

POND PREPARATION for Spawning Channel Catfish

Commercial production of food-sized channel catfish depends on reliable fingerling supplies. Current fingerling production hinges on the culture practice of placing ripe broodfish in ponds early each spring and providing suitable spawning containers.

Containers come in a variety of shapes and are commonly made of plastic or metal for ease of handling and long life. Most suitable containers have a volume of 10 to 15 gallons; in one end the containers have a round opening approximately 7 inches in diameter for fish entrance. Containers 2 to 3 feet deep in the water, setting on the pond bottom as level as possible, give the best results.

Fifty to 75 containers per 500 females are adequate if spawns are removed to the hatchery at 2- to 3-day intervals. Plastic fish baskets, coolers, and wash tubs have been used with success to collect egg masses and to transport them to the hatchery. Eggs in collection and transport stages need some manner of water exchange and/or insulation to maintain water temperature similar to that of the collection pond and dissolved oxygen near 6 ppm at all times.

Fish mate at random as their normal cycles allow, with each female spawning only once, while males may mate with several females over the course of the season. Males guard and tend the egg masses and are normally found in or around the containers.

Seasonal spawning success for channel catfish in ponds varies widely, but 40 to 60 percent of total females spawned is considered excellent, and rates as low as 20 to 30 percent are common. Not all factors that affect spawning

success are understood, but some conditions such as dissolved oxygen levels and water temperature have been researched. Fingerling producers who properly plan their broodstock selections, feeding strategies, and adequately prepare ponds routinely have greater success rates.

Fish

Mature fish are essential to spawning success. Brooders should be at least 3 years in age and weigh at least 3 pounds. To ensure good egg development, feed brood fish adequately throughout the year, at 1 to 2 percent of body weight, 1 to 4 days per week, depending on water temperature. A good rule of thumb is to feed 2 days per week in spring and fall, 1 day per week in winter, and 3 to 4 days per week throughout the summer. In summer, daily feeding is not necessary if fish are fed what they will readily consume. Any catfish foodfish production feed with 28 to 32 percent protein is adequate. Having forage fish available the year around also promotes excellent brood stock health and egg development.

Fathead minnows, golden shiners, and crayfish are good forage species. Do not stop feeding brood stock at spawning time. Fish must have an adequate diet to ensure spawning success and good egg quality.

Water Quality

Excellent water quality is essential to spawning success. The best spawning results when dissolved oxygen levels do not drop below 5 ppm; morning-dissolved oxygen levels below 3 ppm even for a brief period usually result in reduced or no spawning. To ensure excellent brood pond water quality, use a new or recently renovated pond that has been thoroughly dried. For reasons not fully understood, spawning containers may be left unattended by males and poor egg quality results when older ponds are used. Ponds that have previously been in use for fingerlings or foodfish production must be drained and bottom soils dried or exposed to air for several months before use as brood ponds. For this reason, plan your brood pond space for spring by selecting and designating the appropriate ponds during the fall. Failure to do so is a major mistake.

Placing brooders in well-prepared ponds just before spawning season seems to initiate good spawning rates. March and April, depending on your location, are ideal times to stock brooders into spawning ponds. Spawning in the Mississippi south delta area may begin as early as mid-April, while spawning in areas north of Belzoni typically starts in early May.

Stocking Rates

Another way to ensure good spawning success is to stock brood ponds at rates of 800 to 1,200 pounds per acre. Male to female ratios can be adjusted but do not adjust to less than two males for every three females. Be sure to check the percentage of males yearly, since mortality in older groups of brood stock, due to fighting and disease, is high.

Stocking grass carp at 25 per acre is a common practice to control aquatic weeds, which can interfere with management of the pond. Dense stands of rooted aquatic weeds,

e.g., *Najas* or *Chara*, may cause pH values to exceed 9.5, even in well-buffered waters, and discourage spawning activity or cause poor egg quality.

Temperature

Although temperature is difficult to control in large, open ponds, it usually affects the onset and the termination of spawning. Spring spawning activity usually begins when morning water temperatures are 72 degrees Fahrenheit or above for several days. Late-season, morning temperatures (June or later) above 86 °F for more than a few days usually terminate spawning. Activity may restart if water temperatures fall back to 80 °F within 2 weeks.

Problems

During the season, and in ponds with few or no fish spawning, check for water quality and fish health. (Dissolved oxygen and pH are discussed in the **Water Quality** section.) Gill parasites, such as *Costia (Ichthyobodo)* or *Trichophrya*, and bacterial infections, such as Enteric Septicemia of catfish, may cause spawning failure. Take a fish sample to your state diagnostic facility and/or consult your area or state Extension specialists for treatments. If you cannot isolate a cause, moving the brood stock to a freshly filled pond often initiates spawning.

Records

The importance of records cannot be emphasized enough. For your brood ponds, record all relevant numbers, including previous pond history, draining dates, refilling dates, number of fish by age, sex and weight, number of spawns collected, and weed or water quality problems. Soon after each season, look for and record ideas that worked and/or failed.

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