

# Hay, Provides Problem Solution of Fulfilling Forages Feed for Dairy Cattle Agribusiness

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**Abstract.** The need of forages feed for dairy cows were quite a lot, namely as food intake in order to produce high-quantity and high-quality of dairy milk. The forages feed need that needed per dairy cow were about 10% of its body weight. In fulfilling these forages feed need, sometimes it's necessary to pay for buying forage feed, especially when the dry season arrives. So it can lead to higher production costs in managing dairy cattle agribusiness. Therefore, the purpose of this activity to provide solutions for dairy farmers in fulfilling the needs of forage feed sources, without causing cost overruns. Hay processing can be an alternative solution for this problem. In this activity, hay is processed from dried soybean straw that added with urea to assist the process of amoniation and then printed in the form of blocks using a hay press. The technique of making hay is very simple and does not require high cost. Soybean straw which is indeed very abundant during the dry season. It can meet the needs of fullfilling dairy feeding, moreover it can minimize the expenditure of feed costs on the management of dairy cattle agribusiness.

## 1. INTRODUCTION

Feed is a major factor or aspect that needs attention in dairy farming activities, especially forage needs. The forage must be fulfilled because if it is not fulfilled, it will affect the quantity and quality of fresh milk produced. As for what is meant by Animal Forage (HMT) is feed derived from vegetative parts of plants / plants with crude fiber content > 18% and contains high energy. Fulfillment of forage feed can also be obtained from dry forage or called "hay" which is HMT which is dried with a water content usually <10%. One of the dry forages can be obtained from soybean plants that have been harvested seeds, or often called soy straw.

Soybean (*Glycine max L.Merr*) is one of the waste from soybean plants which is considered as material waste from soybean cultivation activities and is often thrown away or just to be burned by farmers. Soybean or so-called "hay" is a dry forage that still contains quite a lot of nutritional content. Based on information from the Agricultural Research-Ministry of Agriculture stated that soy straw contains 16.6% protein, 1.2% calcium, and 0.20% phosphorus. Therefore, soybean straw is one of the agricultural wastes that is potential enough to be used as food for dairy cattle.

The soybean straw as agricultural waste used for animal feed is the right step, in addition to increasing the use value of soybean straw, it can also provide alternative feed for dairy cows especially in meeting the needs of Animal Forage Foods (HMT) in the form of "hay" dry forages.

## 2. METHODS

The Community Service Program will be carried out on the "Sejahtera Mandiri" livestock group in Balung Lor Village, Balung District, Jember Regency. The method of implementation used is through the active participation approach of the target group through outreach activities, training and assistance. In this activity, partners are expected to always participate and play an active role at each stage of the activity. The stages that will be carried out in this activity in detail are as follows.

### a) Location Survey and Coordination with Partners

In this activity, the proposing team went to the partner location ("Sejahtera Mandiri" Livestock Group) in Balung Lor Village, Balung District, Jember Regency with the aim of finding out the conditions and conditions of partners in the field. The proposing team together with partners listed the group members who are members of the livestock group. It was also determined by the location and schedule for the implementation of the next phase of activities. a) Preparation of Material and Technical Preparation

Before conducting counseling and training, the proposing team will compile material and simulations for making dairy cattle feed using soy straw. The materials compiled include, among others, counseling materials about the benefits of soy straw as an alternative to animal feed and how to process soy straw as animal feed. In addition, at this stage the proposing team will also make a soybean straw processing simulation through ammoniation techniques to increase nutrient levels and digestibility so that it is more beneficial for the dairy cattle, which are then pressed until the straw is in the form of soybean straw blocks. Furthermore, the proposing team also simulates the formulation of dairy cattle feed with soy straw and other rations which will be given to dairy cows.

### b) Counseling the Use of Soybean Straw

Before conducting the training and demonstration activities, the proposing team will provide some counseling material first, as well as conducting socialization to farmers regarding the use of soy straw as an alternative to dairy cattle feed.

### c) Procurement of Straw Press Printing and Pressing Equipment Sets (Hay Press)

In the processing of soybean straw, hay press is needed. This equipment is used to print the soybean straw into a beam. Where according to Syarifuddin (2014) states that hay as an alternative forage feed has various forms, including long hay, cubed hay, baled hay, shredded hay, and so on. In this activity that will be used is in the form of long hay. So the set of hay press equipment is designed with a long beam mold that is added by a hydraulic machine to the sides to help press the soybean straw. Hay press is very important to use during the processing of soybean straw, for example, is useful in the process of ammoniation to storage. As is well known, that the amount of soybean straw used as dairy cattle feed is not small in number, then the use of this hay press will be able to assist farmers in processing hay (hay).

### d) Training for Soybean Processing Engineering (Hay)

After the extension activities were delivered to the breeders, the next stage was in the form of training consisting of direct practice on how to manage and store soybean straw. The breeders (partners) are expected to play an active role by directly practicing how to use soy straw as an alternative to dairy cattle feed by ammoniation. This ammoniation process is carried out to increase nutrient levels and digestibility of straw as an alternative to dairy cattle feed. The stages

of the soybean straw processing technique by means of ammoniation are as follows:

#### 1) Preparation of Materials and Tools

The main ingredients prepared are soybean straw which is dry and in good condition, while other supporting materials such as urea, plastic sheets, plastic sacks, and straps. While the equipment that must be prepared is in the form of a "hay press" printer and scales.

#### 2) Straw Pressing

Soybean straw that has been prepared is then immediately put into a mold box, then made compaction / pressing against the straw using a "hay press" machine to produce straw blocks. The purpose of pressing here is to facilitate the preparation of straw during the process

of ammoniation, making it easier to calculate the amount of weight of soy straw. After the soybean straw is printed and pressed in the form of a long beam (long hay), then the straw beam is removed from the printing press.

3) Fastening with a Rope

Soybean straw that has been removed from the printer, then tied with a rope with a strong enough.

4) Weighin

The straw that has been shaped like a block and tied and then weighed. This is done in order to determine the average amount of weight on each bond of straw blocks, so that it can be known the

total weight of the straw to be used at the ammoniation stage to obtain dairy cattle feed. In a sense

it also makes it easier to calculate the amount of urea that needs to be added to the ammonia stage.

5) Urea added

After the beam of straw (long hay) is weighed then urea is added by sprinkling evenly with the amount of dose that has been adjusted to the weight of the straw. The use of urea in the processing of straw is not much, because urea only serves to assist the process of ammonia in straw. The amount of urea sprinkled on the straw block is 4-6% of the weight of the straw.

6) Wrapping

Straw blocks (long hay) that have been sprinkled with urea are then tightly wrapped using plastic. This wrapping is done as an effort to optimize the ammoniation process, namely by conditioning the anaerobic environment.

7) Storage

The blocks of straw that have been coated with plastic are then placed in a shady place, protected from rain water. Structuring the straw blocks is done by stacking and arranged up to the top. This

ammoniation process takes approximately 30 days. Criteria for good straw ammonia results are

brownish, dry, and softer than before the amoniation process. The ammoniated straw is then stored in a storage room or warehouse that has a roof and adequate ventilation, because if the

straw is left exposed to rain then it will eventually cause weathering of the straw. Good storage

will keep the straw quality and can last up to one year.

e) Training on the Use of Soybean Processing Results as Dairy Cow Feed

After training in making soybean straw blocks that have gone through an ammoniation process for 30 days, then at this stage training will be conducted in the form of how to use soy straw as an

alternative to animal feed. This is done as an effort to apply the results of processing soybean

straw on dairy cattle managed by partners. At this stage, partners will be given formulations on how to use the soybean straw. Ammoniated straw can be given to cattle in whole form or mixed with additional food to balance the non-protein nitrogen content in urea. Where by providing straw as a staple food, it must be balanced with an adequate amount of drinking water as a counterweight, because basically the straw is in dry conditions and minimal water content.

f) Partner Assistance

During the activity, the proposing team will provide assistance to partners by establishing active communication between the proposing team and partners. This is done as an effort to anticipate

the obstacles that occur in partners. g) Monitoring and Evaluation

Monitoring and evaluation is carried out as an effort to control the quality of feed produced from the processing of soybean straw (long hay) conducted. So that monitoring and evaluation

activities can take place more optimally, during this activity partners will be given a kind of control card.

### 3. RESULTS AND DISCUSSION

Agribusiness management training is conducted by direct exposure to materials related to the management / management of dairy cattle agribusiness starting from the upstream to downstream sectors to members of the breeders' groups. Through this presentation, members of livestock groups can increasingly understand how to calculate the feasibility of dairy cattle business that has been carried out on the basis of theoretical business feasibility calculations which can then be applied by farmers. In this activity also carried out discussions that were built through a persuasive approach, so as to build effective communication with members of the Mandiri Sejahtera livestock group. The socialization activities and counseling of the management of dairy cattle agribusiness can be seen in the following figure.



**Figure 1.** Agribusiness Management Training Activities for Dairy Cattle

The making of fermented soybean straw also aims to increase levels of crude protein, freeing soybeans from contamination of other harmful microorganisms, because microorganisms that work in the process of making fermentation are beneficial microorganisms for digestion. So that by making fermentation, soybean straw is preferred by livestock (high palatabilitas) so that consumption increases and digestibility increases.

#### **4. CONCLUSION**

Based on the results of the activities and outcomes achieved in this progress report, it can be concluded that the results of the activities that have been carried out can provide outcomes in the form of improving the skills of dairy farmers, especially in the "Sejahtera Mandiri" livestock group.

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