IMPROVEMENT OF FORAGE MANAGEMENT FOR BALI CATTLE IN SOUTH SULAWESI

(Peningkatan Pengelolaan Hijauan untuk Sapi Bali di Sulawesi Selatan)

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ABSTRAK

Salah satu faktor yang berpengaruh terhadap produktifitas sapi bali adalah ketersediaan hijauan pakan yang berkualitas. Berdasarkan hal tersebut, the Australian Center for International Agriculture Research (ACIAR) bekerjasama dengan Universitas Hasanuddin dan BPTP Sulawesi Selatan telah melaksanakan suatu kegiatan yang bertujuan untuk meningkatkan pengelolaan hijauan pakan di Sulawesi Selatan. Kegiatan ini dilaksanakan langsung di lahan pertanian/peternakan melibatkan enam puluh orang peternak sebagai "*best bet*" atau petani contoh dari dua belas desa di tiga kabupaten (Barru, Bone, dan Gowa). Adapun aspek yang jadi perhatian adalah tingkat pemanfaatan hijauan yang selama ini telah digunakan oleh peternak dan tingkat pemanfaatan hijauan yang diintroduksi oleh kegiatan ACIAR tersebut. Estimasi kecukupan hijauan dibanding jumlah ternak sapi pada setiap lokasi juga dievaluasi. Hasil penelitian menunjukkan bahwa sebelum pelaksanaan program ACIAR, rataan proporsi hijauan yang diberikan kepada ternak sapi adalah 43,4% rumput gajah, 34,4% rumput alam, 12,6% jerami kacang tanah/jagung, 9,1% jerami padi, dan 0,7% daun legum pohon. Setelah terlibat dalam program, terjadi perubahan proporsi hijauan yang digunakan sebagai pakan, yakni 47,3% rumput gajah, 13,4% rumput alam, 12,4% jerami kacang tanah/jagung, 12,3% jerami padi, 4,1% daun legum pohon dan diikuti pemberian hijauan yang baru diintroduksi berupa 2,1% rumput setaria, 2,5% mulato, 5,1% paspalum, dan 0,9% panicum. Kesimpulan, terjadi perubahan proporsi hijauan yang digunakan sebagai pakan sebelum dan sesudah terlibat dalam program, yang mana proporsi penggunaan rumput gajah dan daun legum pohon mengalami peningkatan sementara terjadi penurunan persentase penggunaan rumput alam. Pemanfaatan limbah pertanian relatif stabil. Dalam hal penggunaan rumput yang baru diintroduksi, paspalum merupakan hijauan paling populer bagi peternak *best bet* untuk digunakan sebagai pakan sapi bali.

Kata kunci: Pengelolaan hijauan pakan, Sapi bali, Sulawesi Selatan

ABSTRACT

One factor affecting productivity of bali cattle is availability of good quality forages. Based on that reason, Australian Centre for Internatioanal Agriculture Research

(ACIAR) in cooperation with Hasanuddin University and BPTP of South Sulawesi funded a program with an aim to improve forage management for bali cattle in South Sulawesi. This activity was carried out under farm condition involving sixty "*best-bet*" farmers in twelve villages across three districts (Barru, Bone and Gowa). Aspects evaluated in this program were utilization of existing forages and utilization of new forages by the farmers. In addition, sufficiency of forage for the cattle of best bet farmers was also evaluated. The results indicated that before implementation of ACIAR program, the average proportion of forage used by the farmers to feed on the cattle was 43.4% elephant grass, 34.4% native grass, 12.6% peanut straw/maize stover, 9.1% rice straw, and 0.7% tree legumes. After program implementation, there was a change in the proportion of forage for cattle, namely 47.3% elephant grass, 13.4% native grass, 12.4% peanut straw/maize stover, 12.3% rice straw, 4.1% tree legume leaves. Proportion of some new forages used by the farmers was 2.1% setaria, 2.5% mulato, 5.1% paspalum, and 0.9% panicum. In conclusion, there was a different in the proportion of forages used by the farmers to feed on the cattle before and after project implementation, in which the proportion of elephant grass and tree legume leaves increased and decreased in the use of native grass, while use of agricultural byproduct was relatively stable. In terms of utilization of new grasses introduced, paspalum was the most popular grass for best bet farmer to feed on the cattle.

Key words: Forage management, bali cattle, South Sulawesi

INTRODUCTION

In the year 2007, cattle population in South Sulawesi was 668.000 heads and is targeted to reach 1 million heads in 2013 (Daud, 2009), while national population of cattle in 2010 was 12.6 million. This cattle population will be expected to increase in order to meet the adequacy of national meat (Directorate General of Animal Husbandry, 2010). To achieve target population, one factor that needs to be addressed is the availability of sufficient and good quality forage for the cattle. One alternative way to solve the problem is by optimizing the use of local feed resources that already exist and the introduction of new forages of various types of grasses and legumes. Offering sufficient quantity and good quality of forage will assure the productivity of cattle (Corfield, *et al.* 2008; Wirdahayati, 2010).

To be effective, improvement of cattle forages should be carried together by the farmer-breeders and technology providers such as universities or research centers and supported by a policy manager in this case is the local government. For that reason Australian Centre for International Agriculture Research (ACIAR) in collaboration with Hasanuddin University and BPTP has launched a program to improve forage management for beef cattle production in South Sulawesi. Collaboration between these components, through working and studying together in the land of farmers, will be expected to give a significant impact on the forage productivity and also on the attitudes of farmers. This paper elaborates the improvement management of forages for bali cattle in three districts of South Sulawesi Province from September 2008 (before ACIAR program) till April 2009 (8 months after program implementation).

MATERIALS AND METHODS

This research was carried out in twelve villages across three districts, i.e. Barru, Bone and Gowa, South Sulawesi. Selection of the three districts as the sites of activities was based on the factor that those areas are well known as the center for bali cattle development in South Sulawesi. From each village, five farmers were selected to participate in the program giving total number of sixty farmers. Those selected farmers were called as "*best bet farmers*". The selection of farmers was based on such criteria as they are having both land and cattle. The program evaluation was conducted from September 2008 (before ACIAR program initiated) till September 2009.

Some of variables observed were proportion of forages fed on the cattle, estimation of forage yield, and estimation on requirement of forage by cattle own by best bet in each district. Proportion of forages given to the cattle was determined as the ratio of one type of forage with the total amount of all forage given to the cattle for each farmer. While availability of forage was estimated as follows: forage owned by each farmer was sampled using a quadrant 1 x 1 m^2, the forage then cut and weighted to know the fresh weight of forage. The sample was dried to determine dry matter yield. Production obtained from quadrant was then converted to estimate dry matter yield per ha. Estimation on the sufficiency of available forage and the cattle own by best bet farmers was determined based on the assumption that each cattle requires forage for the amount of 3% of live weight. Average body weight of cattle was assumed as 275 kg. All data collected in this program were analyzed descriptively.

RESULTS AND DISCUSSION

Estimation on the available forage (ton DM/ha) on individual best bet farmer as well as proportion of forage fed on the cattle are discussed according to district level.

Barru District

An estimate dry matter production of forage, which was calculated on the availability of cattle forage at farmers' groups in Barru District, is presented in Fig. 1 while proportion of cattle forage offered is given in Fig. 2. Before the research activities (September 2008), forage yield was 228.9 tons DM and increased to 267.7 tons DM (April 2009) or there was an increase by 17.0%. The number of cattle owned by farmer group in Barru is 147 which requires the amount of forage 325.3 tons DM. This fact indicated that there was a lack between the forage need of cattle and availability of forage. This lack can be fulfilled by the farmers by optimizing the fallow land for planting grasses. In addition, farmer provided storage facility to store crop residues. The main crop residues preserved by the farmers as backup forage was peanut straw and rice straw. Feeding system was a combination of grazing systems and cut-carry system. Therefore the natural grass of the pasture remains a major source of forage beside that elephant grass and crop residues. Pasture grass still be important as reported by Hadi, *et. al.* (2002) that in the Barru District of South Sulawesi Province and the Sumbawa District of West Nusa Tenggara Province, the allocation of grazing areas for breeding farms village is very important.

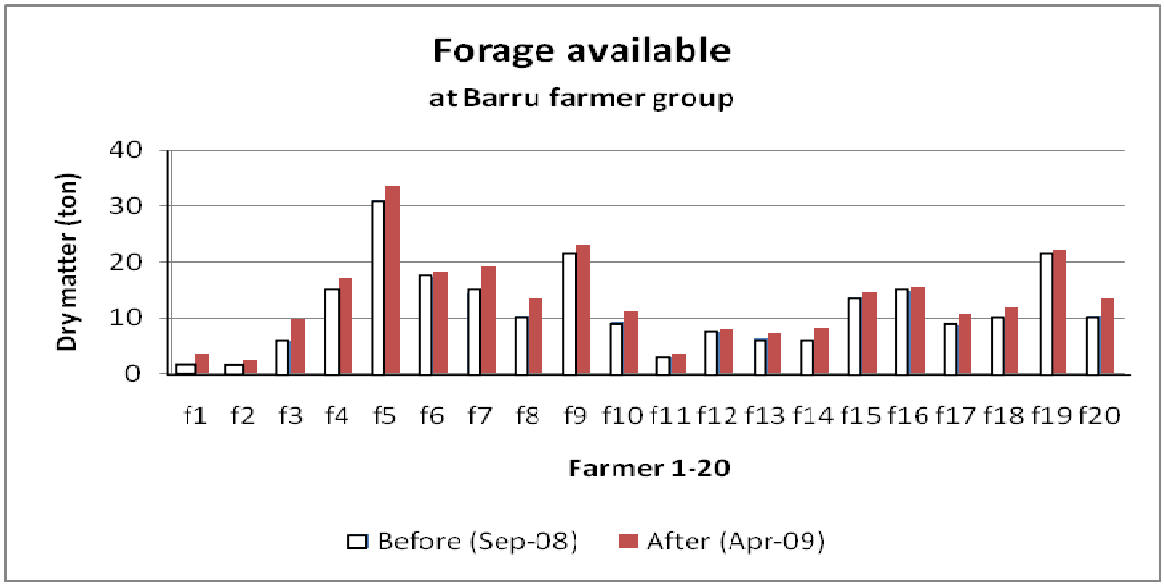
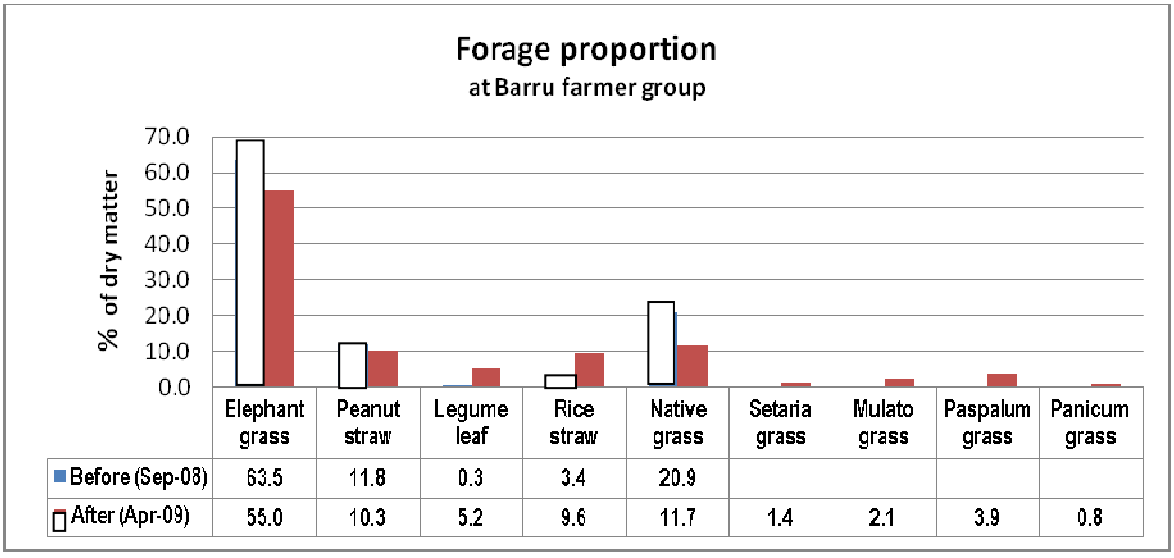


Figure 1. The availability of cattle forage to each 20 persons selected farmers at Barru district before and after the project implemented.



	Elephant grass	Peanut straw	Legume leaf	Rice straw	Native grass	Setaria grass	Mulato grass	Paspalum grass	Panicum grass
Before (Sep-08)	63.5	11.8	0.3	3.4	20.9				
After (Apr-09)	55.0	10.3	5.2	9.6	11.7	1.4	2.1	3.9	0.8

Figure 2. The proportion of cattle forage offered at Barru district before and after the project implemented.

Forage proportion given to the cattle is presented in Fig. 2. Prior to research activities (September 2008) proportion of forage given to cattle was 63.5% elephant grass, native grasses 20.9%, 11.8% of peanut straw, rice straw 3.4% and 0.3% legume leaves. After research activity (April 2009), proportion of elephant grass decreased to 55%, native grass decreased to 11.7%, used of peanut straw and rice straw was 10.3% and 9.6% respectively, while legume leaves was 5.2%. This was coupled by the use of new grasses, namely 1.4% setaria which were grass setaria, 2.1% mulato, 3.9%

paspalum, and 0.8% panicum. The increased use of legume leaves and new grass plants was possible because farmers planted legume Gliricidia (*Gliricidia sepium*) as a living fence and planted new grass on land that was still fallow. Among new grasses introduced, paspalum was mostly preferred grass. Farmers like it because the plants are not itchy and not heavy to transport. In addition, fraction of leaves is higher than the stem so that is more preferred by the cattle. High yield of paspalum has been reported by several researchers (Kalmbacher *et. al*. 1997; Somsak Poathong and Chaisang Phaikaew, 2000; Bahar, 2008; Bahar and Natsir, 2010).

Bone district

An estimate dry matter production of forage, which was calculated on the availability of cattle forage at farmers' groups in Bone District, is presented in Fig. 3 while proportion of cattle forage offered is given in Fig. 4.

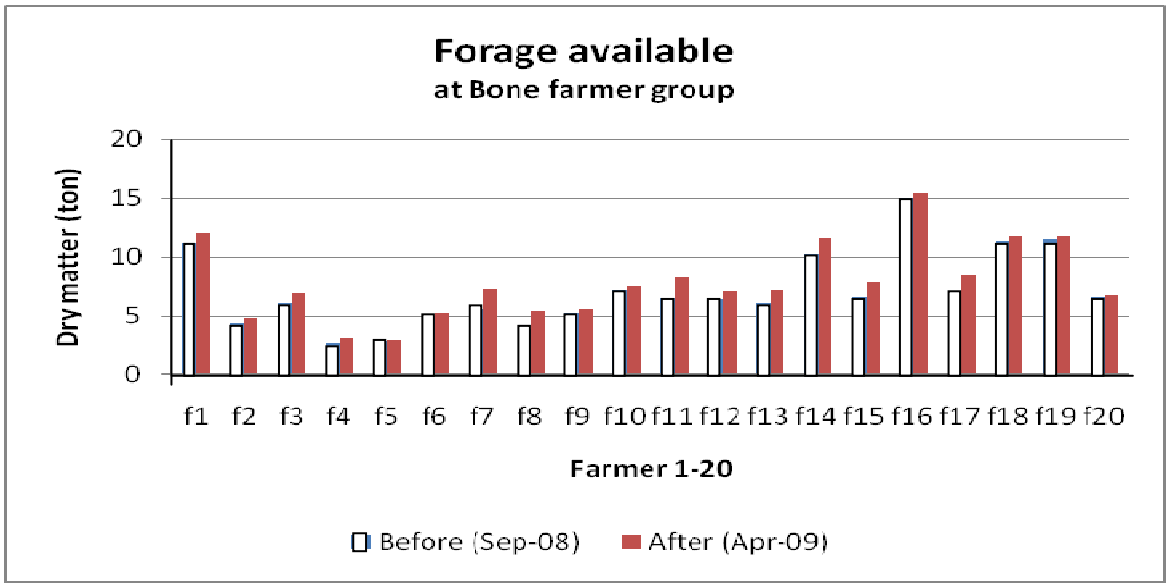


Figure 3. The availability of cattle forage for each person of 20 selected farmers at Bone District before and after the project implementation.

Before program implementation, total availability of forage was 141.5 tons DM and increased to 157.1 tons DM after implementation or increased by 11.0%. The number of cattle owned by farmers groups Bone was 95 heads. If each cattle required 3% DM forage of its live weight, it was required forages 215.4 tons DM per year. This can be fulfilled by Bone farmers through the increased supply of forage crops from the lands that were still fallow and increased use crop residues. Crop residues that were mostly stored by farmers as a backup feed was peanut straw and rice straw. Feeding system was a combination of grazing systems and cutting-transport system. Therefore, the natural grass of the pasture is still a major source of feed other than grass and crop residues.

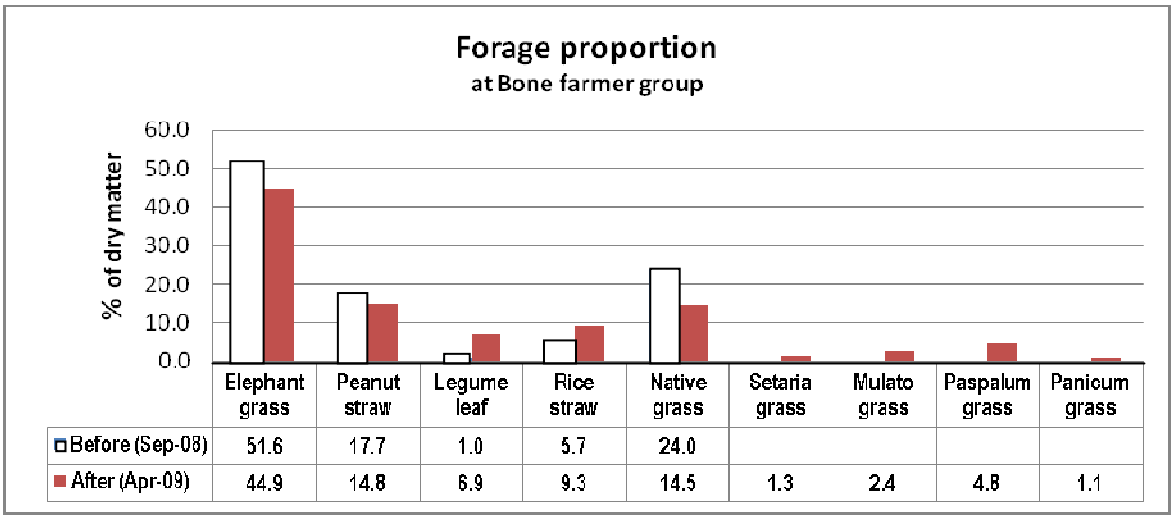


Figure 4. The proportion of cattle forage offered at Bone District before and after the project implemented.

Before the program, proportion of forage given to cattle was 51.6% elephant grass, 24.0% native grass, 17.7% peanut straw, 5.7 rice straw, and 1.0% legume leaves. But after the program implemented, use of elephant grass was 44.9%, 14.5% of natural grass, peanut straw 14.8%, 9.3% rice straw, legume leaves proportion increased to 6.9 % and coupled by the use of new grasses, namely 1.3% setaria, 2.4% mulato, 4.8% paspalum, and 1.1% panicum. The increased use of legume leaves and new grass plants is possible because farmers planted legume Gliricidia (*Gliricidia sepium*) as a living fence and the used the empty land to grow new grasses.

Gowa district

Unlike farmers in two other ditricts, farmers in Gowa used more natural grass to feed their livestock by grazing system in limited communal pasture. This phenomenon especially occurred in the lowland village with intensive rice cultivation with very limited land to plant fodder grass. while in the highland village, the land was still available to grow fodder grass. Before program implementation, total availability of forage (Fig. 5) was 96.2 ton M and after program implementation, it increased to 158.2 tons of DM which means there was an increase of 62.1 tons DM or 64,5%. The number of cattle owned by farmers' groups was 99 head which roughly required 171.9 ton forage DM per year. Even though the lack of forage was quiet high, this lack can be fulfilled by the farmers by continuing adding forages from the fallow land and increased saving of crop residues. The main crop residues stored by the farmers of Gowa was rice straw and maize Stover. However, the saved crop residues only became the main course at a certain moment within a year, which was in the dry season. Feeding system was a combination of grazing system and cutting-transport system. Farmers in Gowa utilized available natural grass by allowing their cattle to graze. Therefore, the natural grass of the pasture is still a major source of feed other than grass and crop residues.

Forage proportion (Fig. 6) given to cattle before the program was 15.2% elephant grass, 58.4% natural grass, 18.2% rice straw, 8.2% corn stover and not used legume

leaves. However, after program implementation, the use of elephant grass increased 41.9%, used of natural grass decreased 14.0%, 18.0% rice straw, 12.0% maize straw and there was a slight use of legume leaves which was 0.1%. The use of new grass was quiet good, which was 3.5% setaria, 3.0% mulato, 6.7% paspalum, and 0.8% panicum.

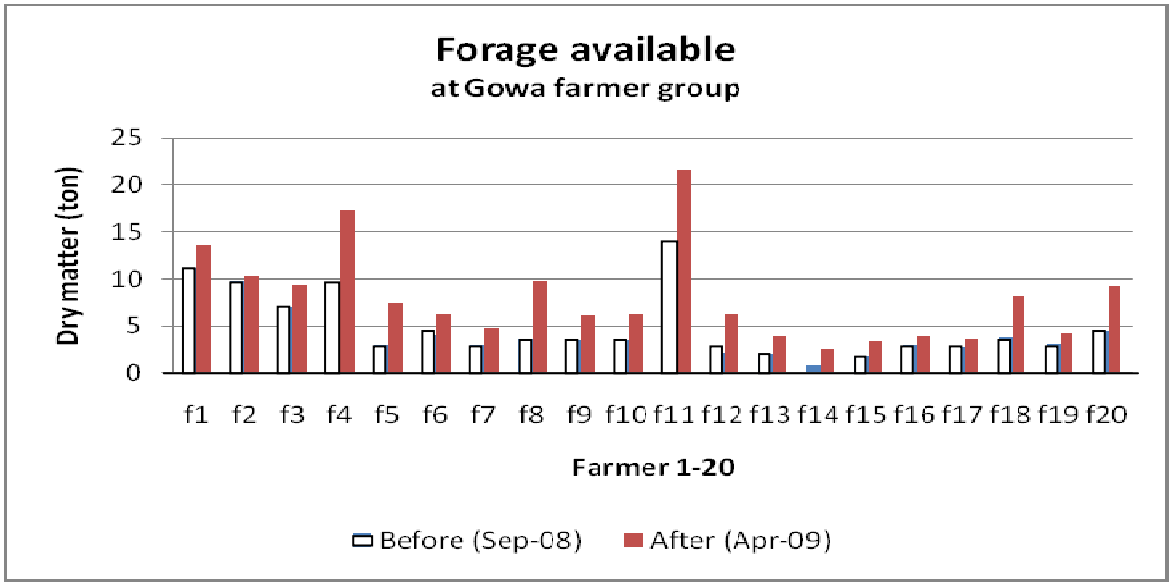
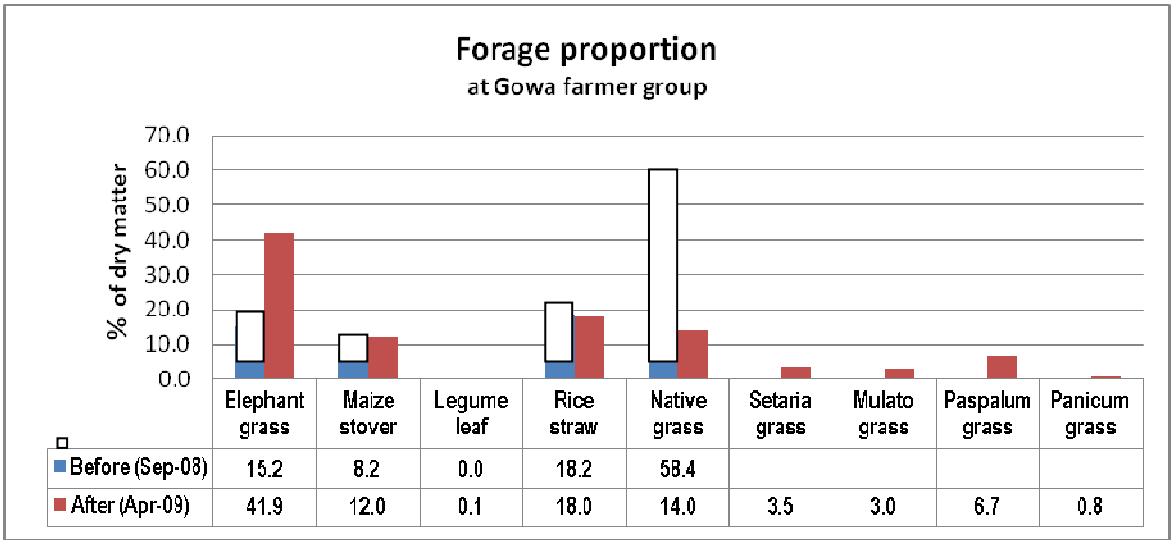


Figure 5. The availability of cattle forage for each person of 20 selected farmers at Gowa District before and after the project implementation.



	Elephant grass	Maize stover	Legume leaf	Rice straw	Native grass	Setaria grass	Mulato grass	Paspalum grass	Panicum grass
Before (Sep-08)	15.2	8.2	0.0	18.2	58.4				
After (Apr-09)	41.9	12.0	0.1	18.0	14.0	3.5	3.0	6.7	0.8

Figure 6. The proportion of cattle forage offered at Gowa district before and after the project implementation

CONCLUSION

There is change on proportion of forage used by the farmers to feed on the cattle before and after the program, in which proportion of natural grass used was significantly reduced in exchange with the increased use of such grass as elephant grass and tree legume leaves. Among the new forages, paspalum was the most popular grass for the farmers to feed on the cattle.

Estimated dry matter yield of forage at best bet level in three districts increased but the increase was still not sufficient to meet the estimation of forage needed for the cattle. Therefore the farmers intensify the use crop residues such as rice straw, peanut straw, and corn stover to cover the lack of forage and optimize the use available natural grass pasture for grazing as well as to use fallow land to grow fodder grass.

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