



FISHERIES SERIES

# TIMELY INFORMATION

## Agriculture & Natural Resources

EXTENSION FISHERIES, SWINGLE HALL, AUBURN UNIVERSITY, AL 36849-5628

### *PADDLEWHEEL AERATOR DESIGN*

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**LOW OXYGEN!** Those can be frightening words to the commercial catfish producer who isn't prepared. One of the best pieces of equipment that a producer can have on hand to handle an oxygen depletion is a portable, tractor-driven aerator.

When oxygen gets low, fish may die unless some method of putting oxygen back into the water is used. The paddlewheel beats the water, breaking it into droplets that absorb oxygen from the air. An area of higher oxygen is created around the paddlewheel, which attracts the suffocating fish. Paddlewheels such as the one in the design (see page 2) are used only in emergencies. They run off the PTO of a farm tractor and require at least 40 horsepower to turn them effectively.

A paddlewheel can be made from a 1/4-ton truck differential. The spider gear of the differential should be welded together so that both wheels turn together. The rigid 4-inch pipe and bracing on the frame prevent the drive shaft from flexing and burning out the drive shaft bearings.

The tractor-driven paddlewheel aerator should be backed into the water so that the axles are parallel to the water surface. The most effective way for this aerator to operate is when the paddles are turning at 108 rpm, 21 inches deep. However, the most effective speed and depth may be too hard on a tractor so that a more moderate level of operation (running the paddles slower and shallower) may be necessary to prevent damage to the tractor. The paddles should turn toward the bank, forcing the water out into the open pond with a violent agitating action.

This piece of equipment can be constructed by the producer at a relatively low cost. They are commercially available from several machine shops in West Alabama.

The Fisheries Department at Auburn University tested the paddlewheel's effectiveness against other types of portable aerating equipment. They found that it rated highest among the portable aerators tested.

