

BY STEVE AND SUZ TRUSTY

# WATER WORLD

BUDGETS,  
LABOR AND  
ENVIRONMENTAL  
ISSUES SHAPE  
AQUATIC HERBICIDE  
MANAGEMENT  
PROGRAMS

Managed well, ponds add to the aesthetic quality of a golf course, provide drainage basins and support irrigation. Water features often add sound and movement, cool the surroundings and provide a haven for wildlife. Last but not least, ponds might come into play, adding another challenging dimension for golfers.

On the other hand, ponds invaded by weeds and algae detract from the golfing experience and affect golfers' perceptions of course quality. Yet the nature of water features adds to the likelihood of weed encroachment. Ponds are usually small and shallow, allowing sunlight to penetrate, creating warm water that encourages weed growth.

The basics of pond management could be covered in a 101-level class (see info box on page 58). Yet each pond is essentially its own complex environment. Savvy superintendents combine the basics of pond management with observation, planning and implementation to fit the unique needs of their courses. A management program needs to be effective for the type of aquatic weeds and algae and be workable within the limitations of budget and labor availability. It also must be in compliance with governmental regulations from the local to national level.

#### **DUCKWEED AND FILAMENTOUS ALGAE**

At Milburn Golf and Country Club, an 18-hole championship course in Overland Park, Kan., there are two ponds – one is an acre, the other an acre and a half – that Bill Maynard, CGCS, and assistant superintendent Danny Huntsinger manage. Each pond is equipped with a two-horsepower pump and fountain for continuous water movement, which is one of the preventive components of their weed and algae management. Another is the buffer zone of turf-type tall fescue and Kentucky bluegrasses that surrounds both ponds. The width of the buffer zone varies but averages about 14 feet. For the area of the buffer zone that's in play, the crew uses string trimmers to maintain the height at 3.5 to 4 inches.



Duckweed and filamentous algae have been recurring problems with pond maintenance at Mulburn Golf and Country Club (right). Each requires a different product to manage. Photo: Milburn Golf and Country Club

At Seven Bridges Golf Club (below), the only problem with pond maintenance is surface algae along the shoreline when rainfall is inadequate. It's treated with copper sulfate. Photo: Seven Bridges Golf Club





“The aesthetics at that height fit the park-like look of our course,” Huntsinger says.

Maynard and Huntsinger also have a border collie to help rid the course of geese.

“Keeping that population away reduces the nitrogen levels in the ponds,” Maynard says. “We can tell through scouting when the ponds will start to act up based on temperature levels and the degree of sunlight each receives.

“Duckweed and filamentous algae have been recurring problems,” he adds. “We use a liquid aquatic herbicide (Reward) for the duckweed and pelletized copper sulfate for the algae. We plan the timing of applications primarily for prevention, making the first application just as active growth becomes visible in July and the second in August.”

Though Maynard and Huntsinger hold all pertinent pesticide application licenses, there are no special aquatic licenses required in Kansas, and the control products they use aren't restricted-use pesticides. Still, one of the two makes or supervises the applications, which are made from the banks of the ponds using a handheld sprayer. Both ponds can be treated in about 45 minutes – five minutes travel time and 20 minutes at each pond. The product costs about \$1,500 for a year's supply.

Additionally, Maynard and Huntsinger are planning to add a black dye application to their preventive program.

“Area superintendents are reporting good results with Black Oynx and LochNess,” Maynard says. “The darker water reduces the photosynthesis, thus limiting vegetative growth. Though black dye doesn't sound too pleasing aesthetically, it actually produces an almost mirror-like effect, reflecting the sky.”

#### ALGAE AND SHORELINE WEEDS

The 18-hole Leavenworth Country Club in Lansing, Kan., has two ponds – one is bigger than four acres, the other is about one acre – and neither is used for irrigation. Buffer zones consisting of a turf-type tall fescue base overseeded with wildflowers surround the ponds and range from 5-feet to 150-feet wide. The narrower sections of the buffer zones are cut to an 8- to 10-inch height with string trimmers, making it a playable rough. The wider areas are out of play.

“We allowed the widest section to naturalize as part of a budget cut, converting it to a no-mow zone to reduce operating costs,” says superintendent Mike Boaz. “We spot spray any noxious weeds, such as thistle, within the buffer areas but do little else maintenance-wise. It's become

a haven for wildlife. It also serves as a filter because water flows from the course through the buffer zone, is channeled into the main pond first, then into the smaller one.”

Triploid grass carp serve as a biological control agent for the submerged aquatic weeds. There were some carp in the ponds when Boaz started working at the course eight years ago. Since then, he's introduced between two and three dozen small grass carp each year.

“Despite those preventive measures, we've had an ongoing problem with algae that we've needed to control aggressively. We've also had to control shoreline weeds.”

Boaz, a certified pesticide applicator, treats the algae and weeds with Cutrine and Reward mixed together for surface applications using a 25-gallon electric sprayer. He uses a small, hand-paddled rowboat to work across the ponds, then travels around the shoreline to treat the weeds. Two individuals are needed in the boat, one to row and one to operate the sprayer. Boaz supervises those making the applications, each of which takes three hours from start to finish.

Previously, Boaz allowed some of the shoreline weeds to remain in the shallowest areas to lessen a more pressing problem – algae.

“In years past, we needed to treat every three to five weeks, depending on the water flow in the ponds,” he says. “This year, we began our attack earlier, making the first application in the spring just as pond temperatures warmed to the point of triggering growth. We followed with a second application about three weeks later. Despite erratic rainfall, we haven't had to treat again. It appears we've knocked the algae down enough so there's no incubation population sufficient to reestablish.”

The savings are significant, Boaz says. The aquatic products had been equaling about 25 percent of his total chemical budget – between \$7,000 to \$9,000 a year. This year, it's about \$2,000.

#### MITIGATED WETLANDS

The 18-hole Seven Bridges Golf Club in Woodridge, Ill., borders the Green Valley Forest Preserve and the east branch of the DuPage River. The club's course features a tributary creek, a lake and three ponds. The entire water surface is equivalent to 32 acres. The course serves as a storm water management system for the village, releasing controlled amounts of water into the

### Resources for aquatic herbicide management

- Internet resources can provide information about everything from the basics of balancing the pond environment to the identification of specific aquatic plants and algae to the details specific herbicides.

- The USDA National Invasive Species Information Center includes an Aquatic Species section: [www.invasivespeciesinfo.gov/aquatics/main.shtml](http://www.invasivespeciesinfo.gov/aquatics/main.shtml).

- The U.S. Army Corps of Engineers Aquatic Plant Information site provides aquatic-plant specific information: <http://el.erdc.usace.army.mil/aqua/apis/apishelp.htm>.

- Invasive Plant Management in Florida Waters contains a section about aquatic herbicide control: <http://plants.ifas.ufl.edu/guide/herbcons.html>.

- Washington State Department of Ecology's Aquatic Plants, Algae & Lakes covers aquatic plant identification and management:

<http://www.ecy.wa.gov/programs/wq/links/plants.html>.

- AquaPlant from the Texas Cooperative Extension Department of Wildlife and Fisheries Sciences at Texas A & M University offers aquatic plant and algae identification by common name and a visual identification: <http://aquaplant.tamu.edu/database/index.htm>.

*Editor's note: Part of an aquatic herbicide management program must include a review of the current regulations issued by governing agencies at the national, regional, state and local levels. Don't assume all Internet postings are up-to-date.*





Some of the ponds at Thunder Hill Golf Club are deep enough and have enough slope on the edges to reduce aquatic weed encroachment. Photo: Thunder Hill Golf Club

river downstream.

“Our ponds are mitigated wetlands,” says Don Ferreri, superintendent and manager of the course. “We worked closely with the Army Corps of Engineers from the design concept through construction. We embellished a couple of the ponds, relocating the fish temporarily and then reintroducing them.”

The buffer zones surrounding the ponds included in the original design meet Clean Water Act regulations. The zones are a combination of tall fescues and wildflowers. More wildflowers have been reintroduced periodically to keep variety in color and texture. The buffer zones add a challenge for golfers and beautify the setting.

“It certainly enhances our wildlife, attracting land and aquatic creatures,” Ferreri says. “We’ve had an Audubon connection from the beginning and have completed four of the six steps for certification.”

The original design was planned to keep the ponds in balance, and it’s working, Ferreri says.

“We have very low maintenance in the aquatic area,” he says. “The only problem we’ve had is some surface algae along the shoreline when rainfall has been inadequate. We’ve treated that

with copper sulfate in a granular form broadcast from the shoreline.”

Ferreri is a licensed pesticide applicator. Any applications are made under his supervision.

#### A FISH HATCHERY

One golf facility that has more ponds on its course than most is the 18-hole Thunder Hill Golf Club in Madison, Ohio. It has 67 ponds, partly because the property was used as a fish hatchery before it opened as a golf course in 1976. More than half of the ponds still are being used as a fish hatchery. The course stretches across 200 acres, including about 50 acres of ponds. About 20 of the ponds are tied together to feed the course’s irrigation system.

“Some of our watershed flows into the Grand River Basin, but we haven’t had any issues with regulations or restrictions because of the attention paid to maintaining balance within the aquatic environment,” says Todd Bishop, CGCS, PGA, who serves as the general manager and director of golf operations.

The fish hatchery ponds are leased to Jeff McKinney, who manages them and works closely with golf course superintendent James Rensel on the overall management program to

ensure nothing jeopardizes the water quality or fish population.

The ponds are deep enough and have enough slope on the edges to reduce aquatic weed encroachment. Several of the ponds also have white amur (grass carp) that feed on submerged vegetation. Buffer zones around the ponds vary in width from 10 to 40 feet. The buffer zones started with a fescue base that has become naturalized gradually.

The only herbicide needed to date has been Reward. It’s applied only as needed as a spot application using a hand sprayer or a wicking tool. An application is made in late spring as temperatures warm. A second spot treatment might be needed in late summer.

“Our two licensed pesticide applicators are trained in aquatics and know which weeds to target,” Bishop says. “Because of the number of ponds, the process is time consuming, requiring around 40 hours for each application. The product cost is about \$500 per application.” **GCI**

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