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

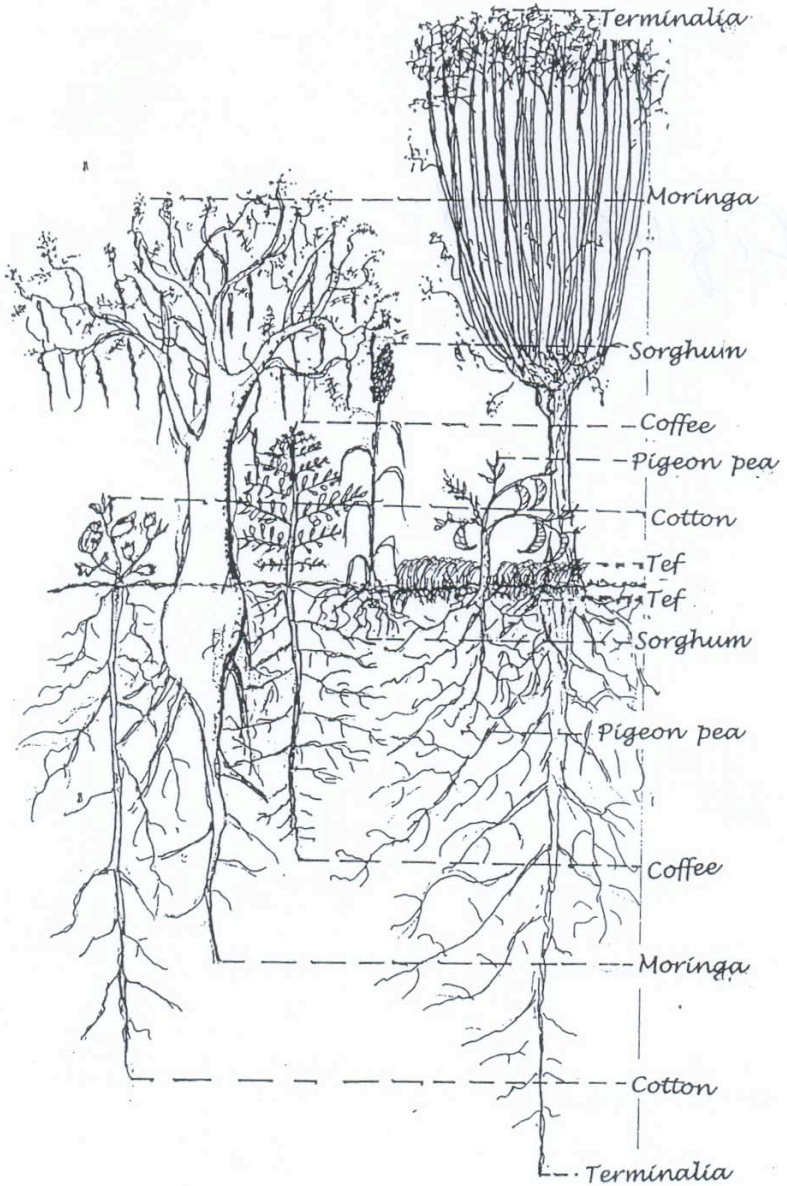
In Ox-culture

✓*Acaia albida*(Faidherrdia albida) (N)

✓*Croton macrstachyus* (P)

Hoe-culture

✓*Moringa stenopetala*


Terminalia
Moringa
Sorghum
Coffee
Pigeon pea
Cotton
Tef
Tef
Sorghum
Pigeon pea
Coffee
Moringa
Cotton
Terminalia

- **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**
- J F M A M J J A S O N D **Altitude**(masl)
- 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 grases/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

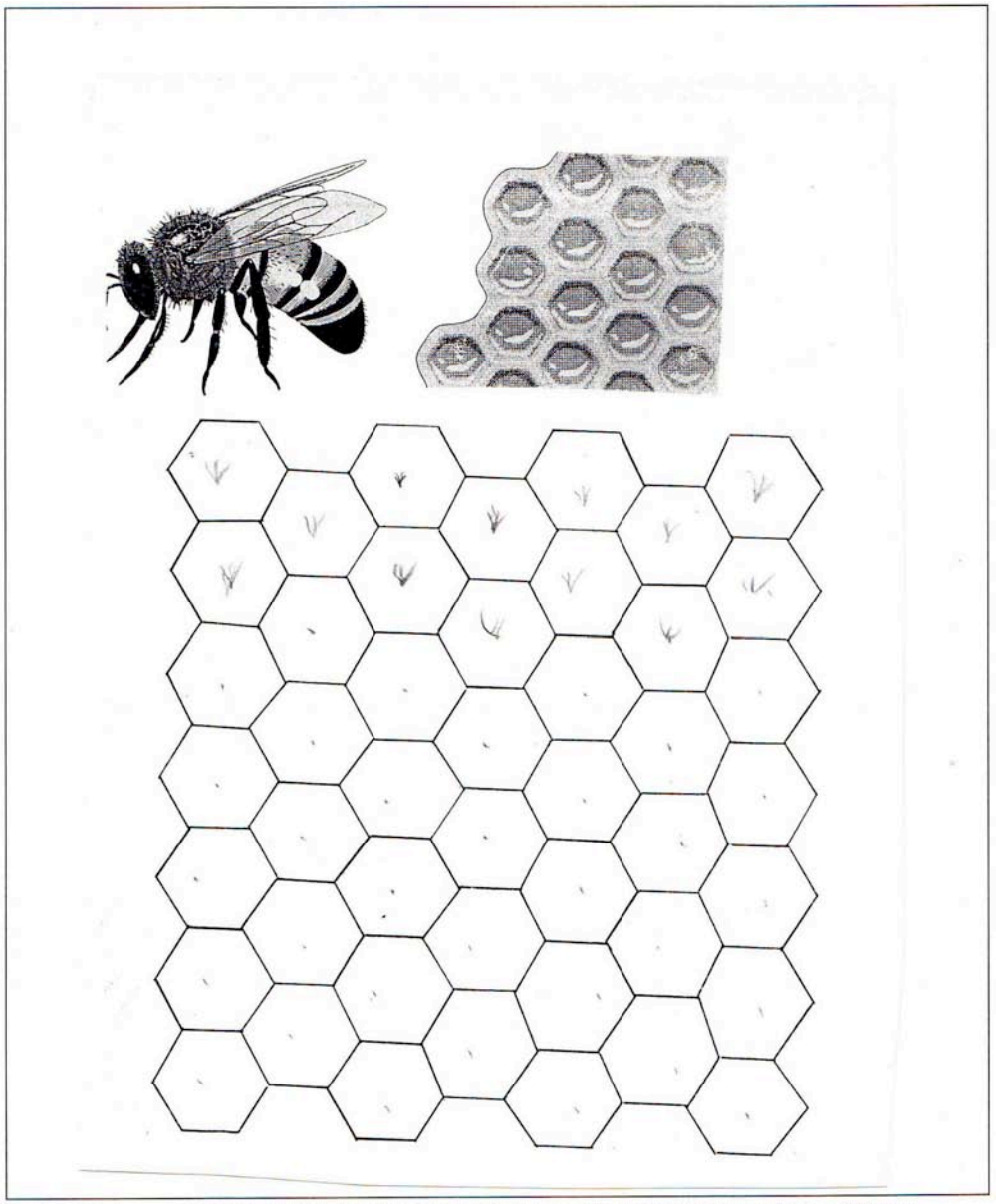
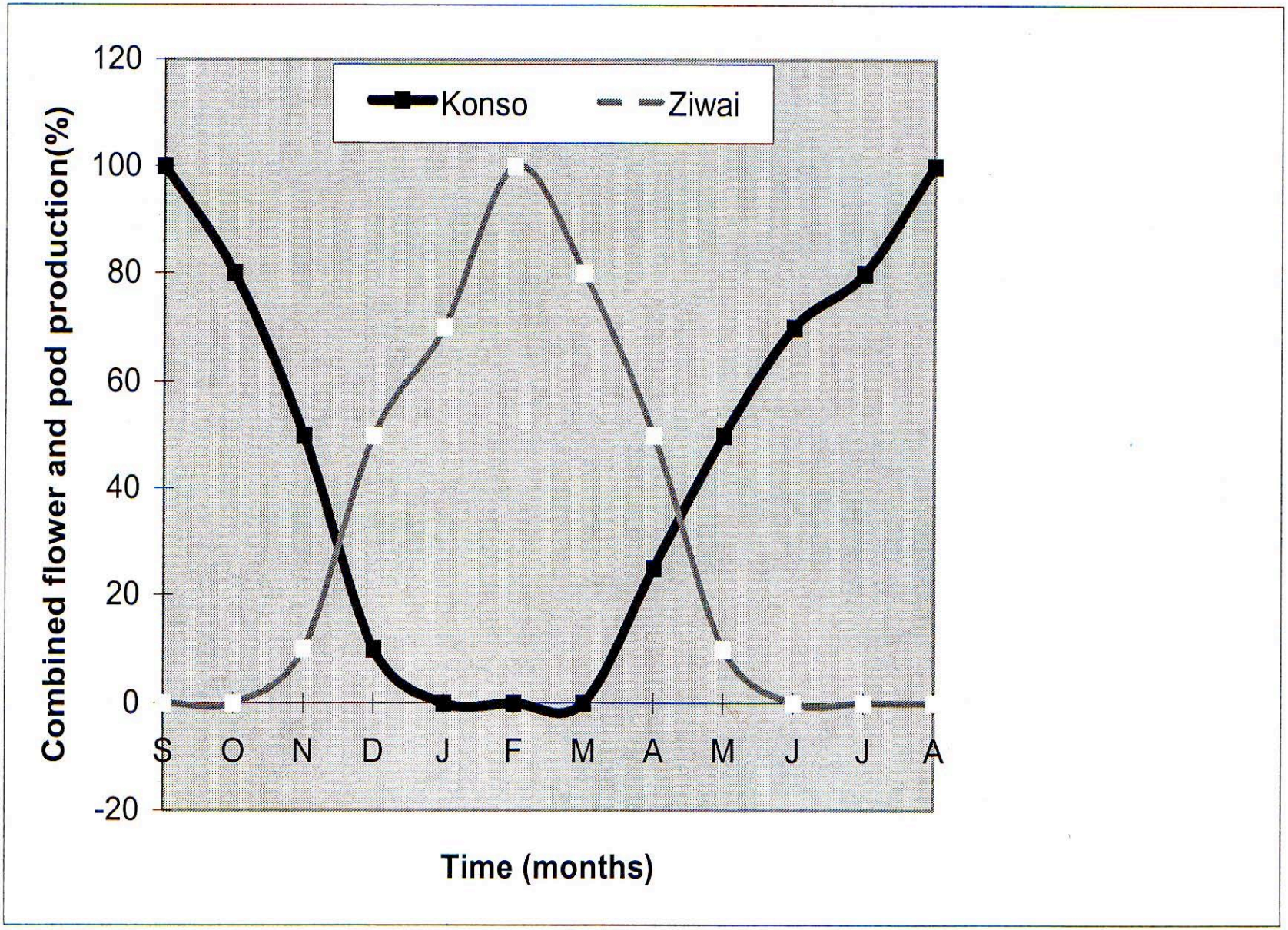
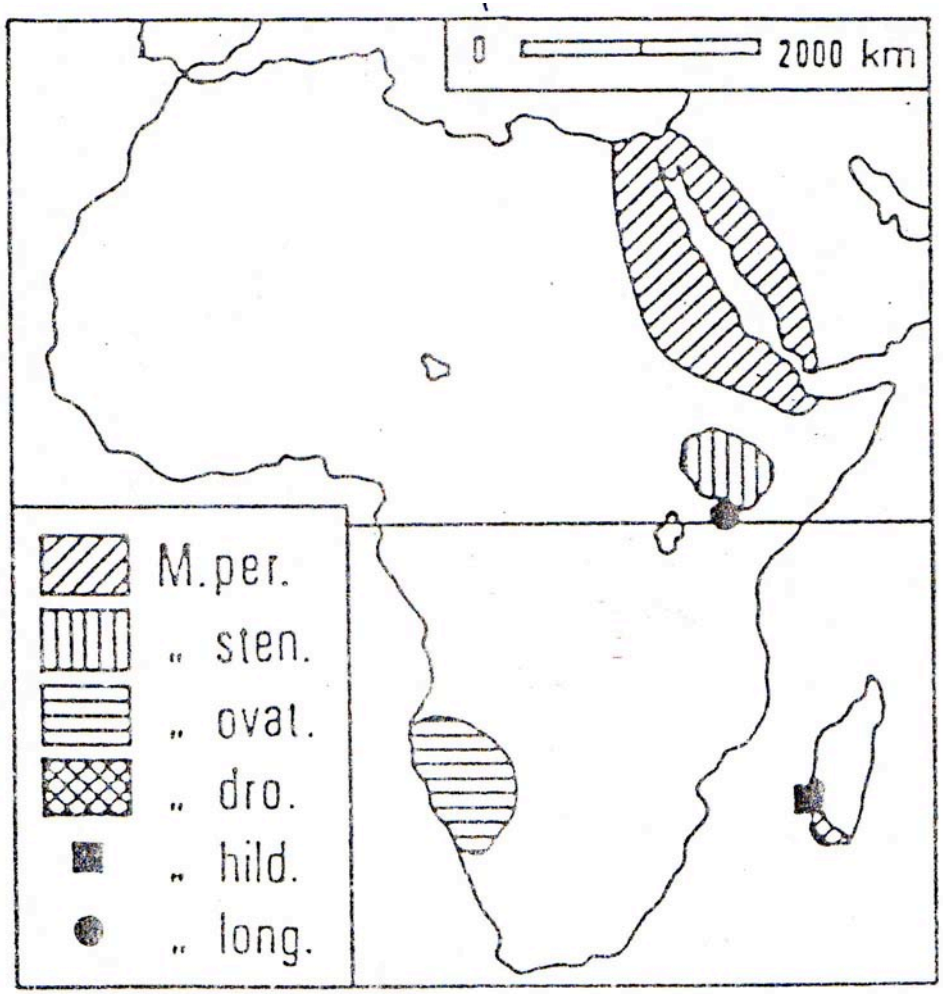
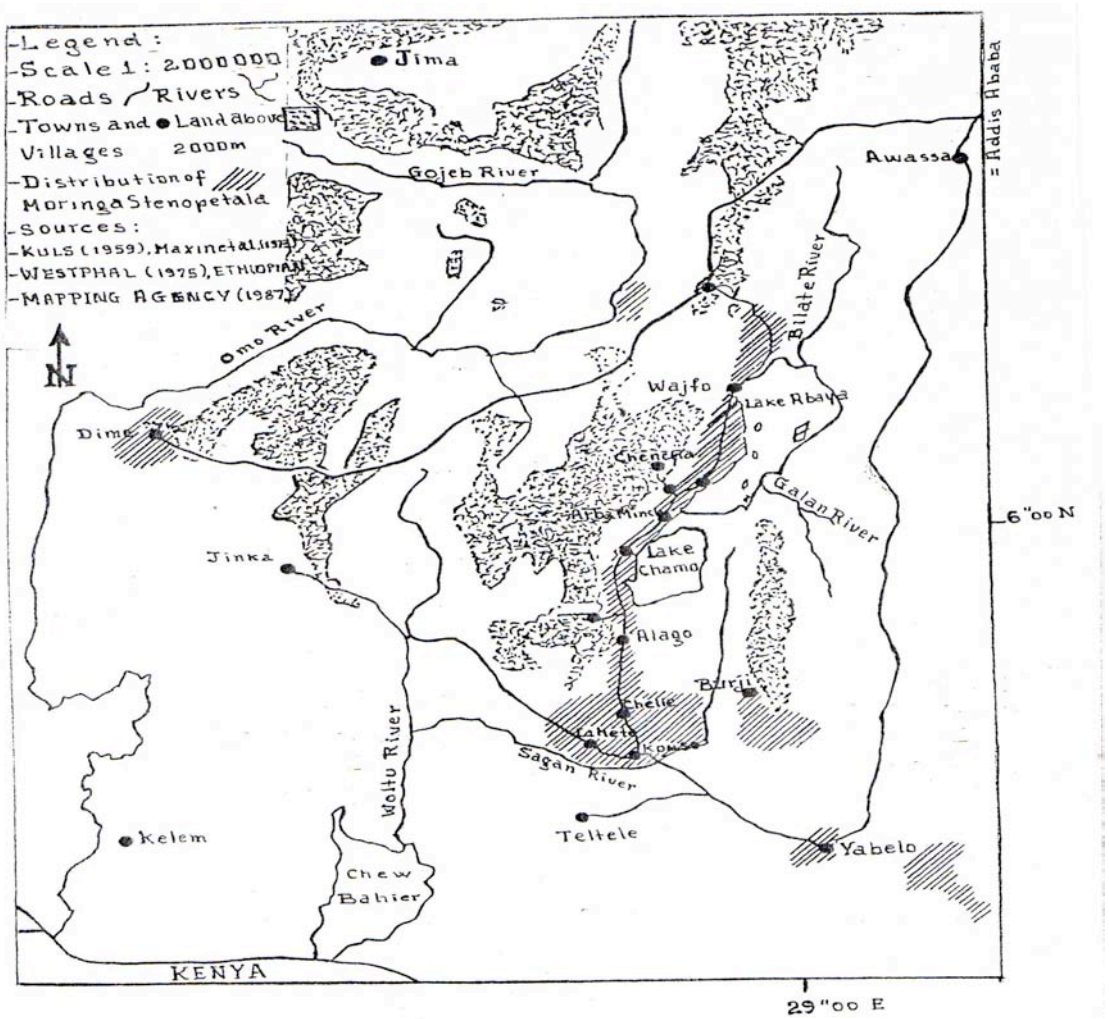


Figure Honeybee comb model, which is directly adopted, from the most industrious and organized social insect


Konso
Ziwai
120
100
80
60
40
20
0
-20
S
O
N
D
J
F
M
A
M
J
J
A
Combined flower and pod production(%)
Time (months)


0
2000 km
M.per.
„ sten.
„ oval.
„ dro.
„ hild.
„ long.

Distribution of *M.stenopetala*

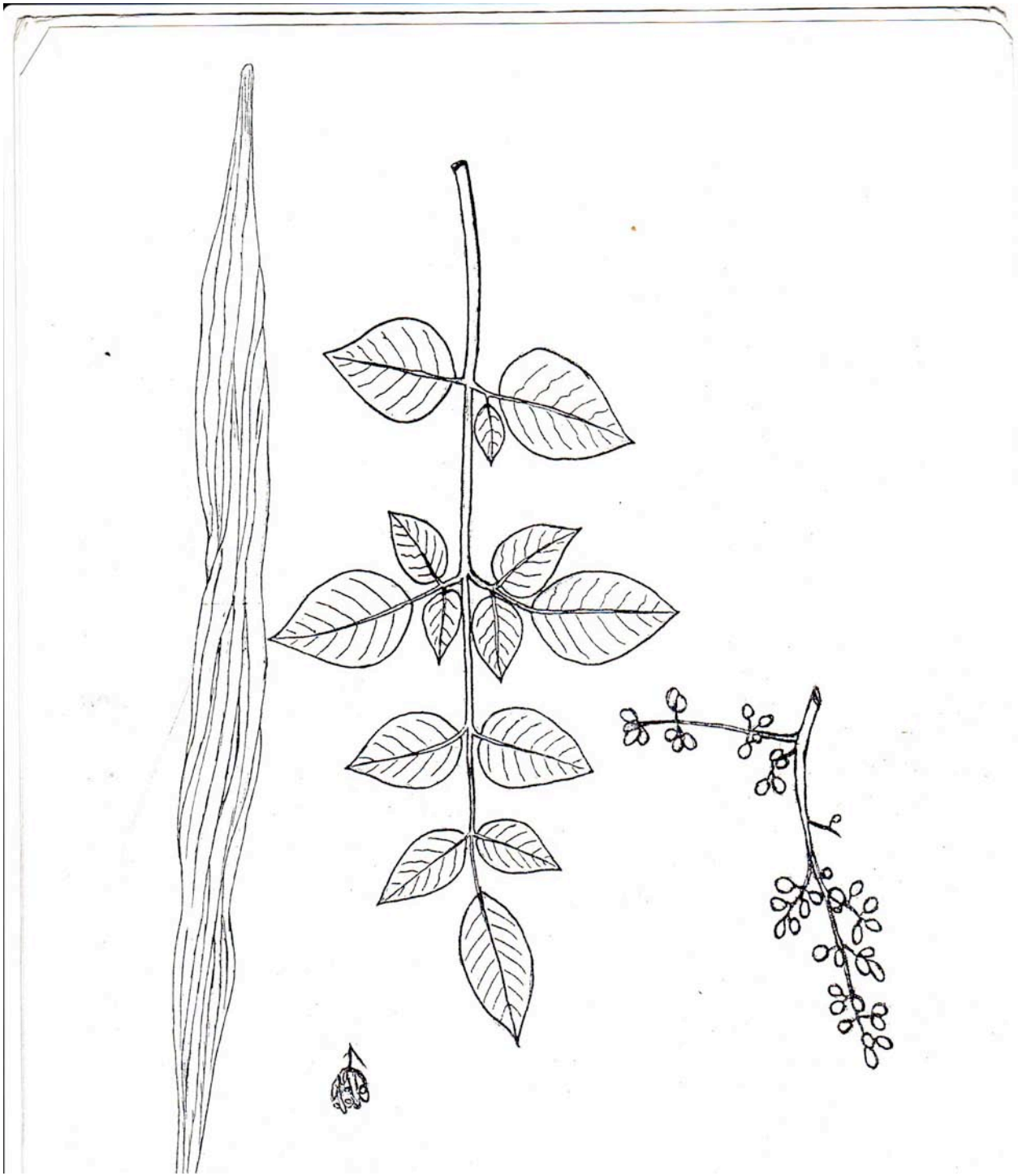


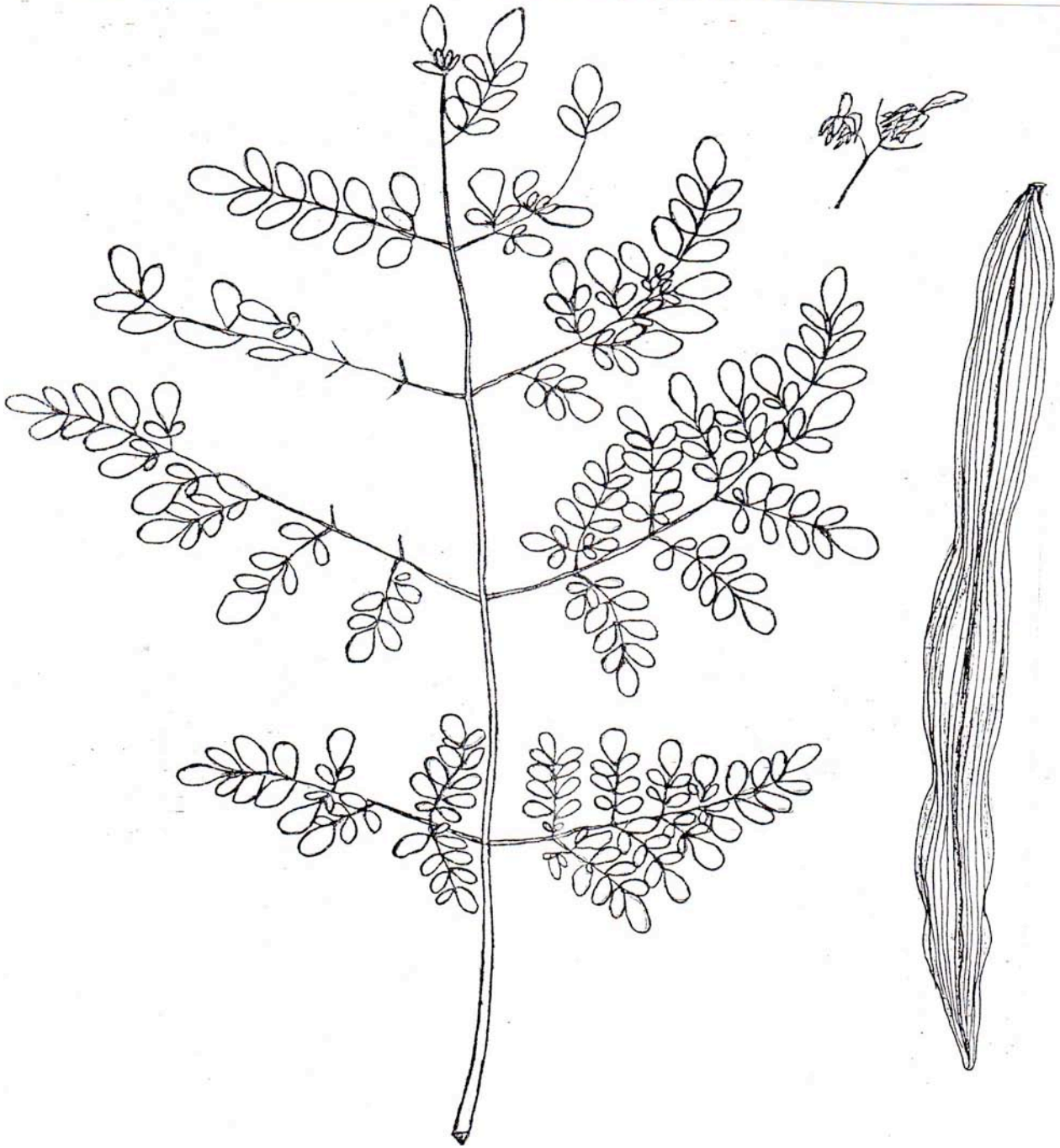
Species diversity

Leaf assessment

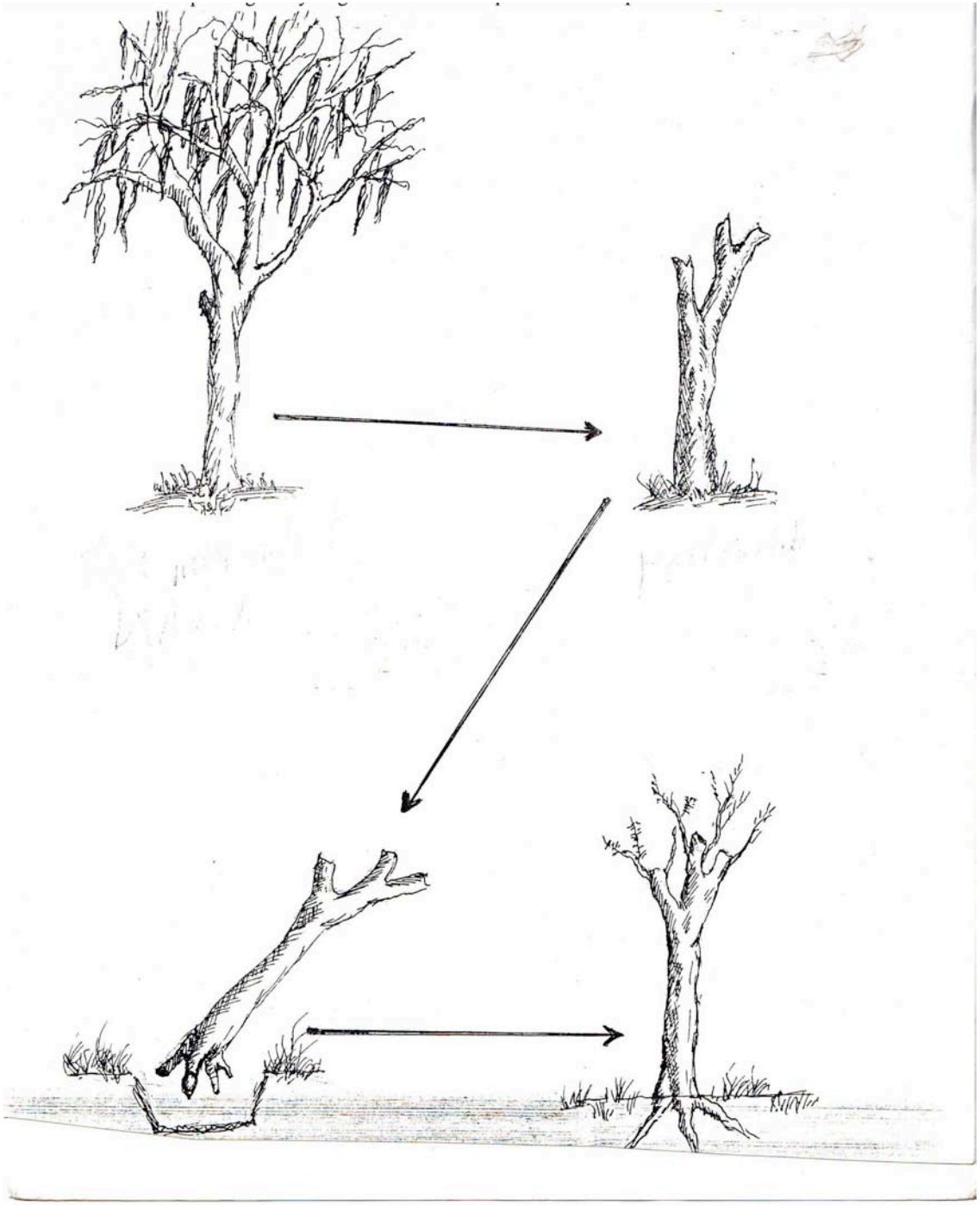
- M.stenopetala
- M.oleifera

Leaflets





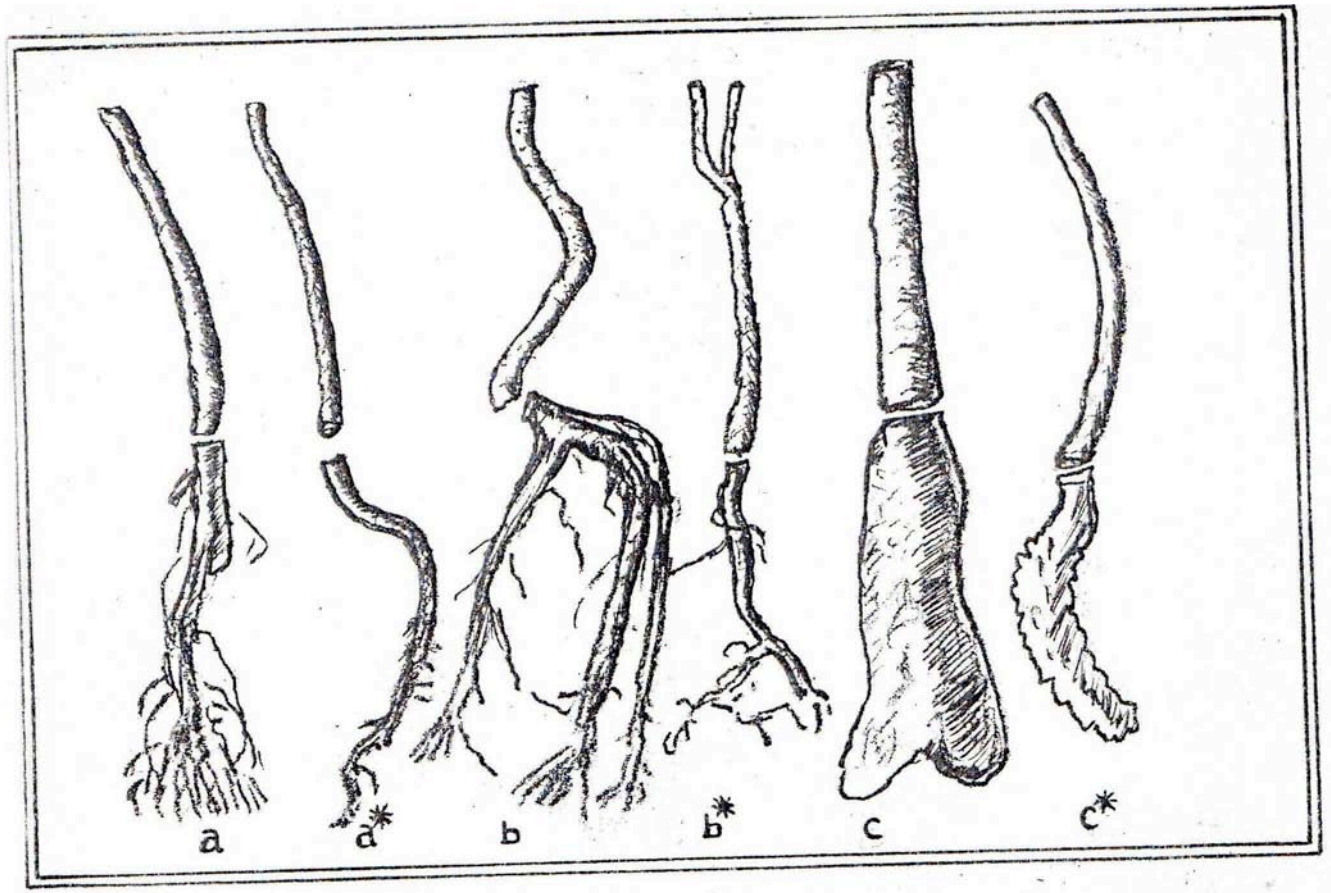
- **Local Konso planting method**



length

out ball of earth and root

79


a
a*
b
b*
c
c*

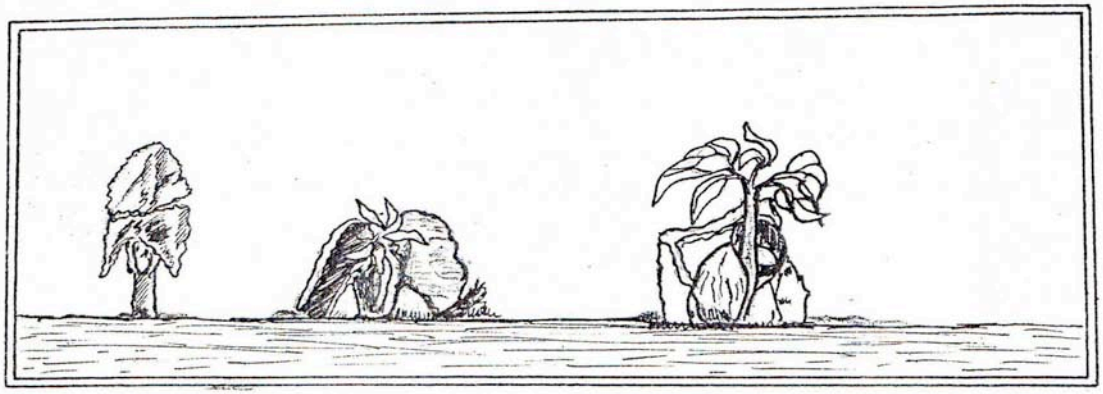
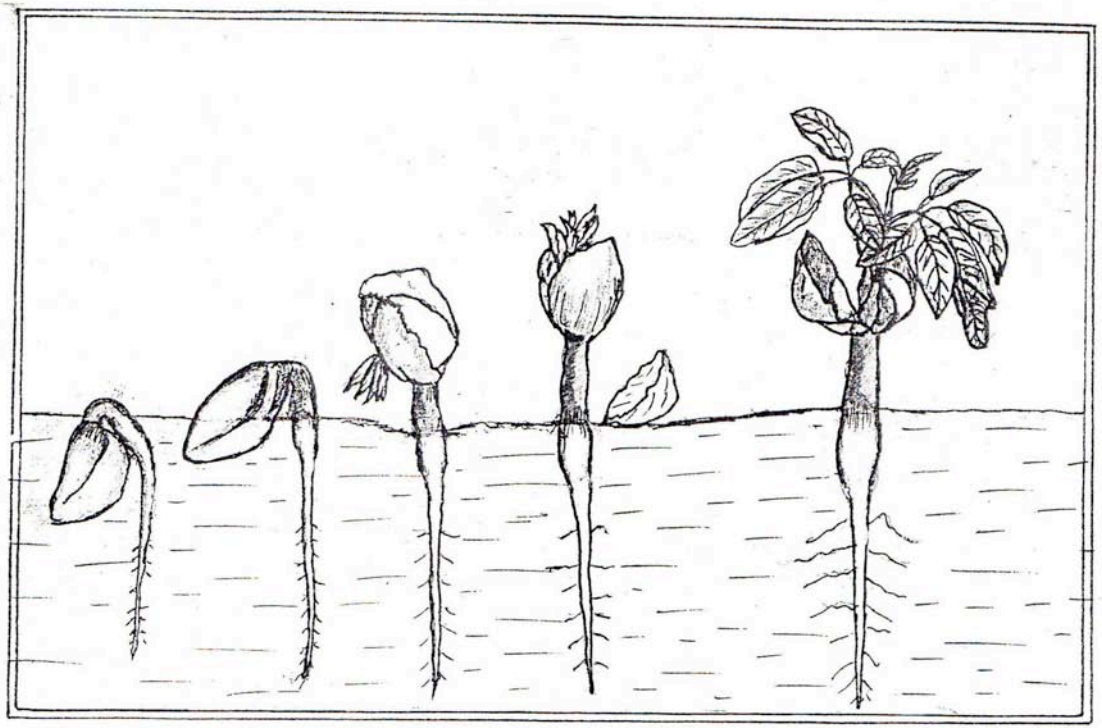


Fig. 7.b Major ways of breaking seed cover during emergency.



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

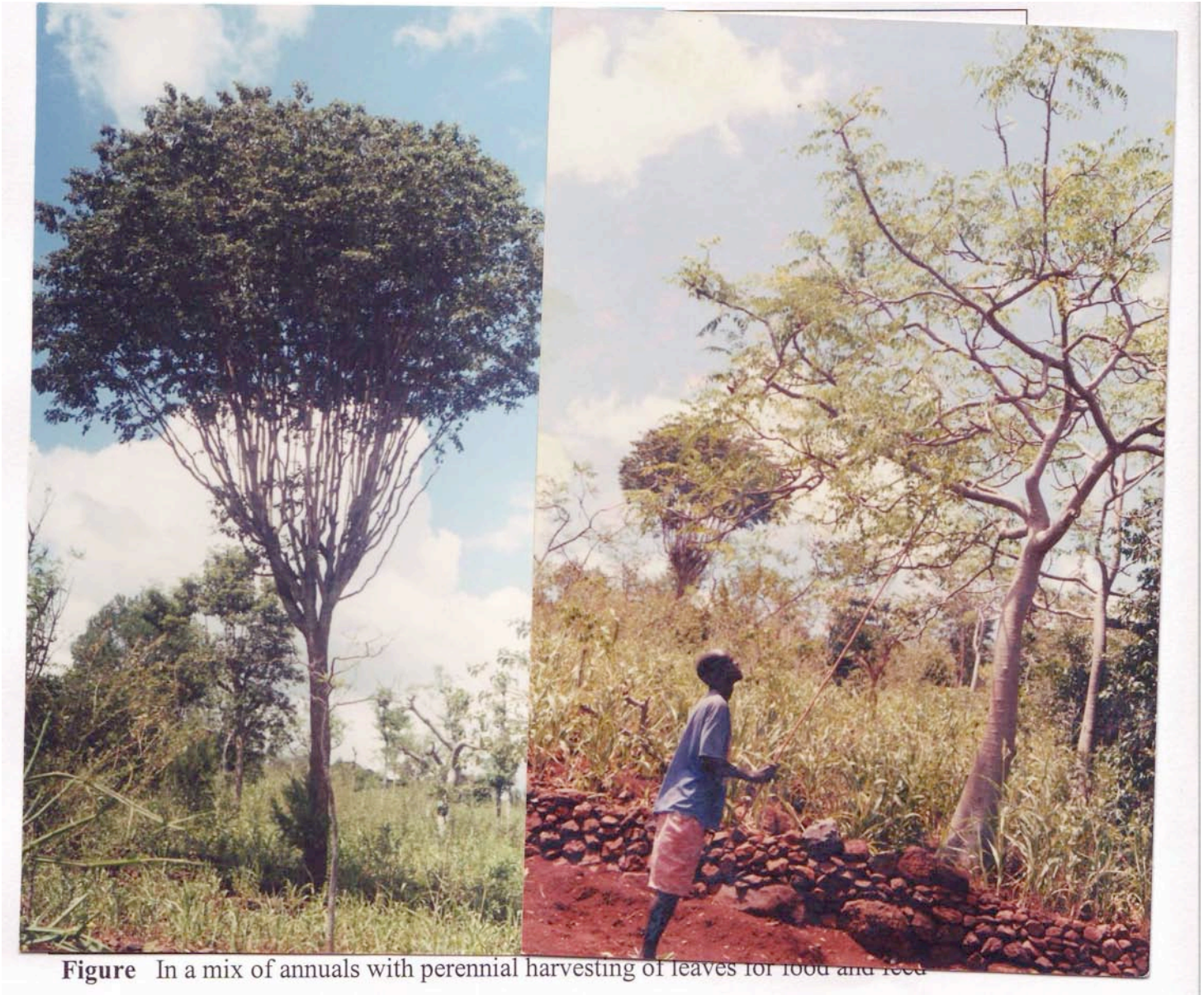


Figure In a mix of annuals with perennial harvesting of leaves for food and feed

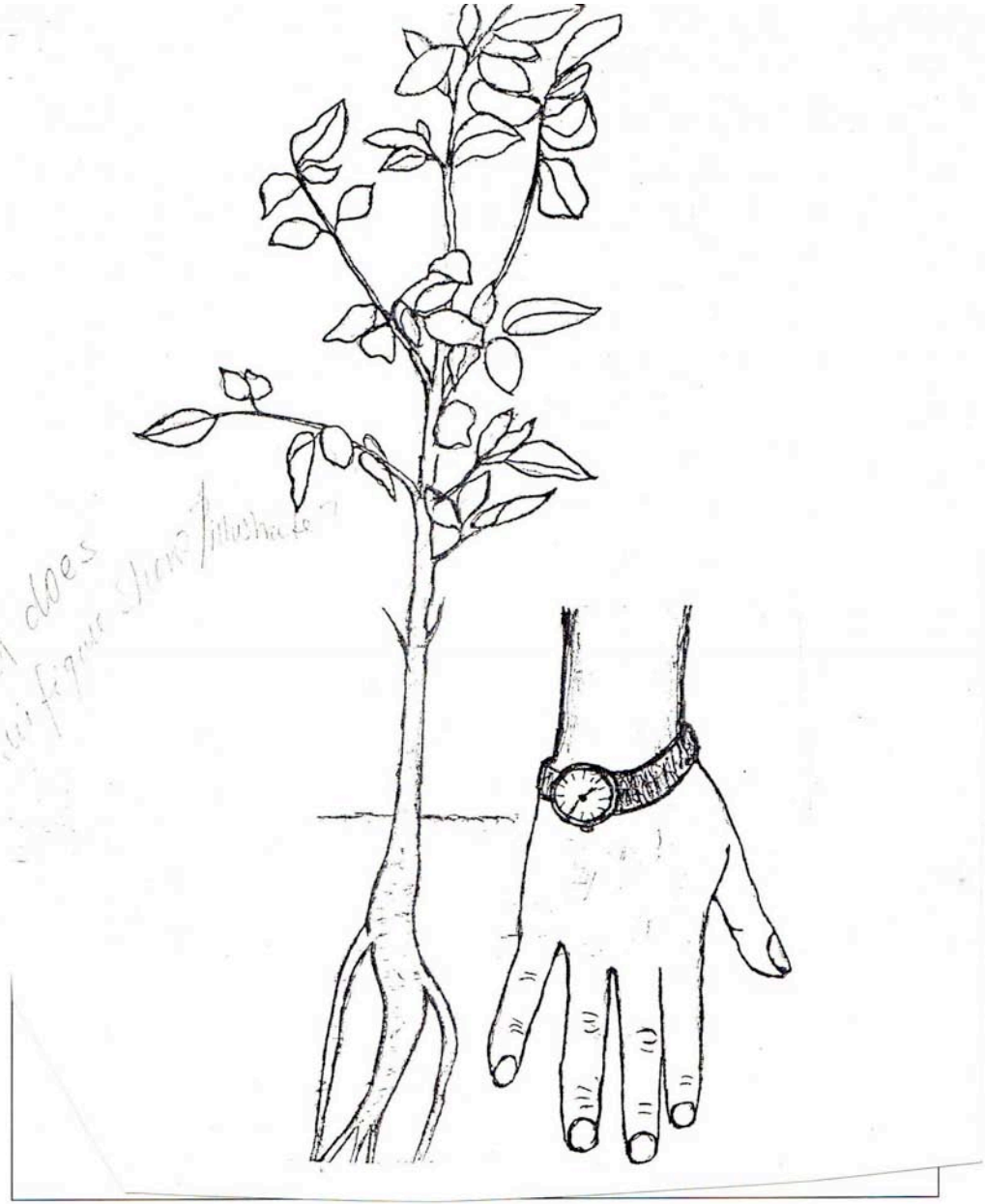


Figure Vigorous growth of 45 days old young seedling of *M.stenopetala*

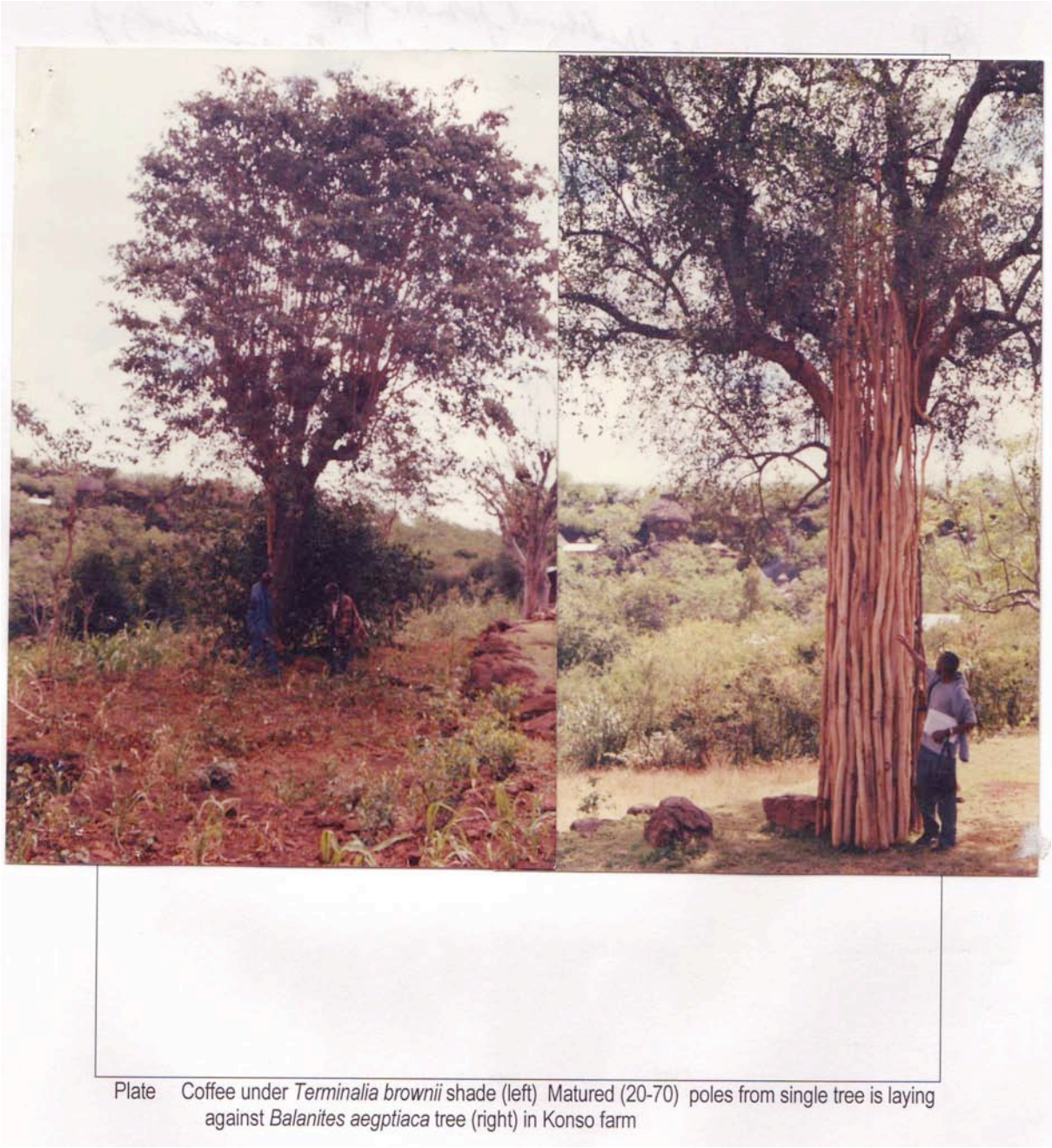


Plate Coffee under *Terminalia brownii* shade (left) Matured (20-70) poles from single tree is laying against *Balanites aegptiaca* tree (right) in Konso farm

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

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

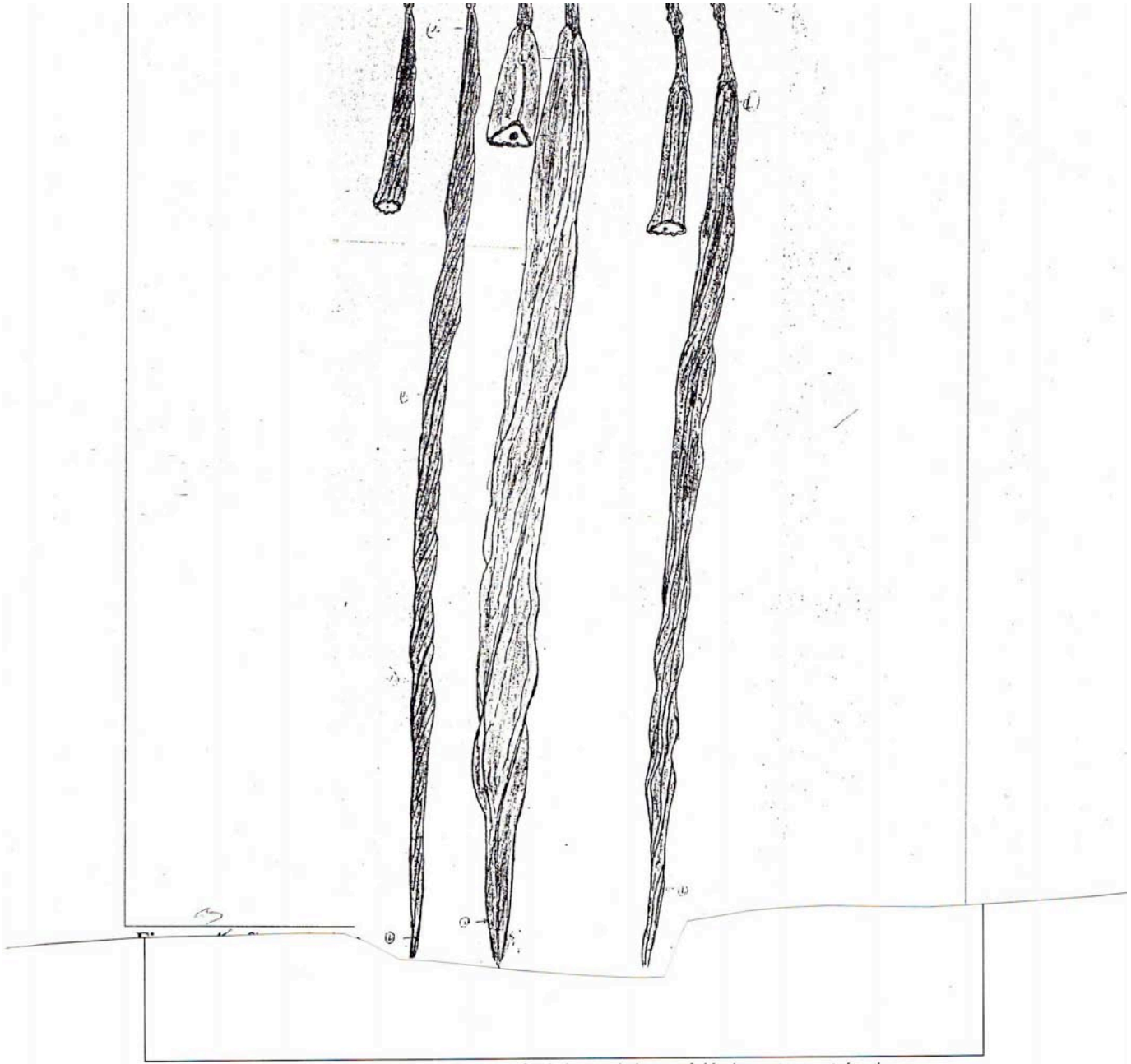


Figure 8 Change in development, degree of twisting and shape of *Moringa stenopetal* pods
Source Dechasa 2000 from Tree Identification file 3: 28

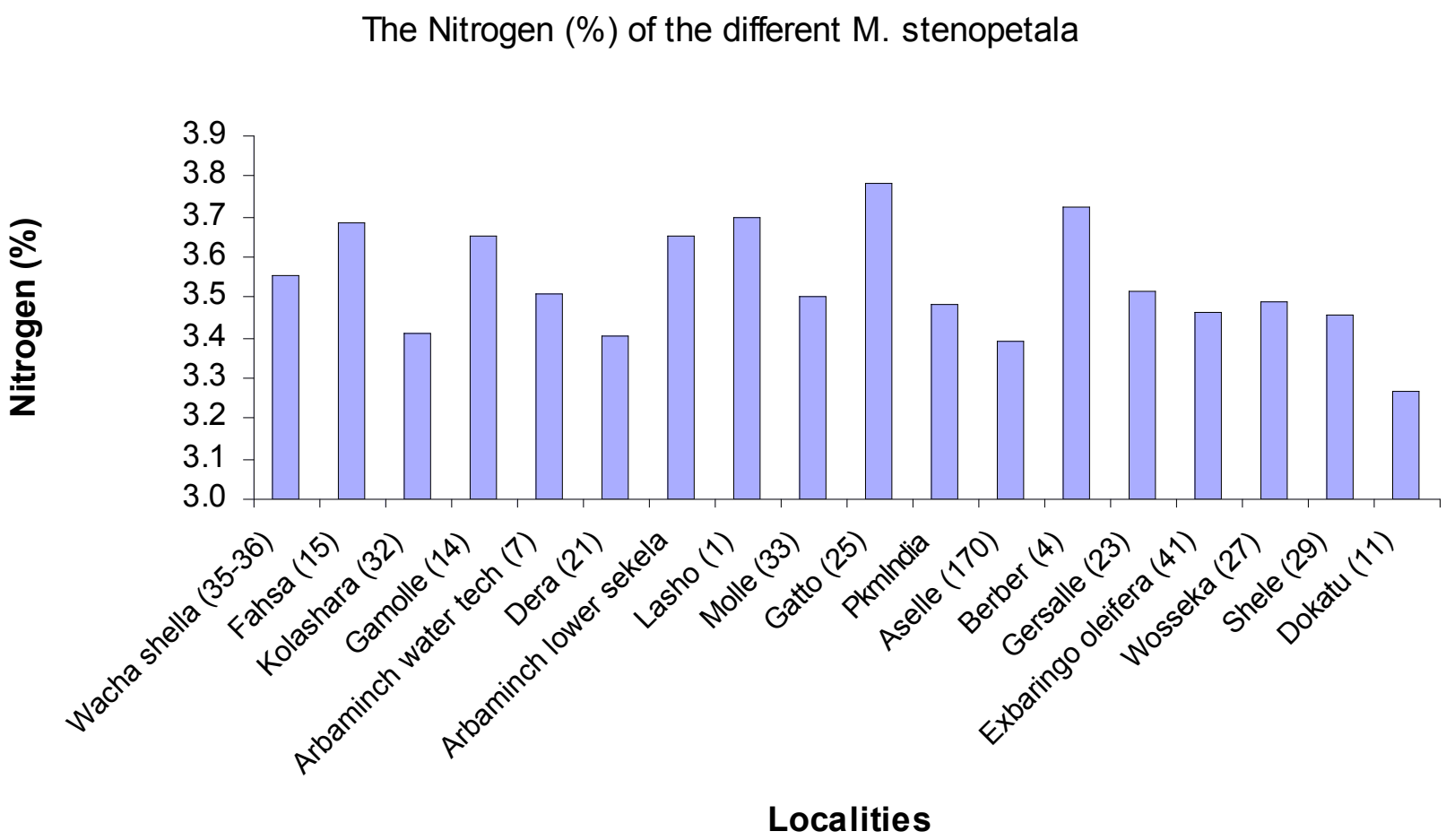
Figure 13 Local method of leaf harvest lower and matured leaf for food and feed.

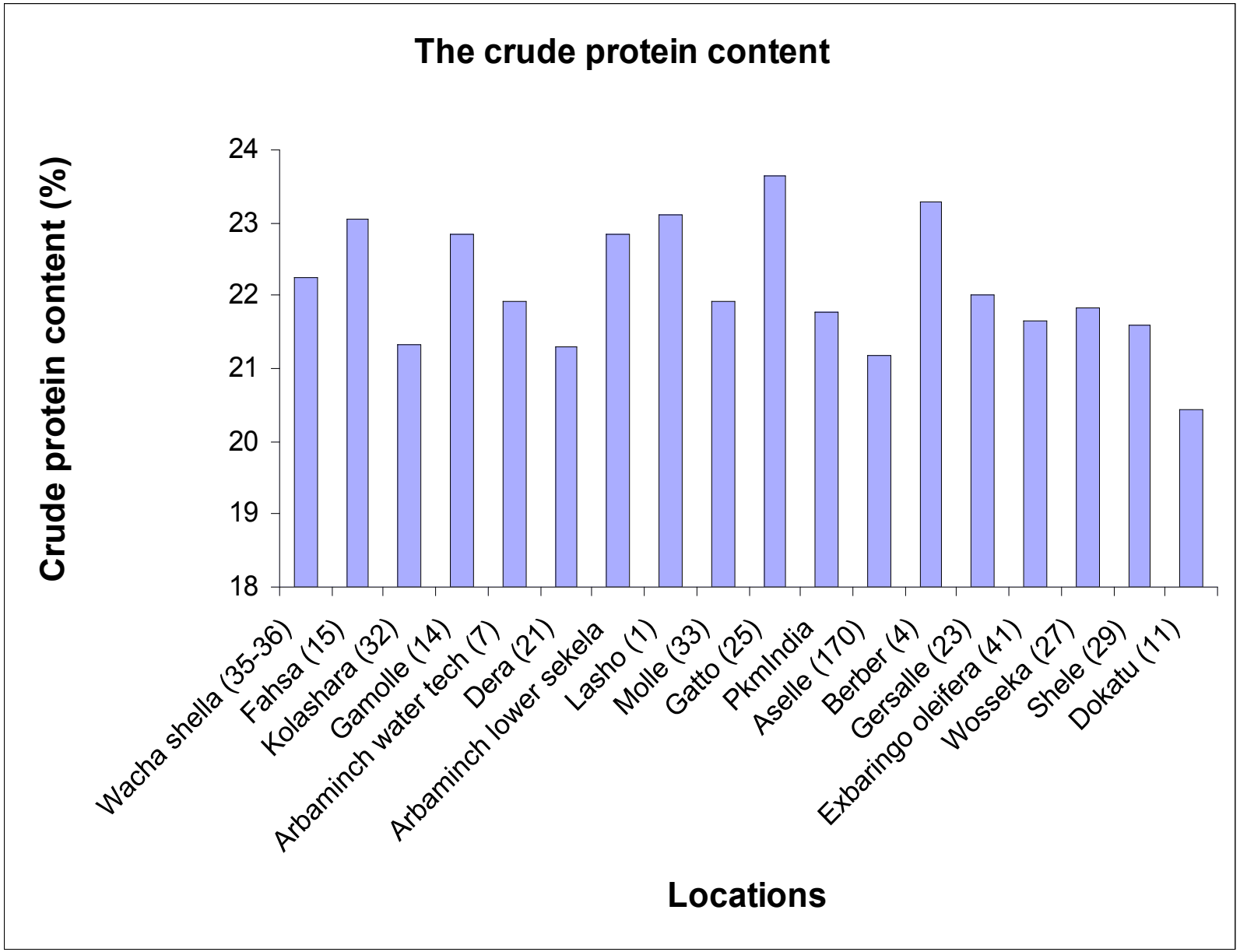
Leaves ready to be cooked

(Photo E. Delemeunaere)

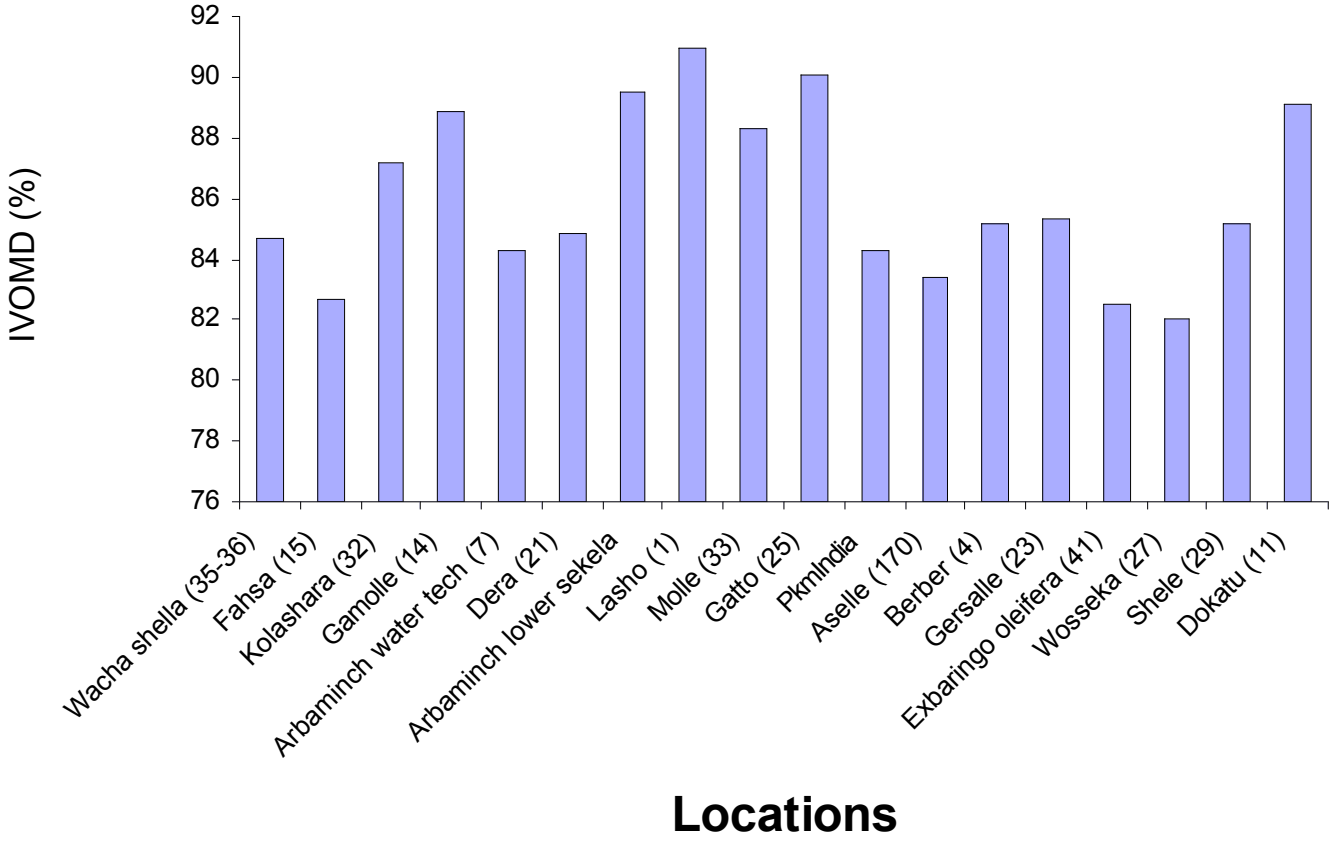
Leaf Yield: M. oleifera= 2 kg/tree
M. Stenopetala = 0.2 kg/tree

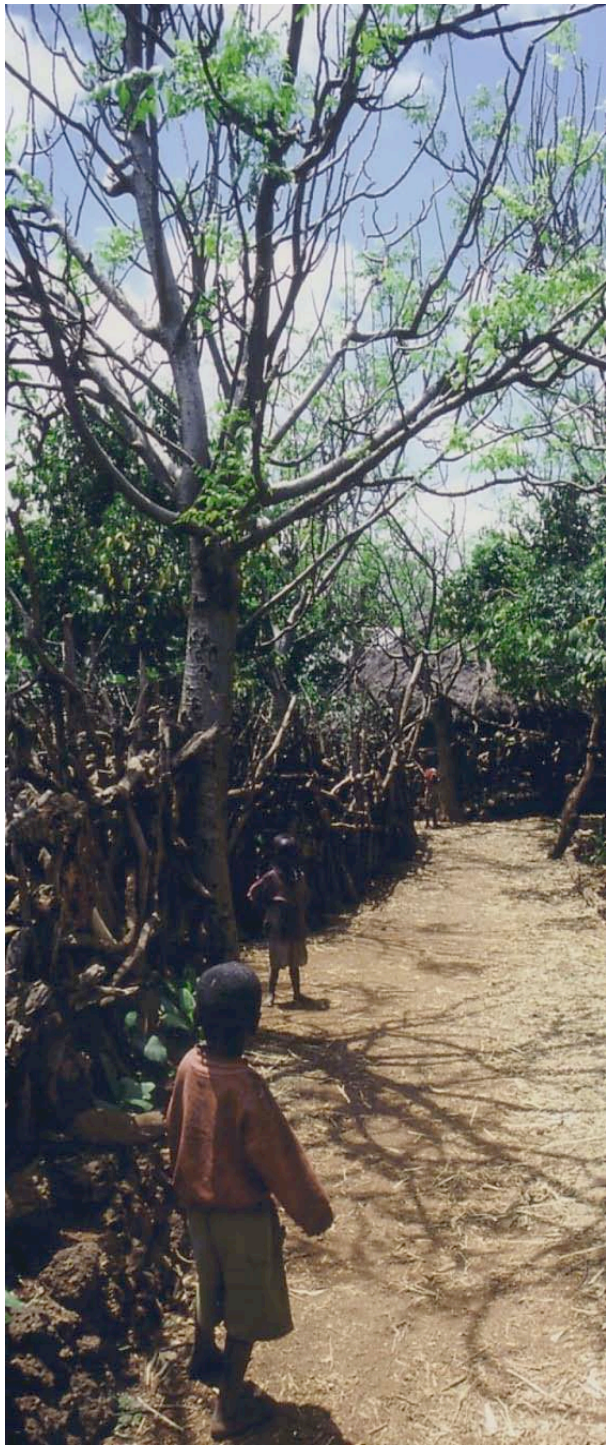
Reasons for low yield:
1.Spacing narrow for stenopetala
2.Insect damage
3.Slow growth


The Nitrogen (%) of the different M. stenopetala
Nitrogen (%)
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
3.0
Wacha shella (35-36)
Fahsa (15)
Kolashara (32)
Gamolle (14)
Arbaminch water tech (7)
Dera (21)
Arbaminch lower sekela
Lasho (1)
Molle (33)
Gatto (25)
PkmlIndia
Aselle (170)
Berber (4)
Gersalle (23)
Exbaringo oleifera (41)
Wosseka (27)
Shele (29)
Dokatu (11)
Localities


The crude protein content
Crude protein content (%)
24
23
22
21
20
19
18
Wacha shella (35-36)
Fahsa (15)
Kolashara (32)
Gamolle (14)
Arbaminch water tech (7)
Dera (21)
Arbaminch lower sekela
Lasho (1)
Molle (33)
Gatto (25)
PkmlIndia
Aselle (170)
Berber (4)
Gersalle (23)
Exbaringo oleifera (41)
Wosseka (27)
Shele (29)
Dokatu (11)
Locations

The invitro digestibility of the different M. stenopetala





THANK YOU

Photo E. Demeuleunaere