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**9. ABSTRACT**

Year-round production of catfish appears desirable, because processors could utilize facilities more fully and ensure a constant supply. Year-round production also could result in a lower consumer price and thus increase catfish sales. Four major factors influence catfish production -- feed, fingerlings, water, and labor -- and costs of over-wintering would be affected by each. 1) Since fish may lose weight during the winter even though fed a maintenance ration, feed costs are increased without corresponding increases in the value of the product. 2) Fingerling costs for year-round programs should not vary greatly although those for summer and fall-stocked fingerlings may be slightly higher and have a greater risk of death loss. 3) Harvest costs are increased during summer months since fish are more subject to oxygen stress at that time. Conversely, with winter or cool weather harvest, less aeration is required in transporting fish. During colder weather catfish can be transported without water or aeration. 4) Fish production requires limited labor except at harvest and as winter traditionally has been a time when labor was free from other production activities, it would be an advantageous harvest period. Over-wintering catfish thus incurs both additional cost and additional risk for open pond production. To increase processing efficiency by year-round operation, seasonal price differentials great enough to overcome cost and risk differentials must be instituted.

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# COST of OVERWINTERING CATFISH in ALABAMA

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CONSUMER DEMAND for catfish exists year round. The supply from producers, however, has been highly seasonal.

Year-round production appears desirable because processors could utilize facilities more fully, and ensure a constant supply. Year-round production could result in a lower consumer price, and thus increase catfish sales. Before year-round operation is attempted, producers should give careful consideration to factors involved in seasonality of production.

Due to biological factors, catfish discontinue feeding when water temperature falls below 60°F. Since most Alabama producers raise catfish in open ponds, control of water temperature cannot be maintained. If catfish are kept overwintered in ponds, those that have not attained harvestable size at the beginning of cooler weather will require a holding period until the water is warmer and feeding resumes. Unless the fish are fed a maintenance diet during this period, a net loss in weight might ensue. The loss in feed efficiency, the additional labor, and the slower capital turnover represent costs to the producer.

Four major factors influence catfish production: feed, fingerlings, water, and labor. Costs of overwintering would be affected by each.

Catfish consume a relatively high protein diet. The price of feed during 1973 and 1974 increased with the shortage of fish meal and the increase in price of substitutes, especially soybean meal. Therefore, feed conversion has become crucial in catfish production. When feed costs exceed 50% of the market value of the fish, total returns may not cover total costs of production. Limited data available indicate catfish attain the optimum feed conversion ratios when water temperature is between 60° and 80°F. Since

fish may lose weight during the winter even though fed a maintenance ration, feed costs are increased without corresponding increases in the value of the product.

Production of catfish fingerlings is geared to the natural reproductive cycle although spawning can be induced artificially at different times. The size of fingerlings is controlled by stocking rates. Under existing production techniques, 2 years are required to produce marketable fish. Normally, after spawning and hatching the fingerlings are overwintered and stocked in food fish ponds the following spring. Year-round harvest of food fish would require year-round supplies of fingerlings. Fingerling costs for year-round programs should not vary greatly although summer and fall stocked fingerlings may be slightly higher and have a greater risk of death loss.

Water is the one indispensable factor in fish production. With a natural watershed pond, draining and harvesting operations are predetermined by the season. If the pond is harvested in summer, restocking cannot occur until the pond is refilled by rainfall. With spring or well-filled ponds, time of harvest may be less crucial.

Harvest costs are increased during summer months since fish are more subject to oxygen stress. Conversely, with winter or cool weather harvest, less aeration is required in transporting fish. During colder weather catfish can be transported without water or aeration.

Fish production requires limited amounts of labor except at harvest. Whether ponds are drained or fish are seined from ponds, labor requirements at harvest are increased. With drained ponds, labor availability is crucial to prevent losses of fish due to oxygen

stress. As a result, producers have attempted to harvest ponds at a time in least conflict with other farm enterprises. Traditionally, winter has been a time when labor was free from other production activities. This possibly has encouraged spring stocking on many Alabama farms.

Overwintering catfish thus incurs both additional cost and additional risk for open pond production. Data from two producers stocking the same size fingerlings but harvesting at different dates are shown in the table. Both producers fed floating feed, and the period between stocking and harvest was approximately

| Stocking date               | Winter harvest<br>April | Summer harvest<br>September |
|-----------------------------|-------------------------|-----------------------------|
| Pounds stocked/1,000*       | 60                      | 60                          |
| Harvest date                | February                | July                        |
| Pounds harvested/1,000*     | 1,087                   | 800                         |
| Production days             | 300                     | 300                         |
| Net pounds harvested/1,000* | 1,027                   | 740                         |
| Feed efficiency             | 1.5                     | 1.9                         |

\* Pounds per 1,000 fingerlings stocked.

the same. The summer harvest producer raised 287 lb. less fish than the winter harvest producer. The winter harvest producer had better feed efficiency and, assuming a feed price of \$0.15 per lb. netted \$0.225 per lb. over feed costs if fish sold for \$0.45 per lb. If the production amounts were equal, summer harvest would require at least a \$0.06 per lb. price differential above the winter market price to cover the difference in feed conversion ratios. However, since winter harvest also had a production differential, at least an additional \$0.08 price differential would be necessary to equate returns for the summer harvest. In effect, summer harvested fish would require a sale price of \$0.59 per lb. to equate net returns to winter harvested fish. Unless profit opportunities are increased for summer harvest, producers will continue the trend toward spring stocking and fall or winter harvest.

Catfish producers, like other farm operators, attempt to conduct their operations in the most efficient manner in order to maximize profits. To increase processing efficiency by year-round operation, seasonal price differentials great enough to overcome cost and risk differentials must be instituted. Higher prices for summer harvest catfish must be justified by higher consumer prices during the summer months. If consumer demand will not respond, then alternatives such as seasonal processing and storage should be considered.