5-1-1987

Building/Renovating Stock Dams for Fish Farming

Marley Beem
South Dakota State University

COOPERATIVE EXTENSION SERVICE
SDSU

Extension Extra

ExEx 12004
May 1987
Wildlife & Fisheries

COLLEGE OF AGRICULTURE & BIOLOGICAL SCIENCES / SOUTH DAKOTA STATE UNIVERSITY / USDA

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by Marley Beem, Extension Aquaculture Specialist

If a new pond or dugout is in the future or if you will soon need to renovate an old one, a few adjustments may make it acceptable for sport fishing or for a commercial fish farming alternative to your normal farming operation.

Pond depth and winterkill

Shallow ponds will usually not support fish through the winter months because the oxygen is depleted under ice and snow cover. As a rule of thumb, your pond should be at least 15 ft deep over one fourth of its area to avoid winterkill.

To be safe, make it deeper. If you feed or fertilize, then even greater depths may be be needed to maintain enough oxygen during the winter.

Pond depth and weed problems

Weeds make fish harvesting difficult and use up oxygen. This leads to fish kills during the summer. Ponds more than a third covered by weeds pose a threat to fish.

Most weed problems can be avoided by minimizing the areas that are less than 3 ft deep. Rooted plants usually don't grow in depths greater than 3 ft because sunlight does not reach them.

Shallow edges should be graded to a slope of 3 to 1 (about 30 degrees). Excess soil from edge deepening can be used on the surface of the dam or spread at the water edge, provided proper drainage is maintained.

Fishing "piers"

If you plan on fishing with hook and line, have the bulldozer operator push up dirt from the pond bottom into piers. This allows bank fishermen access to more of the pond and gives the fish more shoreline.

Seining areas

Fish can be harvested with a seine if there is an area with a smooth and relatively flat bottom without any rocks or tree stumps. The water depth should be about 4 ft at this site.

If there is a pond drain, this seining basin might be constructed in a deeper part of the pond so that fish could be concentrated as the water level is drawn down.

If the fish are fed, the seining area can be anywhere along shore. Fish can be "corral seined" by leaving a seine in the water, feeding regularly between it and shore, and then pulling the seine in when fish are feeding.

Minimizing fish escape

If the watershed for the pond is 20 or more times larger than the surface area of the pond, heavy flows of water across the emergency spillway are likely. Fish will take advantage of these flows to escape.

One way to minimize this is to widen your spillway. This will have a shallower flow of water, making it less easy for large fish to escape.

You could also construct a fish barrier across the spillway and emergency spillway. Weld smooth 3/8-inch round metal bars horizontally to smooth, 3/4-inch round metal vertical support bars which are about 4 ft apart. The horizontal bars should be on 1 3/8-inch centers so that there is a 1-inch space between them.

This design is relatively self cleaning, but a clogged spillway barrier is a potential danger to your pond. Keep it clean manually if necessary.

Your Extension agent has further construction details.

Drains and trickle tubes

Drains are only expensive until you need them.

A drain comes in handy if you are managing the pond for fish. You can partially drain the pond to facilitate harvest. You can eliminate bullheads or other undesirable fish without the expense and trouble of poisoning.

Trickle tubes, or bottom water releases, draw water from the lower levels of the pond and discharge it. This is good for fish because the bottom water has no oxygen for much of the year. In ponds where fish are fed, bottom water can be especially harmful when fish wastes build up there.

Late summer or fall can be a dangerous time for fish since ponds may "turn over," mixing the top and bottom waters and leading to summerkill. Trickle tubes will not eliminate this possibility, but they help ward it off.

Diversion ditches and check dams

If you intend to manage the pond for sport fish and rely on natural pond fertility to support them, you don't want excessive amounts of water flowing through the pond. The water will flush out the nutrients.

To avoid this, a diversion ditch may be necessary to route most runoff water around the pond.

On the other hand, if you are feeding a complete diet, then pond flushing is beneficial. It reduces the amount of fish waste in the pond.

Ponds located in eroding watersheds may suffer from muddy water. If fish are fed a complete diet, this is not a problem. For sport fish ponds, muddy water is the equivalent of throwing a tarp over your garden.

One way to reduce the amount of mud flowing into a pond is to use a check dam above the pond. Water in a check dam is held long enough for most of the sediments to settle out before it enters the main pond.

Keeping wild fish out

Undesirable fish, such as bullheads and carp, can enter a pond from either below or above. Building a 4-ft drop into the channel below the spillway takes care of one direction.

Fish washing into your pond from other ponds higher in the watershed are more difficult to control. The only way to be sure of keeping them out is to work with other pond owners in the watershed. In most cases, rotenone is the method of choice. Your local conservation officer can provide details on obtaining a fish poisoning permit.

Site selection

Choose the best available site for construction of your pond. Anything in the watershed above the site is likely to end up in the pond.

Plowed fields are likely to be a source of mud, fertilizers, and pesticides. Avoid sites below feedlots or where large numbers of cattle will pollute or muddy the water. If there are existing ponds with undesirable fish above the site, chances are that the new pond will soon have them also.

This Extra is not intended to give complete information on building a pond. For more assistance, contact your local Soil Conservation Office. Information on fish farming can be obtained through your Extension agent. Ask also for Extension Extras 12001, 12002, and 12003.

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