SURVIVING WITH A LIMITED WATER SUPPLY

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Quality turf requires proper development of the site followed by a continuous high standard of management. One of the most important criteria in the development of the site is the irrigation system, and the best of systems is only as good as its manager. The two year drought we have been experiencing in most of California may be of greater benefit to the turfgrass developers and managers in the long term than the losses experienced in the short term. If we take a positive approach to what we have learned from this drought, readjust our thinking and re-plan for the future, high quality golf courses will remain an important part of our California landscape.

Golf courses are a major identifiable landscape unit when it comes to water use. Where water has been really short the public is quick to point out that "golf courses are wasting water when I must conserve." The majority of the public would, if given the vote to do so, dry up the golf courses before they would consider water conservation on their part. If this is true, golf courses can ill afford to be water wasters. Nor can a wall to wall green carpet be maintained when it is not a functional part of the game and/or a functional part of the golf course site.

During this past two years, superintendents have learned two important facts about their golf courses.

(1) They have better turf with less disease and at a lower management cost when they reduced the amount of water they were previously applying. Because of the use of clocks to turn the water off and on we have been overwatering much of our turf.

(2) They have been intensively mowing, fertilizing and irrigating areas which have little relationship to the game of golf. Typically many courses have shut down 10% to 40% of their irrigation systems with little or no effect on the game of golf.

It is to this latter point that I would like to see some redirection of our thinking. Almost all golfers and designers feel that a true golf course is an equalateral triangle composed of three major components: Golf - the game and its elements which are needed to play this particular sport; Aesthetics - the necessary amenities which make the golf course site attractive, without interferring with the game; and Maintenance - the practices which maintain a landscape suited to the game and aesthetical acceptable to the user.

Many of the golf courses have become wall to wall carpets. The excuse for this trend is (1) ease of design and application of water, (2) less complicated mowing and fertilizing programs, (3) the area can be managed by low paid, unskilled labor, (4) play is faster, (5) a reasonable lie for the ball from anywhere on the golf site. All or some of these points may be valid for golf courses. I would question their validity for most California golf courses. In many cases, we have distorted the balance between golf, aesthetics and maintenance. False aesthetics and increased maintenance costs are prevalent. Average management to excessive turf is practices, instead of top management to a balanced course. On some golf courses we have distorted the game with out open park like areas.

As we are a profit motivated people, perhaps the drought will bring us back in the direction of a proper balance to our golf courses. In our 1964-65 survey

we found that the average regulation 18 hole golf course was located on a 142 acre site, with 101 acres of intensively mowed and irrigated turf. The average water cost was $8,000. The water cost at that time ranged from a low of $800 to a high of $42,000 per course. Our present and future cost of water may force us to a proper balanced turf to justify the golf course and its high use of water. Table I shows the millions of gallons of water required to maintain 100 acres of an intensively mowed and irrigated golf course and the water savings possible by reducing the acreage.

Table II shows the type of costs facing some golf courses in Marin County, depending on location, and the water district which supplies their water. Even at the very low application of 20 inches per year the water costs should make designers, pros, superintendents and memberships think twice about the need for wall to wall carpets.

The short term answer for some courses has meant cutting out the use of many sprinkler heads. Redesigning of complete fairways and irrigation systems, different grass species, and different management programs for the different areas will be needed. In addition, the well managed balance of play areas instead of expensive turf areas will also be needed.

Table I
The Average 18 Hole Golf Course has
100 Acres Intensively Mowed and Irrigated Turf

Inches Applied/Year	Million Gallons per Year Reduction in Area		
100 AC	10%	20%	30%
20	54.4	5.4	10.9	16.3
25	67.9	6.8	12.6	19.4
30	81.4	8.1	16.3	24.4
35	95.0	9.5	19.0	28.5
60	162.9	16.29	32.6	48.4

Table II
Water Cost per 100 Acre
Irrigated Golf Course

20 inches applied per year (54,400,000 million gallons)		
Water District A	$0.50/100 cu. ft.	= $36,363/yr.
Water District B	$1.22/100 cu. ft.	= $88,727/yr.