**Plums and their ilk**

**History**

Plum species are found throughout the temperate regions of the Northern hemisphere. Species/variety boundaries and history can be a bit bewildering and much of what follows will almost certainly change as a result of ongoing DNA investigations into their taxonomy.

There is a wide diversity of plum species in Europe and Asia and we will only consider the more widespread ones here.

*Prunus insititia* (Damson, Bullace, Mirabelle and St. Julien) is thought to have been in cultivation for 2000 years and fruit stones of this and *Prunus spinosa* (Sloe) have been found in several European Neolithic sites. This is a diverse species with many varieties. Hardier than *Prunus domestica,* it flowers earlier - from February (Mirabelles) to April. Bullaces are thorny with round dark blue fruit which ripen late and are usually cooked. Damsons probably originated in Damascus (Syria) more than 2000 years ago. Mirabelles are small (2cm) either yellow or red, extremely fragrant and often used for jam St.Julien is similar to a Damson but is more usually encountered nowadays as a rootstock.

The garden Plum/Greengage (*Prunus domestica*), with which we are all familiar, is thought to be a hybrid between *Prunus cerasifera* (the Cherry Plum or Myrobalan) and *P. spinosa*. It originated in either Southern Europe or Western Asia and is widespread in the Balkans and Mediterranean. It was being cultivated on a large scale by the Romans in Bosnia in c.300 AD and many hundreds of cultivars now exist.

*Prunus cerasifera* (the Cherry Plum or Myrobalan) originates from the Caucasus and Asia Minor. It makes a small tree (to 9m, though usually 4-8 m), it is very hardy and flowers early (March) and ripens early (July). It suckers freely. High yielding it has small, cherry-like fruit with thin skins. They can be red, yellow or black. It has a confusing series of synonyms – *P. domestica var. myrobalan, P. myrobalana, P. korolkowii* and *P. domestica var. cerasifera*.

*Prunus spinosa* (Sloe or Blackthorn) is the familiar ingredient for Sloe Gin but sweet cultivars have been selected particularly in Russia. In France the unripe fruit are apparently pickled! It has also been used as a rootstock for *Prunus domestica*.

**Rootstocks**

Myrobalans, Damsons, Bullaces, Mirabelles and St. Juliens are nearly always grown on their own roots or on St. Julien A.

Garden Plums can be found on Brompton, Myrobalan B, Pixy and St. Julien rootstocks amongst others. Rootstock incompatibility is an issue with some varieties.

Brompton is a semi-vigorous rootstock – 100% of standard. It is tolerant of heavy soils. It is very susceptible to silverleaf and susceptible to bacterial canker.

Myrobalan B gives a productive tree with good anchorage and few suckers; it induces slightly later ripening and has a wide compatibility except with greengages. It is a very vigorous rootstock – 125% of standard. It is very tolerant of alkaline soils. It is resistant to silverleaf and to bacterial canker.

Pixy is a dwarfing rootstock (50%) which promotes precociousness in the grafted variety which will fruit after 3 years. It also promotes early flowering (so beware of frost) and early fruiting. It has a small root system and therefore needs good soil and permanent staking. Unlike the other 3 rootstocks listed it will not tolerate waterlogging. Has a tendency to be thorny. It is very resistant to silverleaf and resistant to bacterial canker

St. Julien A (often abbreviated to SJA) is a semi-dwarfing rootstock of around 75-85% of standard. It promotes precociousness. It is susceptible to bacterial canker.

**Varieties**

 With around 600 named varieties the choice can be bewildering. Most varieties will do well in sunny situations with good soil as long as pollination is achieved. However in less than ideal situations the following may be helpful.

In frost pockets/at altitude choose a late flowering variety or one with frost resistant flowers– Belle de Louvain, Count Altham’s Gage, Czar, Early Laxton, Jefferson, Jubilee, Kirke’s Blue, Marjorie’s Seedling, Late Transparent Gage, Pershore Purple.

In shady or north facing locations, all cooking varieties will do well as will Belle de Louvain, Czar, Denniston’s Superb, Early Rivers, Early Transparent Gage, Jefferson, Oullin’s Golden Gage.

In cool summer areas go for Belle de Louvain, Czar, Early Laxton, Edda, Herman, Marjorie’s Seedling, Opal, Oullin’s Golden Gage, Pershore Purple, Reine Claude de Bavay or Warwickshire Drooper.

For disease resistance Blaisdon Red, Denniston’s Superb, Marjorie’s Seedling and Pershore Purple have good canker resistance and Blaisdon Red, Marjorie’s Seedling, Monarch and Pershore Purple have silverleaf resistance.

**Harvesting**

Myrobalans ripen in July and August, before most garden plums and will often hang on the tree to October. They can be harvested by shaking.

Garden plums and gages span a long season; it is possible to have ripe fruit from early July to late October. With plums, gages and damsons it may be worth thinning heavy crops to reduce the likelihood of branch breakage, alternatively branch props can be used. Fruit should be harvested when still firm and almost ripe. It will usually need two or three pickings. Yields are very variable and some varieties are notoriously fickle and shy bearing but varieties on St. Julien A can produce up to 50kg/year/tree when mature and standards on Brompton or Myrobalan up to 75kg.

**Cultivation**

Myrobalans, Damsons, Bullaces, Mirabelles and St. Juliens are usually self-fertile apart from the red cultivars which are usually not. They are pollinated by bees. They will tolerate a wide range of soil types from light through to heavy clays and tolerate a similar wide range of pH – 4.5 to 8.3. They are much hardier than plums and cope better with wet weather. Unlike plums they are usually untroubled by disease. Standard trees should be spaced at around 6m.

Plums and gages will succeed on slightly acid soils (ideally pH 6.0 to 5.5). A pH higher than 6.5 often causes lime-induced chlorosis with very few varieties able to cope; Pond’s Seedling being about the only one. Some such as Victoria are self-fertile; others are self-sterile – Coe’s Golden Drop for example. Some are described as partially self-fertile but this is a bit of a misnomer as without cross pollination they will only set 2-5% of their fruit. They should be treated as self-sterile. It goes without saying that the cross-pollinator should be in flower at the same time as the receiving variety; plum varieties span a flowering period from early April to early May and many varieties are only producing viable pollen for around a week so choice of partner can be crucial. Spacing varies from 6m for standards on Brompton and Myrobalan B through 3.5 to 4.5m for half-standards on St. Julien A to 2.5-3m for bushes on Pixy.

**Form and Pruning**

Correct formative pruning is vital as plums are very prone to branch failure under the weight of heavy crops or in windy weather. An even distribution of well-angled branches is crucially important and it is preferable for them to be disposed along a reasonably long section of trunk to prevent catastrophic failure if one mature branch does break away. Trees that succumb to silverleaf and/or bacterial canker often do so because the disease has entered through a branch failure wound. Formative pruning should be done in late spring to allow at least some strong vegetative growth to ensue but subsequent maintenance pruning should be done in the summer when the chance of disease infection is lowest. It may be advisable to paint wounds over 25mm with a formulation of *Trichoderma viride* to combat any silverleaf infection.

**Pests and Diseases**

**Bacterial canker** (*Pseudomonas syringae pv. morsprunorum and P. syringae pv. syringe*)

**Cause**

A bacterial disease of *Prunus* species (stone fruits) that is most common on cherries and plums. The disease weakens the plant and can cause extensive die back if not treated. Plants growing in poorly drained soil are more susceptible to this disease. The disease infects the leaves in summer, gaining entry through stomata. During autumn, the disease can enter the scars left by the falling leaves. It will also enter the bark through any natural bark openings, injuries or wounds made during pruning. These give rise to small cankers in which the bacteria survive the winter.

**Symptoms**

The earliest symptoms are brown spots, often ringed with a yellow halo, that appear on the leaves in summer. These dry and turn into holes, and cause premature leaf fall. Shallow hollows that exude gum may also appear on the branches. The main other symptom is cankers. These may appear on twigs, branches and the trunk. Inside the cankered areas, bark becomes darker, looks wet and shrivels. These can kill the branch completely, causing the tree to die back. They can kill the tree if they completely girdle the stem.

**Treatment**

The only treatment is to prune off affected growth. Trees often recover and become immune. Pruning should be carried out as for Silver leaf (see below), and tools should be wiped with disinfectant between each cut. Spraying trees during autumn with a fungicide is claimed to reduce the chances of infection but I have seen no peer reviewed studies to confirm this. Certain rootstocks such as Myrobalan B, Pixie and F.12.1 cherry rootstocks may have some resistance to bacterial canker. Some varieties e.g. Victoria are very prone to infection whereas others such as Denniston’s Superb and Marjorie’s Seedling are very resistant.

**Silver leaf fungus (*Chondrostereum purpureum*)**

**Cause**

This is a fungus that is active in the living sapwood (rather than the dead heartwood) of trees. Silver leaf can affect a wide range of fruit and ornamental tree species, including most species of the rose family *Rosaceae*, particularly the genus *Prunus*. In the UK it usually only affects plums and, to a lesser extent, damsons and cherries. Victoria plum is particularly susceptible to infection. Fruiting fungal brackets form on dead, previously infected branches during autumn. Spores released from these are carried in the air, infecting new trees by entering living tissue through fresh wounds caused by pruning, rubbing or other damage. They produce fungal threads which grow through the living wood, producing toxins in the sap and killing the tissues. Large wounds (>50 mm diameter) are more susceptible to silver leaf infection, due to a reduction in the inhibitory influence of the cambial layer and their greater surface area. Rainfall and humidity determine the number of spores released from the fruit bodies. Large numbers of spores are released on days when it is raining, foggy or calm and there is high humidity. Spore numbers drop rapidly on sunny days with low humidity and strong winds. Temperature also has an important influence on the numbers of spores released; this peaks at around 18 deg. C and then declines rapidly above 20 deg. C. The life cycle of the silver leaf fungus is particularly adapted to infect trees during winter. Rainfall and relative humidity are higher than at other times of the year, the reduced evaporation enabling fruit bodies to remain hydrated longer. Host trees are dormant and more susceptible to infection, and conditions are more likely to be suitable for germination. By late spring/summer the aging fruit bodies produce fewer spores and the weather is less favourable for sustained spore production.

**Symptoms**

The leaves develop a silvery sheen, caused by air in the tissues. The foliage and shoots then discolour and wither, dying off progressively as the disease works back along the branch. As infected branches thicken they develop a purplish stain in the centre which can be seen when cut across. Sometimes the tree may bear flat, small, purple or brown fungal bracket growths with a wavy margin and a whitish woolly upper surface, produced on dead, previously infected wood. Other symptoms can include reduced leaf area, reduced root growth and smaller and fewer fruit. Do not confuse with False Silver Leaf where leaves also turn silvery but there is little die back and no staining. False Silver Leaf is caused by overfeeding and irregular water supply.

**Treatment**

Silver leaf is incurable, but trees with only mild infections may recover from it. Diseased wood should be pruned away; cutting back to a point 10-15 cm after an unstained cross- section is reached. The further back into a tree the fungus has spread the less chance the tree has of recovering. If Silver Leaf has gone unnoticed until it has reached the main trunk then it may be necessary to remove the tree completely. The roots can either be removed or covered with soil to prevent the fruiting bodies developing. As silver leaf only spreads from spores produced by the fruiting bodies there is no chance of infection from the silvered leaves and transfer by secateurs, pruning shears and root grafts is not significant. Similarly, trees and branches killed by silver leaf do not carry infective material themselves. They may develop fruiting fungal brackets at a later date however, and for this reason may be removed from the orchard and burnt. Spores are windborne and can travel considerable distances. The risks of infection can be reduced but not eliminated by the removal of dead infected trees. As the spores only affect live wood, fallen and standing dead wood that has not been killed by silverleaf cannot subsequently become infected, and can therefore be safely left in the orchard. Regular maintenance pruning, maintaining an open structure and removing damaged wood, will minimise the chances of infection occurring. Pruning should be confined to small branches where possible. Pruning should be carried out in the summer between May and early September, when there are fewer fungal spores present in the air and the tree is actively growing. This allows the rising sap to 'flush out' the wound which will also heal more quickly, minimising the risk of pathogens entering and causing disease. To minimise the likelihood of wound infection, pruning should be undertaken on warm, sunny days when relative humidity is below 70% and there has been no rainfall for 24 hours. Strong, drying winds during pruning are a bonus. As a general rule, do not prune on days that are not suitable for hanging washing out to dry! Isolates of the fungi *Trichoderma viride*, sold as Binab T, have been used as a biological control for silver leaf in fruit trees and ornamental trees.

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