



Manufacture of Fish Feed and Animal Feed by Utilizing Waste from Livestock Manure as an Alternative for Community Livelihoods in Bekiung Village, Kuala District, Langkat Regency, North Sumatra Province

Julia Syahriani Hasibuan^{1}, Khairunnisa², Hafnes Wahyuni³*

¹[Departement of Aquatic Resources Management, Faculty of Agriculture, Universitas Sumatera Utara]

²[Faculty of Marine and Fisheries, Universitas Syiah Kuala]

³[Departement of Agrotechnology, Faculty of Agriculture, Universitas Sumatera Utara]

Abstract. BUMDesa Bangun Mandiri in Bekiung village, Kuala sub-district, Langkat district, is that raising cattle is still carried out traditionally without considering the processing of livestock manure. In addition to the problems caused by livestock waste, the high price of feed produced by feed factories will reduce the profits obtained by the surrounding community, especially fish cultivators. This community service activity was carried out in Bekiung Village, Kuala District, Langkat Regency, North Sumatra Province. Methods Implementation of activities is carried out through approaches with several methods, such as the formation of implementing committee team is carried out through a family discussion approach, handing over tools and materials for making feed, outreach, and practical training in making animal feed and fish to marketing/selling products and services through social media, as well as providing service activity modules.

Keyword: Lumbricus Rubellus, Bekiung Village, Livestock Feed, Socialization, Entrepreneurship

Abstrak. BUMDesa Bangun Mandiri di desa Bekiung kelurahan Kuala kabupaten Langkat adalah pemeliharaan sapi masih dilakukan secara tradisional dengan tidak mempertimbangkan pengolahan limbah kotoran ternak. Selain permasalahan yang disebabkan oleh limbah peternakan, tingginya harga pakan yang di produksi oleh pabrik pakan akan menurunkan keuntungan yang diperoleh masyarakat sekitar khususnya pembudidaya ikan. Kegiatan Pengabdian Kepada Masyarakat ini dilaksanakan di desa Bekiung Kecamatan Kuala Kabupaten Langkat Provinsi Sumatera Utara Provinsi Sumatera Utara. Metode Pelaksanaan kegiatan dilakukan melalui pendekatan dengan beberapa metode, seperti pada pembentukan tim panitia pelaksana dilakukan melalui metode pendekatan diskusi cara kekeluargaan, penyerahan alat dan bahan pembuatan pakan, sosialisasi dan pelatihan praktek pembuatan pakan ternak dan ikan hingga

*Corresponding author at: Departement of Aquatic Resources Management, Faculty of Agriculture, Universitas Sumatera Utara, Medan, Indonesia

E-mail address: juliasyahriani.h@usu.ac.id

pemasaran/penjualan produk dan jasa melalui social media, serta pemberian modul kegiatan pengabdian.

Kata Kunci: *Lumbricus rubellus, Desa Bekiung, Pakan Ikan dan Ternak, Sosialisasi, Kewirausahaan*

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1 Introduction

Langkat Regency is one of the areas in North Sumatra. Geographically, Langkat Regency is located at 3°14'00"–4°13'00" North Latitude, 97°52'00"–98°45'00" East Longitude and 4–105 m above sea level. Langkat Regency occupies an area of $\pm 6,263.29$ Km² (626,329 Ha) consisting of 23 Districts and 240 Villages and 37 Definitive Villages. Langkat Regency is an area with a tropical climate, so this area has 2 seasons,

namely the dry season and the rainy season. The dry season and the rainy season are usually marked by the least number of rainy days and the volume of rainfall in the month the season occurs. The climate in Langkat Regency is tropical with the following climate indicators: Dry Season (February to August); Rainy Season (September to January). The average rainfall is 2,205.43 mm/year with an average temperature of 28 degrees Celsius - 30 degrees Celsius. In 2020, there was a flash flood in Kuala District, Langkat Regency, North Sumatra which caused damage to several facilities, including 15 residents' houses which were heavily damaged because the water level reached 200 cm. One of the villages affected by the floods included Bekiung village which resulted in a state of stables and cattle in the village. This situation also has an impact on the economy of the Bekiung village community which has been disrupted due to the covid-19 pandemic. In the following year, the village of Bekiung gradually experienced an increase in the economy where the condition of the livestock population has increased in line with the high demand for livestock products because livestock activities have prospects for development. Livestock activities also provide quite high profits and are a source of income for many people in rural areas in Indonesia. In addition to obtaining benefits in terms of business, livestock business also has a negative impact on the environment and public health. Waste that is directly discharged into the environment without being treated will contaminate air, water, and soil, causing pollution. Some of the gases produced from livestock waste include ammonium, hydrogen sulfide, CO₂ and CH₄. These gases apart from being a greenhouse gas effect (Green House Gas) also cause an unpleasant odor and interfere with human health [1]. The most fundamental problem in cattle farming in rural areas is that raising cattle is still done traditionally without considering waste management. To overcome the problem of livestock manure, new innovations are needed so that livestock manure can be utilized for the welfare of society. One effort that can be done is to use the *Lumbricus rubellus* worm as a reactor for treating livestock manure [2]. The type of *Lumbricus rubellus* worm is used because it contains high protein which is often used as an ingredient in making animal feed for livestock or farmed animals such as fish,

shrimp, frogs, poultry, and others [3]. In addition to the problems caused by livestock waste, the high price of feed produced by feed factories will reduce the profits obtained by the surrounding community, especially fish cultivators. The need for fish feed is getting bigger and the high price of manufactured fish feed makes the business of making bulk feed on a household industrial scale considered quite promising, and this is in accordance with one of the problems that occur in Bekiung village, namely the high waste livestock manure in the area [4]. Therefore, the utilization of livestock manure waste is one of the feeds for *Lumbricus rubellus* and is a source of protein from the manufacture of animal feed and fish feed [5]. Based on this, the dissemination of knowledge and training regarding the manufacture of fish feed and animal feed by utilizing livestock manure to the people of Bekiung village will be an alternative livelihood for the community, which generally groups of breeders and fish cultivators are community groups that can produce feed independently and market it to other areas as one of the additional incomes for the surrounding community.

2 Method of Implementation

Langka Community Service Activities for the 2022 Disaster Mitigation Scheme have been carried out for 6 months from the start of the activity to the submission of the final report in Bekiung Village, Kuala District, Langkat Regency, North Sumatra Province. This activity includes 2 stages, namely the first stage of socialization by presenting material on techniques for making fish feed and animal feed by utilizing this livestock manure to the Bekiung village community, which is then followed by a question and answer session between the presenters and activity participants. The second stage is the direct practice of making fish feed and animal feed carried out by the participants who are assisted by lecturers and students using the tools and materials provided. The purpose of this activity is to provide and at the same time invite the community to take advantage of manure waste which is carried out by disseminating knowledge and training regarding the manufacture of fish feed and animal feed to the people of Bekiung village. community groups that can produce feed independently and market it to other areas as additional income for the surrounding community.



Figure 1. Submission of tools and materials for making feed

3 Results and Discussion

Based on the Community Service activities that were carried out in May with partners and community groups in Bekiung Village, Kuala District, Langkat Regency, North Sumatra Province, namely the first activity was a visit by the community service team in May 2022 by discussing techniques for making feed and fish, namely counseling with how to provide material by giving a live presentation. Activities carried out with participants having implemented health protocols to prevent the spread of the Covid-19 virus. Then the second activity is direct practice carried out by lecturers, students and the community in the field.

3.1 Socialization Activities for Making Fish Feed and Animal Feed

The socialization was carried out in the hall of the village head of Bekiung, Kuala District, Langkat Regency, North Sumatra Province. Participants in the socialization of this feed manufacturing technique were the Bekiung village head, BUMDesa Bangun Mandiri, Farmers' Groups, the Bekiung village community, lecturers and students from the University of North Sumatra University's Aquatic Resources Management Study Program. The presenter in this counseling activity was Julia Syahriani Hasibuan, S.Pi, M.Si, a lecturer from the University of North Sumatra who was the head of the

Community Service implementation team at the University of Sumatra North. This socialization activity is useful for conveying information related to Animal and Fish Feed Manufacturing Techniques to partners and the local community.



Figure 2. Socialization of Feeding Techniques

Knowledge dissemination activities are aimed at educating the public about the basics of making and components of fish and animal feed where simple techniques and components originating from their surrounding environment can still produce animal feed. [6] state that the manufacture of animal feed and fish feed has a high nutritional content and is important for slag and fish. Utilization of components originating from the surrounding environment can also reduce capital

for making feed so that it can generate large profits. In the socialization session, they will also be taught how to promote/sell the fish feed and animal feed that has been made.

3.2 Training on Techniques for Making Fish Feed and Animal Feed

The next community service activity is the manufacture of animal feed and fish feed with partners and community groups. Feed production is carried out in the village hall of Bekiung, Kuala District, Langkat Regency, North Sumatra Province, which can be seen in Figure 3.



Figure 3. Training on Animal and Fish Feed Manufacturing Techniques

This practical activity was explained by the head of the community service implementation team assisted by members of the community service implementation team and six students of the Aquatic Resources Management Study Program, Faculty of Agriculture Universitas Sumatera Utara.

4 Conclusion

Based on the Community Service activities that have been carried out, it can be concluded that the method of community service is in the form of counseling/ socialization, question and answer, and practice of technical activities for making animal feed and fish feed directly with the tools and materials that have been submitted. The Baking village community also understands how to make animal feed and fish feed by applying the knowledge provided so that they are able to compete in the midst of the community and can create jobs.

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REFERENCES

- [1] Widyastuti, F. R., Purwanto, Hadiyanto. Upaya Pengelolaan Lingkungan Usaha Peternakan Sapi di Kawasan Usahatani Terpadu Bangka Botanical Garden Pangkalpinang. *Prosiding Seminar Nasional Pengelolaan Sumber Daya Alam dan Lingkungan*. 81 – 85. 2013
- [2] Mashur. Pemanfaatan Sampah Organik Rumah Tangga sebagai Media Budidaya untuk Meningkatkan Produktivitas Cacing Tanah *Eisenia foetida*. *Journal Sangkareang Mataram*, 6(2), 10-19. 2020
- [3] Ernawati, N. M., Arthana, I. W., Kartika, G. R. A., Julyantoro, P. G. S., dan Dewi A. P. W. K. Praktik cara budidaya Cacing *Lumbricus Rubellus* dalam menunjang budidaya ikan lele di Desa Keramas Kabupaten Gianyar. *Buletin Udayana Mengabdi*, 18(3). 2019
- [4] Mashur. Pemanfaatan Sampah Pasar sebagai Media Budidaya Cacing Tanah *Eisenia foetida* untuk Meningkatkan Kokon dan Biomassa. *Journal Geodika Hamzanwadi*, 2(1), 15-25. 2020
- [5] Agus Priyanto. *Pemanfaatan Limbah Biogas (Sludge) Sebagai Pengganti Pakan Pellet Komersial Untuk Meningkatkan Perkembangan Kematangan Gonad Dan Pertumbuhan Benih Lele (Clarias gariepinus)*. Universitas Brawijaya. 2011
- [6] Nugroho dan Setya Jati. *Pemakaian Limbah (Sludge) Biogas dari Kotoran Sapi sebagai Sumber Bahan Baku Pakan*. Institut Pertanian Bogor. 2010