles shown in operation here (Photograph courtesy Syngenta)



Bio-inspired, bio-based active ingredients are more likely to automatically fulfil these requirements compared with traditional chemical pesticides created in the crucible. The original natural biochemical having evolved in natural soil-dwelling microbes will, by its very nature, be highly potent and targeted and, therefore active at a comparatively low [?] loading against a narrow range of competitors.

Similarly it must be inherently resistant to leaching in order to carry out its defensive function in the uppermost soil profile including on the thatch. The eventual active ingredient is not the original natural biochemical, but having the same basic chemistry the foundations for these benefits are in place.

Stewardship on the golf course

Greenkeepers have their role to play by adhering to the instructions and recommendations on the product label and by following best practice around the entire pesticide application process and also in its wider context.

This will include avoidance of drift by not spraying in windy conditions and not placing spray closer than stipulated to water courses, lakes and ponds and by increasingly adopting low drift hydraulic spray nozzles and controlled droplet application (CDA) sprayers that use shielded rotary atomiser nozzles to virtually eliminate spray drift.

However, in these times of increasing official scrutiny, that

might not be enough, meaning that the course manager should always be thinking laterally and one step ahead. Soil compaction is a fact of life on golf courses and its effect on grass growth and general turf condition is well known. However, there are additional dimensions with strong implications for pesticide use and environmental protection. For instance, compacted turf is prone to 'puddling' and run-off of surface water is thus created. Timely aeration may, therefore, become an important, albeit more tenuous, factor in pesticide product stewardship.

Thinking ahead means casting a watchful eye beyond the sports and amenity turf 'box' and into other dimensions of pesticide use such as agriculture and horticulture. A classic case in point is the current concern expressed by apiarists (beekeepers) and some environmentalists who claim that the use of neonicotinoid insecticides on arable crops, including oilseed rape, is harming bee populations.

At first glance such concerns are completely inapplicable to golf courses carpeted with wild flowers, but always in non-treated areas. However, closer examination shows that the greenkeeper needs to be on guard because successful broad-leaf weeds of turf are, by their very nature, extremely prostrate plants with growing points at soil level that miss the mower blades.

Weeds such as white clover that flower on greens and tees are an extremely rare event, but fairways

are a different matter. In mid-summer as the turf starts to dry out and drought resistant white clover starts to get the edge on turf grasses it is not unusual to find large patches of white clover in full flower and acting as the proverbial honey pot for bees. White clover is one of the most important honey plants in the United Kingdom and mowing regime can clearly play a part in product stewardship.

What's in the spotlight?

Speculating on pesticides which could be at risk is generally not a good idea and probably a case of tempting fate. However, there are several important pesticides sufficiently in the spotlight and known to be at risk to a greater or lesser extent.

Asulam

Greenkeepers might not even be aware of this highly specialist herbicide unless they have a problem with bracken on their course. If they do they will undoubtedly be concerned because as the situation currently stands asulam could be on the way out forever as asulam can no longer be purchased and all stocks must be used by 31 December, 2012.

Asulam is highly selective against bracken and if this herbicide cannot be saved the only other herbicide for bracken control is glyphosate, a total systemically acting herbicide which cannot be used safely in the same way as asulam.

Greenkeepers with a bracken problem who are unable, or not

INSIDE TOP: Wildlife and especially aquatic animals like these spawning common frogs now receive top priority when it comes to all aspects of pesticide safety

INSIDE SECOND TOP: Chlorpyrifos the only sprayable insecticide to control leatherjackets in turf (shown here) is in the spotlight over much heavier and widespread use in agriculture (Photograph courtesy Syngenta).



INSET ABOVE: Good turf management practice including aeration and mowing regimes may play a more tenuous though still important part in pesticide product stewardship. Shown here is white clover in flower on a fairway and proving attractive to bees.

INSET BELOW: What gets into water courses from spraying in agriculture may impact heavily on future pesticide use in turf

