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The Efforts to Enhance the Economic Independence of Pesantren Baitul Qur'an by Developing Qualified Fish Farms With the Addition of Feed Booster from B & B Laboratory of Universitas Sultan Ageng Tirtayasa

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Abstract

The Pesantren Baitul Qur'an is a place of Islamic education that provides free and for the poor. This Pesanten educates 250 childrens, whose entire cost of living is borne by the head of the Pesantren, he called the ustadz. He gets the income to finance the Pesantren's livelihood, mostly from community donations and there is a drinking water business. It's life is simple and requires help. The management of the Pesantren together with us to develop the fish farm. In order to boost fish growth and in order for fish to be harvested quickly, fish need nutrient-rich feed, thus producing fish of the best quality. Commercial fish feed is expensive, as much as it requires a solution for homemade fish feed and has good quality. We've formulated the Feed Booster as a main of fish feed. These boosters can be mixed with other ingredients such as shellfish, wastes and debris around them. Fish feed witd added fish booster is going to be a routine food for the fish that's been bred. This fish booster formula consists mainly of black soldier (BSF) larvae, fish flour, clay flour and other plants that have high protein and are mixed with various vitamins to boost fish growth. This formula has been tested and can boost the maximum fish growth in 2.5 – 3 months after the feeding of the boorter mixed from B & B Laboratory Untirta and produce fish with a size between 500 gr–1.200 gr per tail. The quality of the fish is also quite good and has quality to supply the supermarket and can be a income generating Pesantren in order to realize economic independence.

Keyword: Fish, Feed, Booster, Growth, Pesanten, Economic, Income, Generating

INTRODUCTION

Pesantren is a traditional Islamic educational institution where students live together and study under the guidance of kyai. Pesantren also have dormitories where students stay overnight. Pesanten also has a mosque for worship, study rooms, and other religious activities. Usually, Pesantren is surrounded by a wall to monitor the entry and exit of the santri in accordance with regulations. Pesantren can also be considered as an institution for religious education and teaching, usually in a nonclassical way. There, a kiai teaches Islamic religious knowledge to his students, based on the books of medieval scholars written in Arabic, and the students usually live in a pondok (dormitory) in the pesantren (Sudjono, 1982).

There are quite a number of pesantren in Banten Province, some of which have economic independence and some that do not. For pesantren that are economically

independent, they are usually financed by funders or even receive fees from the students. Many pesantren are not economically independent and only expect donations from the public to support their students. Most of these pesantren accommodate underprivileged children, orphans and abandoned children. The source of funds for the livelihood of these students depends on the amount of donations or businesses developed by the pesantren management. The problem is that donations from donors are unstable and fluctuate and if the business managed by the santri manager is not reliable, the adequacy of food and other needs in the pesantren will be lacking and will have an impact on not meeting the needs of student. This shortage will threaten the adequacy of food and nutrition and disrupt the learning and education process at the pesantren. Therefore, it is necessary to find a solution that the adequacy of food and nutrition and the adequacy of other needs fulfilled, so the pesantren is encouraged to have economic independence by developing businesses and at the same time providing entrepreneurship education to santri.

Pesantren Baitul Qur'an, located in Pengasinan Village, Kramat Watu Subdistrict, Serang City, Banten Province, is one of pesantren that provides free schooling in both religious and general studies. This pesantren is led by Ustadz H. Zaenal Arifin Izuddin and few teachers. Mr. Uztadz and the teachers teach religious knowledge and also provide public school learning so that student can also take the General National Exam. This pesantren has almost 250 boys and girls with an age range of between 3 and 17 years old. This pesantren has a refillable drinking water business and bottled water which is a mainstay to meet the needs of santri and pesantren children besides receiving donations from various donors. This pesantren is still not economically independent so it is necessary to develop business units that can develop and become income generating pesantren. This pesantren has a land area of almost 2 hectares and one of the businesses to be developed is fish and bee farming and fruit plantations. Currently, a large pond has been made around the pesantren for tilapia and catfish farming and fruit plantations. Mini ponds have been tested for fish farming but are still traditional. In its development planning, the pesantren cooperates with academics so that development can be more structured and directed. Fish farming in Pesantren Baitul Qur'an is still simple and traditional so that the growth of fish is still slow and not yet according to the quality to be supplied to supermarkets and fish suppliers. To improve the quality and growth of fish, it is necessary to collaborate with the Bioengineering and Biomedical Engineering Lab (B &B Lab) for its development.

Bioengineering and Biomedical Engineering Lab (B&B Lab) is one of the research laboratories in the Research Center (CoE) of the Faculty of Engineering UNTIRTA. This

laboratory develops and engineers products from natural and fermented materials using microorganisms. One of them is microorganisms to increase the absorption of animal feed, one of which is for fish feed. This laboratory developed Feed Booster which has been applied in pilot fish farms in Cilegon. This booster feed is a modified feed and has been fermented using various good microbes to increase the absorption of feed in fish digestion and increase fish growth. This pilot pond has a size of 3 m x 10 m x 2 m and is currently farmed around 3,000-5,000 fish with a total production of 20-50 kg of catfish per week with good quality and has supplied supermarkets and catfish suppliers in the Cilegon and Serang areas. With this experience, B & B Lab with the head of the Lab Prof. Dr. Ir. Eka Sari, M.T., IPM provides training and application of the Feed Booster innovation of B & B Lab at the Pesantren Baitul Qur'an.

This program is expected to support the development and productivity of catfish and tilapia harvests in the business ponds developed by the Pesantren Baitul Qur'an and is expected to support the economic independence of the pesantren, and also teaching and educating students for entrepreneurial learning and in the long term it is hoped that Pesantren Baitul Qur'an will become a freshwater fish production center in Banten Province and a Fish Farming Education Center.

SUITIBILITY OF STAKEHOLDER TO PROGRAM IMPLEMENTATION

Suitibility of the proposing tean

The head of the proposing team for this proposal is Prof. Dr. Ir. Eka Sari, M.T., IPM who is a researcher who has developed various research products and downstream research based on natural ingredients, one of which is a booster feed product for catfish growth enhancers based on high protein supplements fermented with good microorganisms for digestion. This *booster feed* has been tested in a catfish enlargement pond and has been in production and produces catfish with a size of 3 m x10 m x 2 m can enlarge catfish between 3,000 - 5,000 heads and produce very good quality fish according to supermarket standards with a production capacity of 25-50 kg per week.

Based on the track record of developing research results and having been applied to a pilot catfish farm and already producing catfish with Supermarket standards and quality, then with this consideration it is very feasible for the booster feed developed by the head of the proposing team to be applied to fish farms in Pesantren Baitul Qur'an and in order to optimize the application of knowledge and its use, training is carried out at the Baitul Qur'an pesantren and then assistance is provided until the fish farm in this pesantren produced and develops.

Furthermore, the proposing team member, an academic from the accounting

economics department and is involved in the field of community economic assistance and development. Her knowledge is also very much needed by Pesantren Baitul Qur'an for the development of pesantren economic independence.

The student team technically involved in the implementation of the program consisted of four chemical engineering students and 10 more teams of Chemical Engineering students and Economic assistance and evaluation of increased production involved 10 students from the Accounting department of the Faculty of Economics assisted by the proposing team members.

Feasibility of Baitul Qur'an Islamic Boarding School as a PKM Partner

Pesantren Baitul Qur'an is one of the large Islamic boarding schools located in Pengasinan Village, Kramat Watu Subdistrict, Serang, which has approximately 250 students. This pesantren and has a vision of developing pesantren with entrepreneurial management for the economic independence of pesantren. This pesantren not only provides religious knowledge but also equips santri children with general knowledge and even provides support for outstanding santri to continue their studies to Arabia, Jordan, Turkey and several Arab countries. In addition, outstanding santris are supported to continue their studies to universities, for example entering the medical faculty and other faculties of interest.

Initially this pesantren had a narrow land and there were only a few buildings and one building that was under construction. This pesantren has been under the guidance of the Head of the Proposing Team since 2015. Various efforts from cement supply to the development of various fields are supported, until now Pesantren Baitul Qur'an already has a large enough land. Currently, the land area owned by this pesantren is around 2 hectares and there is a three-story building and halls and classrooms for learning. At present, a building for students has also been built which is quite extensive and is still a foundation and has also made a fish enlargement pond with a very large size of 3m x 30 meters x 3 m and there is also a fish pond measuring 3 m x 100 m x 2 m and will continue to increase the number of ponds for fish hatcheries and enlargement, until the end of this October it is targeted that the pond will start operating and will be released tilapia and catfish seeds for enlargement. Figure 1 shows the location of Pesantren Baitul Qur'an.

Figure 1. Feasibility of Baitul Qur'an

It is hoped that this community service program can be implemented and the support of the Untirta Campus and the academic team from the proposing team and the involvement of 4 technical students and overall program assistance there are 20 students and 10 lecturers from chemical engineering and accounting economics majors. It is hoped that the program will run so that it can achieve the economic independence of the pesantren and the development of fish farming entrepreneurship in this pesantren. The development of this fish farm is one of the programs that will be implemented from the entire planned pesantren development program, namely the development of animal husbandry and fruit plantations and their derivative products will be supervised by the proposing team in this community service program.

In the development of fish farming, fish feed is a very important thing to prepare because fish feed is an essential source of nutrients for the growth and development of cultured fish. With the increasing demand for fish-based foods, the production of high-quality fish feed is more important than ever. Currently available fish feeds on the market come in the

form of pellets, flakes, and granules, each offering a unique combination of protein, fat, vitamins, and minerals. The quality of fish feed directly affects the health and growth of farmed fish, as well as the overall productivity of an aquaculture operation. By understanding the nutritional needs of different fish species and choosing the right fish feed, fish farmers can optimize their yields and ensure sustainable practices in the industry.

In addition to providing essential nutrients for fish growth and development, proper feeding can also help prevent disease outbreaks and improve water quality in aquaculture systems. Proper feeding, including monitoring feed conversion ratios and adjusting feeding schedules based on fish behavior and environmental conditions, is critical to maximizing the efficiency and profitability of fish farming operations. In addition, sourcing sustainable fish feed ingredients, such as using plant-based proteins or by-products from other industries, can help reduce the environmental impact of fish farming and encourage a more environmentally friendly approach to fish farming. Overall, investing in high-quality fish feed and implementing good feeding practices are important steps to ensure the long-term success and sustainability of fish farming operations. By prioritizing fish health and welfare through proper nutrition and feeding practices, farmers can not only improve the quality of their products but also minimize waste and reduce overall environmental effects.

There are several types of fish feed available for fish farming and each with its own benefits and drawbacks. Some common types of fish feed include pelleted feed, extruded feed, and live feed. Pelleted feed is one of popular choice among fish farmers due to its convenience and ease of use. Extruded feed is another option known for its high nutritional content and good digestibility. Live feed, such as salt shrimp or daphnia, can also be used to supplement the diet of some specific fish species. Every type of animal feed has its own unique advantages and considerations, and for farmers it is important to carefully weigh their options when choosing the best feed for their endeavor. Factors such as the species of fish being farmed, their growth stage, and the availability of resources taking a role in determining the most suitable type of feed. Pelleted feed is often chosen for its long shelf life and ease of storage, making it a practical choice for large-scale operations. In contrast, live feed may require more effort to cultivate and harvest, but can provide essential nutrients that are difficult to replicate in processed feed. Ultimately, a diet that is balanced and meets the nutritional needs of fish is essential for promoting healthy growth and maximizing productivity in aquaculture systems.

These natural feeds can help improve the overall health and immune system of fish,

leading to better growth rates and higher survival rates. Nevertheless, the availability and sustainability of natural feed might vary depends on factors such as seasonality and environmental conditions. Therefore, a combination of processed feed and natural feed may be the most effective approach to ensure a balanced diet for fish. In addition, incorporating probiotics and other supplements into the feed can further enhance the nutritional value and digestibility of the diet for fish. These supplements can also help maintain healthy gut flora in fish, which is essential for good digestion and nutrient absorption. By carefully monitoring and adjusting fish diets, fish farmers can optimize fish growth and health, which will ultimately lead to a more successful and sustainable operation. Investing in high-quality feed and supplements may require a higher initial cost, but the long-term benefits in terms of better fish health and productivity make it a worthwhile investment.

In the development of booster fish feed, fish feed is formulated based on natural feed ingredients with a protein supply of a mixture of animal protein and vegetable protein. Some of the fish feed ingredients formulated for this feed include:

Maggot Meal

Black soldier fly larvae have gained popularity as a sustainable alternative protein source for fish feed due to their high nutritional value and efficient conversion of organic waste into biomass. In research that has been going on recently is focused on optimizing the production and utilization of black soldier fly larvae in fish farms to reduce reliance on fishmeal and promote more environmentally friendly feed options. Studies have shown that incorporating black soldier fly larvae into fish feed can improve growth performance, feed conversion efficiency, and overall health of fish. In addition, the use of black soldier fly larvae in fish feed has the potential to reduce environmental impact by recycling organic waste and reducing the need for wild-caught fish as feed ingredients. Overall, the incorporation of black soldier fly larvae into fish feed has the potential to revolutionize the fish farming industry by providing a sustainable and cost-effective alternative to traditional fishmeal. As more research is conducted on the benefits of using black soldier fly larvae in fish feed, it is clear that this innovative approach has the potential to not only improve efficiency and sustainability, but also contribute to a more environmentally conscious industry as a whole. With further development and application, black soldier fly larvae could have an important role in forming the future of fish farming in a more sustainable and environmentally-friendly direction.

In accordance with Fahmi *et al*. (2007) the results of maggot proximate analysis contain 44.26% protein, 29.65% fat, and 2,38% water content.

According to Lu *et al*. (2022), BSFL that is both defatted both defatted and full-fat BSFLs have the same acid profile amino acid profile and therefore has potential as a more sustainable protein source than soybean meal or fishmeal. Mineral content, especially calcium in BSFL is also quite high at 55.65%, while the content of phosphorus content was 0.13%. High calcium and phosphorus minerals can improve the quality of livestock growth because calcium and phosphorus are important components for muscle mass, maintenance of osmotic, enzymatic activity, signaling, protein synthesis, metabolic reactions, acid-base balance and membrane construction in animal cells.

Fish Meal

Fishmeal is ingredients that has potentials as a source of protein and fat as a animal feed, because fishmeal has long-chain unsaturated fatty acids (PUFA), which are known to play a role in improving the reproductive performance of livestock (Ashes *et al*., 1992; Palmquist and Kinsey, 1994; Spain *et al*., 1995). Mandell *et al*. (1997) reported that fishmeal contains such as essential fatty acids eicosapentaenoic acid (EPA, C20:5n-3) as much as 5.87 g and docosahexanoic acid (DHA, C20:6n-3) as much as 9.84 g/kg. These essential fatty acids are reported by many researchers to have unique functions in improving productivity, product quality, and reproductive performance of livestock (Pike *et al*., 1994; Burke *et al*., 1997; Anonymous, 1999; Anonymous, 2001a; Anonymous, 2000).

In accordance with Mikdarullah *et al*., (2020) the results of proximate analysis of fishmeal contain protein content of 58.87%; moisture content of 7.20%; ash content 21.34%; fat content 6.56%; and crude fiber 2,54%.

Moringa Leaf

Moringa plants can be used as one of the ingredients for animal feed because moringa leaf has many nutritional values for livestock to eat. Moringa leaf contain crude protein by 26% of its dry matter. This amount illustrates that it is quite large if used for animal feed. Moringa is a shrub from the Moringaceae family that is commonly found in Indonesia as a hedge plant and has extensive benefits. Research conducted by Dewi *et al*. (2014) showed that the amount of protein contained in moringa leaves reached 27%.

In accordance with Kantja *et al*. (2022), the results of proximate analysis of moringa leaf contain moisture content 10.96%, ash 9.45%, crude protein 24.14%, crude fiber 11.44%, and crude fat 6.11%. The high crude protein of moringa flour can be stated that moringa flour can be used as a source of protein as an animal feed source of protein.

Corn Flour

Corn (*Zea mays*) is one of the commodities that has many opportunities to be developed because of corn can be used as the main source of carbohydrates. Corn flour contains 73.3% carbohydrates that can be used as an additional ingredient in making fish feed (Kordi 2009). The utilization of corn seed meal in carnivorous fish feed can be done up to a concentration of 20% while in omnivorous or herbivorous fish feed it can reach a concentration of 35% (Lestari *et al*., 2013). The utilization of corn flour in feed needs to be combined with other animal raw materials so that it can produce feed that suits the fish needs.

In accordance with Ardiansyah (2021), the results of proximate analysis of moringa leaf contain moisture content 17.02%, ash 4,21%, crude protein 10,52%, crude fiber 2,41%, and crude fat 4,60%.

Rice Bran

Rice bran is the output result of rice processing, and the quality of rice bran will vary depending on the type of rice. Rice bran is one of the results of the rice milling plant in producing rice (Superianto *et al*. (2018).

In accordance with Mila & Sudarma (2021), the results of proximate analysis of rice bran contain dry material 90,288%, crude protein 9,47%, crude fiber 14,717%, and crude fat 4,60%.

Tofu Dreg

Tofu dregs are a waste of the tofu processing industry. Tofu dregs have high moisture and fiber content, so their utilization is not optimal and their shelf life is relatively short. However, tofu dregs still can be used as a source of protein for animal feed. In accordance with Nuraini *et al*. (2009) Tofu dregs can be used as a protein source feed because it contains a high crude protein of 27.55% and other nutrients such as fat 4.93%, crude fiber 7.11%, BETN 44.50%, besides the price of ingredients, production costs, and the production process is fairly cheap. Making fish feed with tofu dreg can be done through a fermentation process.

Probiotic and Prebiotic

Probiotics are feed additives (additional ingredients) that contain bacteria (microbes) that have a beneficial effect on fish health because they may improve the balance of intestinal microflora, so that they may provide such as protective benefits, disease protection and improved feed digestibility. In addition, probiotics can also accelerate growth and increase immunity from certain pathogenic diseases. Probiotics develop in the intestine and can benefit the host either directly or indirectly from their metabolites. The bacteria contained in probiotics can alter the gut microecology in such a way that beneficial microbes can thrive. Enzymes produced by microbes contained in probiotics are amylase, protease and cellulose

enzymes (Wang *et al*., 2008). These enzymes hydrolyze complex molecules such as breaking down carbohydrates, proteins and fats into simpler molecules so as to facilitate the process of digestion and absorption of nutrients in the digestive tract of fish.

Meanwhile, prebiotics are feed ingredients that cannot be digested by the animal but have beneficial effects by selectively stimulating the growth of the activity of one or more bacteria in the gut (Lactobacilli and Bifidobacteria), thereby improving host health (Gibson 2004; Manning *et al*. 2004). The addition of prebiotics to feed will stimulate the improvement of normal microflora in the digestive system of fish.

IMPLEMENTATION PROGRAM & APPLICATION

Program implementation begins with the following stages:

1. Review of the Fish Farming Site at Pesantren Baitul Qur'an
2. Preparation of Booster Feed is a modified high protein feed fermented with microorganisms good for fish digestion, this activity is carried out in the B & B Laboratory.
3. Preparation of Training Equipment
4. Training implementation
5. Handover and application of Feed Booster on Patin and Tilapia Fish Farms at Pesantren Baitul Qur'an
6. Fish Development Monitoring and Fish Enlargement Assistance
7. Evaluating production and increasing production capacity and crop yields implementation of activities carried out at Pesantren Baitul Qur'an and Laboratory Bioengineering and Biomedical Engineering Lab (B&B lab),

The implementation of the activity was carried out by the team leader and team members together with lecturers in the Chemical Engineering Department. This activity involves 4 students who technically carry out activities and more than students who are involved in monitoring and learning fish farming entrepreneurship.

The outputs of this program are:

1. Feed booster product specially formulated by the proposing team and is the result of the development of the B & B Lab team.
2. Production method of booster feed and its technical formulation that can be filed as a development patent
3. Methods of fish farming and feeding booster that can also be made SOPs on fish farming

4. Scientific Services and Assistance and consultation provided by the Proposing Team as a means of academic community service to the Pondok Pesantren and is a form of implementing the Tri Dharma Perguruan Tinggi.

This activity is very beneficial for the development of business and entrepreneurship of pesantren towards economic independence and also provides education to santri to be creative and make an effort.

In the long-term development, an integration program with other businesses will be made for the development of independent feed making and downstream product production. In addition to selling fresh fish, a frozen fillet fish production center will be developed in this pesantren. In its development, it is hoped that this location will become a center for Fish Farming and Downstream Freshwater Fish Products.

The implementation of this program will provide solutions to problems in society in general and Pondok Pesantren in particular including:

1. Developing independent business ventures for the pesantren community that can provide financial benefits and educational media for entrepreneurial learning for santri.
2. Community business groups will be formed in pesantren that can support economic independence in fulfilling food and nutrition needs and other needs needed by pesantren.
3. Benefit for the general public, fish farming in Pesantren Baitul Qur'an can be a pilot for people who want to develop a business, and partner business units can also be formed that can be followed by the community.
4. The fish farm at Pesantren Baitul Qur'an will be a center of knowledge in fish farming and a place for the application of knowledge development from academics who provide new innovations to improve fish growth and processing of feed products.

The implementation of this community service activity begins with preparing the Booster Feed Material which will be used as homemade feed which will be produced by the Pesantren Baitul Qur'an for feeding fish in the Baitul Qur'an farm. The stages of implementing this activity follow the following stages:

1. Preparing Maggot which is the main ingredient of the booster feed.
2. Preparing other ingredients as a booster feed mix
3. Formulating Booster Feed which was carried out in the B & B CoE Laboratory FT. Untirta
4. Making fish feed by mixing the Booster Feed that has been made in the Lab with other additional ingredients around the Pesanten Baitul Qur'an.
5. Feeding the feed that has been made and increasing the feed for daily needs.

6. Fish Development Monitoring for enlargement to harvesting.

The stages of implementing community service activities at the Pesantren Baitul Qur'an are divided into 2 stages, namely:

1. Preparing maggot which is the main ingredient of the booster feed.

Preparing the maggots starts with preparing the maggot equipment and is equipped with a full set for raising maggot. In addition, maggot eggs are also prepared. After the equipment is ready, the maggot larvae feed is given water and then the maggot eggs are placed on a dry place. If the maggots have hatched, the baby maggots will go to the place that has been prepared. The documentation of this maggot breeding equipment can be seen in Figure 2, Figure 3, dan Figure 4.

Figure 2. Full Set Maggot Breeding Package

This is a full set of maggot breeding equipment, this equipment is complete with containers, sieves, maggot seeds, and BSF eggs and baby maggot temporary feed. After the temporary feed is given water and placed in the container then put the maggot eggs by placing the sieve upside down, after that let the BSF egg process hatch into baby maggot. After 5 to 6 days, the BSF eggs will hatch into baby maggots. After becoming baby maggots, these baby maggots will immediately eat the temporary food prepared. Keep the container closed with the perforated stimin.

Figure 3. Maggot Bioreactor for Hatching Maggot Eggs

Figure 4. Baby Maggots Starter Feed Mixed with Fine Bran

After 8 to 10 days the baby maggot starts to look and grow bigger, then it is fed with organic waste until it is 2 weeks old, then the maggot is harvested. The harvesting process can be seen in Figure 5 and Figure 6.

Figure 5. Harvesting Maggot for Booster Feed Formulation

After harvesting, the maggot is washed and then dried in an oven and weighed.

Figure 6. Drying Maggot Using an Oven

Figure 6. Drying and Weighing the Maggot according to the Booster Feed Formulation

After the preparation of the dried maggot material, the preparation and drying of other materials, namely vegetable protein sources. Vegetable protein sources used are made from aquatic plants. Plants that are still wet are dried in two stages, namely drying using the sun, then drying using a dryer in the lab. The process of drying feed sources from vegetable protein ingredients carried out in the laboratory can be seen in Figure 7.

Figure 7. Drying of Vegetable Protein Materials

The drying process of plant-based raw materials that have vegetable protein uses dyer equipment for almost 3 hours at a temperature of 70^{o} C. After drying, pulverization is

carried out to become powder. Smoothing Process of Booster Feed Materials can be seen in Figure 8.

Figure 8. Smoothing Process of Booster Feed Materials

After the smoothing process, the ingredients for formulating the Booster Feed were weighed as shown in Figure 9.

Figure 9. The process of weighing the booster feed ingredients according to the formulation

After the weighing process, the Booster Feed mixing process is carried out as shown in Figure 10.

Figure 10. Mixing Preparation Process for Material Formulation

After all the ingredients and vitamins as well as probiotics and prebiotics are deposited there are approximately 15 ingredients then the ingredients are mixed by manual mixing. This manual mixing process can be seen in Figure 11.

Figure 11. Mixing process of all ingredients according to the booster feed formulation

After the mixing process, the process of weighing the booster feed and packaging is carried out. The process of weighing and packaging booster feed can be seen in Figure 12.

Figure 12. Packaging and Weighing Process of Booster Feed

The booster feed that has been packaged is weighed with a weight of 1 kg. then this booster feed will be taken to the Baitul Qur'an pesantren as the main ingredient to be mixed with feed ingredients around the pesantren. The B & B Lab team who participated in this activity.

After making the booster feed, the next activity was carried out on the application of booster feed and training on making feed for routine fish food at Pesantren Baitul Qur'an. Training activities and application of Feed Booster from Lab B & B are carried out at Pesantren Baitul Qur'an. Training activities and feed booster applications can be seen in Figure 19 onwards.

2. **Feed Booster Training and Application at Pesantren Baitul Qur'an**

Training activities and application of booster feed at the Pesantren Baitul Qur'an were carried out with stages:

a. **Training on making fish feed made from booster feed and other ingredients**

The activity of making fish feed by mixing fish feed and materials around the pesantren such as bran, tofu waste and ground fish. The documentation of this training activity is can be seen in Figure 13.

Figure 13. Training on making routine fish feed based on feed booster

Figure 13. above shows the implementation of community service at the Pesantren Baitul Qur'an for Training and application of Feed Booster for routine fish feed making in the context of enlarging catfish and tilapia at the fish farm at the Pesantrem Baitul Qur'an.

b. **Fish Feeding**

After feeding training, the finished routine fish feed is fed to the fish farm as shown in Figure 14.

Figure 14. Fish Feeding at the Pesantren Baitul Qur'an Fish Farm

c. **Routine Feed Production Monitoring Activity using Feed Booster from Untirta's B&B lab**

After the training and application of the booster feed, along with the routine provision of fish feed to the fish farm and the distribution of food to the students at Pesantren Baitul Qur'an, the feed production activities at Pesantren Baitul Qur'an will be monitored until March 2025. Pesantren Baitul Qur'an plans to request waqf donations from the community to purchase fish feed making equipment to produce floating fish feed.

CONCLUSION

The implementation of community service activities at the Pesantren Baitul Qur'an with training and application of Booster feed formulated from the Bioengineering and Biomedical Engineering laboratory, Research center, Sultan Ageng Tirtayasa University has been carried out. Monitoring will continue to be carried out and assistance will be provided until this Pesantren can carry out independent fish feed production and meet the needs of fish farms. In the long term, assistance will continue until the Pesantren Baitul Qur'an can produce commercial floating feed, and will be integrated with training in catfish and tilapia farming so that a community of fish farmers will be formed and then for the fish community in Banten it is hoped that the feed supply from the Pesantren Baitul Qur'an using Feed Booster from Untirta's B & B lab. Hopefully this activity will be useful and the application of knowledge

and products from the university can help the Pesantren economy. Hopefully this activity can be duplicated with activities in other pesantren.

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