

# Letters

## ■ GCSAA: shape of things to come ■ Courses' biggest compactors

summer and early autumn, not to mention the general weakening of the plant through resultant excessive leaf tissue removal, enhancing the abrasive effects of wear and tear and the inevitable invasion of *Poa annua* on the fine turf which is so essential for the game of golf. In no other sport is the turf species so critical to the playing of the game.

Of course if *Poa annua* dominance is accepted then all of this pales into insignificance due to the inherent capabilities of this opportunist weed which can never produce acceptable surfaces for year round play!

Coming to Mr Gray's point regarding cutting height trials on bent grass plots at St Ives in the thirties, surely the fact that the STRI (as he himself acknowledges) have long since documented and published the shortcomings of excessively close mowing practices on fine turf, particularly fescues, merely highlights the obvious inadequacy of said trials in relation to the practicalities we now know.

This re-assessment of past 'advice' in the light of modern technology and understanding of pedological aspects, for instance in fine turf production and maintenance, is not new. It is not that long ago the STRI were advising NPK compound fertilisers for general use on fine turf! Like all research and development programmes, some previous findings or conclusions, although not all, have to be abandoned as progress is made and naturally the same analogy applies to old books on greenkeeping or golf books containing chapters on course upkeep, where quite often only a percentage of the information therein is of any practical value, either then or now. Certain basic principles remain true however (ie. the need for well-drained, well structured, un-compacted soils of low fertility).

A cutting height over the winter period of approximately 5/16" is the normal on fescue/bent turf for obvious reasons and perfectly suitable surfaces ensue. Contamination with ryegrass patches of course spoil good, clean surfaces and necessitate physical removal. Incidentally I have seen perfectly good surfaces produced over winter on fescue greens with an occasional light roll being the only requirement following a raising of mowing height to 5/16" in October as growth fails. The only 'coarse growth' I have experienced on putting surfaces is from coarse grasses and as they are weeds by definition in this situation, they consequently require removal!

In conclusion I consider it important for the restoration of British golf courses in general (re. The Way Forward) that such heretical writings be refuted by all responsible professional people in golf course management (as Neil Whitaker found his cost in the same issue of Greenkeeper International).

How can we expect our young ambitious greenkeepers, the course managers of tomorrow, to gain a clear understanding of the interrelation and timing of the many and varied, yet essential, cultural practices in the quest for

high quality playing surfaces if consistent correct advice is not forthcoming, especially when in the vast majority of cases it is not the maintenance of such surfaces that is initially required but the reclamation of the fine turf species, something which sadly only a limited number of Course Managers are seriously engaged in, let alone have achieved.

**J S PHILP**

Links Superintendent, Carnoustie Golf Links Management Committee, Carnoustie, Angus

■ I was fortunate in winning a competition run by Maxwell Hart Ltd, the prize being a trip to New Orleans to visit the GCSAA convention. I thought I would put pen to paper, or rather finger to keyboard, and put down some of my thoughts and reactions

I thought the exhibition was really good, my first reaction being that it was no bigger than IOG Peterborough, but then it struck me that the Stateside show is 100% golf course equipment and materials, unlike 'our' show, which covers all sports and even kid's playground gear!

If you can imagine a show with about the same number of stands as IOG but held indoors in just one huge centre that has three very large halls, a large ballroom and umpteen meeting rooms then you will get an idea of the size of the new Orleans Convention Centre.

I saw many new products and I guess that we may never see some of these on this side of 'the pond'. Equally, there were many new products which I was told would be launched in the UK in September – it was good to get this preview of things to come.

As for New Orleans itself, what can I say? It's a town and a half! Nightlife that really has life and food that is so Tasty it deserves a capital 'T'! Though viewed with some trepidation, I even enjoyed alligator tail on a stick! However, like many American towns and cities, we were warned to keep to the main streets, for the deserted side streets were places where one walked in peril of mugging or worse!

The weather was unbelievable for February, with highs of 80°F and 100% humidity. I dread to think what the summer atmosphere must be like. It rained one night with a fall of four inches, though next day everywhere was totally dry. I got off the 'plane at Gatwick in my short sleeved shirt and found ice on the handrails in the airport. What a shock!

Final thought – what a well organised event.

**JOHN ATKINS**

Course Manager  
Chestfield Golf Club, Kent

■ Whilst I agree with the contents of Jonathan Tucker's February article on trolleys (being a 'bag carrier' myself), I must point out that there are minus points in carrying your bag, especially across the green.

As we all know, by far the biggest compactor on the golf course is the golfer. When

you walk the whole of your weight at one time is on the ball of your foot, an area of approximately five square inches. This, for a man weighing 12 stones, works out at a pressure of  $168 \div 5 = 34$  pounds per square inch. A carrying type golf bag together with a full set of clubs, waterproofs and umbrella can weigh up to 20 pounds – adding another 4 pounds per square inch to the compacting pressure.

This is worse from the compaction point of view than taking a trolley across the green, though I hasten to add I am not for one minute advocating this practice!

Whilst on the subject of trolleys, I think some manufacturers should take another look at their designs. The weight distribution benefit of a wide wheel is completely lost if the wheel is not lying flat on the ground. In fact, if it is running on it's edge it probably does more marking than the old fashioned narrow wheels. Some types, especially folding ones, tend to have their wheels running on edge.

I am in full agreement of the development of alternative tees to vary the routes from green to tee and hence spread the wear. However, I think it is vitally important that we make 'alternative' tees as properly constructed tees, approximately the same yardage and not 'winter' tees. 'Winter tees' usually mean a neglected, muddy piece of ground approximately 3 yards by 2 yards and 50 yards in front of the proper tee.

**AG ELLIS**

Chairman of Green, Royal St David's Golf Club, Harlech

• *Valid points certainly, especially that of archaic trolley design. Nevertheless, the real problem of trolley use remains that of constant 'same path' attrition. Worn areas and bare, often muddy, patches are always the unsightly result of such rigid flow patterns. Furthermore, carriers will always dump their bags at the earliest greenside opportunity.* –Editor.

■ Included in our 'wants list' of new machinery, tools and other accessories – deemed necessary in the annual assessment – one doubtful piece of equipment, namely a clocking in and out machine, was duly bought (I understand, from a company that had gone bust, which may prove something!) and laid to rest one wintry morning whilst we sat over lunch. "It looks nothing like the expected new 180", said someone, but there it looms, the 'thing' which now has pride of place on our bothy door, whirring away with a loud 'clonk' every minute of every hour of every day.

No one dares approach it: it rules and you don't mess with it. It seems to say 'You will now clock in on time and you will not sneak off thirty seconds early at night'. We are three 'amazed, never late' greenkeepers and now wonder if we are the only greenkeepers in Britain with a time-clock monster as another master?

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■ Sleaford-based Sharpes International has just published a new amenity grass seed brochure which provides full details on the company's range of Designer Mixtures. This new 28 page brochure, which now has colour illustrations, features several new mixtures. These include GREEN BAIZE, for bowling greens, croquet lawns and golf greens and TURFMASTER, which offers very fast establishment and an extremely good appearance. The brochure also provides detailed information on a comprehensive range of grass & wild flower mixtures – along with useful hints on how to establish and manage them. Free copies from Sharpes International, Sleaford, Lincs. NG34 7HA. Tel: (0529) 304511.

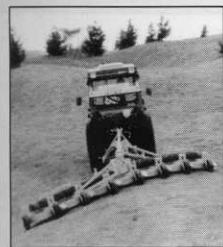


■ **Logic ATV Equipment have just introduced a new cab for ATVs. The Weather-Stop MkII has significant improvements on the original version, claiming excellent visibility with hinged side doors that are frame supported. Towed equipment controls can be reached by rolling the rear panel up. It will fit most ATVs including those with rear cargo beds. Details: 0434 606661**



■ Spanish manufacturer, Ausa, has introduced MULTITRANS DV17, a 1500kg payload utility vehicle. Powered by a water cooled 21.7hp Isuzu diesel, DV17 features 4 forward and 4 reverse gears and has a top speed of 16mph. Power to weight ratio is impressive and there is plenty of power in reserve for towing trailers.

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■ The Articator, which was launched by Hayter Beaver in 1991, has won the prestigious Australian New Product of the Year Award, sponsored by 'Power Equipment Australasia'. It was when the publication's editor, Steve Symons, visited Hayter Beaver at IOG that he first spotted the Articator – a unique concept

in rotary mowing. The magazine's reasons for selecting this winner were 'its rugged and simple design with the idea of solving the problem of cutting undulations without scalping the turf.' Mark Phillips, Beaver's export sales director visited Australia in February to receive the award and coincidentally, whilst out there, Mark also presented Kubota Tractors (Australia) with Beaver's Award for Best Asia-Pacific Distributor 1991. This title was achieved in spite of stiff competition from Japan, where the company's grass cutting machinery is selling well. Details: 0279 723444



■ The Amazone Groundkeeper tractor-mounted grass cutter/scarifier from Amazone Groundcare now has a spring-loaded top link assembly designed to allow the machine to follow ground contours. It avoids the problem with fixed linkages of the

machine rising out of work when the tractor traverses an undulation. The new top link consists of a coil spring inside a telescoping tube. Tension can be adjusted by re-positioning a stabiliser chain, and this can also be adjusted to suit the machine to different makes and models of tractor. It is standard equipment on all Amazone Groundkeeper semi-mounted models and optional for Hi-Tip and standard machines.

Details: 0579 51155.

■ **The addition to Multi-Core's range of aeration equipment – the TM1500 – is announced. Like its smaller brother, the TM1000, it features a robust, all welded steel frame and is fully sealed throughout and requires no greasing. The 1.5 metre working width makes the TM1500 ideal for tees, fairways and greens. It fits any tractor 22hp and above and various tine sizes are available. Details: 0772 451959.**

■ Dorset-based Central Spares have set up a new division to supply replacement parts to professional users of grass-cutting machinery. Central are better known in the industry for the lead they have developed supplying replacement parts to the domestic trade for the last 20 years. They source from suppliers throughout the world. Newly-appointed division head Pat Lowry said the company have been supplying a small number of professional users for just over 10 years, primarily with items like air filters, brushcutter blades and line. "We have scored with our huge stock of parts ready to ship out – about £1/2 million worth." he said. Central's products include items currently supplied by the original equipment manufacturers. Details and catalogue: 0905 831873.



■ Ransomes have won an order to supply 104 electric Cushman vehicles to Euro Disney, to be delivered in time for the April 12th opening. Custom-built bodies are fitted with sliding doors to facilitate total access. There are over 500 Cushman vehicles in service with Disney in the USA.

■ Rhone-Poulenc have introduced Regulox K to their range. Based on Maleic Hydrazide, Regulox K has an established reputation for long term grass suppression and, being a foliar acting product, its performance is not greatly affected by drought conditions. Evaluated at the famous Bibury plots, it was demonstrated to increase species diversity on road side verges, with coarser grasses suppressed and the finer leaved, shorter grasses encouraged, producing a denser sward. Unwanted grass growth can be retarded on grass areas. Regulox K should be used in conjunction with a selective herbicide to control any broad leaved weeds present. Details: call the Rhone-Poulenc helpline on 0277 261414.

■ Fisons Horticulture has taken over the UK sales and marketing of the brand-leading Turfex turf wetting and penetrating agent from Service Chemicals. This announcement coincides with the launch by Fisons of an improved version of the product at BTME.

New Improved Turfex effectively alleviates the twin dry summer problems of dry patch and compaction. Both dry patch and compaction weaken a sward by restricting water penetration to the roots, causing poor growth, susceptibility to wear and disease and poor playability. Increasing the rate of water penetration leads to a deeper, healthier root development for a more resilient, healthier sward. Simultaneously, the product when applied reduces the volume of irrigation water required in times of drought and yet facilitates rapid draining of surface water. New Improved Turfex has been trialled at Fisons Levington Research Station – building on the development work carried out at the STRI, Bingley. The result is a product which offers greenkeepers the most rapid performance available, with no risk of foaming or phytotoxicity problems.

■ Specialist grass seed mixtures for golf courses are featured in a new 12 strong Olympic range introduced for the leisure industry by Hunters of Chester. A leaflet is available: 0829 760644.



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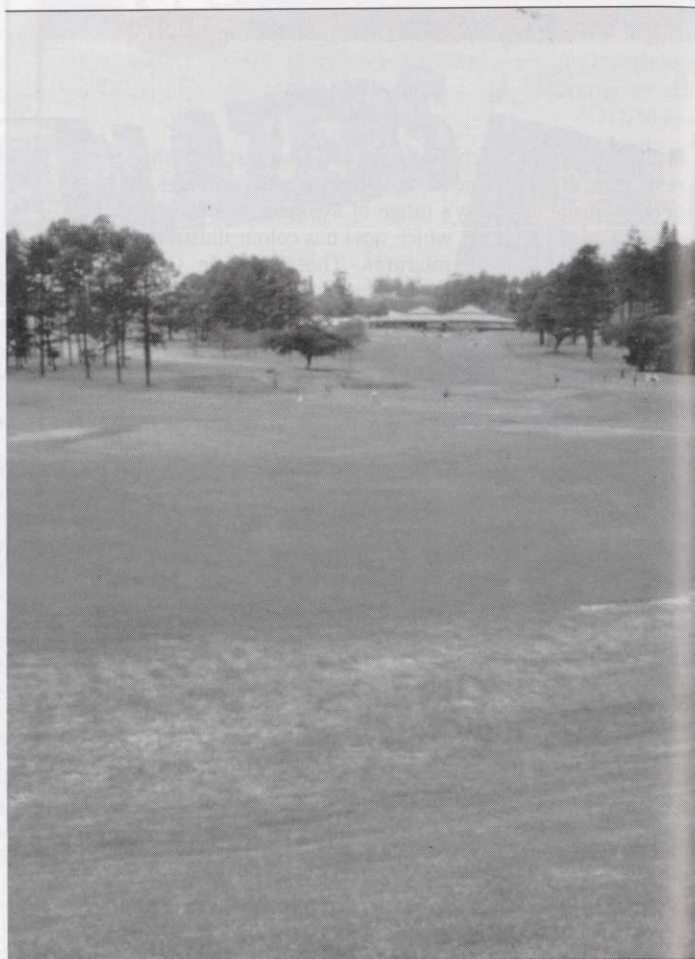
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# SOUTH AFRICA

From Surrey to a climate altogether sunnier... LES ADAMS explains how greenkeeping practices are different, and how some stay the same, in a country five times the size of the UK, when showers bring 50mm of water in 20 minutes

I live in Durban, a coastal town in South Africa where miles of golden beaches are pounded by the Indian Ocean.

I left England in 1983 with my wife and two children in search of sunshine and some essential warm weather to improve the health of my eldest son. I had been employed in greenkeeping for over ten years, the last six years as course manager at Leatherhead Golf Club in Surrey, and I am now course manager at Mount Edgecombe Country Club, a picturesque parkland course 3km from the sea and



18km north of Durban. We have two bowling greens, squash courts, four tennis courts, a large swimming pool and a clubhouse which has two bars and two dining rooms. The Club has a membership of just under 2000, approximately 900 of these being golfing members, and we average around 50,000 rounds of golf each year. An old friend in England asked me to write about my greenkeeping experiences in South Africa, which has prompted this epistle.

South Africa is a big country, five times the size of the UK, therefore with many different climatic conditions. I have worked in both Durban and Johannesburg and will write a little about both these areas.

Durban's climate is sub-tropical with average summer temperatures in the mid-30s and humidity almost as high as Florida in the USA. Night temperatures in Durban in summer drop only a few degrees below those of the day time, and if an off-shore wind (known as a Berg wind) blows, it can actually get hotter. Because of this, cool season grasses do not survive and warm season grasses are grown, *Cynodon* (or Bermuda as it is known in the USA) being the most popular.

Course management is more related to southern locations in the USA, although basic principals of cultural practices are the same anywhere. Warm season grasses are stoloniferous or rhizomal in growth habit (sometimes both) and colonise open ground very quickly. *Cynodon* grows towards the sun and forms what is known as grain, which creates different putting speeds – putting down grain being much faster than against the grain. Verti-cutting and topdressing are the main ways to control and minimise grain and must be done very regularly. Grooming reels are now available which can be used daily.

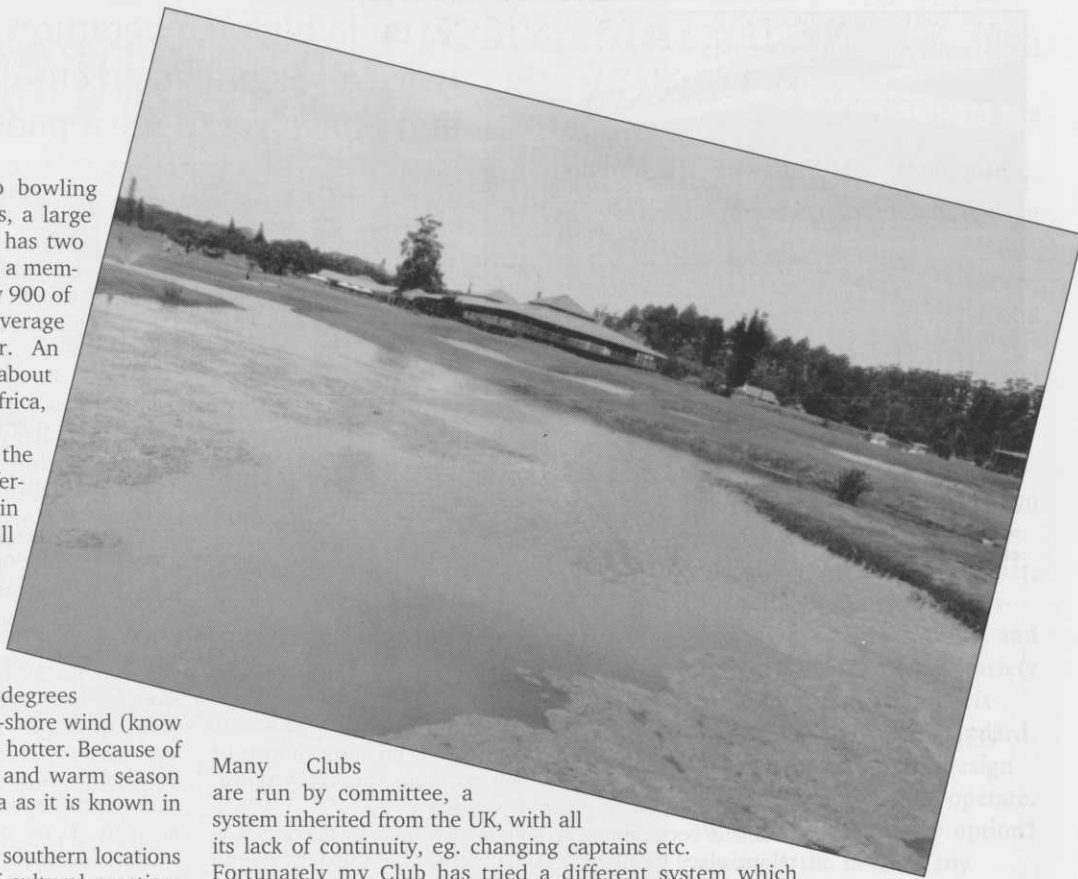
Because of the rate of growth and toughness of the grass it is general practice to try to cut the entire course, including rough, every day during the summer. Greens are generally double cut seven days a week during times of peak growth.

I now have a much better understanding of the reason why courses in the USA have larger budgets than those in the UK. For a start; staff levels are much higher. As an example, we have a total of 30 staff employed to maintain the golf course, bowling greens and gardens. Such work requires a great deal of machinery to cut the entire course each day, for remember; the grass grows for 9-10 months of the year. This leaves little time for machinery maintenance and to overcome this most top Clubs have considerable back-up machinery, which once again adds to the budget.

Jacobson, Toro, Ransomes, Scott Bonar and Kubota machines are all available in South Africa, as are Ford, Massey Ferguson and John Deere tractors, but prices are high. A triplex greens mower for example, costs around R50,000 and I sometimes think we course managers have to be extraordinary salesmen to convince committees to pay this amount of money for a greens mower, especially when a Toyota Corolla with air-conditioning, electric windows and power steering costs only R45,000.

A sophisticated irrigation system is essential in South Africa, especially in the winter months when days are sunny and warm (mid-20s) and rain is not expected for weeks. Frost is unheard of in Durban, with the lowest night temperature around 5 degrees centigrade and the most miserable days between 15 and 20 degrees centigrade.

We have recently installed a computerised irrigation system capable of putting one million litres of water on the course in 12 hours. Our irrigation water is stored in two large lakes, which are features of the course and fed by a small river. Most Clubs are not so fortunate and rely entirely on borehole water, which is both costly to extract and has to be stored in man-made reservoirs.



#### Many Clubs

are run by committee, a system inherited from the UK, with all its lack of continuity, eg. changing captains etc.

Fortunately my Club has tried a different system which seems to work reasonably well. We have an executive committee of five members from which the chairman and vice chairman are elected. They also form the nucleus of the financial committee and are responsible for all major decisions affecting the Club. The Club captains, both male and female, are co-opted onto this committee for their term of office and attend mainly to keep the members up to date with committee policies. I report directly to the chairman, who has held his position for almost ten years. Should the present chairman decide to retire, his place would be taken by the vice chairman; who has also been involved for several years and is fully aware of the policy we have been following since I joined the Club. This creates continuity and stability within the club and is more settling for the staff than the annual or bi-annual changes of committee I have experienced in the past. Just out of interest, Leatherhead was run on similar lines and was also a pleasant working environment.

Johannesburg is a city on a land plateau known as the reef, which is almost 6000 feet above sea level. It has an average rainfall of 700mm and an evaporation level of over 1500mm. Rainfall is almost entirely in the summer months and is usually in the form of afternoon thunderstorms. Because of the altitude, temperatures are usually below 30°C day-time and night temperatures drop considerably. This makes it possible to grow some cool season grasses under good management and bent grass is widely used on the greens throughout the reef, with excellent results.

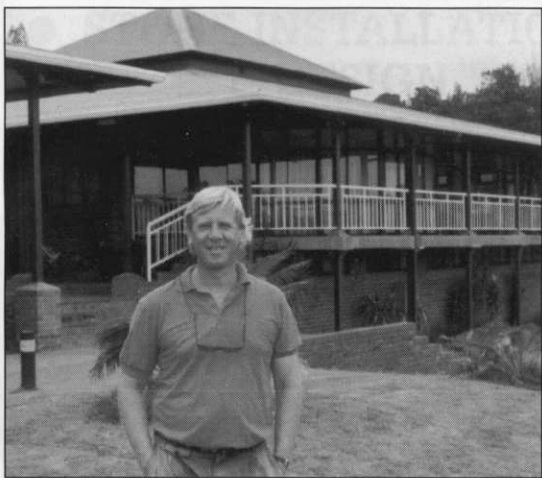
Turf grass diseases such as Brown Patch, *Helminthosporium* and Pythium Blight are all a problem, but the biggest problem appears to be invasion by *Poa annua*. Tests are under way with a selective herbicide, and these show some promising results, but it will be sometime before the product is registered; even if successful.

*Poa annua* can be controlled in Bermuda grass with a chemical called Promamide, which is usually used as a pre-emergent, but unfortunately the chemical damages bent grass and I would imagine that it would also damage fescue.

Because of its altitude and lack of cloud cover during winter nights, Johannesburg has moderate frost from May until August and although day temperatures are high, even bent grass does not grow much during these months. Pitch mark damage becomes a serious problem, as the number of rounds played is high during this time. Some course managers are experimenting with very high applications of

**Above: Clubhouse, built in 1990 following a fire at the old clubhouse, with 18th green and water feature.**

**Left: A view of the clubhouse from the back of 17th green. The green was opened for play just five months ago.**



Les Adams in front of the new clubhouse

'Even in high temperatures I only irrigate once or twice a week. The greens drain exceptionally well and I have yet to see a puddle on them'

► Nitrogen throughout the winter, an idea which came from Israel, a country which has a similar climate.

Results so far have been interesting, with an increase in growth and surprisingly little increase in disease, but it is too

early to draw any conclusions as yet. Education for greenkeepers is almost entirely supplied by their own association, but a technical college in Pretoria does offer a Diploma course in Turfgrass Management, which is a definite step in the right direction.

Greenkeepers – or course managers as they are now called – are almost all Europeans, working with Asian or African staff. There is a serious shortage of trained greenkeepers, with only few Clubs having European assistants gaining experience. Thus golf Clubs rely on horticulturists or mechanics to fill those vacant positions caused by retirement or for any new course construction.

Golf is becoming very popular and new development is taking place throughout the country. Unfortunately, due to the shortage of trained course managers, standards are dropping. Salaries are increasing quite quickly in Johannesburg and also in some parts of Durban and it is hoped that with a change in policy by the Clubs and the increased pay structure, more educated people will be encouraged to join the industry.

South Africa is a beautiful country which is in the middle

of huge political changes. How these changes will affect our lives we really do not know. If it wasn't for the 'wind of change' I would recommend that the more adventurous young course manager come and make a career in the sunshine.

As a past member of the BGGGA executive way back in the 1970s, I must congratulate BIGGA on the tremendous forward strides that they have made in the past few years – well done! I must also say how much I enjoy reading Greenkeeper International – keep up the good work.

● *The author is course manager of the Mount Edgecombe Country Club, in Durban, South Africa. He also acts as a consultant at the Royal Durban Club and is involved in advisory work on new course maintenance and construction.*

● *As a postscript to the above, Les Adams wrote again most recently: The days just fly past at the moment, it's almost scary. We are in the middle of a huge re-vamp of the course and the pressure is on to open four more new greens, making eight new ones so far with another five almost ready and only two left to construct, leaving me with 30 greens to maintain at present – it's really quite hectic.*

Out of interest, we have built our greens to the USGA Spec., and contrary to popular belief, these do not need huge amounts of water. In fact, if constructed properly, a perched water table is formed and even in Durban's high temperatures I only irrigate once or twice a week. The greens do, however, drain exceptionally well and I have yet to see a puddle on them – even after the heaviest of downpours, eg 50mm in 20 minutes – a typical Durban storm!

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\*Standard on model 2120. Available at extra cost on models 1720 & 1920 only.



The Series 20  
Compact Tractors



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The great attraction of compact tractors compared to other grounds maintenance machines is their versatility to work every day of the year, says GLYN BRYAN

**W**henever any item of grounds maintenance equipment is acquired, the most expensive elements to buy and maintain are generally the engine and transmission. Yet if you buy a ride-on mower, all-terrain load carrier or mini excavator, the chances are that when the machine is not working at its specialist task, its motive power unit (the engine and transmission) cannot be used for anything else and must stand idle.

Of course there are times when a compact tractor cannot compete with, say, a ride-on mower in terms of manoeuvrability, but when the mowing season ends a compact tractor can swap its mower for another implement and continue working.

Compact tractors may all look similar, but they can offer significantly different features. To get the best out of a machine it is important to choose one with features most relevant to your particular needs. For example a transmission system ideal for loader work is of little value if you never use a loader.

Starting with the engine, compact tractors invariably use diesel power. Traditionally diesel engines have been noisier and heavier than petrol, but the difference at compact tractor size is not great and the diesel engine works better from cold, can use untaxed fuel, has a longer life and better torque characteristics.

Torque still causes a lot of confusion with horsepower. Horsepower is a measure of the energy from an engine. For example, two machines, both with X horsepower engines can shift five pallets of compost from A to B in five minutes. Machine 1 is fast but not very strong, so moves the pallets one at a time, taking only a minute for each pallet. Machine 2 is slow but very strong, so can take all the pallets in one load, but takes five minutes to move from A to B. Machine 2 has the higher torque, sometimes referred to in sales jargon as pulling-power. For most jobs around a golf course, engines with higher torque capacities are more desirable. These engines tend to slower revving, with large cylinder displacements.

Getting the power from the engine to the wheels is the transmission, and here I have always tended to prefer a manual gearbox. They are lighter, more efficient and I have always felt more "in control" with a manual change. A horticulturalist I knew however, chose hydrostatic transmissions for his compact tractors because he towed trolleys heavily laden with potted plants. Achieving a smooth move off with a manual transmission had meant he kept burning out clutches, but this problem doesn't occur with a hydrostatic unit. Hydrostatic transmissions are also easier to operate and they allow on the move changes in speed, even when working or pulling heavy attachments.

Iseki, Massey-Ferguson, Kubota and Ford offer the choice

● Ford offers five models, ranging from the 16.7hp 1220 (shown) to the 41.3hp 2120



# TRACTORS

of manual or hydrostatic versions on many models in their ranges, while Ferrari has gone one better and has a 30hp tractor with both manual and hydrostatic transmission within the same machine. Those who like the control of a manual with the flexibility of a hydrostatic should take a look at Honda's debut machine, the new H6522. It has a nine forward, three reverse powershift transmission. The difference between a manual gearbox and the powershift is that the operator can move from one gear to another without dipping the clutch, so the power can be kept on at all times.

The other option to look at in the transmission is what is referred to as a synchro or power shuttle. Put simply, it means the ability to change from forward to reverse by pulling a single lever or pedal. This applies to mechanical transmissions and allows the tractor to move backwards or forwards without having to de-clutch, change gear and re-engage. It is primarily of use for loader work. Whether to choose two or four-wheel drive is now largely academic. Manufacturers have recognized that two-wheel drive is becoming obsolete and many now only supply their four-wheel drive versions in the UK. Power take-offs are a common service on compact tractors.



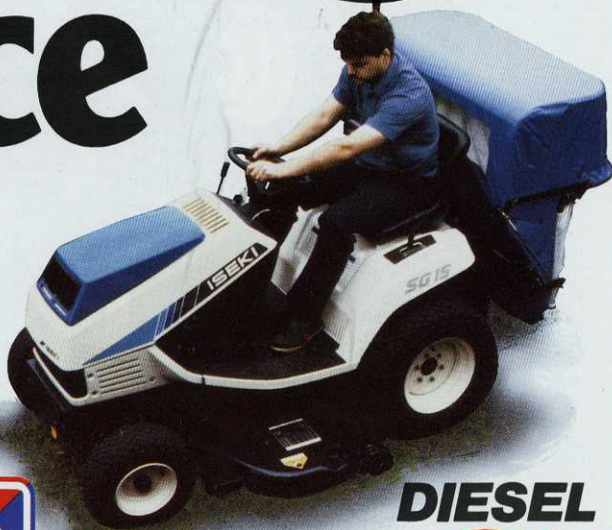
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## COMPACT TRACTORS

● Power take-offs and hydraulic services are major contributors to the versatility of compact tractors, as shown by this shot, above, of a John Deere 755 with 303 hydraulic gang mower.

● Honda's debut machine, the 22hp H6522, right, features powershift transmission, optional front PTO and the highest hydraulic lift capacity in its class

28 • All manufacturers supply a rear PTO as standard, but check that the speed(s) available will match the implements to be used. Having a mid-mounted PTO offers the flexibility to run a mower without having to detach it before using other implements. Going a step further, other manufacturers are following the lead of farm tractor makers by making provision for a front-mounted PTO. In theory at least, it should be possible to run one tractor operating three implements at the same time.

Honda offers a front PTO option while Iseki has it as either optional or standard for most of its machines. Marshall compacts have a front PTO option for the complete range. A typical item of equipment attached to the three-point linkage of a golf-course compact is a leaf collector. Take a close look at one of these when fully loaded and you realise the importance of a good lift capacity for the three point linkage. This is a feature many manufacturers choose to ignore, but others such as John Deere, Massey-Ferguson, Ford, Hinomoto and Honda publish lift capacities in their promotional literature. Honda claim the strongest lift capacity in the 22hp category with a load of 950kg, but the best overall range (for the machines featured on Page 32) is Ford, with four out of its five models having the best lift capacity. Ford's range are also the heaviest machines – so presumably you need less weights to counter balance at the front of the tractor.

Still on the subject of hydraulics, think about the ancillary hydraulic services needed – the number of single or double-acting valves you need to operate your implements. A single-acting hydraulic ram (such as on a trailer) extends by receiving oil under pressure, but relies on

gravity to force the oil out when it needs to contract. A double-acting ram receives oil in the same way to extend, but a second inlet on the other side of the "plunger" pushes the other way to contract the ram – providing force both outwards and inwards. Double-acting hydraulics are seen typically on backhoe/back actor digging attachments. Iseki, John Deere, Massey-Ferguson and Ferrari include single or double-acting valves in the base specifications, but other companies will only supply them as options – which can add an average of around £250 (per double-acting valve) to the price.

