

Dairy Farmers Empowerment Subak in Bali Indonesia

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3 Abstract:

The main purpose for the application of science and technology for livestock group of cow, is to form a group of skilled and professional livestock, as vaccinators, can take advantage of *Azadirachta indica* leaves a plant insecticide, apply a good cage sanitation, can produce organic fertilizer from feces of cow, can treat hay as feed to good nutritional value. The method used is education and training. Activity results obtained, that 10 percent of members of the group have managed to become vaccinators cadres, able to implement good sanitation stables, feces of cow (*Stomoxys calcitrans*) can process technology with EM4 into organic fertilizer and can process the rice straw with urea spraying method, to produce feed hay to the value of good nutrition for growing cattle.

Keyword: livestock group, cow, organic fertilizer, plant insecticide

A. Introduction:

Empowerment is importance part on education (Sumantra, Yuesti, Suryatmaja, Sudiana, 2016 ; Yuesti, Julianti, Suryandari, Astuti,2018; Yuesti & Sumantra, 2017, Sumantra & Yuesti, 2018; Arnawa, Et al.,2018). Cow breeding system by ranchers in Subak Anggabaya Kelurahan Penatih Sub-district of Denpasar Timur, semi-intensive, cow stood with single cage system, feed given only limited to grass, cage management has not done well, so that become the main purpose of science and technology application for cattle farmers , is to form a group of skilled and professional cattle, as a vaccinator, can utilize the neem leaves as a plant insecticide, apply

good sanitary cage, can produce organic fertilizer from cow dung, can process straw as a feed with good nutritional value. The method used is counseling and training and mentoring. The result of the activity was found that 10% of the group members had succeeded in becoming vaccinator cadres, could use neem leaves (*Azadirachta indica*) as insecticides to suppress the population of cage fly (*Stomoxys calcitrans*), able to apply good sanitation cage, can process cattle dung with EM4 technology into organic fertilizer and can process straw using spraying method with urea, to produce straw feed with good nutritional value for livestock growth.

Dairy farmers in Subak Anggabaya Kelurahan Penatih amounted to 20 people, Average land

ownership is relatively narrow that only reaches 0.25 ha. with rice farming productivity reaching only 5.15 ton / ha (Village Monograph, 2016). Farmers have a habit of raising cattle in paddy fields and moorlands. Most of the farmers have cattle to earn additional income as farmers of paddy fields and not as cattle labor, farmers have cattle between 1-2, most of the livestock owned is own livestock.

Farmers have not used much of livestock waste as organic fertilizers, farmers use more inorganic fertilizers (urea) in their paddy fields, as well as the use of rice waste (straw) as livestock feed, more farmers use grass as animal feed, when dry season feed source is very difficult to obtain. Whereas the potential of straw as a source of animal feed in Subak Anggabaya is quite high.

Cattle breeding system by farmers is semi intensive, cow is stuck in single cage, feed given only limited to grass, cage manure has not done well so cow dung (feses) mixed with urine, cows indirectly exposed to dirt so stimulate the cage fly (Stomocxys calsitrans) to settle and suck the blood on the body of the cow or suck on the eyes of the cow's eye. Cow manure which is a source of manure for livestock groups, instead sold in raw form has not been processed as organic fertilizer (Bokasi).

B. Source of Inspiration:

The prospect of dairy business development in Subak Anggabaya Penatih Urban Village is very advantageous, demand and price of cattle there is tendency to increase, but there are still some obstacles faced by cattle group such as:

- a. Breeders' knowledge of cattle health management is still limited, so almost every year there is an increase in morbidity due to snoring (Septicemia epizootika).
- b. Farmers find it difficult to cope with the problem of the development / population of the cage flies so rapidly especially in the rainy season.
- c. The use of commercial drugs is still low in the effort to eradicate the cage flies, in addition to

the limited knowledge, also because the price is relatively expensive and tends to increase so as not affordable by farmers who include poor farmers.

- d. The level of knowledge of farmers on cage sanitation is still relatively low, which is seen from the cage neighborhood is dirty by the pile of leftover feed, feces, and urine.
- e. Breeders do not know about the processing of cow dung waste that can be used as the basic ingredients of organic fertilizer (Bokasi).
- f. Farmers do not know the processing of straw as animal feed as a source of food that has a high digestibility (nutrient), for the growth of livestock.
- g. Farmers do not know good livestock management in hiring mothers who are pregnant or postpartum.
- h. Limited Livestock Extension Officers (PPL) that provide guidance to farmers in the health management business of cattle.

C. Method Of Technology Application:

The method used is; training and assistance in order to raise awareness of the importance of SE vaccination program that is done periodically to prevent disease, before the rainy season and the end of the dry season. Train the skills of each group member in order to apply the vaccine to form skilled vaccinator cadres. Conducting training and mentoring the manufacture of plant insecticides (herbs) that can be used to combat the cage flies with the base material of mimba (*Azadirachta indica*). Admitted from the research Unmas team, the results are very effective in eradicating the cage flies and eliminate the unpleasant odor from the cage. Conduct training on the benefits of sanitary cages, cattle health management. Conducting training and assisting the processing of cow dung waste into organic fertilizer, processing of straw into animal feed that has a high digestibility (nutrient) for livestock growth. Application of technology is done through several learning methods, namely:

- a. Counseling, training and assistance on SE vaccination procedures and how they apply.
- b. Counseling and training on the method of making mimba leaf extract and demonstration together with livestock group about the process of making and its application using sprayer. The method of packaging and storage using a 5-liter jerry capacity (for 10 head of cattle) so that the plant insecticide (herbal medicine) is more durable by not reducing its effectiveness.
- c. The manufacture of organic fertilizer and its packaging, so it can be used in accordance with the needs, durable in storage, and the rest can be sold to increase group income.
- d. The making of animal feed from straw, so it can overcome the difficulties of obtaining feed (grass) in the dry season, and how to keep it more durable.
- e. Providing socialization through coaching and counseling using audio-visual or liflet media on examples of diseases in cattle transmitted by *Stomoxys calcitrans* and the economic impact of the disease
- f. At the end of the activity there will be a successful evaluation of activities: counseling, training and facilitation through post-skill tests both orally and in writing that will be compared with pre-tests conducted at the beginning of the training activities.

D. Main Works:

Management of cattle business done to farmers in Subak Anggabaya Kelurahan Penatih is still semi intensive, so it takes a solution to increase income and welfare of farmers in the future. Farmer empowerment is one that can be done to achieve that goal. Empowerment of breeders conducted among others; Training each farmer's skills to apply the vaccine, thus forming skilled vaccinator cadres. Training and mentoring of vegetable insecticides (herbs) that can be used to eradicate the cage flies with the base material of mimba (*Azadirachta indica*). Training on the benefits of cage sanitation,

cattle health management. Training and assisting the processing of cow dung waste into organic fertilizer, processing of straw into animal feed that has a high digestibility (nutrient) for livestock growth.

E. Work Reviews:

1. Provision of SE vaccination in cattle

SE vaccination needs to be done periodically to prevent morbidity due to snoring (Septicemia epizootika). In order for SE vaccination activities can be done regularly and sustainably, then the breeders need to have knowledge and skills as a vaccinator. Counseling and training needs to be done to establish vaccinator cadres. Training on the formation of cadres of vaccinators is done in two stages, namely, in the form of counseling in the classroom and then followed by direct practice in the field. To measure the effectiveness of counseling conducted pre-test and post-test.

The results showed that there was an increase in the knowledge of breeders about the benefits of SE vaccination in cattle, the tofu category increased by 10% from 20% to 30%, the know-enough category increased by 15% from 30% to 45% and the unknown category decreased from 50% to 0% . This shows that almost half of the farmers do not know about the benefits of regular SE vakasinasi on cattle. In accordance with the expected output target, the formation of vaccinator cadres of at least 50% of the farmers, can not be achieved, this is due to lack of counseling and training, so the SE vaccination and training activities still need to be continued, knowledge of breeders can be improved, but farmers' skills to become vaccinators are still needed training in the form of direct practice, and to more quickly achieve the target outcomes achieved, farmers need to be facilitated by means of vaccinations.

2. Preparation of mimba leaf extract to suppress the growing population of cage flies:

The use of commercial drugs, in addition to the relatively expensive price, is also less supportive of the concept of sustainable development that proclaimed the Bali provincial government, Clean

and Green. So the use of commercial drugs that have an impact on environmental pollution needs to be reduced. The use of mimba leaf extract as a cage-flaying drug is very suitable to be used, because it is effective to suppress cage flies, and has almost no negative impact on environmental pollution, the action of mimba leaf extract is not to kill the cage fly directly, pupulation of the cage flies can be suppressed, besides the neem leaf extract has the effect of neutralizing the unpleasant odor around the cage. The use of mimba leaf extract in the long term to suppress the population of cage flies, is very beneficial for both farmers and the environment, because the price is cheap and easy to obtain, so as to save costs and increase profits breeders.

Neem leaf extract, obtained by extracting the segemgam daum mimba mixed with galangal approximately the size of the adult's thumb mashed then mixed with one liter of water, then filtered, mimba leaf extract ready for use, as shown in Figure 1. below.



Picture 1: Making mimba leaf extract to suppress population of cage flies

The results of counseling and training showed that there was an increase in the knowledge of farmers about the benefits of neem leaf extract to suppress the population of cage fly, the know category increased by 10% from 0% to 10%, enough know category increased 50% from 50% to 100% 50% to 0%. This suggests that, prior to extension almost half of farmers do not know that neem leaf extract can be used as a vegetable medicine that can be used to suppress the population of cage fly.

3. Utilization of manure for organic fertilizer:

Cow manure in raw or non-processing conditions is not good for plant growth because it will increase methane gas emissions. Therefore it is necessary to process livestock manure before it is used as organic fertilizer for plants. EM4 technology is one of the ways of processing cow dung into organic fertilizer as shown in Figure 2. EM4 is about 0.25 liters of liquid mixed with 0.25 kg of brown sugar dissolved in 20 liters of water. Combine 200 kg of cattle dung with 10 kg rice husk and 10 kg of fine bran. Then pour the EM4 solution mixed with red sugar into the livestock mixture, then fermented for one week. The characteristics of the compost is ripe, the shape is crumb / easy to destroy, the color is blackish brown, not smelly.



Picture 2: Making organic fertilizer from cattle dung

The results of counseling and training show that farmers have known correctly how to process cattle dung into organic fertilizer. If assumed the breeder is able to produce 1000 kg of organic fertilizer every time the production process, and the price of organic fertilizer Rp. 1000 / kg in accordance with the price around the activity, there is an additional acceptance for livestock group of Rp. 1,000,000., Each time the production process. Furthermore, the availability of fertilizer for farming activities will certainly be guaranteed throughout the year, because fertilizer will be produced daily from cattle, dependence on chemical fertilizers such as urea will slowly be reduced. So that the cost of farming can be reduced without decreasing the productivity of

farming and even in the long term the use of organic fertilizer continuously will be able to increase the productivity of farming.

4. Making animal feed from Straw:

In irrigated areas, some farmers have cultivated forage (HMT) forage, by planting in paddy fields of about 2 - 3% of wetland area. The potential of large and untapped HMT sources is rice straw. Low digestibility of straw as feed caused by high content of lignin, cellulose and hermi cellulosa. Processing of straw is principally intended to break down lignin and cellulose, resulting in more digestible feed.

One of the simplest and easiest technologies can be done by breeders for the processing of straw is by spraying method using urea, as shown in Figure 3. Rice straw is cut along 5-10 cm, urea weighed as much as 6% of the weight of straw, urea dissolved into in water weighing 40% of the weight of straw, then the straw pieces are inserted into plastic bags arranged in layers of 10-20 cm then straw sprayed with urea solution until the entire surface is wet, then added the next layer and sprayed again as in the first layer and pressed as tightly as possible, then closed tightly, approximately 1 month of processed straw has been formed.



Picture 3: Processing of straw by spraying method

The results of counseling and training showed that farmers had difficulties in obtaining straw to be processed, usually the straw would be re-immersed as compost into the fields. Farmers are accustomed to provide only young straw feed that is, still looks green colorless without being processed and given

limited as feed interlude. Processing straw requires a large enough space and require pemrosen long enough time.

Conclusion:

Based on the results of counseling, training and mentoring and discussion on the review of works can be summarized as follows:

Members of Subak Anggabaya beef cattle group 10 percent have succeeded in becoming vaccinator cadres.

Livestock groups have been able to utilize mimba leaves (*Azadirachta indica*) as insecticides to suppress the population of cage flies (*Stomoxys calsitrans*)

Livestock group is able to apply good sanitation cage, can process cattle dung with EM4 technology into organic fertilizer and can process straw using spraying method with urea, to produce straw feed with good nutritional value for the growth of livestock.

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