

AT MICROFICHE REFERENCE LIBRARY

A project of Volunteers in Asia

Better Farming Series No. 2, The Plant: The
Stem; the Buds; the Leaves

Published by:

Food and Agriculture Organization of the
United Nations
Via delle Terme di Caracalla
00100 Rome
Italy

Paper copies are \$ 1.50.

Available from:

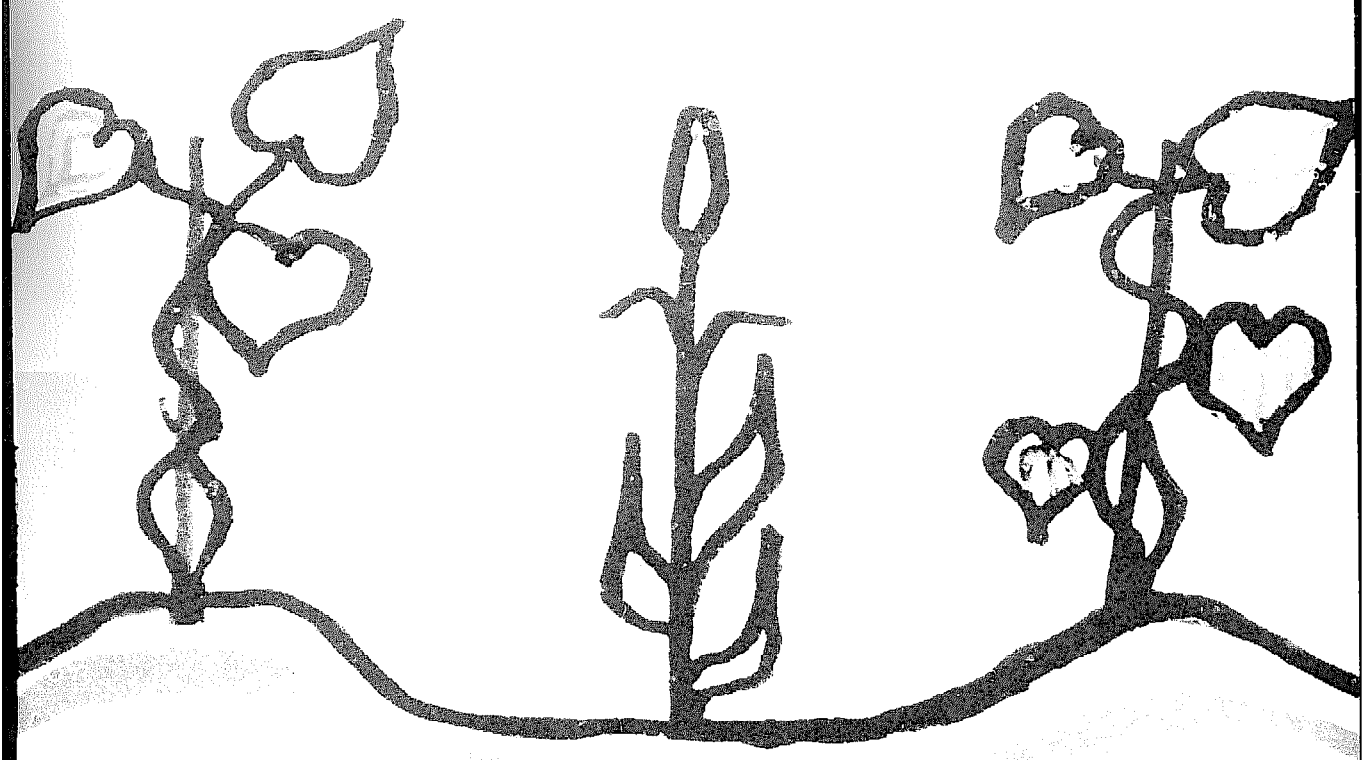
UNIPUB
P.O. Box 433
Murray Hill Station
New York, NY 10157 USA

Reproduced by permission of the Food and
Agriculture Organization of the United Nations.

Reproduction of this microfiche document in any
form is subject to the same restrictions as those
of the original document.

the plant

**the stem
the buds
the leaves**



BETTER FARMING SERIES

Twenty-six titles have been published in this series, designed as handbooks for a two-year intermediate level agricultural education and training course. They may be purchased as a set or as individual documents.

FIRST YEAR

1. The plant: the living plant; the root
2. The plant: the stem; the buds; the leaves
3. The plant: the flower
4. The soil: how the soil is made up
5. The soil: how to conserve the soil
6. The soil: how to improve the soil
7. Crop farming
8. Animal husbandry: feeding and care of animals
9. Animal husbandry: animal diseases; how animals reproduce

SECOND YEAR

10. The farm business survey
11. Cattle breeding
12. Sheep and goat breeding
13. Keeping chickens
14. Farming with animal power
15. Cereals
16. Roots and tubers
17. Groundnuts
18. Bananas
19. Market gardening
20. Upland rice
21. Wet paddy or swamp rice
22. Cocoa
23. Coffee
24. The oil palm
25. The rubber tree
26. The modern farm business

The plant

The stem

The buds

The leaves

**Published by arrangement with the
Institut africain pour le développement économique et social
B.P. 8008, Abidjan, Côte d'Ivoire**

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome 1976

First printing 1970
Second printing 1972
Revised edition 1976

ISBN 92-5-100141-3

© French edition, Institut africain pour
le développement économique et social (INADES) 1970

© English edition, FAO 1976

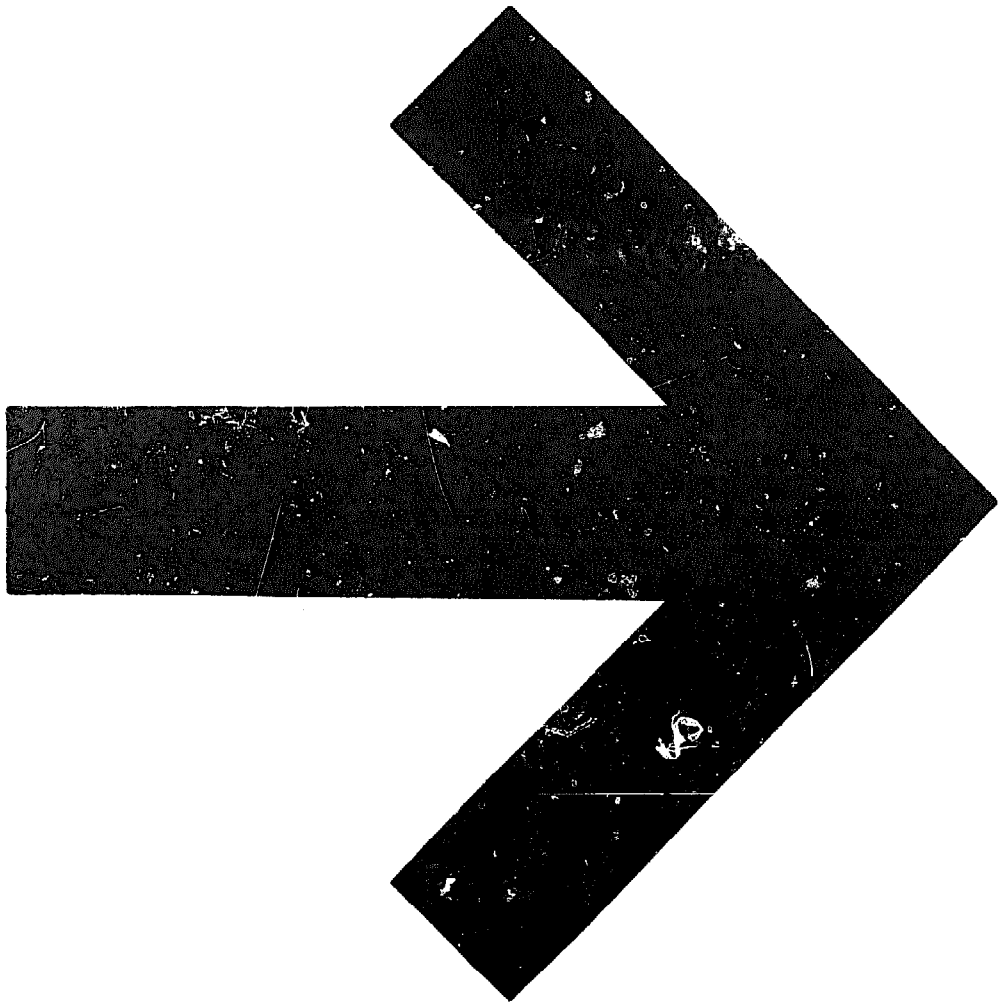
PREFACE

This manual is a translation and adaptation of "La plante — la tige, les bourgeons, les feuilles," published by the Agri-Service-Afrique of the Institut africain pour le développement économique et social (INADES), and forms part of a series of 26 booklets. Grateful acknowledgement is made to the publishers for making available this text, which it is hoped will find widespread use at the intermediate level of agricultural education and training in English-speaking countries.

The original texts were prepared for an African environment and this is naturally reflected in the English version. However, it is expected that many of the manuals of the series — a list of which will be found on the inside front cover — will also be of value for training in many other parts of the world. Adaptations can be made to the text where necessary owing to different climatic and ecological conditions.

Applications for permission to issue this manual in other languages are welcomed. Such applications should be addressed to: Director, Publications Division, Food and Agriculture Organization of the United Nations, Via delle Terme di Caracalla, 00100 Rome, Italy.

The author of this English version is Mr. A.J. Henderson, former Chief of the FAO Editorial Branch.



OUTLINE OF COURSE

● The stem	4
Where is the stem?	4
How a stem is made	6
What the stem does	11
● The buds	12
● The leaves	13
How a leaf is made	14
The leaf-stalk	15
The veins	16
The shape of leaves	17
What are leaves for?	19
How the leaf changes raw sap into elaborated sap	20
Organic matter in the plant	23
The plant breathes	23
The plant transpires	23
● Some practical applications	24
The plant needs air and light	24
The plant needs water	26
The plant needs its leaves	27
Some insects eat leaves and buds	28
Insects and diseases can be destroyed	28
Animals also eat leaves	29
● Suggested question paper	30

PLAN OF WORK

FIRST WEEK

The stem.

Read pages 4 to 11.

- You must look at each stem.
For example, on page 7 it says:
"Let us look at a yam plant."

Go to the field,
and look at the stem of a yam.

If there are no yams in your village,
look carefully at the drawing.

- You must take good note
of how one stem differs from another
or is like another.

Make sure you understand what the stem does.

SECOND WEEK

The buds. How a leaf is made.

Read pages 12 to 18.

- To help your memory, read again pages 4 to 11.
- Look carefully at buds.
- Take a good look at the leaves you have picked.
Look carefully, you will see the veins.
- Learn the new words, such as vein, midrib, leaf-stalk.

THIRD WEEK

What the leaves do.

Read pages 19 to 23.

- Read again pages 12 to 18.
- Leaves change raw sap into elaborated sap.
- Leaves breathe.
- Leaves transpire.

This week's work is more difficult.
You must take longer to study it.
Don't forget to look up the other pages mentioned.
For instance, where it says,
 "See Booklet No. 1, page 17."

FOURTH WEEK

Some practical applications.

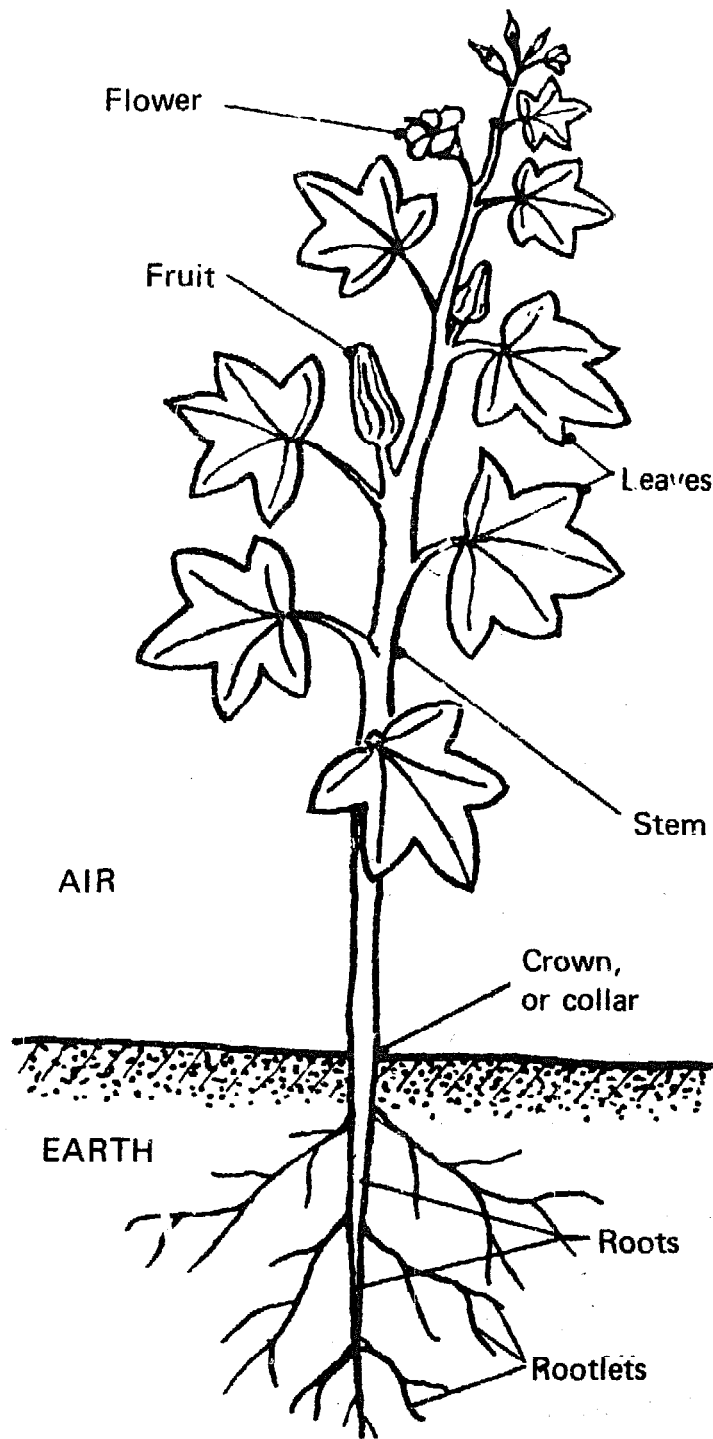
Read pages 24 to 29.
This is easy work, and not long.

Read again the whole course, especially the work for the third week.

THE STEM

Where is the stem?

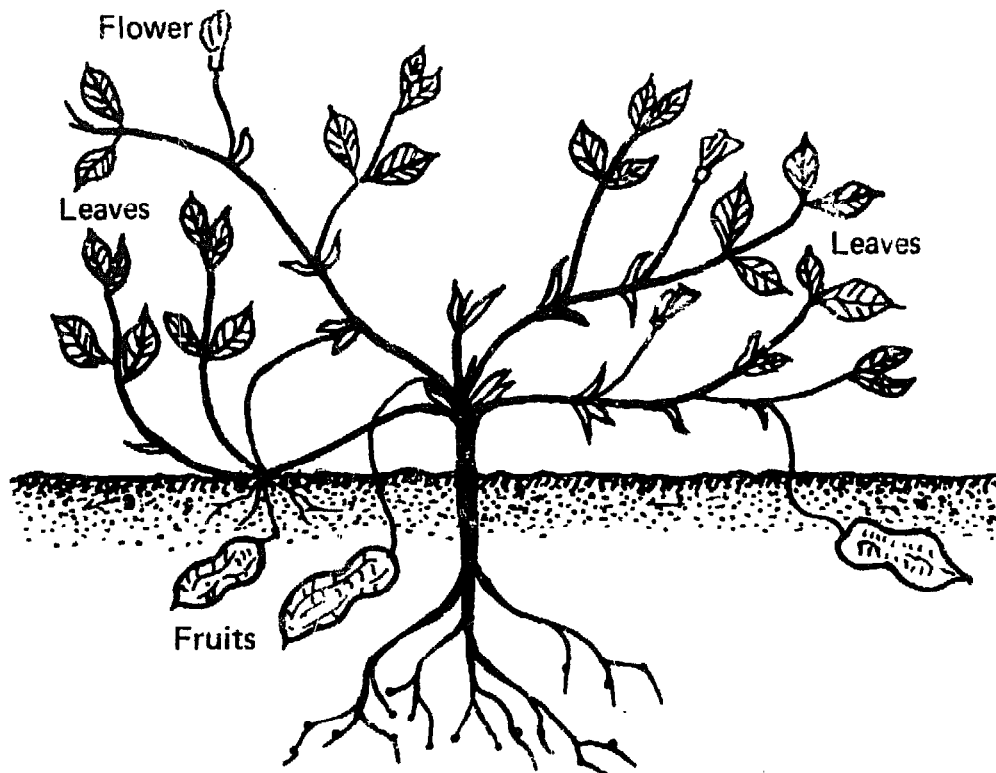
- The root is the part of the plant that lives in the soil.
- The stem is the part of the plant that lives in the air, above the soil.
- The crown, or collar, joins the root and the stem.
- The stem bears leaves, flowers, fruits.
- Leaves, flowers, fruits, all grow on the stem.



How a stem is made

- The stem can be trailing,
for example,
that of a groundnut plant,
or of a marrow, cucumber or melon.

Let us look at a groundnut plant.
What do we see?



A groundnut plant

A groundnut plant has several stems.

They are easy to cut
or crush between the fingers.

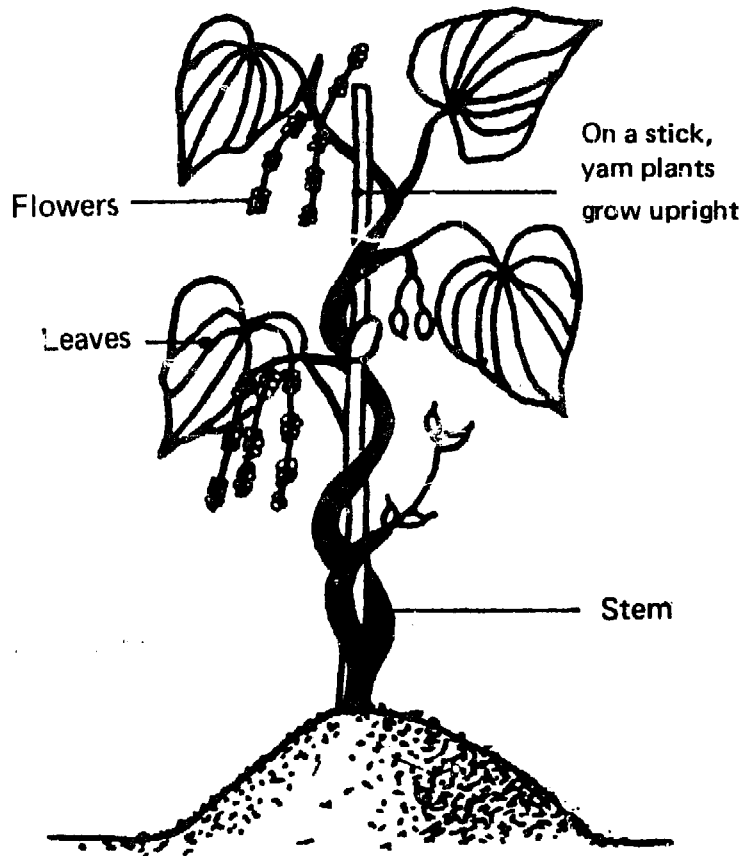
They are not hard.

The stems lie on the ground or are upright.

- The stem can be climbing,
for example,
that of the yam, bean, pea,
and all the creepers.

Let us look at a yam plant.

What do we see?

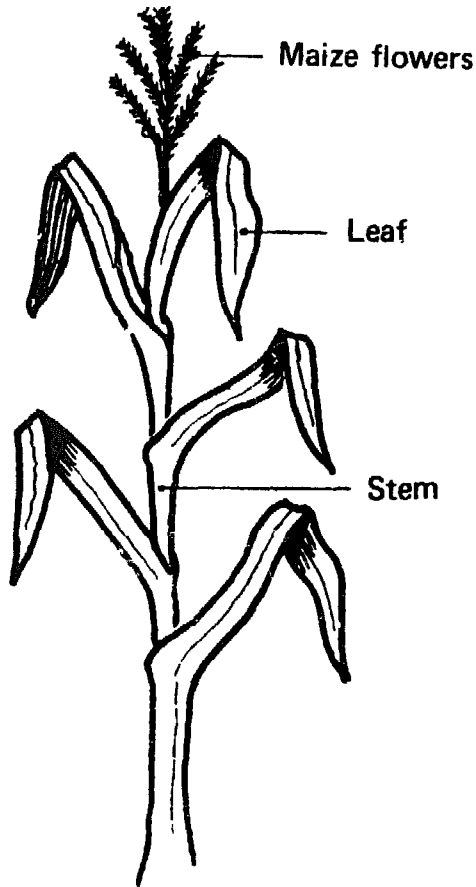


A yam plant

- A yam plant may have several stems.
The stems lie on the soil.
If you push a stick into the ground beside a yam,
the stems can be held upright,
because they hold on to the stick.
The stem winds round the stick and climbs.
- The stems bear
rather large green leaves
and clusters of little flowers.

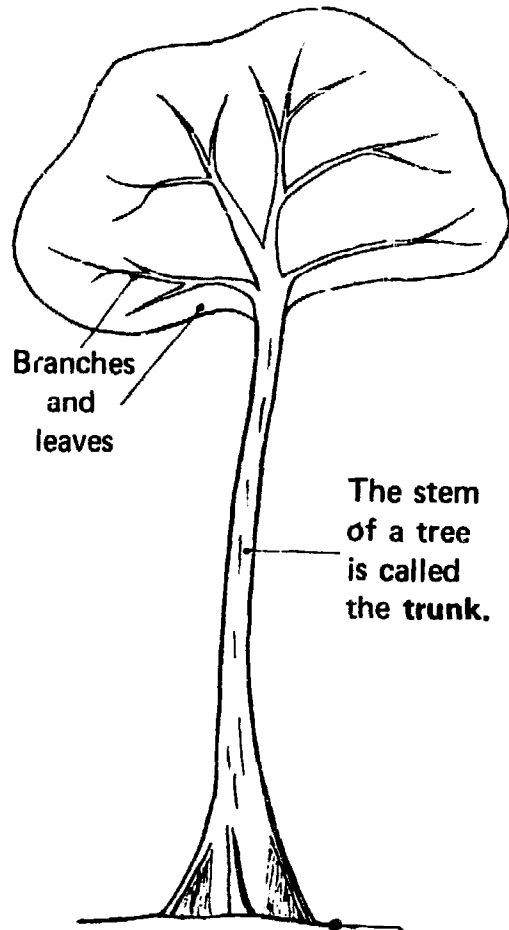
- The stem can be upright,
for example,
that of millet, maize,
sorghum, cassava

cotton,
kapok tree or baobab.



Maize plant

Maize has only one stem.
The stem is upright.
It is harder
than the stem
of groundnuts
or yams.



Kapok tree

Trees:
The stem is upright,
very tall,
very thick,
hard.

It is called the trunk.

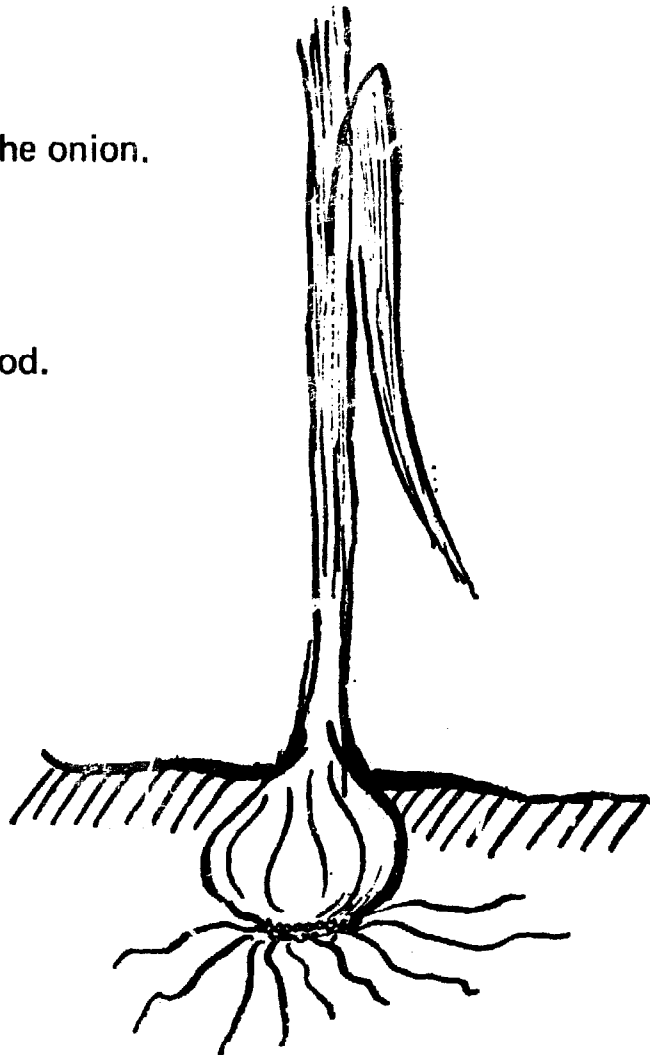
The trunk of a tree is
its stem.

- The stem can be **underground**,
for example
that of garlic or onion.

Let us look at an onion.

What do we see?

- A **very thick stem**,
in the ground;
this is the onion.
- Long leaves
come out of the stem.
- Roots grow in a ring
at the base
of the stem,
at the base of the onion.
- These stems
hold a lot of food.



An onion

HERBACEOUS STEMS AND WOODY STEMS

- The stems of groundnuts, yams, maize, millet, tomato and okra are **green and pliable**.

They can be bent without breaking.
They are like grasses.
They are called **herbaceous stems**.

- The stems of cotton, kapok trees, coffee, cocoa, of all trees, are **hard**.

They break if you try to bend them.
You have to strike hard to cut them with a machete.
They are called **woody stems**.

ANNUAL STEMS AND PERENNIAL STEMS

- The stems of groundnuts, maize, millet, tomato and okra last for **only one year**.
They are called **annual stems**.
- The stems of the kapok tree, coffee, cocoa, the underground stem of yams, last for **many years**.
They are called **perennial stems**.

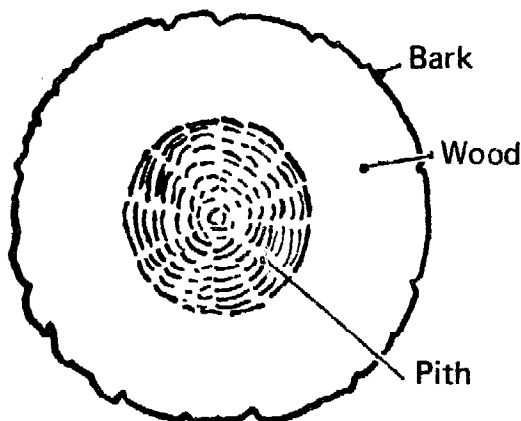
What the stem does

- It supports leaves and flowers.
- It circulates sap.

THE CIRCULATION OF SAP

Cut through the stem of a coffee tree or of a lemon tree.
What do we see?

- First of all, **on the outside of the stem, there is the bark.**
This is the skin of the tree.
Skin protects a man or an animal.
The bark protects a tree stem.
If a goat eats the bark, or you cut it with a hoe,
the plant is no longer protected. It is injured.
Many diseases can get in through this injury.
You must not injure the bark.
- **Under the bark is the wood.**
When the tree is old, the wood is thick,
the stem is hard.
Wood makes the stem hard.



Cut stem of a lemon tree

In the wood you can see
many little holes.

These are little tubes
or **vessels**.

In a man's body
the blood is carried
by blood vessels.

In a plant,
vessels carry the sap.

- **In the centre of the stem is the pith.**
If you cut a cotton stem
you can see the pith very easily.
It is less hard than the wood.
Often it is not the same colour.

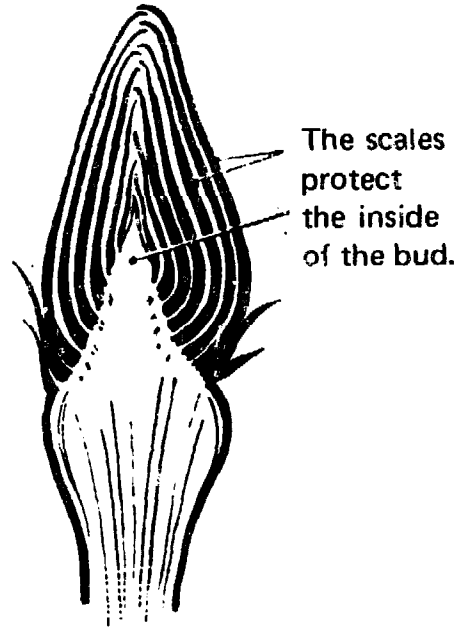
THE BUDS

How buds are made

A bud is made of little leaves; they are hard and very closely packed and called scales.

These scales are stuck together.

They protect the inside of the bud.



What are buds for?

Flowers come out of certain buds.
These are called flower buds.

Leaves or shoots come out of certain buds.
These are called leaf buds.

Where are the buds?

They are at the tip of the stem and on the stem.

- Those at the tip of the stem enable the stem and shoots to grow.
- Those at the base of the leaves produce shoots, leaves and flowers.

THE LEAVES

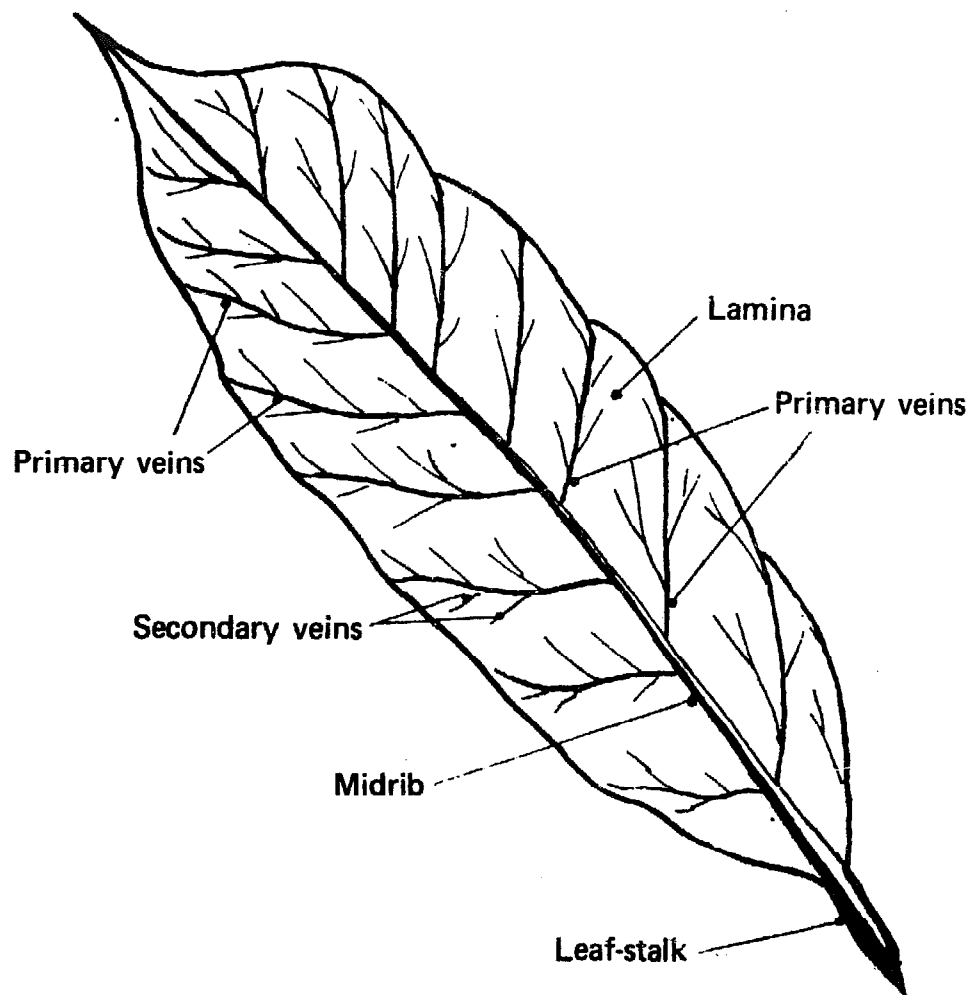
Where are the leaves found?

- Leaves grow
from leaf buds.
- Leaves are found
on stems
and side shoots or branches.
- They are joined to the branches
by the leaf-stalk.

How a leaf is made

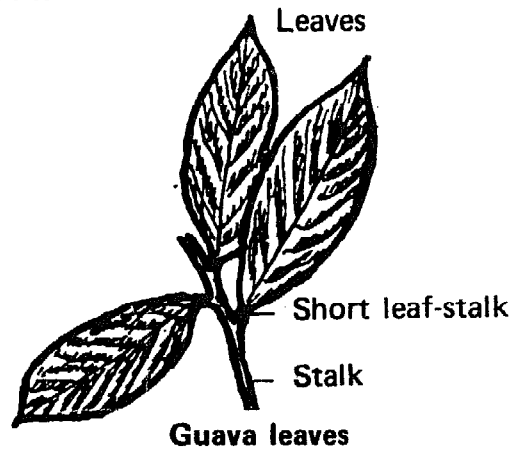
Pick up some leaves of a mango tree or coffee tree.
Let us look at them.

- Leaves are usually of a **green colour**, more or less dark.
- They are joined to the stem by a stalk called the **leaf-stalk**.
- The leaf-stalk is continued into the leaf by the **midrib**.
- Other smaller veins branch out from the midrib. These are the **primary and secondary veins**.
- The whole flat part of the leaf is called the **leaf blade or lamina**.

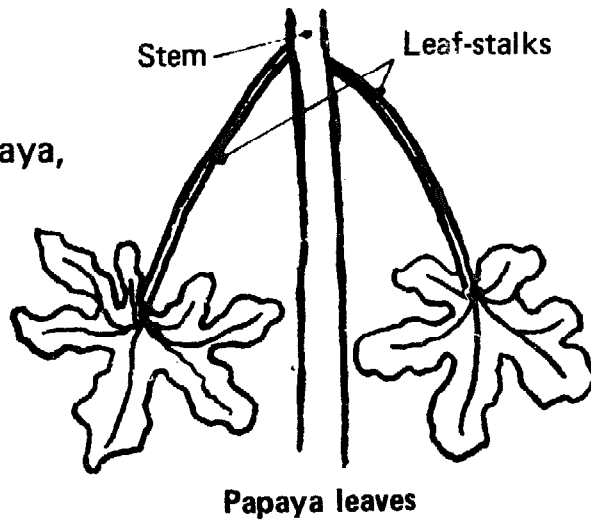


THE LEAF-STALK

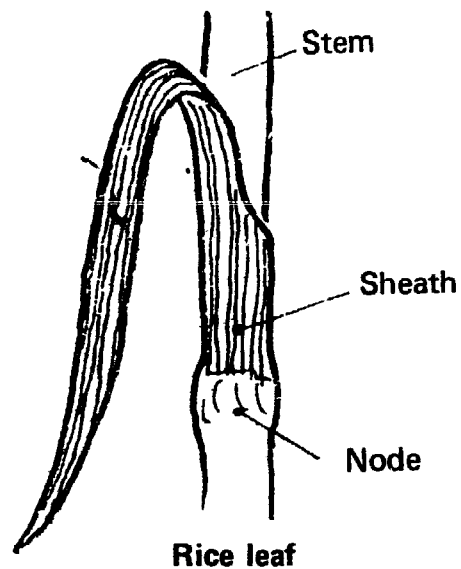
Some plants have
a **short leaf-stalk**.
For example,
coffee,
orange,
hibiscus,
guava.



Some plants have
a **long leaf-stalk**.
For example,
papaw or papaya,
sweet potato



Some plants
do not have a leaf-stalk.
The leaves of maize,
millet or rice
surround the stem.
There is no leaf-stalk.



THE VEINS

In the middle of the leaf there is the midrib.

On each side of the midrib
other veins branch off.

These are the **primary veins**.

They are smaller. These primary veins
divide into many still smaller veins.

Perhaps you have seen a leaf
that has been eaten by insects.
The leaf tissue has gone and only the veins are left.
It is like a spider's web.

What are the veins for?

They carry the sap.

The sap passes along the stem vessels.

Then it enters the vein vessels.

Cut a palm frond and you will see the sap flow.
The vessels of the palm frond
carry the sap.

In a man's body, the vessels carry the blood.

In a plant, the vessels carry the sap.

Sap is the blood of plants.

The shape of leaves

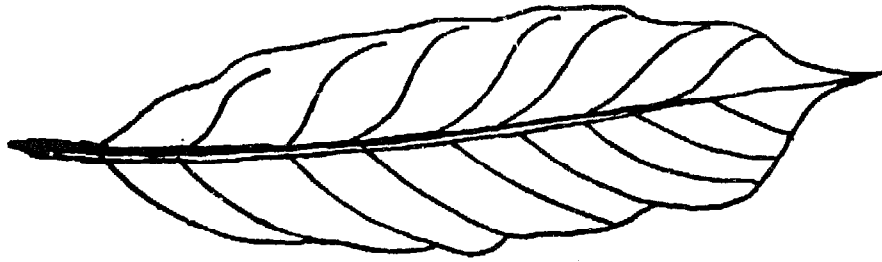
The leaves of yam are not like those of cassava.

You can recognize a plant by looking at the leaves.

Leaves are simple or compound.

- **Simple leaf**

The simple leaf can be entire or lobed.



Entire simple leaf

Examples: yam
millet
okra.
hibiscus
maize
cocoa
teak
coffee



Lobed simple leaf

Examples: cassava
cotton

● **Compound leaf**

Look carefully at the drawing of a groundnut leaf.

What it shows is not four groundnut leaves.

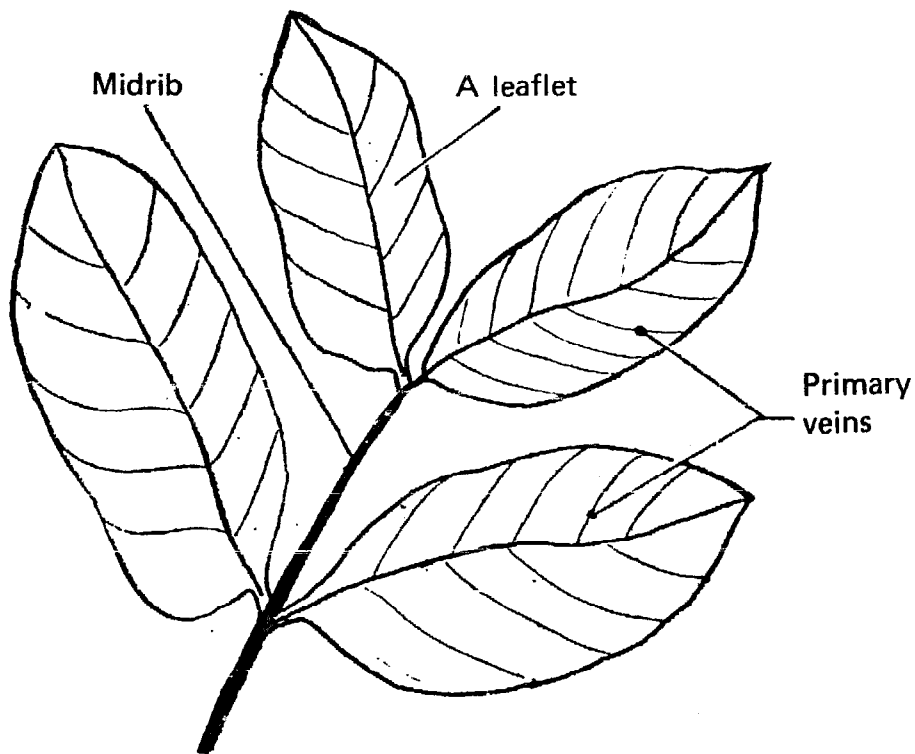
It is a single leaf.

But this leaf is made up of
a midrib bearing
four little leaves.

These little leaves are called **leaflets**.

The midrib of a compound leaf is not a stem.

So there is never a bud between the midrib and
the leaflets.



A groundnut leaf

What are leaves for?

To live, a man feeds
and breathes.

To live, a plant also feeds
and breathes.

THE PLANT FEEDS

- The plant takes up food from the soil through its roots.
It takes water and mineral salts from the soil (see Booklet No. 1, page 17).
But it has to **change** the water and mineral salts.

A baby drinks only milk.
Its hair grows
and so do its arms and legs.
It becomes strong and heavy.
The baby has changed
the milk in its stomach
into hair, fat, muscles, etc.

- The leaf changes the water and mineral salts taken from the soil by the roots.
Water and mineral salts make up the **raw sap** (see Booklet No. 1, page 19, and Booklet No. 2, page 21).

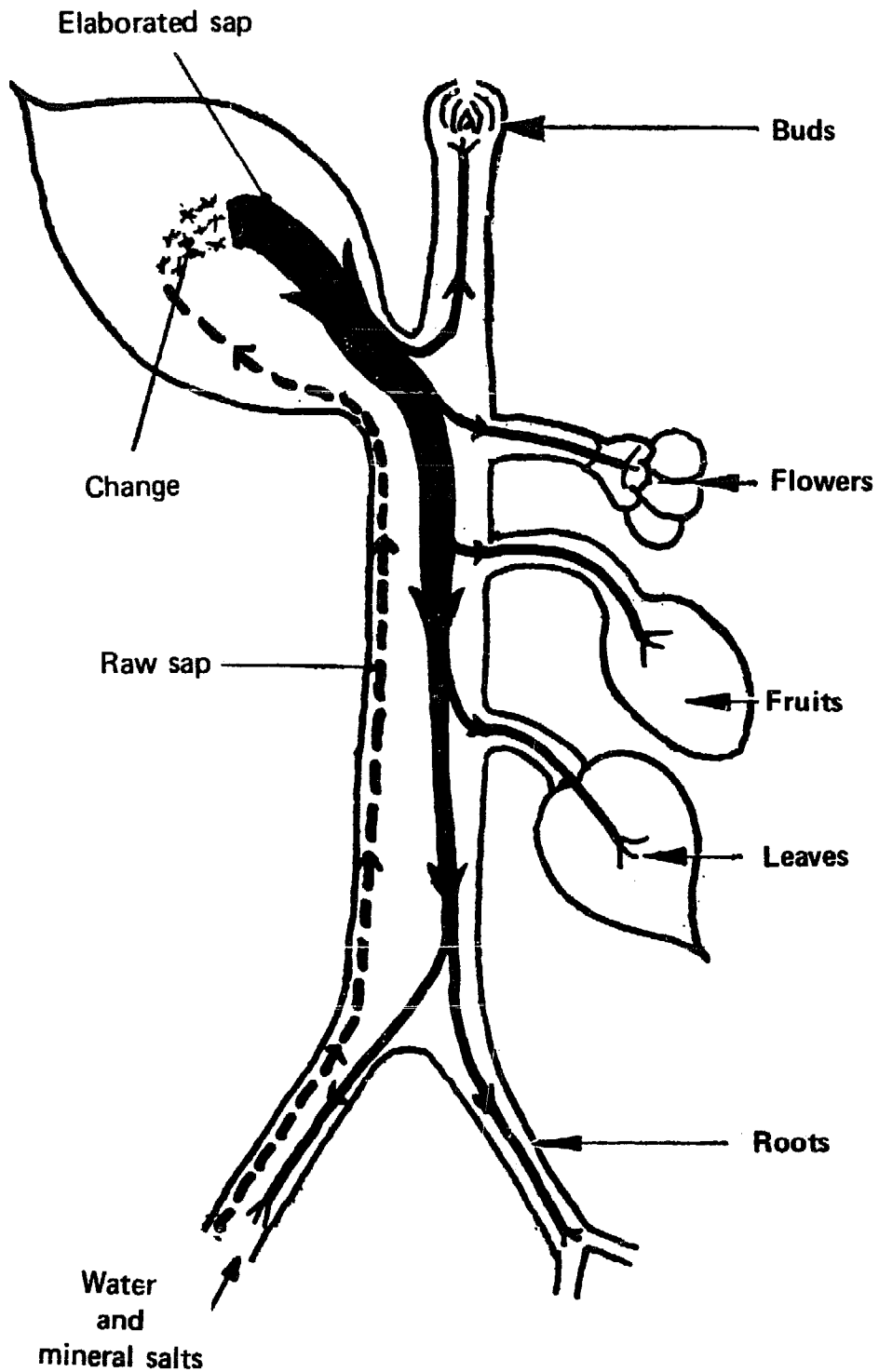
The leaf changes the raw sap into **elaborated sap**.

The leaf sends the elaborated sap into the buds,
flowers, fruits, stem and roots.

The elaborated sap feeds the whole plant.

- The leaf changes the raw sap into elaborated sap.

The elaborated sap FEEDS: →



HOW THE LEAF CHANGES RAW SAP INTO ELABORATED SAP

- **The leaf feeds the plant.**

It receives the raw sap;
it changes the raw sap into elaborated sap.
This change is called
plant material synthesis.

What is plant material synthesis?

- Heaps of sand, wood and bricks
are not a house.
To build a house
you have to put them together.
You join them with cement.
The cement changes the wood, sand and bricks
into a house.
- Water and mineral salts
cannot feed the plant.
They have to be put together,
they have to be joined.

How are water and mineral salts joined together?

- The leaves live in the air.
The air contains **carbon dioxide gas**.
The carbon dioxide gas
is made of oxygen and carbon.
The leaf keeps the carbon
and gives off oxygen.
- **The carbon joins the mineral salts and the water.**
The mineral salts and water
are changed into elaborated sap.
The elaborated sap can then feed the plant.

The carbon changes
the raw sap into elaborated sap.
This is plant material synthesis.

To join sand, wood and bricks with cement
requires work.

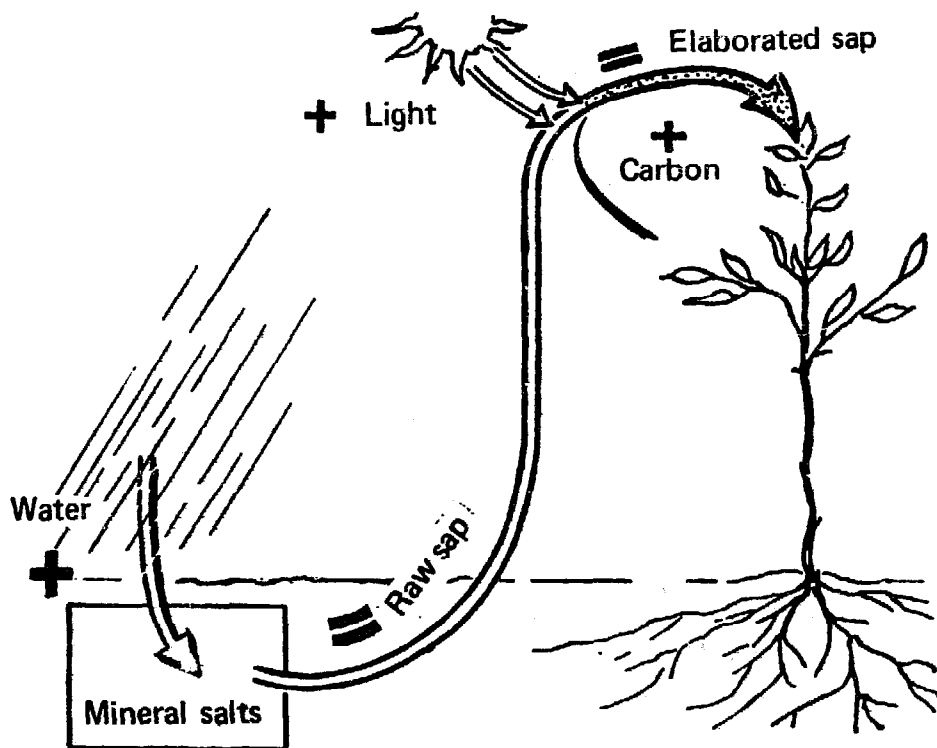
You can't have a house
without men's work, men's energy.

To join water and mineral salts with carbon
also requires work and energy.

- Light gives the leaf this energy.

Light enables the leaf
to change raw sap into elaborated sap.

At night there is no light,
and the raw sap is not changed.



ORGANIC MATTER IN THE PLANT

The plant gets water and mineral salts
from the soil.

This is **inorganic matter**.

This inorganic matter is changed
by light and carbon
and becomes elaborated sap.

The elaborated sap feeds the plant.
Just as blood enables a man
to make his muscles, hair, bones,
so elaborated sap enables a plant
to make leaves, wood, fruits.
The leaves, the wood, the fruits
are **organic matter**.

Inorganic matter has become organic matter.

The plant breathes.

To live,
a man feeds and breathes.

To live,
a plant also feeds and breathes.
A plant breathes through its leaves.

The plant transpires.

When it is hot,
a man sweats, he transpires.

A plant also transpires.
The water in the sap evaporates,
the leaf gets dry.

The plant is thirsty.

SOME PRACTICAL APPLICATIONS

The plant needs air and light

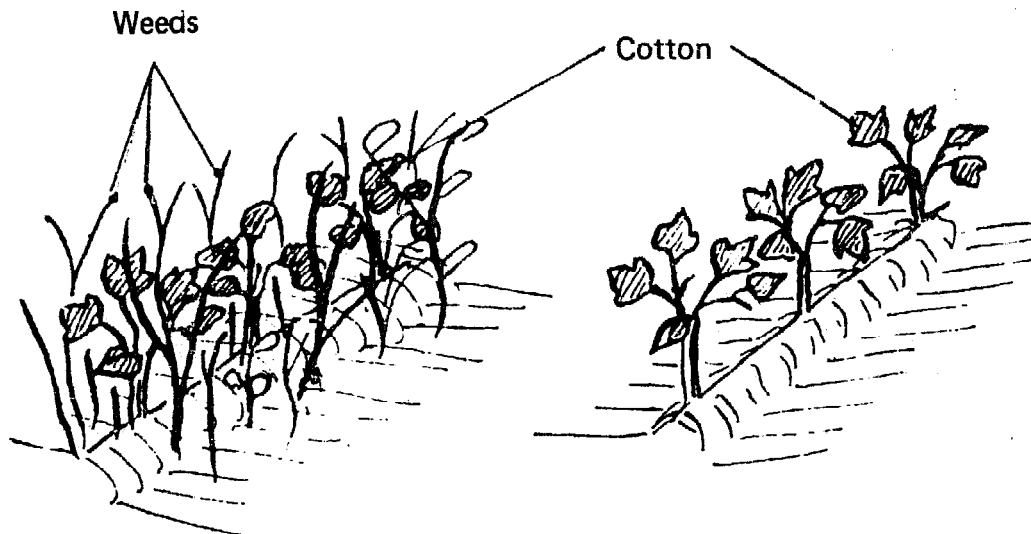
If a plant is not in the light,
it does not grow well.

Light does not come through the leaves
of a dense mango tree,
and almost nothing grows under it.

Grass needs light to grow.

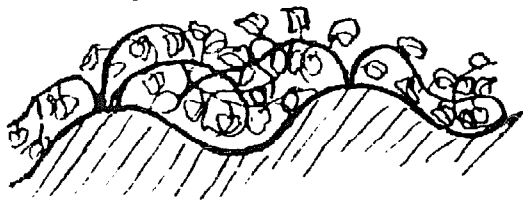
Plants get most good from air and light:

- if you pull out weeds;
- if you prune trees such as coffee, cocoa.
- if you grow crops on fairly high ridges,
as with groundnuts, cotton, salad plants.
- if you make stems climb on sticks or branches,
for instance, cowpeas,
tomatoes,
yams.

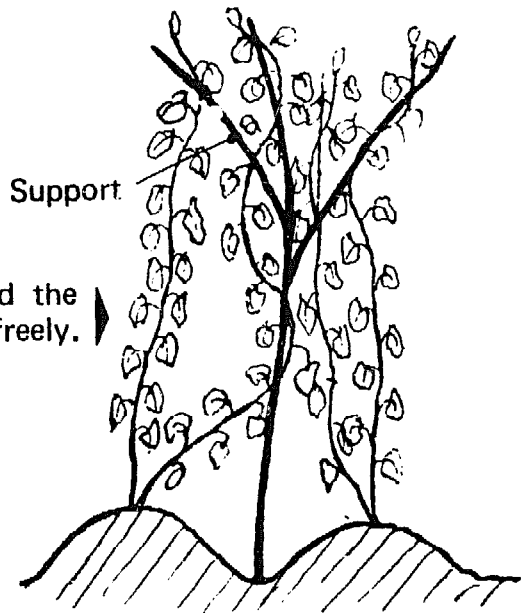


With good air circulation,
there is less disease.
Well ventilated plants
resist disease better.

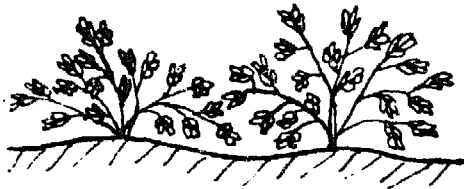
Yam trails on the ground.
Air does not circulate.



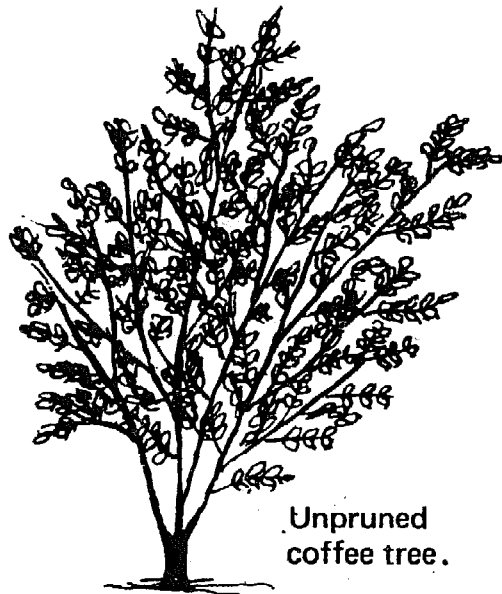
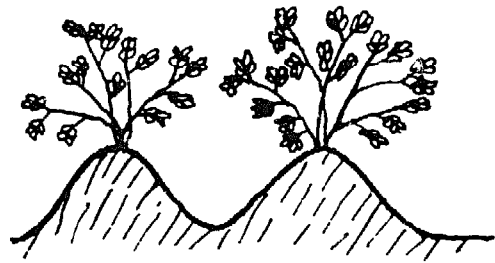
The yam climbs and the
air circulates freely.



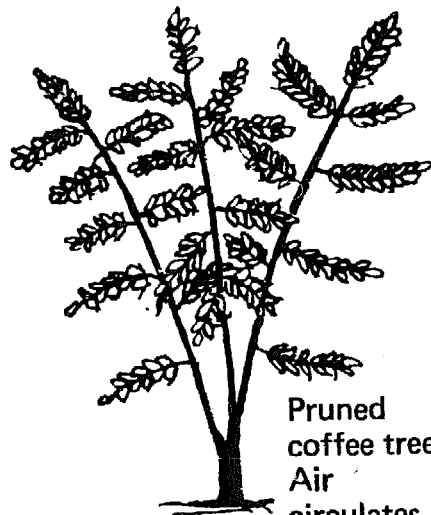
Groundnuts not earthed up.
Air does not circulate freely.



Groundnuts on ridges



Unpruned
coffee tree.



Pruned
coffee tree.
Air
circulates
freely.

The plant needs water

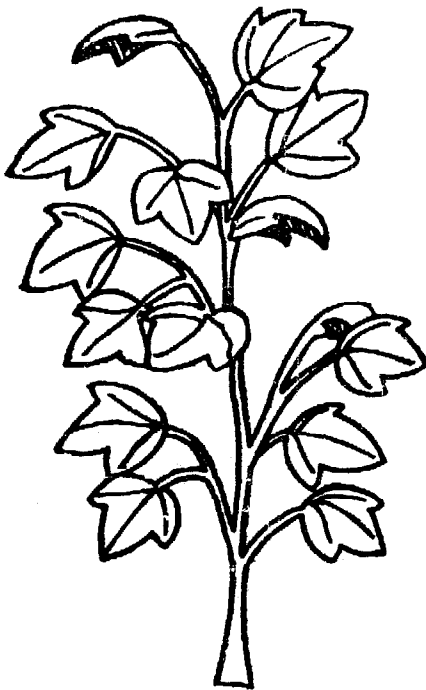
When there is not enough rain,
the roots cannot find water,
the leaves wilt,
the plant grows badly.

If there is a great lack of water,
the harvest is very poor.

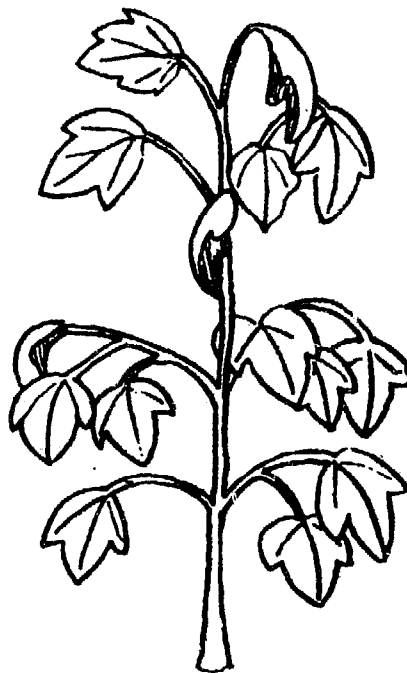
The plant feeds badly.
It does not produce many fruits or seeds.
It may die.

You understand now why you have to give the plant water.

When there is enough water, the plant grows well;
it produces plenty of seeds or fruits.

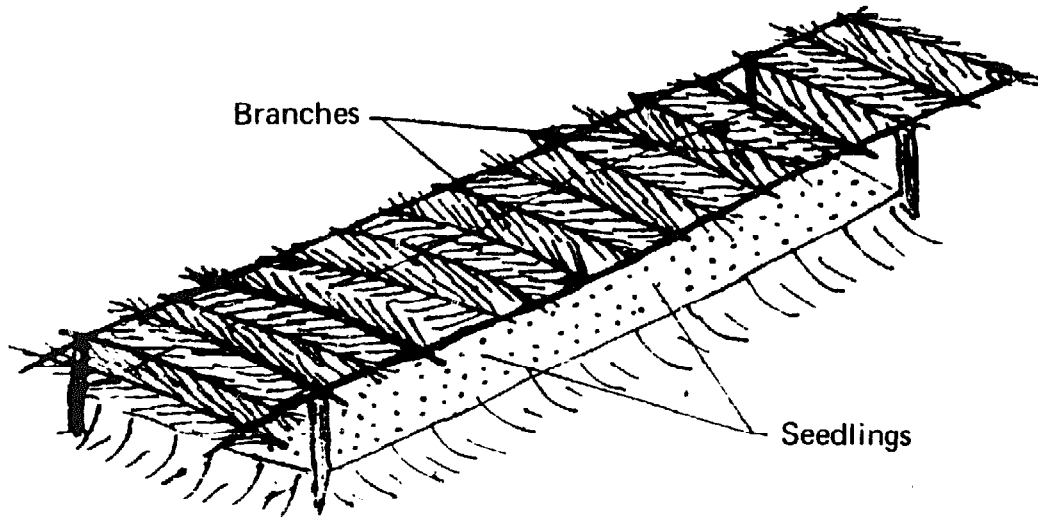


The plant has plenty of water.
It grows well.



The plant lacks water.
The leaves wilt.
The plant grows badly.

Young plants do not have many roots.
They cannot seek out water that lies very deep.
They wilt quickly if they are left in the sun.
Seedlings must be protected by covering them,
for instance, with branches.
Seedlings must be well watered.



The plant needs its leaves

If a plant has many big leaves,
the harvest will be good.

If a plant has few, small leaves,
the harvest will be less good.

Plants sown at the best density
(see Booklet No. 1, page 26)
will have the best leaves.

The roots will find enough food,
and the leaves will change this food into organic matter,
and the harvest will be good.

When plants of cotton or maize
are too close together,
the surplus plants are removed.

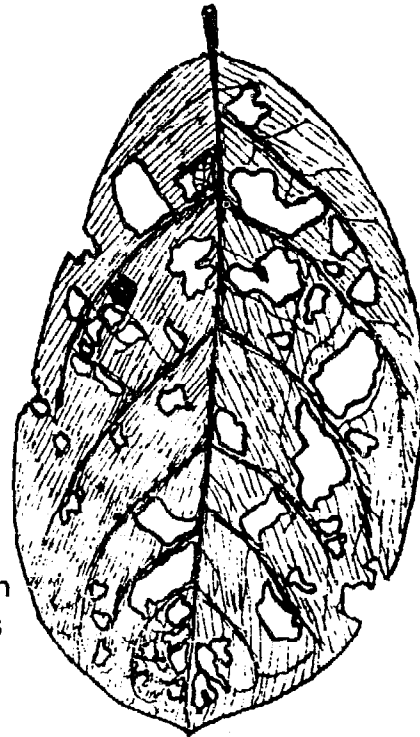
- **Some insects eat leaves and buds.**

Young leaves are eaten first,
because they are not hard.

When the insects are born,
the plants should already be strong.

The leaves, being harder,
will be less attacked.

Plants sown at the right time
will be strong
when the insects appear.



Leaf eaten
by insects

- **Insects and diseases can be destroyed.**

You should pull out diseased plants.

Let them dry.

Burn them.

Insects and diseases are killed by fire.

Certain seeds produce strong plants.

These strong plants

resist diseases and insects better

Sow seeds

which resist diseases and insects.

To kill insects or to prevent diseases,
pesticides can be used.

These pesticides are poisons.

You cover the leaves with them and the insects are killed.

Often you need a sprayer,
so that the pesticide covers
the whole plant.

These pesticides can be dangerous
to men and animals.

You have to be very careful.

You must use exactly the quantity written on the containers,
no more and no less.

● **Animals also eat leaves.**

Leaves and plants must also be protected against animals,
such as goats, cows, agoutis, monkeys.

Put fences round the fields,
keep a watch on cows and goats;
put them in a paddock.

SUGGESTED QUESTION PAPER

FILL IN THE MISSING WORDS

The stem

The part of the plant that lives in the air is called

It bears flowers and fruits.

The leaves

Leaves change the sap into sap.

Leaves take from the air.

Carbon joins the and the water of the raw sap.

The raw sap elaborated sap, and it can then the plant.

A good farmer protects his plants. He destroys the which attack crops.

He does not leave at liberty.

Animals at liberty leaves; they crops.

ANSWER THE FOLLOWING QUESTIONS

How is a groundnut stem made?

How is a cotton stem made?

What is the stem for?

What can you do so that a plant gets the most good from the air and light?

Where are the buds?

Explain to a friend what leaves are for.

What is elaborated sap?

What can you do to protect your plants from insects and animals?

FAO SALES AGENTS AND BOOKSELLERS
AGENTS ET DÉPOSITAIRES DE LA FAO
LIBRERIAS Y AGENTES DE VENTAS DE LA FAO

Argentina	Editorial Hemisferio Sur S.R.L., Librería Agropecuaria, Pasteur 743, Buenos Aires.
Australia	Hunter Publications, 58A Gipps Street, Collingwood, Vic. 3066; The Assistant Director, Sales and Distribution, Australian Government Publishing Service, P.O. Box 84, Canberra, A.C.T. 2600, and Australian Government Publications and Inquiry Centres in Canberra, Melbourne, Sydney, Perth, Adelaide and Hobart.
Austria	Gerold & Co., Buchhandlung und Verlag, Graben 31, 1011 Vienna.
Bangladesh	Association of Voluntary Agencies in Bangladesh, 549F Road 14, Dhammandi, P.O. Box 5045, Dacca 5.
Belgique	Service des publications de la FAO, M. J. De Lannoy, rue du Trône 112, 1050 Bruxelles. CCP 000-0808993-13.
Bolivia	Los Amigos del Libro, Perú 3712, Casilla 450, Cochabamba; Mercado 1315, La Paz; René Moreno 26, Santa Cruz; Junin esq. 6 de Octubre, Oruro.
Brazil	Livraria Mestre Jou, Rua Guaipá 518, São Paulo 10; Rua Senador Dantas 19-S205/206, Rio de Janeiro.
B r e i t	MPH Distributors Sdn. Bhd., 71/77 Stamford Road, Singapore 6, Singapore.
Canada	Information Canada, Ottawa
Chile	Biblioteca, FAO Oficina Regional para América Latina, Av. Providencia 871, Casilla 10095, Santiago.
China	China National Publications Import Corporation, P.O. Box 88, Peking.
Colombia	Litexsa Colombiana Ltda., Carrera 15, N° 51-79, Apartado Aéreo 51340, Bogotá.
Costa Rica	Librería, Imprenta y Litografía Lehmann S.A., Apartado 10011, San José.
Cuba	Instituto del Libro, Calle 19 y 10, N° 1002, Vedado.
Cyprus	MAM, P.O. Box 1722, Nicosia.
Denmark	Ejnar Munksgaard, Norregade 5, Copenhagen S.
Ecuador	Su Librería Cia. Ltda., García Moreno 1172, Apartado 2556, Quito.
Egypt	Al Ahram, El Galaa St., Cairo.
El Salvador	Librería Cultural Salvadoreña S.A., Avenida Morazán 113, Apartado Postal 2296, San Salvador.
España	Librería Mundi Prensa, Castelló 37, Madrid; Librería Agrícola, Fernando VI, 2, Madrid - 4.
Finland	Akateeminen Kirjakauppa, 1 Keskuskatu, Helsinki.
France	Editions A. Pedone, 13 rue Soufflot, 75005 Paris.
Germany, F. R.	Alexander Horn Internationale Buchhandlung, Spiegelgasse 9, Postfach 3340, Wiesbaden.
Ghana	Ghana Publishing Corporation, P.O. Box 3632, Accra.
Grece	"Eleftheroudakis", 4 Nikis Street, Athènes
Guatemala	Distribuciones Culturales y Técnicas "Artemis", Quinta Avenida 12-11, Zona 1, Guatemala
Haiti	Max Bouchereau, Librairie "A la Caravelle", B.P. 111B, Port-au-Prince.
Honduras	Editorial Nuevo Continente S. de R.L., Avenida Cervantes 1230-A, Apartado Postal 380, Tegucigalpa.
Hong Kong	Swindon Book Co., 13-15 Lock Road, Kowloon.
Iceland	Snaebjörn Jónsson and Co. h.f., Hafnarstraeti 9, P.O. Box 1131, Reykjavik.
India	Oxford Book and Stationery Co., Scindia House, New Delhi; 17 Park Street, Calcutta.
Indonesia	P.T. Gunung Agung, 6 Kwitang, Djakarta.
Iran	Iran Book Co. Ltd., 127 Nadershah Avenue, P.O. Box 14-1532, Tehran; Economist Tehran, 99 Sevom Esfand Avenue, Tehran (sub-agent).
Iraq	National House for Publishing, Distributing and Advertising, Rashid Street, Baghdad.
Ireland	The Controller, Stationery Office, Dublin.
Israel	Emanuel Brown, P.O. Box 4101, 35 Allenby Road and Nachlat Benyamin Street, Tel Aviv; 9 Shlomzion Hamalka Street, Jerusalem.
Italie	Distribution and Sales Section, Food and Agriculture Organization of the United Nations, Via delle Terme di Caracalla, 00100 Rome; Libreria Scientifica Dott. L. De Biasio "Aeiou", Via Meravigli 16, 20123 Milan; Libreria Commissionaria Sansoni "Licosa" Via Lamarmora 45, C.P. 552, 50121 Florence.
Jamaica	Teachers Book Centre Ltd., 96 Church Street, Kingston.
Japan	Maruzen Company Ltd., P.O. Box 5050, Tokyo Central 100-31.
Kenya	The E.S.A. Bookshop, P.O. Box 30167, Nairobi.

FAO SALES AGENTS AND BOOKSELLERS
AGENTS ET DÉPOSITAIRES DE LA FAO
LIBRERIAS Y AGENTES DE VENTAS DE LA FAO

Korea, Rep. of	The Eul-Yoo Publishing Co. Ltd., 5 2-Ka, Chong-ro, Seoul.
Liban	Dar Al-Maaref Liban S.A.L., place Riad El-Solh, B.P. 2320, Beyrouth.
Luxembourg	Service des publications de la FAO, M. J. De Lannoy, rue du Trône 112, 1050 Bruxelles (Belgique).
Malaysia	MPH Distributors Sdn. Bhd., 71/77 Stamford Road, Singapore 6, Singapore.
Maroc	Librairie "Aux Belles Images", 281 avenue Mohammed V, Rabat.
Mauritius	Nalanda Company Limited, 30 Bourbon Street, Port-Louis.
México	Dilitsa, Puebla 182-D, Apartado 24-448, México 7, D.F.
Netherlands	N.V. Martinus Nijhoff, Lange Voorhout 9, The Hague.
New Zealand	Government Printing Office: Government Bookshops at Rutland Street, P.O. Box 5344, Auckland; Mulgrave Street, Private Bag, Wellington; 130 Oxford Terrace, P.O. Box 1721, Christchurch; Princes Street, P.O. Box 1104, Dunedin; Alma Street, P.O. Box 857, Hamilton.
Nicaragua	Culturama, Camino de Oriente, Apartado 4741, Managua.
Nigeria	University Bookshop Nigeria Ltd., University of Ibadan.
Norway	Johan Grundt Tanum Bokhandel, Karl Johansgt. GT 41-43, Oslo 1.
Pakistan	Mirza Book Agency, 65 The Mall, Lahore 3.
Panamá	Distribuidora Lewis S.A., Edificio Dorasol, Calle 25 y Avenida Balboa, Apartado 1634, Panamá 1.
Perú	Libreria Juan Mejia Baca, Azangaro 722, Lima.
Philippines	The Mcdern Book Company, 928 Rizal Avenue, Manila.
Poland	Ars Polona-Ruch, Krakowskie Przedmiescie 7, Warsaw.
Portugal	Livraria Bertrand, S.A.R.L., Apartado 37, Amadora; Livraria Portugal, Dias y Andrade Ltda., Apartado 2681, Rua do Carmo 70-74, Lisbon - 2.
Rep. Dominicana	Fundación Dominicana de Desarrollo, Casa de las Gárgolas, Mercedes 4, Santo Domingo.
Roumanie	Illexim, Calea Grivitei No. 64-66, P.O. Box 2001, Bucharest.
Saudi Arabia	Khazindar Establishment, King Faysal Street, Riyadh.
Singapore	MPH Distributors Sdn. Bhd., 71/77 Stamford Road, Singapore 6.
Somalia	"Samater's", P.O. Box 936, Mogadishu.
Sri Lanka	M.D. Gunasena and Co. Ltd., 217 Norris Road, Colombo 11.
Suisse	Librairie Payot S.A., Lausanne et Genève; Hans Raunhardt, Kirchgasse 17, Zurich 1.
Sweden	C.E. Fritzes Kungl. Hovbokhandel, Fredsgatan 2, 103 27 Stockholm 16.
Tanzania	Dar es Salaam Bookshop, P.O. Box 9030, Dar es Salaam.
Thailand	Suksapan Panit, Mansion 9, Rajadamnern Avenue, Bangkok.
Togo	Librairie du Bon Pasteur, B.P. 1164, Lomé.
Turkey	Güven Kitabevi Müdafaa Cad., Güven Building 12/5, Ankara.
United Kingdom	Her Majesty's Stationery Office, 49 High Holborn, London, W.C.1; P.O. Box 569, London, S.E.1 (trade and London area mail orders); 13a Castle Street, Edinburgh EH2 3AR; 109 St. Mary Street, Cardiff CF1 1JW; 7 Linenhall Street, Belfast BT2 8AY; Brazenrose Street, Manchester M60 8AS; 258 Broad Street, Birmingham 1; Southey House, Wine Street, Bristol BS1 2BO.
United States of America	UNIPUB, 650 First Avenue, P.O. Box 433, Murray Hill Station, New York, N.Y. 10016.
Uruguay	Juan Angel Peri, Alzaibar 1328, Casilla de Correos 1755, Montevideo.
Venezuela	Blume Distribuidora S.A., Calle 3, N° 508, Quinta Palmera Sola, Campo Alegre, Chacao, Caracas.
Yugoslavia	Jugoslovenska Knjiga, Terazije 27/11, Belgrade; Cankarjeva Založba, P.O. Box 201-IV, Ljubljana.
Other countries	Requests from countries where sales agents have not yet been appointed may be sent to: Distribution and Sales Section, Food and Agriculture Organization of the United Nations, Via delle Terme di Caracalla, 00100 Rome, Italy.
Autres pays	Les commandes ou les demandes de renseignements émanant de pays pour lesquels des agents ou des dépositaires n'ont pas encore été désignés peuvent être adressées à: Section distribution et ventes, Organisation des Nations Unies pour l'alimentation et l'agriculture, Via delle Terme di Caracalla, 00100 Rome, Italie.
Otros países	Los pedidos procedentes de países en donde aún no han sido designados agentes distribuidores, pueden hacerse directamente a la Sección de Distribución y Venta, FAO, Via delle Terme di Caracalla, 00100 Roma, Italia.