

Moringa and other highly nutritious plant resources: Strategies, standards and markets for a better impact on nutrition in Africa. Accra, Ghana, November 16-18, 2006

**Leaf yield and Nutritive
value of *Moringa
stenopetala*
and *Moringa oleifera*
Accessions**

By

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In marginal dry parts of Ethiopia Moringa tree intercrop of the Konso people and the Surrounding people of the South Ethiopia is on farm tree (home-garden) farm that supports nearly high population density.

Konso moringa tree intercrop in the dry farming has less to no problem of soil erosion, population increase, environmental degradation and famine in relative terms.



Participatory farmers interview

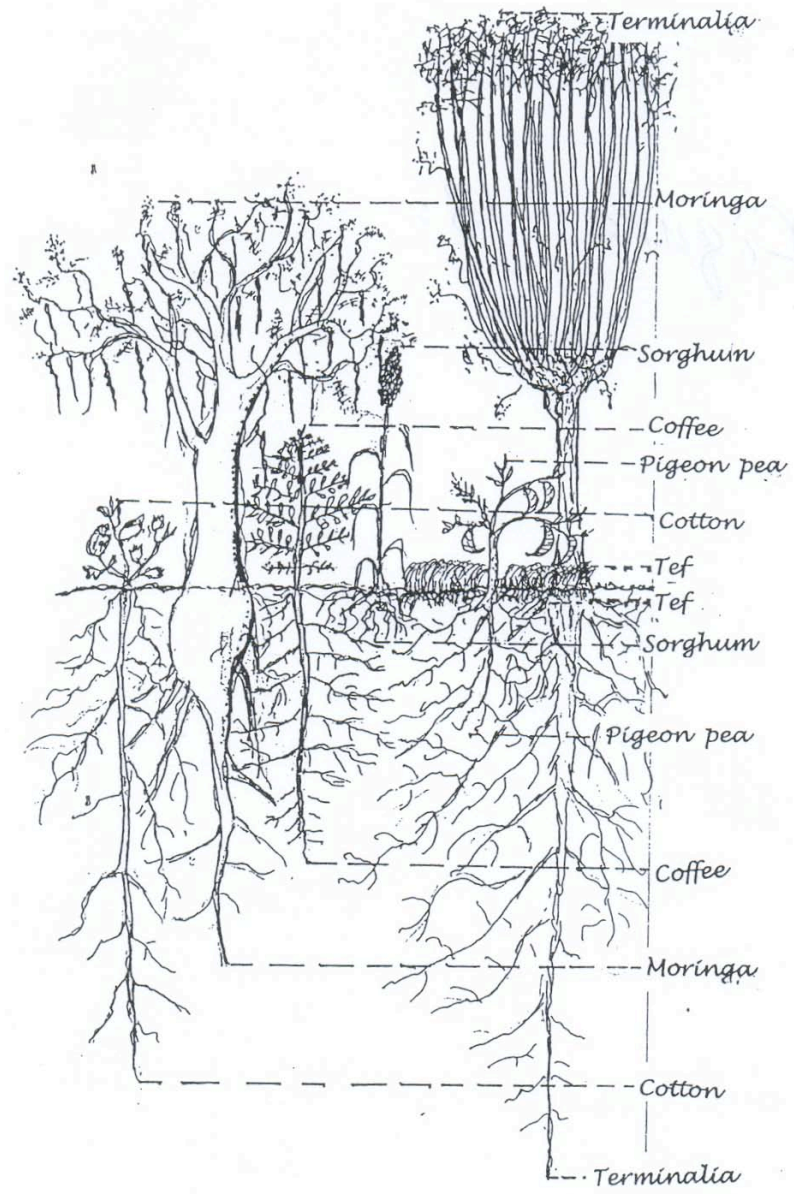
Three important tree intercrops were identified in Ethiopia

In Ox-culture

- ✓ *Acaia albida*(*Faidherrdia albida*) (N)
- ✓ *Croton macrstachyus* (P)

Hoe-culture

- ✓ *Moringa stenopetala*



- **Honey production (Apiculture)**
- Ethiopia has three to five million bee colonies, which makes the country with the highest bee density in Africa. It is the fourth largest wax producing country after China, Mexico and Turkey. The total estimate is about two thousand one hundred tones per year, it is one of the largest honey producing country in Africa. World wide it stands in tenth place in honey production. In area where cattle production is limited apiculture plays a significant role. Perennial plant provides sustainable bee forage Since land is currentely converted to annual crop and grass cover bees are indanger.

Recommended species	Flowering period												Altitude(masl)
	J	F	M	A	M	J	J	A	S	O	N	D	
1. Acacia abyssinica	=====												1500 - 2900
2. Acacia albida				=====									500 - 2600
3. Acacia tortilis	=====												600 - 1900
6. Albizia gummifera	=====												1550 - 2150
7. Albizia schimperiana	=====												1550 - 2800
8. Cordia africana	=====												550 - 2600
9. Croton macrostachys				=====									1300 - 2700
10. Dovyalis caffra												1500 - 2600
11. Ehretia cymosa	=====												500 - 2700
12. Erythrina abyssinica	=====									=====			1000 - 2800
13. Erythrina brucei	_____									_____			1550 - 2800
14. E.camaldulensis	=====												900 - 2400
15. Eucalyptus globulus	=====												1800 - 3200
16. Euphorbia candellbrum	==									=====			1200 - 1900
17. Euphorbia tirucalli	=====												1300 - 2000
18 Moringa stenopetala	==									=====			100-1800
19. Annual grasses/Weeds													in all ranges

- **Source:-** Dechasa 1995 mainly based on honeybee flora of Ethiopia
- **Note:-** It is a general indicator the detail and reliable information is under investigation for priority species in specific agro-ecology/site condition/
- ===== Pollen and nectar are collected frequently
- ===== Pollen and nectar collected less frequently
- _____ Either pollen or nectar

On farm tree planting

Staggered spacing is adopted

From Engineer Bee

It is also a breeder

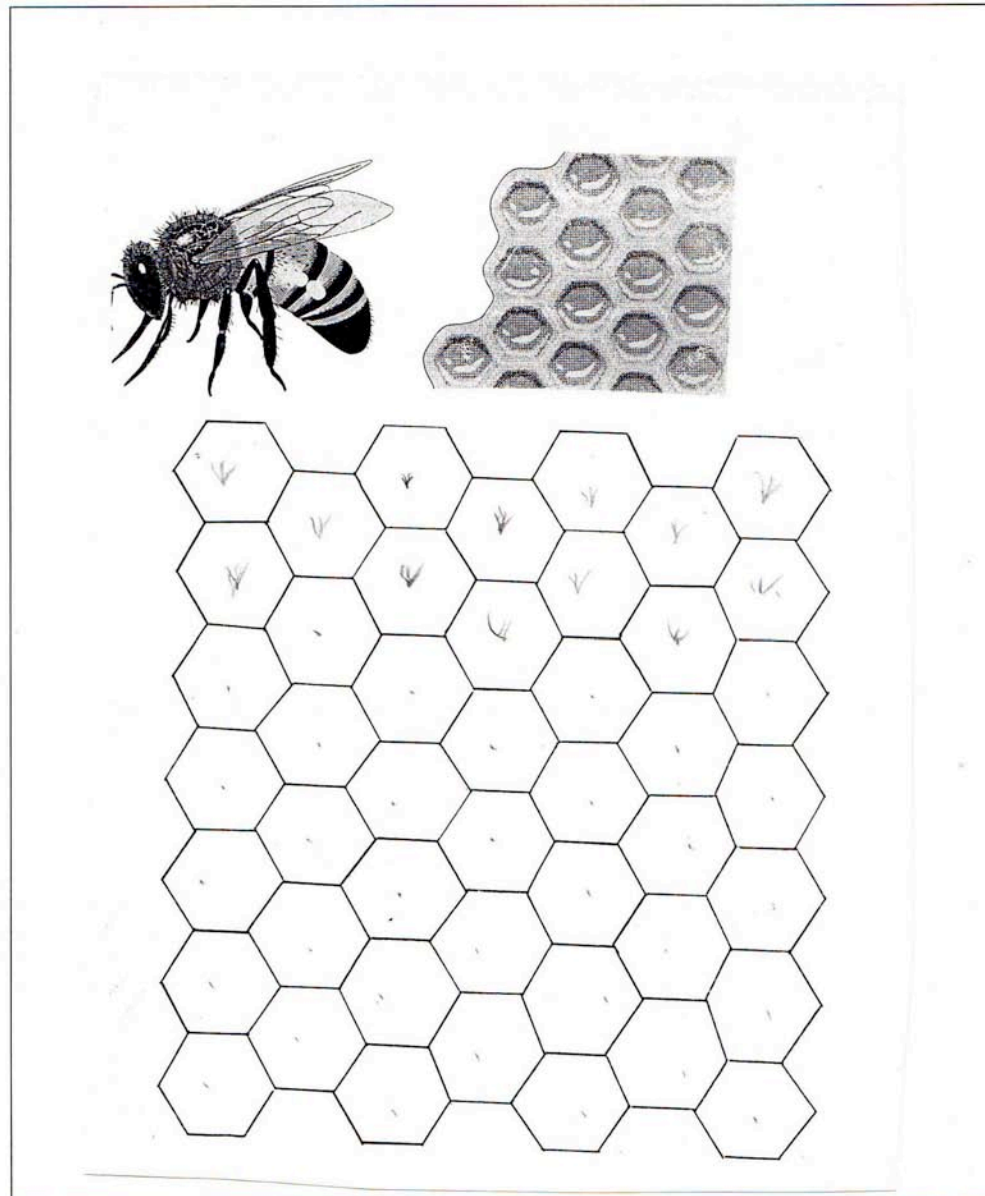
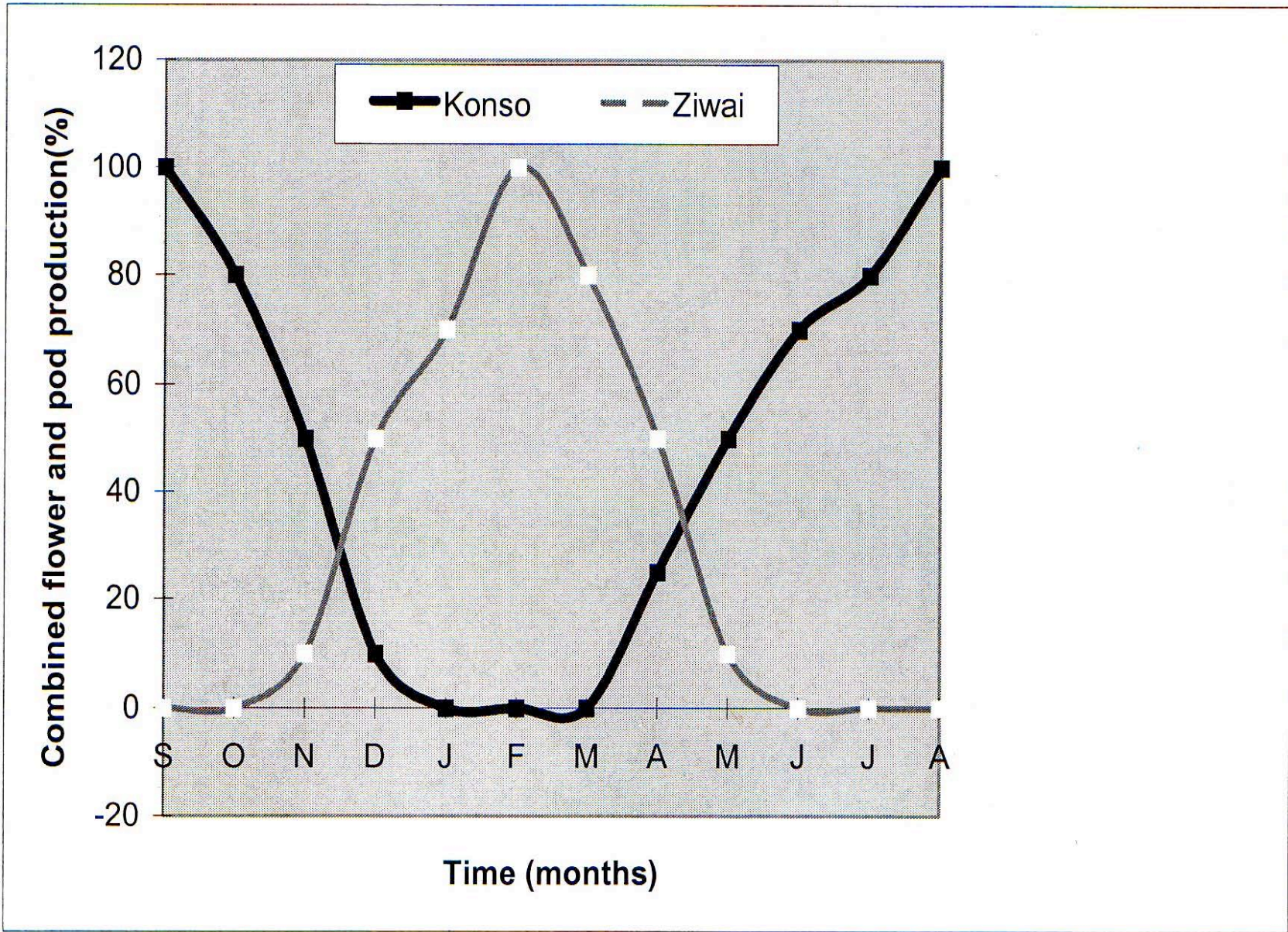
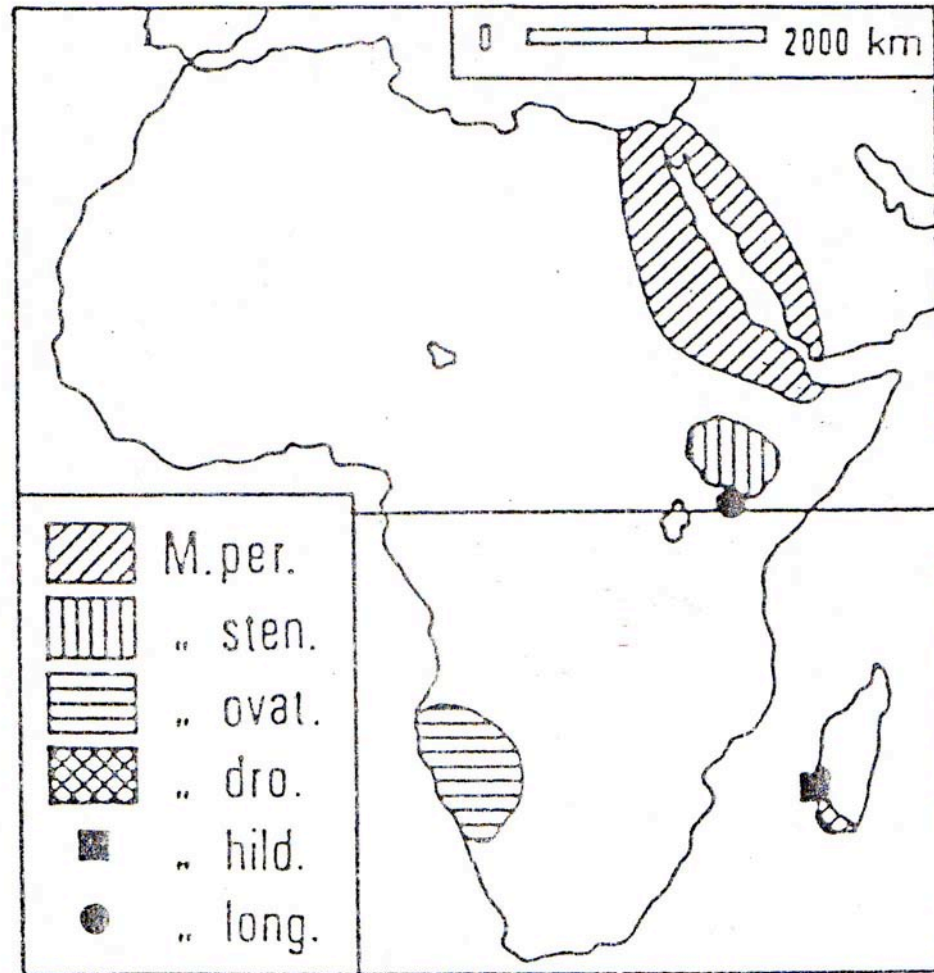
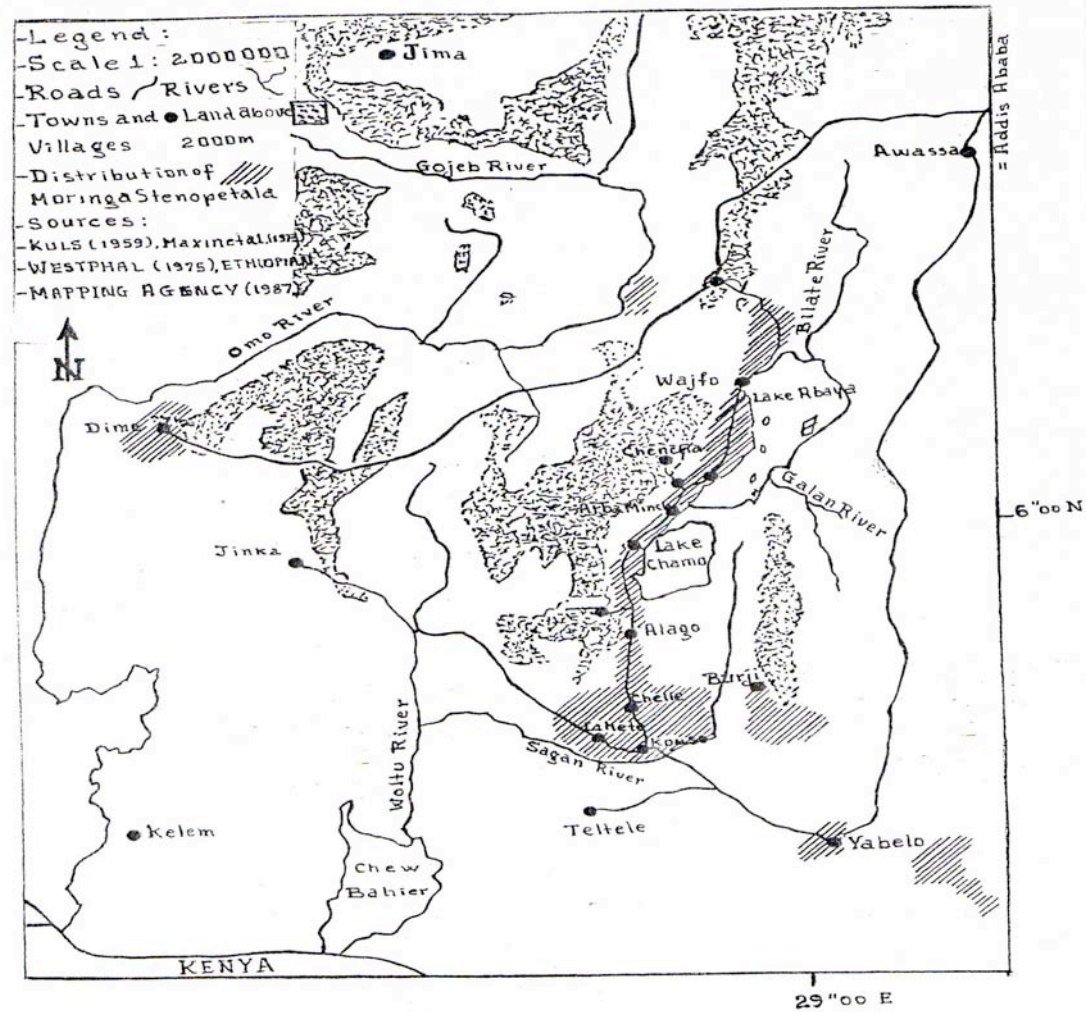


Figure Honeybee comb model, which is directly adopted, from the most industrious and organized social insect





Distribution of *M. stenopetala*



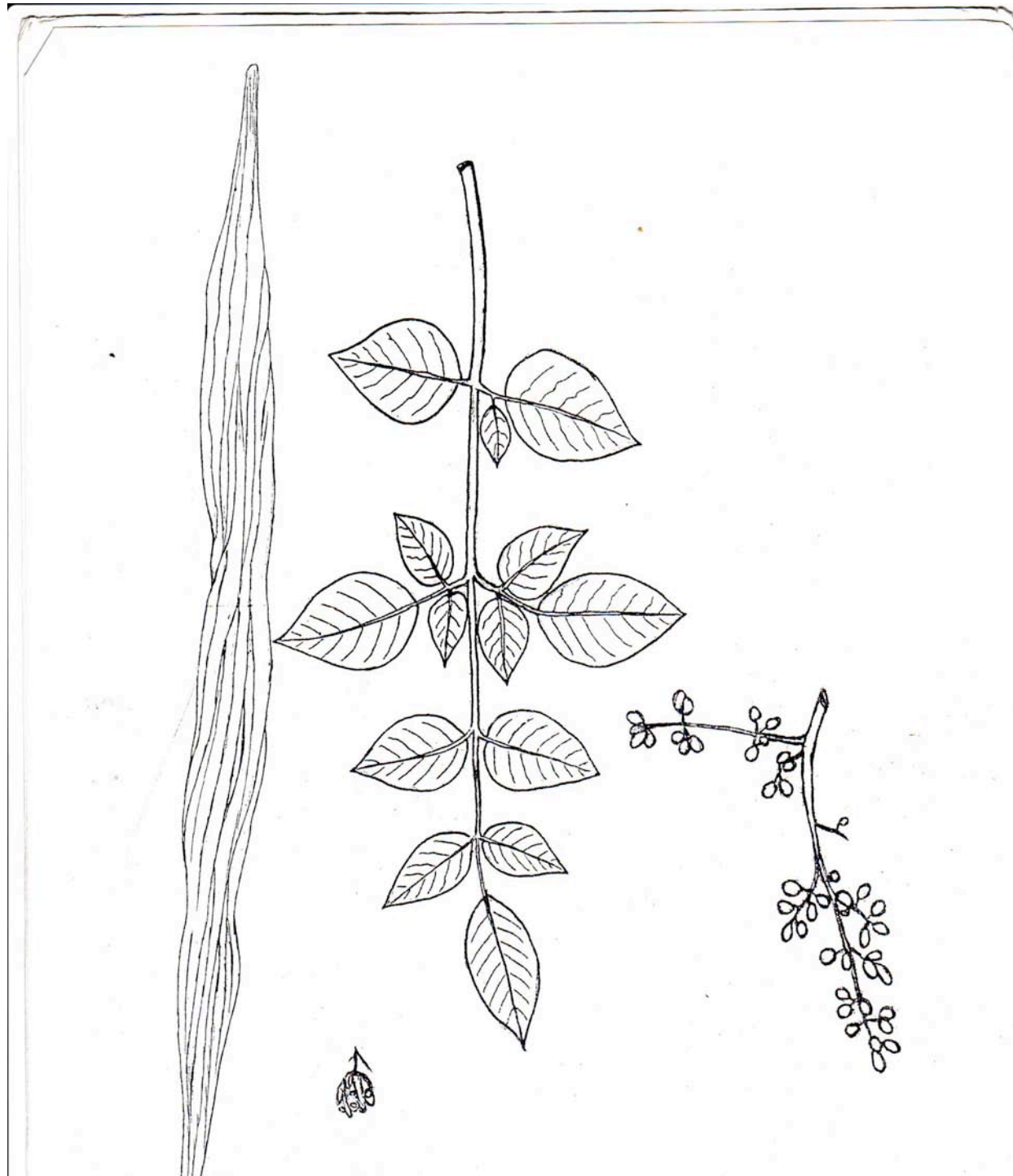
Species diversity

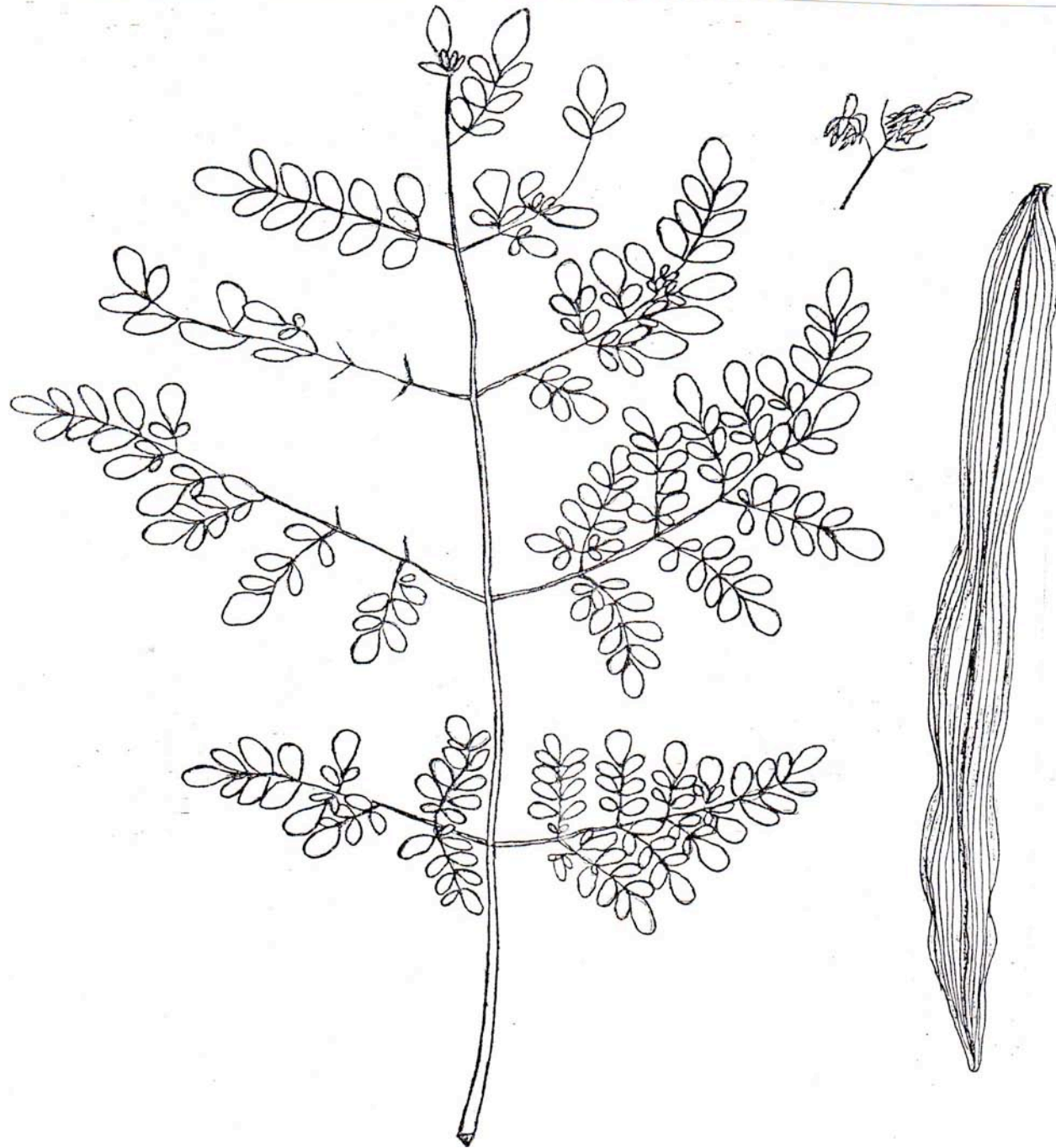


Leaf assessment

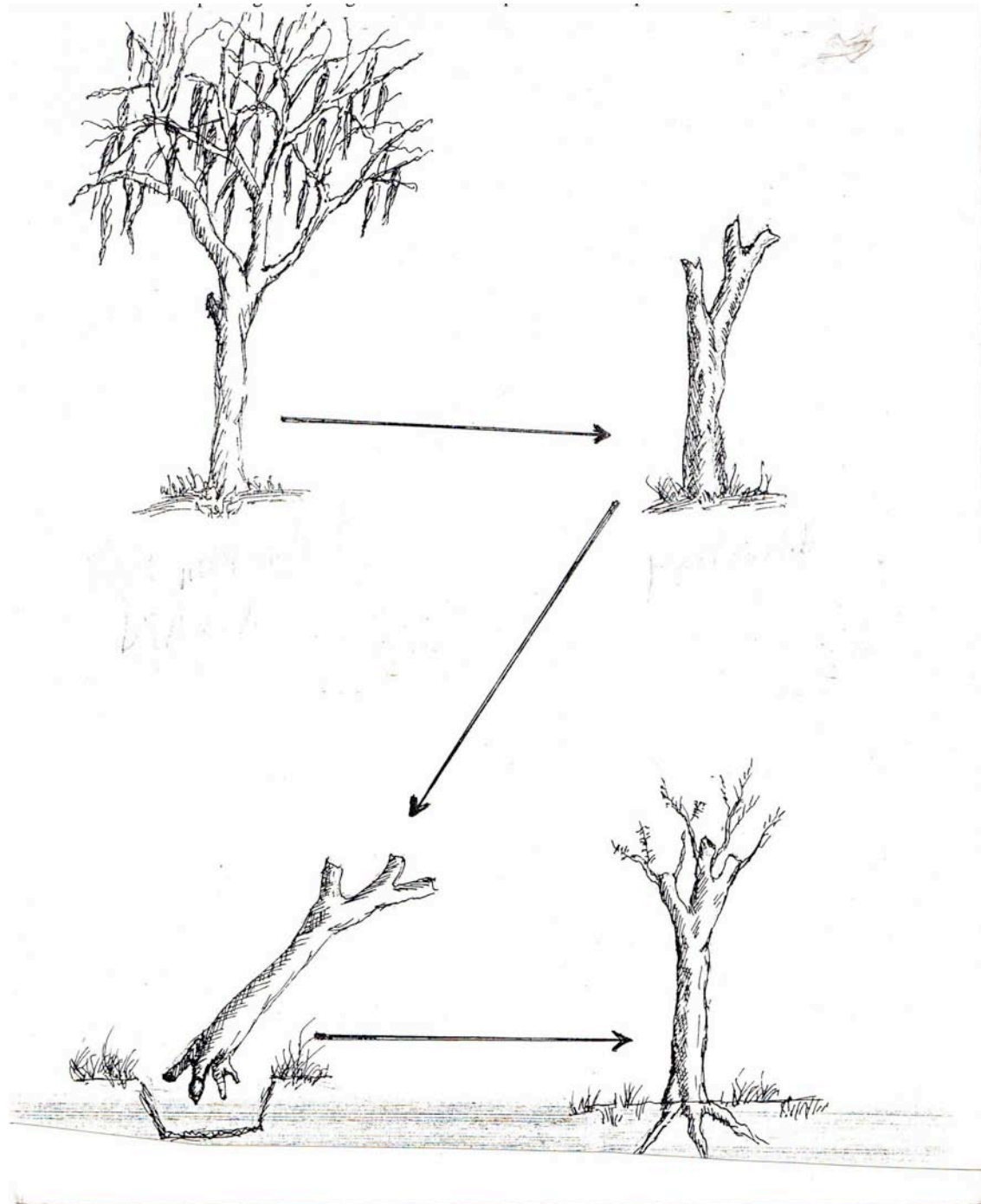
- *M.stenopetala*
- *M.oleifera*

Leaflets





- **Local Konso planting method**





length

without ball of earth and root

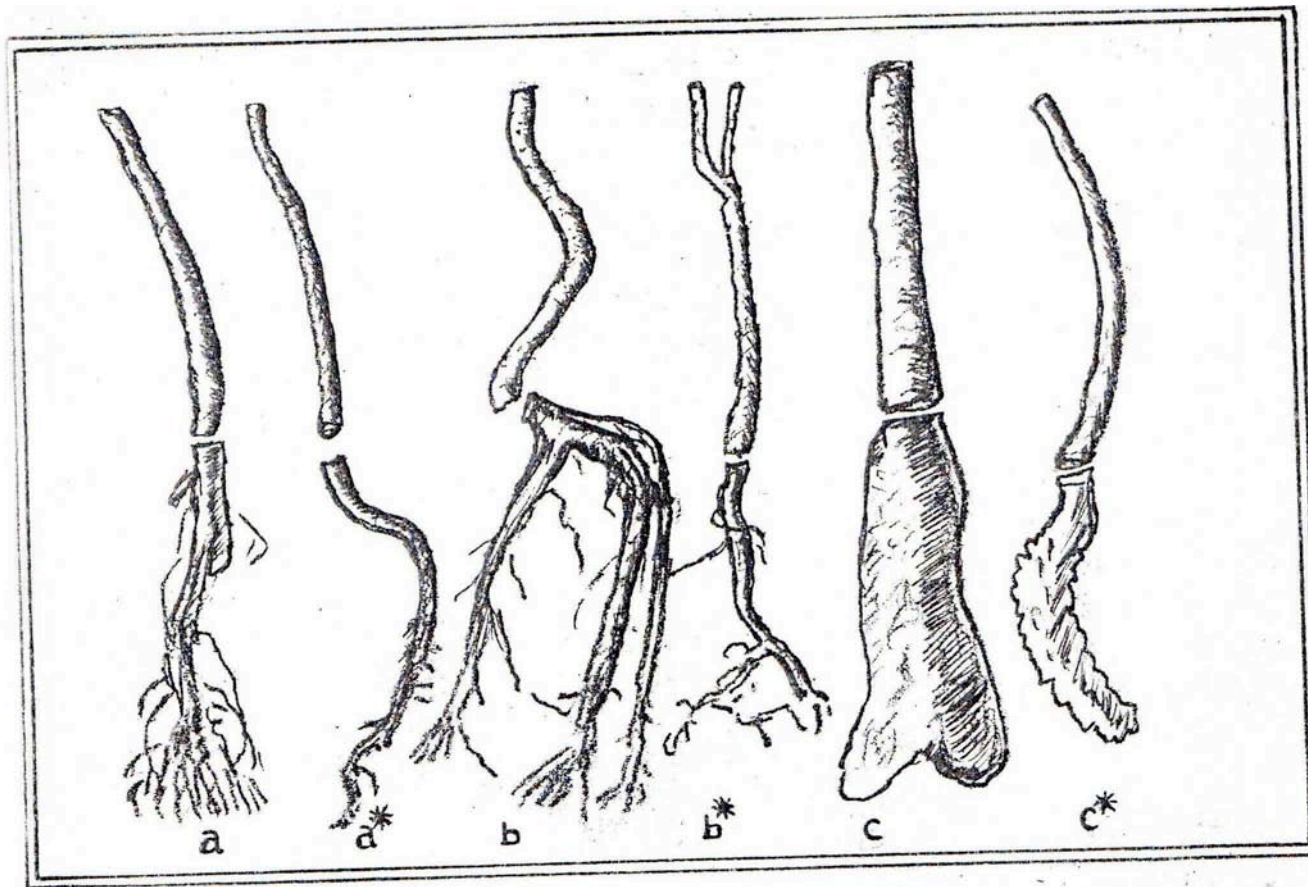
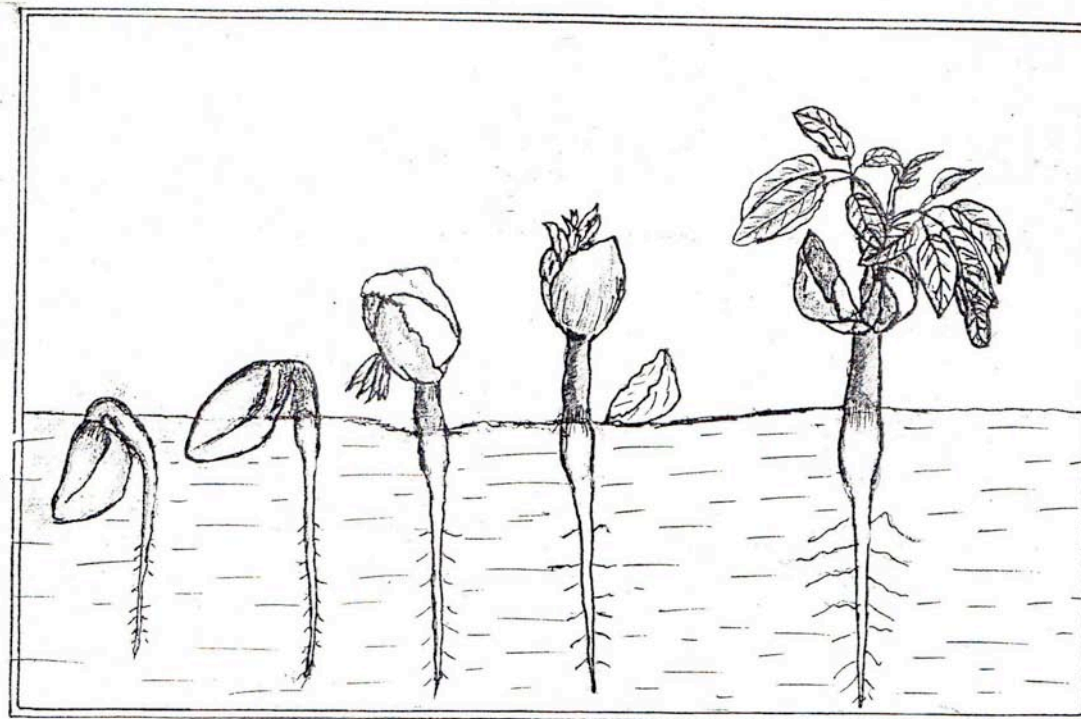




Fig. 7.b Major ways of breaking seed cover during emergency.



Germination and development of *Moringa stenopetala* seedlings from bare seed.

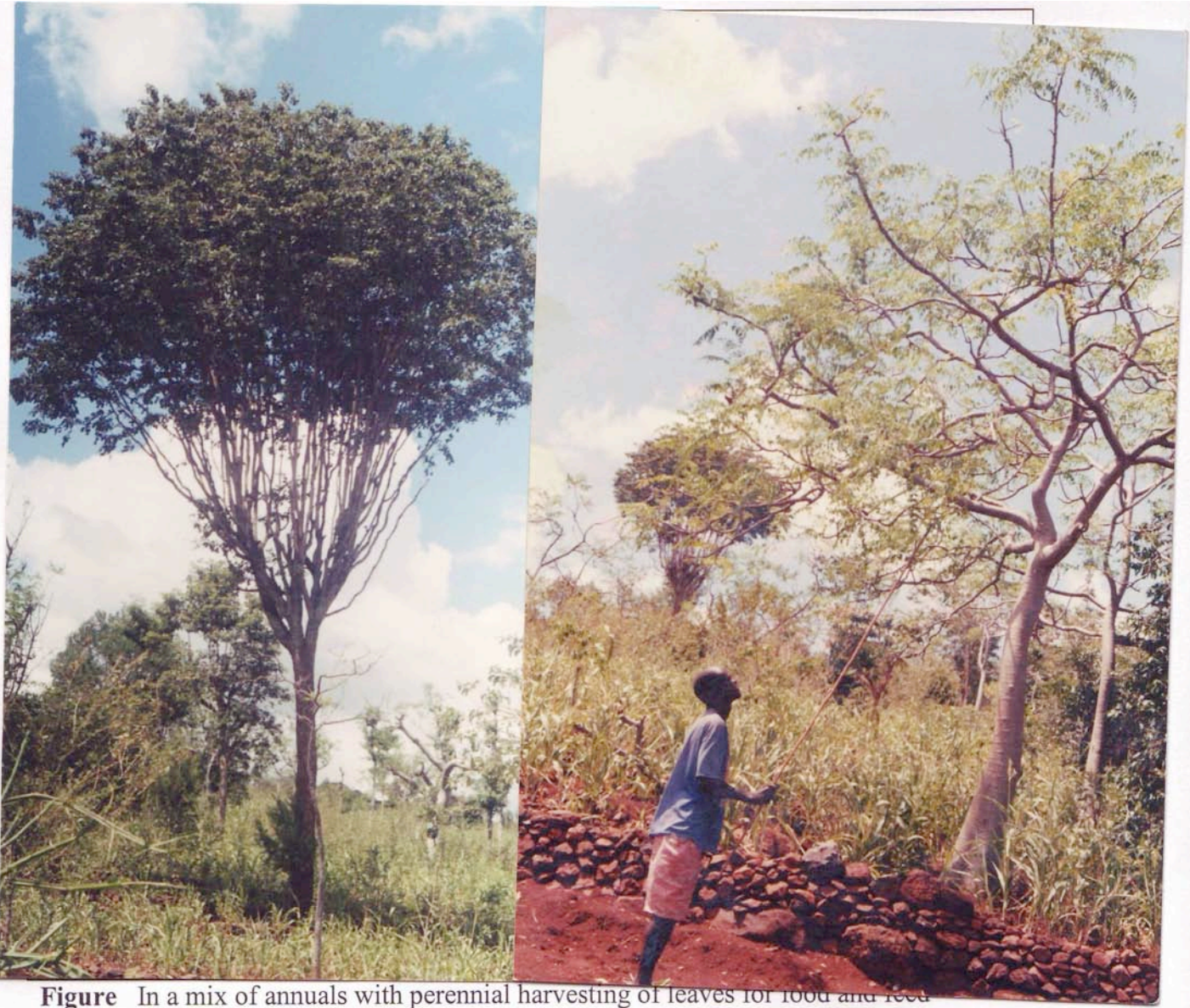


Figure In a mix of annuals with perennial harvesting of leaves for food and feed

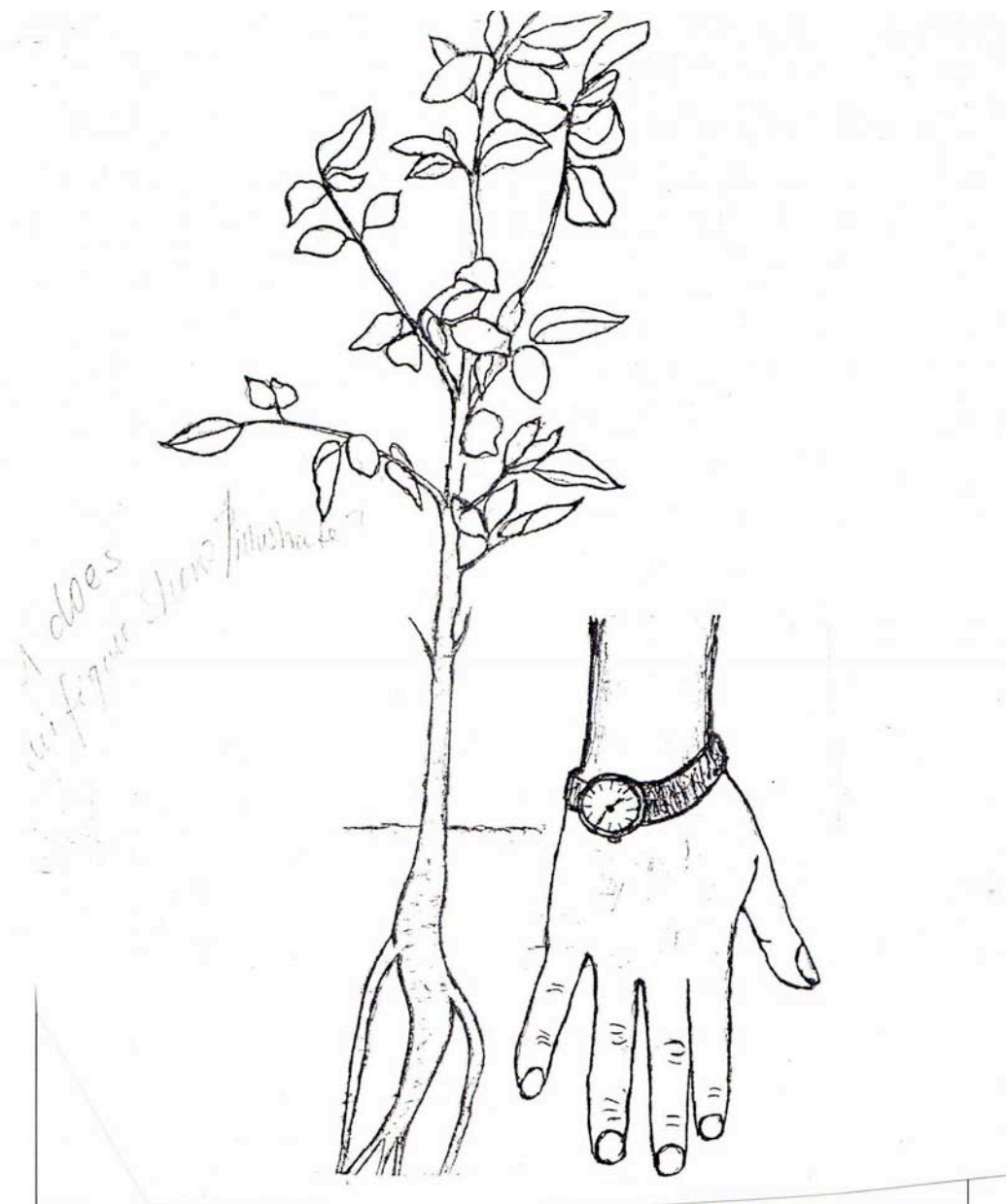


Figure Vigorous growth of 45 days old young seedling of *M.stenopetala*



Plate Coffee under *Terminalia brownii* shade (left) Matured (20-70) poles from single tree is laying against *Balanites aegyptiaca* tree (right) in Konso farm

The following plate helps to identify the right development stage of the pod and their respective size grading for quality food and feed according to local test.



Plate Relative size of fresh green pod size for food and feed (Photo Dechasa 2003)

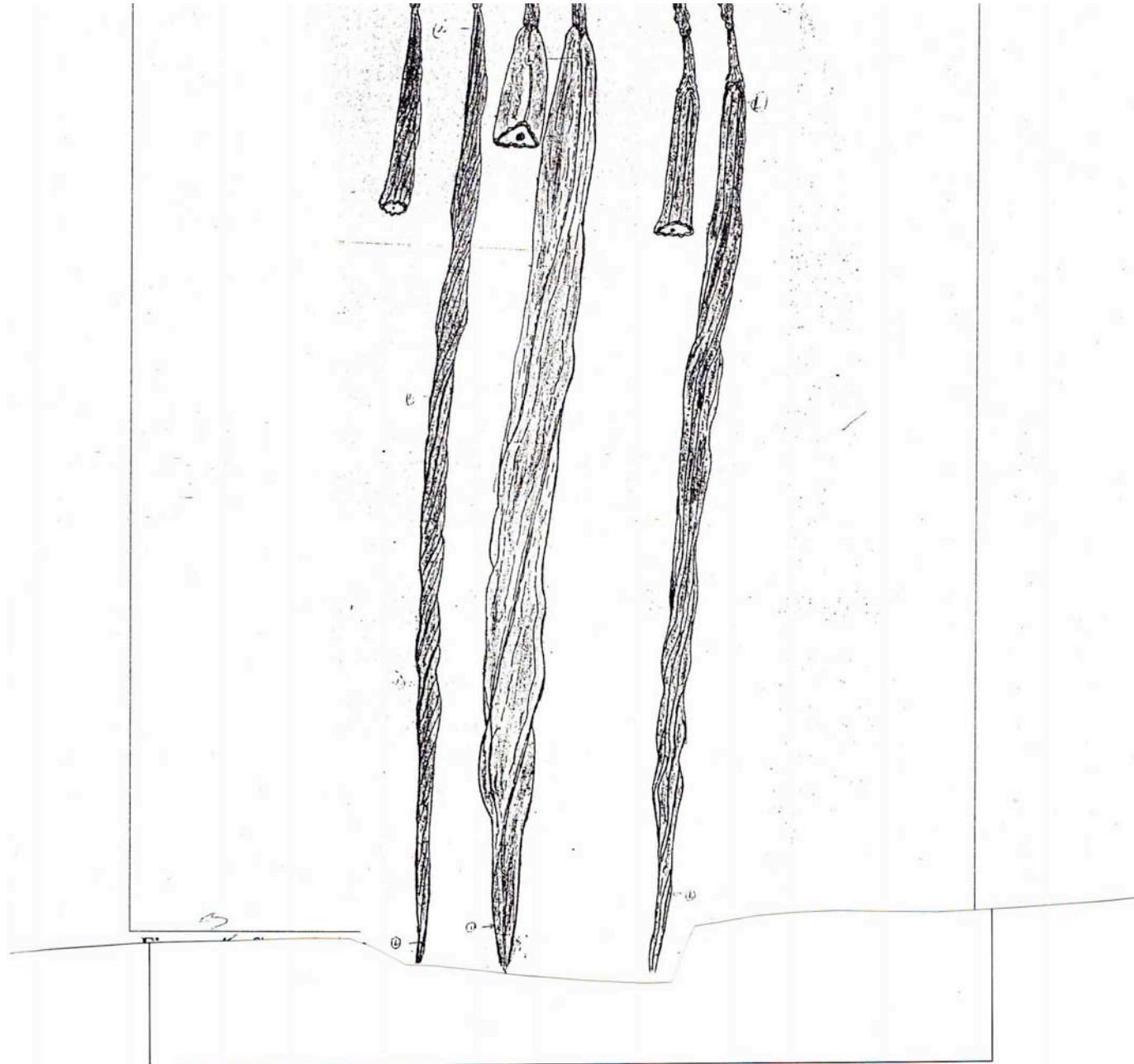


Figure 8 Change in development, degree of twisting and shape of *Moringa stenopetal* pods
Source Dechasa 2000 from Tree Identification file 3: 28



Figure 13 Local method of leaf harvest lower and matured leaf for food and feed.



Leaves ready to be cooked

(Photo E. Delemeunaere)

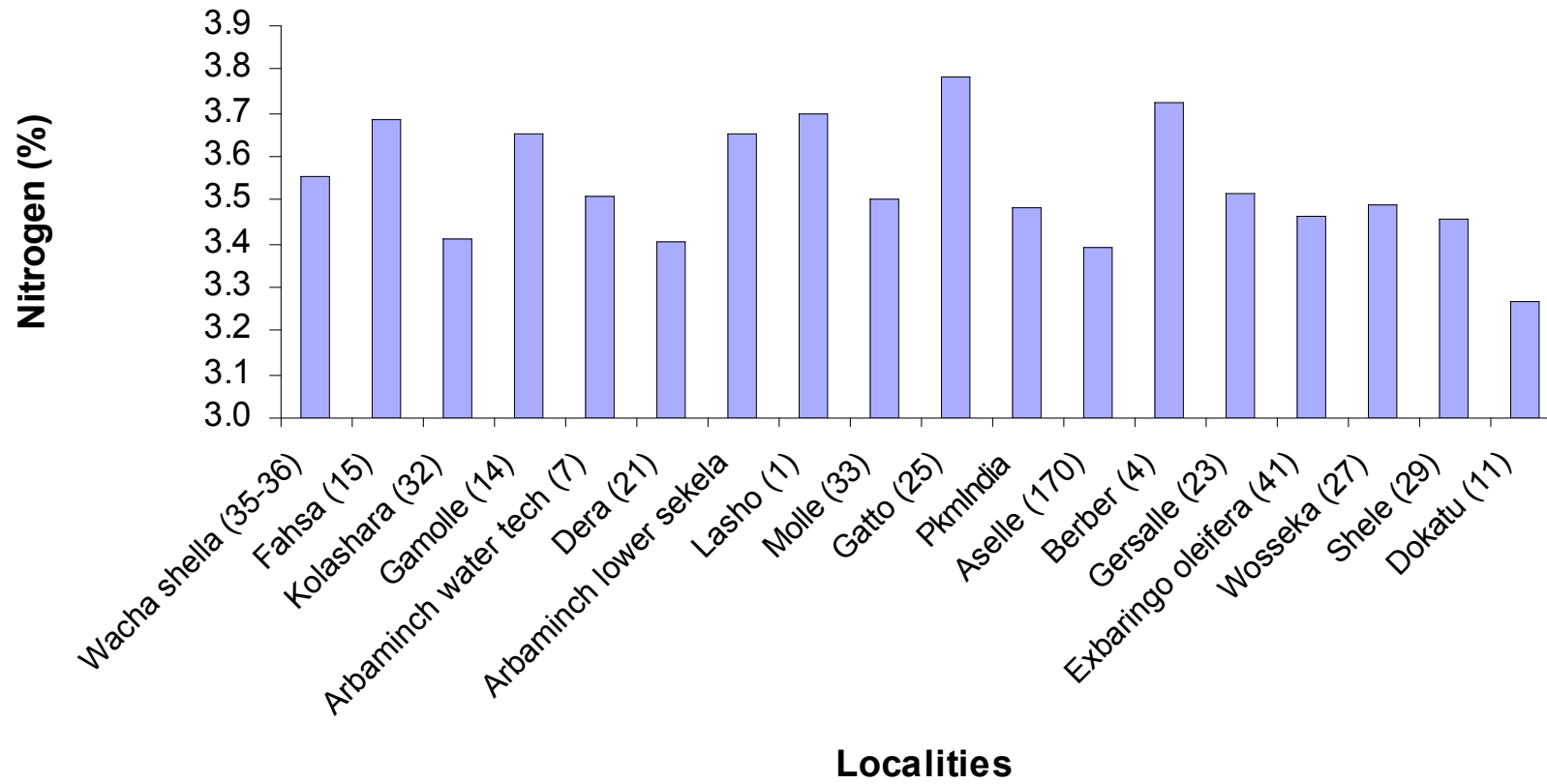


Leaf Yield: *M. oleifera* = 2 kg/tree
***M. Stenopetala* = 0.2 kg/tree**

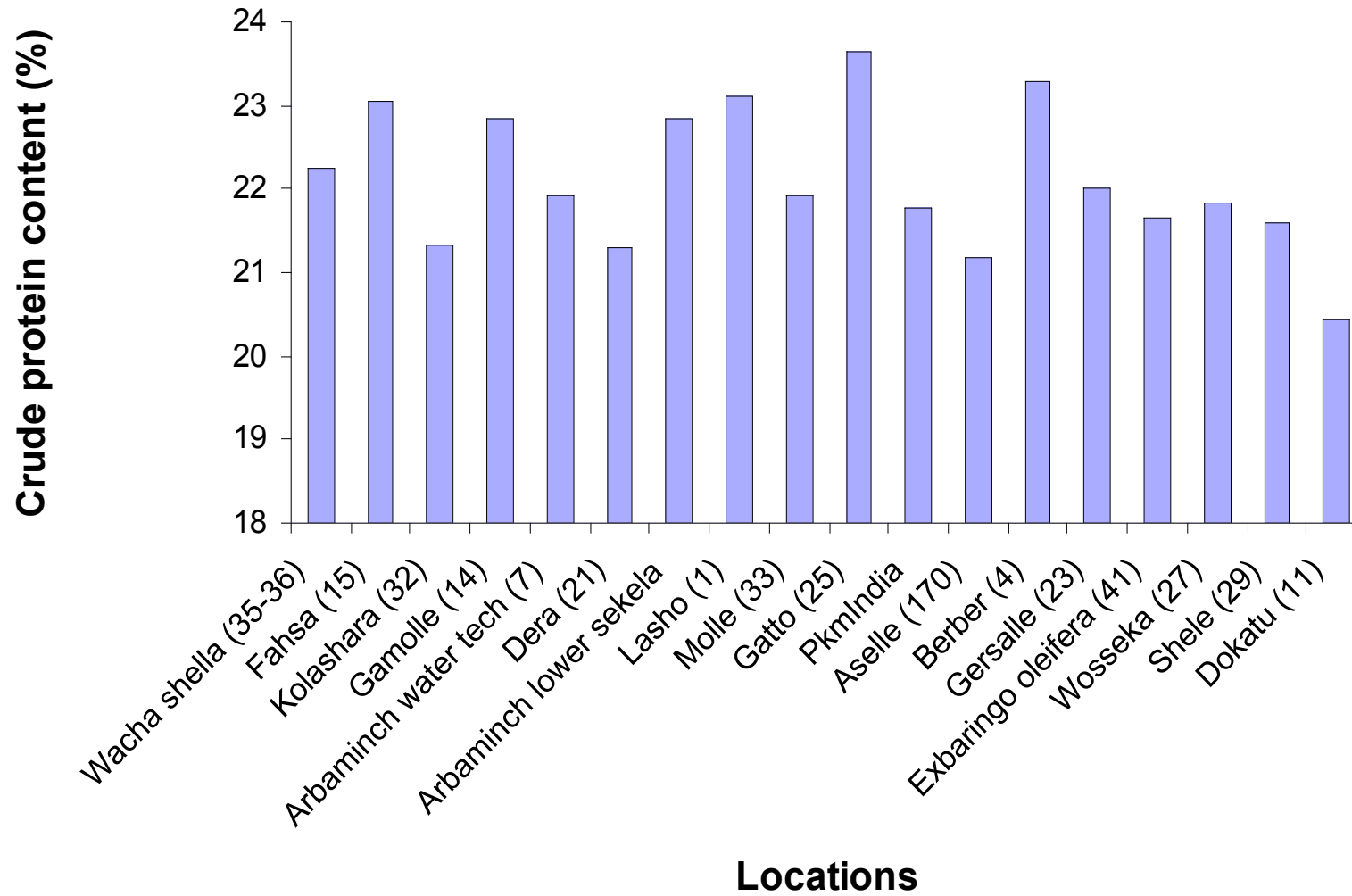
Reasons for low yield:

- 1. Spacing narrow for *stenopetala***
- 2. Insect damage**
- 3. Slow growth**

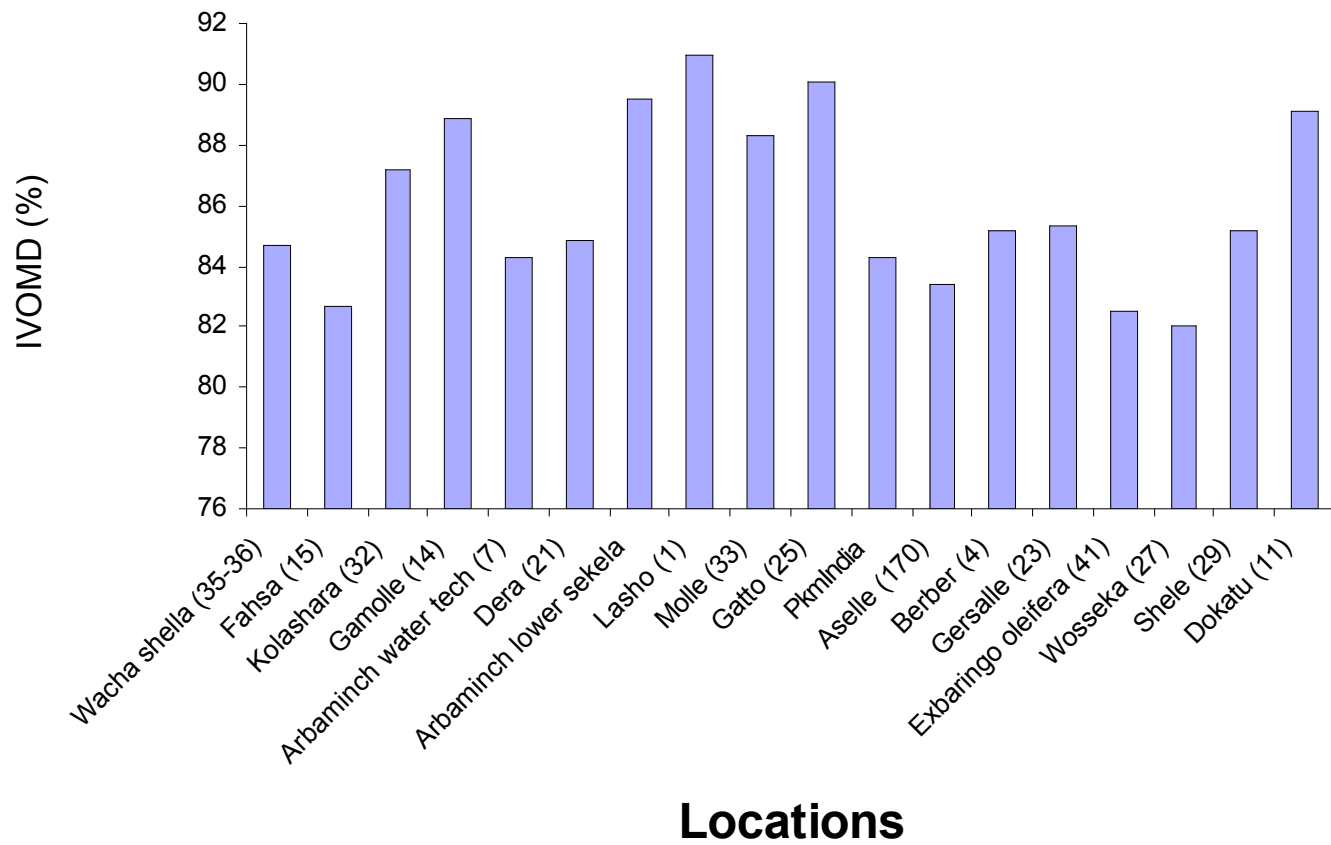
The Nitrogen (%) of the different *M. stenopetala*

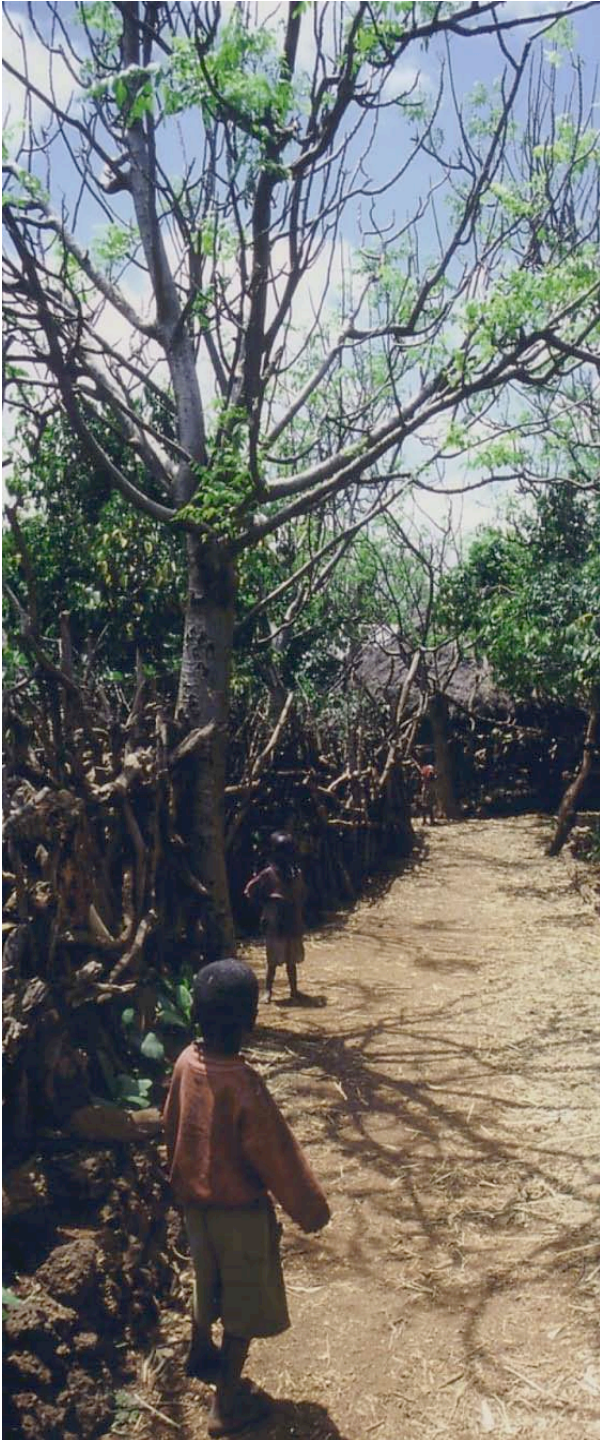


The crude protein content



The invitro digestibility of the different *M. stenopetala*





**THANK
YOU**

Photo E. Demeuleunaere