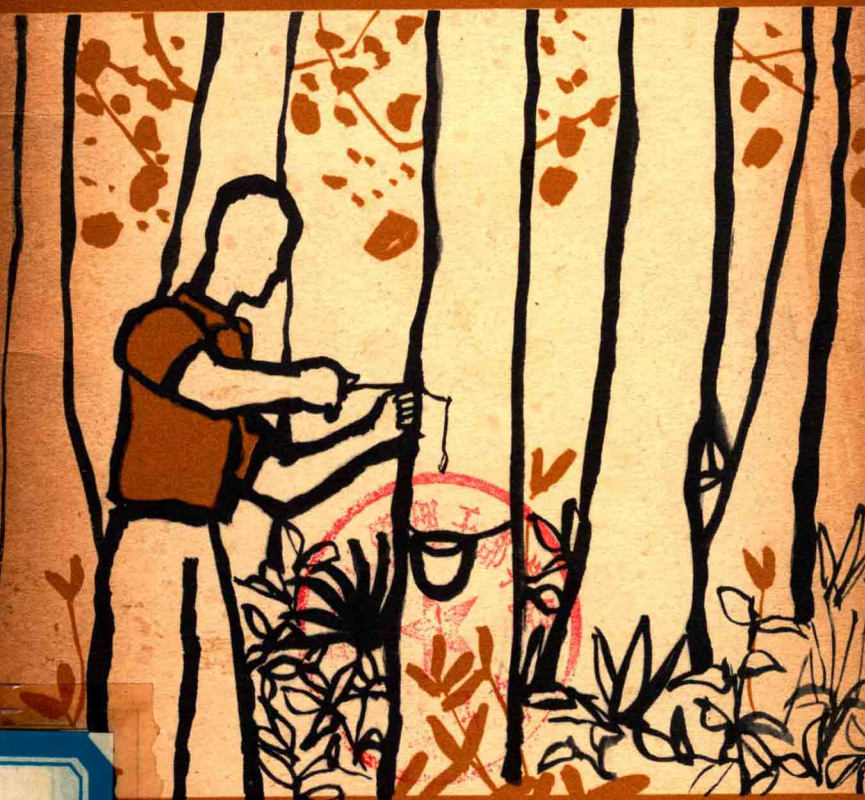


the rubber tree



The rubber tree

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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.

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PREFACE

This manual is a translation and adaptation of "L'hévéa," 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.

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Why rubber trees are grown

The rubber tree is grown
because rubber is made from the latex in its bark.

The rubber tree has roots made up of
a tap-root
and creeping roots.

In the bark of the rubber tree
there is **a liquid called latex.**

The latex is harvested
by **making a slit in the bark,**
that is, by cutting a piece of bark.

The latex makes the **rubber** that is used:

- in the tires of bicycles, motorcars and airplanes;
- for the soles of shoes;
- for many other things.

Rubber is in great demand all over the world;
more and more of it is needed.

But it is very difficult
to grow rubber trees well
and to harvest the latex.

They cannot be grown everywhere.

They need:

- a high temperature;
- plenty of water;
- moist air, though they can withstand a dry season.

Where rubber trees are grown

Rubber trees are grown in regions that are hot and moist, that is:

- in Africa (250 000 tons of natural rubber);
- in Central and South America (31 700 tons of natural rubber)
- in Asia, which is the chief producer (3 207 100 tons of natural rubber).

In Africa they are grown mainly in the forest regions.

In Africa the chief producers of natural rubber are:

Liberia	100 000 tons
Nigeria	80 000 tons
Zaire	35 675 tons
Ivory Coast	18 000 tons
Cameroon	12 000 tons
Central African Empire	1 250 tons
Ghana	1 700 tons
Mali	1 100 tons
Congo	160 tons

These production figures (for 1974) are from the *FAO Production Yearbook 1974*.

To grow **good rubber trees**
and harvest **plenty of latex**,

you must:

- prepare the seedlings well;
- make a good plantation;
- look after the plantation;
- harvest the latex well.

PREPARING THE SEEDLINGS

It takes a long time to get good rubber tree seedlings to put in the plantation.

It takes two years to get seedlings for putting in the plantation.

To raise seedlings for the plantation, you must:

- make the seeds germinate in the germinator;
- put the germinated seeds in the nursery;
- look after the nursery;
- graft the young seedlings in the nursery.

Germinating seeds in the germinator

To do this, you have to:

- make the germinator;
- choose the seeds;
- put the seeds in the germinator.

● Making the germinator

A germinator

is the place where you sow the seeds to make them germinate.

To make a germinator

you must choose ground that is quite flat,
that has no vegetable refuse on it;
you must choose a spot that can be easily watered.

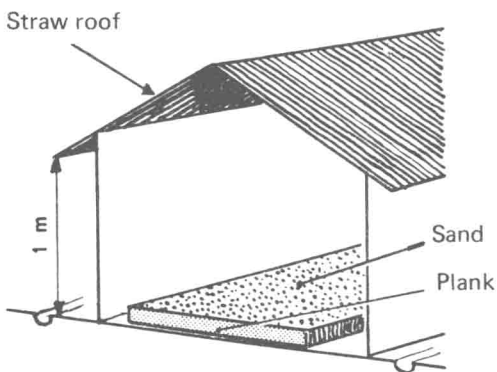
Make beds 1 metre wide.

Each bed is edged with planks,
so as to make a box.

Into each box put sand to a depth of 10 centimetres.

Cover the germinator with a roof made of straw.

The roof must be at least 1 metre above ground,
so that you can get underneath it
to put the seeds to germinate.



● Choosing the seeds

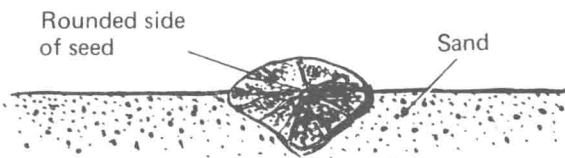
To get good seeds,
it is best to ask for them at a **seed selection centre**.

The seeds must be put in the germinator
as soon as they have been harvested
for they very quickly become unable to germinate.

When you put the seeds in the germinator,
you must look to see
if each seed is shiny and bright.
If is not, do not put it in,
because it will not germinate.

● Putting the seeds in the germinator

Push the seed half way into the sand,
with the rounded side of the seed uppermost.



Put the seeds close together, side by side,
and water them.

To make a plantation of 1 hectare, with 625 trees,
you must put 1 700 seeds to germinate.
So you must have a germinator
1.7 metres long and 1 metre wide.

A week later the seed has germinated,
and the rootlet is about 2 centimetres long.

This is the time to take the seeds out of the germinator
and put them in the nursery.

Putting the germinated seeds in the nursery

The nursery is the place

where you put the germinated seeds
so that they will grow into young rubber trees.

● The soil of the nursery must be well prepared

Choose a spot that is easy to water.

Grub up all trees.

A few days before planting the germinated seeds
remove all vegetable refuse.

The soil must be tilled by hand very deeply,
to at least 60 centimetres,
with a hoe.

Then the soil must be levelled and harrowed
to break up clods.

This is how the nursery is made ready
for the germinated seeds.

● Putting the germinated seeds in the nursery

The germinated seeds are planted in rows.

In each row leave 40 centimetres between seeds.

Leave 30 centimetres between the rows.

Plant the seedlings (germinated seeds) in alternate spacing,
as shown in the drawing on page 9.

Make four rows in each nursery bed.

Leave 60 centimetres between the nursery beds.

After every four beds, leave a space of 1.20 metres.

Thus 1 hectare will contain 58 000 seedlings.

To make a plantation of 1 hectare,

you have to plant 1 500 germinated seeds;

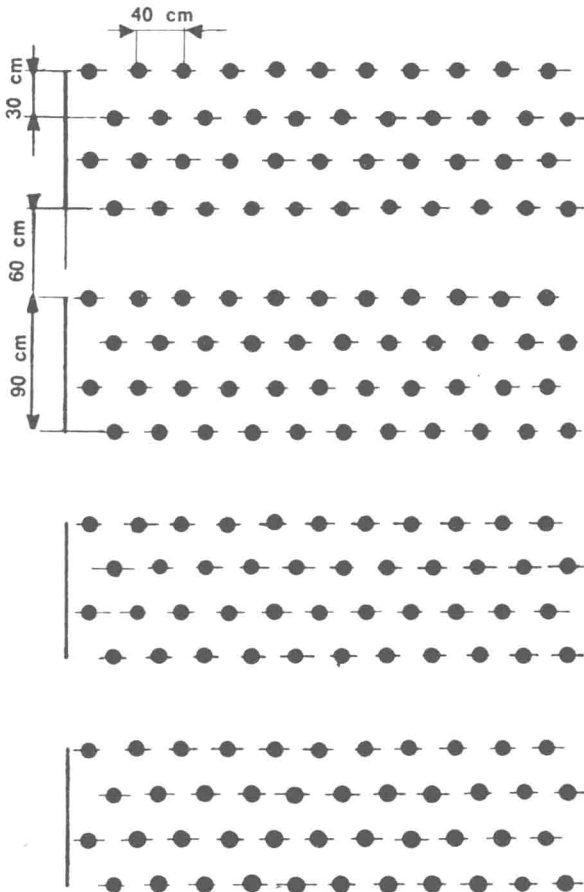
that means two nursery beds, each 70 metres long.

When transplanting the seedlings,

press the soil well down round the tap-root and the rootlets,
without damaging them.

Water the seedlings as soon as you have transplanted them.

PLAN OF NURSERY



Looking after the nursery

You must hoe often

to get rid of weeds,
and to keep the soil moist.

In the dry season **you must water** rather often.
But do not water in the middle of the day.
Water in the morning or in the evening.

If the soil is not very fertile, you can give it **fertilizer**,
as follows:

- The first time, 2 months after transplanting,
give 150 kilogrammes of ammonium phosphate
to each hectare
and 75 kilogrammes of potassium chloride
to each hectare.
This means that for a bed of 70 square metres
you need 1 kilogramme of ammonium phosphate
and 0.5 kilogramme of potassium chloride.
- The second time, 5 months after transplanting,
give the same amounts.

But you must get advice from technical officers,
because different soils have different needs.

Ten months after transplanting to the nursery,
take out the young plants that have not grown well.

When the young plants are between 12 and 15 months old,
during the short rainy season,
grafting must be done.

Grafting is a difficult job.

You must pay great attention to it.

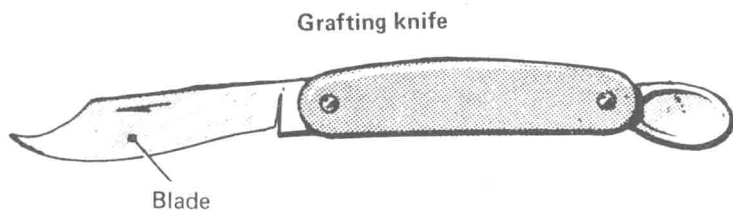
Grafting young plants

Grafting means putting into a young plant (**the stock**) a little piece of a branch (**the scion**) taken from a tree of good quality.

The young plant in the nursery is the **stock**. It will provide the roots of the plant which is to be put into the plantation.

You take a piece of a branch from a tree that gives plenty of latex; this is called the **scion**. The scion will provide the stem of the plant that is to be put into the plantation.

To graft you use a **grafting knife** with a very sharp blade.



To do the grafting, you have to:

- prepare the young plant from the nursery (the stock);
- take the scion from a tree of good quality;
- place the scion in the stock.

Afterwards look to see if the graft has succeeded.