

better farming series

5

1976 edition

the soil

how to conserve the soil



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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 soil

How to conserve the soil

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 92-5-100144-8

© 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 "Le sol — comment conserver le sol?", 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 soil can change	4
Erosion	5
Water	5
Wind	6
Sun	6
● How to conserve the soil	7
Prevent erosion by stopping the flow of water	8
Contour line ridges	8
How to make contour lines	10
Contour line barrier strips	14
Contour line ditches	15
Terrace farming	16
Prevent erosion by covering the soil	17
Mulching	18
Cover crops	19
Why we must not make brush fires	21
Fallow	23
Crop rotation	24
Land-use allocation	27
● Suggested question paper	29

PLAN OF WORK

FIRST WEEK

Erosion.

- Read pages 4 to 7.

This lesson for the first week
is not very long.

But you have to understand
that erosion is very bad,
and how and why
soils are carried away
by rain and wind.

SECOND WEEK

How to stop the flow of water.

- Reread pages 4 to 7.
- Read pages 8 to 16.

We see that
there are several ways of controlling erosion.

- Where you live, do they make
contour line ridges or ditches?
Or barrier strips?
Do they go in for terrace farming?
- You must understand
why keeping to the contour lines
prevents erosion.

THIRD WEEK

How to cover the soil.

- Reread pages 7 to 9.
- Read pages 17 to 22.
 - Why is mulching used?
 - Why sow cover crops?
- Where you live, do they make brush fires?
 - Try to find out why.
 - In what season do they make brush fires?
 - Why?

FOURTH WEEK

Fallow, crop rotation, land-use allocation.

- Read pages 23 to 28.
 - Fallow and green manuring
improve the soil.
 - It is best to grow crops
and raise animals as well. Why?
 - Were crop rotations
and land-use allocation used in the past?
 - How long did the fallow last?
 - Why must a change be made?
- Reread the whole booklet,
- Answer the question paper.

THE SOIL CAN CHANGE

In Africa many soils can become bad.

Why?

- The sun, the rain and the wind
change the soil a great deal.

In Africa the rains are often very heavy.

After the rains the heat is very great.

Great heat after heavy rains
ruins the soil:
the humus is quickly destroyed.

The wind too ruins the soil.

So we have to
protect the soil from sun, rain and wind
by stopping the water from flowing away;
by covering the soil.

- If you always farm the same field,
the plants will take all the mineral salts
out of the soil.

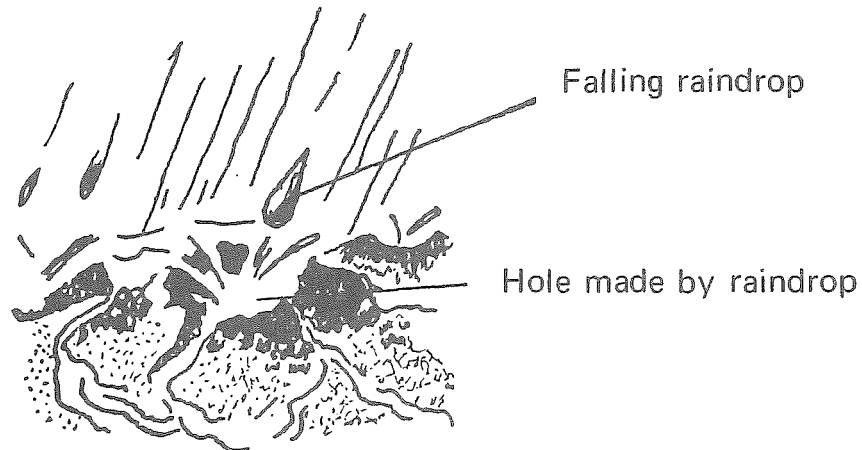
You must let the earth rest
by fallows;
by crop rotation;
by land-use allocation.

EROSION

- Rainwater may carry away cultivable land.
This is water erosion.

Let us see what happens
when it rains heavily.

Every drop of heavy rain
that falls on the soil
takes away a little earth.



Around the house,
the water that falls from the roof
makes holes and takes away earth.

When the rain falls gently,
it does not flow off,
it goes into the soil.
All the earth becomes wet.
Gentle rain does not carry away earth.

When the rain is very heavy,
it does not all go into the soil.
It flows and makes ditches.
If the soil is on a slope,
the water flows more quickly,
and makes deeper ditches.
A lot of earth is carried away.
Along the sides of the road,
the water runs very fast,
it carries away the earth,
and makes deep ditches.

Water erosion is worse

- when the soil slopes:
the water flows quickly
and carries away a lot of earth;
- when there are no plants growing on the soil:
plant roots hold the earth
and the leaves shelter it from the rain.

*For instance, at Adiopodoumé, Ivory Coast,
the weight of earth in kilogrammes (kg)
carried away by the rain in one year
has been calculated as follows:*

<i>From 1 hectare of</i>	<i>kg carried away</i>
<i>bare land</i>	<i>117 000</i>
<i>land under crops</i>	<i>52 500</i>
<i>forest land</i>	<i>2 400</i>

- The wind can also carry away earth.

This is erosion by wind.

In some very dry regions
where the wind is very strong,
it carries away earth.

Bare soils, without plants,
and soils with a bad structure
(see Booklet No. 4, page 24)
are most easily carried away by the wind.

What remains in the field is poor soil.

- Strong sun spoils the soil.

When there are no plants on the soil,
the soil is bare,
the earth is not protected.
The earth becomes dry.
The humus is quickly destroyed.
The soil structure becomes bad. .
Good earth is easily carried away.
The soil becomes poor.

HOW TO CONSERVE THE SOIL

Erosion can be prevented:

- by stopping the water from flowing away.

Quickly running water carries earth away.

It is dirty water, mixed with earth.

If the flow of water is stopped,

the earth mixed with the water settles on the ground.

The water becomes cleaner.

The earth is not lost.

In order to stop the flow of water and keep the earth,
we use:

- contour line ridges,
- ditches,
- barrier strips,
- strip cropping.

- by covering the soil.

Water that falls on bare soil
carries away the soil.

Water that falls on soil covered by plants
damages the soil less.

The plants that cover the soil reduce erosion.

To cover the soil, use **mulches** and sow **cover crops**.

Brush fires

leave the soil bare and without plants.

They destroy organic matter.

The soil structure becomes bad.

Brush fires are bad for the soil.

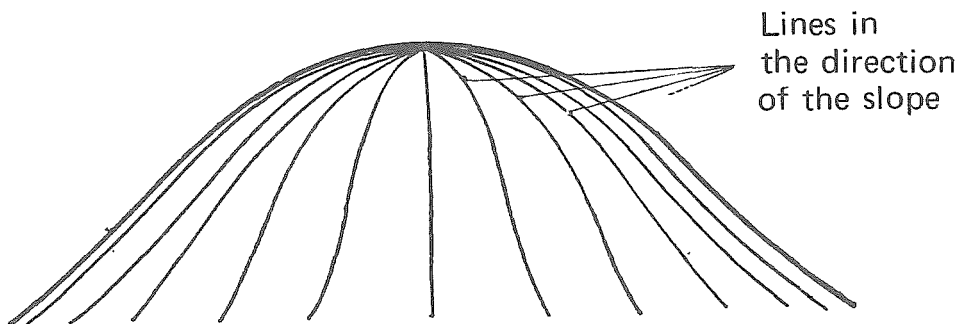
Prevent erosion by stopping the flow of water

CONTOUR LINE RIDGES

Water flows very fast on sloping land.
It flows strongly and carries away earth.

When ridges are made in the direction of the slope,
or if you plough in the direction of the slope,
the water flows faster and faster between the ridges.
It carries away a lot of earth.

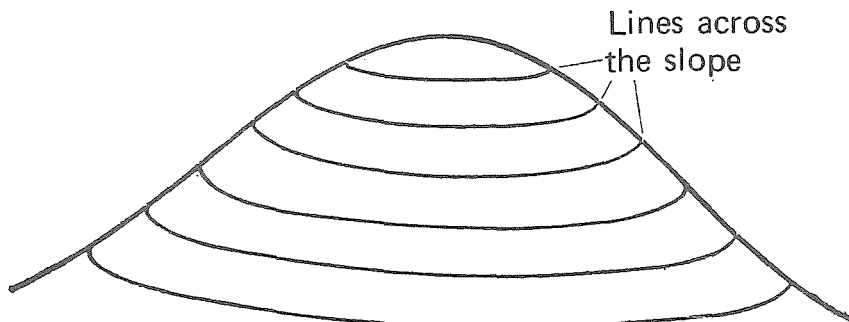
Look at this drawing:



The lines are in the direction of the slope.
The water flows very fast. Earth is carried away.

When ridges are made across the slope,
water cannot go fast.
It is stopped by the ridges.
Earth is not carried away.

Look at this drawing:



These lines are across the slope.
Water and earth are held up.

When you make ridges
across the slope,

When you plough
across the slope,

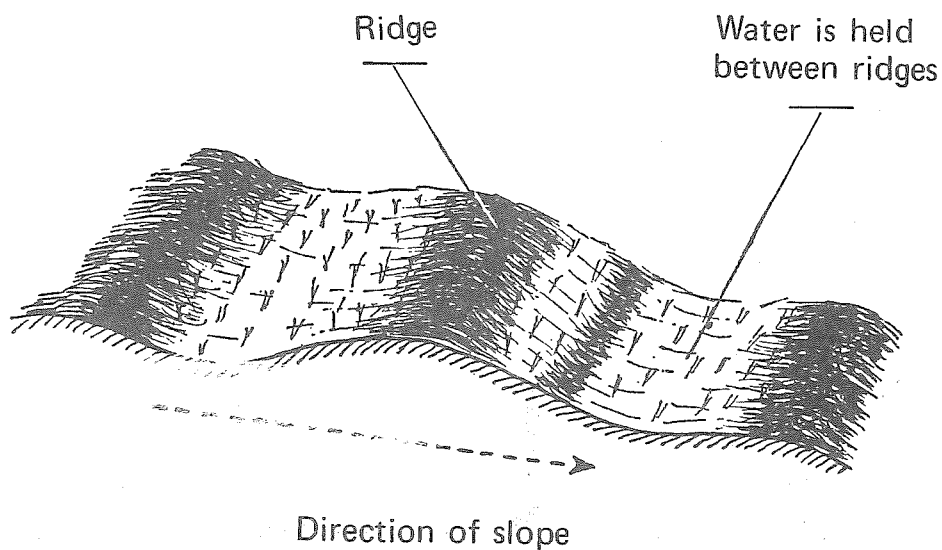
You are working on the contour line.

A contour line
is a line across the slope
running always at the same height,

Making ridges
along the contour lines
helps to control erosion.

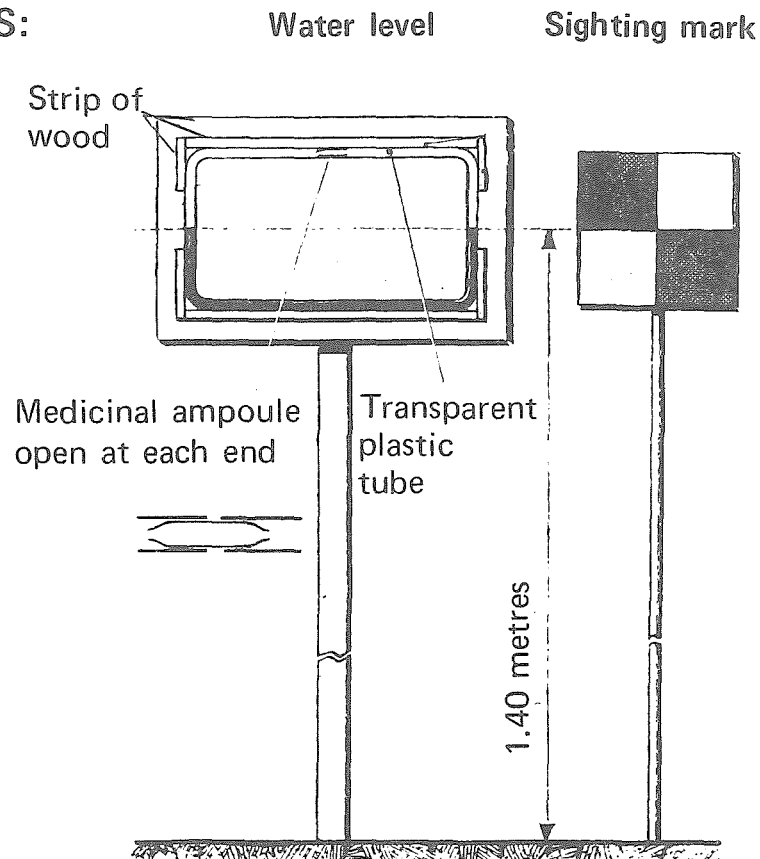
The water cannot flow fast.

The water is held by the ridges.



HOW TO MAKE CONTOUR LINES

THE TOOLS:



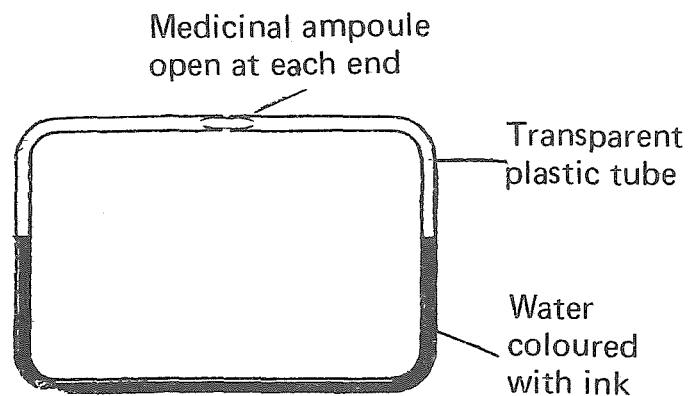
● The water level

We need:

- a board 80 centimetres by 50 centimetres;
- an empty medicinal ampoule;
- 1.80 metres of plastic tube of the same size as the ampoule (the dispensary may have it).

Half fill the tubing with water mixed with a little ink.

Join the two ends of the tube with the ampoule, which should be open at each end.



Fix the tube on the board
as shown in the drawing,
putting the ampoule at the bottom.
Protect the tube
by strips of wood,
except in the places
shown in the drawing.

Nail the board to a stake 1.40 metres high.

- The sighting mark

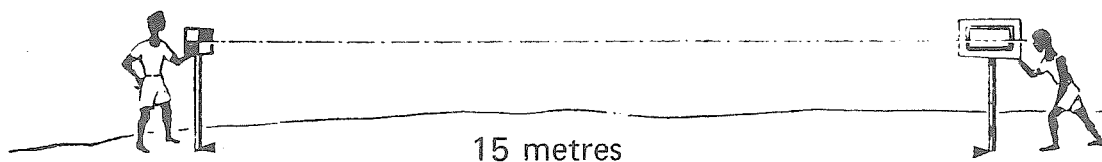
Get a board 30 centimetres by 30 centimetres.
Nail the board
to a stake 1.40 metres high.,
Paint two squares on the board
as shown in the drawing.
This is our sighting mark.

- Stakes

Get ten stakes 1 metre high.

MARKING THE LINES

Two people are needed,
the man in charge and his helper.
The man in charge
takes the water level.
His helper
takes the sighting board and the stakes.

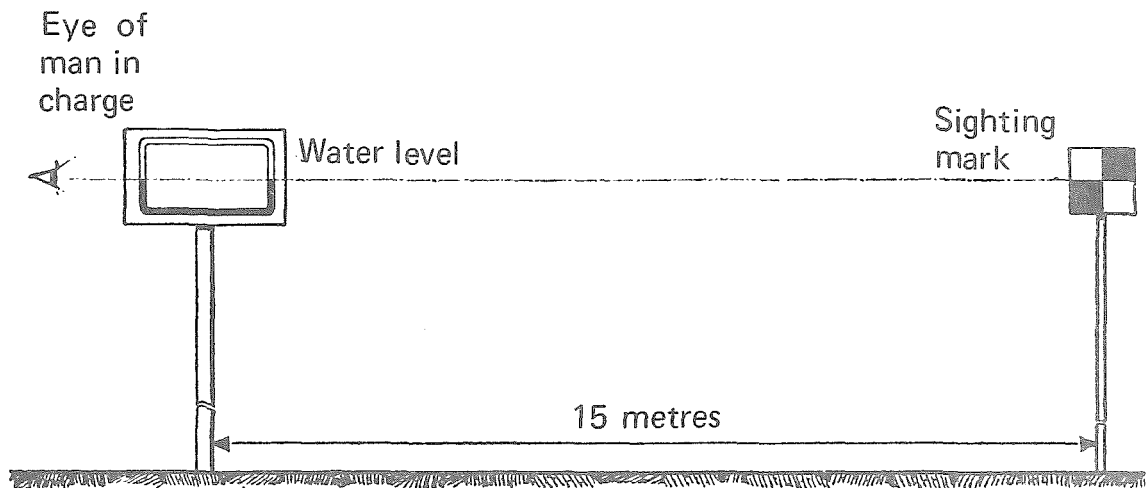


The man in charge goes to the top of the field.
His helper goes to the same height at a distance
of 15 metres or paces.
The sighting mark and the level are held quite straight.

As shown in the drawing,
the man in charge
tries to get in the same line of sight
the levels of the water in the tube
and the centre of the sighting mark.

He takes a sight.

The man in charge does not move from his place.
He signs to his helper
to go up or down the slope.
When he has got a good sight,
the helper fixes a stake
in place of the sighting mark.



The helper goes 15 metres or 15 paces away
from the stake he has just fixed in the ground.
He is now 30 metres from the man in charge.

The man in charge takes a new sight.
His helper marks the spot
with another stake.

The helper again goes 15 metres away.
The man in charge takes another sight.

The helper gets to the end of the field.
All the stakes are at the same level.

The man in charge marks a ridge
joining all the stakes.

This ridge marks the contour line.

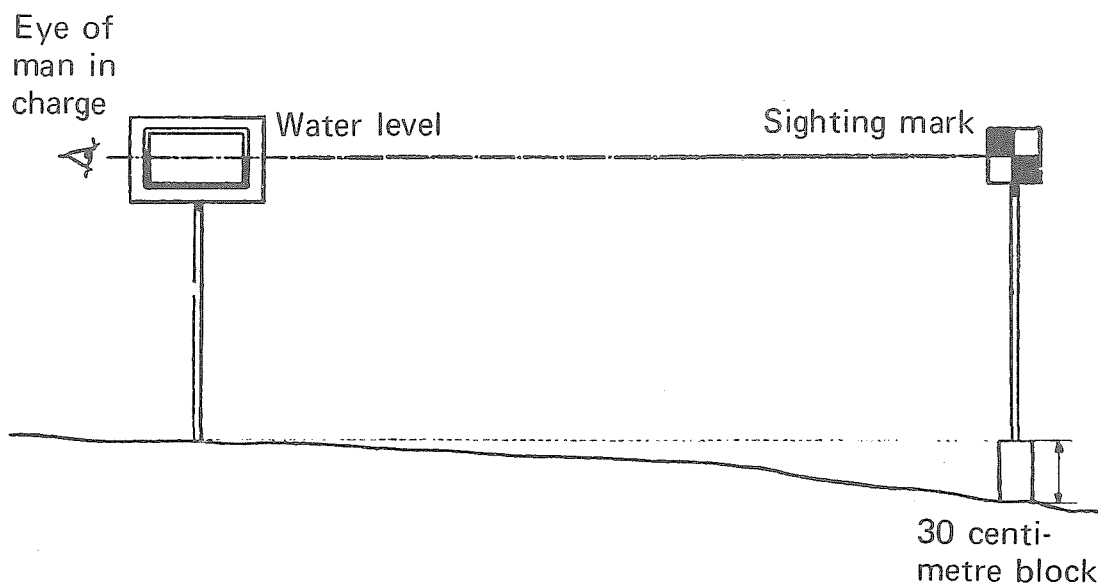
To make a line 30 centimetres lower,
the man in charge puts his level
on the line he has just marked.

His helper puts a block 30 centimetres high
under the sighting mark.

The man in charge takes a sight.

He finds the beginning of a contour line
that is 30 centimetres lower.

He looks for points on the new line.



Then he marks a third line,
and a fourth line.

CONTOUR LINE BARRIER STRIPS

- On a slope
the soil can be even better protected
by making barrier strips.

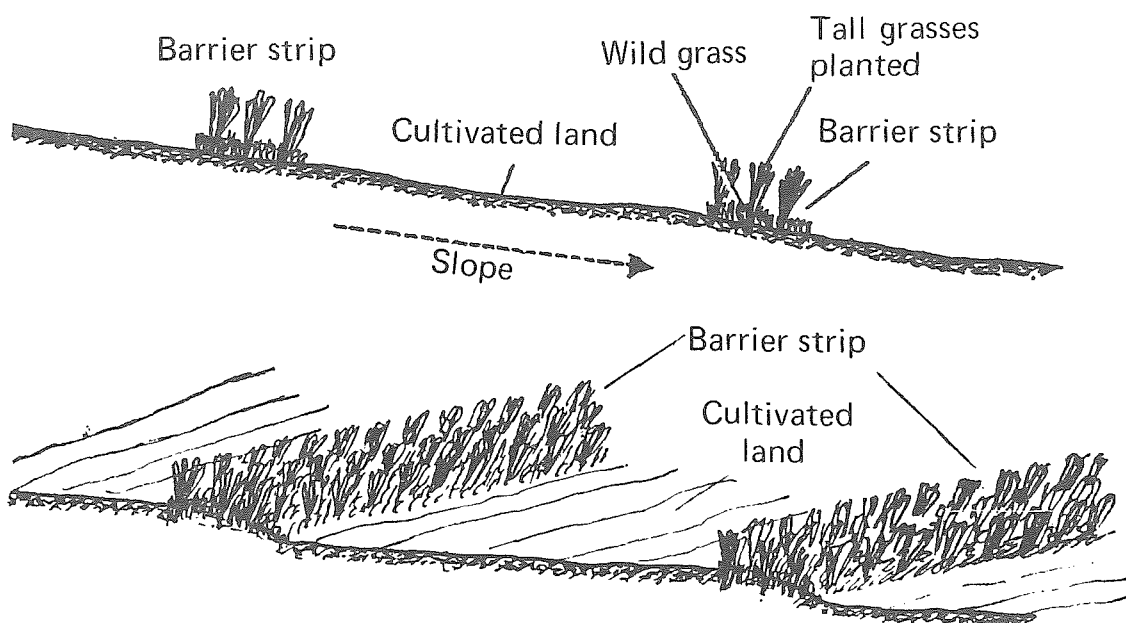
A strip of uncultivated land is left.
Grass grows on this strip;
it stops the flow of water
and the earth is not carried away.

Barrier strips must also be made
on the contour lines, across the slope.

A barrier strip should be at least 2 metres wide.

To better stop the flow of water
tall grasses can be planted.
Even trees can be planted.

- If the slope is slight,
barrier strips are made 30 to 40 metres apart.
If the slope is a little steeper,
barrier strips are made 10 to 20 metres apart.



CONTOUR LINE DITCHES

- If the slope is very steep,
and if the water flows very fast,
it is difficult to stop the water
with ridges or barrier strips.

- Ditches 30 centimetres deep
are dug along the contour lines.

The earth from the ditch
is piled up along the lower edge of the ditch
and forms a big ridge.

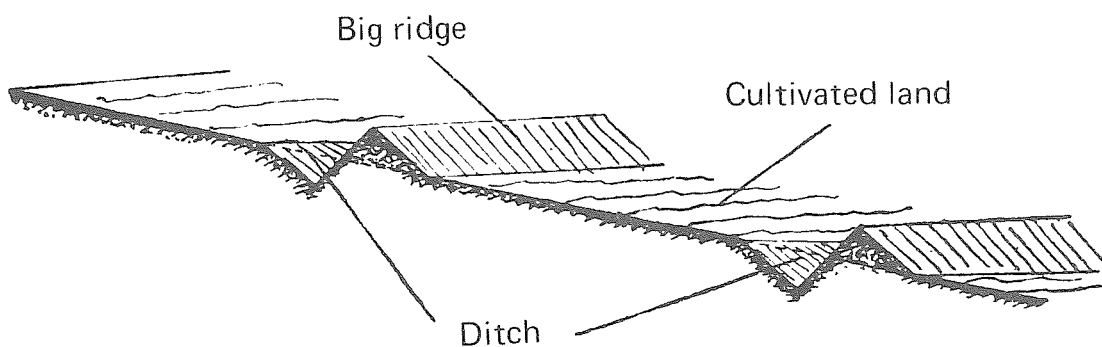
The water is stopped
by the ditch and the ridge.

- No crops are grown on this big ridge.

Grass is allowed to grow on it;
the roots prevent water from carrying away
the ridge.

The ditches are made 20 to 30 metres apart.

Crops are grown on the strips of land between the ditches.

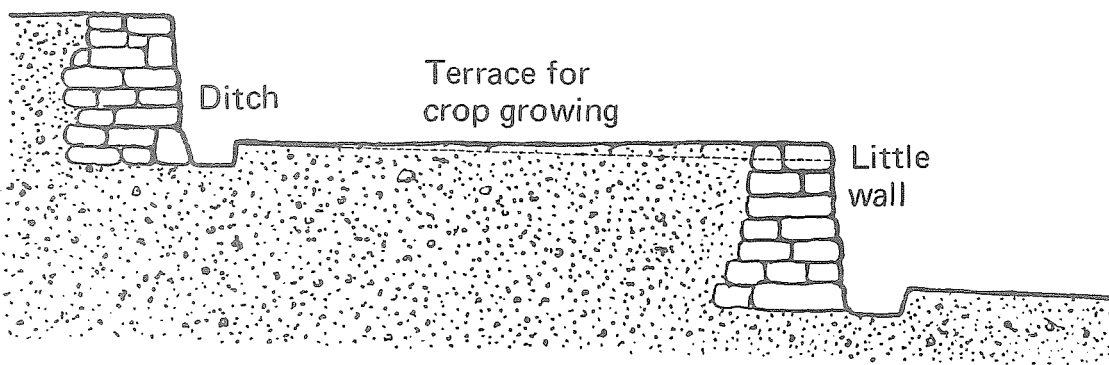


Ditches control erosion very well,
but they must be cleaned out
from time to time.

TERRACE FARMING

- If the slope is even steeper,
it is impossible to grow crops on the slope.
- But little walls of earth or stone can be built.
These walls are built across the slope.
Earth is put behind the little walls.

In this way terraces are made.
Crops are grown on the terraces.



A ditch is made at the foot of the wall.

The ditch takes the water
that runs down from the terrace.

In some African countries
there is a lot of terrace farming,
for example:

- among the Dogons in Mali;
- among the people of the highlands of northern Cameroon;
- among the hill people of Rwanda and Burundi.

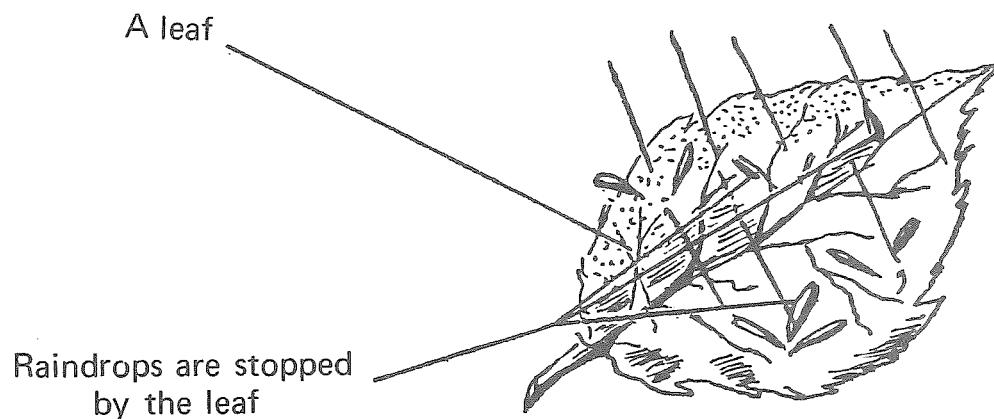
Prevent erosion by covering the soil

Heavy rains, dry wind and sun
all ruin the soil (see pages 5 to 6).

Plants protect the soil
against rain, wind and sun.

- Plants that cover the soil
prevent erosion.

The rain drops do not fall on the soil.
They fall on the leaves.
Then they run gently on to the soil
and do not carry away earth.



Plants break the force of the wind,
and make it less strong.
Herbage protects the soil.
The wind does not blow away the soil in dust.

The sun does not shine straight on to the soil.
Plants with their leaves cast shade.
The earth remains damp.
Humus is not destroyed.

MULCHING

- You can cover the soil with:

straw
cut herbage;
leaves,
stems of millet, maize, etc.

This cover of dead plants is called a mulch.

- A mulch is useful because:

It protects the soil against water and wind
that carry away earth.
It protects the soil against the sun
which dries the earth.
The soil stays damp.
It prevents weeds from growing.

- After mulching

the straw etc. rots and makes humus.
The soil is made richer.

- Mulching is used

to protect the soil of gardens,
and in growing bananas.

Mulches are also spread
round certain fruit trees,
such as mango, papaw and orange.

For palms and coconuts

the residues of fruit clusters and coconut fibre
are used for mulching.

- When you clear a field,

do not burn the herbage and the small trees.
Leave them on the soil
so that the leaves and cut trees
cover the soil.

COVER CROPS

- **Cover crops**

are the plants which are sown or planted to cover the soil in certain plantations.

When you let soil rest
by leaving it fallow
after three or four years of crop production,
you can sow cover crops
which protect the soil from erosion.

In tree plantations,
such as palms, coffee, cocoa, rubber,
you must sow a cover crop
between the lines of trees,
for example, Pueraria.

When the cover crops grow too big,
cut them down.
Prevent them from climbing up the trees.

- **Choose the right cover crops.**

A good cover crop
must grow quickly and last a long time.

Some cover crops
can be used for feeding animals,
for example, Stylosanthes and Pueraria.

The agricultural extension service
will tell you which is the best cover crop
for your plantation.

- **The cover crop also improves the soil
by giving it organic matter
(see Booklet No. 2, page 23).**

BRUSH FIRES

During the dry season,
many plants die and lie on the soil.
They are burned in a brush fire.

Why are brush fires made?

- **To clear the land.**

Fire cleans the field and makes work easier.

- **For hunting.**

Animals are afraid of the fire
and take flight.
They are caught and eaten.

- **To make the grass grow again.**

Cattle do not want to eat dry grass.
After the fire, green grass grows,
and cattle eat it.

- **To protect the following crop**
(see Booklet No. 2, page 28).

Many little animals,
such as agoutis, rats and insects
spoil crops.
The fire kills them.
They won't attack the following crop.
The fire also burns up diseased plants.
They won't pass the disease
to the following crop.

- **To walk more easily in the bush.**

The fire burns tall grasses.
It is easier to get about.

WHY WE MUST NOT MAKE BRUSH FIRES

Fire destroys organic matter.

Plants burned by the fire
do not yield any humus.
After the fire
there is nothing left but ashes.
Wind and rain can carry them away.
Humus enriches the soil
and improves its structure.
Ashes enrich the soil
but do not improve its structure.

Fire leaves the soil bare.

Grass cannot grow again
on soil burned at the end of the dry season;
the soil is too dry.
The first rains are often very heavy.
They fall on bare soil.
They easily carry it away
after a brush fire.

Fire destroys good plants.

After the fire a lot of plants die.
Often the good plants die
more easily than the bad ones.
Each year bad plants
take the place of good plants.
In this way savanna takes the place of forest.

Fire is dangerous.

Often whole plantations are destroyed,
for instance,
coffee trees, or oil palms.
Often houses and barns are burned,
sometimes the whole village.
In Africa many soils have often become poor
because of fire.

The brush fire is bad.

If we want to stop making it,
we must:

- destroy insects, small animals and diseases
by using chemical products.
- bury weeds by ploughing.
- feed animals during the dry season with hay.

But farmers do not always have
the machines and the chemical products.
Many of them must still make fires.
However, they can prevent the fire being too bad.

If the fire is lit at the beginning of the dry season,
the fire is not so fierce and not everything is burned.
The grass has time to grow again.

Then the soil will not be bare
at the beginning of the rainy season.

When a farmer
cannot get the good results of fire by other means,
he should make brush fires
at the beginning of the dry season.

FALLOW

When you clear a field,
the first harvests are good.
But after four or five years
the harvest is less good;
the plants have taken the mineral salts from the soil
and the soil becomes poor.
The soil must not be used again.
The soil must be allowed to rest.
This rest for the soil is called a **fallow**.

On soil that is left fallow,
grass and other herbage grows.
The plants protect the soil against erosion.
The plants die.
The organic matter from the plants
(see Booklet No. 2, page 23)
enriches the soil with humus.
The soil becomes rich again.

To get a better fallow:

- **Sow plants.**
These plants grow more quickly than grasses,
and cover the soil better.
They make more organic matter.
For example, *Stylosanthes* and *Crotalaria*
are good fallow plants.
- **Do not burn plants growing on the fallow.**
- **The fallow can be used for feeding animals.**
But the animals must not eat all the plants.
Because then the soil will no longer be protected.

CROP ROTATION

- If the same crop is grown
on the same field
every year
the harvests get much smaller,
and the soil becomes poor.
- If the crop is changed
on the same field
every year,
the harvest can stay good,
and the soil does not become poor.
This is called crop rotation.

An example of crop rotation
from the Baoulé country,
Ivory Coast:

First year: yams
Second year: maize or rice
Third year: cotton
Fourth year: fallow

- In traditional farming,
the same crop is grown
on the same field
for several years.

The crop takes all the mineral salts.
The soil becomes very poor.
The soil structure (see Booklet No. 4, page 24)
becomes bad.
Erosion carries away soil.
Sometimes even the village has to be moved.

Crop rotation
means growing a different crop
each year
on the same field.

REASONS FOR CROP ROTATION

- To make better use of all parts of the soil.

For example:

The first year I grow cotton.

Cotton has a tap-root (see Booklet No. 1, page 23).

Cotton gets its food deep down.

The second year I grow rice.

Rice has fibrous roots (see Booklet No. 1, page 21).

Rice gets its food on the surface.

Thus all parts of the soil are used.

- To make better use of all the mineral salts in the soil.

For example:

The first year I grow cotton.

*Cotton uses chiefly one mineral salt —
phosphoric acid.*

If I grow cotton

*for two years running on the same field,
the cotton will lack phosphoric acid.*

The second year I grow rice.

*Rice uses chiefly another mineral salt,
one containing nitrogen.*

A farmer who grows cotton and then rice
makes better use of all the mineral salts
in the soil.

- To control insects and diseases.

For example:

When you grow cotton,

the insect pests and diseases of cotton increase.

If you grow cotton again the next year,

*the pests and diseases which have remained
in the field do a lot of harm to the cotton.*

If you grow rice after cotton,

*the pests and diseases of cotton
do no harm to the rice, and disappear.*

- An example of crop rotation in the Central African Republic:

First year: groundnuts
Second year: cotton
Third year: rice
Fourth year: cassava
Fifth year: fallow
Sixth year: fallow
Seventh year: fallow

Thus four years of crops
 are followed by three years of fallow.
 Fodder crops can be sown on the fallow,
 and so the animals can be fed.

This is a seven-year rotation;
 every seven years
 the same crops are grown.

HOW TO CHOOSE A CROP ROTATION

Before choosing a rotation
 you must think carefully.

- You must choose crops
 that will feed the family
 all the year.
- You must choose crops
 that will bring in money
 (industrial or cash crops).
- You must choose crops
 that can be grown one after the other
 without making the soil poor.
 They must be plants that have different roots,
 plants that do not use the same mineral salts.
- A crop rotation enables you to
 keep the soil rich,
 cut down the length of fallow,
 farm the same fields.

LAND-USE ALLOCATION

- Every year the farmer needs several different crops.

For example:

millet or cassava to eat,
cotton or maize to sell,
grass for his animals.

- So every year he must grow different crops on different fields.
He must allocate his land according to crop use.

Examples of land-use allocation:

Mamadou has six fields.

He does not grow millet on all his fields.

On field 1, he plants cotton.

On field 2 he sows rice.

On field 3 he sows groundnuts.

On field 4 he sows millet.

Fields 5 and 6 he leaves fallow..

1	Cotton
3	Groundnuts
5	Fallow

2	Rice
4	Millet
6	Fallow

Mamadou has made a good land-use allocation.

He has crops to eat (millet and rice).

He has crops to sell (cotton, groundnuts, rice).

*He has two fields of fallow to feed his animals
and to let the soil rest.*

REASONS FOR LAND-USE ALLOCATION

- To organize your work better.

Sowing, hoeing, cultivating, applying pesticides and harvesting of different crops do not always have to be done at the same time.

For instance,
it is easier to grow during the same season one hectare of millet and one hectare of groundnuts, than to grow two hectares of millet.

If you grow only one crop,
you have to do all the work
at the same time.

With a good land-use allocation
you always have enough time
to do all your jobs well:
ploughing, sowing, cultivating and harvesting.

- To provide a safeguard.

If you grow only one crop,
and if a tornado, drought or animals
destroy this crop,
you have nothing left.

If you grow only one crop
and this crop fetches a poor price,
you earn no money.

By growing several crops
you can always have
both food and money.

SUGGESTED QUESTION PAPER

FILL IN THE MISSING WORDS

Many soils can become

Wind, sun and rain destroy soil; this is called

Erosion must be controlled by ,
or by covering the soil with
and with crops.

A good farmer brush fires.

He knows that fire is for the soil.

Fire destroys and
and it also leaves the soil

To conserve the soil, a good farmer lets his soil rest; this is called a

He grows a different crop each year on the same field; this is called

Each year he grows different crops on different fields; this is called

ANSWER THE FOLLOWING QUESTIONS

What is erosion?

Why do we let soil lie fallow?

What is a cover crop?

Your field is on a steep slope. What do you do in order to grow a crop and conserve the soil?

What are the advantages of a good crop rotation?

Tell a friend why you do not make brush fires.

After having studied this course, what are you going to do to improve your farming?

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; Junín esq. 6 de Octubre, Oruro.
Brazil	Livraria Mestre Jou, Rua Guaipá 518, São Paulo 10; Rua Senador Dantas 19-S205/206, Rio de Janeiro.
Brunei	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 6, Copenhagen S.
Ecuador	Su Librería Cía. 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.
Grèce	"Eleftheroudakis", 4 Nikis Street, Athènes.
Guatemala	Distribuciones Culturales y Técnicas "Artemis", Quinta Avenida 12-11, Zona 1, Guatemala.
Haïti	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	Librería Juan Mejía Baca, Azangaro 722, Lima.
Philippines	The Modern 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, Călea 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 2BQ.
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.