

Research Update: Evaluation of the GGCSA BMPs

Clint Waltz
The 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 started in 2004. After a year of coordination and education as to what BMPs were, GGCSA slowly began receiving completed BMPs from individual golf courses. Then, on May 14, 2007 GGCSA presented BMPs from what totaled more than 90% of its member clubs to Dr. Carol Couch, Head of Georgia Department of Natural Resources (DNR). The 2004 Memorandum of Agreement with DNR called for 75% within the three year period. These "pioneering" efforts of golf course superintendents have proved fruitful, in that, golf course superintendents are recognized as leaders in water conservation, provided for Dr. Couch's 2008 Administrative Order allowing for golf course irrigation of areas other than greens, and gained a prominent role in development of the Water Conservation Implementation Plan (WCIP). However, the GGCSA recognized the importance of continued efforts in getting all courses using BMPs for water conservation and understanding the information that has already been provided. 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 the BMPs were sent to the UGA Turfgrass Extension Specialist, Dr. Clint Waltz. Each course's BMPs document was reviewed and entered into a developed data base. The data base will allow for analysis of statistics and trends on water use and to make more appropriate calculations on water use and savings. As BMPs have continued to be submitted to

GGCSA, copies have been sent to UGA and entered into the data base.

As of November 2008, there were 238 site-specific BMPs entered into the data base. This represented courses across Georgia and greater than 95% of the GGCSA membership. Using a conservative estimate of 400 golf courses in Georgia, the 2003 Georgia State University economic impact study 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, most of these are non-GGCSA members.

A general template for the BMPs was provided but not all BMPs were submitted 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 asked as to where the water is being used on the golf course (i.e. greens, tees, fairway, roughs, driving range, clubhouse grounds, etc.). It is not possible to determine specific use areas from the BMPs, 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. This is a figure that needs 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 onsite pond,

river, stream, or lake. Twenty-four percent had onsite wells that may be either used directly or to fill a pond or lake. Surprising low, 5% reported using reclaimed water. The use of reclaimed water continues to pose challenges to Georgia 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, demonstrating 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. Some assumptions must be considered. First, irrigation calculations were limited to golf course acreage only. Some BMPs listed golf course use and water use around clubhouse and other grounds. The second assumption was the “standard” recommendation for turfgrass irrigation is one-inch of water per week, supplemental to rainfall, and Georgia has a 30 week growing season (April 1 to October 31). Therefore, 30 inches of irrigation would be recommended, it would be expected that the actual amount would be less because irrigation should be supplemental to rainfall. Using these assumptions and calculating the water use as reported in the BMPs, the average use was 14.06 inches / acre / 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 caveats to these calculations are 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 use an established

measurement protocol.

Since 2004 the GGCSA has had many accomplishments in goodwill and demonstration of sound environmental stewardship. Continued commitment to conservation and research can aid golf course superintendents through study of actual practices. Also, research can identify opportunities for further conservation and program to groups that still need an understanding how golf courses can conserve water while provide enjoyable playing surfaces. 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 can be created when the BMPs concept and philosophy is adopted by all water users, golf course superintendents must continue to lead the water conservation efforts.

Acknowledgments

This work would not have been possible without the support and cooperation of numerous groups and individuals. It was the GGCSA and GGEF that funded this work. Also, I would like to recognize my technical support staff, Clay Bennett, Kathy Evans, and Claire Pendley, they kept this project moving and coordinated.