

# The Science behind Pruning Plants Successfully

## Introduction

The pruning of plants can appear to be a complex matter, however the understanding of important principles can very much assist with this important area of horticulture.

## Important pruning points

- 1) Large plants are often cut down to size in one single operation. This action is most likely to result in hormonal difficulties (remember hormones are vital in plant growth and development) and nutritional problems. If it is necessary to reduce in size a large shrub or tree, do consider feeding it in the previous season with a balanced fertiliser. A 'nutra ball' is very useful in this situation.
- 2) Pruning cuts are often recommended with a sloping cut. There are several observations with sloping cuts. The intention is that rain will run-off the sloping cut, however this will occur with a straight cut equally as well. The sloping cut often damages the cambium within the stem and therefore slows healing. It also is a larger surface area to lose water and be prone to infection.
- 3) Hedges - established hedges are very often made up of mature shrubs or even trees which are being cut to a specific size. We often forget that these plants are growing in the same soil for a very long period of time. The soil these plants are growing in very often becomes deficient in nutrients and which will result in weaker growth and disease resistance is Poor.  
It is therefore important to feed hedges at least once every two years with a balanced fertiliser. In Sandy soils feeding once a year is recommended.
- 4) Roots -it is important to note that the root pruning an established shrub/tree can lead to problems and is very often not recommended.  
Remember roots have important functions: Anchorage and water/nutrient absorption. Pruning roots can lead to the following problems.....

- a) Stability concerns.
- b) Die back on cut roots - remember it is the root tip area which contains the root hair, these absorb water and nutrients. Cutting off the root tip will ultimately kill the rest of the root.
- c) The root is connected to branches via internal transport systems (vascular tissues) cutting one root can lead to die back on branches which may not be required.

5) Buds - a bud is a condensed shoot which can develop sexually or asexually. Buds are important to consider with pruning for the following reasons..

- a) Terminal buds (this is very important)

The terminal bud will control the future growth of the shoot and will influence the development of the lateral buds.

The terminal bud will produce the hormone, Auxin, which travels internally down the stem and will prevent the lateral buds from developing. Therefore the terminal bud will grow and the lateral buds close to the terminal bud, are prevented from growing. This growth is called Apical Dominance.

It is important to note that the lateral buds are not destroyed they are just prevented from growing. Therefore to encourage bushy growth and to prevent apical dominance the terminal bud can be removed. Only a small section of the terminal shoot needs to be removed. Very often gardeners remove far too much material which results in future vigorous growth.

A key feature of buds is how they grow and develop and very importantly when they grow and develop. In basic terms buds develop about four months before they open, therefore if we need to influence the development of this bud is important to do so at the right time.

Examples:

- 6) Very often gardeners prune plants very hard, especially if the plant has outgrown its allocated space. An important point to remember, is that when plants are reduced in size there are fewer buds remaining on the plant. The root system is clearly not affected by this action and therefore will supply the same amount of nutrient but to fewer buds left on the plant. The result here is going to be very vigorous growth which may not be balanced hormonally and therefore will not produce good growth ie. flower production will be adversely affected.

A much more efficient way of dealing with vigorous growth is to remove the terminal bud and then wait for future lateral buds to develop which take the energy away from the single terminal bud growth. This is clearly recommending a two-stage approach in pruning vigorous plants, stage 1 remove the terminal bud, stage 2 allow the lateral buds to develop lower down on the plant; this can take up to three months after removing the terminal bud. Removal of the vigorous growth down to the lateral buds will result in smaller but balanced plants.

7) Very often a variegated shrub will produce a vigorous green shoot. It is very tempting to remove this green shoot with secateurs, however this action will result in future green shoots as they are always stronger than the variegated shoots. The most efficient way of overcoming these green shoots is to remove the terminal bud as soon as the green shoot is observed. Three months after doing this, it is possible to prune out the green shoot down to its origins - it should not come back as a green shoot again.

Explain:

8) Many shrubs will exhibit very vigorous individual shoots which are out of character with the rest of the plant. It is very tempting to prune these out, cutting hard back into the plant, however this is counter-productive and will lead to much more vigorous growth in the future. Removal of the vigorous terminal bud will immediately change (reduce) the vigour of the individual shoot. Lateral buds will develop shoots lower down on the plant which will take the energy away from the single vigorous shoot.

9) In the pruning of trees and shrubs there are important pruning groups which are based on the period the plant flowers, or on the growth characteristics of the plant.

Listed below are the main groups for pruning plants

a) Plants which should not be pruned on a regular basis. Clearly dead diseased and displaced growth should be removed, but mainly these plants should not receive regular pruning.

Examples:

b) Plants which flower very early in the season. In order to produce the flowers very early in the season, the plant must have made the flower buds in the previous year. Therefore it is important to prune these plants immediately after flowering in

order to allow growth to be made (in the same season) which will flower early in the next season. ie there is not enough time in the season of flower to make enough growth to produce future flowering wood, therefore it must have been made in the previous season.

Examples:

c) Plants which flower later in the season clearly will have time within the same season to make the growth for flowering. These plants therefore can be pruned in early spring, which will facilitate sufficient growth for flowering later in the season.

Examples:

10) Established hedges - the optimum time to complete annual clipping is between the 20th of July and the 20th of August. At this time the sex hormone is masking the growth hormone. The result of this hormonal activity is that growth will not occur for several months following the annual clipping. Note, the reason for the specific dates relate to light levels at the same period. Pruning to reduce the height and/or width of the hedge ie. Pruning into wood older than one year should only be undertaken in April or October. In this case the growth hormone is not masked by the sex hormone and therefore regrowth will be very efficient.

**It is however important to record two observations...**

a) A mature hedge which requires reducing in size is very often in a poor physical state especially with reference to nutrition; therefore feeding the plant in the season before pruning is very beneficial.

b) If April is selected for the pruning of the hedge, it is essential to complete a risk assessment in respect to birds nesting. It is illegal to disturb birds nesting at this time.

## **Review of key elements**

Can you answer the following questions?

- i) Why are hormones important in plant pruning?
- ii) Why is hard pruning with vigorous shrubs not beneficial?
- iii) Why is root pruning not recommended?
- iv) Why is a knowledge of plant buds very useful in the study of pruning?
- v) Why is plant nutrition important to consider when pruning established plants?