

Leaking Ponds

One of the most common farm pond problems is heavy water loss through leakage. The ability of the pond to retain water depends largely on the characteristics of the soil at the pond site. Most leaky pond problems can and should be prevented by cautious site selection. Before building a pond, be sure to test the capacity of the soil to hold water. Soils with a high clay content will minimize seepage since clay particles tend to swell when wet and, thereby, provide a good bottom seal. Add a truckload of clay to pond sites with low clay soil content.

Removal of woody trees and shrubs and thinning high numbers of burrowing animals (crayfish, muskrats, and beaver) are management options to prevent leaking ponds.

Bottom Seals

Although it is usually expensive, leaky ponds can be sealed using one or more of a variety of compounds. The most commonly used pond sealant is bentonite clay. Bentonite is most effective on sandy soils that contain insufficient amounts of clay. This clay has the capacity to expand up to 20 times its original size when moistened. For best results, bentonite should be spread evenly over the dry pond bottom at a rate of 50 lbs/100 ft (20,000 lbs/acre) mixed with the existing soil, moistened, and then compacted with a roller. Other sealants, including soluble salts and polyphosphate chemicals, are effective on certain soils. Laboratory analysis of the soil is essential to determine the appropriate type of sealant and its rate of application.

Another increasingly popular method of pond sealing involves lining the bottom with a flexible plastic or rubber sheeting of polyethylene, vinyl, or butyl at least 2 mm thick. To protect against punctures and tears, the pond liners should be covered by at least 6 inches of sand or fine soil. Plastic or rubber sheeting can be purchased from local hardware stores.

Burrowing Animals

Leaking ponds may be caused by burrowing animals such as crayfish, muskrats, and beaver, who construct their homes or “burrows” by digging into soil banks along the shorelines of waterbodies. Tunnels dug above the water level can decrease structural support of the embankment and increase the risk of washout during flood conditions. These hazards are multiplied in waters where burrowing animals are abundant and where water levels fluctuate. Rising and falling water levels often stimulate these animals to dig new burrows, increasing the potential for structural damage and water leaks.

If large numbers of burrowing animals and extensive tunneling activity are undermining the structural integrity of the dam, several control measures can be effectively employed. Efforts at total eradication are usually futile since burrowers from upstream waters or nearby ponds can migrate considerable distances and will continually reinvade the pond. Therefore, the control measures suggested below should be viewed simply as actions the pond owner can incorporate to reduce excessive numbers of crayfish or muskrats to a level at which structural damage and water leaks will be minimized.

Crayfish

Trapping crayfish is an effective method for control. Several types of trap are available from sporting goods outlets or can be made at home using 1/2-inch mesh chicken wire. Modified funnel-end commercial minnow traps are often used. The funnel openings should be enlarged to about 2 inches in diameter to allow for easy entry by large crayfish if this type of trap is used. Lift traps, similar to the ones used to catch saltwater crabs, are commonly used to catch crayfish. Simply lower the baited trap to the bottom, then quickly pull it up at frequent intervals. Meat scraps, fish heads, soybean cake, perforated cans of dog food, or almost any high-protein substance can be used as crayfish bait. For overnight or long trap setting times, you can enclose the bait in hardware cloth to prevent the trapped crayfish from eating all the bait.

The habits of crayfish strongly influence how easily they are caught. Crayfish overwinter in their burrows in the bottom muds or shoreline banks, emerging as the water warms. The opening of trout season roughly corresponds with the time when crayfish first become active in Virginia. The optimal water temperature range for crayfish is between 40°F (4°C) and 75°F (24°C). If temperatures are below or above this range, crayfish become inactive and quit feeding. Crayfish are nocturnal (active at night). Traps should therefore be set in late afternoon and left overnight.

An excellent method for preventing high numbers of crayfish is to stock and maintain a balanced population of fish. Trout, bass, catfish, and large bluegills (bream) are all predators of crayfish and reduce excess numbers. Other natural predators that feed heavily on both young and adult crayfish are: amphibians (bullfrogs, salamanders), reptiles (turtles, water snakes), waterbirds (herons, kingfishers, ducks, geese), and mammals (raccoons, otters, mink). These beneficial creatures should be protected and encouraged to live in or near your ponds. Natural predators, which act as biological controls, have the advantage of providing year-round protection from burrowing crayfish problems without the need for trapping.

Muskrats and Beaver

Muskrats and beaver can be discouraged from living in a pond by eliminating water plants and shoreline vegetation that provide food and cover for these burrowers. Muskrats prefer to feed on starchy aquatic plants, particularly cattails, bulrushes, reeds, arrowhead,

and aquatic grasses. Controlling the growth of these water plants and keeping the pond banks well mowed will limit muskrat populations. Physical barriers to prevent muskrats from tunneling into shorelines and earthen dams can be used to reduce tunneling. Lining the inner face of the dam with pea gravel, sand, rock rip-rap, concrete, cement board, or wire screening (1-inch mesh) will effectively discourage digging. These physical barriers should extend from 1 foot above the high water mark to at least 4 feet below the normal water level.

Trapping is the most practical method for controlling muskrats and beaver. They can be “live-trapped” with wire cage or box traps, or humanely killed using the steel traps set underwater. Traps should be set in runways, or den openings. If possible, trapping should be conducted during the winter when the fur is prime. Muskrats and beaver are valuable furbearers that represent a potential cash crop to the pond owner.