Dry matter and organic matter wafer feed and level Trembesi leaves (S. saman)

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Abstract. The main problem in the development of ruminant livestock production is the availability of feed on a continuous basis both in quality and quantity. An efficient feeding strategy is utilizing abundant and nutritious local resources for livestock. Waste agricultural and plantation crops such as corn cobs have a lower quality and palatability. Wafer is an offered alternative solution, by adding trembesi leaves that tree legume and available throughout the year. The experimental design used a completely randomized design (CRD) with 5 treatments and 4 replications. Trembesi leaves was on level (0%, 5%, 10%, 15%, 20%) in feed wafers. Parameters observed was dry matter and organic matter on feed wafer stored for four weeks. Analytical statistic showed significantly effect (P <0.05) on organic matter and no significant effect (P> 0.05) on dry matters content. It could be concluded that the level of trembesi leaves in wafer feed increased on dry matter dan organic matter.

1. Introduction
The availability of animal feed material is increasingly limited, due to the decreasing land for forage production due to land conversion ie: housing, industry and other purposes. Therefore, new resources are required to replace some or all of the forage commonly used. Feed has an important role in livestock life. Feed limitations lead to decreased livestock productivity. Fulfillment of feedstuffs should be easy to obtain and available continuously and not compete with human needs. Various agricultural by product results can be used as a source of feed raw materials, such as agricultural waste and agro-industry waste. Agricultural by product have limitations, among others, is bulky and has a low nutrient content. Therefore it is necessary to do a technology to improve the nutritional value and palatability so that it can be used as a potential feed.

Ruminants depend heavily on forage feed. The main problem in the development of ruminant livestock production is the difficulty fulfill the feed requirement and sustainability both in quality and quantity. An efficient feeding strategy is utilizing abundant and nutritious local resources for livestock. Waste agricultural and plantation crops such as corn cobs, corn and other dregs generally have a lower quality and palatability of nutritional value that needs to be improved [1]. Feed processing technology is an alternative solution offered, by adding a trembesi leaf that is a legume tree tree rich in protein sources and available throughout the year. The nutrient requirement for ruminant livestock will be fulfilled and more palatable.

Trembesi (Samanea saman), a legume tree, grow and produce leaves that are heavy throughout the year [2]. Protein content of trembesi leaves 23.26% [3], organic matter 91.16% [4]. Currently,
trembesi serves as a shade plant only and leaves have not been widely utilized. Processing of feed materials from agro-industrial waste that is enriched source of protein derived from a legume tree that leaves trebesi by complete feed technology ready to feed products containing the necessary nutrients ruminants, easily consumed and palatable.

2. Materials and methods
The research was conducted experimentally based on a completely randomized design (CRD) with 5 treatments and 4 replications. Treatments applied were the addition of trembesi on the wafer feed with the levels of 0, 5, 10, 15 and 20%, respectively. The main materials for making wafer feed are agricultural waste obtained from around the Hasanuddin University campus. The feed was prepared based on the requirement for ruminants [5]. The process of making wafer feed can be seen in figure 1. Data obtained by using analysis of variance according to completely randomized design [6], dry matter and organic matter analyzed according to AOAC method [7].

3. Result and discussion
The results showed that the physical quality test some agricultural waste which complete feed technologies such as wafer was presented in table 1.

After stored in for four week, the wafer feed have brownish color, the highest trembesi leaves level have brown-greenish color. The wafer feed have compact, not covered with mold and specific smell. The physical condition, wafer feed was still good to be ruminant feed. Dry matter and organic matter contents showed in table 2
### Table 1. Physical condition based wafer feed waste and leaves trembesi

| Physical condition | P0   | P1   | P2   | P3   | P4   |
|--------------------|------|------|------|------|------|
| Color              | Chocolate | Chocolate | Chocolate | Chocolate | Brownish Chocolate |
| Texture            | Compact | Compact | Compact | Compact | Compact |
| Fungi              | no    | no    | no    | no    | no    |
| Smell              | Specific feed | Specific feed | Specific feed | Specific feed | Specific feed |

### Table 2. Dry matter (%) based wafer feed waste and leaves trembesi

| Parameter      | Dry Matter (%) | Organic Matter (%) |
|----------------|----------------|--------------------|
| P0             | 89.39          | 87.22^a            |
| P1             | 89.76          | 87.45^a            |
| P2             | 89.76          | 87.59^a            |
| P3             | 90.91          | 88.33^b            |
| P4             | 90.40          | 88.56^b            |

Analytical statistic showed significantly effect (P < 0.05) on organic matter and no significant effect (P > 0.05) on dry matter content. Dry matter content was the lowest in 89.39% and the highest was 90.91%. Organic matter content was 87.22% and the highest 88.56%. Organic matter legum wafer feed content was 91.90% [8], and organic matter content from wafer lamtoro leaf 88.80% [9]. Wafer is one of the alternative feed making procedure to improve the palatability and consumption of nutrients for ruminants [10].

### 4. Conclusion

It could be concluded that level trembesi leaves in wafer feed increased on dry matter and organic matter.

### References

[1] Rohaeni ES., Subhan A dan Darmawan A 2010 Kajian penggunaan pakan lengkap dengan memanfaatkan janggel jagung terhadap sapi. Prosiding Lokakarya Nasional Jejaring Pengembangan sistem Integrasi jagung-Sapi. Pontianak 9-10 Agustus. Puslitbang Bogor. Hlm 185-192

[2] Delgado DC, Hera R, Cairo J, Orta YB 2014 *Samanea saman*, a multipurpose tree with potentialities as alternative feed for animals of productive interest. *Cuban J. Agric. Sci.* 48(3): 205-2012

[3] Susanti S dan Marhaeniyanto E 2014 Kadar saponin daun tanaman yang berpotensi menekan gas metan secara in vitro. *Buana Sains* 14(1): 32-38 Diakses 10 Januari 2018

[4] Datt C, Datta MSNP 2008 Assesment of fodder quality of leavest of multipurpose trees in sub tropical humid climate of india *J. Forestry Res.* 19(3) 209-214

[5] NRC 1994 *Nutrient Requirements of Small Ruminants* (Washington DC: National Academy Press)

[6] Gaspersz V 1994 *Metode Perancangan Percobaan*. Cetakan pertama. (Bandung: Penerbit CV. Armico)
[7] AOAC 2000 *Official Methods of Analysis*. 17th ed. (Washington DC: Association of Official Analytical Chemists)

[8] Dianingtyas BD, Retnani Y, Evvyernie D 2017 Legum wafer supplementation to increase the performance of post-weaning ettawah grade goats. *Med. Pet.* **40**(1) 42-46

[9] Herni, Retnani Y and Suharti S 2017 Effect as feed supplement wafer the nutrient consumption and digestibility of pasundan cattle. *The 7th International Seminar on Tropical Animal Production Contribution of Livestock Production on Food Sovereignty in Tropical Countries.* (Yogyakarta, Indonesia)

[10] Retnani Y, Suharti S, Khotijah L, Prihantoro, I, Taryati, Herni and Argadiasto D 2017 The evaluation of wafer feed supplement containing leucaena leaf on pasundan calves. *The 7th International Seminar on Tropical Animal Production Contribution of Livestock Production on Food Sovereignty in Tropical Countries.* Yogyakarta Indonesia