

fungicide applications – when infection has taken place during periods of high disease risk, but before symptoms are visible on the turf – can achieve better results and maintain improved turf quality, from fewer applications and at reduced cost.

Coupled to this, it remains essential that turf managers adopt the highest level of Integrated Turf Management (ITM) that will help to prevent problems. Measures such as appropriate nutritional and cultural treatments, correct disease identification and the early or preventative application of appropriate fungicides can all help to prevent serious problems occurring.

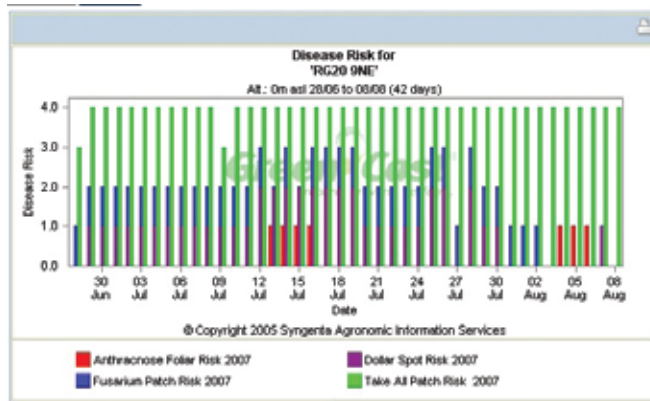
Stress Management

UK cool season grass species struggle to cope when temperatures rise and soil water reserves fall. With a warming climate becoming a reality, turf managers are going to have to cope with increasingly stressful conditions. Staying cool and green when all around are burning up will make a real difference.

Research trials and turf managers' experience on UK golf courses and sports pitches has consistently demonstrated the ability of a Primo MAXX programme to help turf withstand the effects of stress more effectively, and to recover faster.

On a sunny day, the temperature within the turf grass canopy is often 7 - 10 °C warmer than ambient air temperature, adding to turf stress. Studies have shown root growth is adversely affected when temperatures get above 18 °C; and above 24 °C leaf photosynthetic rates reduce and the chlorophyll content decreases in cool season turf grasses, such as bents, fescues, ryegrasses and Poa annua.

The net result is loss of colour, turf density and turf quality, yet, under drought conditions Primo MAXX has been shown to increase leaf chlorophyll content by 60%. Furthermore, it has been shown to increase the level of bioactive cytokinins within the plant that serve to delay the degradation of chlorophyll



caused by high temperatures and to alleviate leaf browning, improving tolerance to heat and drought induced stress.

Water Use

Research at Rutgers University has shown that only 3% of water taken up by turf grass is used in photosynthesis, with over 90% transpired by the plant. The Primo growth regulation programme has been shown to improve the turf plant's water efficiency by reducing respiration rates and stomatal evapo-transpiration, which in practice can reduce irrigation requirements by 30%.

In trials under drought conditions, the photochemical efficiency of turf was enhanced by over 75%, compared to untreated turf. The relative water content of the grass leaves remained a healthy 20% higher than untreated 28 days after application.

Healthier plants, with deeper rooting, are better able to seek out available soil moisture and nutrients, make more efficient use of irrigation and stay green and healthy for longer, as well as recovering faster from drought effects or traffic and wear stress from heavy play.



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ADVICE ON SAVING WATER FROM THE ENVIRONMENT AGENCY

Are you saving water?

Saving water at home, in the garden, or at work can take little effort, but makes a big difference.

The key is for everyone to reduce personal wastage, ie. turning the tap off when you brush your teeth, can save up to 5 litres a minute. If the entire adult population of England and Wales did this, we could save 180 million litres a day, enough to supply nearly 500,000 houses.

Why should I save water?

Water is not as abundant in England and Wales as you would think. We only have 1,334 cubic metres (m³) per person a year – much less than France (3,065 m³) or even the hotter Mediterranean countries of Italy (2,785 m³) and Spain (2,775 m³).

South East England has even less water per person due to its high population density and low rainfall. The Thames Valley has only 266m³, only a fifth of the England and Wales average.

Dry winters have the biggest impact on water resources. Winter rain tops up groundwater supplies while summer rain only helps reduce water consumption as we don't have to water our gardens or wash our cars. Saving water will make sure that the water we do get lasts, particularly as it is impossible to predict how long a drought will continue.

Water shortages don't just affect us: they can also seriously harm our environment. Our water comes from rivers and groundwater so every drop we use has a direct effect on the environment.

Fish, wetland birds and other wildlife that rely on ponds, rivers and streams struggle to survive when these dry up or run low. Sources of food and breeding sites for wildlife can be lost and fish can die through lack of oxygen.

The average person in England and Wales uses 150 litres of water every day. Most of it is used for washing and toilet flushing, but it also includes drinking, cooking, car washing and watering the garden. We use almost 50% more water than 25 years ago, partly because of the use of power showers and other water using household appliances.

Rainwater Harvesting

Rainwater Harvesting is the collection of water that would otherwise have gone down the drain, into the ground or been lost through evaporation. Large surfaces such as roofs or driveways are ideal for rainwater harvesting and can provide up to 100m³ (100,000 litres) of water per year from a medium sized area. This water can be used to flush toilets, water gardens and even feed the washing machine. Rainwater harvesting systems can be installed in both new and existing buildings, and the harvested water used for purposes that do not require drinking water quality. Rainwater harvesting has the potential to save a large volume of mains water and therefore help reduce the pressure on water resources.

Is it for me?

Before deciding whether or not to install a system for home or work, consider the costs of buying, installing and maintaining the system.

- Calculate the volume of rainfall that can be collected from roof areas or driveways to see whether rainwater harvesting can meet your requirements.
- Work out the potential water and cost savings.

Water-efficient gardening

There is much that gardeners can do to reduce the need for watering. Adding organic matter, home compost, composted bark or rotted manure at about a bucketful per square metre will boost the amount of water that soil can retain. Water efficient gardens also save labour, as there is less need to water them and mulches suppress the growth of weeds.

Choosing plants suited to the soil and site will mean that they grow good roots which can search out moisture. Mulching with organic matter such as bark chips or with other materials such as gravel or ornamental crushed glass will help to promote good root growth and reduce moisture losses from the soil. Newly planted areas and newly laid lawns won't survive without watering if you plant them in the summer. Set out plants and lawns as early in spring as possible so that they develop good roots early. If drought strikes, these should have top priority for whatever water is available.

Lawns can survive drought very well and even if brown recover when rain returns. Gravel and other mulches, or prostrate evergreen plants such as Juniperus squamata, can be used as an alternative to lawns.

Saving water in the public sector

Did you know that with the introduction of the Water Act 2003, all public bodies now have a duty to 'conserve water'? By monitoring your water use and comparing it to benchmarks you can save up to 50% of your water bill. The Water Act 2003 places a duty on all public bodies to 'take into account, where relevant, the desirability of conserving water supplied or to be supplied to premises'. This means that all public bodies should reduce the water used on their premises to an efficient level.

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Environment Agency.



WATER USAGE

HOW MANY LITRES TO...		
Fill a kettle:	1	
Fill a watering can:	5	Flush a toilet: 9
Have a shower:	30-50	Use a dishwasher: 25-60
Fill a bath:	80	Do laundry: 70-120

Source: BBC News

TOP TIPS...

ADVICE...

In 2003 Laleham Golf Club experienced the worst drought they had ever suffered. Course Manager, John Ross explains and offers five top tips in the fight against drought.

"In 2003 Laleham Golf Club had zero rainfall from March until October, 113 mm fell locally in that time but it felt like we were inside some form of protective dome. The water licence at Laleham allows only 1.84 cubic metres of water per hour to be applied through the irrigation system and Laleham is laid out on gravel exacerbating the problems."

TIPS FOR COPING WITH DROUGHT

1. Plan for it

If it does not happen you have lost nothing, planning is done in the winter and spring, every winter and spring! Aeration is key, No aeration no drought resistance.

2. Learn to read the early signs of plant stress

Leaf wilt, uneven dew formation.

3. Irrigation without infiltration and percolation is wasted

When we water we target plant roots not foliage.

4. Turn negatives into positives

Use a drought as a means of constructing arguments for investment in irrigation, drainage and aeration (yes drainage! drought tolerance starts with good drainage).

5. Do not abuse your irrigation system

Hand water hot spots if that is what is needed, no point saturating a large area to get a small area.

FLOODING ADVICE

Immingham Golf Club, Humberston, suffered greatly from flooding in 2007. Course Manager, Steven Beverly, offers some advice and explains: "When 500mm fell in two months, including over eight inches in one day, we ended up with several areas that were only passable by boat!"

TOP TIPS FOR COPING WITH FLOODING...

1. If you identify poorly draining areas then they need to be addressed before any flooding occurs.

2. Ensure you are properly equipped to deal with the problems, i.e. have pumping equipment on site, know where drains are to pump into, ensure these drains work.

3. Any damage done by flooding needs to be cleared away promptly, i.e. any debris left on the course needs to be removed, washed out bunkers repaired.

4. Have course policies in place, if flooding causes the cancellation of major competitions or closes holes for prolonged periods of time.

5. **DON'T PANIC!** The flooding wasn't caused by greenkeepers or bad greenkeeping practices; it is an act of god and cannot be prevented, only dealt with as smoothly and quickly as possible.

CLAIM SOME RECOGNITION

2008 BIGGA GOLF ENVIRONMENT COMPETITION



The opportunity for the golfing community to show, and indeed be recognised for, its commitment to promoting a sustainable environment has returned.

The competition is in place to acknowledge the positive work being carried out at golf clubs and to highlight to other clubs the ways in which they may become more sustainable. The focus is not limited to elite clubs who have been developing environmental projects over many years but is also on those who are in need of support and backing to justify the works they are already undertaking.

For more information and an application form contact Sami Collins, Head of Learning and Development, on tel: 01347 833800 or: sami@bigga.co.uk The deadline for applications is June 20, 2008.



Last year's BIGGA Golf Environment winners, Notts (Hollinwell) Golf Club

FURTHER ADVICE

For further advice on climate change contact:

The Met Office: 0870 9000100

Email: enquiries@metoffice.gov.uk

DEFRA: 08459 33 55 77

Email: helpline@defra.gsi.gov.uk

Environment Agency: 08708 506 506

Email: enquiries@environment-agency.gov.uk

GES Consulting, Alan Hopkins BSc, MPhil, CEnv, MIEEM

Email: environment.hopkins@virgin.net

www.water.org.uk

www.ofgem.gov.uk - Regulators of electricity and gas markets in Great Britain

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reliable and sustainable turf disease control - now, and in the future. Combined with the independently proven advice from www.greencast.co.uk you can be confident of applying the right product, at the right time, to maintain the ultimate turf.

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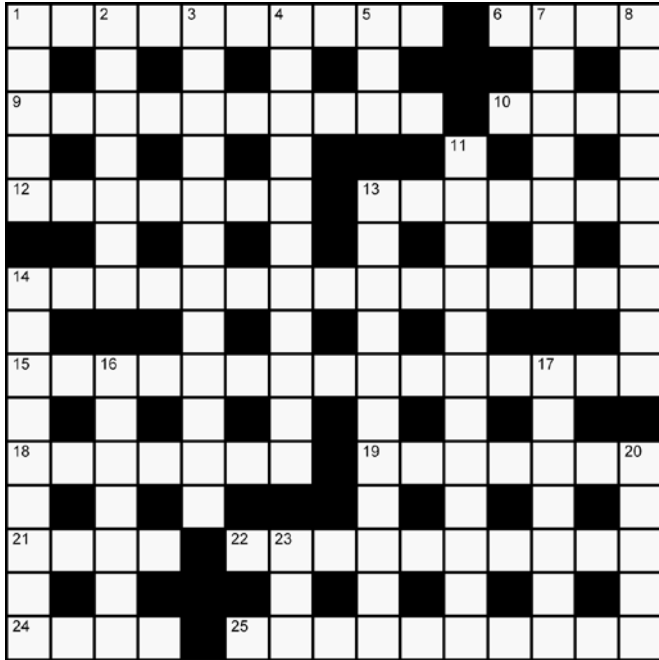
Always read the label. Use pesticides safely. ©Syngenta AG May 2008, GQ.



In the Shed

Greenkeeper International brings you 'In the Shed', a puzzle page to keep you entertained when the weather forces you in or for when times are slow.

CROSSWORD



Across

- 1 Pertaining to motor vehicles (10)
- 6 Establish validity using evidence (4)
- 9 Merchant navy employee (4,6)
- 10 Respiratory organ (4)
- 12 Word denoting part of something but meaning the whole (7)
- 13 Introduced from an external source (7)
- 14 Type of healer - anagram of CITY HAS PROPHETS (15)
- 15 Birthplace of Monty Python founder John Cleese (6-5-4)
- 18 Construct from scratch again (7)
- 19 Portuguese footballer who joined Manchester Utd in 2003 (7)
- 21 Hang around furtively (4)
- 22 Conjuring sticks (5,5)
- 24 Time taken for a planet to revolve around the sun (4)
- 25 Inhabitants of a landlocked central Asian republic (10)

Down

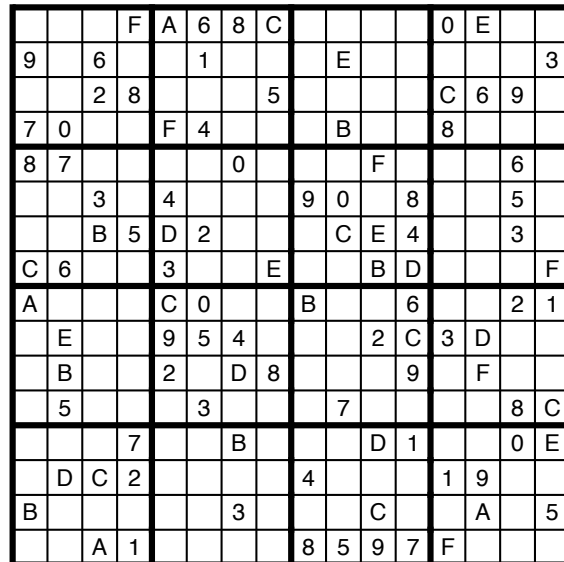
- 1 Fear caused by awareness of danger (5)
- 2 Author of War and Peace (7)
- 3 Sneeringly disbelieving of goodness in others (12)
- 4 Injured or shocked (11)
- 5 "By way of" - word for Italian street or road (3)
- 7 Performing name of escapologist Erik Weisz (7)
- 8 Small passenger vehicle often used for sightseeing (9)
- 11 Redevelopment of slum areas (5,7)
- 13 Monopoly game square furthest from the start (4,7)
- 14 Fielding rule in One Day International cricket from 2005 (9)
- 16 Vast, largely frozen area of Russia (7)
- 17 Capital of Georgia, USA (7)

QUICK 'NINE-HOLE' QUIZ

1. Who lost the 1990 World Cup final?
2. What is the last event of the Olympic decathlon?
3. In sport, Ray Reardon won his last world championship in 1978 in which sport?
4. Who won the Wimbledon women's singles most times in the 1980s?
5. In football, who is England's top international goalscorer?
6. Which athlete ran the first sub-4 minute mile?
7. Who set a new Olympic record in 1996 in the men's 100 metres?
8. Which Scottish football team play at Somerset Park?
9. In sport, what was the former ground of Derby County football club?

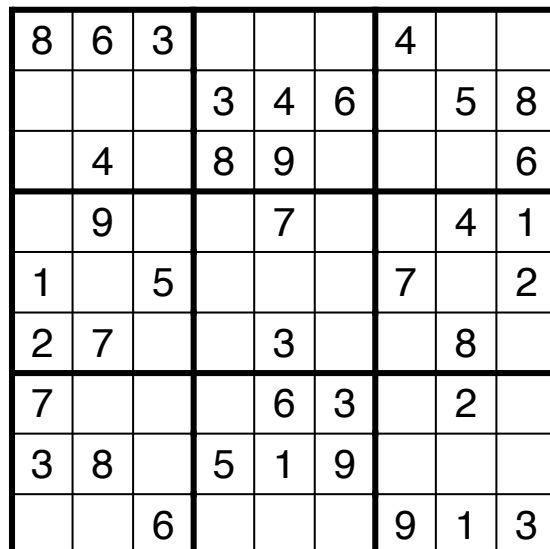
MONSTER SUDOKU

Fill in the grid so that every row, every column and every 3x4 box contains the numbers 1 to 9 and the letters A,B and C.



SQUIGGLY SUDOKU

Fill in the grid so that every row, every column and every 12 box shape contains the numbers 1 to 9.



IN THE SHED ANSWERS ON PAGE 67



IN THE SHED



Hobbies

Here's something you didn't know about me...

Name: Martin Forrester
Hobby: Football Referee
Job: Course Manager, Essex Golf & Country Club



How and when did you start referring football games?

"After some 15 years as a player, I had to finally retire due to a number of persistent injuries and constantly hobbling into work on a Monday morning in pain.

"I needed an objective to try and keep reasonably fit and also wanted to keep active within the game I have loved since a small boy. In 1991, I qualified as a referee and have since officiated over 600 games for various age groups and genders. I have also had the opportunity to officiate at a number of senior Essex grounds including Chelmsford City, Braintree Town, Billericay, Witham and Maldon."

What's your most memorable match?

"My biggest highlight was when I was 4th official at Roots Hall (Southend United, at present division One). The game was a boring 0-0 draw but

the atmosphere and the day it's self will one I will never forget, along with using, for the first time, the electronic board to make substitutions.

"To use the electronic board is an art in its self and when both sets of managers wanted to make a number of substitutions at the same time to say things got slight confused would be putting it politely but that's for another day."

What is it about being a referee that appeals to you?

"Like our Association, the Referee association has given me the opportunity to make many a friend and also meet the likes of Sir Trevor Brooking, Bob Wilson and Peter Taylor (then England Assistant Manager) along with those who know their match officials Ken Aston, Jeff Winter, Steve Bennett and Phil Sharpe.

"Finally to all you spectators, managers and players out there in our industry, next time you are at a match please give that person in the middle a chance. They are only human, will make mistakes and like us in our every day job will have to make decisions that will not please everyone (the golfers or committee member)."



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FEATURE

BIGGA'S GOLDEN AND SILVER KEY SPONSORS TO A MILLION AND BEYOND

BIGGA's Golden and Silver Key programme will soon have generated £1 million and many many greenkeepers have benefited from the generosity of its contributors.

BIGGA's Golden and Silver Key Programme has become one of the Association's flagship initiatives since it was introduced in 1992 and it epitomises everything that is good about the greenkeeping industry - everyone working together and supporting each other for the benefit of the industry.

In which other industry would you find the companies which supply goods and machinery to the industry also contributing to the funding the training and development of the people who work within that industry?

Since 1992 BIGGA has received £977,898 from Golden and Silver Key supporters and in the next year current projections predict that the one million pound barrier will be breached - a remarkable feat and one which everyone in the greenkeeping industry should be incredibly proud.

Think about it for one minute. The people who supply the industry with the tools to do the job also provide the resources to train and develop the people who use those tools. But what is truly commendable is that it's not just practical training in using a particular piece of kit that is provided, it is much, much wider than that. Let's look at what BIGGA's Training and Development Fund has facilitated.



Videos/DVDs

Initially produced as videos but latterly DVDs with the videos transferred to DVD format.

- Golf Course Preparation
- Golf Course Ecology
- Golf Green Reconstruction
- Irrigation
- Raising the Standard in Mowing Management
- Raising the Standard in Spray Applications



Field Guides

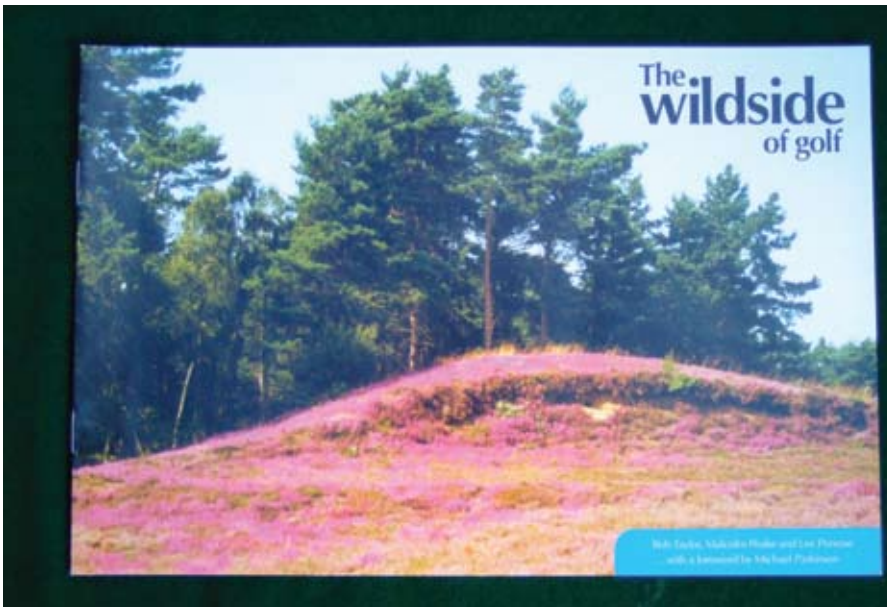
- Major Diseases and Pests for Fine Turf
- The Identification of Golf Course Grasses
- Trees and Shrubs on the Golf Course
- The Identification and Uses of the Main Grasses Found in Golf Course Rough
- The Identification and Damage Caused by Mammals and Birds





The BIGGA Library

- Currently standing at 905 books and constantly growing.



Booklets

- Wildside of Golf.



Regional Training

Over 800 greenkeepers have been trained in 24 different subjects

Refund of Fees Scheme

Set up in 1998 the Fund has given 112 BIGGA members financial assistance with education and training courses.

Education and Training Subsidies

This has provided BIGGA Regions and Sections with informal support for their seminars and training courses. Since last year this has been formalised and 26 events have received financial support.

In the Pipeline

There will be more field guides, the newest two covering Weeds and Ecology.

- A Greenkeeper Accreditation Scheme which will enable BIGGA members to attain an accredited status
- Develop training courses for Bite Sized Learning based on NVQ Standards and in line with the National and European Qualification Frameworks
- Develop an Individual on-line Continuing Professional Development (CPD) system

Quotes from donors, recipients and training providers...



Ronnie Bunting, Ballochmyle Golf Club

"I received financial assistance from the Learning and Development Fund for my SVQ Level 4 course and was among the first in Scotland to sit with GOSTA Training."

"I wouldn't have been able to take the course without a subsidy from the Learning and Development Fund. It wouldn't have happened."

"It is difficult for smaller members' clubs to justify funding such courses as the training budget tends to concentrate on the younger staff, so I am delighted that companies within the Golden and Silver Key Supporters provide money for people like me to advance our knowledge and careers."

Murray Mannall, Slaley Hall H&GC

"I really wanted to develop my education but had to fund my own training. As I wasn't earning much I contacted BIGGA to ask for financial support. Through the refund of fees scheme I have received up to 80% of my course fees and this has enabled me to complete my Chainsaw Maintenance and Cross Cutting, Felling of Small Trees and my PA6 Spraying Certificates. I really do appreciate what BIGGA, with the support of the Golden and Silver Key companies, has done for my career."

Dave Steward, Marketing Manager, Scotts Professional

"Advances in technology require all of us to adapt the way we work and the products we use. Because Scotts' products are at the forefront of fertiliser technology, we're committed to the ongoing education of end-users and are proud to support BIGGA's education and development provision for greenkeepers through our continued Golden Key membership."

Peter Mansfield, General Manager, Toro Turf Products, Lely UK

"Our Golden Key sponsorship is a great way for us to support greenkeepers at all levels in their professional development. It's vital that they get the best training aids and learning opportunities to progress. These are delivered effectively through BIGGA's funding programme and we are happy that Toro and Lely UK's contributions are helping ensure that this important initiative is such a big success."

Dave Roberts, National Sales Manager, Kubota UK

"Kubota see the Golden and Silver Key programme as a great way of putting something back into the industry at grass roots level and because it does support learning and development it was all the more important that we became involved."

Chris Bothwell, Training Manager at COSTA Training, Glasgow

"The funding from the Golden and Silver Key Learning and Development Fund was a huge boost to the industry."

"We market all our students each year tell them which courses we are putting on and letting them know where there may be funding assistance. BIGGA's support is a large part of that."

"We tend to find that younger greenkeepers can receive funding from other sources like the Independent Learning Accounts which offer subsidy for people earning less than £18,000 per annum and for things like Chainsaw and Spraying courses the clubs are often happy to put their staff on the course and pay the difference."

"For Course Managers seeking to take N/SVQ Level 4 or HNC or HND there is not generally funding available and the Golden and Silver Key Development fund often helps people who would otherwise be unable to fund the courses totally themselves."

David Withers Managing Director Ransomes Jacobsen.

"As we look back over recent years it is clear how much work BIGGA have done in raising the profile of greenkeeping in general and the role of greenkeepers in particular."

"One of the successes of this has been in the increase in greenkeepers wanting to further their careers in terms of continued professional development. This can only be good for the game of golf and the status of the profession as a whole."

"The Golden and Silver Key programmes are a vital component in helping to fund ambitious greenkeepers in fulfilling their aspirations. As such we at Ransomes Jacobsen are delighted to commit funding to support BIGGA's members."

David Hart, Commercial & Consumer Equipment Division Sales, John Deere UK

"It's great to be able to support the golf industry and in some way to give something back to our largest groundcare customer segment, and to help raise the profile of the industry. We are especially pleased that our financial support is used for BIGGA's training and education activities, as we believe that training is the key to the success of any professional business."

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Silver Key Individual Members

Adie Archer; Steven Tierney; Paul Jenkins; Iain Barr; Richard McGlynn; Steve Dixon and Sam Langrick.