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Value chain analysis of *Balanites aegyptiaca* (L.) DEL. and *Ziziphus mauritiana* Lam. fruits in the Ferlo (Senegal).

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Introduction

Despite the great socio-economic importance of non-wood forest products from the Great Green Wall in Senegal, there was limited knowledge of their contribution to the local or national economy. This study aimed to contribute to a better understanding of the value chain of the fruits of *Balanites aegyptiaca* and *Ziziphus mauritiana* in the Sahelian zone of Senegal.

Material and methods

The study was carried out on the basis of socio-economic surveys conducted in the Ferlo zone (Widou Thiengoly, Amaly, Labgar, Tésékéré and Dahra) and in major cities such as Dakar, Thiès and Touba (Figure 1).

Individual structured interviews were carried out with a questionnaire administered to 260 260 participants (harvesters - 55, intermediate traders - 107 and consumers - 98) in the study sites.

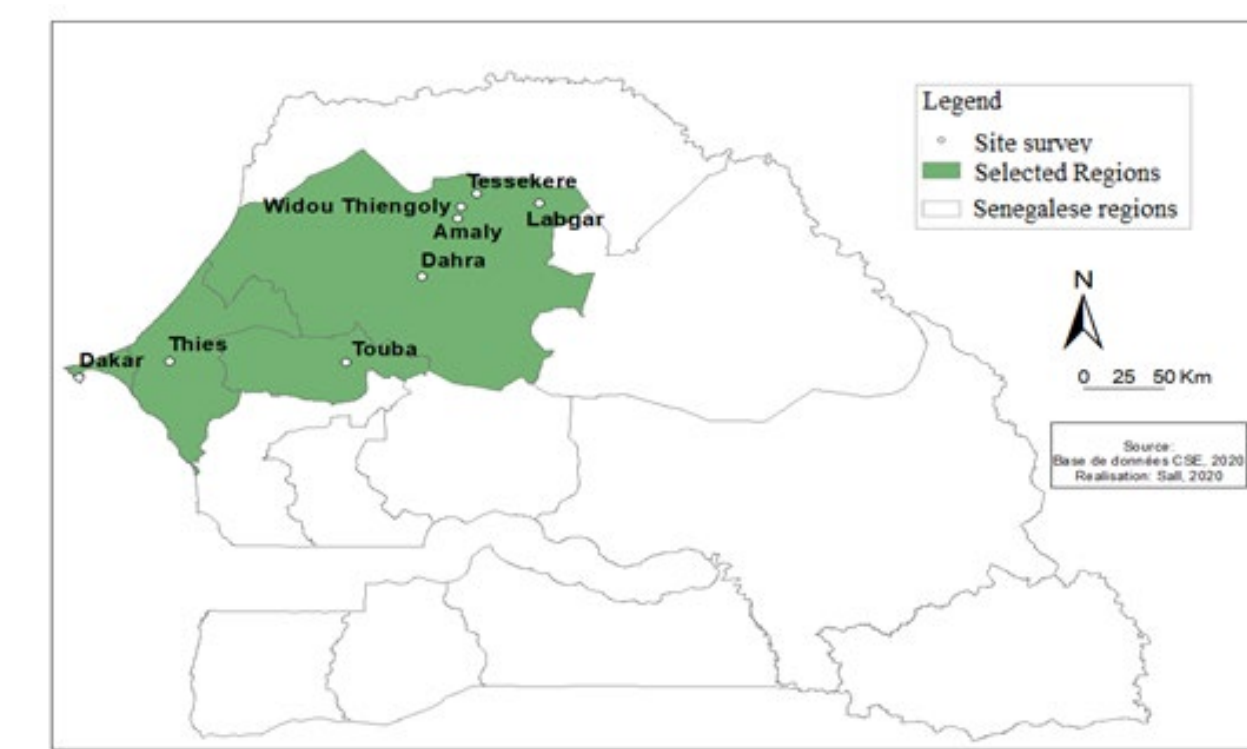


Figure 1: Study site locations

Results

The surveys showed that only fruits of *Balanites aegyptiaca* (51%) and *Ziziphus mauritiana* (49%) species were exploited (Table 1). This exploitation was more common among women (98%), with the 35-45 (35%) and 45-55 (26%) age categories being the most represented.

Table 1: Use of species products by Ferlo populations

Species	Use categories	Organ	% citation
<i>Balanites aegyptiaca</i>	Energy source	Wood	55
		Leaves	40
	Medicinal products	Fruits	36,5
		Tree bark	23,5
	Aliments	Fruits	100
		Feuilles	100
	Animal feed	Flowers	100
Fruits		100	
<i>Ziziphus mauritiana</i>	Medicinal products	Leaves	48
		Tree bark	52
	Aliments	Fruits	100
Animal feed		Leaves	100
		Flowers	100
		Fruits	100

The highest use values obtained at the harvester (3.05) and consumer (1.73) levels were for *B. aegyptiaca* species.

In the Ferlo, the traders surveyed ("banabanas") bought products at the weekly markets in the various villages located at the survey sites (Figure 2).



Figure 2: Exhibition of *B. aegyptiaca* fruits in the weekly market of Widou Thiengoly

In cities, "banabanas" carried products to urban markets for sale to wholesalers, semi-wholesalers, retailers and consumers (Figure 3).



Figure 3: Marketing of fruits of *Z. mauritiana* by the Retailers in the Sandiga market (Dakar).

The highest price a kilo of fruits was between 300 FCFA and 450 FCFA for *B. aegyptiaca* (sold by the harvesters between 100 and 250 FCFA) and 350 FCFA to 500 FCFA for *Z. mauritiana* (sold by the harvesters between 125 and 300 FCFA). Transport costs and taxes concerned only banabanas, and amount respectively to 40 FCFA - 70 FCFA and 15 FCFA for each kilogram.

The seeds of *B. aegyptiaca* are crushed (to grind stone or mortar). The obtained past is put into a pot and then is heated with a little water. After cooled, this past is pressed to obtain oil. This oil is sold in local markets by women (Figure 4).



Figure 4: Balanites oil



Figure 5: Balanites seed cake



Figure 6: Biscuits of pulp of *Z. mauritiana*

Balanites aegyptiaca seed cake was used as animal feed (Figure 5).

The obtained farinaceous (from crushed ripe and dried fruits) product was sieved using a fine-mesh sieve by adding sugar. It was molded into a ladle. Cooking was steamed into a pot. The resulting biscuit was sold in local markets by children and women (Figure 6)

Conclusion

This study showed a strong potential and an important opportunity for the employment creation and the improvement of the food and nutritional status of the rural populations of the Ferlo. The populations were also aware of the fodder and medicinal role played by these species. However, better preservation of forest resources and good organization of the *Z. mauritiana* (Jujube) and *B. aegyptiaca* (soump) sectors would necessarily involve: (i) diversification of the products derived from their processing by trying *Ziziphus* juice and *Balanites* oil to diversify the offer and access new markets; and (ii) raising the awareness of the populations about the degradation of the stands and their socio-economic importance.