

Consider safety and purpose before you build a pond

■ Ponds add much to the beauty, value and enjoyment of a landscape. But they're not easy to install. They have to be well-planned and properly installed to save yourself problems later.

"Most ponds take a lot of time and money to build," says Dennis Ferraro, of the Douglas County Extension Office, Omaha, Neb., so you don't want to have to add even more investment due to poor planning.

Ferraro says proper planning includes:

- the size and shape of the pond;
- purpose behind the pond; do you want to attract wildlife, or solve a watershed problem;
- the type of plants do you want around or in the pond;
- type of materials on the floor of the pond; and
- safety and liability considerations.

"You have to plan, exactly, the shape of the pond, where it's going to go, everything about it," insists Ferraro.

Plants should be included as part of the pond design. "You do not want invasive plants growing across the entire pond," warns Ferraro.

Nor do you want to worry about tree roots invading the masonry around the pond. Maples or oaks are especially troublesome due to their long root systems.

Point of focus—You want the pond to fit well into the surrounding landscape, not overpower the view, so pond shape and size are important. Types of surroundings can be a golf course, residential areas or office buildings.

'An attractive nuisance'—Ponds increase liability concerns.

Ferraro says to learn what rules and regulations the city or county has on the books for pond construction.

"In many cities," says Ferraro, if the pond is more than two feet deep, you must have a locked fence around the property."

Design considerations—"My theory is to make the pond as large as you can for the area," advises Ferraro. "I haven't had anybody tell me, 'I wish I had made that pond smaller.'"

For protection against heavy rain, the pond should be able to hold an additional 6.5 inches of water in a 24-hour period.

"You need to calculate where the overflow and drainage are going to go. You

can't have everything going into a spillway," says Ferraro, "because a spillway goes into a neighbors property or street."

Ferraro says that in the heaviest storm conditions, the pond has to be able to divert a foot of rain in 24-hours.

Run-off—"What's in the run-off?" asks Ferraro.

"Is it from a sewage lagoon, or an area with a lot of chemicals, or is it run-off from an area where a lot of lawn insecticides are used?"

"Many of our new insecticides [pyrethroids] have very low toxicity to mammals," says Ferraro, but are highly toxic to cold-blooded animals.

"In those cases, you have to have a very well-documented IPM—Integrated Pest Management program—with low pesticide usage, or use non-pyrethroid pesticides, or find a way to divert the watershed and have an area where you have drainage, so the water drains around the pond."

Ferraro adds that many water plants are "super sensitive" to herbicides, especially broadleaf herbicides.

Ratios—The bigger the pond, the easier it is to take care of, says Ferraro.

"A big pond can make it's own ecosystem and it almost takes care of itself. If it's bigger than 50 ft. in diameter, there's very little maintenance," except in run-off situations.

Smaller ponds heat up quickly, which can harm plants and animals.

"You always want more deep area than shallow area," says Ferraro. "If you're

going to use [the pond] for irrigation, it should be 7 to 8 feet deep. If it's just for aesthetics, and you want native plant materials, and native animals, to be able to withstand the winter without having to take them out, it should be 3 to 4 feet deep.

The depth ratio between the uppermost portion of the bank to the pond floor should always be 3:1. For example, if the water is 1 foot deep at the top edge, the intermediate depth should be between one-and-a-half feet deep, and the depth at the floor should be 3 feet deep.

Materials. The pond floor must be coated with the proper material, or problems will occur almost immediately.

One of the best materials, according to Ferraro, is called bentonite. A volcanic clay, bentonite swells up in water, and seals the natural spaces in the soil. When a root tries to breach the surface, the bentonite closes around it.

Bentonite is mixed into the soil before being put on the floor of the pond, at a rate of 20 lb./sq. yd.

Bentonite, however, will kill fish by lodging in their gills and expanding. So do not stock the pond for at least two days after filling it with water.

It's also important that the workers wear dust masks when using bentonite. If inhaled, bentonite will expand in the lungs.

Ferraro doesn't recommend concrete, due to cracking. But some concrete contain elasticizers which allow the concrete to expand. And if you do use concrete, Ferraro recommends that you first put down 6 inches of sand.

Fiberglass is "great for small ponds," says Ferraro.

—Terry McIver



This pond, at Ohio's Westfield Country Club, was built between two 18-hole courses. Trees are placed farther back so that falling leaves are not a problem.