

PKM (Community Service Program) : Raising Sheep Farming in Wuluhan District, Jember Regency, East Java Province

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Abstract.

Sheep is one of the potential livestock that can help people to fulfill their meat needs. Observations (surveys) conducted on partners, sheep fattening efforts owned by Mrs. Marsiti and Pak Abdul Karim are still less productive due to: 1) the low production capacity and quality of sheep feed (silage feed) due to limited equipment so that the feed production process has been carried out manually, 2) lack of partner information about proper sheep fattening so that not all sheep achieve weight as expected during maintenance, 3) lack of information owned by partners on how to manage sheep business appropriately so that profits are not maximized.

The service community activities that have been carried out include: 1) providing assistance in the production of fermented animal feed equipment and machinery in order to increase the production capacity and quality of animal feed, 2) provide training on how to use feed production machinery for partners, 3) provide training in business management and marketing so that can improve the ability of partners in managing sheep fattening business and can improve the partner's marketing strategy.

1. Introduction

Increasing population growth rates and public awareness about the importance of consumption of animal protein in improving intelligence and quality of human life, thus demanding ever increasing meat needs. Smallholder livestock has a significant contribution in the provision of food sources of animal protein for the people of Indonesia, so that the productivity of livestock, especially ruminants, needs to be increased to sufficient the needs of meat.

This is supported by the statement of President Joko Widodo [4], which states that sheep and goats can be a good alternative to sufficient protein needs. President Joko Widodo encouraged the role and contribution of sheep and goats to sufficient the needs of animal protein, which so far is still focused on consumption of beef. The President revealed that the protein content of sheep is even better, because the sheep's protein is around 20-27% while cattle are 20-24%, besides that goats and sheep do not need large areas of land such as cattle [4]. The potential of goats and sheep as small slaughterhouses quickly multiply, high carcass growth and production even the quality of fatty meat is favored by consumers and able to tolerate crude fiber [1].

Jember Regency with all kinds of natural resources and the potential they have still not optimally explored, now must be able to be managed properly so as to generate income that is beneficial for the community and local government, so as to increase economic growth in all sectors. One of the great potentials of Jember is the livestock sector.

Jember is the third most populated area in East Java. The geography of Jember with its many plants and green grass strongly supports the development of sheep business due to the availability of sufficient forage feed, especially in the rainy season. Prospects for sheep development are quite good, in addition to fulfilling domestic meat needs also have export opportunities, so that it will open employment opportunities and businesses to increase farmers' income. Sheep are widespread in rural areas whose maintenance is intended as cattle for consumption needs. One of the sheep business

centers in Jember Regency is in Ampel Village, Wuluhan District. Ampel village is located 50 km south of Jember city.

Proper feeding management is one of the main factors in the success of sheep farming. Feed ingredients are any ingredients that can be eaten, liked, can be digested in part or in whole, can be absorbed and beneficial to livestock. Therefore, in order to be referred to as feed ingredients, it must fulfill all these requirements, while what is meant by feed is material that can be eaten, digested and absorbed both in whole or in part and does not cause poisoning or does not interfere with the health of the animals that consume it [3], while what is meant by rations is a mixture of several feed ingredients arranged in such a way that the nutrients they contain are balanced according to the needs of livestock [2]. Feed components that are used by livestock are called nutrients [5]. Feed functions as the construction and maintenance of the body, the source of energy, production, and regulating processes in the body. The content of nutrients that must be present in feed is protein, fat, carbohydrates, minerals, vitamins and water.

The main problem in the development of sheep production is the difficulty of fulfilling the adequacy of forage feed, especially in the dry season. Sheep productivity tends to decrease during the dry season due to the decreasing availability of both quality and quantity of feed. Therefore, innovation and alternative management of feed ingredients is a solution for the availability of sheep feed every year. One of the results of the innovation of sheep feed which proved effective in increasing the weight of sheep was fermented feed with the HCS method. Fermented feed with the HCS method commonly referred to as silage is proven to increase the weight of sheep animals in a fairly fast time, which is about 3-4 months of maintenance.

The sheep business owned by Mrs. Marsiti and Mr. Abdul Karim is located in Pomo Hamlet, Ampel Village, Wuluhan District, as one of the livestock centers in Jember Regency. Mrs. Marsiti and Mr. Abdul Karim started the sheep business from August 2013. Bu Marsiti's livestock business includes the maintenance / cultivation of slaughtered sheep (without having a sheep pen) or referred to as sheep fattening and fermented animal feed production, while Pak Abdul's livestock business Karim includes the maintenance / cultivation of cut / broiled sheep (there are livestock pens) and fermented animal feed production. Mrs. Marsiti cooperated with Pak Abdul Karim in sheep breeding because Mrs. Marsiti did not have a cage to raise her sheep. The number of livestock owned by Mrs. Marsiti at the start of the business was three sheep, while Pak Abdul Karim only had one sheep. In April 2017 the number of sheep of both partners increased, Mrs. Marsiti had eight sheep while Pak Abdul Karim had four sheep. The picture of the business conditions of the two partners is shown in Figure 1 and Figure 2.



Figure 1.2 Business Condition own by Mrs. Marsiti



Figure 2. Business Condition own by Mr. Abdul Karim

Sheep feed that is most widely used by partners is wet fermented feed or known as silage made by both partners manually. The composition of the feed made consists of ingredients: banana stems, SOC (Liquid Organic Supplements), bran, tofu pulp, sugarcane drops and water. The flow chart image of the SOC HCS feed fermentation method for the production process is shown in Figure 3.

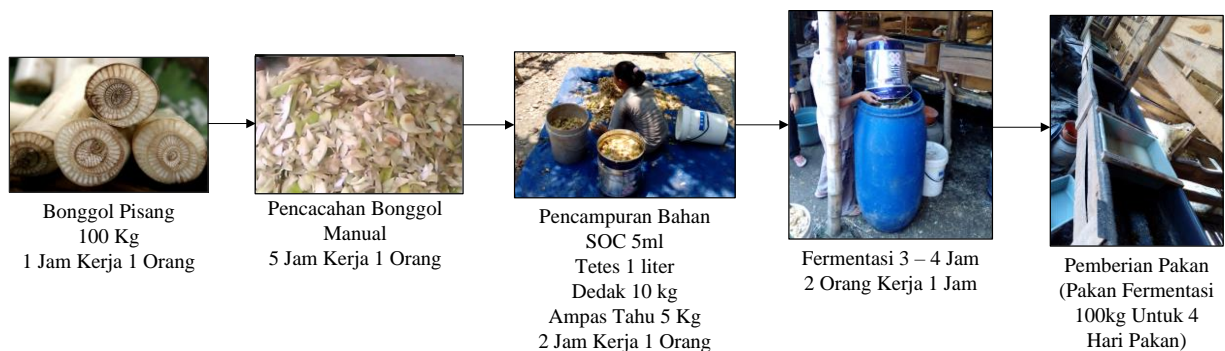


Figure 3. Flow Chart of Animal Feed Production Process with SOC HCS Method

The description of the livestock business run by the two partners begins with the purchase of young rams with a per-tail weight of about ± 12 kg - 15 kg at a price per kg of weight between Rp. 50,000, - up to Rp. 75,000, -; with a per-tail price of around Rp. 650,000, - then the young sheep is maintained for approximately four months with forage feeding and fermented feed to the weight per sheep reaches ± 20 kg. Every two months of sheep fattening, the partners again buy young sheep with a fluctuating amount, sometimes a lot, sometimes a little because the knowledge of livestock business management owned by the two partners is still very minimal.

During four months of sheep breeding, feeding methods that are more often carried out by partners are silage feed to avoid difficulties in obtaining forage feed in the dry season. Production of fermented animal feed is carried out by the partner manually, the total cost of making feed in one production is Rp. 146,000, - for 10 sheep, this feed can be used for 4 days. The provision of fermented feed method of SOC HCS proved to be effective in increasing the weight / weight of sheep which is ± 2 kg - 3 kg per month, so that in the period of approximately three to four months the weight of sheep has reached ± 20 kg. Furthermore, after reaching the desired weight, sheep will be sold at a price of \pm Rp. 75,000, - up to Rp. 90,000 per kg of livestock weight so that the selling price per sheep is between Rp. 1,500,000 - up to Rp. 1,800,000. The net profit that can be obtained by partners is \pm Rp. 450,000, - up to Rp. 750,000, - the recorder after deducting the purchase price of young sheep by Rp. 650,000, - along with fermented feed expenditure of \pm Rp. 400,000, - per sheep in four months. Means that the net profit obtained by Mrs. Marsiti every four months with the number of 8

sheep is around Rp. 3,600,000, - up to Rp. 6,000,000; whereas Pak Abdul Karim because the number of sheep is less than 4, then the net profit per four months is around Rp. 1,800,000 - up to Rp. 3,000,000. The more number of sheep owned by business actors, the greater the benefits that can be obtained. When knowing the amount of net profit that can be gained from the business of raising broiler sheep, the two partners are motivated to pursue the business of sheep.

The sheep business carried out by the two partners over the past four years has not yet shown significant progress. This is shown from the increase in the number of sheep which is still very little for four years because partners still have not implemented agribusiness management in sheep farming. Livestock businesses carried out by the two partners are still simple due to the unavailability of fermentation feed production machines and the limited knowledge of partners about proper management of livestock /business management and intensive methods of sheep farming.

Both partners need the help of animal feed production equipment in order to increase production capacity and quality of animal feed. In the aspect of livestock cultivation, partners need counseling on how to raise sheep more intensively so that the sheep fattening process can be achieved more effectively and efficiently. In the management aspect, both partners need training in business management in order to achieve maximum profits and marketing management so that they can expand the marketing area if the number of partner sheep grows rapidly.

2. Output And Target

Silage feed production problems include the lack of effectiveness and efficiency of feed production, can be solved by providing feed production machinery and equipment which include: a) chopper machines in order to shorten the time of making animal feed besides the quantity of feed made can increase (feed production capacity increases), b) fermentation vats equipped with separator so that the feed fermentation process takes place more effectively and efficiently, besides the fermentation liquid separated with its solids so that the physical condition of the feed becomes drier so that fermentation liquid can be used as a sheep drink

Partners lack knowledge about how to fatten sheep properly so that the weight of the sheep can immediately increase. The solution to this problem is to provide the training program by giving materials related to proper sheep fattening, including: how to arrange the quality of silage feed ingredients, how to maintain the balance of feeding for livestock about regulating forage intensity and feed fermentation, by giving the vitamins (prebiotic bacteria) that can increase lust feeding livestock and administering vaccines regularly along with good cage sanitation so that sheep become healthier so that the sheep fattening process can be achieved more effectively and efficiently.

Partners lack knowledge about business management and marketing management. The solution to this problem is to provide training: a) business management so that partners can manage the business better, partners are able to analyze the feasibility level of their livestock business, how much the BEP (break-even point) and net benefits can be obtained every four months; b) marketing management includes marketing strategies that partners should do to reach the market (consumers) more broadly, if later the number of sheep grows rapidly.

The output targets that are expected to be produced by this PKM activity are:

1. Fermentation feed production tools and machines which include: a) chopper machine, b) fermentation equipment in the form of barrels equipped with separator;
2. Training on how to breed/cultivate slaughtered sheep (setting the composition of quality feed, giving vitamins and vaccines, cage sanitation);
3. Business management training (business analysis) and marketing management (sheep marketing strategy).

3. Method

The design of the feed copper machine is done by using the QFD (Quality Function Deployment) method to suit the needs of partners. Quality Function Deployment (QFD) is a process and set of tools used to effectively define customer requirements and convert them into detailed engineering specifications and plans to produce the products that fulfill those requirements. QFD is used to translate customer requirements (or VOC) into measurable design targets and drive them from the assembly level down through the sub-assembly, component and production process levels. QFD methodology provides a defined set of matrices utilized to facilitate this progression. The technology used in designing feed copper machines is appropriate technology. Training on how to use feed copper machines is given by providing guidance and practice on how to use the machine and how to maintain the machine.

Training on sheep fattening (arrangement of quality feed composition, vitamin and vaccine administration, cage sanitation) and management training (business management and marketing management) are provided by describing it in the form of slides and by making modules.

Steps to evaluate program implementation and program sustainability in the field after PKM activities have been completed:

- a) Monitor and evaluate partners that are carried out after training activities (production and management) to find out partner conditions: 1) whether the partner has problems in using / operating the equipment and production machinery provided by the implementing team, 2) whether the partner has understood and better implement sheep breeding methods, 3) whether partners can manage businesses and market their livestock in a better way.
- b) Monitor partners as program sustainability to find out the conditions of partners: 1) whether the partner livestock business has been growing 2) whether the partners are still having problems in marketing their livestock. The service implementation team will try to help partner problems even though the service activities have ended.

4. Discussion

Appropriate technology (feed counting machine) is made by taking into account the needs of partners by using the Quality Function Deployment (QFD) method to obtain the criteria for the required machine characteristics.

Through the results of the questionnaire distribution to partners, the specifications of the feed mill include: propulsion machine 6.5 hp, gasoline fuel, 12 blades double blade, split blade 2 horizontal fins, 5x5 elbow iron frame, 4x4 hollow pipe frame, mild steel 2.5 mm plate body, transmission pully and V-belt type-A, wet rod chopping capacity 500 kg / hour, dry chopping capacity 500 kg / hour, two functions in one machine each hopper.

Partner mentoring activities are carried out to find out whether partners have been able to use feed production systems correctly and provide direction on how to care for feed mill so that it can be used for a long period of time. The implementing team also provides guidance to partners on how to manage / manage sheep business so that they always get a profit.

Some documentation of the activities that we have carried out are shown in Figure 4.



Figure 4. Training on the Use of Feed Copper Machines

5. Conclusion

The conclusion in this service activity there are :

- 1) Dedication activities to partners which include: provision of sheep feed production equipment and machines, training in the use of feed chopper machinery, training in business management and marketing takes place smoothly and successfully. This can be seen from the enthusiasm of the partners and participants during the training and when they received the tools and machines for feed production.
- 2) Business management and marketing training activities are expected to improve partner's business managerial abilities.
- 3) The provision of equipment and machinery for animal feed production is expected to be able to improve the effectiveness and efficiency of sheep feed production.

6. References

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