

# Baobab production and utilization in Kilifi County, Kenya: assessment of information and training needs

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## 1. Introduction/Background

- The fruit pulp of the baobab (*Adansonia digitata* L.) is of high nutritional value (vitamin C and minerals content, prebiotic and antioxidant functions)
- In Kenya the species' potential for improving local diets and livelihoods is not yet fully exploited
- Extension services currently do not address sustainable baobab management, processing and utilization activities
- The purpose of the study was to assess community capacity relating to the production and utilization of baobab, in particular current knowledge levels, gaps and information sources of rural smallholders
- Results will contribute to developing interventions to enhance utilization of baobab by rural communities to achieve food security

## 2. Hypotheses

The following hypotheses have been derived from literature and shall be tested in this study:

- H1: Farmers are more likely to use and manage baobab trees if they have secure rights to these resources [1], [2]
- H2: Management and utilization of baobab by farmers is positively related to periods of household food shortage [3]
- H3: Management and utilization of baobab is positively related to farmers' knowledge of management practices and baobab products [4]

## 3. Methodology

- Data was collected Kilifi County, Majajani/Mavueni sub-location, Kenya
- Baobab trees commonly occur in the study area, mainly in the areas characterized by low rainfall and hot and dry weather conditions
- Main economic activities are agriculture, tourism and fishing
- The study used semi-structured interviews
- Data from 120 households of 11 rural communities was collected using a systematic random sampling technique (10.3% of the total population)
- Observation and expert interviews (i.e., NGOs, national and country agencies) used to triangulate the data

## 4. Selected preliminary results and discussion

80 (66.7%) of respondents have been engaged in harvesting of baobab. 83 (69.2%) of respondents have baobab trees growing on their farms, 67 of which within a distance of 2 km around their homestead. Farmers who 'have baobab trees on their farm' and 'who own the land where baobab trees are grown' are more likely to harvest parts of the tree and to implement tree management activities at an statistically significant level, confirming H1 (Tab. 1).

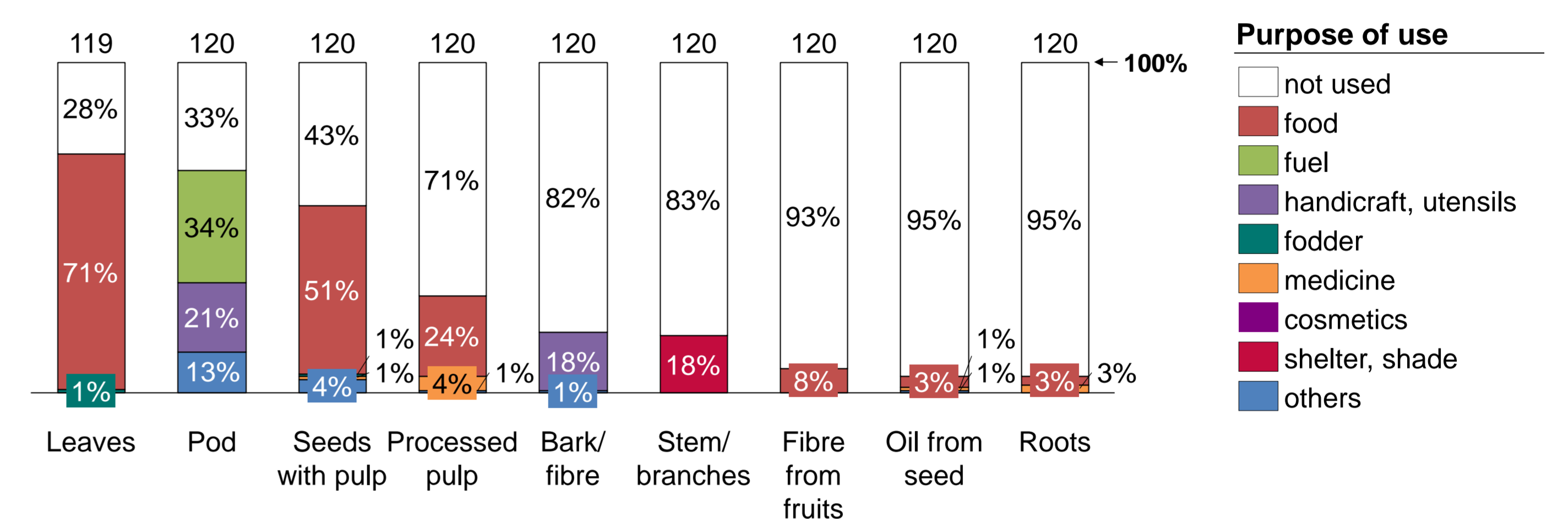
Tab. 1: Results of ANOVA to test Hypothesis 1

		Have you harvested any part of the baobab tree?				Number of management practices applied to baobab trees					
		Sum of Squares	df	Mean Square	F	Sig.	Sum of Squares	df	Mean Square	F	Sig.
Have baobab trees on their farm	Between Groups	2,322	1	2,322	11,962	0,001***	2,119	5	0,424	2,058	0,076*
	Within Groups	21,356	110	0,194			23,473	114	0,206		
	Total	23,679	111				25,592	119			
Distance of trees from homestead	Between Groups	0,774	1	0,774	0,915	0,342	4,292	5	0,858	1,037	0,402
	Within Groups	62,634	74	0,846			61,258	74	0,828		
	Total	63,408	75				65,550	79			
Baobab trees grow on land owned	Between Groups	22521,617	1	22521,617	12,043	0,001***	21855,362	5	4371,072	2,216	0,058*
	Within Groups	198227,300	106	1870,069			216999,078	110	1972,719		
	Total	220748,917	107				238854,440	115			

## 4. cont'd

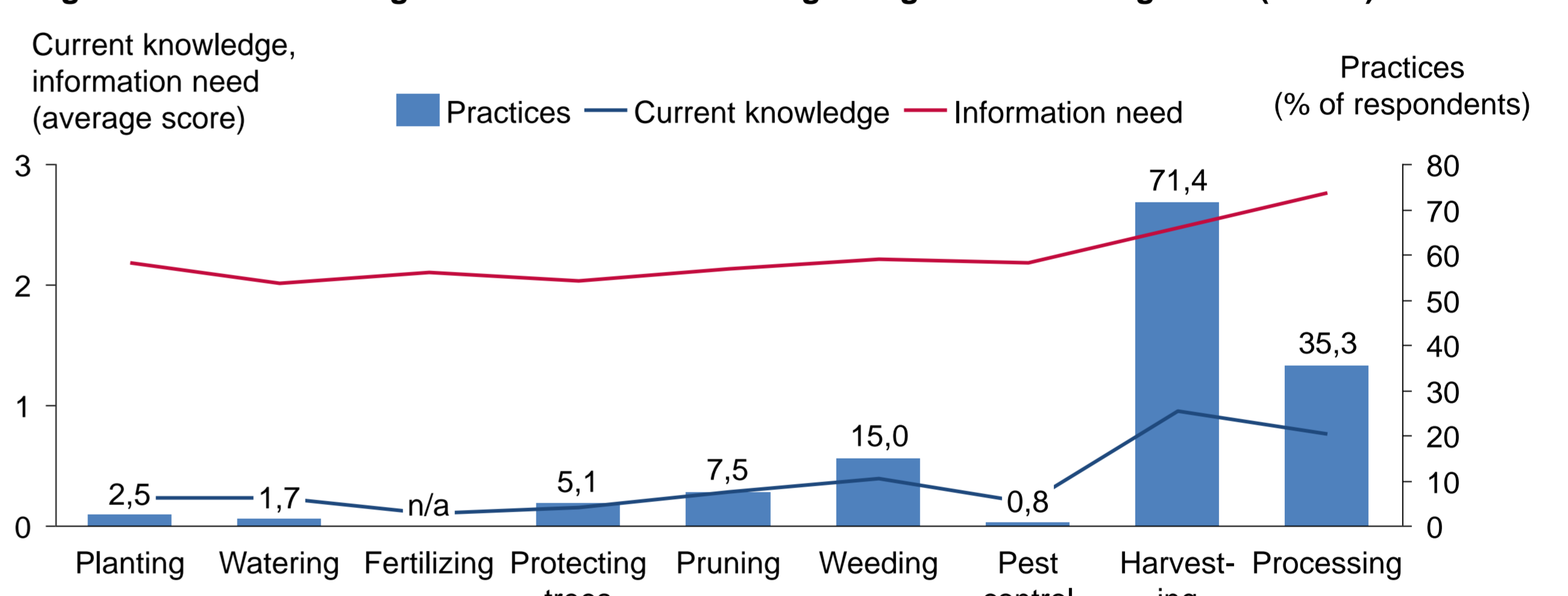
Between 72 and 37% of respondents utilized baobab leaves, pods and/or seeds with pulp, respectively. Nutritional use was the single-most important purpose of use of baobab. Use of other tree parts (including, e.g., processed baobab pulp, bark/fibre, seed oil, or roots) or for other purposes was reported less frequently (Fig. 1).

Fig. 1: Commonly utilized parts of the baobab tree by respondents (% of responses, N=120)



Only a minority of farmers were engaged in tree management other than harvesting or processing. Knowledge was generally low and closely correlated to current practices ( $r=0,96$ ). Information needs were generally high, confirming great interest of farmers to better manage baobab trees (Fig. 2). Having baobab trees on farm or harvesting baobab products did not influence knowledge and information needs at statistically significant levels, but temporary food shortage (70% of respondents) was significantly linked to higher knowledge of drying/ storing/ packaging and processing for sale, and higher information needs regarding processing for sale ( $p<0,05$ ).

Fig. 2: Current knowledge and information need regarding baobab management (N=120)



Farmers with larger farms, of younger age, more aware of various processed baobab products, with better knowledge of baobab management and with other baobab users in their social networks were more likely to harvest baobab, rejecting H2 and confirming H3 (Tab. 2). Other management practices were less clearly associated to the investigated variables.

Tab. 2: Results of Logit model to test Hypotheses 2 and 3

Variable	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold [PartsHarvested = 0]	0,524	2,927	0,032	1	0,858	-5,213	6,261
Location							
FarmSize	0,954	0,497	3,695	1	0,055*	-0,019	1,928
AgricInformation	-1,188	0,730	2,646	1	0,104	-2,620	0,243
AgeInYears	-0,179	0,081	4,819	1	0,028**	-0,338	-0,019
NumberBaoPartsUsed	0,718	0,599	1,434	1	0,231	-0,457	1,893
NumberBaoProductsAware	1,694	0,965	3,082	1	0,079*	-0,197	3,586
MonthsFoodShortage	0,104	0,098	1,118	1	0,290	-0,089	0,297
FoodExpenditurePerWeek	0,001	0,001	1,645	1	0,200	-0,001	0,003
BaoInformation	-0,465	0,519	0,801	1	0,371	-1,483	0,553
TotalBaoKnowledge	-0,416	0,239	3,040	1	0,081*	-0,884	0,052
[AwareOtherPeopleOperatingBaobabTrees=0]	2,958	1,791	2,729	1	0,099*	-0,551	6,468

\* $p<0,1$ ; \*\* $p<0,01$ ; pseudo  $R^2$  between 0,458 (Cox and Snell) and 0,706 (Nagelkerke).

## 4. Conclusion

Results suggest that there is ample scope for improving utilization of baobab in the communities. In addition to secure access, awareness of the commercial potential of the tree promotes its utilization. In a next step, extension materials shall be developed towards this aim.

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