LOW-INPUT SHRIMP FARMING DEMONSTRATION

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Over the past few years, freshwater shrimp farming has become very popular in Kentucky. Aerators, pond-side electricity, substrate, and high stocking densities are used to raise shrimp intensively. The majority of people contacting extension specialists for information about shrimp production do not have or can not afford the resources needed for intensive culture practices.

During the 1970s and early 1980s, farmers and researchers typically produced freshwater shrimp without aeration and could grow 300-900 lb/ac. Harvest yields were related to the number and size of shrimp stocked. The data indicated that bigger animals could be grown if ponds were stocked at lower densities, or with larger juveniles rather than 7-day post larvae.

With high stocking densities, aggressive feeding schedules, and no aeration; the risk of low oxygen concentrations and the loss of a shrimp crop is high. However, it is generally accepted that poor water quality and low oxygen are uncommon when daily feeding is no more than 25 lb/acre. To demonstrate low-input shrimp farming practices, a 0.5-acre pond in Hopkins County, Kentucky was stocked with 4000, 0.5-g freshwater shrimp (8,000 shrimp/acre). The pond was fertilized with 125 lb (250 lb/ac) of alfalfa meal 14 days before stocking. Juvenile shrimp were released into the pond on June 13, 2002. Daily feeding began at 10 lb/acre but did not exceed 25 lb/acre. Aeration was not used.

The pond was harvested on September 28 -- 107 days after stocking. Approximately 200 lb of shrimp (400 lb/ac) were captured. The average size of each animal was 35.2 g, or 13 shrimp to the pound (13 count). Shrimp were fed a 35% protein, sinking pellet and a total of 723 lb. The food conversion ratio was 3.6 (lb feed/lb gain). Survival was 64%. It seems likely that harvest yield and shrimp size would have been significantly larger if the juveniles had been stocked before June 1 rather than on June 13.

Water quality was measured during August and September when feeding, temperature and oxygen demand were greatest. The dissolved oxygen concentration averaged 6.8 mg/L (temperature, 76-81F) with the lowest value at 4.8 mg/L. Total ammonia nitrogen concentration was never higher than 0.3 mg/L and pH ranged from 7.8-8.5. Total alkalinity and total hardness were 27 mg/L and 230 mg/L, respectively.

Assuming a price of $7.00-8.00/lb for 400 lb of shrimp and subtracting the costs of food, fertilization, and juvenile shrimp (Table 1), the value of shrimp harvested by this cooperator was between $1,695 to $2,095/acre. The farmer in this

project owned a pond that already contained water, possessed the equipment and supplies needed, and had family help for harvest. A potential producer must consider additional expenses such as: loan financing, pond construction, liming, pumping, mowing, harvest labor, nets, purging tanks, and ice. However, with low-input farming, there are no costs associated with installing electric power on pond banks, the purchase of aeration equipment and substrate, or electricity to operate aerators.

Poor water quality can cause the death of a crop and the loss of an investment (juvenile shrimp, feed, fertilizer, etc.). Low oxygen levels could occur using intensive or low-input methods, with or without aeration. While the risk is small for low-input farming, oxygen problems are possible, especially in ponds greater than 6 feet deep. Nonetheless, low-input practices may provide an opportunity for farmers with limited resources, or ponds in remote locations, to profit from freshwater shrimp farming.

Table 1. Stocking, fertilization and feeding costs (per acre) for a low-input freshwater shrimp farming demonstration in Hopkins County, Kentucky -- 2002.

Item	***Quantity***	***Price***
Juvenile shrimp	8,000	$ 800
Alfalfa	250 lb	$ 35
Feed	1450 lb	$ 270
Total		**$1105**