

Processing of Shellfish Shell Waste as Fish and Poultry Feed Ingredients in 3 Shellfish Fisherman Villages in Sidayu District, Gresik Regency

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Abstract

The use of clam shells through the Community Partnership Program will become a new source of income for shellfish business actors and especially the Sidayu sub-district community can participate in managing and utilizing the abundant shellfish waste to be further processed as a mixture of fish and poultry feed ingredients. Thus, it will increase the income of managers and as a forum for opportunities to support the implementation of the zero waste program in order to create a clean and beautiful sub-district environment. The Community Partnership Program (PKM) through coaching and mentoring contributes to the community with the objectives of: 1. Providing insight or knowledge about the utilization of shellfish waste, 2. Empowering and encouraging the improvement of the welfare of shellfish business actors who are sheltered by the Sidayu MSME Association (ASUMSI) by conduct education as well as training on how to process the use of shellfish as a mixture of fish and poultry feed. The method used is the lecture and question and answer method, giving machines and also demonstrations for processing. Through the PKM Program, it is hoped that good cooperation between partners will be formed in the future in carrying out activities that are to promote MSMEs, and also especially for the community to be able to take advantage of something that used to be waste that has no added value to be processed into a product that has added value and more selling value.

Keywords : Waste, Shellfish, Fish Feed, Poultry Feed

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Introduction

Sidayu District, Gresik Regency is one of the largest shellfish producing centers. The shells caught by fishermen are then sold to collectors who are ready to be sold at fish auctions and people's markets . The system of selling clams is still diverse, clams are sold with their shells and some are sold separately. So far, the shells have not been used and are being dumped in landfills because they have no selling value. Shellfish processing activities take place continuously so as to make the accumulation of shellfish waste more and

more and disturb the cleanliness and comfort of the surrounding environment. Public education and training on the management of shellfish waste need to be encouraged, so that the abundant and unused shells can add value.

The use of clam shells through the Community Partnership Program will become a new source of income for shellfish business actors and especially the Sidayu sub-district community can participate in managing and utilizing the abundant shellfish waste to be further processed as a mixture of fish and poultry feed ingredients (Yuni dkk, 2019). Thus, it will increase the income of managers and as a forum for opportunities to support the



implementation of the zero waste program in order to create. Thus, it will increase the income of managers and as a forum for opportunities to support the implementation of the zero waste program in order to create a clean and beautiful sub-district environment (Widiyanti dkk, 2019). The Community Partnership Program (PKM) through coaching and mentoring contributes to the community with the objectives of: 1. Providing insight or knowledge about the utilization of shellfish waste, 2. Empowering and encouraging the improvement of the welfare of shellfish business actors who are sheltered by the Sidayu MSME Association (ASUMSI) by conduct education as well as training on how to process the use of shellfish as a mixture of fish and poultry feed. The method used is the lecture and question and answer method, giving machines and also demonstrations for processing.

This PKM program will collaborate with the Sidayu MSME Association (ASUMSI), this association has been formed since 2015 with the aim of developing MSMEs in order to build the economy of MSME actors in the Sidayu sub-district, Gresik. The activity of the Sidayu MSME Association is to empower members through training and mentoring.

Methods

The implementation method used is the lecture method and discussion with the community and partners, here we will explain all the problems and together to find solutions. Extension works in collaboration with parties who have expertise in engineering waste into processed or value-added products.

Raw materials and equipment

Tools and materials used to make animal and fish feed from shellfish waste are disk mills, mixers for large production, sacks, ovens, porcelain dishes, stoves, lpg gas, pans, shellfish waste, bran/bran, NaOH or caustic soda. , water, and other supporting materials.

The clam shell flour machine used is a disk mill type. Disk mill is a flouring machine that functions to grind or flour materials such as grains, leaves, rice husks (bran/bran) and other

dry ingredients (Taufiqurrahman, 2003). The disk mill machine used in this community service has been modified in advance so that it can be used to grind clam shells into flour in one process. Because clam shells include materials that have a high hardness so that the grinding machine is modified with steel to make it stronger (Faujjah, 2013).

This disk mill flouring system uses a disk rotation system and inside the disk there is a beater that is useful for flouring the material, this disk mill machine has two disks, namely a rotating disk and a stationary disk. This disk mill machine is also equipped with 3 sieves so it is very effective for flouring all types of dry products quickly and with maximum results so that it can save on maintenance costs, especially for poultry and fish feed.



Figure 1. disk machine

Results And Discussion

A. Scallop Shell Process

The method of making fish and poultry feed is divided into 2 stages, namely making shellfish flour and mixing it with nutritional supplements for animal feed such as bran/bran and corn. The first stage is making sea shell flour through a grinding process until it is smooth. The milling process uses a machine with a production capacity of 100-200 kg/hour at 2600 rpm. The steps for making flour from clam shells are as follows:

Retrieval of shellfish waste from the disposal site



Figure 2. Locations for collecting shellfish waste

2. Cleaning the clam shells from the remaining meat with running water until clean.
3. Drying the shells under the hot sun for 6-8 hours.



Figure 3. Dried clam shells

4. Grinding clam shells into smaller sizes (flour) with a Disk Mill so that they are easy to process for the next process.



Figure 4. Grinding clam shells

5. Boiling the shell flour with 0.1 N NaOH solution at 50°C for 3 hours. The use of this chemical solution aims to remove the organic matter present in the shellfish flour, such as fat and protein that are physically bound from the remains of meat attached to the shell walls of varying amounts, so that the shellfish flour does not easily rot or get moldy. The protein in clam shell flour reacts with sodium hydroxide to form sodium proteinate which is soluble in water so that the protein will be released through the deproteination process.
6. Washing the clam shell flour with water for the neutralization process.
7. Re-drying the clam shell flour under the hot sun for 6-8 hours or drying in the oven at 120°C for 30 minutes.



Figure 5. Drying flour

8. The process of mixing (mixing) shellfish flour with nutritional supplements for animal feed such as bran/bran, corn and feed concentrate

9. After the mixing process is complete, it is ready to be given to poultry and fish.



Figure 7. The process is complete

Conclusion

The Community Partnership Program (PKM) through coaching and mentoring contributes to the community with the objectives of: 1. Providing insight or knowledge about the utilization of shellfish waste, 2. Empowering and encouraging the improvement of the welfare of shellfish business actors who are sheltered by the Sidayu MSME Association (ASUMSI) by conduct education as well as training on how to process the use of shellfish as a mixture of fish and poultry feed. The method used is the lecture and question and answer method, giving machines and also demonstrations for processing

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