



MAPPED OUT

Archie Stewart highlights just what a GPS system can add to a Course Manager's arsenal

GPS is a technology that is mature and proving to be an invaluable part of our infrastructure. It is used for navigation; guiding planes in to airports via flight paths and ships along sea lanes to ports around the world. For scientific research it has made accurate measuring of the polar ice caps and melting glaciers possible. It can track anything from trucks carrying valuable cargoes to elephants in Africa. It is used in agricultural to drive giant tractors and machines through dust and darkness. With experienced labour very scarce growers of high value crops can achieve a constant level of accuracy for the application of fertiliser and pesticides ensuring maximum output and reducing operator error. It is a vital tool for business improvement in many sectors and can increase efficiency and save costs.

So how is GPS being utilised in golf course management?

The most common application of the Global Positioning System (GPS) in golf management is in course surveys. The initial GPS survey and mapping may be best carried out by contractors who can provide high accuracy and are well versed in the use of GIS (Geographic Information System) mapping software. It is worth the extra investment to provide a useful geographic appraisal of the prime asset of the golf club, the course itself. The survey provides a snapshot in time of the course which is easily updated and kept relevant. This is a valuable record of historic and current management practices, landscape and other features and forms a base for course management and development planning.

Accurate area measurement for all features of the course, like tees, fairways, bunkers and greens are the minimum requirement of a survey. This information is invaluable for precise calibration of spreaders and sprayers. The certainty that you are working with current measurements

for each feature should allow for accurate ordering of inputs and robust record keeping. The survey will be produced as a digital map that can be linked to a database to allow records to be kept regarding each feature on the map. The survey should also show buildings, areas of different habitats, feature trees, ponds and wetlands.

Golf courses don't sit in isolation, so combining aerial photos and Ordnance Survey maps add value by showing the immediate surrounding environment that may influence many factors on the course. This context also produces an attractive and accurate map for scorecards and websites, and even for the wall of the clubhouse.

Maps are an excellent media that can be used as living documents and updated over time. Maps can be printed for daily tasks and planning to help communication with staff, committees, golfers and the public. They can show development plans, plans for new planting or new bunkers. They can also be used on signboards to inform the public about paths, location of dog bins and the plants and animals that live on the golf course.

GPS comes into its own when installing irrigation, or any underground services. Anyone who has tried to dig a burst drain or find broken control box from a set of old drawings of the irrigation or drainage system will know that what the plan shows and the location of the pipe or control box may not be one and the same. The use of GPS to record the position of the pipes or drains as they are laid ensures that they can be found again in the future. The location can be shown on the course map or if there is no course map they can still be recorded and added later.

Once the survey is done and installed on computer, what next?

After obtaining your professional basemap, you can begin to update this



yourself. Buying and learning to use a compact handheld GPS receiver to take onto the course to record information and locate features is the next step. There are a range of receivers available from small units used by walkers with an accuracy of four or five metres to units that can download the course map and have accuracy of about one metre. As with most things it is a case of getting what you pay for, more expensive units will be more accurate and prove better value for money in the long term. The units should be rugged enough to withstand daily use in all weathers, recording and transferring data should be simple otherwise they will not be used to their full potential.

With the map installed in a handheld GPS unit it is possible to go on course to record areas of weeds or disease, wet patches and soil sample points or any other feature that is needed. All the information gathered can be transferred to the office computer and laid over the course map to record treatments and results. Areas of weeds or diseases can be shown as maps and these maps can be used to reduce the amount of pesticide used by treating only the area required instead of a blanket application. This has obvious savings in terms of cash as well as the environmental benefits.

The location of soil sample points can be shown and the analysis can be displayed in a nutrient map allowing investigation into any problem patches with the ability to record the results in map form and on a database. Any applications can be tailored to try and resolve the problem and the results monitored. GPS brings the ability to manage areas large or small record and display the results in a form that is easily understandable.

If drainage is a problem and, as is often the case, plans for the existing

drainage system are old and possibly inaccurate areas that flood or lie wet can be recorded and plans made to remedy the problem. At the other extreme during times of drought the lines of drains sometimes can be clearly seen and that is a good chance to record their position.



Maps can be created that show how habitat management is working, gorse areas responding to rotational cutting, location of bird life on the course in fact almost any feature on the course can be recorded as required.

Many buggies are sporting GPS screens and scorecards to help the golfers with their round. These can also bring revenue to the club in the form of advertising of local services and with a relay back to the clubhouse be used to monitor the location of each buggy and the pace of play.

The decision by the PGA to allow the use of GPS rangefinders in professional events this year will inevitably provide a sales boost for the products and an opportunity for clubs to benefit from having an accurate course map. The range finders can only be as accurate as the information (course map) they contain.

By looking to agriculture we may take a guess at what may be available for golf and amenity work in the near future. GPS guided tractors are becoming common for the application of fertiliser, sprays and ensuring that high horsepower tractors with wide equipment is working at optimum rates with no overlapping or missed bits. Mowers could be equipped with GPS steering control that would ensure that each bout was made at the full width of the mower ensuring an even cutting pattern allowing the operator to concentrate on the machine and saving

time and fuel. Details of the shape, width and height of cut can all be stored in a database building up a record over the years.

Application of sprays and fertiliser could be targeted to the areas predefined by soil, weed or disease maps. With increasing regulation these maps would show justification and control for treatment of pesticides.

GPS is a relatively new tool in the course manager's armoury that is yet to be fully integrated and realise the potential it offers. Investment in a course map perhaps to be followed by handheld GPS data receiver can be gradual process to suit the budget and ensure that the club is making the most of developing technology to take it into the future.

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