

What is Grafting ?



Grafted peach trees ready for planting, Surkhet, Nepal

The Farmers' Handbook - "Near The House 2", Chapter 12 - Grafting

It can be difficult for farmers to earn their livelihoods from growing only grain crops. That's why it's good to learn new methods which increase production to farm our own land. One method is by making a nursery to grow improved fruit tree seedlings. This means you can grow tasty and nutritious fruit on your own land, and at the same time sell or trade extra production to earn cash. There are many methods of joining local wild fruit tree rootstock to high producing improved varieties. One of those methods, which is detailed in this chapter, is called **grafting**.

Grafting is a method of joining the cutting (scion) of an improved variety of fruit tree onto the root (rootstock) of a local compatible variety.

Why do Grafting ?

Benefits of Grafting

- Grafted trees produce fruit quicker. A tree grown from seed may take 8-10 years to fruit, but a grafted tree will only take 2-4 years.
- A tree grown from seed may produce poor tasting fruit. Grafting is done to improve the taste and size of the fruit.
- A tree grown from seed may not produce fruit the same as the tree the seed came from (mother tree). But a grafted tree will be just as good as the tree the cutting (scion) came from.
- A grafted tree will continue to give the same quality fruit for many years.
- Grafted fruit trees can be sold to give an income to the household.
- By producing your own seedlings and fruit, you save money.
- Seedlings can be produced locally, saving time in searching for the right fruit trees to plant.

Cutting the rootstock in preparation for grafting



This Chapter's Author:

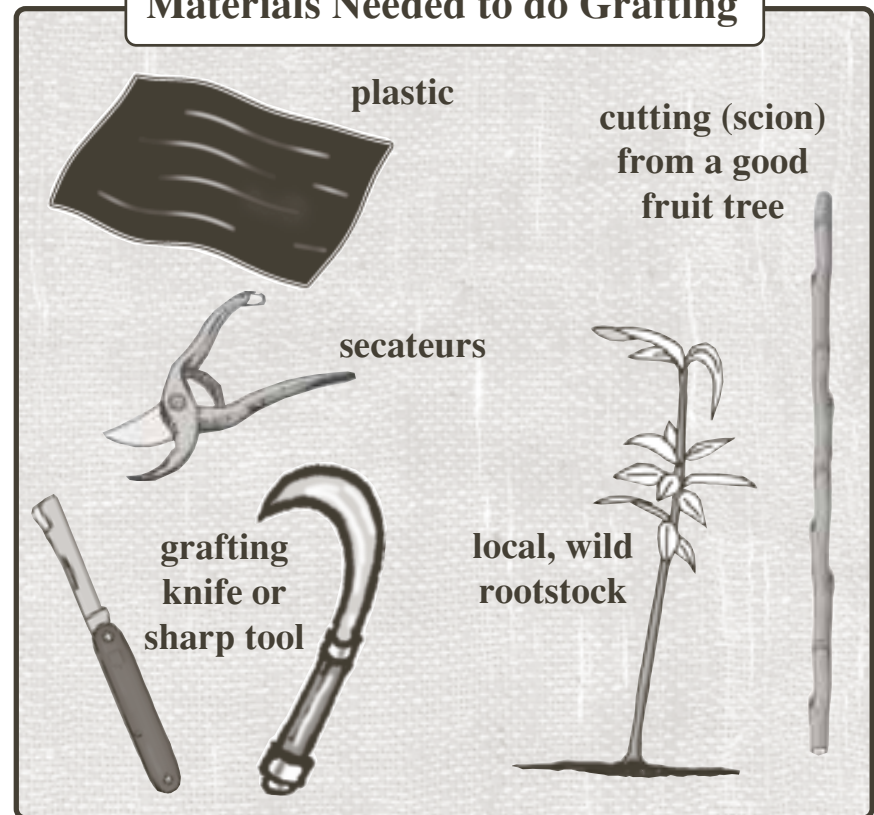
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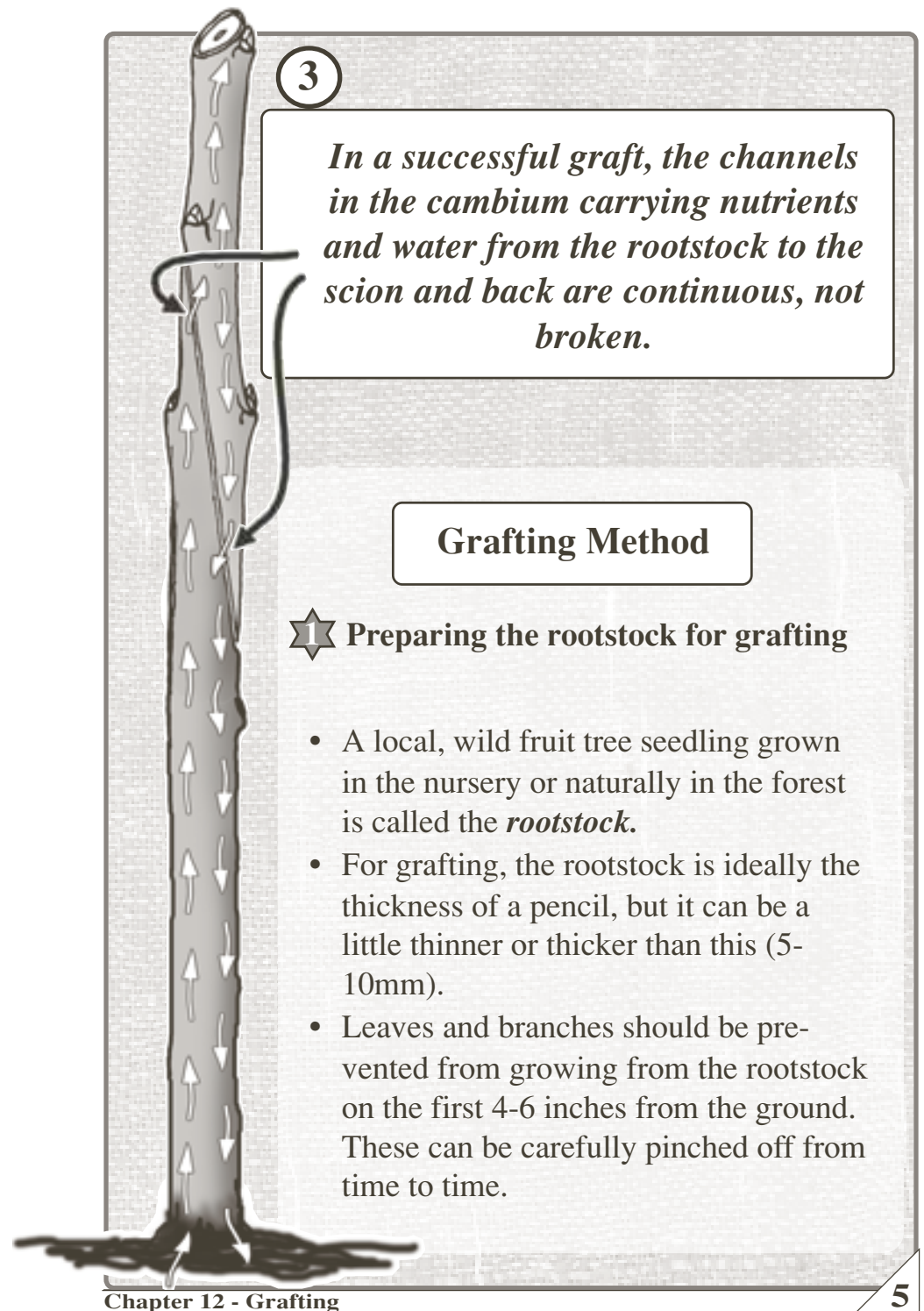
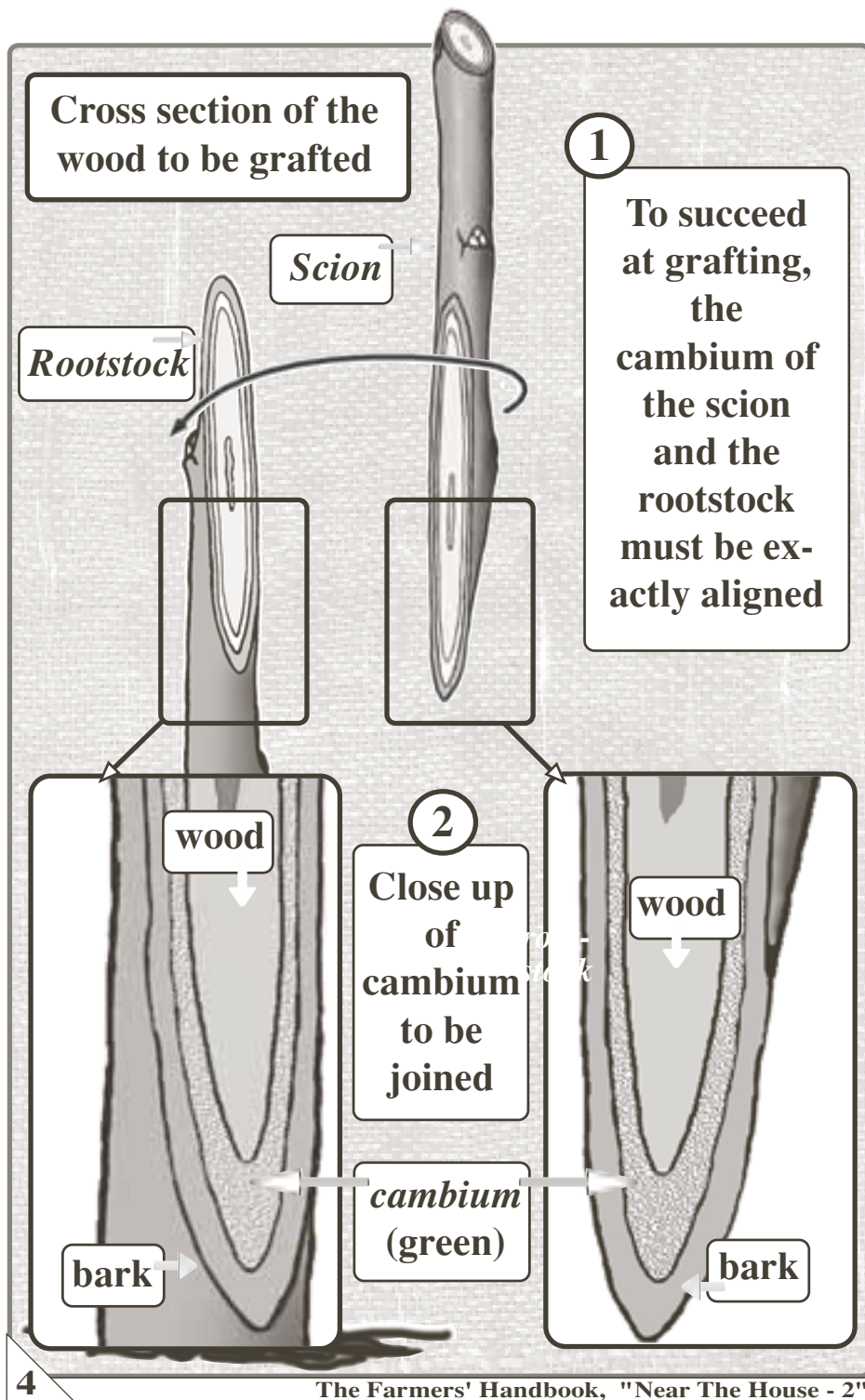
How to do Grafting ?

Materials Needed to do Grafting



How does grafting work ?

All plants have tiny channels which take water and nutrients up to the leaves and down again. These channels are inside the bark but outside the woody part of the stem. They form a greenish band around the stem called the *cambium*.



2 Selecting the scion for grafting

- To graft onto a local, wild rootstock, the branch cutting from a good fruiting tree is needed.
- This branch cutting is called a *scion*.
- The scion could be from a healthy, disease-free tree that gives good fruit.
- A one year old branch should be used as scion wood.
- If the scion is to be brought from far away, a whole branch should be cut. The cut end should be covered with moss and packed in sacking. Any buds should be unbroken, and the cutting should not be exposed to the sun.

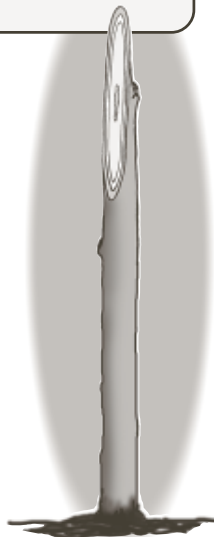
3 Cutting the scion

- The scion should be the same diameter as the rootstock if possible. It can be thinner than the rootstock, but not thicker.
- There should be 3-5 live buds on the scion, which should be cut at a slant, just above the top bud.

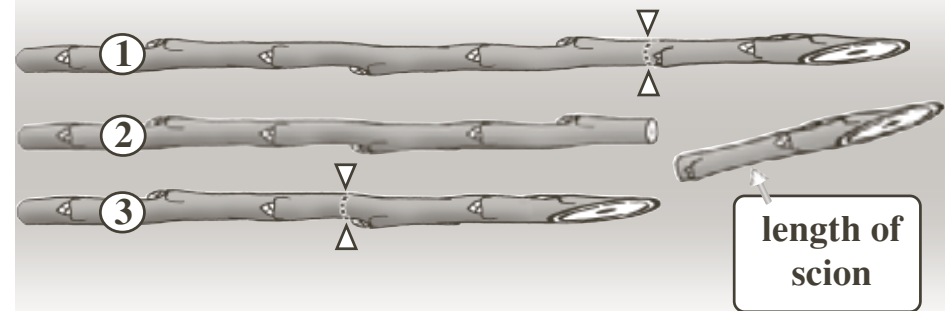
4 Cutting the rootstock and grafting the scion

- The way to prepare rootstock is described in the *Fruit Nursery* chapter.
- On the day before grafting, water the rootstock well and mulch thickly.
- Using a sharp knife or similar tool, make a 1 inch long slanting cut through the rootstock 1-3 inches from the ground. The face of the cut should be completely flat.

Prepared rootstock



- Trim the scion so it has 3-5 buds. The scion should not be thicker than the rootstock.



- Make a 1 inch long slanting cut at the base of the scion, the same length as the cut on the rootstock. The face of the cut should be completely flat.



slanting cut

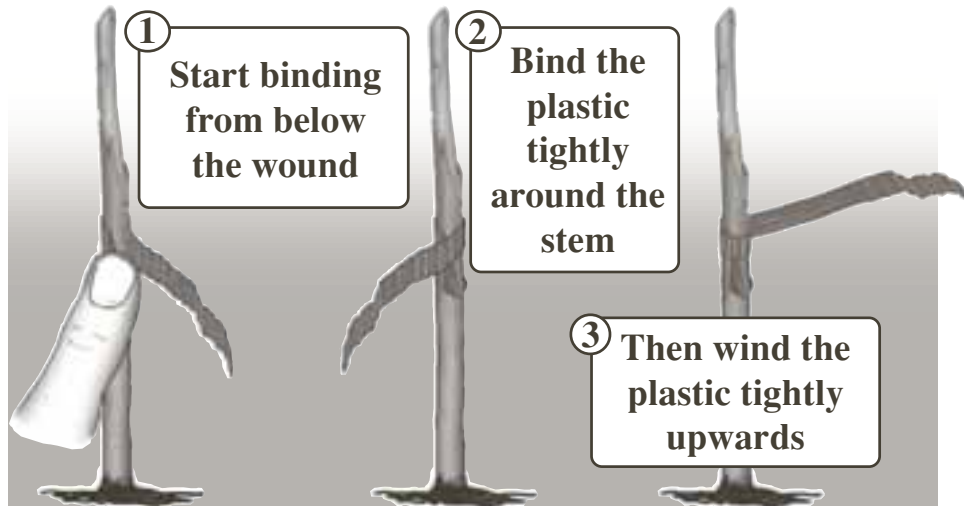
The scion should be cut just above the top bud to prevent too much wood drying out

- Half way up the slanting cuts of both rootstock and scion cut a small nick into the face of the cut edge (see also p.10, photo 5 to 8).
- Join rootstock and scion together by inserting the nicks on opposing faces of the rootstock and scion into each other.
- Push rootstock and scion together so that the cambium layers are in close contact *at least* on one side of the join (if rootstock is larger than scion), if not both sides (if rootstock and scion are the same size).
- The scion and rootstock should be held together by the opposing nicks being interlinked with each other.



★ 5 Binding the Graft

Bind the joined rootstock and scion together so no air or water can enter the wound.



See an alternative to using plastic on p.18

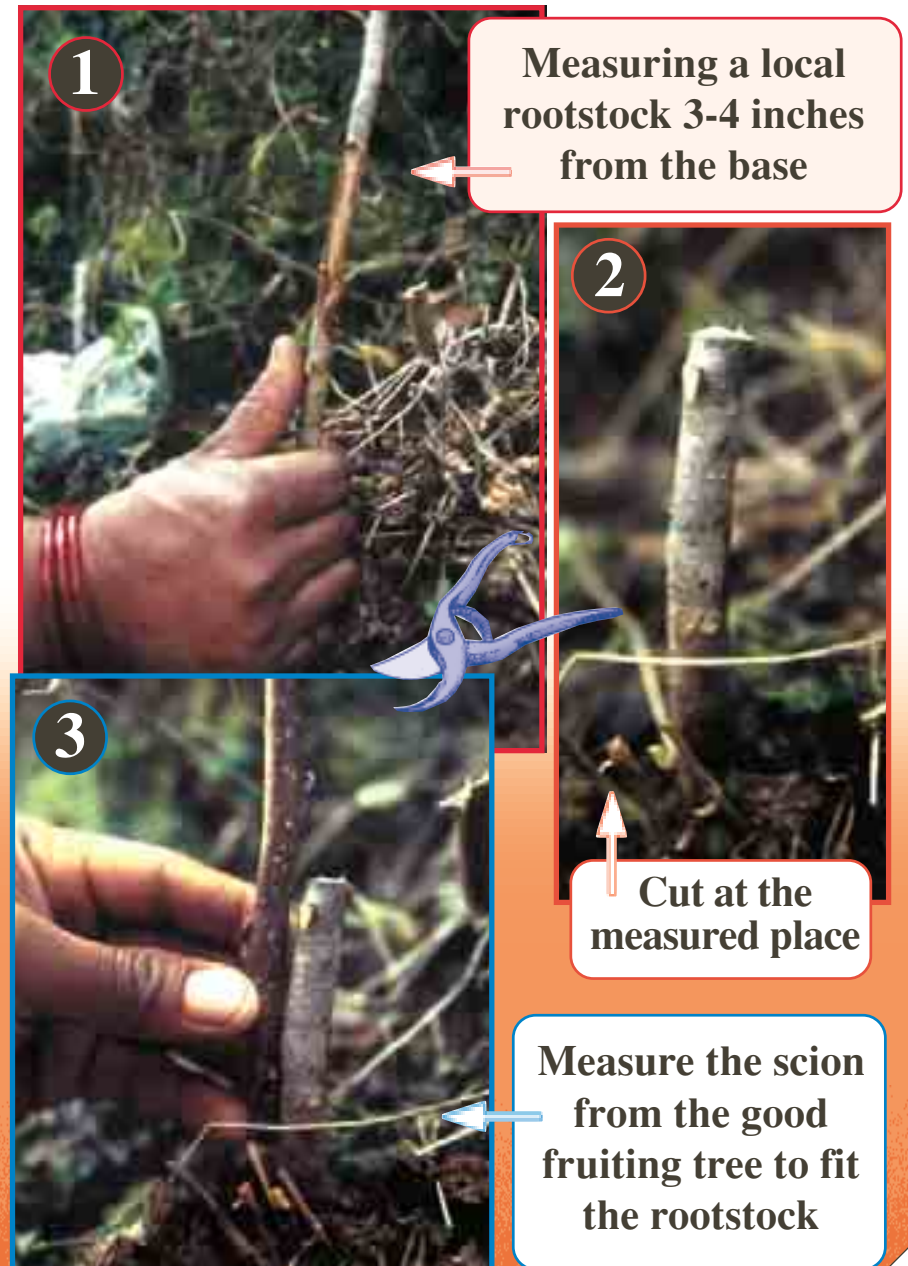
4 Wind the plastic to above the join, then wind it down again

5 Bind down to where the plastic started

6 Tuck the end of the plastic so it points downwards

Let's See

how to do Grafting





4

Make a slanting cut 1 inch long on the base of the scion.

5

Make a small nick about half way down the face.

6

Hold the scion in the mouth to prevent drying out.

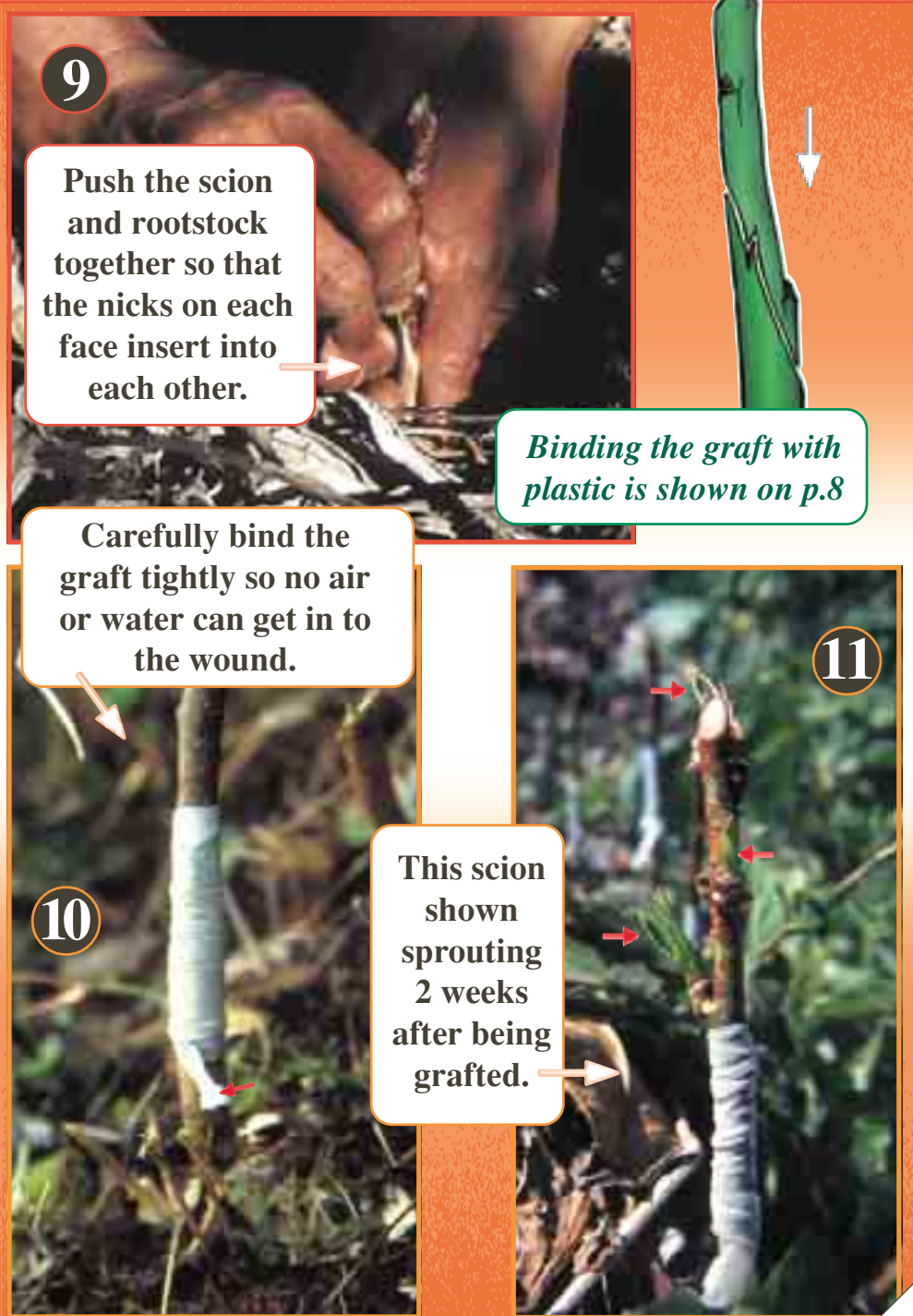
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Make the same 1 inch slanting cut on the rootstock

7

Make a nick in the same place on the rootstock

Rootstock with nick close up



9

Push the scion and rootstock together so that the nicks on each face insert into each other.

Binding the graft with plastic is shown on p.8

Carefully bind the graft tightly so no air or water can get in to the wound.

10

This scion shown sprouting 2 weeks after being grafted.

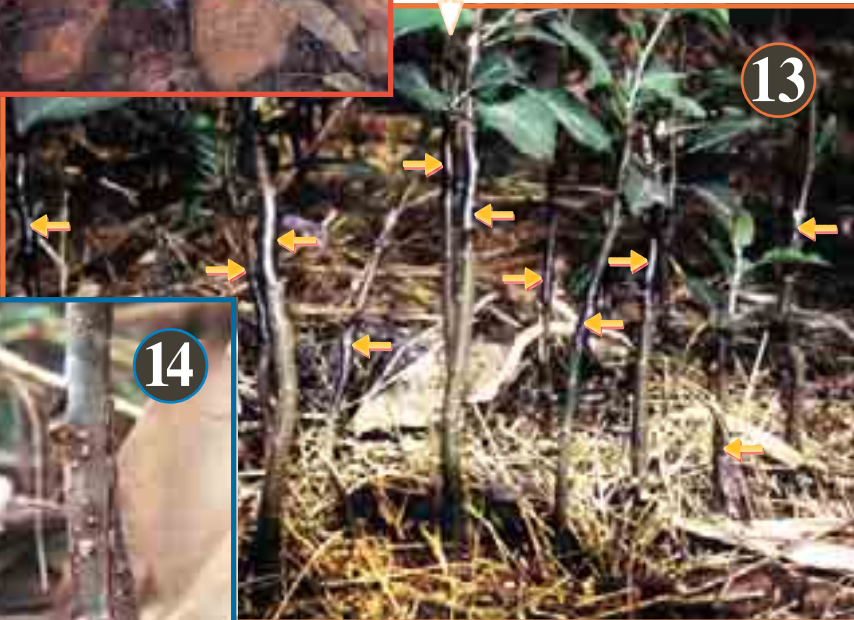
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12

A stone mulch has been placed around a seedling grafted directly in the fields. (↙)

Grafted seedlings shown in the nursery. An arrow marks the bound graft. (→)



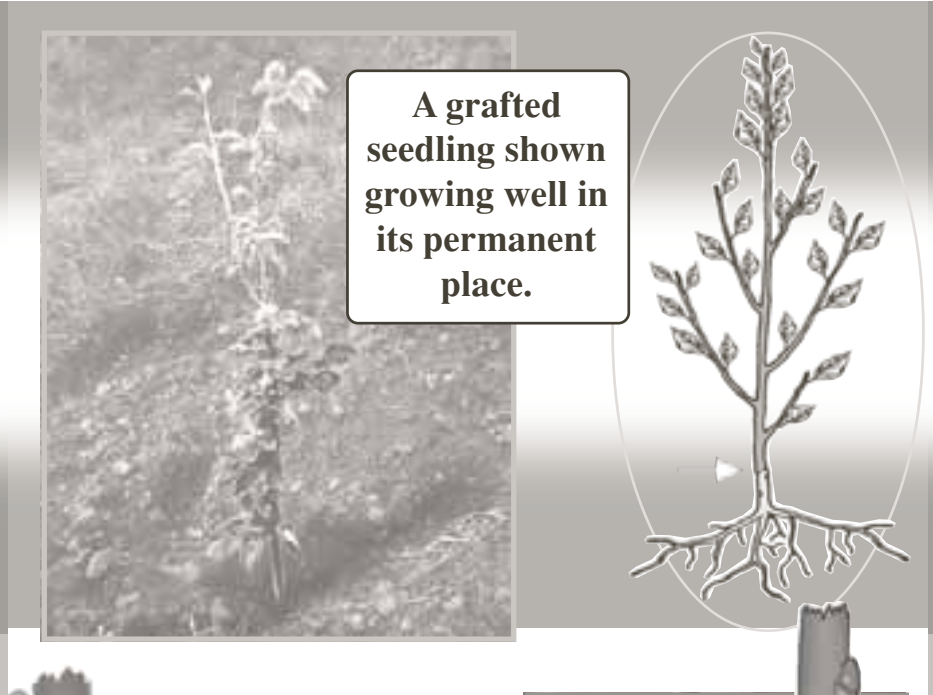
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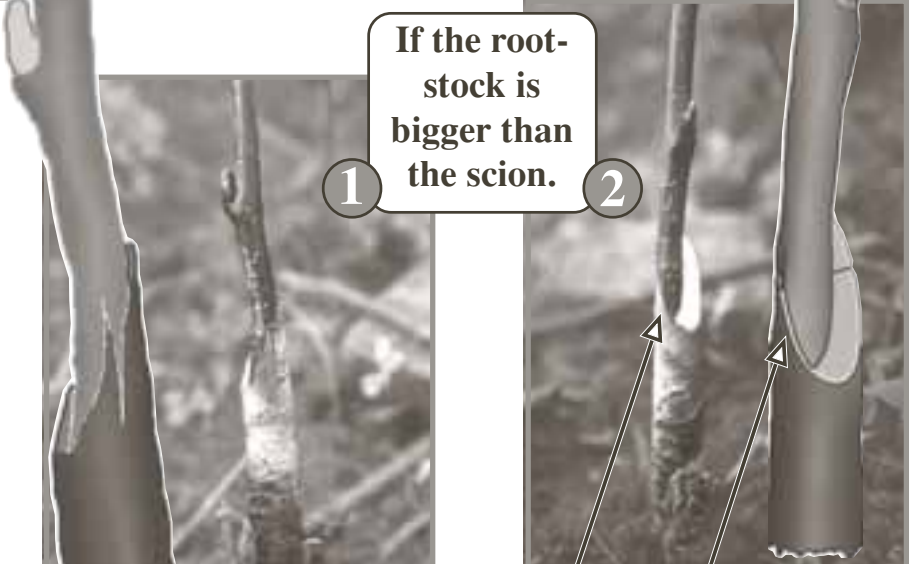
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A shoot sprouting from the rootstock of the graft. This should be pinched off.

The graft scar can be seen after plastic is removed



A grafted seedling shown growing well in its permanent place.



1 If the rootstock is bigger than the scion. 2

It's OK to graft a small scion onto a larger rootstock.

One side of the cambium of root stock and scion must match exactly.

Maintenance

How to maintain a grafted seedling

Care needed after grafting

- The grafted seedlings need fencing against livestock, and should not be touched.
- They should be protected from strong sun, wind, hail, and heavy rain. Make a 50cm high thatch to place over them, and the nursery should be in a sheltered site.
- The seedlings need regular watering to keep the soil moist.
- After 4 months, when the scion has sprouted well, the plastic can be carefully removed.



Without protection, work is wasted

Pinching

Any leaves or branches sprouting below the graft (from the rootstock) should be pinched off with the fingers, otherwise they take valuable water and nutrients meant for above the graft. This is called **pinching**.

If the graft is unsuccessful, a single sprout from the rootstock can be allowed to grow. This can be used to graft another scion again next year.

Citrus rootstock is grafted in the Autumn and kept under plastic until Spring.



Compatible species and timing of grafting

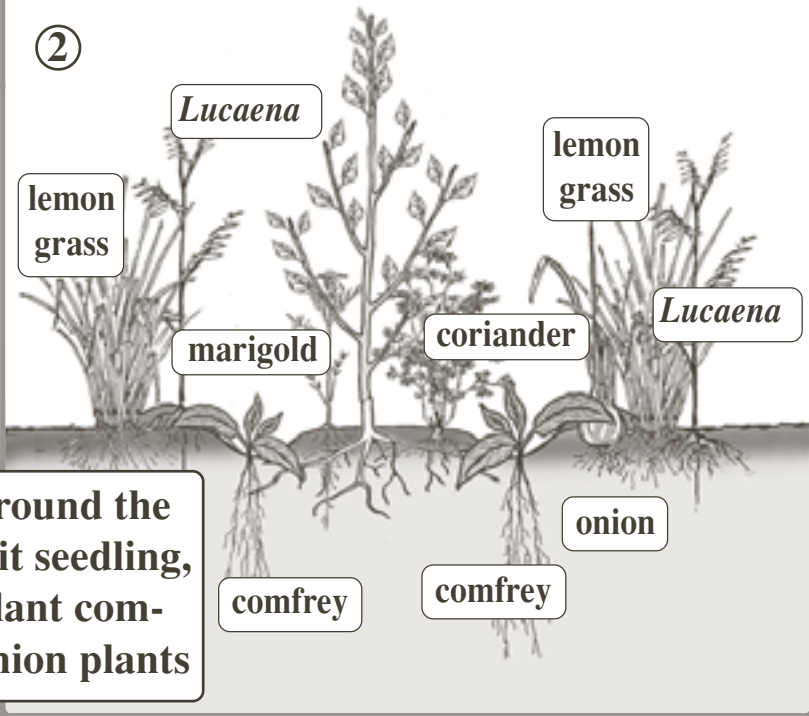
Type of scion	Type of rootstock	Month (Northern Hemisphere)
1. Improved peach, plum, apricot, almond	} all can be grafted onto wild peach, plum or apricot	Jan./Feb., Sept.
2. Soft shelled walnut		local walnut
3. Pear	wild pear	Jan./Feb., Sept.
4. Orange	<i>trifoliata</i>	Oct./Nov.
5. Persimon	local persimon	Jan./Feb.
6. Apple	wild apple, crabapple	Jan./Feb., Sept.
7. Cherry	wild cherry	Jan./Feb.

①



Grafted seedlings should be protected from livestock

②



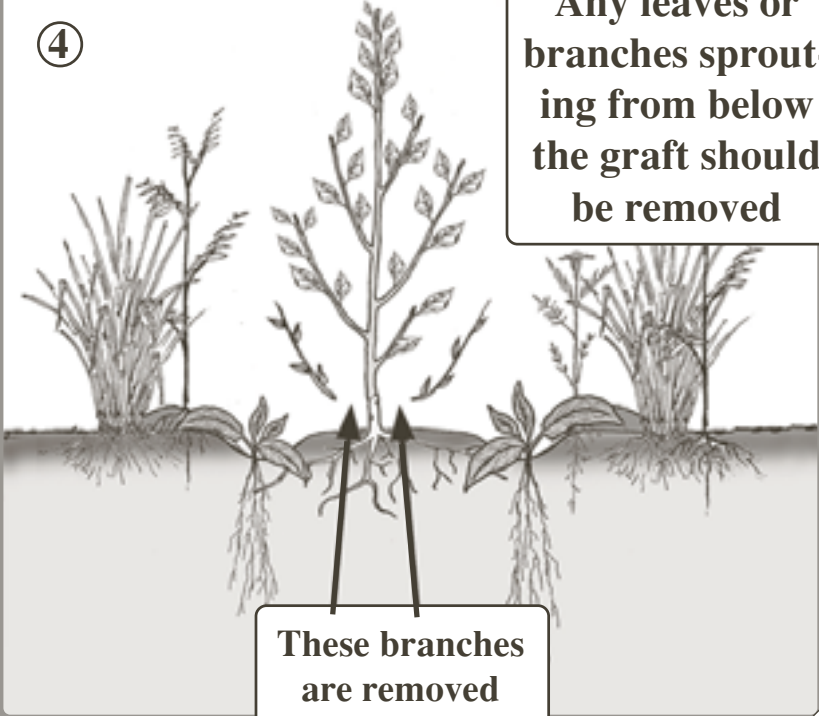
Around the fruit seedling, plant companion plants

③



Grafted seedlings should be given water and compost

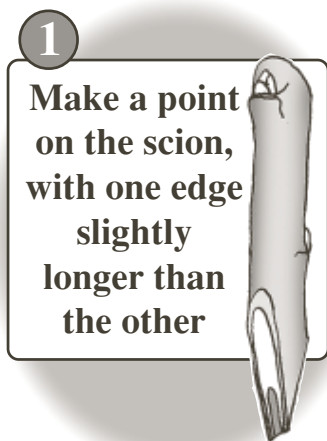
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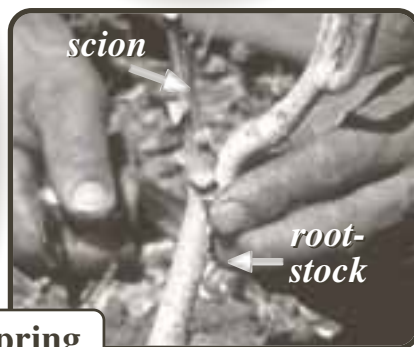
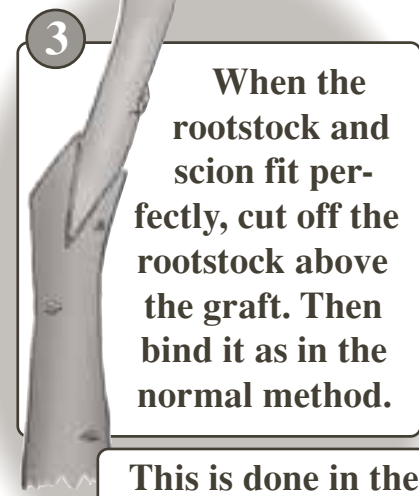
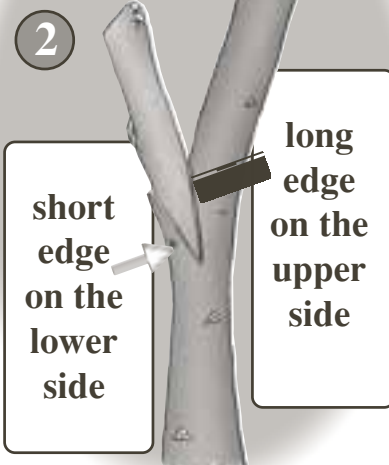
Any leaves or branches sprouting from below the graft should be removed

These branches are removed

The method for grafting walnut is slightly different to that given above. Let's see :



How the scion is joined onto the rootstock



The skin of the sisal (*Agave*) can be used to bind the graft. The skin is removed as shown here. More details about this are given in chapter 10 - *Fruit Introduction*



Farmers' Experience

Mr Shanta Bahadur Pun



Shanta Bahadur Pun

From Jajarkot district, Dhime - 7, Dharnasi village in Nepal, Mr Shanta Bahadur Pun has done plenty of grafting. Now let's read about his experiences.

“ After I learned grafting I practiced at home with a small local, wild peach nursery. Onto them I grafted improved peach, plum, apricot and almond. On such a small piece of land this gave such a high production, and you can literally eat the fruits of this success within 3 years! In the spring, shades over the beds are very important - this stops the hot sun from drying out the newly grafted seedlings. Water needs to be given carefully, at ground level. If you water from above, water can get inside and ruin the graft, and it can also shake the seedlings and so break the graft. The cutting tools need to be sharp and clean - like in any operation. I've succeeded using just the local *ashi* (hook), I don't need a posh grafting knife. At first the other farmers didn't believe that it would work. I grafted plants on my own farm, and sold them. Then they believed me. Nowadays all the farmers have small or large nurseries on their land. ”





Read On !



Subjects Related to Grafting

This book provides enough information for you to be able to do your own grafting on fruit trees. However, this information is also linked to other methods. For extra benefits let's read, learn and practice from other related chapters.



Fruit Nursery chapter

How to grow root stock from local wild fruit seed for grafting and budding on your own land.



Stone Grafting, Budding, Top Grafting and Air Layering chapters

Information about various simple methods of growing improved fruit varieties at home for planting on the farm are given in these chapters.



Fruit Tree Planting chapter

After raising good seedlings in the fruit nursery, if they're not planted well all the work can go to waste. Information is given in this chapter.



Integrated Fruit Orchard chapter

Information on how to plant fruit trees with various other multi-purpose trees to give more and quicker benefits for less work is given in this chapter.

