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Botanical Composition and Quality of Ruminant Feed Resources in the Dry Land Farming Areas in Yogyakarta, Indonesia

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Abstract

This study aims to determine the botanical composition and quality of ruminant feed resources in dry land farming areas. The research toke place in Kemejing village, Semin subdistrict, Gunugkidul district, Yogyakarta province, Indonesia. Data obtained in a participatory rural appraisal method of 17 samples of farmers which are determined by purposive sampling. Data taken within two seasons namely dry season and the wet season each for 4 x 10 days and 3 x 10 days are respectively along with agricultural harvest crops. All the data obtained are reported descriptively.

The results showed that the type of feed given to cattle is very varied. There are 35 species in the dry season and 15 species in the wet season. There is no concentrates were used as feed for 2 seasons. Rice straw is the most dominant type of feed used as feedstaff seen from the frequency of services and the amount consumed both in the dry and wet season, followed by elephant grass, corn straw, native grass and peanut straw. Ration composition was dominated by two types of feed rations by both dry and wet season with a variety of types 1-6 in the dray season and 1-4 type on the wet season. The chemical composition is not much different for each type of feed between seasons, whereas the greatest difference between the different types of feed.

The conclusion, farmers provided feed to the cattle have not been based on the nutrient requirements for production, but rather the number of quantity (stuffed animals). And to survive in difficult circumstances widely used feed forage feed from other plants.

Key words: feed resources, botanical composition, ruminant, dry land, forage, cattle

1. Introduction

Feed is a very important factor in the animal production. The main feed ruminant is forage, both quality and quantity of them are sufficient to meet the nutrient requirements, which are factors that determine the productivity of ruminants. However, in tropical regions such as Indonesia, it seems difficult to provide high quality forage in sufficient quantities throughout the year. This is caused by the difference between the dry season to the wet season, where the wet season forages grow fast and quickly so the production of abundant, whereas in the dry season, forage is difficult to grow and production plummeted.

More than 90% of beef cattle farmers in Indonesia cultivated by farmers in the rural farm household systems (Widiati, 2003), with an average tenure of each breeder 2 heads (Bakrie, 1996), or for small ruminants (goats or sheep), 4-6 heads (Budisatria, 2006). Land area in Indonesia are mostly dry land that reaches more than 60 million ha (Agus, 2005). Dryland farming syatem has an important role in the farming system despite having a lot of problems such as marginal land with limited water availability, lack of appropriate crop varieties, cultivation technology not yet developed, and the low income of farmers.

Development of farming systems in the dry lands that combine food crops with animals into the form of integrated farming system is expected to provide benefit and increases the income of farmers (Devendra, 2001; Devendra, 2011). Ruminants have greater opportunities for development in dry lands as an attempt to increase income from agriculture system as a whole (on farm) (Devendra et al., 2012).

Problems arise when utilizing dry land for a farm, it is generally nutrient-poor, less water and unfertile, so it is less productive to produce or source of food and feed. Therefore, the factors particularly the availability of feed forage which can cause fluctuations in the availability of forage, and periodically always happens every year between dry season to wet season. The quantity, quality and continuity of forage is not guaranteed throughout the year resulting in animal production can not be optimal.

Describe fluctuating of forage availability, shown that the availability of forage in addition to depending on the season is also determined by the cropping pattern and the time of agricultural crops (Ifar, 1996 and Zemmelink, et al, 2003). Therefore, the development of ruminant production at the farm level related to the availability of feed resources and socio-economic communities. Supply of animal feed derived from plants (forage, agricultural waste and plant leaves tree) whereas land availability is affected by this condition (Ifar, 1996, Zemmelink et al., 2003, Marjuki et al., 2000). In dry land agricultural crop harvest between one another is not the same, so the availability of forage derived from agricultural waste vary from time to time. At harvest crops, agricultural waste

which can be used as animal feed is abundant and not even all used for animal feed, there's something rotten or burned, on the other hand in the dry season to meet the needs of animal feed difficulties occur. The purpose of this study was to determine the botanical composition and quality ruminant feed in dry land farming areas.

2. Materials and Methods.

2.1. Time and study area

The study was conducted during two seasons namely dry season (April 2011 - Septeber 2011) and wet season (October 2011 - March 2012) to the study site in the Kemejing village, Semin sub district, Gunungkidul district, Yogyakarta.

Consideration chosen Kemejing village, Semin subdistrict, Gunungkidul district of Yogyakarta as the site of study are: (1) Gunungkidul region is an area, more than 95% in the form of dry land farming system and ruminant, especially cattle and goats are highest in the Province of Yogyakarta, (2) Semin sub district, density of ruminant (Animal unit/ agricultural land) including highest density zone in Gunungkidul, and (3) Kemejing village, density of ruminant including highest density zone in Semin subdistrict.

2.2. Sampling methods

The farmer as respondents toke with purposive sampling. Election purposively based on certain considerations appropriate to the objectives of the study. Sample selection was based on the analyst houshold ownership patterns in rural Kemejing village where most farmers raise two heads cattles, as well as the experiences, then the terms in this study the sample farmers are: (1) is a peasant farmer who has more than 2 heads of cattle, and (2) farmers have had minimum 10 years experience on raising cattle. This requirement is necessary to facilitate the digging of information related to the management of data feeding on cattle. After determining the terms of the respondent sample selection farmers or further define the number of respondents. A total of 17 farmers respondents determined by purposive sampling, with consideration of access location (technically could be used as a sampling site), time, effort and expense, and in accordance with the model of participatory rural appraisal (PRA) research. So with certain conditions set forth, of the respondents had been able to provide a closer to the truth.

2.3. Data collection

The data were obtained by direct observation in the field include: the amount and type of feed given, feeding frequency, system services, ration composition and nutrient content of feedstuff. Data taken within two seasons namely dry and wet season each for 4 x 10 days and 3 x 10 days are respectively along with the harvest of agricultural crops.

2.4. Data analysis

The data obtained from the quantitative amount and type of feed given, feeding frequency, system services, ration composition and nutrient content of feed ingredients. descriptive reported.

3. Results

3.1. Kind, frequention and feeds consumption

The results showed that the source of feed ruminants especially cattle at the farm level is highly variable. Type of feed used during the dry season there are 35 types, while the wet season 15 types, each of which consists of a group of grasses (*gramineae*), legume (*leguminoceae*), agricultural waste and forage from other plants. Feeding frequency and amount of feed consumption during the study as shown in Table 1 and 2 below.

Table 1. Feeding frequency and amount of feed consumption in dry season

No	Feedstuff	Frequency		Consumption	
		Amount	%	DM (kg)	%
1	Rice straw (*Oryza sativa*)	879	33,26	3272,36	41,51
2	King grass (*Pennisetum hibrida*)	519	19,64	1535,63	19,48
3	Corn straw (*Zea mays*)	354	13,39	814,44	10,33
4	Native grass	217	8,21	710,38	9,01
5	Peanut straw (*Arachis hypogaea*)	149	5,64	447,84	5,68
6	Banana leaf (*Musa paradisiaca*)	118	4,46	177,98	2,26
7	Mahogany leaf (*Swietenia mahagony*)	102	3,86	253,15	3,21
8	Acacia leaf (*Acacia sp*)	58	2,19	157,56	2,00
9	Banana stems (*Musa paradisiaca*)	55	2,08	174,62	2,21
10	Cassava leaf (*Manihot utilissima*)	31	1,17	64,63	0,82
11	Mungbean leaf (*Phaseolus radiatus*)	29	1,10	59,48	0,75
12	Spinach (*Amaranthus sp*)	25	0,95	11,22	0,14
13	Soybean straw (*Glycine max*)	19	0,72	88,17	1,12
14	Chickpea straw (*Vigna sinensis*)	14	0,53	4,26	0,05
15	Guava leaf (*Anacardia offinale*)	14	0,53	11,81	0,15
16	Leucaena leaf (*Leucaena leucochepala*)	7	0,26	17,40	0,22
17	Mango leaf *(Mangifera indica)*	10	0,38	7,46	0,09
18	Jackfruit leaf *(Artocarpus heterophyllus)*	9	0,34	10,15	0,13
19	Sesbania leaf *(Sesbania grandiflora)*	7	0,26	13,19	0,17
20	Cassava peels *(Manihot utilissima)*	6	0,23	21,54	0,27
21	Wora wari leaf *(Hibiscus schizopetalus)*	3	0,11	2,34	0,03
22	Kluwih leaf *(Artocarpus camansi)*	2	0,08	5,87	0,07
23	Bamboo leaf *(Gigantochloa)*	2	0,08	3,45	0,04
24	Dadap leaf *(Erythrina lithosperma)*	2	0,08	3,64	0,05
25	Munggur leaf *(Samanea saman)*	2	0,08	1,23	0,02
26	Kepil leaf *(Stelechocarpus burahol)*	1	0,04	1,42	0,02
27	Duwet leaf *(Eugenia cumini (L.) Decne)*	1	0,04	0,18	0,00
28	Papaya leaf *(Carica papaya)*	1	0,04	3,42	0,04
29	Canna leaf *(Cordyline sp)*	1	0,04	1,01	0,01
30	Johar leaf *(Cassia siamena)*	1	0,04	0,72	0,01
31	Sono leaf *(Dalbergia latifolia)*	1	0,04	1,11	0,01
32	Kapok leaf *(Ceiba petandra)*	1	0,04	1,80	0,02
33	Starfruit leaf *(Averrhoa carambola)*	1	0,04	1,71	0,02
34	Sweet potato leaf *(Ipomea batatas)*	1	0,04	3,02	0,04
35	Banana peels (*Musa paradisiaca*)	1	0,04	-	0,00
	Total	**2.643**	**100**	**7884,19**	**100**

DM : dry matter

Table 2. Feeding frequency and amount of feed consumption in wet season

No	Feedstuff	Frequency		Consumption	
		times	%	DM (kg)	%
1	Rice straw (*Oryza sativa*)	549	41,60	2483,35	41,68
2	King grass (*Pennisetum hibrida*)	508	38,50	1176,15	19,74
3	Corn straw (*Zea mays*)	325	24,60	1830,80	30,73
4	Native grass	87	6,59	163,97	2,75
5	Peanut straw (*Arachis hypogaea*)	40	3,03	177,56	2,98
6	Mahogany leaf (*Swietenia mahagony*)	15	1,14	21,03	0,35
7	Banana leaf (*Musa paradisiaca*)	13	0,98	47,21	0,79
8	Chickpea straw (*Vigna sinensis*)	10	0,76	16,14	0,27
9	Cassava leaf (*Manihot utilissima*)	7	0,53	16,18	0,27
10	Guava leaf (*Anacardia offinale*)	6	0,45	7,95	0,13
11	Lecaena leaf (*Leucaena leucochepala*)	6	0,45	5,96	0,10
12	Hibiscus leaf (*Hibiscus sp*)	5	0,38	2,60	0,04
13	Mango leaf *(Mangifera indica)*	2	0,15	6,04	0,10
14	Jackfruit leaf *(Artocarpus heterophyllus)*	1	0,08	1,73	0,03
15	Acacia leaf (*Acacia sp*)	1	0,08	1,57	0,03
	Total	**1320**	**100**	**3474,91**	**100**

DM : dry matter

There are 5 types of feedstuff used as feed predominantly seen from the amount of the gift (frequency of services) and the amount of DM feed consumption, which are rice straw, King grass, corn straw, native grass and peanut straw.

Rice straw

The frequency and amount of DM consumption in both of the dry and wet season were 33.36% vs. 41.59% and 45.54% vs 41.68% respectively (Tables 1 and 2). The highest percentage compared to other feeds showed rice straw is the most dominant type of feed used as feed (the highest frequency of services) and also the most widely consumed (highest intake) by cattle. This is due to extensive planting and rice harvesting area greater than most other plants, so that the production of rice straw was also greatest among forage types or other agricultural wastes. On the other hand, rice straw is a type of forage the easiest and most widely stored, and most often bought by farmers as farmers supply of feed to be used in times of feeding shortage. Even more interesting is the wet season turns on the use of rice straw remains highest. This shown that rice straw is a type of feed are stored and also the most easily gift to cattle when farmers are labor difficulties, such as crop harvest.

King grass

King grass commonly used in both dry and wet season and most widely consumed during the dry season after rice straw, while the amount consumed during the wet season under maize straw. The frequency and amount of consumption for both of the dry and wet seasons were 19.64 vs 38.48% and 21.37% vs 19.74% respectively (Tables 1 and 2).

The high use of elephant grass shown that more intensive farmers have planted King grass. Evidently, soils unsuitable for food crops (eg. land at the edges of rivers, lands on the roadside and terracering) has been planted of this grass. The extent of planting and age of cutting (harvesting) is usually done by the farmers is 30 days (1 month) when there is rain resulted in the production of elephant grass high enough to use for cattle also high.

Corn straw

Corn straw was ranked third out of gift frequency and the amount of DM consumption in the dry season and the frequency of the wet season, while the consumption amount ranks second after rice straw. The value of the gift frequency and the amount of consumption in both of the dry and wet season, 13.39% vs. 24.62% and 11.33% vs 30.73% respectively (Tables 1 and 2).

Both of the extensive planting and harvesting area, the largest corn crop after rice, so that the production of wastes (corn straw) are also high. Corn is a type of crops planted since the first planting season in the wet season, especially in lands are not suitable for dry field rice plants, and the most widely planted crops than any other. However, corn straw utilization is not maximized, because the storage is difficult, so that when the corn harvest,

a lot of waste (corn straw) that is not utilized as much foul and or burned. Corn straw storage constraints are to be completely dry, to prevent rot and mildew if the water level is still high. On the other hand in storage is often eat by a termites a kind of insects, so farmers are not interested in the storage of corn straw. Farmers have tried to use maize straw as livestock feed as much as possible by taking first while waiting for leaves dried beans and corn ready for harvest. So the last living maize stems and seeds freshly harvested remaining. There is no farmer who does storage in fresh condition (*silage*), despite the fact that farmers have known this conservation technique.

Native grasses

Native grass (difficult to measure production), is ranked fourth in the frequency of gift and the amount of DM consumption in both the dry and wet seasons. The amount and frequency of consumption amount both of the dry and wet season, 8.21% vs 6.59% and 9.89% vs 2.75% respectively (Tables 1 and 2).

Sources of native grass is in crop land and obtained simultaneously with the current crop weeding. Total consumption in the dry season was higher than the wet season, because during the dry season most farmers plant weeding activity 2 times while in the wet season only one time, and during the wet season so much land flooded amount of native grass also gained less. During the study found no peasant farmers who are looking for native grass public fields such as riverbanks, roadsides, and other places, because the land is already widely used as a land of elephant grass, on the other hand farmers also do not have time to look for native grass.

Peanut straw

Peanut straw was ranked fifth as a feedstuff used as cattle feed. Planting and harvesting peanut are smaller than rice or corn, so it is much less waste production. Farmers are not much interested in planting peanuts, because it requires time and treatment plants are more complex than rice and corn. Peanut straw is also difficult to store and leaves fall off easily when drying. Peanut straw should be completely dry before storing it as if it does not dry well, easy rotten and moldy straw, so the cattle do not like it.

Other forage

Other forage is used as cattle feed but use little (frekuenasi and total consumption) such as leguminoceae, such as sesbania and leucaena leaves; agricultural waste such as cassava leaves, soybean straw, mung beans straw and chickpea straw and forage crops such as leaf acacia leaves, mahogany leaves, banana leaves, etc.

Leucaena and sebania leaves are very small used as feed, even sesbania leaves only be used during the dry season. Types of legumes such as Gliricideae has potential as a high quality feed for protein content not used as feed both dry and wet seasons. Plants of this type are difficult to find at the sites. The low use of legumes leaves is due to farmers not to cultivate the types of plants, so the availability of the forages too low.

Other types of agricultural waste could be calculated production potential such as cassava leaves, soybeen straw and mung beans straw, little use. This is due to soybean straw obtained after soybean seeds taken after drying so that the leaves fall off the stem and peel the seeds stay. While mung beans straw very little use due to extensive planting and harvesting area is also small and only planted during the dry season. Widely planted and harvested area of cassava in fact a large (wide), as well as high production, but its use is not optimal, because the cassava leaves are difficult to store, and there are poisonous, so farmers ranchers afraid to use it. Cassava leaves are usually given to cattle in the state are still fresh.

Found the use of forage crops such as banana leaves, mahogany leaves and acacia leaves, both in the dry and wet seasons and in high enough amounts, especially in the dry season. In the dry season, which already scarce agricultural waste (not harvesting crops) and grass growth has slowed (there is no rain), types of trees are still green and the leaves can be used as animal feed. On the other hand, during the wet season is widely used mainly plant leaves, especially at the beginning of the wet season, where the new grass begins to grow (yet to be harvested) and the new crop was planted. These plants potentially be used as an alternative feedstuff.

Thats interesting, the type of forage that are used as animal feed during the dry season variations far more than the wet at 23 vs 6 types (Tables 1 and 2), although the numbers were small quantity (a little). This shown that during the dry season feed shortages and to maintain the condition of livestock (survive), then the farmer use forage from other plants. Such as banana trees, bamboo leaves, duwet leaves, sono leaves, munggur leaves, kluwih leaves, etc., which in the wet season is not used at all (Tables 1 and 2). Other forage crops derived primarily from their own land around the house (garden). Both of dry and wet season the feed requirements of more than 95% satisfied from agricultural waste and grass.

3.2. Ration composition

The composition of the ration during the study in both of the dry and wet season as shown in Table 3 below.

Table 3. The composition of the ration during the study

No.	ration composition	dry season		wet season	
		Amount	%	Amount	%
1	1 kind (single)	95	14,84	99	22,00
2	2 kinds (double)	241	37,66	253	56,22
3	3 kinds (triple)	202	31,56	95	21,11
4	4 kinds (Quadruple)	85	13,28	3	0,67
5	5 kinds (Quintuple)	15	2,34	-	-
6	6 kinds (Sextuple)	2	0,31	-	-
	Amount	**640**	**100**	**450**	**100**

The results showed that during the dry season ration composition comprising a single ration (one type of feed) to 6 types of feed during all the day, while in the wet season consists of a single to 4 types of feed (Table 3). Large variations in the composition of the ration during the dry season than the wet season showed that during the dry season feed shortages occur indication, so as to meet the needs of feed (amount) used different types of feed in small amounts (Table 1). In wet season the ration composition dominated diets single up to 3 types during all the day. This shown that feed availability during the wet season are more. The composition of the ration of the largest in the dry season and the wet ration is composed of two types of feed material during all the day which is 37.66% and 56.22%. Peasant farmers give their cattles feed on the assumption the needs of the quantity (amount), not based on the need of quality. And that's still in the forecast according to the custom of farmers by looking at the behavior of cows intersection, which if still screaming, it denotes lack of feed (still hungry). This is evident from the type of feed given to the cattle almost everything is green (Tables 1 and 2), and not at all given concentrates.

3.3. Feeds quality (nutritive value of feeds)

The chemical composition of potential feedstuff (can be calculated production) in both of the dry and t wet season as shown in Tables 4 and 5 below.

Table 4. Chemical composition of feedstuff (dry season)

No	Feedstuff	DM	CP	CF	EE	ASH	MDD	DOM
			---------- % DM ----------					
1	Rice straw	22,81	5,78	32,22	1,79	26,00	33,30	27,49
2	Corn straw	28,26	7,16	23,06	1,23	10,03	46,91	42,05
3	Peanut straw	19,46	12,67	21,62	2,48	10,08	66,92	62,10
4	Soybeen straw	50,23	10,58	23,29	1,97	6,05	50,35	42,76
5	Mungbean straw	27,11	11,18	23,14	2,11	10,66	62,63	55,63
6	Cassava leaves	26,53	18,14	17,54	5,41	6,76	52,91	48,17
7	Elepant grass	19,96	9,61	34,27	1,57	21,17	41,10	34,58

DM : dry matter; CP : crude protein; CF: crude fiber; EE : extract eter; DMD : dry matter digestibility; OMD : organic matter digestibility

Table 5. Chemical composition of feedstuff (wet season)

No	Feedstuff	DM	CP	CF	EE	Ash	DDM	DOM
			---------- % DM ----------					
1	Rice straw	22,15	4,91	27,00	0,61	21,47	38,50	36,94
2	Corn straw	27,40	5,81	29,15	2,22	10,92	39,06	37,29
3	Peanut straw	18,41	8,72	28,18	0,56	17,77	49,62	47,45
4	Soybeen straw	50,54	10,09	22,91	1,95	6,13	51,16	43,29
5	Mungbean straw*)	-	-	-	-	-	-	-
6	Cassava leaves**)	-	-	-	-	-	-	-
7	Elepant grass	19,60	10,20	22,99	1,53	13,76	55,67	52,66

DM : dry matter; CP : crude protein; CF: crude fiber; EE : extract eter; DMD : dry matter digestibility; OMD : organic matter digestibility
*) Not planting
**) harvest in July-August (dry season)

The results showed that the type of feed potential in both of the dry are 7 types and wet season 5 types. In the wet season, mungbean straw and cassava leaves shoots no data, because mungbean are not planted on the first

planting (the rainy season), while the cassava harvest season yet (harvested in the dry season). Nutrient content for each type of feed did not differ much between both of the dry and wet season, whereas a significant difference exists between the type of feed.

4. Discussion

There is great variation in the type of feed used during both of the dry and wet seasons (35 species vs. 15 species), and rice straw is the most dominant type of feed used as feed views from the highest frequency of gift and also the most widely consumed (highy BK intake). Rice straw is the most widely consumed by cattle, even up to 78% (Marjuki, et al., 2000). This is due to extensive planting and rice harvesting area greater than most other plants, so that the production of rice straw was also greatest among types of forages or other agricultural wastes. Rice are the main crops grown by farmers (Winarto, et al., 2000). Rice straw is a type of forage the easiest and most widely stored, and most often bought by farmers.

As with the high use of feed corn straw (rice straw at the bottom), due to extensive planting and harvested the largest corn crop after rice, so that the production of wastes (corn straw) are also high. Corn is the main crop after rice (Marjuki, et al., 2000; Winarto, et al., 2000).

Corn is a type of crops planted since the first planting season in the wet season, especially in lands are not suitable for dry field rice plants, and the most widely planted crops than any other.

Sources of native grass is in cropland and obtained simultaneously with the current crop weeding. It is very closely related to the availability of labor. Native grass is obtained when working for food crops, because the grass grows on the sidelines of the crop. Access to food resources is closely linked to the availability of labor farmers (Marjuki, et al., 2000; Winarto, et al., 2000). Total consumption in the dry season was higher than the wet season, because during the dry season farmers at least do an activity 2 time weeding crops, while only 1 time during the wet season (Suwarto, 2006), and during the wet season more land under water (Marjuki, et al., 2000) so that the amount of native grass also gained less

Use of peanut straw dominance under rice straw, corn straw and native grasses. Planting and harvesting peanut are smaller than rice or corn, so it is much less waste production (small). Peanuts is a plant that few (minor) planted (Marjuki, et al., 2000; Winarto, et al., 2000). Farmers are not much interested in planting peanuts, because it requires time and treatment plants are more complex than rice and corn.

Other forage was a little used as cattle feed (frequency and total DM consumption) were leucaena leaves, sesbania leaves (legumes), cassava leaves, soybean straw, and mungbean straw (agricultural waste), acacia leaves, mahogany leaves, banana leaves, etc. (forage trees).

Forage types such as cassava leaves, soybean straw and mungbean straw really can be calculated on potential production, but which are a little used. This is due to soybean straw taken after seeds drying so that the leaves fall off the stem and skin live seeds (Marjuki, et al., 2000). While straw green beans very little use due to extensive planting and harvesting area is also small, and only planted during the dry season. And the planting and harvesting of cassava actually large (wide), as well as high production, but its use is not optimal, because the cassava leaves are difficult to store, and there are poisonous, so farmers afraid to use it (Ifar, 1996). Cassava leaves are usually given to cattle in the state are still fresh. Other forage crops derived primarily from their own land around the house (garden) (Marjuki, *et al.,* 2000).

In the wet season the ration composition dominated diets 1-3 types during all the day. This shown that feed availability during the wet season more. The composition of the ration of the largest in both of the dry and wet season is composed of two types of feedstuff during all the day which are 37.66% and 56.22%.

Nutrient content for each type of feed did not differ much between both of the dry and wet season, whereas a significant difference exists between the type of feed. Variations nutrient content of each type of feed are small (Ifar, 1996), and this variation depends on the state of the soil, climate, crop growth stage and variety (Crowder and Chedda, 1982). Greatest variation occurs between different types of feed according Ifar, (1996) and Zemmelink et al., (2003).

5. Conclusions

1. Type of ruminant feed during the dry season greater variation (35 types) than the wet season (15 types), and rice straw are most dominant for both of the seasons
2. The composition of the ration during the dry season is greater (1-6 kinds) than the wet season (1-4 kinds), and composition for the ration both of the season was dominated by two types of feed
3. The chemical composition of the feeds do not differ much between types of feed while significant difference between both of the dry and wet season

4. Farmers do not pay attention to the quality of the feed given to cattle, appear only forage (predominantly agricultural wastes) are given without giving concentrates

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