INSTITUTE OF RURAL ECONOMY

Japan International Research Center

for Agricultural Sciences

LAIRAGE des petits ruminants

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Appendix: Technical Manual 7

"Guide for the Management and Natural Resource Conservation"

Contents

THE MINISTER OF AGRICULTURE

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REPUBLIC OF MALI

One People - One Goal - One Faith

Technical sheet

LAIRAGE des petits ruminants

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1. Foreword

Decreasing soil fertility causing lower crop yields, emerged as one of the priority problems of the peasants in a village survey in different cites the project. The financial capacity of farmers to do more to access their required amounts of mineral fertilizers to fertilize their fields, forcing them to resort to the use of organic manure (mainly feces, garbage, manure park). But the current driving mode of the animals is a consequence of the crucial lack of fodder reserves do not provide sufficient amounts of manure.

As part of this project, the aim of improving the collection of feces as manure to restore fertility of farmland, sheep farming has been tried for 3 months (March-May) in parks improved in three villages in the Koulikoro and Segou in Mali. The advantages and disadvantages emerged following the trial, and the problems of this innovative technology were summarized in data sheet.

2. Definition of stabling

The barn is to keep the animals seasonally or permanently in a closed space, covered or not, while ensuring a good diet. This time, the trials involved stabling sheep for 3 months of the dry season, from March to May The collected manure will be used to fertilize the soil during the rainy season.

3. Objectives of the technique

- Increase the amount of collected manure.
- Improve the nutritional status of the animals.
- Increase farmer income.

4. Expected Results

- The amount of the collected manure is increased.
- The nutritional status of the animals is improved.
- The farmer's income is increased.

5. Detailed technical

5.1 Herd Management System

The system of herd management by farmers was studied in Segou and Koulikoro. Despite changes in herd sizes and wholesale management system

livestock (seasonal grazing cows outside the village) in the ethnic villages, sheep and goats are generally kept throughout the year in the village, especially in pastures near homes (Table 1, photo 1 and 2). Because of the economic importance (put on the market price), sheep fattening has a high priority among farmers compared to goats (Table 1).

Table 1: the small management system livestock in villages

	sheep	Goats
Owner	Men (sometimes women)	Women often
Rainy season (June to October)	In controlled grazing in meadows village fields or fallow fields in the villages during the day. They brought near homes overnight and mineral blocks are available to them.	In controlled grazing in fields near the village or fallow fields in the villages during the day. They are brought close to homes for the night and receive food supplementation if they are ill or breastfeeding.
dry season (November - may)	Free grazing on Soforo (fields in the neighborhood) and Kungoforo (far field) or near villages and brought close to homes for the night. They receive mineral blocks, deputy agricultural products, cowpea and peanut vines.	Free grazing on Soforo (fields in the neighborhood) and Kungoforo (far field) or near, and brought near homes for the night. They receive extra food in case of illness or during the breastfeeding period.

Photos 1 and 2: ordinary guard near homes (to the left : sheep, right : goats)

5.2 Production of the upgraded park

The traditional practice of stalling in some villages, which was to enclose the animals seasonally or permanently in a roofless park or tie it to a tree was inappropriate. This is why it was necessary to provide for a location under roof to shelter from the sun during the day and where the animals possessed enough space for their movements. All farmers who participated in stalling activity benefited from an improved park, equipped with 2 feeders for food (dislocated drums) and a trough (basin in plastic) (Photo 3). Park étaientt dimensions of 5 m long and 3 m wide with a workforce of 10 sheep. The material used for making the park étaitt composed of:

- Mesh for the fence;
- Angles to fix the fence;
- Cement to stabilize the brackets;
- wire to attach the mesh to the angles.

In addition to the materials mentioned above, each park was equipped with a shed built using forks and sleepers on-site and covered with millet or sorghum stalks, to help provide shade To animals. He could also serve as a storage place

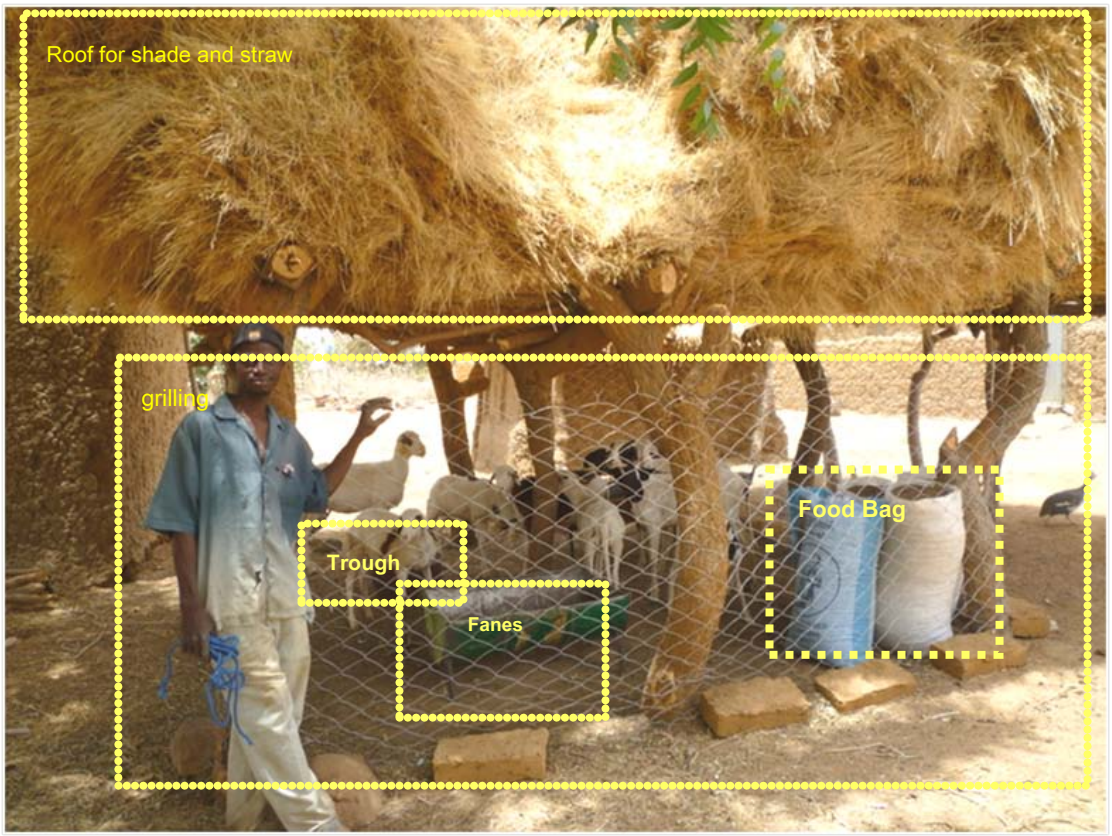

Photo 3 Structure of improved park

for animal fodder.

5.3 Health monitoring of animals

The health monitoring of animals is very important in the management of herds. Therefore it is desirable that all animals are vaccinated and dewormed whatever

Photo 4: Vaccination of animals

driving mode, rambling or stalling. Before starting the stall test, the animals were vaccinated against pasteurellosis with pastovin and dewormed with albendazole (photo 4). For the duration of stabling, water and salt licks were made available animal at will.

5.4 Animal Feed

A sufficient amount of feed necessary for the practice of raising animals in confinement. Given the difficulties of obtaining forage during the period of the stall, which corresponds to the dry season (March to May), it is desirable to provide fodder stocks prior to the activity. Forage possible on site consisted of millet and sorghum stalks, bran, rice straw, tops cowpea and groundnut, fig leaves, cottonseed meal, bush straw, etc. . Table 2 shows the recipe forage actually used by farmers.

Regarding nutritional aspects, the stalks of millet and sorghum, bush straw, tops of cowpea and groundnut and the fig leaves are coarse. These are foods low in nutrients (energy, protein) and very rich in cellulose. They are broken down in the rumen bacterial micro fauna and so are energy sources for animals. In addition, they are indispensable for the proper functioning of the rumen. As for cotton cake and cereal brans, they are concentrated foods rich in nutrients. These are necessary for the production of meat and milk.

2. Table 3: Examples of rations used by farmers for animal feed

(Daily amount of food for 10 heads)

example 1	10 kg of peanut haulm, 10 kg of bush straw, 10 kg of fig leaves
example 2	8 kg sorghum stalks, 7 kg of rice straw, 3 kg of millet bran, 7 kg of bush straw
example 3	13 kg of sorghum stalks, 7 kg of cottonseed meal, 5 kg of millet bran quantities of food

to vary by gender and age of animals.

5.5 Monitoring Indicators

The stalls of small ruminants (sheep) lets hope the increased manure production and weight of the sheep. Monitoring the barn made of 2 years with 2 monitoring indicators has clarified the following points.

- The amount of manure produced: The amount of manure produced were weighed once a month at the park cleaning (or in accordance with conventional practices, wandering). During 2 years in a row, it turned out that 10 sheep in stables have produced 270 kg of manure per month. What makes 1.5 to 2.7 times more than in straying (Figure 1).

- Weight of the animals: Animals were weighed at the start of the activity and then every month. The results compared to animal weight gain have not allowed this time to notice a difference between animals in confinement and those straying. This fact was due to uncontrollable environmental factors cited in the villages, such as: the availability of feed resources during the dry season, age and sex of the animals and finally the quality of food distributed. However although this is not visible on the weight of the animals, the views collected during a verbal survey vis-à-vis farmers who practiced stalls were quite positive. Farmers who have had to concentrate their animals,

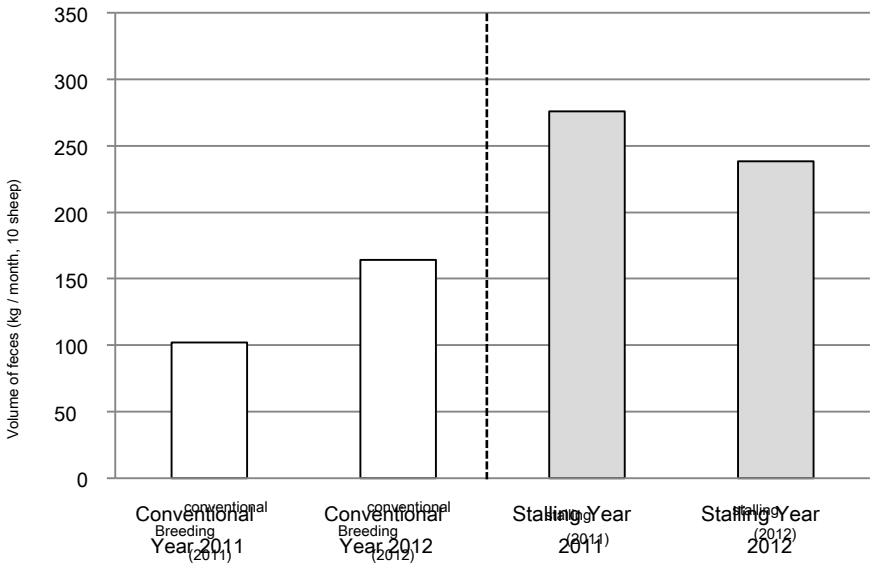

Figure 1: Comparison of amounts of manure produced between livestock straying (Conventional farming) and stall (litter partially included)

6. Costs for making an improved park

The costs related to the preparation of an improved park are summarized in Table 3.

Table 3: Cost is imatifs for con f ection of a park amé Lioré

rubric	Amount	Unit price (Franks CFA)	Total (CFA)
grilling	16 m	800 / m	12,800
angles	4 parts (1.5 m)	7.500 / 6 m	7,500
Fastening wire	1 reel	3,000	3,000
Cement	1 bag	6,000	6,000
pliers	1 piece	900	900
Trough (half barrel)	1 piece	4,500	4,500
Trough	1 piece	5,000	5,000
		Total	39,700

Note, however, that some parameters have not been considered in estimating costs during building of the park. These forks, ties and labor.

7. Advantages and disadvantages of stabling

In addition to the increased manure production weight of the animals, the barn has the following advantages and disadvantages.

Advantages

- Better management of herds animals are always under the owner's control and which could directly intervene in case of problems;
- The animals are protected against theft, which according to the farmers are very common in our areas of operation;
- Animals are also immune to the attacks of wild animals (eg hyenas).

disadvantages

- It is difficult to get enough food for the animals during the dry season. It should be enough stocks).

- Compared to straying, further efforts are needed (distribution of food and water).

8. Acknowledgments

This project was funded by the Ministry of Agriculture, Forestry and Fisheries of Japan through JIRCAS. It should enable the end of his run to provide farmers, appropriate methods of sustainable management of natural resources by combining agriculture and livestock. His execution in Mali has been possible thanks to the close collaboration with the Rural Economy Institute (IER) must be mentioned, however, that the realization of this data sheet required the involvement of technical staff of the Agriculture sector Banamba and Barauoéli, who spared no effort for the success of field activities. They find here the expression of our deep gratitude.

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