

# Evaluation of the GGCSA BMPs

By Dr. Clint Waltz • University of Georgia

With a concerted effort to demonstrate the environmental stewardship of Georgia's golf course superintendents, the water conservation best management practices (BMPs) program began in 2004. After a year of coordination and education as to what BMPs were, GGCSA slowly began receiving completed BMPs from individual golf courses. On May 14, 2007 GGCSA presented BMPs from more than 90% of its member clubs to Dr. Carol Couch, head of Georgia's Department of Natural Resources (DNR). The 2004 Memorandum of Agreement with DNR called for 75% participation within the three-year period.

These "pioneering" efforts of golf course superintendents have proved fruitful. Superintendents are now recognized as leaders in water conservation, as demonstrated by Dr. Couch's 2008

Administrative Order allowing for golf course irrigation of areas other than greens. Georgia's golf course superintendents were also given a prominent role in developing the state Water Conservation Implementation Plan.

The GGCSA continues to encourage 100% participation in the water conservation BMP program. In 2008, the Georgia Golf Environmental Foundation (GGEF) provided funds to research the BMPs. The objective was to determine some general statistics on golf course water use and identify opportunities for additional conservation efforts.

Copies of completed BMPs were sent to the UGA's turfgrass extension specialist, Dr. Clint Waltz. Each course's documents was reviewed and entered into a database. The database allows for analysis of statistics and trends on water use and makes calculations on water

consumption and savings. As more golf courses submit their BMPs they are added to the database.

As of November 2008 there were 238 site-specific BMPs in the database (over 95% of the GGCSA membership). Using a conservative estimate of 400 golf courses in Georgia (based on the 2003 Georgia State University economic impact report showing an estimated 450 courses), 60% of the golf courses in Georgia have submitted BMPs. This means there is still opportunity to educate golf course superintendents and managers on BMPs for golf course water conservation, although most of these are not GGCSA members.

Although a general template for the BMPs was provided for golf courses in 2004, not all BMPs were submitted

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using the same format. Therefore, the amount and type of information contained in individual BMPs was variable. Slightly greater than 55% of the BMPs included information on annual water use. It is unclear how many of these courses track the actual water used or

simply estimate water use based on irrigation events and runtime. Of those reporting water use, it was from golf courses from diverse economic levels (e.g., daily fee or municipal to private) and within and outside the Level IV drought area. The question has been posed as to where the water is being used on the golf course (e.g., greens, tees, fairways, roughs, driving range,

clubhouse grounds). It is not possible to determine specific use areas from the BMPs, as the reported volumes were an annual total for the facility. Because of the diversity of the courses, methods of measurement and indication of specific year for the presented use, it would be inappropriate to present actual water use figures. These figures need to be monitored over multiple years using an established measurement protocol. Otherwise, any water use statistic is a single snapshot in time and not representative of variable rainfall years.

Looking at water sources, 70% of the respondents were using water from an on site pond, river, stream or lake. A total of 24% of courses had on site wells that may have been used directly or to fill a pond or lake. Only 5% reported using reclaimed water. The use of reclaimed water continues to pose challenges to Georgia's golf course (e.g., delivery) but remains a viable option as an alternative water source. **Less than 1% reported using municipal water as their primary source for irrigation.** It is these statistics that need to be better understood and presented to municipalities and the general public to demonstrate that golf courses are not using potable water for irrigation.

To gain an understanding of actual water use, some calculations can be made from the BMPs, although some assumptions must be considered:

(1) Irrigation calculations were limited to golf course acreage only. Some BMPs listed golf course use and water use around the clubhouse and grounds; and

(2) We accept the "standard" recommendation for turfgrass irrigation as 1 inch of water per week, supplemental to rainfall. Because Georgia has a 30 week growing season (April 1 to October 31), 30 inches of irrigation would be recommended assuming there was no rainfall during that time period. In actuality, irrigation should be less than 30 inches per year.

Using these assumptions and calculating the water use as reported in the BMPs, the average use was 14.06

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inches per acre per year. Golf courses, on average, are using 64% of the recommended water for a growing season. With a third assumption that course conditions meet players demands, at least from a wetness or dryness perspective, golf course superintendents are finding a balance between water use and course conditions.

The caveat to these calculations is that this is a snapshot in time and could vary depending on the rainfall across the state and within the growing season. None of the BMPs stated whether water use volumes were from "wet" or "dry" years. To determine a representative range for water use by Georgia golf courses, monitoring needs to continue for multiple years and employ a uniform, established measurement protocol.

Since 2004 the GGCSA has been a leader in demonstrating sound environ-

mental stewardship. Continued commitment to conservation and research can aid golf course superintendents through study of actual practices. Research can also identify opportunities for further conservation efforts. Golf course superintendents have established themselves as leaders in water conservation. It is imperative that they continue their efforts and then transcend golf, taking their learned knowledge and experiences to other related and non-related turfgrass industries. A culture of conservation will be created when the BMP concept and philosophy is adopted by all water users.

**ACKNOWLEDGMENTS**

This work would not have been possible without the support and cooperation of numerous groups and individuals, including the GGCSA and GGEF for funding and Clay Bennett, Kathy Evans and Claire Pendley who coordinated and assisted as my technical support staff. ●

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