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AN OVERWINTERING, FEEDING STUDY OF CHANNEL CATFISH IN CAGES*

Commercial production of channel catfish (*Ictalurus punctatus*) requires that fish be available year around. This has led to the practice of feeding during winter months. Although there has been little research on the subject of winterfeeding of catfish in cages, a commercial caged catfish operation in western Arkansas has successfully overwintered food-size catfish in large cages (9m³) (Newton, 1980). Burke and Robison (1980) overwintered catfish fingerlings in small cages (1m³) and found that fingerling survival and weight gains were satisfactory. This study was a continuation of that experiment, utilizing larger size fish. Catfish averaging 147 g were stocked 30 October 1981 (at the rate of 200 fish per cubic meter) and harvested 8 March 1982. Two hundred fish were stocked in each of six one cubic meter cages and floated in a 1.6 ha farm pond located at the University of Arkansas Research Center at Pine Bluff, Arkansas. Each cage was constructed of 5 x 5 cm pine with 1.2 cm mesh. Each cage had a solid plywood bottom installed with an inside feeding ring made of 3.2 mm plastic mesh placed around the bottom ring of the cage.

Catfish in three cages were fed a 32% protein sinking catfish ration. Feeding rate was based upon daily water temperatures (Table 1). The remaining three cages received no supplemental feed and served as the control treatment. Fed fish received a total of 17 kg per cage, of a 32% protein ration over the entire period, and were fed on 51 of 143 days. Average water temperature was 9°C and ranged from 3.8°-17°C. There was total ice coverage on the pond for 15 continuous days during the period 9-23 January.

Fed catfish gained an averaged of 1.5% while nonfed fish experienced an average loss of 8.5% (Table 2). This loss was similar to, although greater than, that reported by Robinette and Newton (1981) and Lovell and Sirikul (1974) for overwintering catfish in ponds. There was no mortality in any of the six cages.

Results of this study and the previous experiment (Burke and Robison, 1980) indicate that catfish may be overwintered in cages, and that they should receive supplemental feeding according to the water temperature. Although feed conversion was high (38 units fed to 1 unit gain), only a small amount of feed was actually fed during the winter months. Moreover, if feed conversion is calculated on the basis of the final weight difference between fed and nonfed fish, the ratio is much lower (3.8 units fed to 1 unit of advantage). Unpublished research conducted at the University of Arkansas at Pine Bluff with catfish fingerlings reared in tanks and not fed revealed that a percentage of the fish will not resume normal feeding when water temperature rises in the spring. In addition, it has been demonstrated that the condition factor of unfed fish deteriorates over winter and therefore, fish are more susceptible to epizootics (Lovell and Sirikul, 1974). Thus, winter feeding of catfish ensures healthy, active fish for the following warmwater production season. Overwintered catfish may also provide fresh fish year around for home use or local sales by small-scale farmers.

Results of this experiment are preliminary with respect to the feeding regime for caged catfish during winter, and additional research should be conducted on winter protein requirements. Feeding schedules should also be closely investigated to determine efficiency for both fish and the farmer.

*Published with the approval of the Director of the Arkansas Agriculture Experiment Station.

Table 1. Percent ration fed to caged catfish relative to daily water temperature during winter, 1981-82.

Percent body weight fed	Water temperature (celsius)
0.5	<10 (Fed fish every 3rd day)
1.0	10 - 16
2.0	16 - 21
3.0	21 - 24
4.0	24 - 27

Table 2. Average weight changes and percent survival for catfish overwintered in cages at UAPB, 1981-82.

Fed cage	Total stocked weight (kg)	Total harvested weight (kg)	Weight change per cage (g)	Percent weight gain or loss	Percent survival
1	29.17	29.54	370	+1.3	100
2	29.85	30.28	430	+1.4	100
3	29.09	29.65	560	+1.8	100
Average	29.37	29.82	453	+1.5	100
Nonfed cage					
1	27.89	25.11	-2,780	-10.0	100
2	27.98	25.65	-2,330	-8.3	100
3	26.19	24.31	-1,880	-7.2	100
Average	27.35	25.02	-2,330	-8.5	100

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