

Stories of change

© Hamidou Nantoumé



© Nancy Gélinas

Women turn to tree fodder to fatten their sheep

By Hamidou Nantoumé and Jean Bonneville

Key messages

- With the support of research, women in a rural community in Mali now know how to use fodder trees as sheep feed. When given a diet in which tree fodder replaced groundnut haulm (stalks), sheep were found to gain as much weight or more over the same period.
- The leaves of two of the three species are available throughout the year. The cost of gathering the leaves is at least 14 times lower than the price of groundnut haulm in the dry season.
- Thanks to the savings and the good weight gain of the fattened sheep, the women have earned more income from the sale of their sheep and increased the food security of their families.

Fodder shortages and high feed costs are the main constraints in sheep production, especially during the dry season. At that time of year, it has long been common practice to use leaves from certain trees and shrubs as fodder. Prior to the research study, however, there was no concrete evidence that the leaves could be used to feed sheep on a regular basis, and could even replace a time-tested feed like groundnut haulm. In addition, the financial and nutritional results of feeding sheep with tree fodders were not very well known. Furthermore, some of these leaves contain potentially harmful anti-nutritional substances. There were also other concerns about tree species, particularly with regard to their forage production capacity, management, multiplication, and integration into the farming systems.

It was in this context that researchers from various fields and institutions met to investigate the issues regarding sheep fattening and the use of trees as fodder. The investigation included laboratory analysis of the chemical composition of various feeds, fattening trials at research stations, and experiments and surveys in rural areas. The results of the work were mainly targeted at female farmers, as sheep husbandry provides a source of income and a method of income diversification with significant opportunities for women.

Context

Raising sheep is an important economic activity in Mali. In 2010, the country was home to around 12 million sheep, which also have considerable social and cultural value, being closely associated with traditional rites of passage and religious celebrations. During Tabaski, for example (a Muslim holiday celebrated by most Malians), it is customary to sacrifice a ram.





Sheep provide women with an opportunity to diversify and increase their income

compared to 122 g with the control ration containing groundnut haulm. The acquisition cost of the tree fodder used, which was readily available in the area surrounding the villages, was assessed at 20 CFA francs/kg. Groundnut hay, on the other hand, because of its relative scarcity sells for 275 CFA francs/kg. At the end of a 75-day fattening trial, sheep fed with tree fodder gained 10 kg. This was 15% more than those fed with the control ration containing groundnut haulm, which cost nearly 14 times more.

Emerging outcomes

Woody species - the top three

Based on a survey of farmers from the Zan Coulibaly rural community in Mali, followed by an on-station feeding experiment with sheep at a research station, *Ficus gnaphalocarpa*, *Pterocarpus erinaceus* and *Pterocarpus lucens* (called *Toro*, *N'goni*, and *Cobi* in the Bambara language) were the three top performing tree species for sheep fodder among all locally used and available species.

Women's groups from four villages in the community then tested feed rations that contained a 50% concentration of these tree species, to determine which ones produced the best weight performance and to calculate their potential financial profitability in the field. The average daily weight gain with the best ration containing tree fodder was 143 g,

Improved sheep fattening and husbandry techniques

Even though Malian women have been raising sheep for a very long time, the researchers observed that their methods did not always bring in a maximum profit, as they were not necessarily familiar with all the knowledge and techniques this activity requires. As a result, the researchers thought it would be useful to supplement the research findings on tree fodder with broader information on good practices in sheep husbandry and fattening.

The research team also noted that sheep fattening was more commonly done by men than women. This practice is distinct from sheep rearing, as it involves the fattening up of sheep over a short period for immediate sale or consumption. This requires a rich and balanced diet so that sheep reach a maximum weight in a minimum amount of time; and they are also

	<i>P. lucens</i>	<i>F. gnaphalocarpa</i>	<i>P. erinaceus</i>	Groundnut haulm
Dry matter ¹	41,7	29,58	34,82	92,50
Protein ²	15,98	13,94	17,17	17,09
Fat ²	2,36	1,77	2,96	2,18
Ash ²	4,59	16,53	5,69	7,95
Organic matter ²	95,41	83,47	94,31	92,05
Crude fiber ²	30,25	23,63	39,47	31,95
Calcium ²	0,71	1,81	0,94	0,82
Sodium ²	0,75	1,15	0,83	0,69
Potassium ²	1,34	1,42	1,53	1,55
Crude energy ³	4548	3337	4520	3987

(1) % of crude matter; (2) % of dry matter; (3) kilocalorie/kg of dry matter

Table 1: Chemical composition of fattening ration ingredients



Women's groups participated in the tests with the leaves of three tree fodder species

given the best possible conditions in terms of health, hygiene and habitat.

The fattening experiments conducted in four villages gave the women involved a first-hand look at the effect of using rations that included tree fodder. When the sheep gained weight, the women were able to see for themselves the advantages of this type of fodder, which had already been demonstrated by trials at the research station and laboratory analyses. The women also realized that sheep fattening was within their reach. All that remains is to ensure that the knowledge and techniques they have acquired are disseminated more widely.

When it comes to rearing sheep, feeding the animals poses a different challenge. The most important thing is to ensure that the sheep have enough food to maintain a satisfactory condition and reproduce throughout the year. Because pastures are the basis of their diet and the forage available is subject to seasonal fluctuations in quality and quantity, it is necessary to provide them with additional food, especially during the dry season. It is also important to ensure that the animals remain healthy, are treated well and are sheltered from bad weather.

What is of particular interest for the women practising either of these two activities, or who would like to start doing so, is that the three tree species mentioned above can serve either as the main ingredient of fattening rations or as a supplementary fodder for sheep rearing. In the latter case, experiments currently underway in three of the community's other villages are comparing two flocks of sheep on different diets (control versus supplemented).

Diversified and increased income

The data gathered during the year-long experiment will make it possible to draw a comparison based on objective scientific criteria. It is also expected that during the process, participants will see for themselves an increase in the productivity of the animals that receive the supplementary fodder, which will naturally bring in additional income, increasing the farmers' food security. Once again, because many women practise sheep rearing and are more directly concerned with household nutrition, it is women and their children who stand to benefit the most.

The fattened sheep, which were sold following the first experiments conducted in their village, provided the women with the means to purchase 30 rams. Confident in their knowledge of the previously tested tree fodder, they decided to launch a new fattening operation in preparation for Tabaski.

“ We knew that sheep ate tree fodder, but what we didn't know was that they could gain so much weight in such a short time by being fed leaves from certain trees. ”

Kadiatou Bagayoko

Over the course of this important Muslim holiday, at least one sheep is sacrificed by each head of household. Based on data from the last general census, it can therefore be estimated that on the day of this holiday in 2013, over a million sheep were slaughtered in Mali. The demand for rams generated by Tabaski, and the resulting monetary exchanges, are therefore very significant.



The price of tree fodder leaves can be up to 14 times lower than that of groundnut haulm



© A Lavoie

Women are most likely to benefit from using affordable, locally available, tree fodder

Conclusion

The three local fodder trees are found not only in Mali but elsewhere in the sub-region. As such, they offer potential for development on a very large scale. Therefore, improving sheep husbandry techniques and providing effective fodder for fattening could have a significant impact in much of West Africa. Initiatives can be implemented on a large scale and directed primarily at women, as they are the ones most likely to appreciate the possibilities for increasing and diversifying their income through improved fattening and feeding practices, using affordable, locally available, tree fodder.

References

- IDRC. *Integrating Agroforestry and Sheep Feed in Mali*: <http://bit.ly/1ctHelG>.

Contact

Dr Hamidou Nantoumé:
hamidou.nantoume@yahoo.fr



Foreign Affairs, Trade and
Development Canada

Affaires étrangères, Commerce
et Développement Canada



IDRC | CRDI

International Development Research Centre
Centre de recherches pour le développement international

Canada

This outcome story is one in a series that reports on research supported by the Canadian International Food Security Research Fund (CIFSRF), a program of Canada's International Development Research Centre (IDRC), undertaken with financial support from the Government of Canada, provided through Foreign Affairs, Trade and Development Canada (DFATD). Produced by WRENmedia in March 2014.