



## Pathfinder Honour: Trainer's Notes

# Fruit Growing



### Instructions to Trainers / Instructors of this Honour

Thankyou for being involved with this Honour. These notes have been developed to assist in teaching / instructing this honour. We recognise that there is much more information available and we are grateful that you should share your expertise.

Please remember that Honours are designed to develop our Pathfinders in many ways; their interests, their knowledge and their relationship with their Saviour and Creator. Your enthusiasm and creativity will have a huge impact on those doing the honour.

To complete an Honour, the following (where applicable) must be completed satisfactorily:

- Physical and Practical Requirements.
- Honour Workbook.
- Honour Assessment Sheet. *(On SPD Honour Website but Leader's level access is required)*

### Additional Reference Material

Refer to Public Libraries, Government agencies etc

### Acknowledgements

These notes are based on Wikibooks at the following website:

[http://en.wikibooks.org/wiki/Adventist\\_Youth\\_Honors\\_Answer\\_Book/Outdoor\\_Industries/Fruit\\_Growing](http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Outdoor_Industries/Fruit_Growing)

“Note: Please be aware that material on any Wikibooks website is beyond the control of the SPD”.

# Fruit Growing Honour

## **REQUIREMENT 1. Why are fruit trees grafted?**

Grafting is a method of plant propagation widely used in horticulture, where the tissues of one plant are encouraged to fuse with those of another. It is most commonly used for the propagation of trees and shrubs grown commercially.

In most cases, one plant is selected for its roots, and this is called the stock or rootstock. The other plant is selected for its stems, leaves, flowers, or fruits and is called the scion.

The reasons for grafting are as follows:

- To induce dwarfing or cold tolerance or other characteristics to the scion. Because the scion is difficult to propagate vegetatively by other means, such as by cuttings. In this case, cuttings of an easily rooted plant are used to provide a rootstock. In some cases, the scion may be easily propagated, but grafting may still be used because it is commercially the most cost-effective way of raising a particular type of plant.
- To speed maturity of hybrids in fruit tree breeding programs. Hybrid seedlings may take ten or more years to flower and fruit on their own roots. Grafting can reduce the time to flowering and shorten the breeding program.
- To provide pollenizers. For example, in tightly planted or badly planned apple orchards of a single variety, limbs of crab apple may be grafted at regularly spaced intervals onto trees down rows, say every fourth tree. This takes care of pollen needs at blossom time, yet does not confuse pickers who might otherwise mix varieties while harvesting, as the mature crab apples are so distinct from other apple varieties.
- To change the cultivar in a fruit orchard to a more profitable cultivar, called topworking. It may be faster to graft a new cultivar onto existing limbs of established trees than to replant an entire orchard.

## **REQUIREMENT 2. What does hardiness mean?**

Hardiness determines the extent to which a plant or tree can tolerate cold or heat. Normally this is measured in cold such as "plant hardiness to -2 degrees." This means that below -2 degrees Centigrade, the plant will begin to be effected by the cold, starting with freezing of leaves and or fruit.

## **REQUIREMENT 3 What site and soil conditions are required to grow 3 of the following: Apples; Peaches; Pears; Plums; Cherries; Oranges or an equivalent choices**

All of these trees require full sun and well-drained, deeply fertile soil. The hardiness zones and spacing vary depending on the variety of tree. They all require a soil pH between 6.0 and 6.5 except the orange tree which requires a lower pH.

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## **REQUIREMENT 4. What is a dwarf fruit tree, and how is it dwarfed?**

In horticulture dwarfing is considered a desirable characteristic in modern orchards, where genetic dwarfs may be selected and propagated, or more often, scions are grafted on to dwarfing rootstocks. Almost all modern apples in commercial use are propagated as dwarf or semi-dwarf trees for ease of picking and spraying, and higher productivity per unit of land.

Dwarf trees provide more fruit per unit of land, higher quality fruit, and reduce the danger of accidents by harvest crews working on ladders.

## **REQUIREMENT 5. Plant at least two fruit trees and train them by pruning for at least two seasons, or train and prune an existing tree. With supervision fertilize and spray as needed for one growing season. Show an example of harvested fruit to your examiner.**

### **Planting**

Fruit trees need a lot of sun, so select a place where it will get plenty of light. Limit the tree's roots exposure to sunlight by leaving them covered until just before you set the stock in the ground. Dig a hole deep enough so that when the stock is set into it, it will grow at the same depth as when it was in the nursery. Loosen the soil all around the roots, and make sure the hole is wide enough to not crowd the roots. Trim off any damaged roots, and then set it in the hole. Add several inches of soil and lightly tamp it to remove any air pockets and then water it. Add more soil, repeating the light tamping and watering until you have covered the roots to their proper depth.

Water the tree frequently, especially during its first year. It is also a good idea to add a layer of mulch around the tree to help it retain water. Monitor the tree, as it will settle into the ground over time. Make sure that the graft point between the root stock and the scion remains at least 3 inches (7.5 cm) above ground, or the scion will form its own roots.

### **Pruning**

In early spring, prune any branches that touch one another. This allows light to penetrate to the center of the tree and will increase its yield. You will, of course, only need to prune one of any two branches that cross. Prune any injured branches, and leave any short branches that are growing from the main trunk (these bear fruit first). In the tree's first five years, prune sparingly, only removing those branches that compete with the branches you want to keep. After the tree is five years old, prune it every year in the late winter. Do not allow crowding. When pruning, always cut the branch off even with its host limb (or trunk). Do not leave stubs.

### **Fertilizing**

Fruit trees should be fertilized in early spring before they bud or sprout leaves. If the soil pH is above 7, use a 21-0-0 fertilizer or ammonium sulfate. If the soil pH is below 7, use a 15-5-10 fertilizer. A general rule of thumb is to use one pound (approx 500 grams) of fertilizer for every inch (approx 25mm) of trunk diameter. Fertilizer can be spread on the ground around the tree and scratched in with a rake. The fertilizer should be laid down in a ring extending out so that it covers all the ground beneath the tree's branches. The inner portion of the ring should extend to within about one foot (30 cm) of the trunk.

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## Spraying

Spray trees with fruit tree spray when the flower petals begin to fall off and repeat every ten days until they are ready to harvest. Do not wait for insects to invade, but rather, keep them at bay before they get a foothold. In early spring while the tree is still dormant, you should spray it with dormant oil. Dormant oil is a highly refined petroleum product which is diluted with water prior to spraying. It suffocates scale insect, spider, and mite eggs that may have overwintered in the tree.

## REQUIREMENT 6. Answer the following questions?

### a. What is pollination?

For plants pollen is what causes reproduction. Some plants are either strictly male or strictly female while others have features of both sexes and can self pollinate successfully. Pollination is the transmission of pollen from one plant bud to another.

### b. What is a pollinator?

A pollinator is the object be it an insect, bug, animal or weather that transmits pollen from one plant to another. Bees are the most well known pollinators.

### c. Which trees need a pollinator?

Nut trees such as pecans and almonds require a pollinator, but most others can benefit from them as well

## REQUIREMENT 7. How are young trees protected from rodent damage

Rodents tend to feed on tree bark when other sources of food are exhausted or difficult to come by. Sometimes they will eat a band of bark encircling the trunk of the tree, and if this happens, the tree will die.

This can be prevented by wrapping wire mesh around the base of the tree. The mesh should have openings between an eighth and a quarter inch (3 - 6 mm). It should extend 30 inches (75 cm) above the ground, and 3 inches (7.5 cm) below the ground.

It also helps to pick up dropped fruit and mow around the trees during the summer, so that rodents are not attracted to the orchard.

## REQUIREMENT 8. Compare the qualities of flavour, texture, and appearance of two different varieties of the same fruit.

You can use any fruit for this, but it is probably easiest to find multiple varieties of apples. Apples are available in many countries all year round. If you are teaching this honour to a group, buy one apple per person, getting as many varieties as you can. Then cut each apple into slices, and place them on plates. Label each plate with the name of the apple variety it holds. Then have a taste testing party.