

venient receptacle for broken tees and such, encouraging the golfers to take a more active role in the proper upkeep of the course. We were told that after several weeks of use on the men's tees only, the women golfers were asking that a set be made up for their tees as well, and that a new enthusiasm for maintaining course neatness in all areas had been generated among the membership. An additional benefit too is that on par-3 holes one always knows where to find a broken peg for teeing it up.

3. The third and final idea of this sequence involves the very pervasive traffic-related problems created by golf carts. Unlike the two previous ideas, this one is already catching on rather widely, at least in the Northeast. This is an idea to remedy wear and soil compaction problems. It involves a simple solid white line of marking paint used instead of signs or ropes for indicating to golf cart operators those areas where they should not drive. This line is painted 30 yards or so out from the entrance to a green. This traffic control method seems immediately to become extremely effective, apparently because of the similarity to highway markings. Clearly traffic damage is not eliminated, but it is pushed back away from areas which most often come into play. Of course as the lines fade and need to be put down again, they can be drawn in somewhat different places to better distribute the traffic, and the worn areas can be renovated periodically as well.

Well, there you have it, our kick-off edition of Little Things That Count: lines on cart paths as 150-yard markers, tee boxes for discarding small objects, and painted lines as a traffic-control device.

We hope that these ideas will prove their worth on other courses, just as they have on those shown. We would also encourage anyone with an idea to share to contact one of our Green Section agronomists or to send in a brief description of the idea and a slide or two illustrating the problem and the solution. Remembering that old adage that if I give you a penny and you give me a penny neither of us has gained, but if I give you an idea and you give me an idea we are both enriched, let's all work together on this effort to share these little things that can count for all of us.

The Stimpmeter - A Management Tool

by PATRICK M. O'BRIEN

Agronomist, Mid-Atlantic Region, USGA Green Section

DURING THE 1980 PGA Tour, there was a direct correlation between the leading money winners and their putting ability. Four of the five players with the lowest average number of putts per 18 holes finished among the top 10 money winners. In contrast, none of the five driving distance leaders finished higher than 44th on the money list. Outstanding putting, then, is essential to championship golf, and it is also essential that greens be of highest putting quality. One tool useful in maintaining a quality putting green is the USGA stimpmeter.

The USGA stimpmeter is an extruded aluminum bar, 36 inches long and 1¼ inches wide. It is a modification of the original stimpmeter, invented by Edward S. Stimpson in the mid-1930s to measure green speeds. The stimpmeter first came into wide use in 1976 and 1977 when eight USGA agronomists took over 1,500 stimpmeter readings on greens in 36 states. The stimpmeter was first used at USGA championships at the 1976 U.S. Open, at the Atlanta Athletic Club, in Atlanta, Georgia. At this Open, millions of golfers saw a stimpmeter demonstration on television by a USGA agronomist.

The green speed data collected in 1976 and 1977 by USGA agronomists was used to produce Green Speed Comparison Tables for regular membership play and tournament conditions. These tables are still used today. Unfortunately, these tables have been misinterpreted by many as an attempt by the USGA to standardize green speeds. The purpose of these tables is to encourage each club to decide upon a green speed desired by the membership, and then work towards reducing variability of speed between greens.

In February of 1978, public distribution of stimpmeters began to golf superintendents of member clubs who subscribed to the USGA Turfgrass

Advisory Service. Stimpmeters were available by the end of 1978 to all golf superintendents at a cost of \$15. By the end of 1980, over 1,800 stimpmeters had been mailed from Golf House. This figure indicates approximately 15 percent of the golf courses in the United States possess a stimpmeter.

THE MAIN USE of the stimpmeter is to help the golf superintendent manage greens so that they putt uniformly over the entire course. The variability of ball speed between greens should be no greater than six inches when measured by the stimpmeter on fast greens for championship conditions. The variability would be less than six inches on greens with slower speeds.

Agronomic management practices performed by the golf superintendent have varying effects on ball speed. Wherever possible, similar management practices should be performed on all greens to reduce variability in ball speed. However, usually several greens on every golf course require unique practices that may influence ball speed. This may be caused by many factors, such as poor soil conditions, inadequate light and air quality, or pest problems. By monitoring the greens frequently with the stimpmeter, alternate management practices may be used to reduce any variability caused by these problems.

Sound management programs appear to encourage uniform medium to fast greens for regular membership play. Golfers usually prefer faster greens because they are generally truer greens. Light watering, minimum nitrogen fertilization, frequent vertical mowing to remove grain, light and frequent topdressing to smooth the surface and reduce thatch, and frequent mowing at 3/16 inch or less encourage quality putting conditions.

Since 1978, Dr. Ralph E. Engel, of Rutgers University, has studied the

effects of management practices on the ball speed of putting greens through the financial support of the Green Section. Studies of this nature will additionally assist the golf superintendent in determining the effect of his management practices on the roll of the ball.

It appears that the stimpmeter will be a valuable management tool for all golf courses. Coupled with sound agronomic practices, the stimpmeter can assist the golf superintendent in maintaining true, smooth, and consistent putting greens.



Pump selection is important. Energy requirements differ for turbine vs. centrifugal vs. submersible pumps.

Water Use and Energy Conservation

by CHARLES B. WHITE

Agronomist, Southeastern Region, USGA Green Section

WATER IS THE single most important factor for turfgrass growth, yet it has been stated that more turf is killed each year from overwatering than by all other management practices combined. Problems experienced last summer have brought water/turf relationships to the fore and have pointed out the tremendous water requirements of turfgrasses and the consequences that can result from mismanagement.

Since water is the primary growth factor for turfgrass plants, it follows that the irrigation system is the single most important tool on the golf course. The quality of the irrigation system and the pumping station will determine just how effectively the high water requirements of turfgrasses are met.

Pumping stations for golf courses are not only tremendous energy consumers, but they also usually operate during the peak hours of electrical demands. Several electrical co-ops in Georgia offer off-peak rates for electricity, which can save 50 percent of a club's electrical bill, or about \$3,000 to \$5,000 annually. The electric company installs a shut-off switch on the main pump, and when peak electric use occurs in the utility company's region, the pump is shut down. Peak loads are met about six to eight times a year, usually during July and August and

occurring about 1:30-4:00 p.m. Distributors can predict ahead of time when peaks will occur and will forewarn their customers. Jockey pumps need not be included in the peak-load shutdown program in order to take advantage of the savings, so even if irrigation or syringing must be done during a shutdown period, the jockey pumps can still be used. Experience shows that in most parts of the country syringing is best done from 10:30 a.m. to 2:30 p.m.

There are other means of conserving energy with our irrigation systems as well. The most basic is pumping station selection and installation. For example, do you know that turbine pumps are more energy efficient than centrifugal pumps, with submersible pumps being the least efficient? The setup and operation of the jockey pump is also important to consider. A jockey pump is 15-25 horsepower in power and is designed to maintain system pressure and to supply low gallonage demands. A jockey pump, however, should be set to cycle five times per hour or less. Remember that it requires 150 percent of operating energy demands to start a pump, so frequent cycling is very energy consuming, even wasteful. Many golf course personnel believe that a jockey pump is unnecessary and an added expense. While it is true that the large pumps can be used for both regular

irrigation and syringing, such constant use can significantly reduce the lifespan of the main pump and waste electricity at the same time. For example, a large pump may deliver 100 gpm, yet you wish to syringe a green with a delivery of 10 gpm. Though it might seem reasonable to expect that the pump would draw only 10 percent of the electricity to meet the 10 gpm demands, it actually draws 40 percent. Most will agree that this will add up to a significant expense over a year's time. Is your system as efficient as it could be?

SOME ENERGY-saving considerations, however, are not feasible for the golf course situation. Such is the case with pump size and selection. One 100 horsepower pump is more economical to operate than two 50 horsepower pumps. The risk of losing the single pump and forcing shutdown of the entire system is not worth this energy savings.

After considering these facts, one question should be foremost in the mind of every golf course superintendent: What can I do to upgrade my irrigation system to meet present-day standards? Consult with the experts and become aware of things you can do as a golf course manager to reduce energy consumption.