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 addiction. 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
day 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 scald.

The key to watering in stress periods
was frequent light applications tailored
to each area of each green, but not neces-
sarily 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 sev-
eral 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 wa-
ter into the smallest 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
avaried micro-climates 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 envoir-
transpiration, and supplement turf with an-
other 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 sur-
face drainage could bail you out of that
problem because greens still had 3 per-
cent or more slope built into them. But
then we began to mow greens below 1/4-
inch and green speeds of 6 to 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
spike dressing 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
wrap speeds, 3 percent surface drainage
slopes in greens became intolerable for
skillful putting. Rather than give up put-
ting surface speeds, we started to make
greens flatter—often below the mini-
mum 1.5 percent required for surface
drainage, which meant almost all water
had to percolate through the root zone.

Over-watering became much easier,
and it started to produce negative con-
sequences like short root systems, root rot
diseases and more invasion by poa annua,
particularly on parched water table sys-
tems and even isolated dry spots. 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 knowl-
edge, 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
reapture 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 tech-
nology to measure the same things that
we did in the old days.

I would like to see the waterman again
become the most experienced green-
keeper, but now he would measure the
sample turf temperature with a hand-held
pyrometer, measure existing soil mois-
ture levels at various depths with elec-
tronic soil probes, and monitor the oxy-
gen 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 al-
ways 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.

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