

Post-Harvest Handling of Fish

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SUMMARY

The word fish is commonly used to describe all forms of edible fish, mollusks that include clams and oysters and crustaceans like the crabs and lobsters that inhabit an aquatic environment. Fish from the marine and freshwater body of the world have been a major source of food for humans since before recorded history. Harvesting wild fish from fresh and marine waters and raising cultured fish in ponds were practices of ancient Egyptians, Greeks, and other Mediterranean peoples. Processing techniques such as sun-drying, salting, and smoking were used by these ancient peoples to stabilize the fish supply. Modern methods of processing and preservation have encouraged the consumption of many species of fish that are popular throughout the world.

INTRODUCTION

Post-harvest handling is a crucial stage in the seafood supply chain, directly influencing the quality and safety of fish products. It encompasses the activities undertaken after fish are caught or harvested, including sorting, cleaning, preservation, and packaging. Proper post-harvest handling is essential to maintain the freshness, nutritional value, and sensory attributes of fish, ensuring that consumers receive high-quality seafood. Fish processing is a critical component of the global seafood industry, transforming raw fish into a variety of products that are enjoyed worldwide. While the specific techniques may vary depending on the type of fish and intended market, the overall goal remains the same: to ensure the safety, quality, and freshness of the final product.



Handling

The intrinsic and extrinsic qualities of fish vary considerably depending upon the location of the fishing, species of fish, water quality and harvesting techniques used. The primary objective of any handling method is to preserve the quality of the fish by bringing down the temperature near to 0°C as quickly as much possible. The factors such as delay in handling and chilling the catch, poor temperature control in the fish hold, damage from rough handling, poor standards of gutting, bleeding and washing the fish and mechanical damage due to the overfilling of the containers have a deleterious effect on the quality of fish and result in reduction of shelf life and in the loss of weight of the fish.

Handling of fish at harvest / Onboard

Maintaining the quality of fish begins with harvest and carries through the harvest-to - consumption. Harvested fish must be immediately stored in a low-temperature environment such as ice or refrigerated seawater. There are, however, several constraints on handling the fish; the important among them are the bacteriological, chemical and physical processes that cause degradation of fish. The chilling process slows the growth of microorganisms that live in fish and inhibits the activity of enzymes. Because fish have a lower body temperature, softer texture, and less connective tissue than the animal that live on the land, they are more susceptible to microbial contamination and structural degradation. If immediate chilling is not possible, then the fish must generally be sold and eaten on the day of the harvest. The surface of dead fish & shellfish are ideal growth habitats for bacteria and the end result of such activity is spoiled fish. Reduction of temperature can prevent the growth of

many bacteria that cause the spoilage. Chemical breakdown due to oxidative and enzymatic reactions can lead to off odors and flavors and rancidity. Digestive enzymes can initiate decomposition in the dead fish. However, fish cooled in refrigerated seawater absorbs salt from the water. For this reason fish that is destined for sale on the fresh or frozen market may be held in refrigerated seawater for only a limited amount of time. The addition of salt during canning or smoking processes is adjusted in order to compensate for any absorbed salt.

Post-Harvest Handling on land

Post-harvest handling of the fish on land involves transportation of the catch, preprocessing the raw material and processing it to the desired product. Pre-processing of fish prepares the raw material for final processing. It is often performed on ship board or in a shore-based plant and included operations such as inspection, washing, sorting, grading, and butchering of the harvested fish. The butchering of fish involves the removal of all non-edible portions such as the viscera, head, tail, and fins. Depending on the butchering process, as much as 30 to 70 percent of the fish may be discarded as waste or reduced to cheap animal feed. Efforts to utilize this discarded fraction for the production of alternative food products have begun in the fish industry.

Final processing of fish

The type of handling the fish receive on land during pre-processing and processing will determine the quality of the final product. Every stage from capture, handling and processing, and eventually to sale, to the consumer, involves some loss of quality. Different raw material specifications are used for each product. For example, chilled fish for immediate sale on the local market may not be perfectly fresh but may still be acceptable to the consumer. But in the case of a product such as frozen fillets, fresh raw material will be required as it will have to withstand the rigors of the freezing process and extended cold storage before it reaches the consumer. Hence during pre-processing stage raw material is graded according to the suitability for various processing methods. Handling the fish raw material during processing varies with type of the fish, the processing methods and the intended final product. As far as possible, every precaution should be taken to avoid the warming of fish, as this will favor the action of enzymes and bacteria. Avoid mishandling of the fish. This will damage the skin and flesh and accelerate the process of bacterial contamination and enzymatic action. Cool the fish as quickly as possible by any convenient method. Whatever be the method, it is important to cool the entire fish. The fish, which are caught at different times, have to be kept apart since they will be at different stages of spoilage. Small fishes have to be kept separately from large fishes, as they tend to spoil more rapidly than the latter. Soft-bellied fishes are to be kept separately and if the guts are being removed or the belly has burst, the body cavity has to be washed to remove any traces of the gut. The containers used for the transportation of fish should be cleaned after every use. Chlorinated water should be used, whenever possible for every fish washing operation. Do not put fish on the ground; it can be kept on simple concrete / wooden platforms, which, if frequently cleaned, will reduce contamination.

CONCLUSIONS

Proper post-harvest handling of fish is paramount to ensuring the safety, quality, and sustainability of seafood products. By implementing effective practices, such as immediate cooling, proper cleaning, and appropriate preservation methods, it is possible to minimize spoilage, maintain nutritional value, and enhance the overall consumer experience.

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