HONDA
The Power of Dreams

Often **copied** **never** equalled

Honda makes the difference

1. Only engines with the Honda logo are the genuine product. Honda has no second brand.
2. Honda engines are specially designed to power specific products.
3. Ready to start when you are.
4. Proven technology: 50 years of experience in engine development.
5. Ahead of forthcoming EU regulations.
6. Genuine parts available all over the world.

Beware of copies

Only genuine Honda engines give you 100% satisfaction and guaranteed reliability.

Honda Europe NV • European Engine Center • Langerbruggestraat 104 • B-9000 Gent, Belgium
TEL: + 32 (0)9 250 12 11 • FAX: + 32 (0)9 250 14 24 • www.honda-engines-eu.com

HONDA ENGINES

United Kingdom • Honda Engines / Selling agent • Honda Logistics Centre (UK) Ltd.
Unit 3210, Wellington Parkway, Magna Park Lutterworth, UK-Leicestershire LE 17 4JQ
TEL: + 44(0)1 45 55 59 429 • FAX: + 44(0)1 45 55 59 428

HONDA

During the summer of 2003 Honda announced the arrival of two new quads, the TRX400AT and the TRX650.

The TRX 400 is a mid size multi-purpose machine with a longitudinally rubber mounted 397cc air-cooled engine. This has a dry sump and heated carburettor for easy starting and running even in very cold conditions.

The automatic transmission gives continuously variable speeds through electronic controls. There are direct front and rear drive shafts with a torque sensing limited slip differential fitted at the front. An electronic thumb switch selects either 2 or 4-wheeled drives. Utility racks and towing point are fitted as standard.

Announced as the biggest Honda machine to date, the TRX650 has automotive style transmission plus a hydraulic torque converter, which incorporates three independent clutches. Through the column style gear lever, drive, neutral or reverse are selected and a button operated Electric Shift Programme (ESP) lets you choose transmission ratios. The Traxlok System enables the operator to select either 2 or 4-wheel drive. A torque sensing front differential is said to lighten steering thus making the machine easy to handle.

As can be seen from the specifications of all the machines mention, there are a lot of basic similarities between makes with each manufacturer adding their own extras. There is one common aspect that encompasses all makes and models of ATVs - safety

The publicity surrounding a recent pop stars accident involving an ATV once again highlights the importance of using any machinery correctly and safely. Every mechanical device ever invented can cause an accident if it is used incorrectly or unnecessary risks are taken. ATV's are no more dangerous than any other form of transport, but unfortunately when celebrities get injured the media tends too overplay the situation.

There are guidelines laid down by the Health & Safety Executive and operators need to study these closely and ensure they are implemented.

HSE research has shown that there are a number of reasons why accidents occur some of these include:

- Insufficient training and experience in operating a machine.
- Travelling at excessive speed, especially on uneven terrain.
- Carrying passengers or unbalanced loads.
- Pushing the ATV beyond its limits on a bank, ditch sides, fallen timber or excessively uneven ground.
- Attempting to drive up or down too steeper slopes.
- Towing overloaded trailers.
- Using trailers, which have no braking system.

When you analysis all these points a key factor is using commonsense, this means adjusting to the prevailing conditions and the type of work being carried out.

It is important to note that it is a legal requirement of employers to provide sufficient training under both the Health & Safety at Work Act of 1974 and the Provision and Use of Work Equipment Regulation 1998 (PUWER).

Under PUWER only employees who have received training should ride ATVs. This provision also applies to any towed attachments or equipment fitted to the machines.

The advice on HSE Agriculture Information Sheet No 33 states that head protection is vital. Over 50% of fatalities involving ATVs in the last five years have been due to head injuries. Readers are also encouraged to read the HSE information sheet on ATV towing ratios.

If you are thinking of purchasing or already have an ATV the HSE website is worth visiting. This can be found at www.HSE.gov.uk. On the left hand side of the entry page is a search facility, type in ATVs and press go. A list of recognised training courses that cover safety and maintenance can also be found on this site and it is strongly recommended that users take one of these.

The ATV can be an important vehicle in a machinery fleet, especially for those courses that cover a large acreage that has steep and uneven terrain; large areas of dunes; heath; moors or woodland. It will certainly earn its keep in transporting personnel and materials quickly and efficiently around these types of courses and if used correctly it is no more dangerous than

other equipment in the machinery shed.

One of the failings of many of us is that we do not thoroughly read the instruction manuals, especially the sections dealing with correct usage procedures? As a New Year's resolution for 2004, albeit a bit late, let's study our equipment's instruction manuals carefully, who knows, we might get more out of our machines and make them safer to use.

SUZUKI

A 493cc liquid cooled engine powers the Suzuki Quad runner LT-A500F. The transmission is automatic with selectable two and four-wheel drives. A manual version of this particular ATV is also available.

The rear suspension is made up of a 4-linked rigid axle with coil springs. It is oil damped and preloaded with 5-way adjustment. Towing capacity is 410kg

The Suzuki Eigers come with a choice of either the company's own Quadmatic fully automatic, variable transmission, which includes an engine brake, or a five-speed manual box. Both versions include 2 or 4-wheel drive and high/low gear ranges.

Power comes from a 376 cc four-stroke engine that has an overhead cam and four valves. These feature are said to provide good low end and mid range torque. Suzuki's cooling system passes a high volume of oil through the cylinder head from a cooling reservoir. This has a thermostatically controlled electric fan to keep the liquid at the correct temperature. The unit is capable of pulling loads up to 450kg.

MASSEY FERGUSON (AGCO) LTD

The MF500/4A TBX is the big machine from Massey Ferguson. Power is supplied by a 493cc liquid cooled Suzuki engine, which develops plenty of torque at low revs. This is said to make it ideal when towing and for maintaining a constant speed for spraying.

The machine has a large rustproof box over the rear axles, which will carry up to 134kg. This box can be tipped via a lever, which is sited at the side of the operator's seat.

A main feature of the machine's carrying abilities is a Multi Rack Platform. The concept of the system is open channel racks both rear and front into which slide in accessories can be easily fitted. This enables the TBX to be tailored to ones specific transporting requirements. Massey

▲ Massey Ferguson (AGCO)

Ferguson claims that their ATVs are the first of their kind to be fitted with this type of system. In addition to on board loading the TBX is capable of towing loads of up to 477 kg.

The MF AgTV range consists of six models from 280cc to 493cc. All models have two or four wheel drive with the exception of the smallest the 300/4, which only has four-wheel drive and fifteen manual forward and three reverse gears. The other models are available as either manual or automatic transmission versions.

All machines have good ground clearance and all-round suspension with a traverse of sixteen inches to provide as smooth a ride as possible over rough terrain.

The MRP system will fit all systems so clubs looking for a medium size ATV can match the carrying facilities to their requirements.

▲ Suzuki Eiger with Rotary mower

A Fine US Showing by Whickham

Whickham Golf Club put up a fine showing as the second British team to play in the John Deere World Golf Championship, in Arizona.

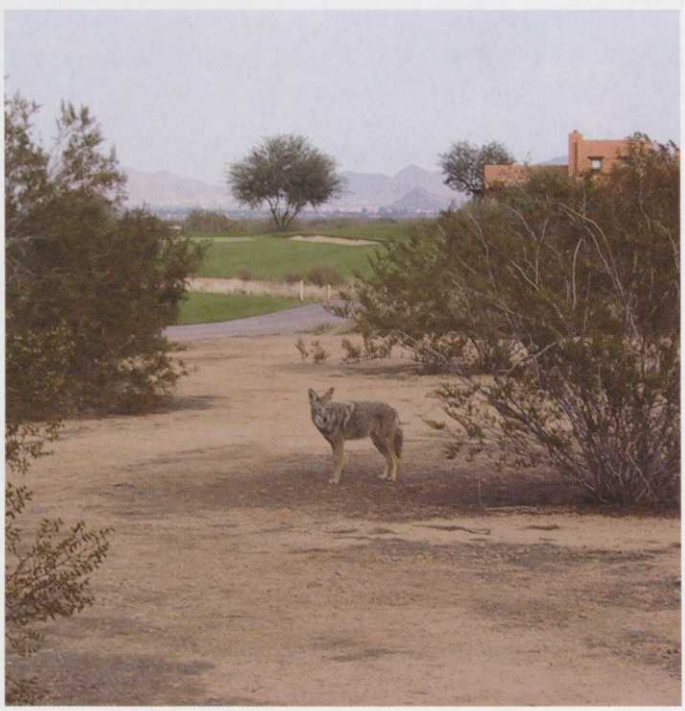
The team comprising Head Greenkeeper, Tony McLure; Club Professional, Andy Hall; Club Vice Captain, Bill Hopper; Competitions Secretary, Gary MacDonald and Roger Stewart of John Deere shot a respectable two round total of 115 leaving them halfway up the leader board in conditions most of the team hadn't faced before.

BIGGA National Chairman, George Brown, travelled to the Grayhawk Golf Club to support the team and also accept a cheque on behalf of the Association.

John Deere is committed to supporting professional greenkeeping associations worldwide and since the Team Championship started in 1987 the company has donated $270,000 to such associations.

"John Deere agreed to donate £25 for each UK team participating in local qualifying tournaments and while I was in Arizona I was presented with a cheque for nearly £10,000 as John Deere's contribution to BIGGA's on-going professional development programme.

"This money was used to support Bigga's Education Conference at Harrogate which allowed the maximum number of people to benefit from John Deere's generosity."Whickham Golf Club won the right to go to Arizona with a win in their dealer's local event and then with another superb performance at the National Final held at De Vere The Belfry last July.



Our John Deere Team Championship representatives Whickham GC, many not have collected any silverware but they certainly did us proud.

"We had a fabulous time and it was a fantastic experience. From the moment we got off the plane people couldn't have been friendlier or done any more for us," said Tony, a +1 golfer.

"The standard of the golf course we played was out of this world and totally beyond anything I've ever played before and I've been lucky enough to play some of the finest courses in Europe," he explained.

And it wasn't just the competition courses that impressed Tony.

"We owe a great deal to George Brown who organised another couple of games for us during the trip and these courses were great as well. George is a wonderful guy and he wouldn't even let us buy him a drink!"

"I've still got the $5 bill I won off him in what he said was the worst game of golf he'd ever played. He's signed it and I'm going to frame it," said Tony, adding that they played golf every day, six rounds on four different courses.

"Thanks to John Deere for making it possible and to George Brown for being such a great guy... and for that $5 bill."

The winners of the event were Oak Terrace GC for Illinois with a score of 105 but John Deere ensure that the event is not just about golf.

It is designed as an event to bring the major decision-makers from a golf club together on common ground to enable them to get to know each other better and each team comprised a member of the greenkeeping staff, a member of the pro staff, the Secretary and Captain or Chairman of Green.

Are You Ready?

Graeme Francis poses the question to Course Managers and Head Greenkeepers around the country.

The irrigation season is just a few weeks away and once again its time to ensure you and your system are prepared.

The period between February and October last year was the driest on record and this has resulted in renewed interest in new and upgrading irrigation systems on our golf courses. Whilst the general level of irrigation provision on UK golf courses has improved significantly, there is a need to optimise the use of these better systems.

Much has been said about The Water Bill. It gained Royal Assent on November last year and is continuing on its way to the Statute Book in England and Wales.

It is not the intention of this article to cover the Bill, but it is possible it will have an affect, not just on clubs with boreholes or water course Abstraction Licences, but also on those using public mains supplies. What is particularly relevant to every Course Manager, whether it is for budgetary, agronomic or water availability reasons, is that irrigation water is used correctly.

An increasing number of greenkeepers are taking courses on irrigation theory and practice and they will undoubtedly be able to use this knowledge for the benefit for their courses. All too often, however, irrigation is still given a low priority. Clearly the operational parameters for irrigation are wider than those for other maintenance operations such as chemical application, but over watering in particular, as we all know, can cause major long-term turf management problems. In addition to the pure turf grass issue, it is not beyond the realms of possibility that significant reductions in water use can be achieved when a Course Manager can use a sound knowledge of irrigation principles and combine it with a reliable, accurate system that will allow that knowledge to be out into practice.

It is widely accepted that the primary purpose of an irrigation system is simply to replace the water that is naturally lost from the plant. If you take evopotranspiration (ET) as a key water-scheduling factor, how do you measure it? and once you have, how can you relate that to the amount of water you apply through the irrigation system? Simply using a weather station that will give a base rate of ET for your course can solve the first part of the puzzle. As a golf course almost always has a variety of microclimates, adjustment using the ET base rate is necessary to fine-tune the irrigation scheduling. Replacement of ET can then, by calculating sprinkler application rates, be programmed into the irrigation schedules. Crucial factors, including aspects such as soil infiltration rates, should then have to be taken into consideration. If you are still using a "box-on-the-wall" controller, manual calculation of the system application rates is the only way to relate ET and the whole plant/soil/water relationship to system performance. This requires accurate information on sprinkler spacing, flows and distance of throw and, sadly despite the efforts of the many good contracting companies, there are still systems being installed, where these essential performance figures are not even provided by contractors at the quotation stage let alone once the system is operational.

There is no doubt that the PC based technology is the future of golf course irrigation control. Systems in which sprinkler application rates are calculated automatically using site data eliminate the need for manual calculation. The biggest benefit is, however, that sprinkler operating times can be based upon application rates shown in millimetres per hour. This allows a direct correlation between water losses through ET, infiltration rates and grass types and irrigation application rates. In conjunction with an ET rate calculating weather station and using the WindowsÆ PC operating environment, ET rates can be used to set and adjust sprinkler run times quickly and precisely. This combination of PC based controller and weather station is increasingly becoming the standard arrangement for many course managers. The most advanced PC based control systems take this a stage further, however, and can be linked directly with a compatible ET rate calculating weather station. The ET value is then taken by the irrigation controller software and automatically adjusts irrigation operating times on a regular basis. Fine tuning is achieved by inputting site factors codes that coverage grass type, soils, slopes and other relevant topographical and operational influences.

This last example clearly represents the pinnacle of irrigation scheduling; such systems are relatively unusual in the UK. For most courses the useful and practical manual system works very satisfactorily. Today, perhaps no more than 10% of Course Managers have the benefit of PC based irrigation control. The majority rely on "box-on-the-wall" controllers. This raises the question of how many greenkeepers have been provided with the necessary level of training to get the best from the less advanced technology available to them. Certainly, the number of greenkeepers taking the British Turf and Landscape Irrigation Association's (BTLIA) Diploma has increased over recent years and this is greatly encouraging. The course covers the plant/soil/water relationship and irrigation design and operational practises, but more greenkeepers should have the opportunity to take the course.

The BTLIA, as a non-profit making trade organisation is committed to improving the standards of system provision and has focussed on irrigation education for many years as one way to meet this objective. Training of irrigation industry personnel and system operators has been the primary

▲ PC-based irrigation control systems like this Toro Gemini-Trident unit offer major operational benefits to Course Managers and greenkeepers

aim of the course. Now, however, a further reason is to ensure when a club is considering a new system the decision makers, Committee Members, Club Directors and Manager's, as well as Course Managers have an adequate understanding of what they are buying. The decision makers should understand the long-term benefits of such design aspects as correct sprinkler selection and positioning. A knowledge of other factors such as the advantages of having individual control of sprinklers on greens is essential if the right choices are to be made. An example is that of tees irrigation. At one time tees were irrigated using a single row of sprinklers down the centre of the tee. These were set to rotate through 360_ and in order to cover the tee surface adequately they would overthrow the tee by as much as 40%.

Today, hopefully all tees are irrigated using sprinklers located along the edges and set to rotate through 180_ across the tee surface. This often requires a row of sprinklers down each side and represents a slightly higher initial capital expense.

In many cases, however, the reduction in water use over the single centre row to apply the same amount of water to the actual tee surface can by as high as 70%. It won't take long to offset the initial cost by reducing water cost. This simple demonstration of how knowledge of irrigation principles can help in making the right choice of system is just one instance of how training can be beneficial.

Even today, over 30 years after automatic irrigation became recognised in UK golf course management, too many purchasing decisions are being made with only one criteria being considered, price. If whilst choosing a system, a club undertakes a comprehensive technical and commercial evaluation of the three or four design proposals they receive and they can be satisfied that the one with the lowest price meets all of their requirements, then no one can argue with the decision to go with that bid. The question is does that always occur? The answer is probably no and the result is that choosing an irrigation selection becomes a gamble. A number

of clubs decide to employ an irrigation consultant to eliminate the risk, but many more seek out contractors and request design and build proposals. In doing so they must take a planned, informed approach. Insisting on comprehensive system performance information is an important area, as this will allow a more technical comparison to be made and will also provide the essential data mentioned earlier that will allow good irrigation practice.

And so we return to where we started, training in system design and operational principles is essential for every Course Manager. Many have recognised this and have taken the BTLIA Diploma course or an irrigation module within a wider greenkeeper training programme. Those that haven't are reducing their opportunity to first get a good system and secondly to use it to the best. Who's to say that the summer of 2004 won't be another long dry one?

Are you prepared?

Graeme Francis joins leading irrigation contracting company

Graeme Francis has joined Par 4 Irrigation Limited as Managing Director. He has been involved in the UK irrigation industry for nearly 20 years, working at both contractor and distribution level. Graeme has been a member of the Executive Committee of the British Turf and Landscape Irrigation Association for the past seven years during which time he was Chairman from mid 1999 until 2002.

Par 4 Irrigation is one of the leading irrigation contracting companies in the UK. Graeme will be formulate and implement the company's strategic plan to further develop its strong market presence and to increase the product and services portfolio into associated areas such as lake management and washdown water recycling systems. The company was founded in 1981 and has installed over 500 systems since that time. Customer service and support are considered highly important by Par 4 and the company currently has over 300 formal Service Agreements throughout the UK.

"I am particularly pleased to have the opportunity to take the extremely good reputation and the very high levels of experience and technical expertise that Par 4 has gained over many years and use it as the foundation for further development. We will continue to strive for ever higher standards of irrigation system design, installation and maintenance and will also bring the same qualities to other areas of our business," said Graeme.

Scholarships

RANSOMES JACOBSEN LTD
A Textron Company

Peter Jones, made the most of his Ransomes Jacobsen scholarship and many nights of hard study was rewarded with a Master of Science Degree in Sports Surface Technology.

Keeping up with the Joneses

It seems a long time ago now, since summer 2001 when I read details about the Master of Science degree in Sports Surface Technology that Cranfield University were going to run, and I can clearly remember making the decision that I would like to embark on the MSc course as my next challenge in both personal and professional development.

I discussed the course in more detail with Alex Vickers on the Cranfield University stand at the Saltex show, and made my application which was accepted on the merits on my experience, qualifications and references from David Golding, GTC, and Ken Richardson, BIGGA.

Although the MSc can be taken as an intensive one year, full-time course, I decided to spread it over two years on a part time basis so that I could integrate it with my ongoing work commitments and family life, which includes two active nine year old sons.

In hindsight, spreading the course over three or more years on a part-time basis would have been an easier option in terms of time allocation, but none-the-less, I managed to complete it in two years and now have the benefit that it is finished and behind me.

Financial assistance with the cost of the course fees was offered in the first year with a half scholarship from the University itself, and in the second year I was successful with a grant from BIGGA through the Ransomes Jacobsen scholarship fund, for which I was most grateful.

I was particularly impressed by the course aims and objectives, and how the content of the MSc. course would relate to my work in the golf course industry. So right from the start I was self-motivated and determined to complete it successfully.

There are 11 modules to complete that run between October and May, and I attended alternate modules to complete six during the first year, and five during the second year. The other key requirements are two integrated end of year exams; a Thesis; and an oral examination, which takes the duration of the course through to a September finishing date.

COURSE CONTENT

SST Integrating Exam Paper 1
SST Integrating Exam Paper 2

RESEARCH PROJECT THESIS AND ORAL EXAMINATION MODULES:

- Soil Science
- Soil/Plant/Water Relationships
- Turfgrass Science and Technology
- Fundamental Plant Physiology & Biochemistry
- Drainage for Sports Surfaces
- Irrigation Management and Optimisation
- Mechanisation for Sports Surfaces
- Project Planning and Operations
- Sports Surface Playability
- Human Resource Management
- Management of Sports Facilities
- Sports Surface Construction (case study/ project based)

The delivery of the course combines a rigorous academic, technical and practical training that also incorporates an advanced level of business management skills.

Each module typically required block attendance at Silsoe campus attending lectures, carrying out research, literature reviews, and conducting practical work in the science laboratories. The modules themselves were marked by a combination of project assessments and exams.

In addition to the work on campus, there were organised visits to a range of sporting venues such as Wimbledon Tennis Club, Ipswich Town FC, STRI, Leeds FC trainings ground, Woburn G & CC, and Lords Cricket Ground (during reconstruction of the outfield). The field trips focussed on matters that related specifically to each module, with projects being set that required investigation and/or information to be gathered on each site.

THE THESIS

The MSc Thesis carries 40% of the overall course marks, and the research project I proposed was entitled:

AN INVESTIGATION TO DETERMINE WHETHER THE INCORPORATION OF ZEOLITE INTO SAND BASED ROOTZONE CONSTRUCTION MATERIALS BENEFITS GRASS QUALITY, GROWTH AND NUTRIENT RETENTION WITHOUT ADVERSELY AFFECTING DRAINAGE

As the mere length of the title might suggest, there was a lot of sampling and research to conduct, and the completed Thesis ran to two volumes, including 31 appendices detailing testing methods; analysis results; data sheets; and records of weather, irrigation & fertiliser applications.

The research project looked at whether the Cation Exchange Capacity (CEC) of USGA and sand-only rootzones could be significantly increased using an inorganic amendment, and whether turf quality and nutrient retention could be improved as a result of this, without impairing the drainage performance of the rootzone.

The amendment selected for use in the project was clinoptilolite zeolite with a hardness of moH 7, (comparable with quartz sand), and a particle size of more than 70% less than 100 microns diameter.

Zeolite is an inorganic material with a skeletal structure and the ability to absorb large quantities of ions and freely exchange them in solution.

One of the natural minerals in zeolite is clinoptilolite which is a crystalline alumino-silicate structure, and one gram of clinoptilolite provides up to several hundred square metres of internal surface area which can absorb an enormous quantity of cations including ammonium.

▲ **Figure 1: Raw clinoptilolite zeolite (0.25 – 1.00mm in size)**

The Cation exchange capacity of clinoptilolite is approximately 120 meq/100g, compared to sand which is typically 1-3 meq/100g. and therefore has a much, much better ability to retain nutrient ions for plant uptake, as opposed to being leached away.

K	4 meq/100g	Mg	18 meq/100g	Ca	85 meq/100g	Na	12 meq/100g

▲ **Table 1: Cations held within the raw material to make up the CEC:**