

An Innovative Approach To Market Live Fish At Premium Price- Diversification Initiative

Vikas PA & Shinoj Subramannian

ICAR-Krishi Vigyan Kendra (Ernakulam) of ICAR

Central Marine Fisheries Research Institute, Narakkal, Kochi, Kerala - 682 505.



Fish vending is getting diversified like agriculture to meet the requirements of changing consumer preferences (Joshy et al 2007). Delivering dressed and ready-to-cook fish at consumer door steps is a popular method that gives lot of convenience to the consumers (Rujikiatkajorn 2003). However, there is a consumer segment who are concerned on fish quality and they prefers to visit the market and choose their fish.

Subsequent to media reports on adulteration

in fish, there has been growing concern about the quality of fish sourced from the market also (Fiorino et al 2018). This has led to on-farm fish vending where the consumers visit the farm, see live fish, and purchase. Less road accessibility to most of the farms is a limitation (Diehl 2020). Live fish vending is an extension of on-farm fish vending where instead of consumers visiting the farm, live fish is transported to the market. This type of fish marketing is gaining popularity in recent times. The live fish vending unit can also

be made mobile so as to reach the doorsteps of consumers.

Live fish vending requires skill and infrastructure to carefully harvest, transport, maintain, and handle the fish. Obviously, the cost would be high and maybe commercially viable only in limited places where the consumers are looking for quality products without considering the cost (Engle 2010). The present study evaluates the pros and cons of a live fish vending venture.

Materials and methods

Suitable species: It is important to note that not all fish species are suitable for live fish vending. A list of species suitable for live fish vending, appropriate marketable size and salinity is provided in Table 1.

Table 1. Fish species suitable for *live vending*

Sl No	Species	Appropriate Size (gm)	Salinity (ppt)
1.	Tilapia	250 to 450	0
2.	Asian Seabass	800 to 1500	5
3.	Pearl spot	120 to 200	5
4.	Red Snapper	500 to 1200	5
5.	Giant Trevally	500 to 1200	10
6.	Crab	100 to 400	10
7.	Anabas	100 to 200	0

Vending unit

1. **Building:** Building with seamless Polyurethane (PU) flooring and 5 feet tall plastered masonry wall at three sides

leaving open area in the customer side and PU coated inside. Ceiling using 6.0 mm thick PVC TKT panels (light colour) equipped with electrical LED spot lights to fish tanks and cutting table. The open space between wall and ceiling needs to be covered using bird proof netting. Waste water drain alleys with stainless steel gratings needs to be fixed. In addition, covered area is required to dispose solid wastes by converting into organic manure.

2. **Power back up:** Sufficient capacity Generator set
3. **Aeration unit:** 360 litres per minute capacity aeration unit along with necessary aeration lines and injectors.
4. **Water storage:** Fresh water storage tank minimum 5000 litre capacity in shaded area and seawater storage tank minimum 1000 litre capacity in open area to facilitate seawater ageing. Both the tanks need to be equipped with aeration facility and bottom discharge valve to occasionally drain wastes. The sea water lines must be with anti-corrosive piping. Minimum fresh water requirement per day is 6000 litres and sea water requirement per day is 400 litre
5. **Fish tanks:** Minimum of two numbers of Fibre reinforced plastic (FRP) tanks each 1500 litre capacity and having wall thickness 8 mm placed side by side and connected with single biological filtration unit (placed 5 feet from water level) are required for maintaining one species. Vigorous aeration needs to be ensured in these tanks.
6. **Water cleaning unit:** Biological filters of minimum 100 litres capacity 3 Nos
7. **Fish cutting table:** Cutting table made of Stainless steel and equipped with sink, water connection and solid waste chute.
8. **Fish handling tools:** Scoop nets minimum 5 numbers and stainless steel trays minimum 5 numbers
9. **Weighing balance:** Minimum 1 number 10 kg capacity

10. Trolley: 250 kg capacity 1 number.
11. Live fish transportation vehicle: Sufficient load carrying capacity carriage vehicle equipped with live fish transport tanks having wall thickness 10 mm, two numbers minimum 750 litre each capacity, Oxygen cylinder and Oxygen injector. Battery power unit is required to operate aerator. Scoop nets of size 2 feet, minimum 3 numbers required in the vehicle.
12. Water quality monitoring system: Portable water quality test kit 1 number and hand refractometer 1 number.
13. Water pump: Immersible water pump of sufficient capacity to exchange water in the tanks
14. Consumables: Low electrical conductivity Coir pith, Composting microbial culture.

Operating procedure

1. Pre-harvest care: Feeding the fish need to be stopped 24 hours prior to harvest.
2. Harvesting: Utmost care should be taken while harvesting fish meant for live vending. There should not be any harvest stress or physical damage. Smooth meshed scoop nets are recommended.
3. Transportation: Water from the same pond where fish is reared should only be used to transport. Adequate aeration and supplementary oxygen need to be provided. Transportation should be carried out during early morning or evening hours only particularly in summer season to avoid heat shock. Ice blocks may be kept around the tanks to reduce water temperature in case of long-distance transportation.
4. Maintaining water quality: The fish tanks need to be filled with saline water or fresh water depending upon the species. The filtration units have to be made operational three days prior to fish stocking. The ph and Ammonia levels need to be checked two times daily and ensure ph in the range 7 to 8 and Ammonia NIL. Water exchange needs to

be done if the ph level varies beyond specified limits. Filter cleaning and water exchange needs to be done as soon as Ammonia level detected. The recommended maximum retaining time of live fish in the vending tanks is 48 hrs. Feed should not be administered in the display tanks.

5. Waste disposal: The fish dressing generates wastes at the rate of 5 to 20 per cent of the whole weight. This can be composted and converted into nutritionally rich manure. The fish waste has to be mixed with equal volume of low electrical conductivity coirpith and subsequently sprayed aerobic composting microbial inoculums as per dose specified by the manufacturer. This mix need to be kept in windrows under a roof having sufficient air circulation and turned once in 10 days to convert into organic manure.
6. License: local self government registration, Food Safety and Standards Authority (FSSAI) registration and legal metrology registration are required.

Reference

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