

# HANDLING AND PROCESSING OF TILAPIA (*Oreochromis niloticus*) (Case Study in Mulyasari Farming Group Arjasari Village, Tasikmalaya Regency)

Iis Rostini<sup>1</sup>, Rusky Intan Pratama<sup>1</sup>

<sup>1</sup> Staff at Laboratory of Fisheries Processing Product, Faculty of Fisheries and Marine Sciences, University of Padjadjaran, Indonesia

## ABSTRACT

Arjasari Village is a village that is included in the administrative area of Leuwisari District, Tasikmalaya Regency. The total area of Arjasari Village is 397,777 ha which is dominated by agricultural areas. Currently, fishing activities in Arjasari Village are only carried out as a side business carried out by farmer groups to earn additional income. The activities that have been carried out are the cultivation of tilapia and combined farming. Tilapia fish handling and processing activities have not been carried out much, only limited to traditional processing. The purpose of this study was to increase knowledge about tilapia handling and processing technology. The method used is lecture and discussion. The material presented includes the technology for handling and processing various products made from tilapia. The results showed that the participants participated in the activities enthusiastically and actively. The activity is two-way, so that participants can discuss if there is material that is not understood about problems in handling fish or processed production activities made from tilapia. This activity is expected to increase knowledge and skills regarding good handling and processing of fishery products, especially in processing tilapia. Thus it can increase the consumption of fish protein in the community, can be used as a business group so that it can improve the community's economy.

**Keywords :** diversification, fish handling, fishery products, post-harvest, tilapia

## 1. INTRODUCTION

Arjasari Village is a village that is included in the administrative area of Leuwisari District, Tasikmalaya Regency. The total area of Arjasari Village is 397,777 ha which is dominated by agricultural areas. The main livelihoods of the community are farmers, farm laborers, traders, breeders and other employees.

Arjasari is an area that has rural characteristics. Geographically, Arjasari is located between the urban areas of Singapore and the foot of Mount Galunggung and is an administrative area of the Leuwisari sub-district. If we walk through this village, we will be faced with economic businesses along the roadside, expanses of rice fields and fish ponds both in agricultural areas and in the yard of the house. So that land use on the main village road is used for business purposes such as workshops and building shops. Meanwhile, the mid to north area (towards Galunggung mountain) is dominated by agriculture and animal husbandry (chicken, duck and fish).

Currently, fishing activities in Arjasari Village are only carried out as a side business carried out by farmer groups to earn additional income. The activities that have been carried out are the cultivation of carp, tilapia and

combined farming. Almost in every yard of the house there is a fish pond, the community uses the harvest from the pond as a source of food reserves to be processed at certain times, for example on holidays or when entertaining guests. The results from these cultivation activities are generally consumed by themselves but some are sold to traditional markets.

Tilapia fish handling and processing activities have not been carried out much, only limited to traditional processing such as fried, peeled and made tilapia jerky. The community does not yet have knowledge about how to handle and process fish properly, attractively and in accordance with Indonesian national standards. People also do not know the various types of products that can be processed from tilapia raw materials.

Tilapia meat is an ingredient that can be processed into various food products such as sausages, meatballs, nuggets [1]. Fish meat can be made into surimi which can then be used as raw material for various processed products [2]. Fish meat can also be added to other products such as kecipring [3], donuts [4], biscuits, bread [5] and other food products. The addition aims to meet nutrition, especially protein, diverse people's tastes so that there are alternatives in presenting new menus and increasing the level of acceptance without reducing the quality of the final product. Various handling products of tilapia are minced meat, surimi and filet. While the processing products of tilapia can be in the form of traditional or modern products including fish crackers, fish shreds, beef jerky, pindang, fish balls, dragon feet, fish nuggets, kamaboko and various other fish jelly products.

Efforts to diversify processed products made from tilapia are prioritized on products that are already commonly on the market. Thus the opportunity for the product to be accepted by the community will be greater. The main problems faced by the community in Arjasari village are limited knowledge about the diversity of products made from tilapia, limited skills in producing processed fishery products in accordance with Indonesian National Standards, application of sanitation and hygiene in the production process, product packaging and business licensing and the product marketing.

The purpose of this research is to improve skills in handling and producing quality and nutritious fishery products in accordance with Indonesian National Standards, increasing knowledge about how to handle and produce well with the application of proper sanitation and hygiene, create products that are liked by the community and create market opportunities for the products produced so as to increase people's income.

## 2. METHOD

The method used is lecture. The implementation method is carried out through lectures in the delivery of material and discussions about the technology of handling and processing tilapia. The material includes the introduction of various processed diversified products made from tilapia raw, how to handle and produce quality and nutritious processed products with the right technology, provide knowledge, guidance and assistance to partners on how to produce good by implementing a sanitation and hygienic system in the production process.

## 3. RESULT AND DISCUSSION

### 3.1 Activity Analysis

Arjasari village actually has specific advantages in the field of fisheries, but has not been able to develop these advantages to its full potential as a source of income. The general constraint that is felt is the level of public knowledge is still low, especially in producing quality processed fishery products.

Tilapia fish processing activities have not been widely carried out, only limited to traditional processing such as fried, peppered and made tilapia jerky. The community does not yet have knowledge about how to handle and process fish properly, attractively and in accordance with Indonesian national standards. People also do not know the various types of products that can be processed from tilapia raw materials.

The added value of cultivated tilapia in Arjasari Village, Leuwisari District can be increased by handling and processing the fish into various fishery products. In addition to being processed into a final product that is ready for consumption, the fish can also be processed into an intermediate product so that it can be used as stock for fishery product processing businesses.

Community empowerment, both members of farmer groups and housewives in Arjasari Village, is carried out by providing knowledge about processing, diversification or diversification of various fishery products made from tilapia according to standards. The target audience who support this activity are farmer groups, organization women, housewives, and other communities.

The socialization stage is carried out to the community by providing information that there will be counseling regarding the processing of fishery products from tilapia. At the socialization stage, knowledge about principles, procedures, materials, equipment and factors that affect the processing of fishery products is also given. Delivered socialization about the importance of implementing sanitation and hygiene in the production process. The people of Arjasari Village welcome with this research activity. The community is interested and participating in the implementation of counseling activities for the manufacture of processed fishery products.

Research activities regarding the development of processed tilapia products are carried out through the delivery of materials and discussions. There were 30 participants in the activity. The age of the participants ranged from 20-40 years. The presentation of the material begins with transferring knowledge to participants about good tilapia raw materials for various fishery products, good fish confectionery technology, diversified products of processed tilapia, types of products that are common in the market, as well as explanations about good manufacturing procedure.

The participating community participated in the service activities enthusiastically and actively. The activity is two-way, so participants can discuss if there is material that is not understood about the problems in carrying out processed production activities made from tilapia. This service activity is expected to increase knowledge and skills in processing fishery products, especially in processing tilapia. Thus it can increase the consumption of fish protein in the community, can be used as a business group so that it can improve the community's economy.

Participants were given knowledge of fish handling technology on how to provide raw materials for processing fishery products. By transferring knowledge about making filet and surimi, the participating communities in particular became aware of how to choose good raw materials and provide stock of raw materials for the production process of processing various fishery products.

With this activity, it is hoped that the community can be motivated to create new processed products from tilapia with a delicious and nutritious taste. These processed products can be used as the flagship product of Arjasari Village. This will increase the added value of tilapia and can increase people's income.

### **3.2 Tilapia (*Oreochromis niloticus*) as Raw Material for Processed Products**

The fisheries sector has an important role as a contributor to protein for the people of Indonesia. One of the national development priorities in the health sector is efforts to improve nutrition based on local resources, institutions and culture. Fish meat as a raw material and protein source in various processed foods is expected to improve community nutrition.

Tilapia is a freshwater fish that has high economic value, has a high protein content, has the advantage of rapid body development, and is relatively affordable by the public. Therefore, the market demand for tilapia is very high, both local and foreign markets. Tilapia is one of the fish species that can be consumed when it is large between 200-400 grams and has an omnivorous nature that can consume food in the form of animals and plants, so that it grows rapidly and has an ideal weight for processing. Tilapia has the characteristics of meat with a savory taste, thick, delicious aroma, dense and compact texture. This is one of the reasons why producers use tilapia as a raw material for processed fishery products.

### **3.3 Tilapia Fish Handling Products**

- **Fish Fillet**  
Filet is a processed fishery product with raw material of fresh fish which is treated with weeding, slicing, with or without skin removal, trimming, washing, with or without freezing, packing and fresh or frozen storage.
- **Minced Fish**  
Minced meat is fish meat that has been separated from the bones, head, offal, and crushed. Crushed meat can be used as a raw material for making surimi.
- **Surimi**  
Surimi is fish meat that has undergone a process of deboning, washing and dewatering so that it is known as wet concentrate protein from fish meat.

### **3.4 Tilapia Based Product**

Tilapia can be processed into various forms of processed fishery products just like other fish. The processed products include nuggets, meatballs, sausages, bone chips, meat chips, otak-otak, shredded dragon feet,

crackers, beef jerky, fried meatballs, ekkado, fish steak, fish finger, golden snail, spring rolls, dumpling and others. There is also tilapia or part of tilapia which is being studied to be added to other food products to increase its nutrition, such as biscuits and various products as well as cendol. Tilapia with a size of 500 grams usually exceeds the size of consumption and is usually used as raw material for shredded or breaded products (nuggets, dragon feet and fish finger) that require the process of making filets.

All parts of the tilapia can be used, even the bones and head. Tilapia fish bones contain calcium which can be used in the processing of fish meal for both feed and food. The addition of tilapia flour is usually done to enrich the content of a product with high calcium or protein content such as its addition to other food products that we are familiar with (biscuits, bread and pastries).

The development of processed products can increase the added value of tilapia which was previously sold in the form of live/fresh or only processed by means of ordinary cooking to be sold in the form of various kinds of processed products. The development of processed products from tilapia is a potential field to be developed. To realize successful and useful processing, innovation, creativity and good marketing strategies are needed. Innovations and modifications to product formulations and product types are needed to overcome the level of consumer saturation that may occur.

- **Tilapia Meatball**

Meatballs are food products in the form of spheres or otherwise, obtained from a mixture of livestock meat (meat content not less than 50%) and starch or cereals with or without the addition of other food ingredients, as well as permitted food additives. The requirements for the quality of meatballs according to SNI are the normal smell of the meatballs or the distinctive smell of the meat used, the savory taste, the normal color (greyish), the chewy texture, and no harmful food additives [6]. Good quality meatballs can be made without the addition of any chemicals. Its quality is determined by how much or less a mixture of tapioca flour or other cereals is added. The more the mixture, the lower the quality.

The raw materials for making fish balls generally consist of the main raw materials and additional raw materials. The main raw material for making fish balls is fish meat, while the additional raw materials are fillers, namely tapioca flour, salt, spices, and ice [7].

Meatball quality parameters are texture, color and taste. The textures that are usually preferred are those that are smooth, compact, chewy and soft. The texture and tenderness of meatball products are influenced by their water content. A smooth surface is a surface where the slices are flat, uniform and the flesh is no longer visible.

- **Tilapia Fish Nugget**

Nugget is a processed meat product made from ground beef which is molded in various forms then steamed, covered with a flour coating (breading) and consumed after the deep fat frying process. Some nugget processors dip the steamed nugget mixture first into the coated flour mixture before frying, while others also freeze the nugget product before frying it for consumption so that the texture becomes crispier. Fish nuggets are almost the same as chicken and shrimp nuggets, the difference only lies in the type and characteristics of the raw materials used.

The utilization of tilapia in Arjasari Village has not been carried out optimally, this can be seen from the use of tilapia which is generally made fresh, such as fried, baked and peppered. Meanwhile, tilapia has the potential to be developed into value-added products, which are processed into raw materials for tilapia nuggets.

- **Tilapia Shredded**

Shredded fish is small block of meat that seasoned and cooked until completely dry. Shredded made by using fresh fish as its raw material, will produce shredded of better quality. The resulting product has a soft shape, tastes good, has a distinctive smell, and has a relatively long durability. Shredded fish is a form of diversification of fishery product processing. Making shredded fish is easy to do and only requires simple equipment. The processing of shredded fish can be done on a home-industrial scale that is adapted to the capabilities of capital, labor and marketing. The available raw materials and relatively easy manufacturing technology make shredded fish have bright prospects as a source of livelihood.

- **Tilapia Crackers**

Crackers are dry and hollow snacks, made from ingredients that contain high enough starch. Crackers when fried undergo volume expansion to form a product that is hollow and has a low density so that it is crispy. The crunchiness of crackers is influenced by the volume of cracker expansion, while the volume of cracker

expansion can be influenced by the amylopectin content (in starch) and the protein content contained in the ingredients.

Types of fish that are often used as raw materials for making crackers include belida fish, mackerel fish, yellow tail fish, red snapper and so on. The naming of crackers usually follows the raw materials used and crackers with tilapia raw materials are called tilapia crackers. Tilapia meat can be made into mashed meat or made into flour first to be used as raw material for crackers.

#### 4. CONCLUSION

This research was well received by the people of Arjasari village, Tasikmalaya Regency. Technology for handling and processing fishery products, especially for processed products from tilapia, can increase the added value of fish cultivated by the community. The implementation of this activity can increase knowledge and skills to the community regarding the processing of fishery products properly. Increase knowledge of raw materials, processing techniques for fishery products according to standards, as well as sanitation and hygiene in the production process. The trainees are active and can receive the material well.

#### 5. REFERENCES

- [1]. Hadiwiyoto, S. (1993). "Teknologi Pengolahan Hasil Perikanan". [Fishery Product Processing Technology]. Jilid I. Liberty. Yogyakarta.
- [2]. Rostini, I. (2013). "Pemanfaatan Limbah Filet Ikan Kakap Merah sebagai Bahan Baku Surimi untuk Produk Perikanan". [Utilization of Red Snapper Fillet Waste as Surimi Raw Material for Fishery Products]. Jurnal Akuatika Vol. 4, No. 2, pp. 141-148
- [3]. Kurniawati, N., Junianto., Rostini, I. (2015). "Pemanfaatan Daging Ikan dari Waduk Cirata sebagai suplementasi pada Kecimpring Singkong dan Daya Simpannya dalam Berbagai Kondisi Kemasan". Laporan Tahunan Penelitian Unggulan Perguruan Tinggi. Universitas Padjadjaran. Jatinangor.
- [4]. Wijaya, FP. (2015). "Fortifikasi Protein Surimi Manyung terhadap Tingkat Kesukaan Donat". [Arius thalassinus Surimi Protein Fortification on Donut Preference Level]. Skripsi. Fakultas Perikanan dan Ilmu Kelautan. Universitas Padjadjaran Jatinangor.
- [5]. Djafar, MJ. (2003). "Aplikasi Penggunaan Konsentrat Protein Ikan dalam Pembuatan Produk Pangan Berprotein Tinggi". [Application of Fish Protein Concentrate in the Manufacturing of High Protein Food Products]. Laporan Akhir Program Insentif Peningkatan Kapasitas Iptek Sistem Produksi. Badan Pengkajian dan Penerapan Teknologi. Jakarta.
- [6]. Badan Standardisasi Nasional (BSN). (1995). "Bakso Ikan" [Fish Meatball]. SNI 01-3818-1995. Badan Standardisasi Nasional. Jakarta.
- [7]. Wibowo, S. (2005). "Pembuatan Bakso Daging dan Bakso Ikan". [Making Meatballs and Fish Meatballs]. Penebar Swadaya, Jakarta.