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Utilization of Various Wastes in Maggot Cultivation As Livestock Feed in Kamang Magek District, Agam Regency

Pemanfaatan Berbagai Limbah pada Budidaya Maggot Sebagai Pakan Ternak Di Kecamatan Kamang Magek Kabupaten Agam

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Abstract - Kamang Magek District is one of the sub-districts located in the eastern part of Agam Regency. Many small and medium enterprises (SMEs) are developing in Kamang Magek District, several UKM and farmer groups produce various by-products of organic waste which often become environmental problems. In addition to MSME waste, there is also household waste and market waste which often cause environmental pollution. These wastes can be used as feed for maggot development. Maggot cultivation apart from being a solution to environmental pollution is also a good source of protein for poultry feed which can increase livestock productivity. The community problems encountered in Kamang Magek District are the large amount of organic waste that pollutes the environment, the low productivity of livestock and the income of farmer groups. Community service is carried out through lectures, discussions, socialization of science and technology and demonstrations of how and how to apply maggot as animal feed. The Community Service was held in the BPP Hall of Kamang Magek District attended by 15 duck breeders, chicken breeders and catfish breeders selected by BPP Kamang Magek District. Based on the discussion results, more than 75% of breeders only provide feed in the form of rice bran and household waste residue and only 15% of breeders provide feed in the form of self-formulated feed using corn, bran and concentrate purchased at the poultry shop and 10% of breeders provide concentrate feed that has become the result of a feed factory formulation. Of all the breeders, there are no breeders who use maggot as feed for their livestock, this is because there are no breeders who have succeeded in cultivating maggot even though they have tried several times but failed. Based on the results of discussions with participants, breeders are interested in developing maggot cultivation because of the large amount of waste used as maggot feed as a cost-efficient solution for duck or chicken feed.

Keyword : Maggot, Waste, Feed, Poultry, Livestock

Abstrak - Kecamatan Kamang Magek merupakan salah satu kecamatan yang terletak di bagian timur Kabupaten Agam. Banyak usaha kecil menengah (UKM) yang berkembang di Kecamatan Kamang Magek, beberapa UKM dan kelompok tani menghasilkan berbagai hasil samping sampah organik yang seringkali menjadi permasalahan lingkungan. Selain limbah UMKM, terdapat pula limbah rumah

JCSAS

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tangga dan limbah pasar yang kerap menimbulkan pencemaran lingkungan. Limbah tersebut dapat dijadikan pakan untuk pengembangan maggot. Budidaya maggot selain sebagai solusi pencemaran lingkungan juga menjadi sumber protein pakan unggas yang baik sehingga dapat meningkatkan produktivitas ternak. Permasalahan masyarakat yang ditemui di Kecamatan Kamang Magek adalah banyaknya sampah organik yang mencemari lingkungan, rendahnya produktivitas ternak dan pendapatan kelompok peternak. Pengabdian kepada masyarakat dilakukan melalui ceramah, diskusi, sosialisasi ilmu pengetahuan dan teknologi serta demonstrasi cara dan cara pemanfaatan maggot sebagai pakan ternak. Pengabdian Kepada Masyarakat dilaksanakan di Aula BPP Kecamatan Kamang Magek diikuti oleh 15 orang peternak bebek, peternak ayam dan peternak lele yang dipilih oleh BPP Kamang Kabupaten Magek. Berdasarkan hasil diskusi, lebih dari 75% peternak hanya memberikan pakan berupa dedak padi dan sisa limbah rumah tangga dan hanya 15% peternak yang memberikan pakan berupa pakan hasil racikan sendiri dengan menggunakan jagung, dedak dan konsentrat yang dibeli di toko. toko unggas dan 10% peternak menyediakan pakan konsentrat hasil formulasi pabrik pakan. Dari seluruh peternak tidak ada satupun peternak yang memanfaatkan maggot sebagai pakan ternaknya, hal ini dikarenakan tidak ada satupun peternak yang berhasil membudidayakan maggot walaupun sudah beberapa kali mencoba namun gagal. Berdasarkan hasil diskusi dengan peserta, para peternak tertarik untuk mengembangkan budidaya maggot karena banyaknya limbah yang dijadikan pakan maggot sebagai solusi hemat biaya untuk pakan bebek atau ayam.

Kata Kunci : Maggot, Limbah, Pakan, Unggas, Ternak

INTRODUCTION

1. Situation Analysis

Kamang Magek District is one of the sub-districts located in the eastern part of Agam Regency which consists of 5 Nagari, namely Nagari Kamang Hilia, Nagari Kamang Mudiak, Nagari Magek, Nagari Kamang Tangah and Nagari Pauah. Kamang Magek sub-district is quite close to Bukittinggi city, namely approximately 10 km from the center of Bukittinggi city, so that economic and market activities in Bukittinggi city are largely supported by agricultural and livestock products and products from Kamang Magek sub-district. Kamang Magek sub-district is close to the city of Bukittinggi, the geographical conditions that support it include the highlands (850-875 m above sea level) and the behavior of people who are accustomed to doing business from generation to generation have resulted in the development of many agricultural businesses and small and medium enterprises (UKM) as a source of economy. community, currently there are 334 types of SME businesses and 146 farmer groups. Small and medium enterprises (UKM) in Kamang Magek District operate in various fields such as food and its processing, crafts and carvings, furniture, agricultural and livestock products, while farmer groups in Kamang Magek District also vary from horticultural crops, food crops and plantation crops. In the Animal Husbandry sector there are also poultry, both broiler and egg laying, small and large ruminants as well as processed agricultural and livestock products. Several SMEs and farmer groups in Kamang Magek District produce various organic waste by-products which often become an environmental problem. On the

other hand, in livestock businesses, farmers experience problems with feed problems so that livestock productivity is not optimal, both ruminants and poultry. Apart from MSME waste, there is also a lot of household waste and market waste which often causes environmental pollution. Kamang Magek has 2 markets, namely Pakan Sinayan whose market days are every Monday and Friday and Pakan Silasa whose market days are every Tuesday and Friday. This market also produces various organic waste such as vegetable remains, chicken intestines and fish stomach waste. This waste quickly becomes rotten and pollutes the surrounding environment. These wastes can be used as feed for the development of maggots. These various organic wastes can be provided directly or through prior processing. Apart from being a solution to environmental pollution, maggot cultivation is also a good source of protein for poultry feed which can replace fish meal or soybean meal which are increasingly expensive so that using maggots as animal feed can reduce feed costs thereby increasing farmers' profits. In semi-intensive poultry farming businesses, many feeds lack protein because they only rely on leftover household food mixed with bran, so using maggots as feed can improve the quality of feed that meets nutritional needs, thereby increasing livestock productivity.

2. Community problems and solutions

Based on a field survey of several farmer groups in Kamang Magek District, several problems were found:

1. Household waste, market waste and agricultural waste pollute the environment
Organic waste in the form of household waste, agricultural waste and market waste has not been utilized so it pollutes the environment because this organic waste rots quickly due to the work of microorganisms. Organic waste can be used as maggot feed either directly or through processing technology such as fermentation and later maggots can be used as animal feed as a source of protein which can reduce feed costs and increase the productivity of livestock such as poultry.

2. Low livestock productivity

Apart from being farmers, many people have poultry farming businesses, both main businesses and side businesses. After seeing it in the field, it turns out that livestock productivity is still low because the need for quality feed according to nutritional needs has not been met. This is because the community is constrained by high feed costs. For example, broiler ducks can only be harvested at the age of 5 months with a body weight of approximately 1.7 kg, whereas in duck cultivation that meets nutritional quality, at the age of 2.5 months they can reach a weight of 1.7 kg. Likewise, village chickens in the field can only be harvested at the age of 5 months with a weight of 1.5 kg because the quality and quantity of their feed is not met. In the laying duck business, people in Kamang Magek District generally only rely on bran + stale rice/leftover rice and of course this ration formulation is very deficient in protein, even though if maggots are cultivated they can become quality feed ingredients so that they can increase livestock productivity which leads to increased income. public.

JCSAS
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ISSN:2962- 2263, Vol. 2, No. 1, Juni, 2023,

3. Low income of farmer groups

As a result of discussions in the field with several farmer groups, they generally complained that their income was so low that it was insufficient to meet their daily needs. This low income is because livestock productivity is not optimal so it takes a long time to harvest. The low income of farmers causes a lack of social welfare. The use of maggots as animal feed will be able to increase livestock productivity which will have an impact on increasing income and community welfare.

II. IMPLEMENTATION METHOD

Community service will be held on Friday, February 3 2022 at the BPP hall office, Kamang Magek District, Agam Regency. From the description of several solutions above, to resolve the problems faced by livestock group X, the steps that will be taken are:

1. Lectures, discussions and demonstrations for the socialization of science and technology

Science and Technology outreach was carried out to livestock group partners and other communities outside the group in Nagari X who were interested in participating. The socialization of science and technology was carried out in collaboration with the agriculture and livestock service in the Kamang Mudik village as well as the Kamang Mudik and Jorong village officials.

The objectives of this science and technology outreach are:

a. Provides an overview of the procedures for cultivating maggots
b. Socializing and training about maggot food.
c. Socializing and processing technology for waste into maggot feed
d. Discuss and train partner groups in the application of technology and application of maggots as animal feed, especially poultry

2. Demonstration of Method

The demonstration aims to demonstrate maggot cultivation technology, feed and the application of using maggots as animal feed. The materials and tools used in the demonstration are EM4 bacteria, and organic waste, barrels or buckets.

a. Demonstration of how to cultivate maggots

Demonstrations were carried out at farmer groups in Kamang Magek District starting from preparing cages and magoot containers consisting of Pufa, BSF flies, maggot eggs, maggots and baby maggots. Each has a different cultivation location.

Pufa is placed in a mosquito net cage to become a fly so that it does not fly to other places, in this BSF fly cage it is equipped with an egg place and a landing place

JCSAS
Journal of Community Service and Application of Science
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1. BSF Fly Cage


2. Hatching Maggot Eggs

Hatching maggot eggs are placed in a container containing maggot feed and covered so that they are not attacked by green flies


JCSAS
Journal of Community Service and Application of Science
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3. Baby maggot

Maggot eggs that have hatched are transferred to a container containing maggot food


4. Demonstration of Maggot Feed Processing

Market waste in the form of vegetable waste and chicken intestines or fish waste along with agricultural waste in the form of sorted sweet potatoes is fermented using EM4 and molasses for 7 days, after 7 days the maggot feed is ready for use


JCSAS
Journal of Community Service and Application of Science
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III. RESULTS AND DISCUSSION

The selection of participants was carried out based on the potential for developing duck and chicken farming using maggot feed. Duck or chicken breeders are constrained by the cost of feed so that the majority of breeders who are members of farmer groups provide feed that is not in line with the nutritional needs of poultry so that the productivity of free-range ducks or chickens is not optimal. Based on the results of discussions, more than 75% of breeders only provide feed in the form of rice bran and household waste and only 15% of breeders provide feed in the form of self-formulated feed using corn, bran and concentrate purchased at poultry shops and 10% of breeders provide ready-made concentrate feed resulting from feed mill formulations. Of all the breeders, there are no breeders who use maggots as feed for their livestock, this is because there are no breeders who have succeeded in cultivating maggots even though they have tried several times but failed.

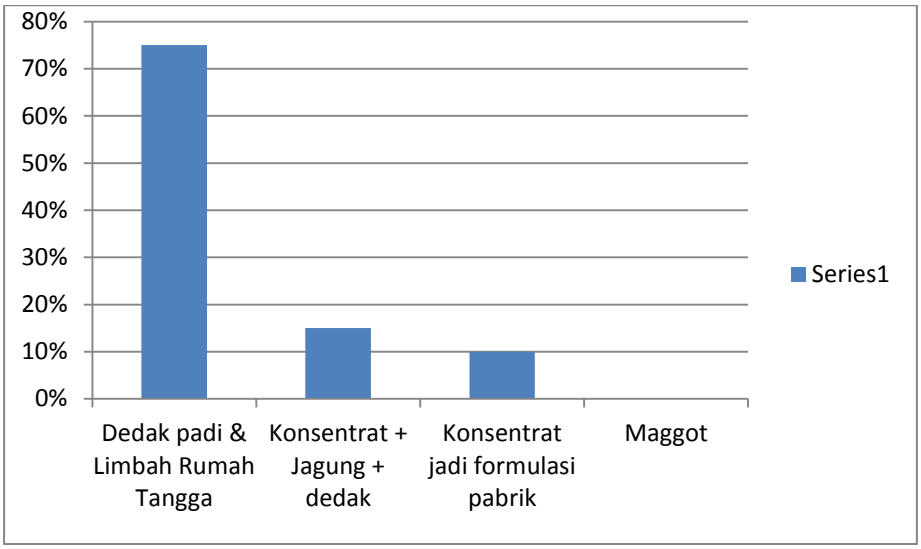

Figure 1. Jenis Pakan Yang Digunakan

JCSAS
Journal of Community Service and Application of Science
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Based on the results of discussions with participants, breeders are interested in developing maggot cultivation because of the large amount of waste that can be used as maggot feed as an effort to streamline duck or chicken feed costs. Maggots are a good source of protein for poultry which have a unique life cycle starting from flies, fly eggs which develop into maggots or larvae, then become pufas which then turn into flies again. Male flies that have mated will die, while female flies after laying eggs will also die, so the essence of the sustainability of maggot cultivation needs to be to maintain the availability of pupae that will turn into flies..

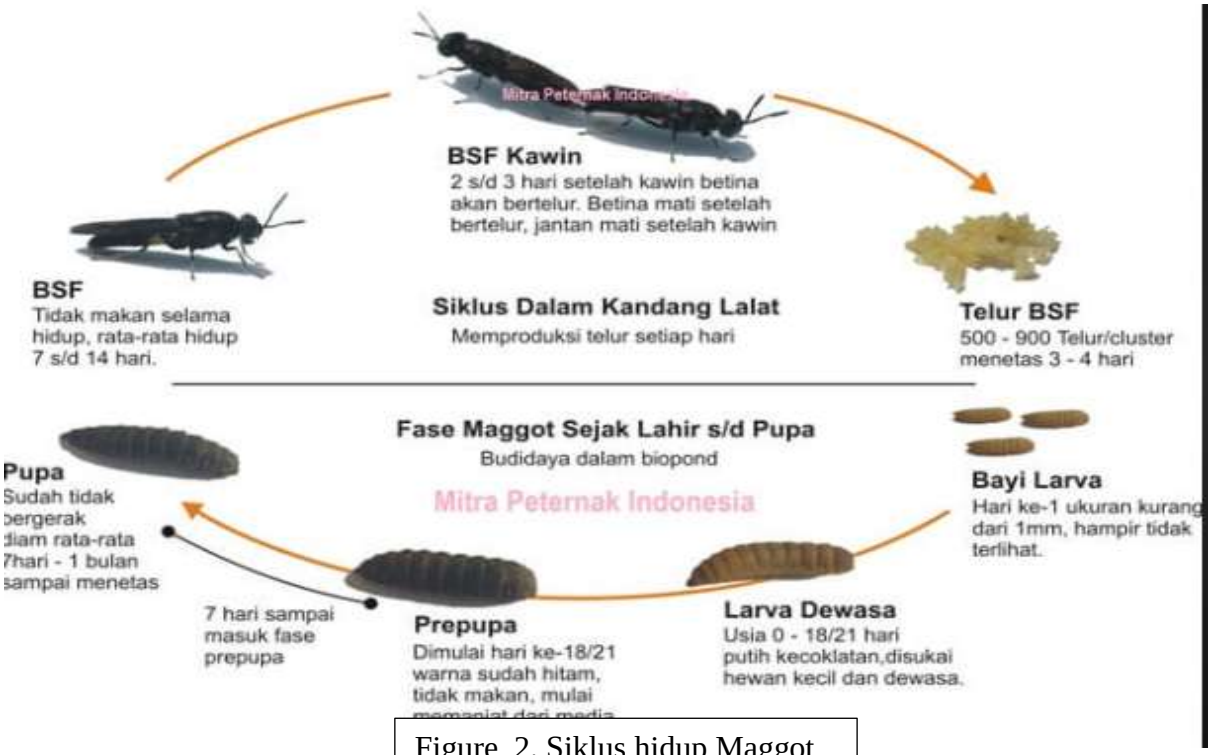

Figure 2. Siklus hidup Maggot

Maggot cultivation requires several places for development in the form of a fly cage, egg laying place, hatching place, pre-pufa place and pupa place. Maggot feed must contain energy and protein because the nutritional content of maggots really depends on the feed given, the better the quality of maggot feed, the higher the nutritional content of maggots and vice versa. Maggot feed with organic waste means maggot protein is 31-35%, maggot feed consists of fruit market waste so the protein is 29-31%, while maggot feed using palm oil meal yields the highest protein, namely 41-49% (Astuti, 2020). Kamang Magek District has the potential to develop maggot cultivation using market waste feed because there are 2 markets in Kamang Magek, namely Sinayan Feed and Silasa Feed, where this market always has a lot of organic waste such as vegetables, fish waste and chicken waste which has been polluting the environment so that it can cause health problems. . Apart from that, there are also various agricultural and nursery processing waste such as cassava peel and mangosteen

JCSAS
Journal of Community Service and Application of Science
ISSN:2962- 2263, Vol. 2, No. 1, Juni, 2023,

peel which have the potential to be used as maggot feed. Apart from market waste, there is also household organic waste, but not much. Poultry rearing management (ducks and free-range chickens) in Kamang Magek District is generally semi-intensive (85.6%) and intensive (14.4%). In this semi-intensive maintenance, livestock are only given minimal food in the morning and evening, which is usually in the form of rice bran and household waste such as stale rice, then in the afternoon the ducks and chickens are released to find their own food, the ducks and chickens are only kept in cages at night. The population of birds reared semi-intensively is generally small, ranging from 5 to 50 birds. Intensive rearing, although the percentage is small, there are several breeders and farmer groups who maintain this intensive pattern, the number of livestock kept starts from 100 heads and some even reach 1000 heads with the feed provided in the form of commercial feed which is in accordance with the standard nutritional needs of poultry and The quantity of feed provided is also appropriate to needs, however this intensive maintenance is hampered by feed costs so maggot cultivation is one way to streamline feed costs.

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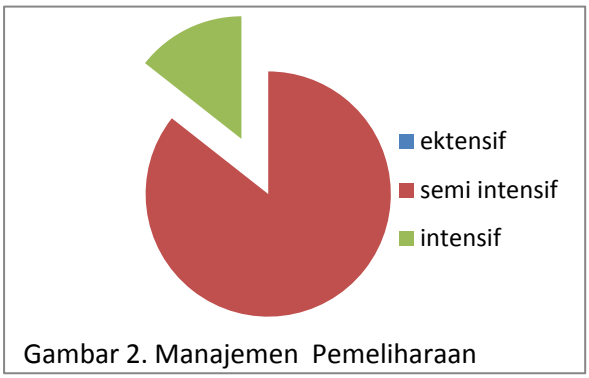

Gambar 2. Manajemen Pemeliharaan

Providing maggots as poultry feed can be given directly or dried into flour, however, breeders in Kamang Magek District are more interested in providing it directly because it is more effective in terms of time and energy. Maggots should be used as feed for poultry under 15 days of age because the nutritional value of maggots, such as higher protein and lower fat, is also not high in maggot shells which contain chitin. Chitin cannot be digested by poultry so it becomes an inhibiting factor in poultry digestion which can reduce poultry production. Apart from being a good source of protein, maggots also contain compounds that can kill pathogenic bacteria, so they are good for use

JCSAS
Journal of Community Service and Application of Science
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as poultry feed. The nutritional content of maggots can be seen in the table below

Umur	Kadar (%)			
Hari	Bahan Kering (BK)	Protein Kasar (PK)	Lemak Kasar	Abu Kasar
5	26,61	61,42	13,37	11,03
10	37,66	44,44	14,60	8,62
15	37,94	44,01	19,61	7,65
20	39,20	42,07	23,94	11,36
25	39,97	45,87	27,5	9,91

Community service activities in the form of maggot cultivation training are very interesting for breeders and breeders want to immediately apply them to streamline feed costs and maintain the cleanliness of the surrounding environment. The breeders and farmers asked that this activity continue in the form of assistance for maggot cultivation, maggot feed processing and its application as poultry feed for both ducks (with meat and laying eggs) and free-range chickens in the Kamang Magek District.

DOCUMENTATION OF MAGGOT TRAINING IN KAMANG MAGEK DISTRICT

JCSAS
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