



What is Top Grafting ?



Many people would like to plant fruit trees, but often can't find good types. Sometimes the seedlings may cost too much, if you have limited income. But difficulty in finding good fruit trees shouldn't stop you trying to get them - the solution to the problem can be found. Raising rootstock seedlings in the nursery may take 2-3 years. After grafting, it will take a few more years before they bear fruit. So let's learn an even easier way to grow grafted fruit trees. This is called **Top Grafting** (or *top working*).

Top grafting is a method of grafting cuttings (scion) from improved fruit trees onto appropriate types of wild trees which are already growing in the fields and forests, without needing a nursery. This method is very cheap and easy, and produces good quality fruit trees which give fruit quickly.



*Pear, top grafted
onto a wild pear tree*



Why do Top Grafting ?

- You can grow fruit trees on your own land
- You don't have to make a nursery
- Many types of less useful wild fruit species can be made into improved varieties
- Trees will fruit sooner and give more fruit than otherwise
- Waste resources can be made into useful ones;
- Fruit trees can be grown easily in the forest



You can eat the fruits of your labour with fruit trees

How to do Top Grafting ?

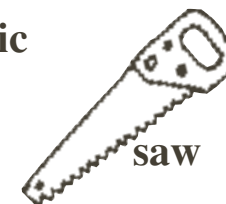
Materials Needed to do Top Grafting



rootstock



plastic



saw

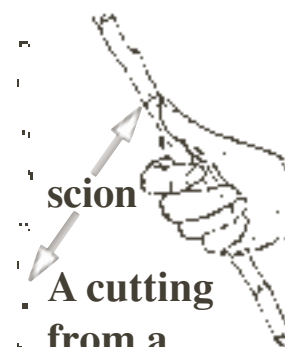
Healthy, disease free, wild fruit trees are called *rootstock*.



sharp tools



secateurs



scion

A cutting from a good fruiting tree is called a *scion*.



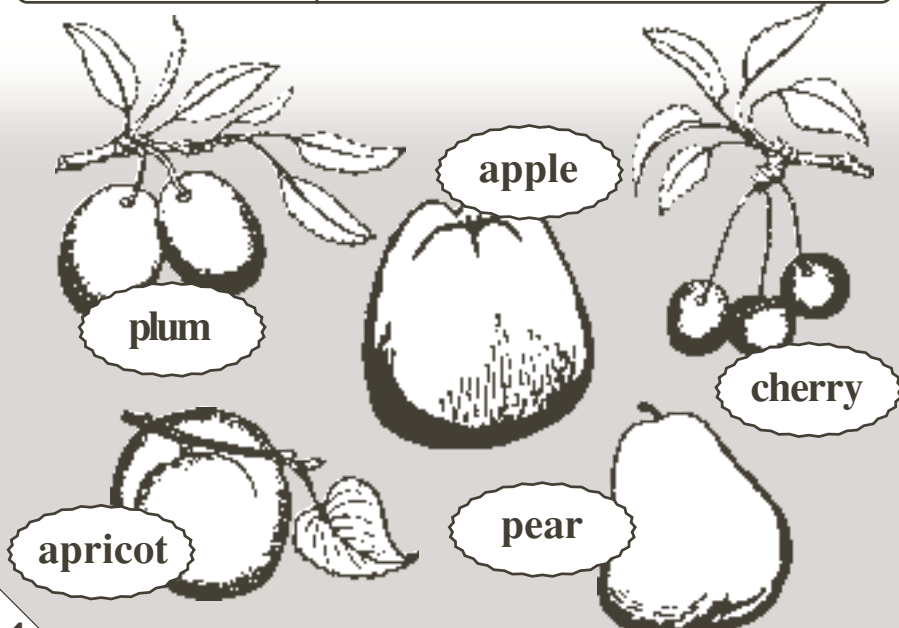
knife



The methods of top grafting are very similar to that of grafting. But while grafting is normally done in a special fruit nursery, top grafting can be done directly on the farmland or in the forest, wherever the appropriate wild fruit trees are found.

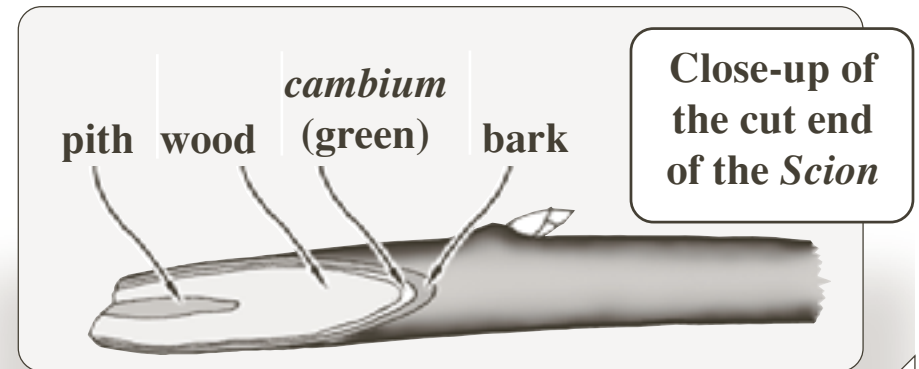
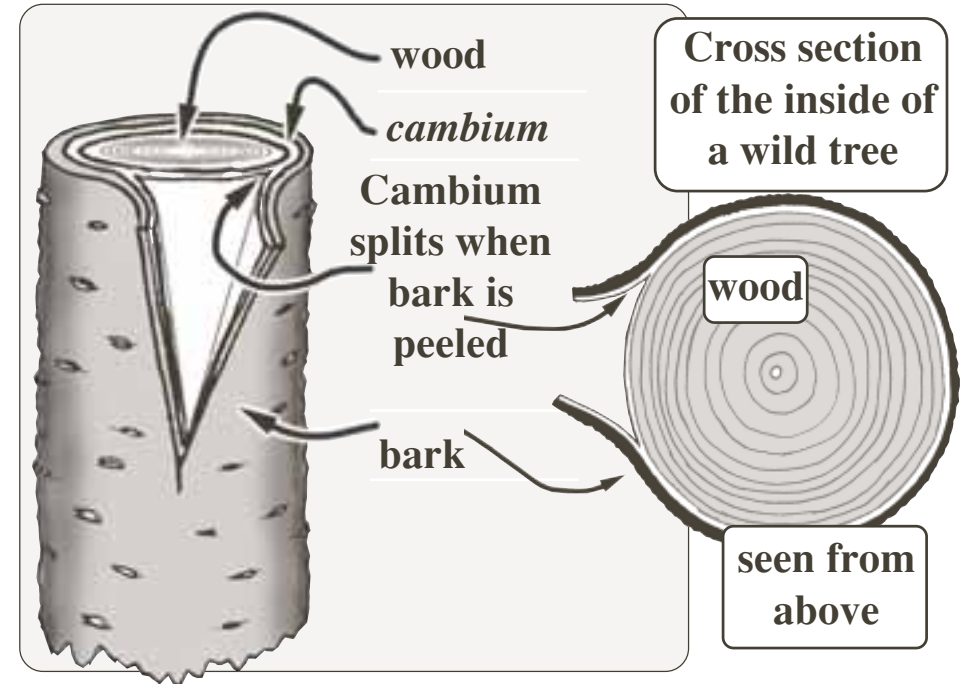
Which types can you top graft onto ?

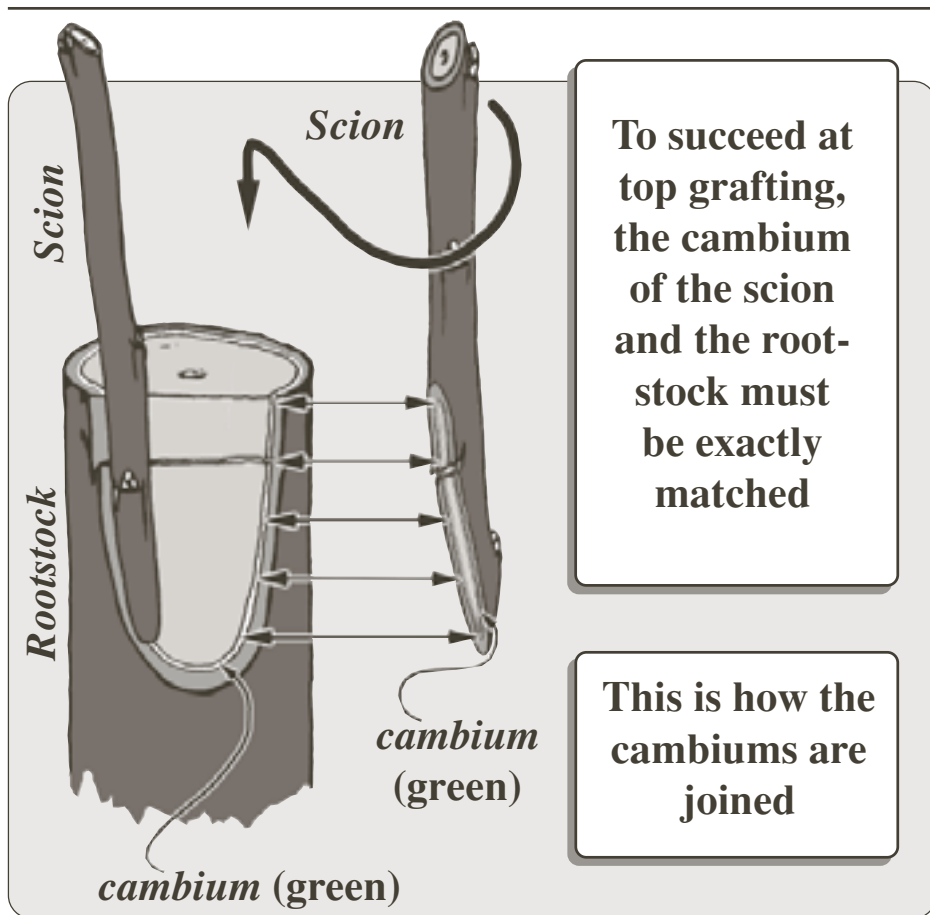
Local Type	What to graft
Local peach	peach, plum, apricot, almond
Wild pear	pear
Wild apple (crabapple)	apple
Wild cherry	cherry



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*.





Where to Top Graft ?

On farmland, grazing land, or in the forest, wherever there are suitable wild fruit trees, such as wild peach, wild pear, wild apricot, etc.

When to Top Graft ?

Top grafting is usually done when trees have lost their leaves, in the winter. In lower, warmer places this may be in January (Northern Hemisphere). In higher, colder places this may be February or March. It is best to top graft about 2-3 weeks before new leaves sprout on the trees.

Top Grafting Method

1. Selecting and preparing the rootstock

- Top grafting can be done on any appropriate local wild fruit tree. The tree should be strong, healthy and free of disease.
- After selecting the tree to graft onto, clear away brush and weeds from around the base, and cut off any small branches growing from the base.



- Cut down the tree anywhere between 4 inches up to 3 feet high above the ground, according to need and the shape of the land.
- The cut should be straight and clean.



2. Choosing and selecting the scion

The scion is selected from a good fruiting tree. The scion is about pencil thickness, or the thickness of your little finger.

3. Grafting the scion

There are 3 ways to graft shown in this chapter. They are shown with photos on the following pages.



4. Binding the graft

Plastic is used to bind the scion to the rootstock so air and water can't get into the graft. If a very large rootstock is used, a separate piece of plastic is needed to cover the cut section while the scion is bound. This is shown on page 11, photos 6 and 7.



Let's see the 3 methods of top grafting

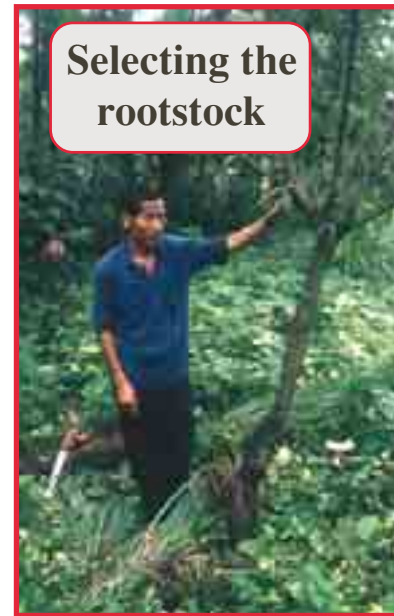


On the next 7 pages, 3 methods of top grafting are shown. The first method is called *bark top grafting*, and is on the first 4 pages. After this, the second method is called *tongue top grafting*, and is shown on 1 page. The third method is called *split top grafting* and this is shown on 2 pages.

Let's See

how to do Top Grafting

Selecting the rootstock



Cutting the rootstock



Method 1. Bark Top Grafting

The cut
section is
cleaned

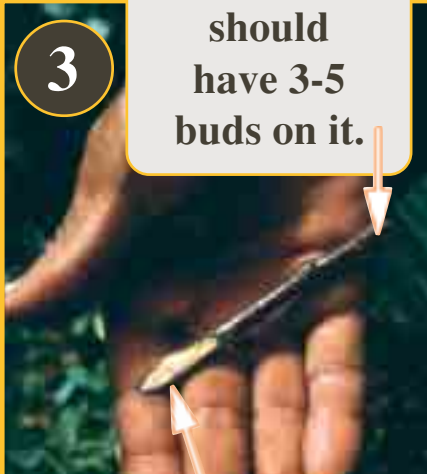
1





2

From the top, make a 1-2 inch long vertical cut in the bark.



3

The scion should have 3-5 buds on it.



4

Make a 1-2 inch slanting cut on the lower end of the scion

Insert the cut end of the scion into the bark through the vertical cut on the rootstock.



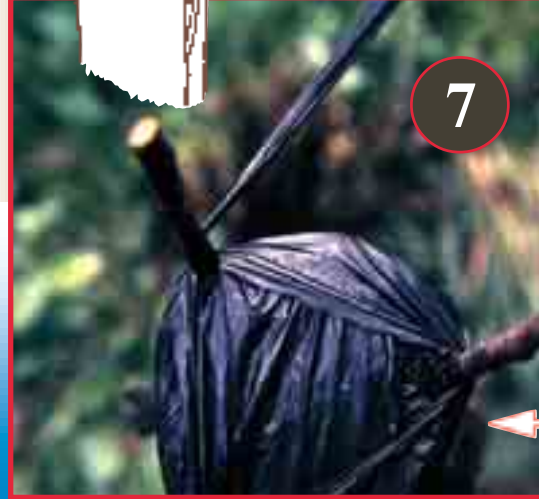
5

On a big rootstock, 2, 3 or more scion can be grafted.



6

Spread a piece of plastic over the top, and bind the scion onto the rootstock with another piece.



7

Bind tight so air and water cannot get in.



8

Finally put another piece of plastic over the top, and bind this on as well.

This shows where care is needed to bind well

Now, grafting work is finished on this tree.



9

When the rootstock is small, as here, only one scion should be grafted.



Method 2. Tongue Top Grafting

1 **rootstock**

scion

tongue

2

The *cambium* layer under the bark of the rootstock and scion should be exactly aligned (see p. 5,6)

3

Bind the graft with plastic, as in the other methods.

The cut on the rootstock and the scion are both slanting and an inch long. In the centre of each cut edge, make a small nick (tongue). These 2 nicks will insert into each other to hold the graft.

Method 3. Cleft Top Grafting



1



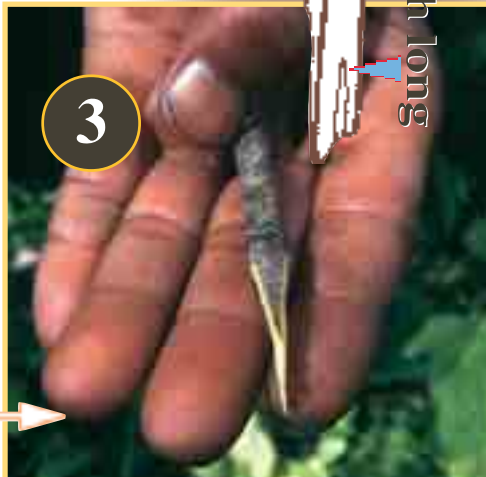
Make a cleft in the middle of the cut stem.

2



Place a sharp tool in the cleft, taking care not to split the stem.

3



the cut is 1 inch long

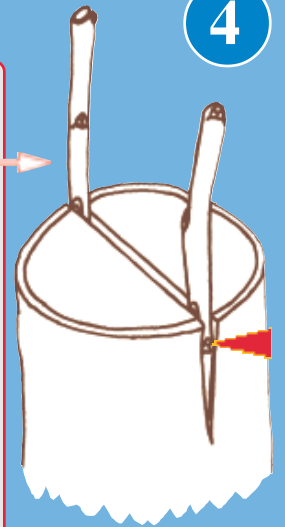
Make an inch-long cut on both sides of the scion.

4



Insert the sharpened scion into the cleft. The cambium of the root stock and scion must be exactly matched.

4



Finished top grafting

5



Bind the graft with plastic, as in the other methods.



After Top Grafting is successful



An improved pear grafted onto a wild pear rootstock has sprouted well. After 4 months, the plastic is removed. The seedling is protected from livestock.



Apricot, 2 years after it was grafted onto a local peach

Maintenance

How to maintain a top grafted seedling

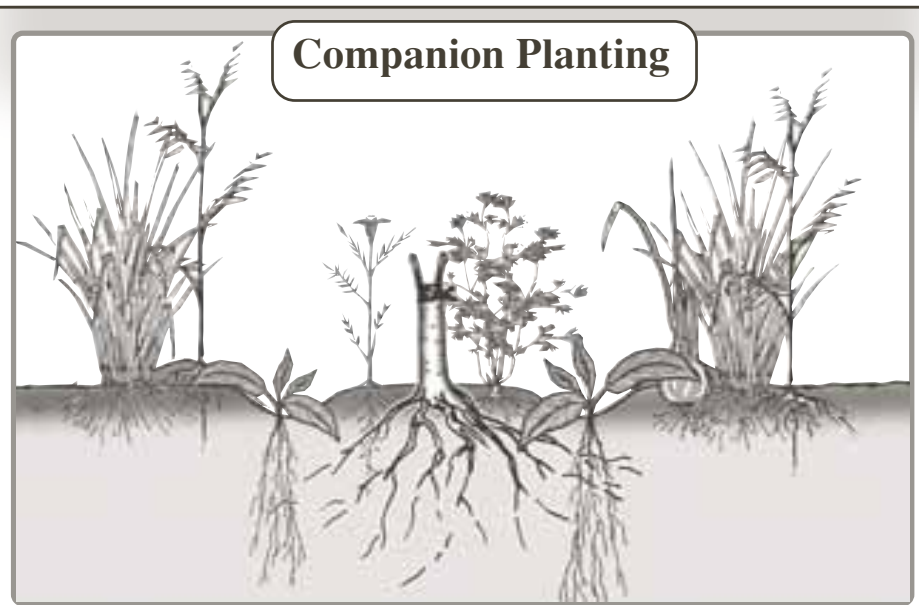
Aftercare for the grafted tree

- Protect the grafted tree from livestock
- Make a round trench around the plant, and use this to give water and compost. Water as necessary, whenever possible
- Mulch thickly around the stem
- Plant companion plants around the tree
- Pinch or cut off any branches that sprout below the grafted branch

A grafted fruit tree orchard in Jajarkot, Nepal



Here, vegetables are grown under the fruit trees.



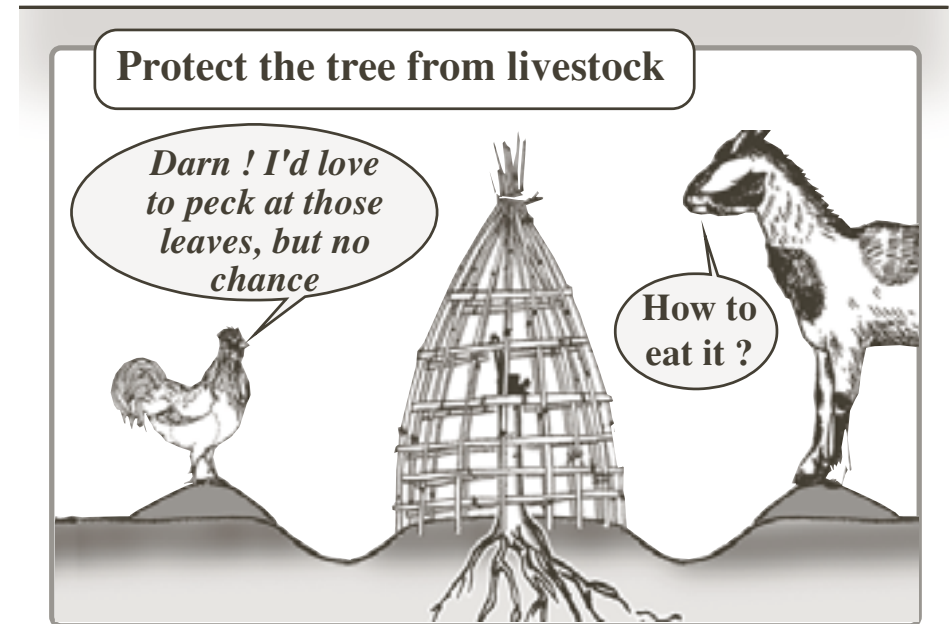
Various plants, such as garlic, onion, marigold, basil, mint, lemon grass, comfrey, coriander, fennel, dill and worm-wood can be planted around the fruit tree, which help it to grow well and give better production.

Benefits of Companion Planting

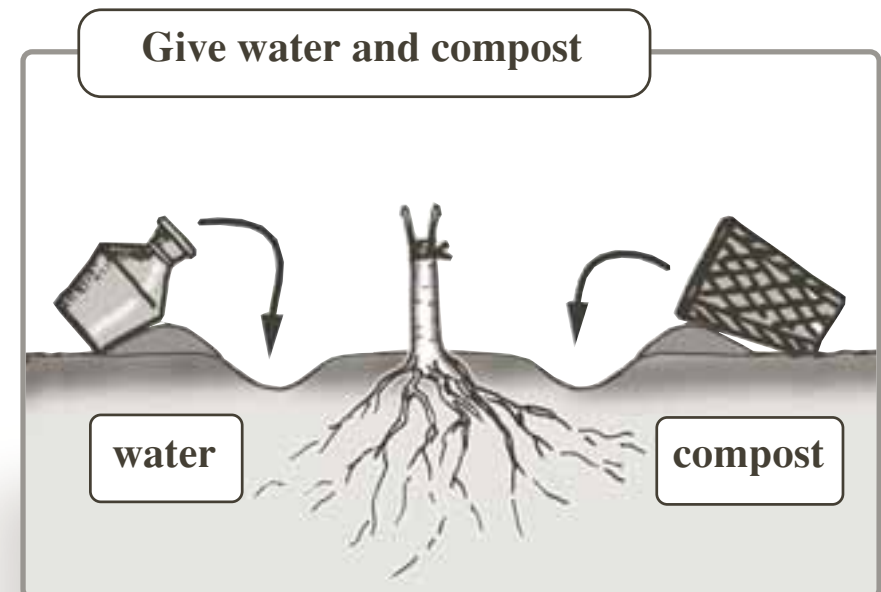
- Companion plants help to protect from harmful pests
- They attract beneficial insects
- They produce vegetables, herbs, nectar for bees, etc.
- They can be cut and used as a mulch
- They can be stacked densely in different layers
- They help to balance the environment
- They help to conserve soil moisture
- They prevent too many weeds from growing



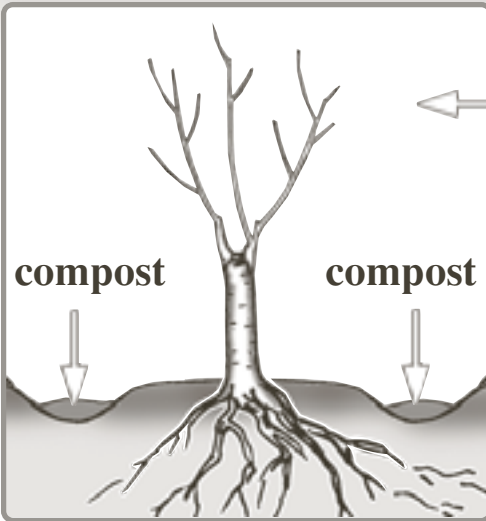
There is more information about this in the *Fruit Tree Planting Method* chapter



Make a small trench around the grafted tree. Use this to give water and compost as needed.

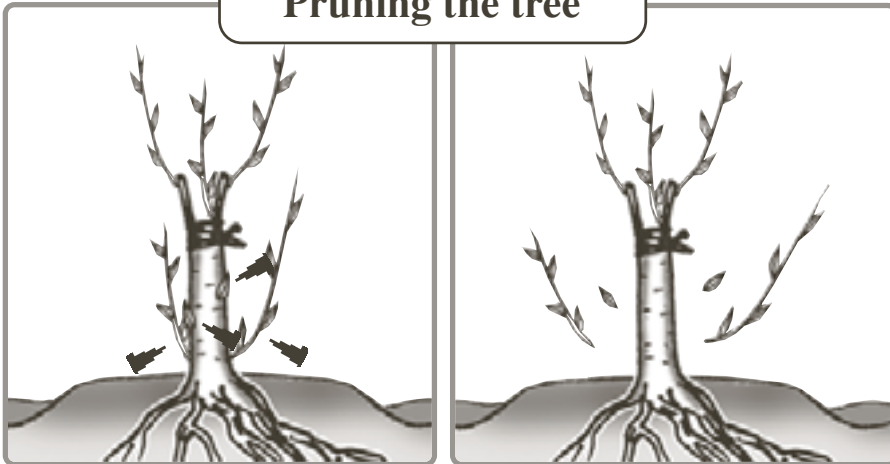


Maintenance needed each year



Now your fruit tree can grow well. To help it more, prune it once a year in the winter. Give it a basket of compost at the same time.

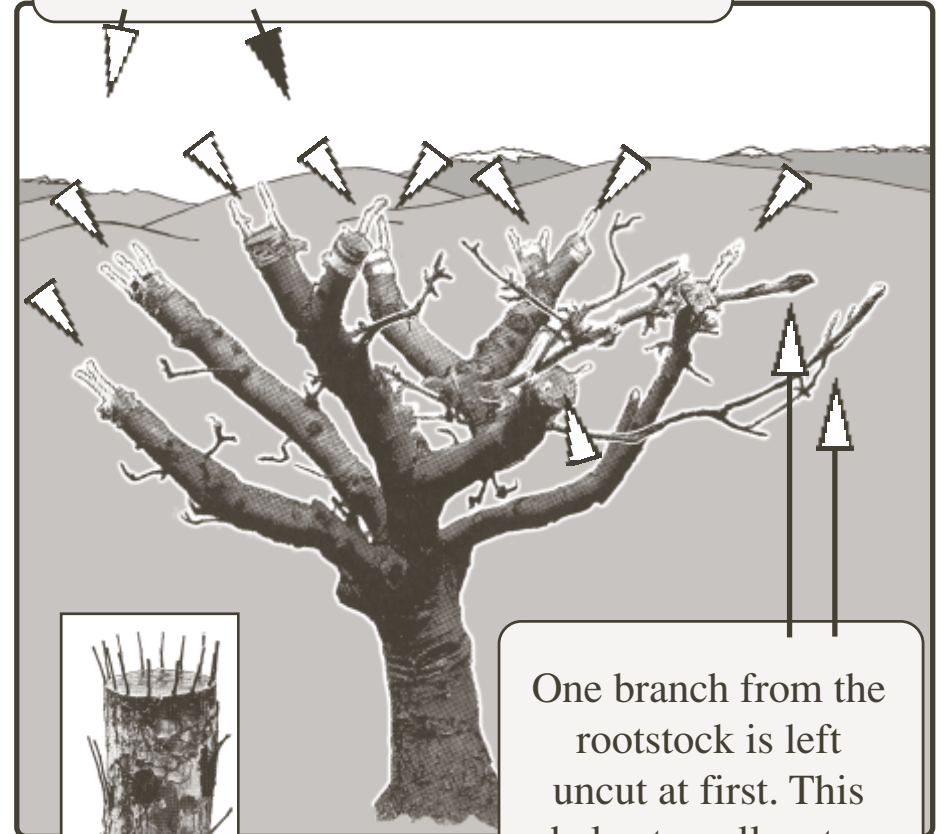
Pruning the tree



Remove any branches that sprout from the rootstock. More information about pruning is given in the *Fruit Tree Planting* chapter.

On a big tree, many scions can be grafted

Top grafted branches are shown



Many scions can be grafted onto a trunk in this way.

One branch from the rootstock is left uncut at first. This helps to pull water and nutrients from the roots for the new grafts. After the grafts have sprouted well, this branch can be cut off.

Farmers' Experience

Mr Tek Bahadur Khadka

From Jajarkot district, Khalanga -5, Pokhora village in Nepal, Mr Tek Bahadur Khadka has done plenty of top grafting. Now let's read about his experiences.



Tek Bahadur Khadka

“ I work for the Homestead Programme (JPP) in 6 VDCs of Jajarkot district. At first I didn't think this method would work, but after training and starting work, I like it a lot. I now teach this in the villages. I started by top grafting pear onto the wild pear that grows here. At first we used to cut these wild pear down as we thought they were useless. Now we top graft them and have made a fruiting orchard out of the forest. Before, you'd see just a few pear trees in the village. Now there are hundreds of trees, and everyone knows how to do top grafting - even in places where I've never been to teach. And it turns the wild pear into a useful tree. You don't have to buy fruit seedlings, and they fruit quickly. Everyone likes the method in the villages, it's so easy. You don't need any strange tools, and can do it in your own village area. ”

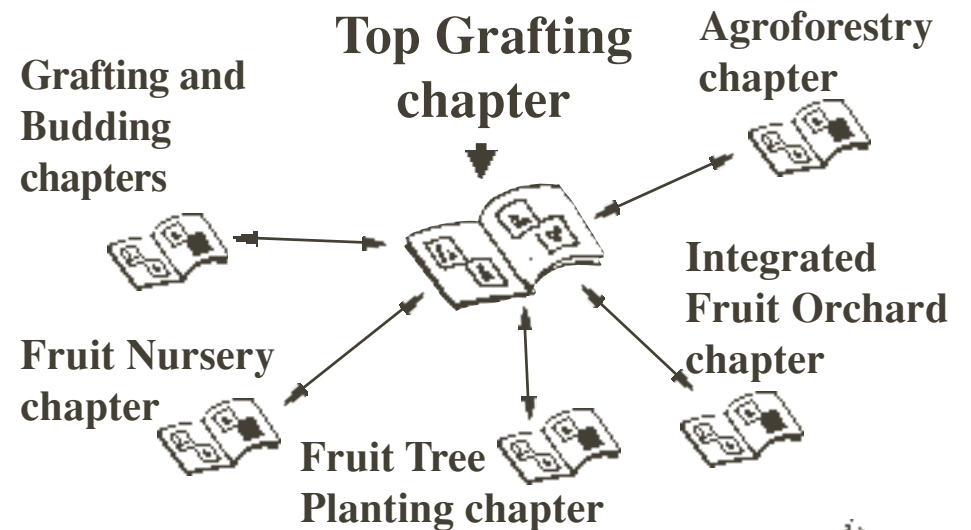


Read On !



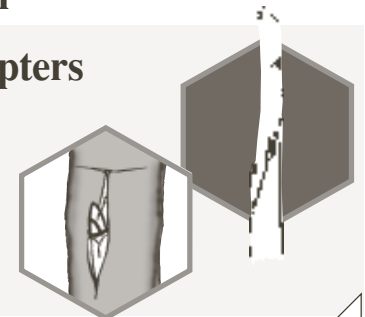
Subjects Related to Top Grafting

This book provides enough information for you to be able to do your own top 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.



Grafting and Budding chapters

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



Fruit Nursery chapter

In this chapter learn how to make a nursery and grow your own fruit rootstock at home for grafting and budding.



Integrated Fruit Orchard chapter

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



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 about fruit tree planting is given in this chapter.



Agroforestry chapter

Planting trees on farmland can bring farmers many benefits. But you can't plant any type of tree, nor anywhere. This chapter gives information on how to plant trees without affecting farm yield.

