

**Ecological and socio-economic importance of
Balanites aegyptiaca in the traditional parkland
systems in Niger, West Africa.**

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Introduction

- *Balanites aegyptiaca* is found throughout the Sahel and neighboring savanna, Egypt, Sudan, East Africa, Arabia, Pakistan and India
- *B. aegyptiaca* is a protected tree and belongs to the Balanitaceae family and is very resistant to drought;
- The species *B. aegyptiaca* plays a significant ecological role in rural areas of semi-arid and arid zones;
- Rural communities of this part of in Niger meet their food security during critical periods through products from *B. aegyptiaca* (leaves, flowers and fruits)
- The species has good quality wood;
- All the above confer a golden privilege to the species;
- One of the main tree species in the parklands of the Sahel.



Objectives

- Determine **the ecological importance** of the species;
- Determine the **relationship** between **tree size** and **fruit production** of the species;
- Ascertain the **socio-economic importance** of the species to rural communities;
- Draw **conclusion on the management** of the species in the parklands of the Sahel

Material and Methods

Study area

- Keita district in Tahoua Region, in Niger. **latitude 14°20' and 15°10' north and longitude 5°20' and 6°35' east.**
- Mean annual rainfall of **300 - 400 mm** concentrated during June to September
- Trees of various species are scattered in the agricultural field among which *B. aegyptiaca*;
- Three village territories (Koutouki, Barzanga and Guidan Fako): **presence of *B. aegyptiaca*, easy accessibility and presence of markets** where products are commercialized.

Material and Methods (C't)

Vegetation inventory

- **plots** along **transects** 300 m from the village centre at every 500 m interval. Transect 1 : Keita-Koutouki ; Transect 2 : Keita – Barzanga et Transect 3 : Guidan Fako-Tamaske
- In each plot, individual trees were identified and measured (height, DBH, crown diameter).

Material and Methods (C't)

Ethnobotanical survey

A semi-structured questionnaire was used for individual and group interview;

women and children (**harvesting and marketing** of Balanites organs (fruits, flowers, leaves, etc).

village chiefs, traditional healers, hunters, traditional hairdressers, and others **possessing traditional knowledge**.

Material and Methods (C't)

- Market survey was carried out in 4 local markets: **Ibohamane, Tahoua, Abalak** and **Badaguichiri** based on the important traffic of Balanites products.
- A regular **market monitoring** was carried out **every week** from **September** to **January** to record the following information :
 - type and prices of Balanites organs and products;
 - price variation according to periods and markets;
 - different measurement units used to quantify organs and products;
 - quantities of products brought in the market;
 - the provenance of products and their destination;
 - actors concerned by commercial transaction;
 - daily income and benefit.

Material and Methods (C't)

Fruit production

- A **non destructive method** was used to evaluate the **fruit production of Balanites**. **39 trees** (13 trees per transect). These selected trees have been marked and put under strict surveillance by local populations living around.
- For each selected Balanites tree, **diameter** at 1.30 m and **crown diameter** were measured. **1/3 of the crown diameter** for a given tree was harvested after physiological maturity. The harvested fruits were weighed and then dried in the sun for 7 days. This weight was then extrapolated to get the total fruit produced by each tree.



Results

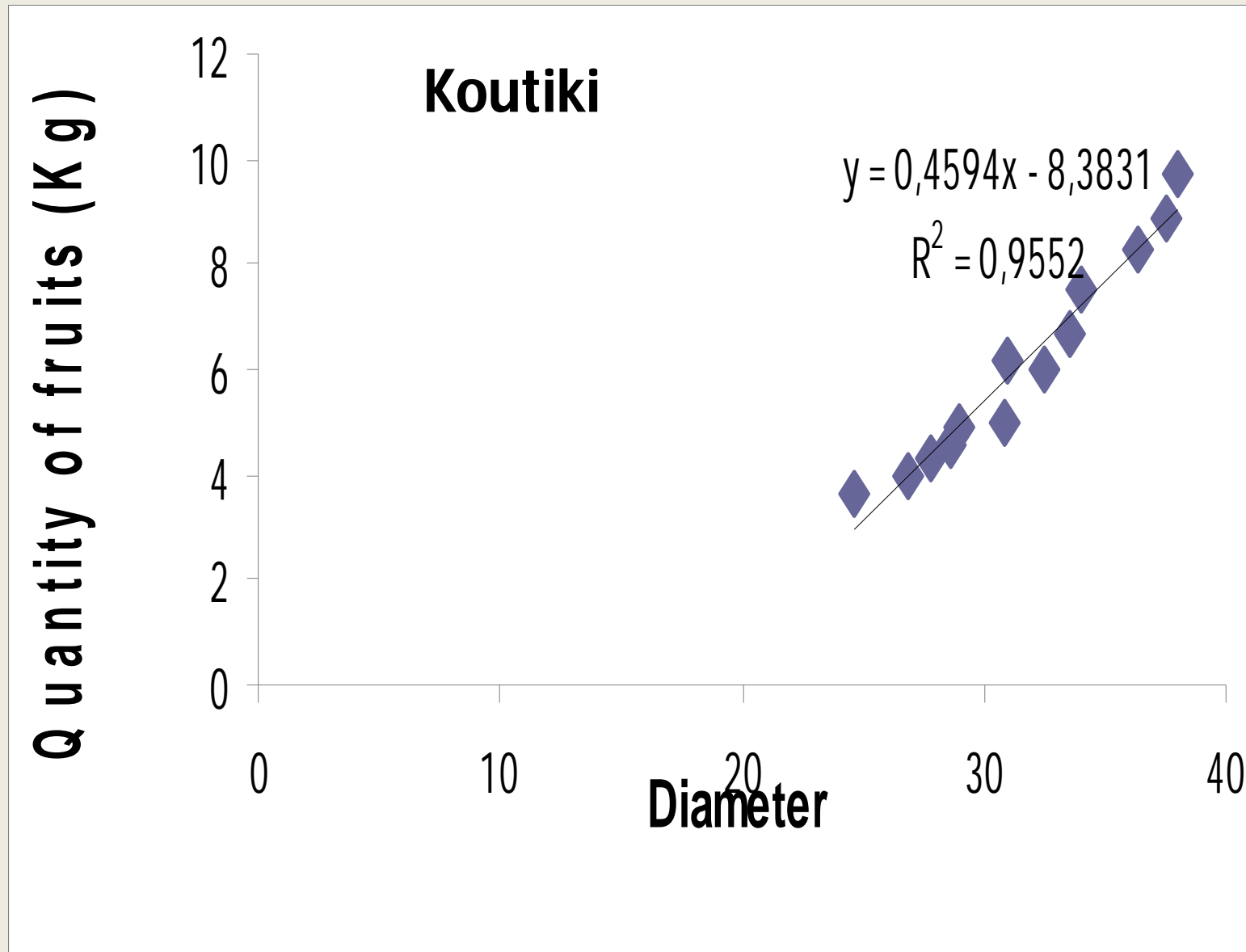
Importance of *B. aegyptiaca* in the parklands – Transect Keita-Koutiki

Species	Family	Frequence	%
Balanites aegyptiaca	Balanitacées	544	74
Acacia raddiana	Mimosacées	39	6
Bauhinia rufescens	Césalpiniacées	36	5
Faidherbia albida	Mimosacées	34	4
Acacia seyal	Mimosacées	31	4
Acacia nilotica	Mimosacées	23	3
Ziziphus mauritiana	Rhamnacées	23	3
Ziziphus spina-christi	Rhamnacées	6	1
Maerua crassifolia	Capparidacées	2	< 1
Total 9	4	738	100

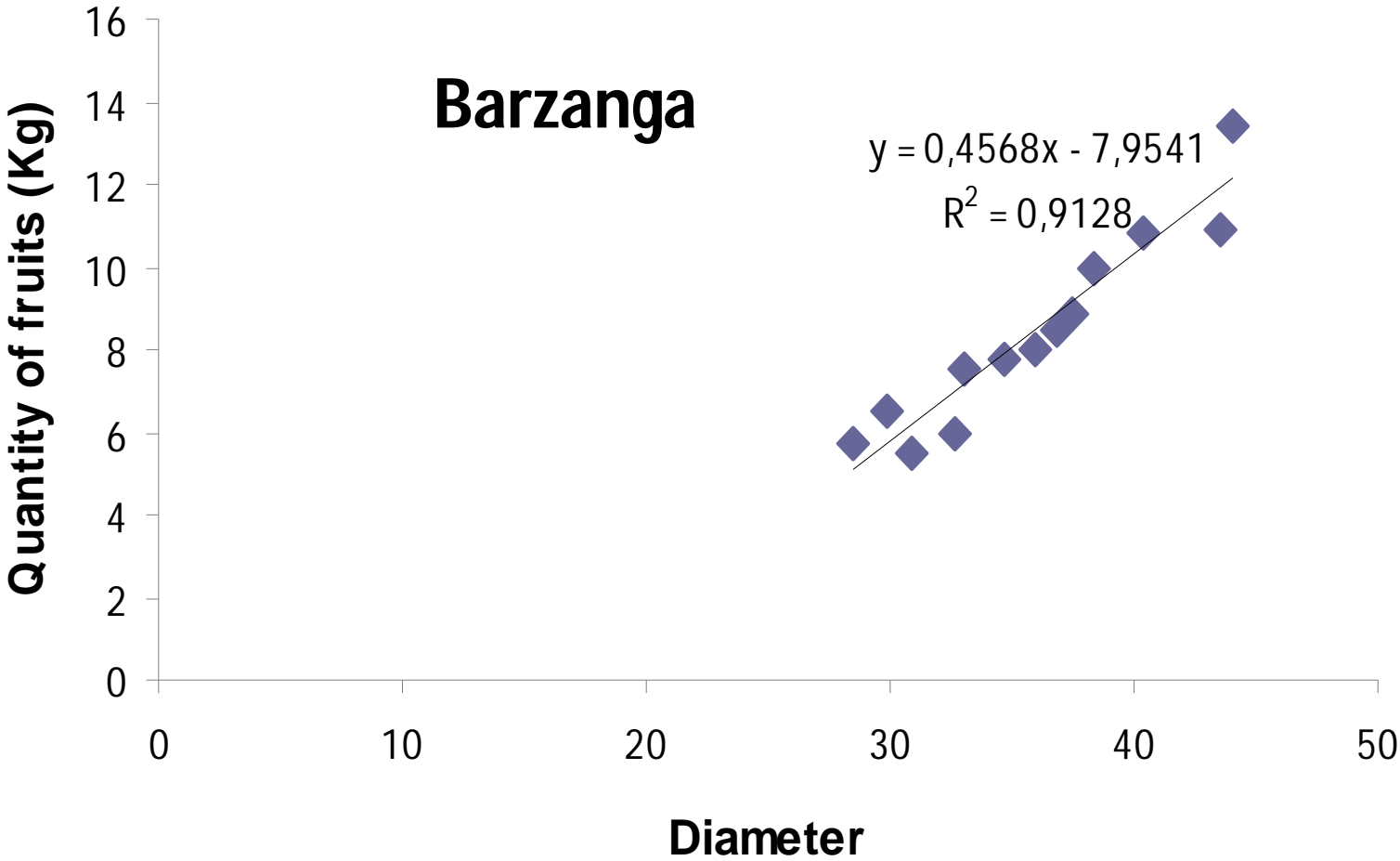
Guidan Fako-Tamaské

Species	Families	Frequency	%
Balanites aegyptiaca	Balanitacées	747	72
Acacia raddiana	Mimosacées	63	6
Bauhinia rufescens	Césalpiniacées	62	6
Acacia seyal	Mimosacées	51	5
Faidherbia albida	Mimosacées	50	5
Acacia nilotica	Mimosacées	30	3
Ziziphus mauritiana	Rhamnacées	22	2
Ziziphus spina-christi	Rhamnacées	7	1
Maerua crassifolia	Capparidacées	6	< 1
Piliostigma reticulatum	Césalpiniacées	4	< 1
Acacia senegal	Mimosacées	2	< 1
Total 11	5	1044	100

Fruit production



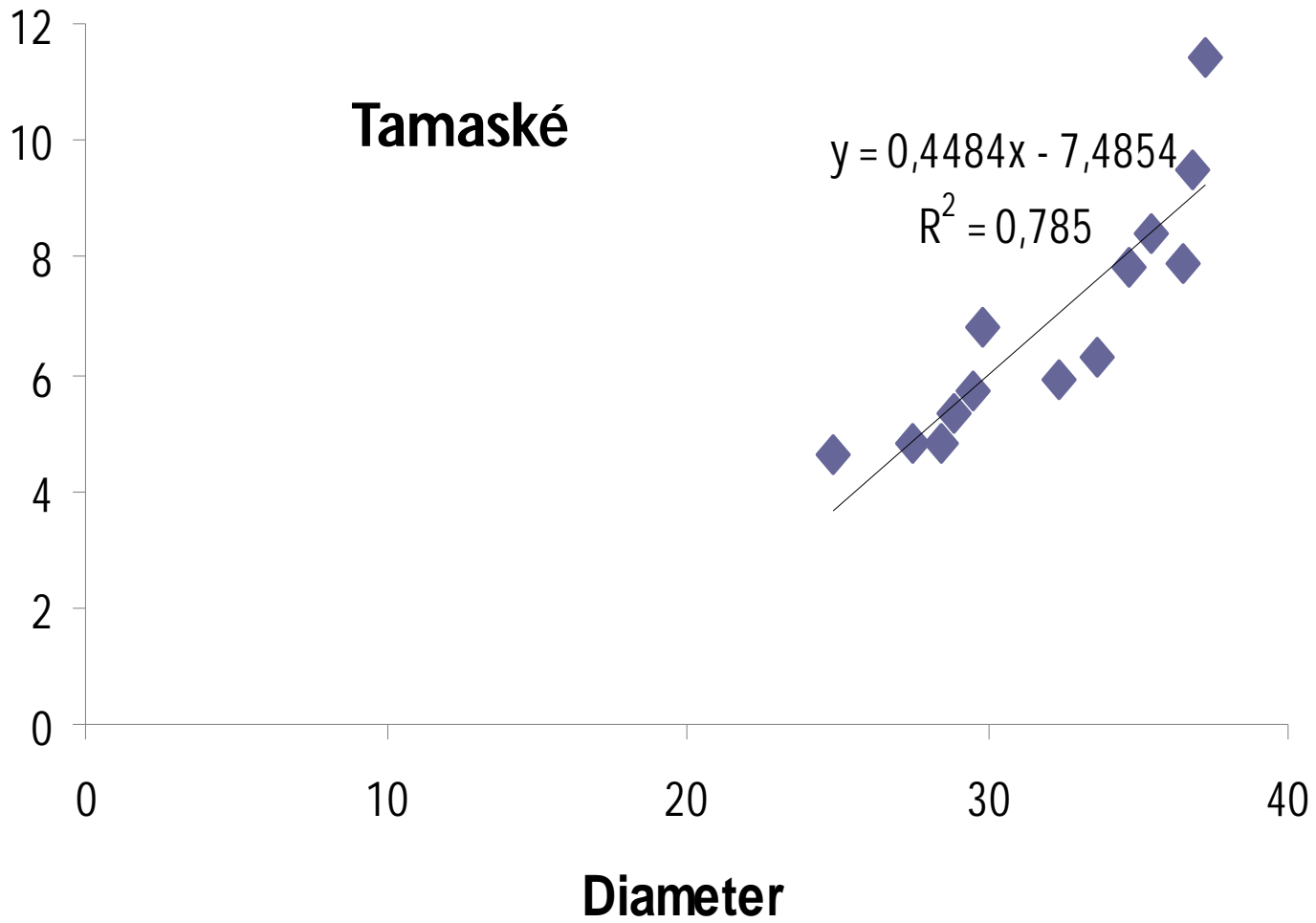
Barzanga



Quantity of fruits (Kg)

Tamaské

$y = 0,4484x - 7,4854$
 $R^2 = 0,785$



Marketing of Balanites products

Quantities of products sold and the income generated during three (3) to four (4) months of surveys in the markets of **Tahoua, Abalak, Badaguichiri** and **Ibohamane**

Abalak Market

Fruits of *B. aegyptiaca* in the market

Month	Quantities brought (kg)	Quantities sold (kg)	Unit price (CFA)	Total amount
October	45 ± 8	all	144 ± 4	6633 ± 1368
November	63 ± 10	all	130 ± 1	8161 ± 1366
December	67 ± 11	all	138 ± 4	9222 ± 1525
Mean	57 ± 5	all	138 ± 2	7868 ± 819

Ibohamane Market

Fruits of *B. aegyptiaca* on the market

Month	Quantity brought (kg)	Quantity sold (kg)	Prix unit price (CFA)	Total amount
October	40 ± 2	all	71 ± 2	2799 ± 172
November	37 ± 2	36 ± 2	74 ± 1	2664 ± 214
December	41 ± 3	40 ± 3	68 ± 3	2680 ± 240
Mean	39 ± 1	38 ± 1	71 ± 1	2711 ± 121

Other *B.aegyptiaca* products

Detergents



Other *B.aegyptiaca* products (Cont'd)

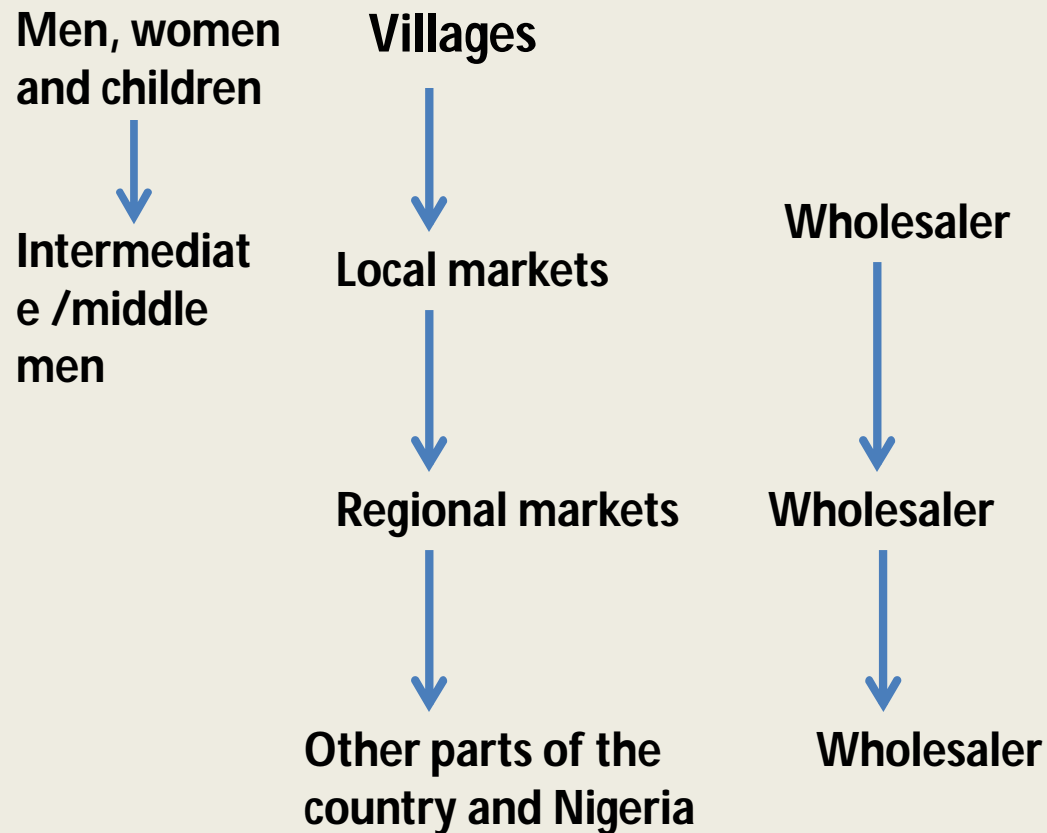
Utensils

- Plates;
- Spons;
- Mortars and pestles
- Hoe and ax handles;
- Hilar

Food and Medicine

- Leaves, flowers and fruits are consumed
- Various parts of the tree are used for treating illnesses for human and animals

Market outlets of BA products



Conclusion

- Farmers give priority to this species in their farms; relative presence in the parklands;
- It improves economic status of rural people;
- There is wide use of species parts by local communities;
- Research is needed to better improve the goods and services provided by the species especially: domestication of the species and value addition.

Thank you