COMMENTARY

New technology ought to aid old-time watering know-how

By MICHAEL HURDZAN

Last month I wrote about the evils of over-watering golf course turf and considerations to break that addiciton. As I wrote I thought about what changes I have seen in golf course irrigation over my past 40 years, as well as what lessons I have learned that might be worthwhile sharing.

I grew up and learned the fine art of watering turf on a nine-hole course built just after the Depression. So it had only the basics — small size, iron ductile pipe, gate valves and hose spigots at tees and greens — to supply the hoses and roller-base sprinkler system. (I think we had six hoses and perhaps nine or 10 sprinklers for the whole course, so we often had to drag hoses between greens or tees.)

With only a 125 gpm well and a 14 hp pump, and with greens and tees made of yellow clay, over-watering was a sin. We were taught how to read the dew patterns on the greens and the subtleties of the color of turf as it approached moisture stress.

We learned to "punch" the turf with the knuckles of a clenched fist to test the green surface for hardness, use the back of our hand to monitor the temperature of the turf, and firmly push our foot to confirm that we had applied just the right amount of water. We learned to control the precipitation pattern of the 1-inch hose with our thumb or combination of fingers, depending on what was called for in a particular spot on the green or the wind direction.

Your skill as a waterman was easily measured, for if you under-watered more than a day or two then "dry mulch," or isolated dry spot as it is called today, appeared and your fellow greenkeepers weren't shy about calling it to your attention. Then you had to take a pitchfork and poke hundreds of holes in that spot and make tens of repeat small water applications to wet the near powder-dry soils below.

Some wetting agents helped. Perhaps because it was so frustrating to cure dry mulch, you learned to read the turf and soil conditions carefully, and you identified indicator places on each green that could forewarn you of that dreaded condition.

Over-watering was equally embarrassing, especially if your greens failed the foot firmness test of our boss-mentor Jack Kidwell. Or if your greens were the first to get disease, worms or *poa annua*. A soft reprimand from Jack carried the same weight with us kids, as an admonishment from the pope. Perhaps even more, for being a good waterman brought recognition from your peers and pride from yourself.

Every morning before we began watering, we had to read each green's carryover condition from the previous day, decide upon what the weather was going to be that day and three days out, as well as what the grass plant needed. Only then could we intelligently and precisely apply just the right amount of water to each individual part of each green.

The most serious times were when you had hot temperatures, high humidity and successive patterns of thunderstorms. It was like reshuffling the deck, for one end of the golf course might get an inch of rain and the other end only a trace, but everywhere had the same heat and humidity that it had to survive.

If you knew a major storm system was headed your way, you had to start backing off the wa-

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Old-time watering

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ter days in advance to get things dry enough to receive the precipitation. If you guessed wrong, you had to try to stop the inevitable appearance of dry mulch or, worse yet, the green might go into wet wilt or even sun scold.

The key to watering in stress periods was frequent light applications tailored to each area of each green, but not necessarily enough to hold the grass through the entire day, for about noon you would go out again and apply another small amount of water to get them safely into the cool part of the evening. At dark we would use roller-base sprinklers in several short sets to replenish soil-moisture reserves.

Stress periods also meant syringing, which we were taught meant cooling the grass plant by cooling the air above the turf. To do that we would first sample the temperature of the green in several places with the back of the hand to determine how much syringing was needed, then use maximum pressure to break the water into the smallet droplets possible, and spray them six to eight inches above the putting surface. We never applied water directly to the grass.

After you were done, you would test the turf to make sure you had sufficiently lowered the temperature. The operative word was "vigilance" — not for a day, week, or month, but the entire summer season.

Each green had a personality and you became intimately familiar with all of its vagaries and nuances. To be a successful turf manager meant being in constant touch with the turf.

By the mid-1960s automatic irrigation, combined with high-tech root-zone mixes, seemingly obviated that requirement for vigilance and the margin of error in water application was broadened. Just set the clocks, adjust them for envirotranspiration, and supplement turf with another short burst of water in a syringe cycle if necessary.

Until individual head control and two-speed heads, the superintendent only had to avoid flooding those areas of multiple-sprinkler overlay, and usually good surface drainage could bail you out of that problem because greens still had 3 percent or more slope built into them. But then we began to mow greens below 1/4-inch and green speeds of 6to 7 feet were considered the minimum.

As the pendulum continued to swing, we evolved the art of shaving bed knives, using comb rollers, and light frequent top dressings to cultivate and satisfy the American golfer's infatuation with ultra-fast greens.

Mowing heights of 5/64-inch became possible (for short periods of time) and speeds in excess of 13 feet. But at such warp speeds, 3 percent surface drainage slopes in greens became intolerable for skillful putting. Rather than give up putting surface speeds, we started to make greens flatter — often below the minimum 1.5 percent required for surface frainage, which meant almost all water had to percolate through the root zone.

Over-watering became much easier, and it started to produce negative consequences like short root systems, root rot diseases and more invasion by *poa annua*, particularly on parched water table systems and even isolated dry spot. Soon the superintendent's only response was to go back to hand-watering, the way he did before automatic irrigation.

But I wonder if during those 30 years or so, we haven't lost much of the knowledge, experience and vigilance that was so important to the art of hand-watering. It seems that now being a waterman is the least prestigious job on the crew and not the most esteemed as it was in my day.

I honestly don't think we will be able to recapture or teach all of those delicate observation skills to be a great waterman; and perhaps we shouldn't. Instead, this and future generations of greenkeepers and superintendents should turn to technology to measure the same things that we did in the old days.

I would like to see the waterman again become the most experienced greenkeeper, but now he would measure the sample turf temperature with a hand-held pyrometer, measure existing soil moisture levels at various depths with electronic soil probes, and monitor the oxygen level of the root zone to maintain an optimum soil water/air relationship for turfgrass growth.

Irrigation cycles should be based again on three- to five-day weather patterns and not short-term envirotranspiration. We should favor the dry side of acceptable moisture range and stimulate the plant's drought-survival mechanisms to produce a healthier total plant.

The operative word will again and always be "vigilance," but just in a different form. But it doesn't hurt to have a few old-time guys like my friend and mentor Jack Kidwell around to give out a few soft reprimands to remind us how important it is to be a good waterperson.