

FEEDING OF CHANNEL CATFISH FINGERLINGS IN MILD AND SEVERE WINTERS IN MISSISSIPPI^a

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Abstract: A feeding study with channel catfish fingerlings (*Ictalurus punctatus*) was conducted in the winters 1975-76 and 1977-78, a mild and severe winter, respectively. In both years, fish in 3 ponds were fed 3 days per week and fish in 3 ponds were fed 6 days per week. In the 1975 study, fish fed 3 and 6 days per week averaged 10% and 45% weight gain with a mean feed conversion of 2.63 and 2.90, respectively; fish fed 6 days per week had significantly ($p < .10$) greater weight gains than the fish fed 3 days per week. In 1977 fish fed 3 days per week gained an average of 24% and had a mean conversion of 1.98. Fish fed 6 times per week had an average weight gain of 29% and a mean feed conversion of 2.50. This was not significantly ($P < .10$) different than the fish fed 3 days per week.

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The advantages of winter feeding channel catfish were demonstrated by Lovell and Sirkul (1974). They found that 0.5-kg fish not fed during the winter lost weight, while fish that were fed on alternate days or on warm days (> 12.2 C) gained weight. Reagan and Robinette (1975) found that 0.4-kg channel catfish gained an average of 36% of body weight over-winter when held in the same pond with rainbow trout (*Salmo gairdnerii*) which were fed 6 days per week.

Winter growth of fingerling channel catfish associated with different feeding schedules has not been documented. The objective of this study was to evaluate fingerling growth over-winter when fed 3 days or 6 days per week, during two winter periods (1975 and 1977).

METHODS

On 26 November 1975 channel catfish averaging 11.9 g were stocked into six 0.04-ha ponds at a rate of 37,050 per ha. The fish were fed a 35% protein floating feed at a rate of 1% of body weight per day fed. Fish in 3 ponds were fed 3 days per week and fish in 3 ponds were fed 6 days per week. Feed quantities were adjusted every 2 weeks based upon an assumed feed conversion of 2.0. On 26 March 1976 the fingerlings were harvested and weighed.

On 8 December 1977 channel catfish averaging 32 g in weight were stocked into six 0.04-ha ponds at a rate of 12,350 per ha or one third of the stocking rate used in 1975. The same feed, feeding rates, and experimental design were used as in the 1975 feeding trial. On 8 April 1978 the fish were harvested and weighed.

A 3 m² feeding "ring" constructed of 2.54-cm diameter plastic pipe was used in both winters. A one-way analysis of variance was used to compare difference in weight gain obtained in the two feeding regimes.

RESULTS AND DISCUSSION

The winter of 1975 was relatively mild with surface water temperatures averaging 12.8 C from 1 November 1975 through 30 March 1976. The mean percentage weight gain of fingerlings that were fed 3 days per week was 10% and weight gain of the fingerlings fed 6 days per week was 45% (Table 1). There were significant differences between weight

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gains of fish for 3 day and 6 day feeding regimes ($P < 0.10$). One group of fish fed 3 days lost 13% of its initial weight. Average weight gain calculated without these data was 21%. Feed conversion averaged 2.63 for the fingerlings fed 3 days per week; those fed 6 days per week averaged 2.90.

The winter of 1977 was relatively severe. Surface water temperatures averaged 7.7 C from 8 December 1977 through 8 April 1978. Fingerlings fed 3 days per week averaged 24% gain in body weight. Fingerlings fed 6 days per week averaged 29% weight gain (Table 1). There were no significant differences ($P > .10$) in gain between fish cultured on the 2 feeding regimes.

Table 1. Effects of 2 feeding frequencies on winter weight gain and feed conversion of channel catfish fingerlings.

Feeding Frequency (days/week)	Percent Weight Gain		Feed Conversion	
	1975-76	1977-78	1975-76	1977-78
3	17	20	3.13	2.44
3	25	23	2.13	2.08
3	-13	30		1.43
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Mean	10 ¹	24 ²	Mean	2.63 ¹
6	60	25	1.98	2.68
6	28	20	4.24	3.57
6	48	43	2.47	1.24
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Mean	45 ³	29 ³	Mean	2.90 ¹

^aTreatment means with the same superscript are not statistically different at $P < 0.10$.

Feed conversion averaged 2.50 for fish fed 6 days per week and 1.98 for fish fed 3 days per week. There were no significant differences ($P > .10$) between feed conversion for the 2 feeding regimes.

Water temperature appears to be the primary factor that influenced weight gain during this study. When fingerlings were fed 3 days per week, the average weight gain was essentially the same over both winters (disregarding the pond in which fish lost weight). However, fish fed 6 days per week gained approximately one-third more weight in 1975-76 than the fish cultured in 1977-78. We attribute the difference in weight gain at the higher feeding rate to an increased rate of ingestion and digestion during the warmer winter. The difference in stocking rates and fingerling size probably had little effect on the outcome of these trials since the initial biomass was essentially the same in both cases. Fish on the 3 day feeding schedule had the same relative percentage weight gains, but fish on the 6 day schedule did not gain weight equally over the two different winters.

CONCLUSION

Channel catfish fingerlings will show good growth when fed even during severe winters in the southeastern United States. Fish should be fed at least 3 days per week and more often during extended mild temperature periods.

LITERATURE CITED

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