



cally improve conditions on very wet sites with heavy soils or where there is a high water table in more permeable soils. Primary piped systems may also provide the infrastructure for any subsequent secondary drainage operations.

Having provided the means for the transportation of soil water, it may be desirable to make provision for the quick removal of surface water.

The restricting factor for the removal of surface water is often the impermeability of the subsoil/topsoil compaction and smearing of the surface.

A number of secondary drainage operations are available.

Gravel/sand slitting involves the excavation of narrow trenches typically 65mm-50mm wide to an average depth of 250mm. The slits are installed generally 2m-1m spacings and installed perpendicular to the primary lateral drains. Trenches are filled with gravel to within 50mm of the surface topped off with coarse sand.

Gravel banding involves the installation of narrow bands of grit, typically 20mm wide to an average depth of 200mm. The bands are installed generally at 0.4m spacings, perpendicular to the primary lateral drains.

Each secondary system intercepts surface water conveying it and discharging to the permeable fill within the lateral drains.

Top dressing on very wet sites should form part of an ongoing maintenance programme to ensure the continuing effectiveness of the drainage systems.

A primary piped drainage system should be carried out only when

ground and weather conditions are suitable i.e. reasonably dry and firm. Typically the works will affect at least one fairway which will have to be closed during the installation of the system. Clearly timing is crucial, particularly as the works will affect play on the golf course. It is common that a Golf Club's calendar of events dictate when works may commence.

However, it is risky to expect works carried out later in the season to be completed. If weather and ground conditions deteriorate there is a possibility that the work may not be completed and the benefits of the works will be lost for another year. An old colleague of mine has always said you cannot make an omelette without cracking the eggs!

Therefore it must be stressed to Managers/Committees that some disruption to play is inevitable for the successful completion of the system.

The installation of a land drainage system within a new or established golf course requires a combination of the correct experience together with the correct installation equipment.

Land drainage machinery for use on golf courses is often specialised, developed for its purpose by the contractor together with machinery manufacturers over a number of years.

Trenching machinery, either tracked continuous chain or tractor mounted continuous wheel should be fit for the purpose of excavation on fine turf.

Typically, trenchers include the provision of soil loading conveyors, therefore excavated soil is loaded directly onto dumpers preventing contamination of the playing surface.

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THE DRAIN GAME



Trenchers should be fitted with an automatic laser levelling device enabling accurate grading of each pipe run. Pipes are laid on a formed trench bed through a chute attached to the trenching machine. Typically, gravel is placed around the pipe and the trench filled to the correct level by the use of a hopper attached to this pipe laying chute in one continuous operation. All wheeled

equipment including the soil removing dumpers and gravel fill front/side discharge trailers should be fitted with low ground pressure tyres fit for use on turf to prevent disruption to the playing surface.

It is important then that faced with the problem of poor drainage that the correct steps are taken to solve the problem.

Planning is all important. You may

already know or have had referred to you a reputable contractor to assist with planning design and costing of the works. Should you require a number of quotations, three would be the norm, then contact the Land Drainage Contractors Association Sports Turf Division. Members of the Association are individually vetted on their ability to carry out such works. Ask your chosen contractor for refer-

ences of a similar project and take them up.

An alternative route may be to engage the services of a Consultant. You will receive unbiased advice and design from them at a cost. Consultant charges depend upon the size and nature of the project and their level of involvement may vary between 5% and 15% of the contract cost.

Ever increasing standards of maintenance and playability are expected in today's society. A key factor in the success of any venue is the ability to remove water quickly and efficiently. Contact the experts.

As one of the U.K.'s leading specialised contracting companies, M J Abbott Ltd have a long history of land drainage installations.

Established in the 1960's, the company has grown to become one of the country's leading specialists in golf course drainage. The company offers a complete land drainage design service comprising feasibility studies, system design, production of plans and cost estimates.

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Nigel Wyatt - Director - M J Abbott Ltd - 01722 716361



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Roland Taylor gives advice on how to ensure the best results from your cutting units

Blade runner



As the main cutting season comes to a close, it is a good time to assess the performance of your mowers and determine the necessary maintenance that will be required to ensure they continue to operate at their optimum.

Regardless to whether the mower is a cylinder, rotary or flail there is one fundamental element that all machines have in common - sharpness of the blades.

Prior to the mid 1800's any mowing of turf was done by a man with scythe and he certainly would have been continually sharpening his blade to make the job as easy as possible.

Throughout the spring and summer, with so much going on, it is easy to forget some of the principles relating to quality of the cut. Obviously the

results of a dulled or badly adjusted cylinder will show very quickly on fine turf, but with rotaries and flails on areas such as fairways or the rough the signs may be less obvious.

Cylinder Mowers

This system relies very heavily on precision - not only in its manufacturer but also when it is being set up - a fact that is very often overlooked in the environment the unit is used in. A round cylinder cuts against a straight edge, the slightest distortion will affect the performance. If the gap between the two surfaces is too great then the grass leaves are torn and seriously damaged. A symptom of this is grass folded over the bedknife. Also with this situation sand or top dressing can

be scooped between the two surfaces and cause excessive wear. Where the adjustment is too tight, severe stress is placed on the mower's components and fuel consumption drastically increases. Heat builds up, especially on multi-bladed cylinders with a thin bottom blade. This can result in fine turf being scorched.

There are three cutting surfaces that need to be accurate on these machines; the cylinder spirals, the leading front edge and the top cutting surface of the bottom blade. A fault in any one of these will cause a poor finish. Back-lapping can be carried out. This will re-establish a cutting edge but is only a stop-gap measure and the unit will eventually require regrinding if the high standards are to be maintained.

There are other contributing factors to watch out for if a machine is to operate safely. As said before, the system relies heavily on precision so cleanliness is important, a fact often overlooked. Grass deposits can build-up on the spiral blades and these need to be removed. The leading edge of the bottom blade is continually in direct contact with the surface so is liable to get worn or damaged. This can be refaced in-situ in a matter of minutes with a grinder especially designed for this purpose.

Where a mower is not going to be used for a period of time, the cylinder should be adjusted away from the bed-knife to avoid any rust building up between the two surfaces. Clean of all dried grass and other debris and spray the metal parts with WD40. Details regarding the engine in this situation are below.

Rotary

While there is less precision involved in the design, the same applies as regards sharpness. A rotary blade works best at around 3000 to 3500 rpm (blade tip travel in the region of between 80 and 100 mph). At this





speed the blunt blade will hack the grass but because of the effort involved, the blade slows down and quality of finish rapidly deteriorates; the cut material builds-up under the deck, and the machine will eventually stall. In this situation the engine consumes more fuel and oil. If the rotary mower is being used with a collector, then the airflow is reduced with a result that the clippings are not ejected correctly so the whole system becomes clogged up.

Considerable stress is placed on all the machine's components and their life can be drastically shortened.

Because rotaries are often used in hostile conditions, there is more chance of the cutting system being damaged and the unit become unsafe. In addition to speed, the rotary relies heavily on balance - a broken or badly chipped blade will cause vibration to occur, which if left unchecked will become a major safety hazard and eventually cause considerable damage.

On a pedestrian machine, it will become obvious to the operator that there is a problem due to the amount of vibration being experienced. This is not always the case with a tractor-mounted rotary. Here the driver is not in direct contact with the unit so is less likely to experience the warning signs, therefore it is important always to be vigilant and check the units regularly.

The rotary system cuts material with a relatively short length of the sharpened edge and cutting occurs only in the front half of rotation. For this reason there is usually a built-in forward tilt in the design of the blade assembly. On machines with height adjustment to each wheel, this angle can be altered so the front of the blade becomes higher than the back. The grass is then being cut both at the front and the rear (double cutting) and the system has of twice as much material to eject. Power requirement increases

by 50% resulting in high fuel consumption and blockages as the rotor speed is reduced. On mowers with multi-height adjustment, the level should always be the same for each wheel or slightly higher at the rear. If a rotary blade is sharpened it must also be balanced.

Flail Mowers

While the principle is different from a rotary, most of the details regarding maintenance and things to watch out for are the same. The rotor with its swing blades is vulnerable to damage, especially in some of the conditions these mowers are worked in. A careful watch should be kept for damaged or missing blades as this can cause vibration with all its inherent problems.

General

Maintaining a consistent drive to the cutting units is important. If either chains or belts are fitted, these may have automatic tensioning devices but they still need checking for signs of slackness or wear.

Where hydraulic systems are used, the main concern is the oil. This must be "squeaky" clean. Contamination from water or even worse dirt will seriously damage the pumps and motors. Hoses and their connectors should be regularly inspected signs of a leakage. Also be on the look out for chuffed or damaged hoses. If one of these bursts hot oil will be sprayed on to the turf and operator - not a pleasant experience. The correct hydraulic oil level has to be maintained if the system is to work correctly.

Greasing points are often fitted these will need regular attention, but be wary how much lubricant is applied. Great dollops of grease clinging to nipples attract abrasive substances such as sand and top dressing. Bearings can also be dislodged.

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Blade runner



The engine

The state of the engine is vital to everything else working correctly so it needs to be in tip-top condition. Oil is relatively cheap compared to having to replace an engine because it has seized-up so regular changes should be carried out.

A dirty oil air filter affects performance and increases fuel consumption.

Modern electronic systems are highly reliable, but spark plugs do not last forever.

All grass cutting machinery is designed to run at an optimum level of rpm and the engine governs this, so it is worth regularly checking the

engine's speed. The difference a slight drop of just 200-rpm can make is considerable.

At this time of year, machinery may not be used often and the fuel in the tank can become stale and also clog up the carburettor system. For a relatively small investment this problem can be overcome. There are fuel additives available, which will keep it fresh for up to 24 months.

Care of machinery is important not just to ensure it is trouble free and works correctly but also as far as pollution from both emissions and noise are concerned.



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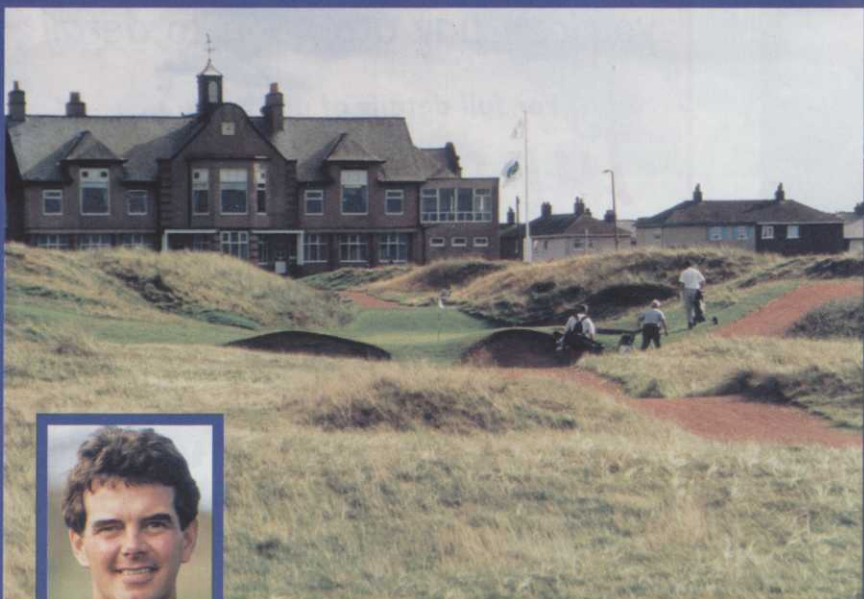
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THE RAIN MAN



Peter Simpson, Head Greenkeeper at Fairhaven, produced an imposing test for the competitors, particularly in the wet conditions



Geoff Whittle's St Annes Old Links brought the best out of the field

Like his namesake, Mr Hoffman, Dustin Houghton proved himself to be a bit of a Rainman when it came to conquering the difficult wet conditions on the second day of the Scotts/Charterhouse BIGGA National Championship. In successfully doing so he went on to become a deserved winner of the splendid trophy.

The 29-year-old Head Greenkeeper from Seaford Head, in East Sussex, shot a nett 69 over St Annes Old Links and then followed it up with a nett 71 at Fairhaven despite the wet conditions.

"I obviously knew I was in with a chance after the first round but tried to put it out of my mind over night," he explained.

"I had a few drinks and my roommate, Richard Clark, gave me a superb talking to which put me in the right mood for the next day."

Halfway round Fairhaven he knew that he only had to keep playing consistently and he would have a great chance.

"I don't use a wood off the tee, only a 3-iron, and this policy served me well. I also holed three or four long putts which made a difference,"

said the 26-handicapper

"I'm absolutely ecstatic to have won.

It is like our Olympics and this is by far the biggest golf event I've ever won," added Dustin.

PHOTOGRAPHS BY ALAN BIRCH

The Competition Scratch Score for each Day of the National Championship was as follows - courtesy of Doug Bell.

1st Day: St Annes Old Links
SSS 72 CSS 73

2nd Day: Fairhaven
SSS 73 CSS 75



Above: Eventual winner Dustin Houghton starts his campaign at St Annes



Above: The four Northern Ireland representatives made a huge impact on proceedings over the two days



Left: Eventual runner-up, Richard Andrews, produced one of his best shots at St Annes' 9th. His 4-iron to three feet left him a tap in birdie but he was still one more than his Highgate GC colleague James Seisun who holed in one at the same hole five years ago in the National Tournament

COMPLETE RESULTS OVERLEAF



Above: BIGGA Chairman Elliott Small, Bert Cross and Richard Minton, of Scotts, enjoyed a threeball on the opening day



Above: Graham Wallace, not only won the longest drive but took the nearest the pin with this effort on Fairhaven's 17th

THE RAIN MAN

Right: National Championship winner, Dustin Houghton receives his trophy from Richard Minton, UK Sales Manager of Scotts UK Professional and Philip Threadgold, Sales Director of Charterhouse UK



CHARTERHOUSE/SCOTTS NATIONAL CHAMPIONSHIP RESULTS ROUNDUP

36 HOLES AGGREGATE NETT

1st Dustin Houghton	140
2nd Richard Andrews	142
3rd Antony Kirwan	(on last 18) 144
4th Richard Barker	144

36 HOLES AGGREGATE GROSS

1st Noel Crawford	147
2nd David Leith	149
3rd Michael Wilson	150
4th John Hutton	(on last 19) 155

1st Round Prizes - Monday

0-9 Barry Holt	70
10-17 Kevin Irving	69
18-28 Alex Robertson	74

2nd Round Prizes - Tuesday

0-9 Eamonn Crawford	(on last 9) 72
10-17 Richard Mullen	74
18-28 Nick Bird	73

Putting Competition

Richard Pendlebury (on last 6) 16

Nearest the Pin Competition

and Longest Drive - Graham Wallace

REGIONAL TEAM CUP

Winners - South East Region

Richard Andrews, Dustin Houghton, Antony Kirwan, Andrew Howarth, John Groombridge, Ian Semple, Andy Sheehan, Richard Clarke

Runners Up - Midland Region

Richard Barker, Barry Holt, Les Howkins, Mike Smith, Michael Hughes, Simon Austin, Graham Wallace, Dave Leatherland

3rd Northern Region

4th Scottish Region

5th South West & South Wales Region



Left: BIGGA Chairman, Elliott Small enjoys a joke from after dinner speaker, John Welch



Below: The victorious South East team



Above: Graham Wallace, longest drive and nearest the pin winner



Above: Noel Crawford - 36 hole gross winner