

"We keep everything super sharp, so a lot of grinding and sharpening goes on here."

"The height has been dropped gradually, taking it down by around 1/2mm a time, as very fast greens are needed for professionals. Grass is not cut this height outside a tournament," he said.

"It is normally 4-5mm depending on how the speed is showing."

"When I joined eight years ago a decision had already been made to purchase Bernhard's Express Dual and Anglemaster grinders. I was pleased, as I had experience of using them at the St Pierre Golf Club, near Chepstow, where I worked previously."

"We do more grinding here than the average main agent," he revealed.

"Generally we grind in batches of six to seven units, as once the mode is set there is a minimum amount of

adjustment and the next unit can usually go on straight away."

"We take off the minimum amount to be economical with the reels, which are somewhat expensive to replace."

"It is vital we maintain the quality of cut and we do not contract out any grinding."

"Indisputably it saves us time and money and I do not know how other golf courses carry on with contracting-out grinding. We can be back on track with the minimum amount of down-time."

In the eight years since Jim came to the Celtic Manor Resort from Wentworth, £120m has been spent creating three courses, a golf academy and the largest golf clubhouse in Great Britain.

His responsibilities include complete maintenance and development

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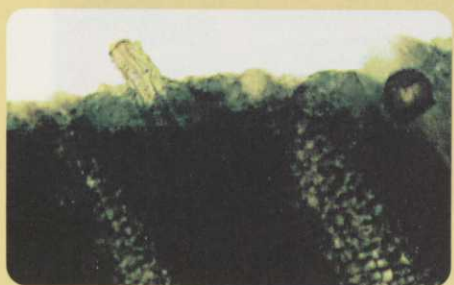
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SHARPER SOLUTIONS WITH BERNHARD

Sharp Practice



Above: Both lapped and non-lapped grass



Above: Magnification of a non-lapped cut



Above: Magnification of a lapped cut



Above right: Part of the Championship Course at the Celtic Manor resort, Wales, who will host the next Ryder Cup

of the golf courses, gardens and estate - everything outside the hotel or clubhouse building.

"Sir Terry Matthews has bought 1,400 acres of land here bit by bit. I have three Head Greenkeepers, Gary Connell is one, and he is also my Deputy, Paul Davies and Nick Vickery.

"We are all here to help put Celtic Manor on the map so the Wales Open is our own event.

With more than 120 cutting units, mainly Toro machines, Jim feels his four mechanics have a great deal of experience in sharpening.

For the Open the team increased their regular maintenance regime - much the same thing but far more often.

"Four times a day we cut and the sward was rolled twice.

"This is for speed and it worked

fairly successfully. We were out from 5am to 9pm every day for a couple of weeks. Some staff were finishing at midnight.

"During this time we were also carrying out a lot of renovation tasks and quite a lot of course construction, two new bunkers and a new tee. This pre-tournament preparation is not quite as they teach you to do it at college," said Jim.

Benefits of clean cut

A critical factor in producing a high quality cut with cylinder mowers is keeping the correct relationship between cylinder and bottom blade.

Over several years many trials have shown that setting mowers with no contact reduces mower fatigue, lowers hydraulic pressures and generally prolongs the life of the cylinder and bottom blade. This also reduces the

stress on the mower engine, reducing engine wear.

"A clean cut causes less stress and damage to the grass, reducing the need for water and chemicals and improving the appearance of the sward," explained Stephen Bernhard, Managing Director of Bernhard and Company.

"Fundamentally, grass does not like being beaten up by a mower and on the golf course it can get beaten up very regularly.

"Grass is often stressed during the process, spores are present and there is considerable tissue damage. A macroscope (small microscope) can be used to look closely at the grass and see the results of mechanical damage.

"Looking at grass in this way clearly demonstrates why it is vital to have mowers which cut well," he explained.



Scything action

Mowers can function with either a scissor or scythe-type action - but usually a much cleaner cut is developed by a scything cut.

Scissoring demands that the two blades operate against one another. To cut effectively they have light contact or the grass will just be pinched.

This method is often less precise and may cause tissue damage and excess transpiration. As a result, messages go to the crown requiring that more nutrients be used to sustain the plant and repair damage caused.

Grass mown in this way can show as much as four times the surface area of damage compared to the relatively low area of damage caused by a clean scything cut where the two blades have no contact at all.

"Scissoring may cause a higher rate of water loss, resulting in the need to water the sward more regularly," said Stephen.

If the mower is set up correctly a scything instead of a scissoring action can be produced.

"With bottom blade and cylinder kept apart only one blade moves through the sward like a set of horizontal razors. The bottom blade holds the grass blades in an absolutely uniform pattern and height," he explained.

"Being cut in a surgical fashion reduces damage to the extent that usually the grass will root better and therefore will more readily withstand the damage caused by play or heavy pedestrian traffic," he added.

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The Devil may care

Visit The Dyke Golf Club, on the Devil's Dyke, high above Brighton on the Sussex coast, and you get the feeling that you are entering a place that is cared for. The modern clubhouse is well appointed, the course in tip top condition and the staff eager to please. And that's all before you take into account that you are in the presence of the 2000 BIGGA Golf Course Environment Award winner.

The Dyke is a perfect example of what can be achieved in both course conditioning and environmental management, and listening to Course Manager, David Ansell, you can't help but feel that here is a man who laps up every single aspect of his job.

"We have a holistic approach at The Dyke where we look not just at the normal work that needs to be done but at all aspects of the land we have in our care," explained David, whose infectious approach to his job seems to have rubbed off on his team.

"If I, or any member of staff, is out on the course and comes across something we haven't seen before we go and find out exactly what it is. It's a job, but it's almost a hobby within a job," explained David, who is also aware of the dangers of becoming too wrapped up in it all.

"You should always keep one foot on the ground in this business and remember that we are a golf club. Golf comes first but fortunately I haven't found any problem with that."

The "We are a Golf Club not a Nature Reserve" faction which operates in many environmentally aware

golf clubs doesn't get the chance to build up much steam at The Dyke.

"In all cases the golf course wins any arguments when there is a conflict," he said firmly.

In any event David ensures that, wherever possible, work dovetails so that conservation work is often done on the back of course construction work.

"For example recently we were building some bunkers and we took the soil and chalk for these from a very stale, poor piece of woodland which contained mainly hawthorn. We cleared that area, took the soil out, and now that area is a nice coppiced woodland. There will also be some replanting of other species to mix it up a bit and more importantly the grassland will be allowed to come through.

"While doing one job to improve the golf course we did another to improve a key part of the woodland."

David is well aware of the unique nature of the land of which he is custodian.

"The Devil's Dyke is a formation from the last ice age and was grassland from early in its existence.

Much of it was turned over to the plough to produce cereal during the war efforts in both the first and second world wars and the grassland lost but the area on which the course now

stands was spared as it became a training area for the Canadian Army.

"As a result the Dyke area is famed for its ancient grassland. We've got species in abundance which you don't find anywhere else," explained David, as we sat in a committee room within the club house which was festoon with photographs, books, magazine articles and plaques all evidence of the importance the club places on its environmental action.

David is convinced that even without the importance he places on conservation matters golf has a real positive impact on it.

"The beauty of golf is that just by working on grass cutting you create a protection to the wild flowers because there is some management input whereas in other areas there might be none.

"The rough is cut on a regular basis, which almost mimics what the sheep were doing. Maintained areas stop the scrub, hawthorn and brambles coming in because they are cut in a





cycle whether it be once a year or once a month," he explained.

David and his team have gone one step further.

"It's now gone from just cutting, collecting and scarifying to looking at timings and heights of cut and monitoring how it may affect the butterflies, invertebrates and wild flowers. There are now areas which we don't cut on a regular basis and leave more tussocky for three to four years. It is trial and error and we have one or two trial plots so we can assess progress.

"This has only just started but I'm certain within five or ten years the results will be very evident.

"Where we have a good crop of orchids we're keeping those areas and trying to time our work to coincide with their growing habits," he added, by way of an example.

Looking back the 10 years to when he first joined The Dyke from Shirley Park Golf Club, in Surrey, David believes that the most sensible thing

they did was to bring in outside bodies to look at the course.

"At the beginning we had to explain to members what was needed to be done and while many people were sympathetic and others had been on the committee for a number of years and were aware of what was required it was good if they could hear it from respected outside bodies like the STRI, the South Downs Conservation Board.

"As much as it seems like common sense to everyone it is only when you've got an outside body who come in, like the STRI, and gives advice that things get done," he said, adding, "Once you've been through that period often there is a bit more trust in your own way of doing things."

He does admit that initially when it came to communicating with members they made many mistakes.

"I think we communicated extremely well with the committee but didn't do quite so well with the rest of the membership.



The Devil may care



"We probably didn't let them know what the work would involve and what the main outcome would be. We'd perhaps explain that an area was to be coppiced but didn't explained that there would be an unsightly area on the golf course until the plants came back."

The club's conservation programme was launched with some fairly small scale scrub clearance.

However, they did learned some tricks of the trade in terms of doing

some of the clearing work in areas where perhaps the golfer doesn't view very often.

"We'd take some before and after photos so that when we ask to do other more major areas, in higher profile areas of the course, we had some examples of the work that we'd done."

He also used some coppicing techniques to minimise any adverse reactions.

"Instead of going straight into a

poor piece of hawthorn woodland we'd perhaps come in from behind or from an acute angle that the golfer wouldn't notice when he was playing his round. We'd do the clearance work inside, wait for the process to grow in and then take out the front trees at the end.

"I wouldn't say it was sneaky but you needn't draw attention to yourself or the work, as it is being done. We did a number of things in that sort of vein to enable us to get the





job done without causing much of an issue within the golf club," said David, who produced a wonderful view over Brighton by clearing an area of trees at the bottom of the course.

David stressed the point that it is not just a case of returning the golf course back to grass at the expense of the other woodland.

"That has never been our aim although that was the fear among some of members when we started out ... that we were going to end up with an open field."

David has aerial photographs of the site going back to 1937 and can chart the change from small open coppiced areas to really thick woodland.

"In some areas this woodland is nice and mixed up with ash, oak and willow coming in but in other areas it is just pure hawthorn which is stale with no undergrowth plants or herbs," he explained.

He added that aerial photographs are taken of the entire country every ten years and are available at minimal cost or from the local library.

"The intention was to look after the woodland so that we get the best out of it over a long period and also get the best out of other surfaces. Most of the rarity is in the transition areas between woodland and grassland."

Since those early days many of those who originally had doubts have been converted.

"A number of people have noticed that the rough areas of the course are becoming full of wild flower and flying activity and that it looks so much more attractive now. That is one of the regular comments we hear with feedback from the members. It would be fair to say that we have increased the wild flowers by three, four even five fold in the last 10 years."

Winning the BIGGA Golf Environment Competition meant a

great deal to David and to The Dyke Golf Club as a whole.

"I was a bit worried when we first entered because I didn't think we'd done enough work to merit an award but it was silly really because, looking back on it, if we'd gone into the competition earlier we'd have got free feedback, in the shape of a report, from Bob Taylor much earlier."

The Dyke won a special commendation in its first year and the next two years was the South East regional winner before winning the whole competition last November.

"We were absolutely thrilled to win it and wanted to mark the year, which coincided with the club's centenary, by doing something special," explained David.

"So we decided to host a workshop for local clubs on the environment hoping to get them involved a little bit more. It went off very well and we are still getting feedback from it and have even heard from clubs who didn't make it on the day. Hopefully it might become an annual event."

The other main project which the club undertook on the strength of winning the competition was to produce a document on the conservation of the course which is colour coded and showing every single feature on the course.

While it may appear the majority of effort The Dyke's greenkeeping staff does goes into conservation work it should also be stated that the team has built 50 new tees, 30-40 bunkers and rebuilt five or six greens.

"There has been a massive amount of work done here regardless of the conservation work. We're lucky that we're on a site on which we can work most winters, but even then, I can't believe any golf club which says it hasn't got the time to go into its woodland and do some conservation work," said David.

Quality Golf Course Signage



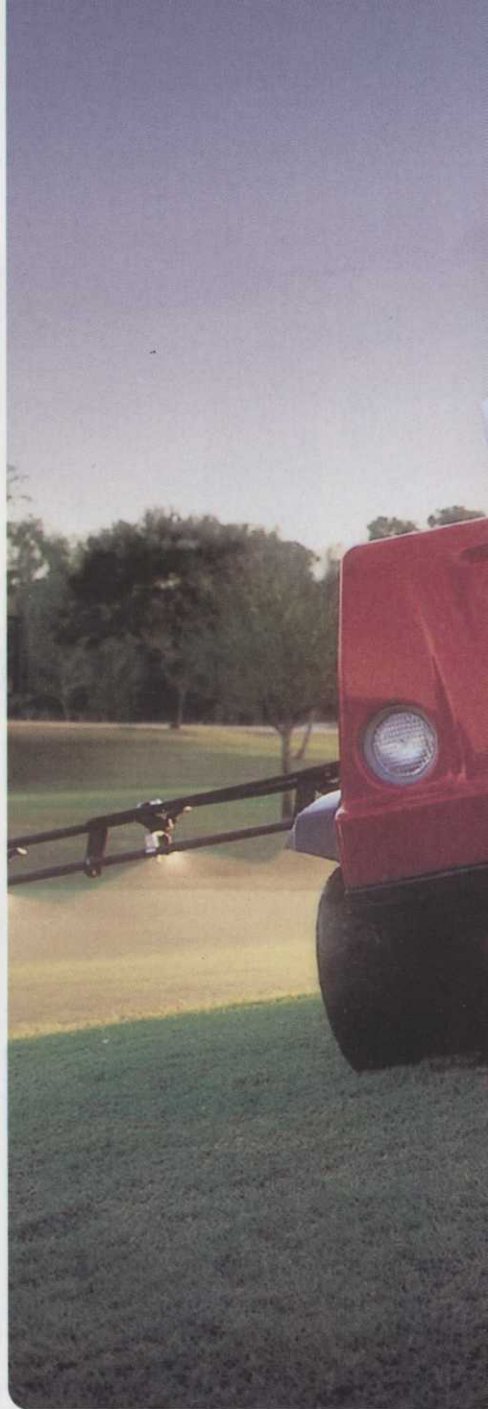
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Roland Taylor dons the latest safety clothing, calibrates his typewriter and dives into the world of the sprayer ...

Spray away



Old A N Other dragged his sprayer from the back of the machinery-shed ready for its annual outing only to discover leaking hoses. So, a little more liquid seeped out on to the grass, no harm would be done.

He took last year's can of chemical

down from the shelf. The label had long gone and with it the dilution rates.

"Never mind, the dilution rate is approximately this," he muttered as he splashed the liquid into the tank.

"Suppose I should have calibrated the sprayer but I've forgotten how to do it," he moaned.

"It was only done a couple of years ago, so it should still be all right."

"What to wear? I've doing this job for as long as I can remember and never worn any special clothing, so why start now?"

This scenario is over the top, although it illustrates the possible area that in the past could have been neglected. The picture today is entirely different, as is the equipment. Strict legislation has forced

manufacturers to reduce the amount of chemicals used and spraying has to be accurate and only carried out by trained operators. Sprays have to be stored in approved containers and under security. The modern sprayer and all its related accessories such as nozzles conform to the highest of standards to ensure accurate application of the chemicals.

Choosing a sprayer, like all equipment, is best done after an analysis has been made of what is required, plus a comparative demonstration of similar makes has been carried out. Specialist advice is available and, if there are any doubts, this should be sought.

The DEFRA (MAFF) have introduced new codes of practice, which state the following. "All pesticides must be contained within the area of application." Not an easy task in this country, where wind can often be a major problem.

There are some new introductions for 2002, which could be the answer to readers' requirements.





...can also be used for
 ...FUNCTION COLLECTION
 ...floating head system,
 ...courses and sports turf

Sisis

The company worked closely with Cranfield University in developing their Ecospray system, which is designed to be used safely close to flowerbeds, water-courses and other sensitive areas.

According to Sisis a patented perforated shroud is used for optimum airflow and to maintain the spray pattern, plus drift is virtually eliminated. Bubble jet nozzles are used to help give a uniform droplet pattern across the full spraying width.

On undulating terrain the height of the spray boom from the ground can alter dramatically. To overcome this the Sisis Ecospray units are fully floating to follow the contours closely. The company says that accurate chemical placement reduces wastage and the amount of chemical required, with the knock-on effect of limiting costs.

A number of models are available with a choice of five or three units, which can be used with a wide range of vehicles, tractors and trucksters. For more confined areas, or where access is restricted, there is a pedestrian powered model.

Charterhouse

Managing Director, David Jenkins says. "Many enclosed boom products simply do not work because they have no shroud or aerofoil over the top of the sprayer hood. This maximises the efficiency of the unit and eliminates a major problem - eddies of turbulence behind the boom enclosure."

The problem is similar to that experienced by many estate car owners, who find their tailgates get surprisingly dirty or dusty owing to the vortex they leave in their wake. A sprayer enclosure without an aerofoil pushes air upward. This creates an eddy that throws the spray droplets up into the air causing drift - a situation that they are meant to overcome.

Charterhouse says that the Rogers Drift Containment Spray Systems have aerofoils on the enclosed booms that are the result of extensive wind tunnel trials. These redirect the air downward, and the spray is targeted towards the ground.

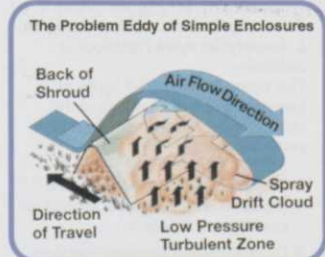
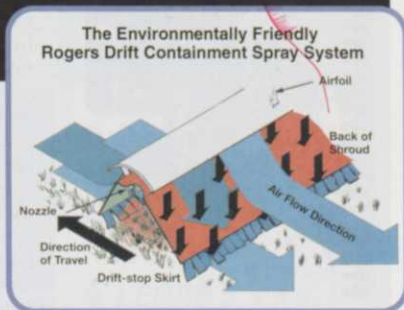
Spraying can start early in the morning, but because of gusty breezes later on, it has to be stopped. It is claimed that with this system the operation can continue until it is finished.

The Rogers Sprayers have a number of other features. The units follow the ground contours closely and visible spray monitors show whether individual nozzles are performing correctly.

There is a choice of manual, electrically or hydraulically operated booms available in 4.5 metre, 5.5 metre and 6 metre lengths. Each section has a break-back to avoid damage should they come into contact with an obstacle.

For spraying greens two models are available. If you already have a sprayer there is the Rogers Greenfoil which can be linked to it and is supplied from its tank.

The alternative is the Turf Electric, which has a 12volt pump and control valve spray monitor and pressure gauge.



David Jenkins stresses the importance of having the right equipment for accurate and safe spraying. He says that mistakes can lead to embarrassing and costly turf damage plus the possibility of contaminating adjacent property, water courses and the operator.

Spray away



Toro

The new Multi-Pro 1250 is a dedicated sprayer based on the Toro workman utility vehicle. It has been designed to handle all the spraying applications required on a course regardless of its size. Powered by a 20hp Kohler petrol engine, the sprayer has a 605 litre tank and the unique spray control system is gear driven off the wheels, so application rates are instantly in proportion to changes in the vehicle's speed. With its small turning circle the Multi-Pro 1250 can work in confined spaces such as golf greens. There is a 4-wheel hydraulic braking system for stable, safe braking, even when fully loaded.

Toro say they have overcome the problem of spray drift in windy conditions by making available an optional enclosed boom, on which shielded nozzles are fitted to ensure the spray reaches its target area. This easy-to-use sprayer has another important feature. Because the spray tank is mounted in a low position, the operator has a 360 degree unobstructed view. A range of dedicated spraying attachments is also available.

Allman

For spring 2002, Allman has launched its six metre Drift Master shrouded boom. The company has introduced this lightweight boom shroud as an add-on kit for all-electric and hydraulic folding 6 metre booms. It can also be fitted to existing booms. Allman says that with this system greenkeepers will be able to maximise windows of opportunity for spraying.

The company's Spray King Turf Truck demountable will fit most turf vehicles on the market.

It has a 600 litre fibreglass tank with

60 litre per minute Comet 60/20 diaphragm pump. According to Allman, the unit can be easily and quickly de-mounted. Tractor powered models are also available

Micron

This company designs and manufactures portable and vehicle mounted controlled droplet application (CDA) equipment including the Enviromist range. Micron say that the CDA system virtually eliminates the production of small driftable droplets. This is achieved by using centrifugal forces which are generated by speed selected rotary atomisation to break up the liquid into uniform droplets of non-driftable dimensions. The company says that the system achieves weed control at significantly reduced volumes (as low as 12 litres/Ha) compared to high volume hydraulic sprayers. The addition of a shroud also minimises loss of spray droplets into the atmosphere.

The sprayers have a 60 litre tank and are light enough to be mounted on an ATV as well as a tractor.

Hardi

According to the company, the Defender tractor and mini versions are the first shrouded boom sprayers to be awarded Local Environmental Risk Assessment for Pesticides (LERAP) 3 star approval, for drift reduction at pressures of between 1 and 10 bar.

When spraying LERAP approved chemicals with a Defender, the buffer zone near watercourses can be reduced from 6 metres to 1 metre (up to a 97% drift reduction). It is also claimed that potential savings in chemical costs can be as high as 30%. The Defender booms can be fitted to all sprayers. Manual electronic or hydraulic folding versions are available. The self-contained Mini

Defender has a 30 litre tank and a 12 volt rechargeable battery-operated 8 litres per minute pump. Nozzle size and pressure govern the application rate and any excess liquid is returned to the tank.

Hardi also offer a comprehensive range of amenity sprayers.

Gambetti UK

Two tractor or truckster mounted sprayers are available with a choice of 4.5 metre or 5.5 metre working widths.

A robust backbone is fitted to the outside of the boom canopy to minimise contamination. The company says that one of the major features of their units is a hydraulic tilt, which is fitted as standard. This gives access under the canopy for testing and cleaning. It is said to also make changing nozzles and power washing out ready for storage easy for the operator. There is a built-in suspension system to ensure smooth operation and the booms have PVC skirts their entire length for contact with the ground. Anti-shock break-back protects the side covers.

All the sprayers come with twin stainless steel tank rinsing nozzles, which are open spinning vanes to avoid choking up. An optional hydraulic system for folding each wing is available.

The company also makes a 2 metre wide walk-behind boom version which will link to most sprayers and a drawbar is fitted for use with an ATV.

Finally ...

The application of chemicals is continually under the spotlight and no doubt we will see continuing restrictions and regulations regarding their use. It is important to ensure your sprayers conform and are operated within the present and any future legislation. The days of Old A N Other are long gone.

HAND-HELD & AMENITY SPRAYERS HANDBOOK

A complete guide to smaller-scale spraying



A booklet produced by the British Crop Protection Council, entitled Hand Held & Amenity Sprayers Handbook is available.

This covers the different types of sprayers, looks at nozzles and the control of droplets. There are other sections dealing with:

- Preparing for spraying regarding regulations and controls, protective clothing and safety
- Calibration and spraying practices
- After spraying and disposal
- Fault finding and equipment choice

For details of how to obtain a copy of this booklet contact BCPC Publications on 0118 934 2727 or check out their website www.bcpc.org where there is an online bookshop.