Response of Cattle Breeders to Rice Straw Silage in Soppeng Regency, South Sulawesi Province

Sitti Nurani Sirajuddin, Aslina Asnawi, Sutomo Syawal, Jamal

Department of Social Economic, Faculty of Animal Science, Hasanuddin University, Makassar, 90245 Indonesia
Department of Animal Production, Faculty of Animal Science, Hasanuddin University, Makassar, 90245 Indonesia
Department of Fisheries Management, Faculty of Fisheries, Indonesian Muslim University, Makassar, 90245 Indonesia

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Address For Correspondence:
Sitti Nurani Sirajuddin, Department of Social Economic, Faculty of Animal Science, Hasanuddin University, Makassar, 90245 Indonesia

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ABSTRACT

The research aimed to ascertain the response of farmers of beef cattle to silage from rice straw in Lalabata village, Soppeng Regency. The research was conducted from July to August 2015 in Lalabata village, Soppeng Regency. The kind of research was descriptive and the source of data was a questionnaire and in-depth interview. The results of the research showed that farmers had a positive response to making silage from rice straw for the reason that its application by the farmer is easy because the technology for it is not difficult.

KEY WORDS
response, farmer, beef cattle, silage, rice straw Corresponding author : sitti.nurani@unhas.ac.id

INTRODUCTION

Cattle ranching in an area can make optimal use of local resources and by-products such as rice straw from rice plants and the joint production of rice bran that can be utilized by cattle as cattle feed. Feed is a major component for the success of the cattle business. According to Raldi et al. [6] the weakness that lay in the livestock production systems are not exactly feeding management. The nutrient content of forage depends on the composition of materials. Forage comes from native pasture, grasslands, improved pasture, legume-grass pasture and agricultural waste. The nutrient content of legume-grass pasture is 21%, grassland is 10,20% [7] and agricultural waste content is 3.6% [4]. Naturally, ruminants like cattle, buffalo, goat and sheep need grass and foliage as feed. Forage from native pasture and improved pasture the availability of which as forage is affected by season and while in the dry season is very limited, necessitates that an effort to find alternative feed sources that are inexpensive, economical, easy to obtain and do not compete with human need be made. Utilization of waste agricultural and plantation is choice the right to address the feed problems. The wet season is plentiful and yet the dry season has a limited stock of foliage soduring the dry season, breeders mostly use agriculture waste like rice straw. Rice generates a relatively large amount of crop residue known as straw. These residues are the leftover vegetative parts after harvesting the grains. Rice straw is made up of panicle rachis, leaf blades, leaf sheath, and the stem. The average ratio of the rice grain to rice straw is 1:1.25 [10]. Only about 20% of these straws are used for industrial (e.g., ethanol, paper, and fertilizer) and domestic (e.g., fodder) purposes [11]. Most of the remaining straws can be removed from the field, left undisturbed to serve as mulch, ploughed into the ground to add nutrients to the soil, or burnt. Burning of rice straw is the fastest mode of straw disposal but causes environmental pollution by increasing the amount of greenhouse gas into the air [12]. Rice straw is used as part of the nutritional requirements of ruminant animals in most rice-producing countries [13]. However, low
protein content, possession of phenolic properties, and high level of silica and lignin are the primary limiting factors in rice straw digestibility in ruminant animals [14].

Straw is given adapted to the cow’s body measurement. Adult cattle are generally given some 20–30 kg of straw per day, sprinkled with salt water to increase their appetite. The addition of other feed ingredients such as rice bran or legume forage can be adjusted to the availability of materials on site. In the Lalabata district, Soppeng Regency breeders pile up rice straw until dry and then burn it because of the limiting factors of rice straw with its low nutrient levels for rough nutrients, high fiber, lignin, silica [9] and low digestibility [2]. The nutrients in rice straw need to improve with physical, chemical and biological processing so it can be use for ruminants to overcome the obstacles associated with supplying animal feed in the dry season by using hay fermentation (silage) of dry grasses, like rice straw and hay, and agricultural waste like rice plants, corn, soy, etc., along with stems, leaves and twigs. Hay as forage is low quality because it contains cellulose (silica and lignin) which is hard on the digestive tract and results in a decline in both production and in the cattle population. With the method of fermentation of rice straw, ammoniation, the nutrients of rice straw can be increased so as to increase the weight of cattle. After holding counseling and training sessions concerning how to make silage of rice straw, then it is necessary to know the breeders’ responses.

Research Method:
This research was conducted between June–August 2015 in the Lalabata district, Soppeng Regency. This kind of research is descriptive. Data were collected with a questionnaire and in-depth interview. The types of data are qualitative and quantitative. Sources of data are the primary data that contain the characteristics of breeders and secondary data are data from relevant agencies. The population group is all the breeders who were followed during the counseling and training in Salokaraja Village, Lalabata district. The sample is drawn from breeders from the Latobaja group in the Lalabatadistrict, Soppeng Regency.

RESULTS AND DISCUSSION

Characteristics of Respondents:

Table 1: Characteristic of Respondent Based On Frequency Distribution

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Frequency (person)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>26-32</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>33-39</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>40-46</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>47-52</td>
<td>13</td>
<td>52</td>
</tr>
<tr>
<td>Education</td>
<td>SD</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>SMP</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>SMA/SMK</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>SARJANA</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Breeder experience</td>
<td>0-3</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3-6</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>7-10</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>Number of Family</td>
<td>1-2</td>
<td>9</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>3-4</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>5-6</td>
<td>7</td>
<td>28</td>
</tr>
</tbody>
</table>

Source: Primer Data, 2015

Table 1 shows the characteristic of the breeders’ ages in Lalabatadistrict, Soppeng Regency. They are mostly in a productive age range, 26–52 years old, which shows the breeders have the ability to raise cattle. It is in accordance with Daniel [3] who said that age is one of factors that affects production or work. Age is classified as productive and non-productive. Someone who is at a productive age will have higher productivity than someone at a non-productive age. This is in agreement with the opinion of Murwanto that the age of farmers is closely related to the adoption of technological innovation which is essential in improving productivity. Farmers of a productive age typically have a dynamic mindset and excellent physical ability to manage the cattle farming. Also in line with the opinion of Fatati that the younger the person, the faster they are in accepting change from the outside because livestock farmers have always wanted to try something new in an effort to improve their knowledge and skills in diversifying farming.

Table 1 shows the classification of respondents based on level of education, which is very diverse, ranging from elementary school, junior high school, senior high school/vocational school and bachelor’s degree. A higher percentage of breeders in Lalabata district, Soppeng Regency had an educational level of senior high school/vocational school (40%), which illustrates awareness on the part of breeders/farmers that the importance of education is great. It is in accordance in Ansar [1] who said education is an activity, a learning process, to enhance the ability to be certain that education was able to be reached. The levels of education also easily determined whether or not somebody understood the knowledge that they earned; in general a person with a
higher level of education got the knowledge better. This is in accordance with the opinion of Mahmud (2013) that low education will affect the ability of farmers in managing the beef cattle farming, especially with respect to the acceptance of new technologies and business innovation in the future. The level of education of farmers is an indicator of the quality of the population and is a key variable in the development of human resources. The adequate education of the farmer will facilitate the admission process of innovation and technological beef cattle farming. This is also in line with the opinion of Mubyarto (1986) that the educational level of farmers affects the systems of thinking, learning and the intellectual level. With formal and informal education, the farmer will have extensive knowledge and insight into making it easier to respond to an innovation that is beneficial to his business.

The experience of breeding is acknowledged to be obtained in doing maintenance and also breeding management. Table 1 shows the experience of cattle breeder to be long enough at 7–12 years and this group has a higher percentage (48%). Mastuti and Hidayat (2008) also state that with greater experience a breeder gains more knowledge so that his skill in breeding/farming can be improve. This is in accordance with the opinion of Murwanto (2008) that the experience of beef cattle farming is a variable in determining the success of farmers in raising the cattle and business development, and at the same time in increasing the income of farmers. Experience in cattle farming is a good teacher; with enough experience, farmers will be more careful in trying and can fix the flaws from the past. According to Alim and Karlina, farmers who have enough experience will be more receptive to receiving and understanding.

The number of family load shows the number of people who should be borne by the respondent’s family. Table 1 shows the family load amount of respondents, ranging from 1–6. The number of family load affected the cattle business. This is in accordance with Priyanto [5] who said that a rise of one family member is able to improve the cattle business. This is in accordance with the opinion of Sobait et al. who said that the number of family members can influence the business activities of farmers because the number of family members can supply manpower to assist with activities. Also, the greater the number of family members, the greater the family needs to be met. Thus, it will encourage farmers to obtain additional income through other businesses.

### Breeders’ Response to Making Silage from Rice Straw:

Counseling concerning making silage from rice straw was done to determine the perception of breeders about further training regarding silage in order to understand breeders’ responses after those activities. The responses of cattle ranchers were quite enthusiastic. Breeders attending outreach activities that most breeders of beef cattle in the Lalabata district attended and training on making silage from rice straw were followed by members of groups of farmers from Latobaja located in the village Salokaraja, district of Lalabata, Soppeng Regency. After training, the group members manufactured silage in large quantities of about 1.5 tons.

The reason why breeders do quite a lot of rice straw in number is that agricultural waste is quite large and not utilized. The production of rice straw variety, which can reach 12–15 tons per hectare and one harvest or total ton of dry materials, depends on the location and the type of plant varieties. Yunilas [9] said the rice straw is the rice plant once it has taken seed, including trunks and leaves. Production of rice produced about 50% of the production of dry rice crops. It is also in line with the opinion of Mahmud (2013) who states that a byproduct of the rice crop in the form of straw has huge potential to support the availability of fodder. Production of rice straw can be available in large enough quantities, with an average of 4 tons/ha, and after a fermentation process may provide material for cattle feed as many as two heads/year. Fermented rice straw is ready to be used as a base material for cattle feed, but can be added to other feed ingredients as forage legumes.

Increasing the nutritional value of the fiber by chemical processing is done by using urea in a process known as ammoniation. In ammoniation urea decomposes into CO2 and NH3. Ammoniation treatment’s effectiveness against high fibrous agricultural waste is affected by the level of provision of ammonia, temperature, length of treatment and the moisture content and quality of processed material.

A combination treatment of fermentation with ammoniation, called amofer, is able to generate an increase in efficiency that is much higher than if the treatment is conducted separately. Fermentation with cellulytic functions to break down cellulose so that the digestibility of feed increases with the production of fungal biomass, itself an enrichment of foodstuffs with high-quality protein, so the effect of fermentation itself is more effective when combined or preceded by ammoniation for the supply of nitrogen.

Syamsu’s research results [8] illustrate that the nutritional composition of fermented rice straw using microbial starter (starbio) and added urea, respectively of 0.6%, can reduce the fiber content of hay rice and showed an increase compared to the quality of rice straw when it is not fermented. This can increase the weight gain of cattle at 0.37 kg/hea/day, dry matter intake to 4.41/head/day and showed a lower feed conversion that amounted to 11.92. With beef cattle breeders it seems that the making of silage from rice straw does not need technology that is difficult.
Conclusion:
The results of this research show that response from the Latobaja group in Lalabatadistrict, Soppeng Regency are quite high in favour of making silase from rice straw.

REFERENCES