

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

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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.