PLANTS FOR YOUR FOOD FOREST

500 PLANTS FOR TEMPERATE FOOD FORESTS AND PERMACULTURE GARDENS

We are very grateful to Sebastian and Annette for their generous support for the production of this book.

First Edition
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The PFAF website and Plants Database are at pfaf.org
Book design and plant text: Trevor Pemberton
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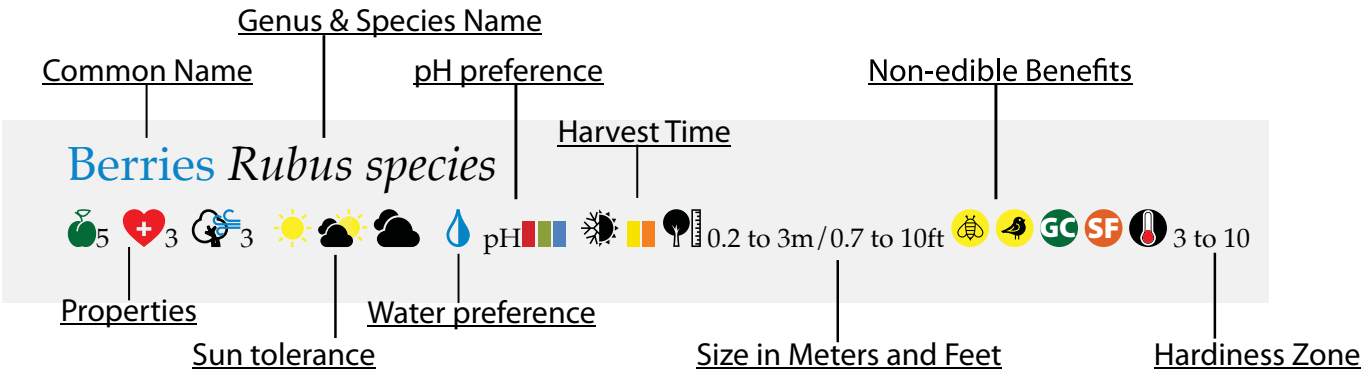
How to use this book

The featured plants are arranged in sections corresponding to Forest Layer: Shrubs, Groundcover Shrubs, Trees, Herbaceous Plants, Herbaceous Groundcover Plants, Running Bamboos, Bulbs, Climbers. Further details of all the plants described here are available from the PFAF Plants Database, which can be accessed free of charge at pfaf.org. At the back of each section, there are additional edible and support plants. Additional edible plants have either already been featured in our other books or have a slightly lower edible rating than the main plant choices. Support plants are plants for a food forest with other non-edible benefits that help the ecosystem to thrive. They might have other design benefits, act as nitrogen fixers or dynamic accumulators, repel or distract pest species, or attract a range of beneficial wildlife. Each section ends with a quick-reference table showing the edible plant parts and their use. At the back of the book is a quick-reference plant matrix featuring all 500 plants included in the book with additional information on the growth rate, prefered soil type and drainage.

Plant Key



Plant Symbols

Edibility Rating Medicinal Rating Other Uses. **Rating** 1=Low (minor uses) to 5=High (very useful).

Sun Semi-Shade Shade Water Plant Wet Soil Moist Soil Dry Soil.

pH Mildly Acid Garden Mildly Alkaline. **Harvest Time:** Winter Spring Summer Autumn.

Size Meter / Feet Nectary Wildlife Invertebrate Shelter Pest Confuser (smell)

N Nitrogen Fixer A Dymanic Accumulator SF Self-Fertile GC Groundcover Coppice

USDA Hardiness Zone

The USDA Hardiness Scale defines 13 zones by annual extreme minimum temperature. For example, a plant may be described as "hardy to zone 10": this means that the plant can withstand a minimum temperature of 30 °F (−1.1 °C) to 40 °F (4.4 °C).

See https://en.wikipedia.org/wiki/Hardiness_zone

Temp (F)	Zone	Temp (C)
-60 to -50	1	-51.1 to -45.6
-50 to -40	2	-45.6 to -40
-40 to -30	3	-40 to -34.4
-30 to -20	4	-34.4 to -28.9
-20 to -10	5	-28.9 to -23.3
-10 to 0	6	-23.3 to -17.8
0 to 10	7	-17.8 to -12.2
10 to 20	8	-12.2 to -6.7
20 to 30	9	-6.7 to -1.1
30 to 40	10	-1.1 to 4.4
40 to 50	11	4.4 to 10
50 to 60	12	10 to 15.6
60 to 70	13	15.6 to 21.1

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Images supplied by Botanical Image at edibleplants.org

General Disclaimer

Each entry includes a 'medicinal rating'; for details see corresponding page on the pfaf.org database for information on the potential medicinal uses of the various products that can be obtained from the plant. We do not attempt to define or identify preparations suitable for treating each ailment mentioned.

To the best of our knowledge all the information contained herein is accurate. But of course we cannot guarantee that everyone will react positively to all plants described as edible in this book or to other plant uses suggested herein.

It is commonly known that many people suffer allergic reactions to conventional foods and products. Even amongst the more commonly eaten fruits, for example, there are plenty of instances where people react badly to them.

We strongly recommend the following precautions when trying anything new:

• Make sure you have identified the plant correctly

• Try a small quantity of anything you have not eaten before. Only increase the quantity consumed once you are satisfied that there are no undesirable side effects.

No liability exists against Plants For A Future or any trustee, employee or contractor of Plants For A Future, nor can they be held responsible for any allergy, illness or injurious effect that any person or animal may suffer as a result of the use of information in this book or through using any of the plants mentioned in it.

About this book

The primary objective of Plants For A Future (PFAF) is to maintain and improve our free on-line database of information on edible and useful plants, especially perennials. In recent years, in response to the global environmental crisis and increasing interest in alternatives to intensive industrialised agriculture and commercial plantations, we have extended the database to include more plants likely to be used in community and small-scale food forests, carbon farming, and carbon sequestration projects.

Plants For Your Food Forest has drawn on this development work. It is intended as an easy-to-use guide to choosing plants to meet your own objectives, to fulfil your own food forest design. There is an increasing number of books about food forests, woodland gardening and carbon farming, but most concentrate on design principles and concepts. The focus here is on the plants, their characteristics and personalities, what they have to offer a food forest ecosystem, and what kinds of foods they can provide. The plants in this book are mainly suitable for temperate conditions; we plan to produce another book on food forest plants for warmer climates.

We have selected over 500 plants that provide a mix of different growing conditions, plant size and structure, type of food, and contribution to a food forest ecosystem. There is also a quick-reference table of the key characteristics. The featured plants are arranged in sections corresponding to Forest Layer: Shrubs, Groundcover Shrubs, Trees, Herbaceous Plants, Herbaceous Groundcover Plants, Running Bamboos, Bulbs, Climbers.

Taller canopy trees can provide shelter from wind and strong sun as well as having edible seeds, leaves or fruit. Smaller trees such as apples, pears and plums are usually selected for their larger fruit crops. In food forests shrubs occupy the highly productive layer between the canopy and the ground. Groundcover plants protect the soil from erosion and water loss, prevent weed germination, insulate the soil from extreme temperatures, can benefit other plants, and as a living mulch build up humus levels in the soil. Groundcovers also provide habitats and cover for animals, beneficial insects and other useful predators. The edible herbaceous layer consists of non-woody plants usually dying back in winter and includes vegetables, flowers, herbs, cover crops, mulch producers and soil-building plants. Climbing or trailing woody-stemmed plants grow through the other food forest layers, and can provide support for other plants, as well as other benefits such as attracting beneficial wildlife or repelling pests. The best edible bamboo shoots in temperate zones come from running bamboos; they spread mainly through their roots and rhizomes and can become invasive, but with careful plant choice and positioning, make an excellent addition to a forest garden.

One corner of the Incredible Vegetables perennials experimental site at Ashburton, Devon (UK)

PFAF Trustees Chris Marsh and Wendy Stayte with Sagara at East Devon Forest Garden (UK)

The Food Forest Alternative

Chris Marsh, PFAF Trustee

A food forest is a form of regenerative farming, a designed ecosystem modelled on nature, with the aim of growing food and sequestering carbon at the same time. As a forest it will consist of plants which occupy different layers, typically a canopy layer, shrub layer, herb layer and climbers. All plants will be perennials in order for the soil to be wild, undisturbed and regenerating. All plants will be food producing, will sequester carbon in their woody parts or in the soil, and will have useful functions in the forest ecosystem.

Interest in radical alternatives such as food forests has grown in recent years due to the growing realisation that industrialised agriculture degrades the land, depletes the soil and makes a major contribution to climate change. In his groundbreaking book *Entangled Life*, Merlin Sheldrake writes:

> Agriculture causes widespread environmental destruction and is responsible for a quarter of global greenhouse gas emissions. Between 20 and 40 per cent of crops are lost each year to pests and diseases, despite colossal applications of pesticide. Global agricultural yields have plateaued, despite a 700-fold increase in fertiliser use over the second half of the twentieth century. Worldwide, thirty football fields' worth of topsoil are lost to erosion every minute.[1]

Concerns about agrochemicals which came into use after the Second World War led to the founding of the Soil Association and the organic farming alternative.[2] However, agriculture was destroying soils – and causing climate change through deforestation – long before modern chemicals and machinery were introduced. There is an old saying: 'civilized man has marched across the face of the earth and left a desert in his footprints'.[3] In around 350 B.C. Plato wrote about soil erosion due to grain farming in the land of Attica where the Greeks had settled: '... the once rich land is like the skeleton of a sick man'; where abundant springs and streams used to flow from forested hills, now the rains poured from the denuded land straight into the sea.[4]

The Coronavirus pandemic that hit the world in 2020 is a further effect of industrialised agriculture. Human ecologist Andreas Malm explains in his recent book: *Corona, Climate, Chronic Emergency: War Communism in the Twenty-First Century* that coronavirus is an example of zoonotic spillover, where an animal disease is passed on to humans, often with an amplifier host in between.[5] Malm predicts that this process will recur because the driving force is deforestation to make way for, in particular, beef, soybean, palm oil and wood products, breaking up wildlife areas and putting the hosts of virus diseases – often bats – under pressure and stress such that they move out of their habitats in search of food. Malm cites the Marxist scientist Rob Wallace saying that 'opening the forests to global circuits of capital' is in itself 'a primary cause' of all this sickness. Malm continues 'It is unrestrained capital accumulation that so violently shakes the tree where bats and other animals live. Out falls a drizzle of viruses'.[6] Coronavirus may be a global pandemic but it is caused by exploitation of forests in developing countries driven by demand from developed countries, an ecologically unequal exchange which is unethical and dangerous.

The way to prevent further zoonotic spillover is to stop destroying wild forests for cattle grazing and plantations of plant food commodities like soybean and palm oil. Sourcing our food from local mixed plantings such as food forests would seem to be an ideal alternative, and yet a food forest is disturbingly like an island of diverse habitat for wildlife living in amongst the food plants, and no one planting and tending a food forest is going to insist on culling any species or order, in particular Chiroptera (bats), so might food forests make zoonotic spillover more likely? This is clearly something that needs further thought by the already impressive cohort of food forest experts.

The so-called 'Neolithic Revolution',[7] the advent of agriculture, was supposedly our most decisive step towards a better life, but proved to be 'a milestone for the worse as well as for the better'.[8] Three plant species, wheat, rice and maize, are now the staple of three quarters of the world's population,[9] providing around half of all the human energy intake around the world.[10] Those three species were first domesticated thousands of years ago, but so were other important edible plants around the world such as squash, potato, lentil, soybean, banana, taro and yam.[11] In Lewis Dartnell's study of human evolution and physical geography, he identifies over sixty familiar food plant species which were domesticated over the course of the past few thousand years.[12] These include legumes, brassicas, plants of the nightshade family, fruits of the

rose and citrus families, and the family of palm trees, plus root and stem vegetables.[13] Interestingly, all the plants Dartnell mentions are included in the PFAF database, a third of them marked as being useful food forest plants, and half of those are included amongst the over six hundred listed in the species matrix in Dave Jacke's book *Edible Forest Gardens*.[14] There is clearly potential to widen our choice of the plant foods we cultivate, and various ways to make our food growing more diverse have been devised in recent years, with food forests particularly interesting as an idea and a world saving practice.

The Food Forest Idea

By using the term 'Food Forest' we are combining two familiar ideas which are not normally associated with each other in the modern world into a new idea with ancient roots. 'Food' normally comes to us by means of complicated systems, originating in fossil fuel and chemical-based monocultures, followed by stages of transportation, processing and trade. Systematic monocultural farming, from the Neolithic period 11,000 years ago to the present, has involved clearing forests to make space for plantations of cereal crops or for grazing domesticated livestock. Since that time, forests have also been treated as if they were monocultures, remote areas for the production of timber. Most of the world's human population is alienated from the land both in practice and in attitudes and expectations. This alienation applies even to people employed in agriculture, or in other forms of resource extraction, since their contact with the land is limited to the patches of land designated to producing particular commodities and often only while using machinery.

'Food' and 'Forest' are instances of monocultural land use in general. This is usually taken for granted and it is normal to look at any area of land as 'for' a particular purpose, as in the zoning maps used by planning authorities. The practice of dividing land into patches of monoculture is so pervasive that even wildlife habitat has become a type of monoculture, made up of increasingly small and isolated conservation areas, some of them dedicated to preserving 'conservation-reliant' creatures now pushed to the edge of survival.[15] Land planted with trees or rewilded to draw down carbon is another kind of monoculture. Sports and recreation depend on yet another form of monocultural land use.

'Food Forest' is a radically different idea. In practical terms a food forest is obviously not a monoculture because it involves designing a diverse ecosystem modelled on nature, made up of a variety of perennial food-yielding plants. As an idea, the combination of food and forest suggests it might be thought of as binary cultivation, 'duo-culture' to coin a term. That could suggest land used for two yields: food plus timber, as in commercial agroforestry, such as 'tree intercropping' where rows of trees are interspersed with strips of annual crops, or 'silvopasture', the deliberate integration of beneficial trees on pastureland.[16] Even the widely-adopted term 'agroforestry' suggests binary cultivation, with its prefix 'agro' coming from 'ager', the Latin for field. Robert Hart, the originator of forest gardening in the UK, defined 'agroforestry' as 'the generic term for systems of cultivation in which trees are combined with other crop-plants',[17] and forest gardening means diverse plantings, as does homegarden, cottage garden, woodland garden and permaculture plot.

We find a form of 'duo-culture' in Vandana Shiva's essay 'Monocultures of the Mind', where she describes how the Indian approach to agriculture relies on neighbouring forests for critical inputs, in particular soil and water conservation, fodder and organic fertiliser.[18] There are of course more than two yields from such a system. Indeed, as soon as one moves away from monoculture, dedicated to a single cash crop, what we see is diversity, as if with duo-culture the monoculture spell is broken. For over forty years, Shiva has worked throughout the world to defend diversity of all kinds: in farming, in ecosystems, and in culture and knowledge. In an extract from her book *Oneness vs the 1%*, Shiva tells us that the threat to diversity is 'globalized, industrialized, inefficient agriculture [which] invades habitats, destroys ecosystems, and manipulates animals, plants, and other organisms with no respect for their integrity or their health'.[19]

The food producing systems I'm calling duo-culture are inherently diverse, with many versions of the basic pattern of an area of annual crops next to a wooded area. There are many annual staples, such as rice or wheat or potatoes, each of which may have many traditional varieties.[20] The dual pattern will also vary according to location, climate and conditions, and also scale. One version of duo-culture of interest to readers of this book is the forest (or woodland) garden in a temperate region such as the UK, where it is usual to have an area of seasonal annual crops adjacent

to the forest garden, especially in its early stages, to compensate for meagre occasional yields from plants in the forest layers. With a 'food forest' as conceived here, the aim is to go beyond duo-culture towards a perennial polyculture supplying all our food needs, and far from being a new idea, indeed it is ancient practice.

In *The Carbon Farming Solution*, his 'global toolkit of perennial crops and regenerative agriculture', Eric Toensmeier mentions the tropical homegarden, an ancient multistrata agroforest system which dates back more than 13,000 years, and he urges us to develop such systems for temperate climates.[21] It is obviously challenging to design, plant and nurture a temperate food forest which will be capable of supplying all the food needs of a particular local community. There is information and advice in Toensmeier's book and elsewhere, including in this book which is intended to assist designers by providing details of over 500 food yielding plants to select from. In the three decades since the first temperate forest gardens were planted there have been many experiments with this new way of growing, as shown in the comprehensive survey carried out by permaculture expert Tomas Remiarz.[22] The question is, can the current, quite encouraging level of interest in and enthusiasm for learning to 'garden like a forest', grow strongly enough and fast enough to be world changing?

Food Forests to Save the World

Readers of this book, which was written to help them choose plants for their food forest designs, may well be open to the idea that food forests could save the world. We live in uncertain times and the present crisis of global warming and biodiversity loss, and threats to human wellbeing and survival, is so terrible that any potential solution, however radical, should be considered, in terms of its viability, and its risks and benefits compared to other approaches. It is already evident that food forests can be part of the solution for producing food in sustainable ways. Conceivably, food forests might even give rise to a more comprehensive shift to living closer to the land in self-reliant local communities, as suggested in the following scenario.

Looking first at viability, we know food forests can be designed and planted and that they potentially have 'very high carbon and other benefits'.[23] Food forests sequester carbon from the start, since as soon as they are planted the soil is covered; there are sections in this book on herbaceous plants and shrubs suitable for ground cover. The key question is whether they can be scaled up such that they become major sources of food for the world. The best driver for such expansion would be popular support: people wanting to be involved in growing food forests and enjoying the produce. This may not yet be the case, but the precursors are many and various, and very encouraging.

People's desire to produce their own food where they live is highly significant, given the economic pressures to consume what comes to us so conveniently via industrialised agriculture, processing, packaging and shipping across global markets to local supermarkets. The need to grow food ourselves manifests in very many ways in different parts of the world. In the UK many people grow food in their gardens and allotments, as a hobby and healthy pastime and for the taste of fresh produce. This has given rise to business opportunities, such as garden centres and online sellers supplying plants, seeds and equipment. Interestingly, there has been a rise of interest in gardening and food growing during the Covid-19 lockdowns, which we saw at PFAF from increased accesses to our database and sales of our books. In the US there have been fast-growing local food movements in recent years, but also a huge rise in small farms catering for local markets.[24]

It is reported that 80 percent of the world's food comes from small farms, only 1 percent of the world's farms being larger than 50 hectares, but this small group controls 65 percent of the world's agricultural land.[25] Small farms in India have long been part of this picture, but they are under threat, and we have seen reports of mass protests where farmers are defending their traditional methods and local markets against draconian new laws to corporatise agriculture.[26] The aim of food forests as a solution would be a transition over around twenty years to a way of life with local food at the heart of it. We have two key components: considerable expertise and information on food forests, and enthusiasm for local food growing, as the starting point for the bigger scenario whereby food forests are the heart of a solution to the planetary crisis. Local food as a way of life is ancient and modern, with the tropical homegarden mentioned by Toensmeier predating the Neolithic revolution, and the food forest may date back even further to the roots of what makes us human.

It came to my attention recently that there is evidence to suggest that our species *Homo sapiens*, together

with our extinct hominin cousins, lived and evolved while dependent on the pre-historic equivalent of food forests. It has been said that '[d]iet is central for understanding the evolution, adaptation, environmental exploitation, cognition, technology, and survival of prehistoric hominins'.[27] We think of our ancestors as hunter-gatherers, and we know about their animal foods since tools and weapons and animal bones are durable and available for archaeological studies. Plant foods may have been even more essential as we spread across the face of the earth. Knowledge of plants and their properties, where and how they grow over the seasons, was essential for survival, and it seems possible that our brains enlarged in order to contain and process vast amounts of detailed plants information. Retaining and sharing that knowledge and passing it on to the next generation would have been at the heart of social life for most of the time humans have been in existence. The archaeological evidence for food gathering is scarce because Palaeolithic plant remains are perishable, but unusual circumstances have occasionally provided some material to enable the plant component of hominin diets to be studied. One study involved extracting microfossils from the dental calculus on Neanderthal teeth.[28] Another study was focussed on a waterlogged site where there were many well-preserved macrobotanical remains, showing the wide spectrum of the diet of mid-Pleistocene hominins who obtained foods from 55 plant taxa, their diet including nuts, fruits, seeds, vegetables, and plants producing underground storage systems.[29]

I made a list of the plant species and groups mentioned in these papers, looked them up on the PFAF plants database and found they were all present. Of course there are many other plants to choose from in our database, all discovered and progressively selected and refined over millennia. If we extend food forests progressively over (say) the next twenty years so that more and more local communities source their food that way, in a sense we will be returning to normal, tapping in to capabilities which we developed in pre-historic times, but of course in different and challenging circumstances. The number of people needing to be fed from future food forests is far greater than ancient populations in their wild forests, so the density of food producing plants has to be far higher than might have occurred naturally, and expansion of these high yielding plantings would have to be extended as fast as possible into degraded agricultural land and other deserts. During the twenty years of transition while the forest ecosystems modelled on nature grow to maturity and spread around the world, today's food forests experts will need to pass on their knowledge. This process is beginning, as we see from the topics presented and discussed by practitioners from around the world at the online Symposium organised by Martin Crawford, agroforestry pioneer in the UK. At this event, scheduled for June 2021, topics including how to cultivate perennial vegetables, the importance of guilds and polycultures, aspects of biodiversity, food forests and wildlife, nutrition, and urban food forests.[30]

A key part of transition is localisation: local food, of course, food being the primary human need. Clothing and shelter are also basic needs, and as food forests develop, we will include plants providing textiles from fibres and dyes, and materials for crafts and construction, and for many other uses which are identified on the PFAF database. We have the plants knowledge to build on, to work towards an utterly new way of life with skills rediscovered from the past. It is important to note that localising the meeting of our needs will cut carbon emissions from transportation, including cutting the need for global shipping, which is a gross and largely overlooked cause of pollution and exploitation.[31]

The scenario I have set out is based on the assumption that local community food forests, expanded over twenty years, could be a total solution to the climate, ecology and social crisis facing the world. That may indeed be possible, and we hope that it will grow to be an important part of the solution, alongside actions by governments actively to fulfil pledges they have been making for decades.[32] But as David Gearing explains in the next section, solutions to the climate crisis promoted and supported by governments and big business are deeply questionable and cannot be relied upon.

Food Forests: A Real Hope for the Future

David Gearing, PFAF long-term volunteer

As you are reading this book it may be assumed that you are interested in undertaking practical action to create a new food forest, or perhaps to enhance or maintain an existing plot. But transforming such an intention into reality may not be easy; for example, it might require moving away from what hitherto has been a secure livelihood, difficulty in obtaining secure access to suitable land, or the prospect of unaccustomed physical work on the land with an uncertain outcome. Therefore there must be strong incentives to make such a commitment.

It is likely that your interest has been strongly influenced by knowledge of and concern about the various inter-related crises and ever-growing threats to our planet's natural systems, and to the way of life we have become used to. Dealing with the enormity of these problems requires far-reaching changes to global capitalism, education and equality. These include challenging the desirability of perpetual economic 'growth', properly pricing environmental externalities, stopping the use of fossil fuels, reining in corporate lobbying, and empowering women. These problems and their effects are getting progressively worse and the need for change more urgent all the time, yet it is increasingly evident that we cannot rely on world leaders, politicians, national governments, inter-governmental bodies or big businesses to initiate and deliver the changes needed.

This article will briefly examine what has gone wrong, and how serious the threats actually are from climate change, soil and biodiversity loss. (Other serious global problems such as air and ocean pollution, sea level rise, and the effects of global inequality, are also important, but beyond the scope of what's being discussed here.) I will argue that nobody else is going to fix these problems for us, certainly not the capitalist 'market' system, within which most decisions are driven by stock market values, short-term profitability, executive bonuses and tax avoidance. This 'business-as-usual' cannot continue much longer, and so it is up to each one of us to do what we can to prepare for what comes once it begins to fall apart. Working on, supporting and living in or around food forests is one of the few ways that individuals, small groups and communities can make a real, positive difference.

The lengthy restrictions imposed in many countries because of the Covid-19 pandemic caused a modest fall of 7% in fossil fuel use in 2020, but nevertheless heat-trapping carbon dioxide continued to build up in the atmosphere, setting a new record of 415 ppm by year end, the highest for millions of years, and still growing year by year.[33] Globally 2020 was the joint hottest year ever: the average surface temperature reached 1.2°C above pre-industrial levels, and even more in Europe: 1.6°C.[34] No human has ever lived on a planet as hot as this one, and it will certainly get hotter. In 2020 there was unusually severe warming of 3°C in the Arctic, causing permafrost to melt over large areas with associated release of methane, a highly potent greenhouse gas, extensive wildfires that released 244m tonnes of CO_2, and accelerated melting of the Greenland icecap.[35] Since the 1970s the oceans have taken in more than 90% of all the excess heat trapped by CO_2 and currently absorb 30% of carbon emissions. They are now thought to be at their hottest for 1,000 years, reducing their future ability to dissolve CO_2 and also increasing the likelihood of extreme weather[36]: in 2020 there were a record 29 tropical storms in the Atlantic.[37]

The strong global response to Covid-19 demonstrated how quickly change could happen when leaders act on scientific advice and persuade people to live differently. The same principle should apply to the climate crisis, but that isn't happening. One reason appears to be that Covid is seen as an immediate threat to human life, whereas climate change can be seen as still uncertain and distant, perhaps because most emission reduction targets for nations and big businesses are set for many years ahead, and this can imply that there is be no need for serious action until later. But the World Health Organisation estimates that for the past 40 years more than 150,000 deaths per annum can be attributed to the effects of climate disruption and extreme weather.[38] In any case, delaying action is an exercise in self-delusion: the longer we leave it the more difficult it will be to keep global average temperature rises below the level at which serious disruption and runaway effects occur, and very soon that will become impossible.

The impressive teenage activist Greta Thunberg has summarised one aspect of the current situation: 'As long as we don't treat the climate crisis like a crisis, we can have as many conferences as we want, but it will just be negotiations, empty words, loopholes and greenwash. We shouldn't be focusing on dates 10, 20 or even 30 years in the future. If we don't reduce our

emissions now, then those distant targets won't mean anything because our carbon budgets will be long gone.'[39] She was referring to the maximum cumulative amount of carbon that can be emitted to stay within 1.5°C average global warming; if current emission rates are not significantly reduced that budget will be exceeded before 2030. The independent New Climate Institute has calculated that current policies presently in place around the world, even if fully implemented as promised, are projected to result in about 2.9°C warming above pre-industrial levels in 2050.[40] This will not be adequate to prevent a global catastrophe; scientists at the Hadley Centre Climate Programme predict that an increase in global temperature at this level would throw the carbon cycle into reverse creating a feedback effect: instead of absorbing carbon dioxide, vegetation and soils start to release it, boosting warming still further, by another 1.5°C by 2100, the effects of which would be devastating.[41] With this tipping point now only 30 years away; it's clear that people who care about saving or restoring our planet's natural systems have to take the initiative, take personal responsibility, both by campaigning for meaningful action and by showing practically what can and needs to be done.

Climate breakdown is not the only problem. The UN's Global Diversity Outlook report from September 2020 said that in the previous decade the world had failed to meet a single target set to stem the destruction of wildlife and life-sustaining ecosystems, that natural habitats have continued to disappear, vast numbers of species remain threatened by extinction from human activities, and environmentally damaging government subsidies of $500billion p.a. have not been eliminated.[42] A recent report by the authoritative Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) said 'Ecosystems, species, wild populations, local varieties and breeds of domesticated plants and animals are shrinking, deteriorating or vanishing. The essential, interconnected web of life on Earth is getting smaller and increasingly frayed. This loss is a direct result of human activity and constitutes a direct threat to human well-being in all regions of the world. […] The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever. We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide'.[43] It just doesn't get more serious than this.

In another study focused on the causes of Covid-19 IPBES reports that 'Rampant deforestation, uncontrolled expansion of agriculture, intensive farming, mining and infrastructure development, as well as the exploitation of wild species have created a "perfect storm" for the spillover of diseases from wildlife to people'.[44] Furthermore, the spread of intensive, mechanized agriculture has been largely responsible for the alarming rate at which the world's topsoils are being lost or degraded: a mind-boggling 75 billion tons per year are lost to erosion by water and wind, caused by habitual mechanised tilling, heavy use of agrochemicals damaging the soil structure, and higher frequency of extreme weather events.[45] In the US the rate of erosion is ten times as high as the natural replenishment rate, in China and India it is 30-40 times as fast.[46] The destruction of forests and natural habitats to create farmland degrades soil, particularly affecting the symbiotic fungi that are important in helping trees and plants grow. According to the UN Food and Agriculture Organization, a third of the world's soil is now moderately to highly degraded, so that any food that is grown in it is likely to be less nutritious.[47] As well as producing food, soils store carbon and purify water, so their conservation should rank equally with the crises in climate and above-ground biodiversity, but currently the problem has received relatively little attention. Topsoils are fragile, complex ecosystems on which we are dependent in various ways: we need nothing less than a total re-think and a revolution in farming and food production methods to avoid destroying them beyond redemption.

Meanwhile, as awareness of and concern about climate change has increased, governments and big businesses have responded by announcing plans to reduce carbon emissions; as I was writing this piece there was a new flurry of such announcements as a result of a virtual summit of world leaders on 'Earth Day', April 21 2021. But the level of genuine commitment and understanding behind such announcements is questionable. They usually have a final target expressed as 'net zero' or a percentage reduction in emissions with a distant target date, sometimes as far off as 2050, as trying to keep warming below 2°C by then was the best target that could be agreed at the Paris Climate Change summit in 2015. Government targets also often ignore the environmental impact of building any new infrastructure needed, and also the 'invisible' carbon footprint, including the carbon emitted overseas in making and shipping goods used

locally, and international travel by their citizens, both of which are significant. Most importantly, these announcements usually lack any firm, realistic, action plan to achieve the targets, and the promises therein tend to be quickly discarded or downgraded when it becomes apparent that their implementation requires immediate actions that will be unpopular with investors, supporters, customers or voters. In addition, 'net zero' plans, rather than focusing on real reductions in fossil fuel use and facilitating changes to ways of living that are far less demanding on resources of all kinds, rely on dubious offsetting and carbon trading schemes. Even then, they are often still left with a significant volume of emissions unaccounted for, which planners claim will be dealt with by carbon capture and storage (CCS). In this context the International Energy Agency has warned that it would be 'virtually impossible' for the world to hit climate targets without capturing and storing emissions generated from factories, power plants, transportation and other sources. According to the IEA the transition to renewable energy, such as solar and wind, will not sufficiently reduce emissions in time.[48]

The CCS technology that extracts carbon from the exhaust gases of power stations and then pipes it into airtight geological formations has been promoted as a key element of CO_2 reduction for the last 20 years. But worldwide at January 2021 only 26 plants of any kind are using it, and 22 of these are rigs using the CO_2 they pump underground to drive more oil out of the rocks, a process called enhanced oil recovery, really the opposite of what's needed.[49] Current CCS capacity is about 0.1% of annual global emissions from fossil fuels. It is very unlikely to be effective on a large enough scale, and is more a new commercial opportunity for fossil fuel companies than a proven, useful technology on which we can rely to scoop up all the emissions we need not to reach the atmosphere. There is another approach: Direct Air Capture of CO_2 (DAC), but work in this area is still in its infancy. Pilot DAC plants have required significant amounts of water and energy input and have been prohibitively expensive to run. Because of the low concentration (0.04%) of CO_2 in the atmosphere, a very large number of capture systems would be required, spread around the Earth: one company estimated that 4.5 million of its carbon collectors would be needed to capture just 1% of global emissions.[50] There is substantial agreement among scientists that carbon capture and other climate engineering possibilities cannot substitute for urgent action to cut down emissions.

Therefore minimising carbon emissions and avoiding catastrophic climate disruption and associated environmental damage must involve radical widespread changes in lifestyle, especially within so-called developed countries. These changes need to include far less globalised commerce and travel (especially by air), moving away from intensive industrialised agriculture, switching from meat and dairy to plant-based foods, and the need to encourage local communities and businesses that support the common good. Food forests and complementary locally-based enterprises can be an important element in bringing about such change. I hope this book will provide readers with practical information and encouragement to get involved in whatever way you can, to make it work for you, and thereby start to be part of the fight-back against the global emergency that cannot be ignored any longer.

Journey of a Community Gardener 2001-2021

Wendy Stayte, PFAF Trustee

This journey started in Ladakh, 2001. I found myself living within the farming community of a small village in the high Himalayas, during the peak summer growing period. Every family within each village farmed. Each was custodian of their own farm, but the community shared their irrigation system, their mill, threshing and winnowing equipment, and helped each other out in their fields in the daily care of the farms. It was a life-transforming introduction to me on how to live in close community with others and with the living earth around, with all that was there, animals, plants, mountains and abundant flowing streams, in a way that was sustainable in the long term. World-wide destructive forces have changed Ladakh now, but I was blessed to have a glimpse of it as it was at that time. The seed it sowed in me bore fruit when I returned to England.

Within a few weeks of my return to the UK, I was offered the opportunity to bring some cultivation onto 65 acres of land in south Devon. This land had formerly been part of a much larger estate, with several tenant farms, and some formal gardens and food growing around the main house. My priorities for cultivation on this land at that time were about growing food to feed those who lived in and came to visit this place, and opening up paths so that people could more easily explore and enjoy the land, and uncovering many of the beauties of shrubs and plants buried under scrub, as well as attractive human artefacts of ponds and pathways.

From 2001-2004 I nurtured a community of gardening volunteers who joined me in this enterprise, some staying for occasional or regular weekends on the land, or for longer periods; some, who lived more locally, coming often or seldom to join me for a day at a time. From 2005-2011 [after a year working abroad], I offered much less intensive involvement with this land. *Who were this human community that came, and why did they want to do it? What were my changing attitudes to what I was doing over these years?* Some land volunteers already knew this house and valley from all that had being going on there over the previous 15 years in its life as a 'retreat' centre, and welcomed the chance to bring some care to land they already loved. I spread the word among local people about what I was doing, and some came out of friendship, others welcomed belonging to a gardening community, others to learn particular skills, and I with them. We harnessed the expertise of hedge-layers, stone-wall builders, wild-life experts, biodynamic farmers and many others to teach us as we went along. I loved this patch of earth for itself. It was peaceful by day, far from any noise of traffic, and dark at night so the stars were very present. Sheep grazed on some of the fields, there was enough woodland and scrub for numerous birds, insects were many and shyer animals glimpsed from time to time. I felt surrounded by beauty being there.

Though passionate about the need for growing organically, I was less aware at that time, of how precious was wilderness, especially in the overworked context of Britain, with less woodland than any other European country. I chafed at the refusal of the household to allow fallen trunks of wind-blown trees or branches to be used for firewood in the house, rather than left as homes for animals, plants and lichens over the years.

River bank on the Hazelwood land, South Devon, UK.

In the global context I now appreciate better our overall need to preserve and restore the richness of the diverse ecosystems, such as woodlands and forests that have many living beings thriving together, of which we humans could be part. I am aware also of the complexity of shaping wise decisions about how this happens.

In one of my later roles as a Trustee of Plants For A Future, I see many young people, setting up different kinds of food-growing systems on small plots of land, all respectful of the need for creating complex ecosystems where multiple wild animals and plants can thrive and beneficially interact, even if the main human aim differs. Some are growing herbs

commercially, alongside running herbalist practice and training others in that skill. Others are creating food forests with an eye to educating children and adults in the benefits and limitations of such ways of growing. Others are using places of mixed perennial growing, with bees and ducks and chickens as part of the mix, as small pockets of research, ways of sustaining their families, sources of unusual plants to sell to others, or all of these together. Each place has its unique nature.

Behind these individual small initiatives lies the need to globally transform our ways of feeding ourselves and keeping well, including preserving enough wilderness to sustain and enhance the rich web of life in which we used to live, enough forests and land for timber and other human uses, and shrink our heavy human footprint of houses and roads and concreting over of the living earth.

Hence decisions about bottom-up change or top-down planning are always complex, requiring juggling amongst the numerous interests of all the people involved, as well as the needs of all other life forms

At the micro-level at which I was working, was it better to allow the trees to fall and branches to naturally decay, providing home to myriad life forms, and keeping this land as a wild life sanctuary, while buying in timber that may have been shipped from far away? Or should logs for heating, as well as food, provide the household needs from as nearby as possible? These were questions with no easy answers, and ones we all face now at local, national and international level. Should we be encouraging a patchwork of small richly diverse food forests to spring up where they will, and/or plan at regional, national or international level how we need to best live in harmony with the land so all can flourish?

Two other streams entered my journey of community gardening. I became one of the coordinators of a Nut tree planting project in Totnes in the spring of 2007, and a Trustee of Plants For A Future in 2008. The Totnes Nut tree planting project was part of the newly formed Transition Town Totnes movement which had started in the autumn of 2006. The original aim of planting such trees was to swell the amount of food grown locally. Nuts trees were chosen initially as a good source of protein, starch and minerals. I and those who joined to plant nut trees on public land were inspired, at least partly, by the notion of 'reducing food miles'. Giving proper attention to the trees we planted, including observation and appreciation as well as practical care through their early years, has been found essential if trees are to grow and flourish within the public domain. Planting trees and ignoring them thereafter is not enough.

Being aware of the animal, as well as human, dangers to our young plants have been lessons learned the hard way as we go along. Human vandalism, rabbits, squirrels, fungi and bacteria all play their part in the life and death of these trees. Changing weather patterns have influenced what trees we plant. In recent years, a run of warmer winters and cold late springs have meant almond blossom unfurling early has then been nipped by frost, and then no nut harvest. The gradual warming of the earth has happened in unpredictable ways. We have retreated to planting mainly those trees which have withstood centuries of the vagaries of British weather. In response to request of residents of the town, we extended our tree planting to include fruit as well as nut trees, giving us now two large and one small orchard in different parts of the town, as well as the patches of nut trees.

Inspired by the energetic and flourishing example of Todmorden, Yorkshire, we started in 2012 planting small community gardens around the town growing vegetables and fruit, herbs and edible flowers, and have continued ever since.

A community edible garden, Totnes, Devon UK.

Am I and other community gardeners in these projects still mainly inspired by the idea of 'reducing food miles'? That motive is somewhere still in the mix. Coming together with others to do something enjoyable and useful, in the fresh air, keeps many of us going. Language students wanting a chance to practise English have sometimes been with us. Students from nearby Schumacher College used to join us so as to get their hands in the earth and away from theorising. In my own mind, bringing back 'the

commons' has been a strong motivation, imagining a more collective guardianship of the earth, away from private ownership. The small sources of food we have managed to initiate in our orchards and nut groves and gardens, have become part of the local foraging possibilities, wild and cultivated.

I have found myself gradually seeing these cultivated patches of ground as havens for pollinating insects, and birds. A year or two back I would have said I was promoting an ethos of sharing and gratitude through this growing of food in public places for all to freely partake. I am jolted in 2020 by a new volunteer who has no interest in pruning for human convenience. Even on this small scale, I realise that hoping for abundance for humans without sufficient abundance for bees and ladybirds, hover-flies and hungry birds, is a doomed path.

Interwoven as a background to these activities in and around Totnes, has been the inspiration to me of the Plants For A Future charity. The education function of the charity is now separate from the continuing cultivation undertaken by Addy and Ken Fern on their experimental site in east Cornwall, not far from Lostwithiel and the south coast. On my first visit there in 2008, some 15 years after the initial planting of the site on land long used for grazing, I was overwhelmed and enchanted by this oasis of mixed woodland growing. In places it was turning into inaccessible thickets, while elsewhere signs of careful tending were apparent. In the tradition of earlier 20th century food forest enthusiasts such as Robert Hart, the Ferns had laid out this site with wind-break trees and shrubs to protect against the wild sea winds, and within these protective plantings were patches of common native trees, orchards of apple trees, clumps of trees less common in that part of the world, such as walnuts and sea buckthorn. Beneath these trees, were shrubs, hedges, clusters of bamboos, climbing vines and other middle-storey plants, and at ground level a rich diversity of edible plants covering the ground. All plants had been chosen for their edible or medicinal value to humans. Deer were excluded but other wild-life thrived in this setting. The whole covered about 30 acres of land.

Living off the produce of a food forest alone, without addition of grains or any of our usual annual vegetables, or preparedness to eat the wild animals like rabbits or squirrels or pigeons, is extremely challenging for most of us used to Western diets. This kind of growing is not a recipe for how we grow all our food, but rather an inspiration to bring back more complexity of plants and trees, perennial and annual, into our farms and small-holdings. Bringing back wide hedges, holding an abundance of animal and plant life, allowing areas of wildness, copses and corridors of trees and shrubs are all steps in a wiser direction. They are an encouragement to keep as diverse a pool of edible and other useful plants as we are able, to widen the gene pool, to offer the resilience of differing susceptibilities to disease and changing climate.

Awareness of these things through my association with Plants For A Future, as well as noticing with sadness how once familiar insects, birds, wild flowers, have become rare, are changing my emphasis in community gardening. Paying attention to the needs of insects, birds and plants, as well as humans, shapes my actions. Searching for unusual perennial plants to weave into the mix of more common edibles has become a bigger part of what I do. I know I am part of a global movement in this direction.

Ken Fern and others in his forest garden, Cornwall UK.

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[19] Vandana Shiva 'Bill Gates' Global Agenda and How We Can Resist His War on Life', https://www.independentsciencenews.org/biotechnology/bill-gates-global-agenda-and-how-we-can-resist-his-war-on-life/ [accessed 12/4/21], taken from Shiva, Epilogue, in *Oneness vs the 1%: Shattering Illusions, Seeding Freedom* (London: Chelsea Green, 2020), pp. 177-81 (p. 177-8).
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Shrubs

This section includes plants for the shrubs layer as well as groundcover shrubs.

Serviceberry, Juneberry, Saskatoon *Amelanchier species*

5 2 3 pH 1 to 3m/4 to 12ft 3 to 9

Saskatoon (A. alnifolia)

The Amelanchier genus consists of small deciduous trees or large shrubs with small blackcurrant-sized fruit. Several species are excellent to eat raw, tasting like a blueberry with a hint of almond or apple flavour from the seeds. The fruit ripens in mid-summer and is soft and juicy with a few small seeds in the centre. The fruit is cooked and used in pies and jams or dried and used as raisins.

Saskatoon (*A. alnifolia*) grows to 4m (12ft). The fruit has a lovely sweet, nutty flavour and is rich in iron and copper. Make a tea from the leaves. Use for erosion control and as a windbreak. Fairly lime tolerant and grows well in heavy clay soils. Heat tolerant in zones 8 through 3. Juneberry (*A. lamarckii*) grows to 6m (20ft). The fruit is sweet and succulent with apple flavour. One of the most agreeable fruits in the genus, they can be eaten and enjoyed in quantity. Heat tolerant in zones 9 through 5. The smaller shrub Southern Juneberry (*A. obovalis*) has sweet, good quality fruit that is eaten raw or used in pies, preserves and drinks. Running Juneberry (*A. stolonifera*) medium-sized shrub growing to 1.5m (5ft) with excellent fruit and tolerates dry soils. A stoloniferous species, spreading by suckers to form a thicket. Heat tolerant in zones 8 through 1.

Propagation: Seed. Division of suckers (two years+ growth for established roots).

• Self-fertile • Wildlife • Nectary • Hedge • Erosion control • Windbreak

Barberry *Berberis species*

4 3 4 pH 1 to 3m/4 to 12ft 3 to 10

Barberry (Berberis species)

Barberries are dense, neat-growing, medium to large deciduous and evergreen shrubs. Native species are available in many areas including the U.K., Europe and North America. Deciduous forms often have spectacular autumn leaf colour and berries. Barberries will grow in sun or light shade but will fruit better in full sun and not flower in deep shade. Ornamental leaves, yellow flowers, and attractive berries make them popular garden plants. The dense and spiny growth habit makes them excellent hedges and barriers as well as shelter for wildlife. Many species have pleasant edible fruit that is eaten raw or cooked.

Indian Barberry (*B. aristata*) large evergreen shrub growing to 3.5m (12ft). It has a sweet-tasting, well-flavoured fruit with a blend of acid, and a slight bitterness caused by the seeds. The fruit is eaten raw, cooked or dried and used like raisins. Add the flower buds to sauces. Asian Barberry (*B. asiatica*) has juicy fruit when ripe with a pleasantly acid flavour, but lots of seeds. Eat the fruit raw or dried; it makes the best Indian raisins. Darwin's Barberry (*B. darwinii*) is a similar size to Indian and Asian Barberry. The fruit has an acid but delightful flavour; the fruit acidity lessens as it ripens. Raw it is tasty in muesli or cooked

in porridge and for preserves. Many seeds detract from the pleasure of eating it. Magellan Barberry (*B. buxifolia*) is smaller, growing to 2.5m (8ft). It has large, black fruit that is hardly acid but slightly astringent, said to be the best flavoured of the South American barberries. Eat the ripe fruit raw or use in conserves. Use the green unripe fruits in pies like gooseberries. Several deciduous barberries have edible fruit including Salmon Barberry (*B. aggregata*) (1.5m/5ft) with a mild, reasonably acid lemony flavour, Coopers Barberry (*B. cooperi*) (1.5m/5ft), Canada Barberry (*B. canadensis*) (1.8m/6ft) with edible raw berries, leaves and flowers. European Barberry or Common Barberry (*B. vulgaris)* (3m/9ft) fruit has a very acid flavour. It is mainly used in preserves or as a refreshing lemon-like drink. Use the young leaves as a flavouring like sorrel (*Rumex acetosa*) or dry them with the shoot tips to make a refreshing tea. Large-flowered Barberry (*B. angulosa*) (1m/3ft) is smaller with large freely borne berries, more palatable than most barberries.

Berberries will not do well in waterlogged soil and may struggle in arid conditions. Some Berberries become invasive when planted outside of their native ranges. Many species are resistant to predation by deer.

Propagation: Seed. Cuttings of half-ripe wood in summer. Cuttings of mature wood in autumn.

• Self-fertile • Wildlife • Nectary • Hedge

Raspberry & Blackberry *Rubus species*

5 3 3 pH 0.2 to 3m/0.7 to 10ft GC SF 3 to 10

Rubus is a well-known genus in the rose family (*Rosaceae*) with many members used for food including raspberries, blackberries and dewberries. By choosing the right species, the fruit is available from early summer to late autumn, even in winter in milder areas. Several species are excellent woodland plants in sun or light shade. Typically rubus species have a suckering root pattern with new plants produced from underground runners.
Raspberries (*R. idaeus*), native to Europe and Asia, are a popular summer fruit tolerating light shade, but with reduced yields. Summer and autumn fruiting varieties are available. Summer raspberries fruit on the previous season's growth while autumn raspberries fruit on the current season's. The fruit is delicious raw eaten directly from the shrub or used in juices, jellies, drinks and sorbets. Cooked they make lovely pies and preserves. The young shoots are edible; harvested as they emerge through the ground in the spring and still tender. Peel them and eat raw or cook like asparagus. Make a herb tea from the dried leaves. Early fruiting cultivars with heavy crops are '***Glen Moy***' and '***Malling Minerva***'. The compact '***Ruby Beauty***' grows to 1m (3ft), is compact and thornless. Mid-season berries with good flavour and fruit are '***Malling Jewel***' and '***Glen Ample***'. '***Glen Prosen***' is well suited to wetter areas. For late summer cultivars choose '***Malling Admiral***' and '***Tulameen***' with large sweet flavoursome berries. '***Cascade Delight***' is suitable for demanding conditions, tolerating heavier, wetter soils. For autumn fruit '***All Gold***' has yellow fruit. '***Autumn Treasure***' is thornless, disease-resistant and tolerant of more deficient soils. '***Joan J***' and '***Polka***' are both east to grow with tasty fruit until first frosts.

Salmonberry (R. spectabilis)

Several North American species of raspberries do well in woodland including Rocky Mountain Raspberry (*R. deliciosus*), Black Raspberry (*R. occidentalis*), Thimbleberry (*R. parviflorus*) and Salmonberry (*R. spectabilis*). They need a warm, reasonably sunny position if they are to fruit well. The flavour develops better in a good summer. Japanese Wineberry (*R. phoenicolasius*) is a very ornamental raspberry from Asia. Its fruits are about half the size of cultivated raspberries and have a lovely flavour. The fruit is virtually free of maggot damage as the fruit is enveloped in the calyx until ripe. For groundcover Nepalese Raspberry (*R. nepalensis*) is a low-growing evergreen shrub seldom taller than 20cm (8in). The fruit is available mid to late summer. Dewberries (*R. spp*) are an early-season cropper with black fruit popular in the U.S. The plant is thorny and makes another good groundcover.

Blackberries (*R. fruticosus*) and hybrid berries (Boysenberry, Dewberry, Loganberry, Tayberry, Tummelberry) are becoming increasingly popular. Blackberries and hybrid berries are more vigorous than raspberries, needing more space and often

attention to control them. Cultivation is similar to raspberries. The majority of blackberries and hybrid berries produce fruit on the previous season's growth. There are now thorn-free blackberries available making harvesting more pleasant. Early to late cultivars are available. Early blackberries include the thornless '***Helen***', '***Loch Tay***' and '***Natchez***'. '***Sylvan***' is thorny but tolerates heavy soils, wind and drought. Mid-season recommendations include '***Loch Maree***', '***Loch Ness***' and '***Oregon Thornless***'. Late heavy croppers are '***Asterina***', '***Cacanska Bestrna***', '***Chester***' and the larger, thorny '***Himalayan Giant***' which needs space and is not well-suited to an average garden.

Loganberries are a cross between the raspberry and blackberry. The fruit is longer than the raspberry and has a sharper flavour. They are usually thornless producing fruit early to mid-summer. The fruit is more like raspberry than blackberry, but the plant growth has the blackberry's vigour and manner. Tayberries are another raspberry and blackberry cross. The fruit has a sharper flavour than raspberry but is sweeter than a loganberry. Tummelberry is an early-season cropper suitable for colder areas with the fruit best for jam making.

Boysenberries are a cross between the loganberry, raspberry and dewberry. The early season berries are heavy cropping and taste like blackberries. Boysenberries are thornless, drought-resistant and very hardy.

Propagation: Seed – requires stratification. Tip layering in summer. Division in early spring.

• Self-fertile • Wildlife • Nectary • Groundcover (Nepalese Raspberry, Dewberries)

Bush clover *Lespedeza species*

3 2 4 pH 1 to 3m / 4 to 12ft N SF 4 to 9

Lespedeza is a genus of shrubby nitrogen-fixing plants or trailing vines in the pea family (*Fabaceae*) commonly known as Bush Clovers. Recommended plants include Bush Clover (*L. maximowiczii*), Round-headed Bush Clover (*L. capitata*), Oriental Bush Clover (*L. thunbergii*) and Shrub Lespedeza (*L. bicolor*). Shrub Lespedeza is edible and is a large, loose, open shrub growing to 3m (10ft). Cook the young leaves, stems and flowers. They have a mild pea-like flavour. Boil the seed and eat with rice. Use the leaves as a tea substitute. Because this species tolerates arid soils, it is grown as a windbreak, sand stabilization and soil conservation. Shrub Lespedeza succeeds in light shade, dry soils and is drought tolerant. The top growth is not very cold tolerant and needs cutting back to the ground in all but very mild winters. It generally resprouts well from the base in the following spring and flower in late summer. It has naturalized in the southeastern U.S. and considered to be invasive in many areas.

Shrub Lespedeza (L. bicolor)

Propagation: Seed. Self-seed in optimum growing conditions. The plant is heat tolerant in zones 8 through 5.

• Self-fertile • Nitrogen Fixer • Invertebrate shelter • Nectary

Chinquapin *Castanea pumila*

4 1 2 pH 4m / 14ft 4 to 8

Chinquapin is a large deciduous shrub growing to 4m (12ft) in the same genus as Sweet Chestnut (*C. sativa*) and American Chestnut (*C. dentata*). The seed has a sweet, nutty flavour superior to sweet chestnuts when raw. When baked, it becomes even sweeter and develops a floury texture making an excellent potato or cereal substitute. The seed is half the size of American chestnut and contains 45% starch and 25% protein. When grown from seed two to three years are needed before the nuts are available.

Chinquapin is very tolerant of high acid, infertile, dry sandy soils. It makes an excellent soil-enriching understorey shrub in pine forests. For coppicing, flowers and nuts are produced on the wood of the current year's growth. Native to the southeastern United States.

Propagation: Seed. Division of suckers in winter. Chinquapin has a flat, shallow root system. Plants can spread widely by underground suckers. Heat tolerant in zones 9 through 5.

• Self-sterile • Nectary • Soil-enriching • Coppice

Chinquapin (C. pumila)

Currents *Ribes species*

5 3 4 pH 0.5 to 2.5m / 2 to 8ft SF GC 2 to 8

Ribes has several well-known deciduous shrubs, including blackcurrant, redcurrant, white currant and gooseberries, with tasty edible berries that grow in full sun and light shade. More shade leads to reduced fruiting. The root pattern is typically flat with shallow, suckering roots with new plants growing from underground runners.

Redcurrant (*R. rubrum*), a European native, has tart red berries produced in abundance in summer. They are eaten raw or cooked in sweet and savoury dishes, including pies and jams. It is more shade tolerant than other species. Several other similar species with tasty edible berries include Alpine Currant *R. alpinum* (northern Europe), and Rock Red Currant *R. petraeum* (southwest Europe). American Red Currant *R. triste* (North America) tolerates wetter soil. The White Currant, sometimes labelled as *R. sativum* or *R. silvestre*, is slightly sweeter. It is an albino variant of the redcurrant, not a separate species.

Redcurrant & Blackcurrant (R. rubrum & R. nigrum)

Blackcurrant (*R. nigrum*) has dark purple to black fruit rich in vitamin C and polyphenols, available summer to early autumn. The raw fruit is tart and tasty. It is cooked and used in sweet or savoury dishes like jams, preserves, and syrups. Use the leaves in soups or dry them and use as a tea substitute. Unlike other currants, the best fruit grows on young wood. Pruning consists of removing about a third of all the stems from just above ground level in the autumn. Remove the oldest stems with the least new growth as they are the poorest fruiters. Blackcurrant prefers a neutral pH soil and is intolerant of acid soils. Blackcurrant is a multistemmed bush with branching and suckering root pattern. Standard-trained blackcurrant is useful if space is limited.

The American Blackcurrant (*R. americanum*) copes with wetter soil, and in its native conditions is found in conifer bogs and marshes in N.E. America. The fruit taste is inferior, but the leaves have a glorious autumn colour. The larger very ornamental plant Golden Currant (*R. aureum*) is native to N.W. America. It has large and flavourful fruit used raw or cooked for desserts, jellies, sauces and pies. Eat the sweet flowers raw; they have a spicy fragrance similar to that of cloves or vanilla. The root pattern divides from the crown into several primary roots and suckers. Gooseberry (*R. uva-crispa*) have more significant fruit than other currants that can be eaten under-ripe. They are very firm with a tart flavour used in pies and jams. When fully ripe in summer, the fruit is soft and quite sweet, delicious raw. Eat young and tender gooseberry leaves in salads. Varieties include green fruited '***Invicta***', red-fruited '***Whinham's Industry***' which tolerates heavy soil, and '***Leveller***' a yellow dessert fruit.

Jostaberry (*R. x culverwellii*) is a gooseberry and blackcurrant hybrid rich in vitamin C. The unique flavour has gooseberry and blackcurrant overtones. When under ripe, it tastes more like gooseberry and more like blackcurrant when fully ripe. The fruit is rich in vitamin C.

Missouri Gooseberry (*R. missouriense*) has smooth-skinned fruit with a rich sub-acid vinous flavour that is very agreeable. It is too acid eaten raw but makes delicious tarts.

Propagation: Seed. Cuttings of half-ripe wood in summer or mature wood of the current year's growth, in winter.

• Self-fertile • Wildlife • Nectary • Groundcover (Alpine Currant)

Dogwood *Cornus species*

5 2 4 pH 0.3 to 10m/1 to 34ft 2 to 9

Kousa Dogwood (C. kousa)

Dogwoods are deciduous shrubs and small trees, some with wonderful tasting fruits. The fruits of all dogwood species are drupes often brightly coloured, and most are edible but may lack flavour. A number do have delicious fruit including Kousa Dogwood (*C. kousa*) (small tree to 10m/32ft), Cornelian Cherry (*C. mas*) (large shrub to 5m/16ft), and Bunchberry (*C. canadensis*) (to 0.3m/1ft). Kousa dogwood and Cornelian cherry have a branching root pattern.

The juicy fruit of Kousa Dogwood has a sweet, tropical pudding-like flavour eaten raw or cooked. The skin is tough and unpleasant, but the pulp is delicious and a favourite late summer fruit. Eat young leaves cooked. Cornelian Cherry's fruits are both tart and sweet when completely ripe with a plum-like flavour and texture. They are very high in vitamin C. The fruit is eaten raw, dried or used in preserves. Low in pectin, it needs to be used with other fruit when making jam. There are some named varieties including '***Macrocarpa***' with larger fruits. '***Nana***' a dwarf form, and '***Jolico***' with well-flavoured fruits three times larger than the species. Plants are somewhat wind resistant. Bunchberry or the creeping dogwood (*C. canadensis*) fruit is pleasant but without much flavour. They are dry with a slightly sweet taste. They are high in pectin and added to breakfast cereals or used to make jams, pies, and puddings. Bunchberry is a good groundcover. Many dogwoods make a good hedge or screen.

All Dogwood species tolerate full sun or partial shade, but those grown for winter stem colour (e.g. Red Osier Dogwood *C. sericea*) show better colour when grown in full sun. The flowering dogwoods *C. florida* and *C. kousa*, prefer a neutral to acid pH soil. *C. kousa* is more tolerant of neutral to alkaline conditions than is the North American species *C. florida*. Bunchberry needs moist, acid soil conditions.

Propagation: Seed. Cuttings of half-ripe side shoots in summer. Cuttings of mature wood of the current year's growth. Layering. Heat tolerant in zones 8 through 5.

• Self-fertile • Wildlife • Ground cover (Bunchberry) • Hedge • Coppice (Flowering dogwood)

Elaeagnus *Elaeagnus species*

5 2 4 pH 3 to 12m/10 to 40ft 2 to 9

The family Elaeagnaceae contains several edible genera, including Silverberry (*Elaeagnus*), Buckthorn (*Hippophae*) and Buffaloberry (*Shepherdia*). All the species are nitrogen fixers having a symbiotic relationship with soil bacteria, making them excellent companion plants. When grown with fruit trees, they can increase yields by up to 10% (this is especially the case with plums and nuts which respond more to nitrogenous fertilization). The fruit of many family members is a rich source of vitamins and minerals (especially vitamins A, C and E), flavonoids, and other bioactive compounds. It is also a good source of essential fatty acids which is unusual for a fruit.

Elaeagnus are deciduous or evergreen shrubs or small trees, with simple, often silvery-scaled leaves, and small fragrant tubular flowers followed by small juicy fruit edible in many species. Eat the fruit raw or cooked in soups, jellies or sherbets. Evergreen species are early fruiting plants, with fruit ripening over a 6-8 week period in early to late spring. They usually require some shade. The deciduous species fruit during the summer and need a sunny position. The best of the evergreen species are Ebbing's Silverberry (*E. x ebbingei*) and Broad-leaved Oleaster (*E. macrophylla*) growing to 4m (12ft). The fruits need to be fully ripe and have a lovely rich taste reminiscent of pineapple. They are 25mm (1in) long with a large edible seed high in protein and fats. The seed has a mild flavour with a hint of peanut. Trim after fruiting to reduce the size. Recommended deciduous species with late summer fruit are Goumi (*E. multiflora*) a pleasantly acid fruit making a delicious dessert or used in pies and preserves. Oleaster (*E. angustifolia*) has sweet berries popular in southeastern Europe. Wolf-willow (*E. commutata*) a dry and mealy fruit good in soups and creating an excellent jelly. Autumn Olive (*E. umbellata*) has juicy and pleasantly acid fruit tasty raw or made into jams and preserves. Trebizond Date (*E. orientalis*) fruit is sweet and mealy and sold commercially. They are considered superior to Oleaster.

Goumi (E. multiflora)

All species are wind resistant with many growing in severe maritime exposure. Many can be grown as hedges.

Propagation: Seed. Cuttings of half-ripe wood or mature wood of the current year's growth with a heel. Layering in autumn. Root cuttings in the winter.

• Self-sterile. Cross-pollination with a different variety is needed.

• Nitrogen Fixer • Wildlife • Nectary • Wind resistant • Hedge • Companion • Scented

Flowering Quince *Chaenomeles species*

4 2 3 pH 1 to 3m / 4 to 10ft SF GC 4 to 8

Chaenomeles is a genus of deciduous, spiny shrubs from 1m (3ft) to 3m (9ft) in size. They have large edible, often fragrant, green or yellow fruits ripening in autumn. The fruit is harsh and astringent when raw becoming aromatic with a citrus, slightly acid taste when cooked. Make the fruit into an excellent jelly or jam; it is delicious cooked with apples in apple pies. The rich aromatic juice, as tart as lemon, is squeezed and used for culinary purposes. Flowering quince juice contains 150mg of vitamin C, more than lemons. Chinese Quince (*C. cathayensis*) grows to 3m (9ft) and has the largest fruit to 10cm (4in) long. Dwarf Quince (*C. japonica*) grows to 1m (3ft) has smaller 4cm (1.6in) fruit. Japanese or Flowering Quince (*C. speciosa*) grows to 3m (9ft) and has an apple or pear-shaped fruit 6cm (2in) long. *C. x superba*, another dwarf quince, is used as a hedge, for soil stabilization and as groundcover. Flowering quinces are one of the first shrubs to flower in late winter to early spring. They have very ornamental blossom always welcome in the garden. Flowering quinces tolerate full shade but require a sunny position for best fruit production. The root pattern is branching dividing from the crown.

Dwarf Quince (C. japonica)

Propagation: Seed. Cuttings of half-ripe wood in summer. Cuttings of mature wood of the current year's growth in winter. The easiest method of propagation is by layering in late spring or autumn.

• Self-fertile • Groundcover • Nectary • Hedge • Soil stabilization

Hawthorn *Crataegus species*

5 3 3 pH 6 to 10m / 20 to 33ft SF 4 to 9

Arnold Hawthorn (C. arnoldiana)

Hawthorns are shrubs or small trees growing to 15m (50ft) with small fruit and thorny branches. They have clusters of creamy-white flowers followed by red or black fruit. They are part of the rose family (apples, pears, plums, cherries, peaches and apricots) and native to temperate regions of the Northern Hemisphere including Europe and North America. There are many species with absolutely delicious fruit easily rivalling cultivated crops. They are easy to grow, tolerating most sites and conditions. Fruit varies widely from species to species with the largest fruit size about an inch (25mm) in diameter. Depending on the species the fruit flavour goes from bitter to sweet with fruit texture from hard, dry and powdery to crisp and juicy. Most of the species ripen their fruit in early to mid-autumn.

Scarlet Haw (*C. pedicellata*) large deciduous shrub growing to 7m (24ft), native to Eastern North America. The late-ripening fruit has an excellent flavour and juicy texture. It is pear-shaped with sweet but dry, mealy flesh. The fruit is used in making pies and preserves or dried for later use. The variety '**gloriosa**' has larger and more lustrous fruits. Caughuawaga Hawthorn (*C. durobrivensis*) has sweet and juicy fruit with a hint of apple, good eaten raw.

Several edible hawthorns are small to large trees more suited to the tree canopy. Mayhaw (*C. aestivalis*), Arnold Hawthorn (*C. arnoldiana*), Scarlet Hawthorn (*C. ellwangeriana*), Downy Hawthorn (*C. mollis*), Chinese Haw (*C. pinnatifida*), Dotted Hawthorn (*C. punctata*), Blue Hawthorn (*C. schraderana*), and Tansy-Leaved Thorn (*C. tanacetifolia*) are worth considering.

Propagation: Seed (requires stratification) or grafting. Self-fertile.

• Self-fertile • Wildlife • Nectary • Hedge • Scented • Coppice

Hazel *Corylus species*

5 2 5 pH 3 to 6m / 10 to 20ft SF 4 to 8

The sweet nuts of all hazels, cultivated for centuries, are edible and will make a tasty addition to any food forest. The hazel is a genus of deciduous shrubby trees and large shrubs native to the temperate Northern Hemisphere. Often grown as a coppiced shrub in woodlands, regenerating shoots allow for stem harvests every few years. Coppicing is a traditional woodland management method where stems are repeatedly cut down near the ground, creating a timber self-renewing source. Make wattle fencing, thatching spars, walking sticks, fishing rods, basketry, and pea and bean sticks from the new growth. Most tree species will coppice, but hazel, sweet chestnut, ash and lime are more suited. Coppicing hazel prevents over-shading, allowing ground layer plants to thrive and creating dense wildlife habitats. Hazel coppice cycles are 7-10 years. The flat, suckering root pattern forms a plate near the soil surface.

The sweet nut is excellent raw, or roast them for bread, cakes, biscuits, pies and sweets. Liquidized with water they make tasty plant milk. Extracted hazelnut oil is used for salad dressings and cooking. The nuts keep for at least 12 months if unshelled. Fertile soils can lead to excessive growth and inferior crop sizes. Planting two or more cultivars, and growing in groups, produce better pollination. Larger nuts are grown on old wood.

Common Hazel (C. avellana)

Recommended species include Filbert (*C. maxima*), growing to 6m (20ft), which has a fine-textured nut with a good flavour. Suitable cultivars include '***Kentish Cob***', '***Gunslebert***' and '***Red Filbert***'. Common Hazel (*C. avellana*) has sweet nuts with a thin shell. Suitable cultivars are '***Cosford***', '***Pearson's Prolific***' and '***Red majestic***'. American Hazel (*C. americana*) is a small tree growing to 3m (9ft) and has a good quality nut with a thick shell and small sweet kernel that make an excellent dessert. Beaked Hazel (*C. cornuta*) is another large shrub growing to 3m (9ft) which has a sweet and well-flavoured nut with a thin shell popular in the U.S.

Propagation: Seed. Cuttings of half-ripe wood in summer. Cuttings of mature wood in autumn.

• Self-fertile • Wildlife • Nectary • Hedge • Coppice

Hibiscus *Hibiscus species*

4 2 3 pH 3m/10ft SF 5 to 9

Hibiscus is a genus of deciduous or evergreen shrubs, trees, annuals or perennials, with large, often showy funnel-shaped flowers. They are native to warm-temperate, subtropical and tropical regions. Several species are useful ornamental plants, and a number are edible. In warmer temperate regions shrubby deciduous Rose Of Sharon (H. syriacus) and (H. sinosyriacus) have edible leaves, flowers and root and are hardy to -20°C (-4°F). Young leaves and flowers are eaten raw and added to salads or cooked. They have a mild nutty flavour and are slightly chewy.

An attractive ornamental hedge. Plants are late coming into leaf, usually in late spring.

Propagation: Seed. Cuttings of half-ripe wood in summer. Cuttings of mature wood, in early autumn. Layering in mid-summer to early autumn.

• Self-fertile • Wildlife • Hedge

Rose Of Sharon (H. syriacus)

Juniper *Juniperus species*

3 3 4 pH 0.2 to 18m/0.7 to 60ft GC 3 to 10

Junipers are evergreen coniferous trees or shrubs ranging from tall 40m (130ft) trees to low-spreading prostrate shrubs. The needle-like leaves are aromatic and in some species the fruit are edible. Many ornamental species are available, and some are used for groundcover, hedging, erosion control and in a shelterbelt. Some forms tolerate maritime exposure. Eat fruit in small quantities.

Shrubby edible groundcovers include Shore Juniper (*J. rigida var. conferta* Syn. *J. conferta*) with fruit eaten raw or cooked and Creeping Juniper (*J. horizontalis*) fruit roasted and used in a coffee-like beverage. Larger shrubs have more edible fruit. Creeping Juniper has a flat root pattern with shallow roots near the soil surface.

Common juniper (*Juniperus communis*) (9m/30ft) very large shrub with edible fruit, seed, leaves and stems. The fruit with soft, mealy, sweet, resinous flesh is used raw, cooked or dried for later use. It is an essential ingredient in gin and used as a flavouring in sauerkraut, stuffings and vegetable patés. Harvest

Common juniper (J. communis)

the fruit in autumn once it is ripe which takes 2-3 years on the plant. The roasted seed is a coffee substitute. Make a tea by boiling the leaves and stems or spicy gin-like flavour tea from the berries. Common Juniper prefers lime-rich neutral or slightly alkaline soil growing well on heavy clay. All parts of the plant are very aromatic. Many forms of this species are useful ground cover plants for sunny situations. Forms to try include '***Depressa Aurea***', '***Dumosa***', '***Effusa***', '***Repanda***' and '***Prostrata***'.

Juniper trees with edible berries include Alligator Juniper (*J. deppeana*) (18m/60ft) with dry and mealy fruit but with a sweet and palatable taste. The fruit can also be dried, ground into a meal and prepared as a mush or cakes. Syrian Juniper (*Juniperus drupacea*) (15m/50ft) has large, sweet fruit used raw or cooked. Western Juniper (*J. occidentalis*) (18m/60ft) has sweet and nutritious fruit with thin, dry flesh and a resinous flavour. Rocky Mountain Juniper (*J. scopulorum*) (10m/32ft) has intensely flavoured, resinous fruit that is sweet and fleshy and eaten raw or cooked. The fruit is used as a flavouring, imparting a sage-like taste, for which purpose it is usually dried and ground into a powder. The root pattern is flat with shallow roots.

Propagation: The seed requires a period of cold stratification. Take mature cuttings or layer in autumn. Established plants are very tolerant of drought.

• Dioecious (male and female plants needed) • Wildlife • Ground cover (some forms) • Scented • Hedge (some species)

Lemon Verbena (A. citriodora)

Lemon Verbena *Aloysia citriodora*

4 3 3 pH 3m/10ft SF 7-10

Lemon Verbena is a large ornamental deciduous shrub with delicious lemon-like leaves used as a flavouring in salads and fruit salads. Occasionally the leaves are cooked as a spinach. Make a delightful and refreshing tea from the leaves. The dried leaves will retain their lemon aroma for many years. The growing plant repels midges, flies and other insects. The leaves make an essential oil used in perfumery and an effective insecticide in 1-2% concentration. Hard frosts damage lemon Verbena; cut back to ground level it resprouts in spring. The root pattern is rhizomatous.

Propagation: Seed. Cuttings of softwood or semi-hardwood.

• Self-fertile • Nectary • Scented

Pawpaw *Asimina triloba*

4 2 3 pH 4.5m/15ft 5 to 8

Pawpaw is a forest understory deciduous large shrub or small tree fruiting well even in partial shade. The papaw produces a delicious edible fruit with an exquisite flavour of banana custard or sometimes described as a mix of avocado and pear. Wild-collected fruit is available in local U.S. markets. The tree commences bearing in 4-6 years from seed and yields up to 30 kilos per tree. Eat the fruit raw or use it for making preserves, pies, ice cream and other sweet desserts. Store the fruit when it falls from the tree in autumn until it is fully ripe.

Pawpaw (A. triloba)

Flowers are strongly protogynous, self-incompatible and require cross-pollination. Some trees may be self-compatible and it is an excellent idea to plant two or more cross-pollination trees. Plants are untroubled by pests or diseases. The root pattern is a heart root, dividing from the crown into several primary roots. Pawpaw often spreads by root suckers to form colonies or thickets. The plant is heat tolerant in zones 8 through 6.

Propagation: Seed. Layering.

• Protogynous, self-incompatible and require cross-pollination. • Wildlife • Coppice

Pea-shrub *Caragana species*

5 1 4 pH 2 to 6m / 7 to 20ft N SF 2 to 9

Pea-shrub, a species of legume, is a fast-growing, nitrogen-fixing shrub or small tree growing 1-6m (3-20ft), native to Asia and eastern Europe. Siberian Pea-shrub (*C. boisii*) and Long-Stalked Pea-shrub (*C. brevispina*) grow to 2m (6ft) and have small seed produced in abundance. Use in spicy dishes as they have a bland, mild pea-like flavour. The seed contains 12.4% of fatty oil and up to 36% protein. The young pods are cooked and used as a vegetable. Siberian Pea-tree (*C. arborescens*) is larger, growing to 6m (20ft) and the seed is eaten in the same way. Pea-shrubs coppice well, make good windbreaks, living fences, hedges and improve the soil.

Siberian Pea-tree (C. arborescens)

Pea-shrubs have an extensive root system used for erosion control, especially on marginal land. They prefer full sun and a light sandy dry or well-drained soil and tolerate very alkaline soils. Established plants are drought resistant.

Propagation: Seed. Cuttings of half-ripe wood in summer. Layering in spring. Heat tolerant in zones 8 through 1.

• Self-fertile • Nitrogen Fixer • Wildlife • Invertebrate shelter • Nectary

• Coppice •Windbreaks • Living fence •Hedge • Carbon Farming

Saltbush *Atriplex species*

4 2 3 pH 0.5-2m / 2-6ft SF 5 -11

Many species from the genus Atriplex have edible leaves. The common name derives from their ability to retain salt in the leaves, giving them a pleasant salty taste. They can grow in areas with high soil salination.

Four-wing Saltbush (*A. canescens*), Sea Orach (*Atriplex halimus*) and Common Saltbush (*A. hortensis*) are large shrubs requiring a sunny, well-drained position and can tolerate saline, alkaline soils and maritime exposure. Grey Saltbush (*A. cinerea*) leaves are bushfood in Australia.

Sea Orach (A. halimus)

Saltbush leaves are available all year and eaten raw or cooked. Harvest lightly in winter when growth is slow. They make an exciting salad addition. When lightly steamed, the leaves retain their crispness and are a delicious spinach substitute. The salty flavour is present when growing inland in non-salty soils. The seed is edible but fiddly to use. Grind seed into a powder, mix with cereals and use in making cakes. Mixed with water, it makes a refreshing beverage.

A good hedge in maritime areas, *Atriplex* respond well to trimming. The plant has fire-retardant properties and can be used for barrier plantings to control bush fires.

Propagation: Seed. Cuttings of hardwood.

• Self-fertile • Wildlife • Hedge • Soil-reclamation

Blueberry & Cranberry *Vaccinium species*

4 3 4 pH 0.2 to 2m / 0.7 to 7ft SF GC 2 to 8

Vaccinium is a genus of evergreen or deciduous ericaceous shrubs or small trees usually restricted to acidic soils. Juicy berries follow bell-shaped flowers. Many species are edible to humans including bilberry, blueberry, cranberry, lingonberry and huckleberry.

Bilberry (V. myrtillus)

Bilberry (*V. myrtillus*) small Europen native shrub growing on acid soils on heaths, moors and woodlands in the wild. Sweet and delicious blue-black berry fruits appear in late summer and autumn. Bilberries are one of the richest natural sources of anthocyanins, giving them their rich colouring. They are high in antioxidants. Eat the berries raw or cooked. Eaten raw they have a slightly acid flavour. Small seeds make them an excellent choice for preserves and jams. The fruit can be dried and used like currants. Make a refreshing tea from the leaves or dried fruit.

Highbush Blueberries (*V. corymbosum*) large shrub with sweet, juicy berries rich in vitamin C. Use raw or in pies, pastries, cereals, jams or jellies; they freeze well. Make a tea from the dried leaves and fruit. Harvest when needed. The fruit will not ripen once picked. Early cropping varieties are available for harvesting in early summer. Underplant blueberries with a groundcover of Cranberries (*V. oxycoccos, V. macrocarpon*), Lingonberries (*V. vitis-idaea*) or strawberries (*Fragaria species*). Lowbush Blueberries (*V. angustifolium*) small, hardier shrub fruiting earlier and tolerating colder climates (zones 2-6). It has large sweet berries cooked, eaten raw or dried for winter. Lowbush blueberries are the earliest blueberry to ripen.

Vaccinium species are multistemmed plants with flat, shallow roots and creeping stems. Blueberries do not grow well with blackberries or raspberries. Heat zones 7 through 1.

Propagation: Seed. Cuttings of softwood, semi-hardwood (slow and difficult) or hardwood. Layering. Division of suckers in spring or early autumn.

• Groundcover (some) • Wildlife • Nectary. • Self-fertile. Plants are at least partially self-sterile; use more than one variety to obtain good yields of fruit.

Plums and Cherries *Prunus species* – see Trees.

Oaks *Quercus species* – see Trees.

Viburnum and Highbush Cranberry *Viburnum species* – see Trees

Groundcover Shrubs

Several ground cover shrubs are edible and will significantly reduce weeding whilst also benefiting other plants. Covering the ground with a carpet of vegetation prevents the germination of weed seeds and, once established, prevents the ingress of perennial weeds. Groundcover protects the soil from erosion and water loss, insulates the soil, keeping it cooler in the summer and warmer in the winter and as a living mulch builds up humus levels in the soil. Groundcovers also provide habitats and cover for animals, beneficial insects and other predators.

Bearberry *Arctostaphylos uva-ursi*

3 4 4 pH 0.1 to 2m / 0.4 to 7ft SF GC 4 to 10

Bearberry is a small procumbent woody evergreen groundcover shrub with bland, red fruit that becomes sweeter when cooked. The form '***Massachusetts***' is a prostrate, free-flowering and free-fruiting form. '***Anchor Bay***', '***Point Reyes***' and '***Vulcan's Peak***' are excellent groundcover forms. Manzanitas (*A. manzanita*) has white, more acidic, berries. Eat them in moderation. Both Bearberry and Manzanitas are useful groundcover plants for a steep, sandy, sunny bank. They need similar conditions to cranberries; use the fruit in similar ways. Spring flowers and summer berries are beloved by birds. Heat tolerant in zones 6 through 1. A clumping mat former. The root pattern is flat with shallow roots forming a plate near the soil surface.

Propagation: Seed. Cuttings of softwood (slow). Division. Layering.

• Self-fertile • Groundcover • Wildlife • Nectary • Pioneer • Erosion control

Bearberry (A. uva-ursi)

Hyssop *Hyssopus officinalis*

2 3 5 pH 0.6m / 2ft SF GC 5-10

Hyssop is a small evergreen shrub in the mint family growing to 0.6m (2ft) and native to Southern Europe and the Middle East. The leaves, young shoot tips and flowers have an intensely aromatic flavour, somewhat like a cross between sage and mint. Eat them raw in salads or as a flavouring in soups. Hyssop is commonly grown in the herb garden, as an edging plant or as a groundcover. It is a good companion plant to grow with grapes. The attractive blooms are suitable for cut or dried flowers. The root pattern is fibrous dividing into a large number of fine roots.

Propagation: Seed. Cuttings of semi-hardwood in summer. Cuttings of softwood in spring. Division in spring or autumn.

• Self-fertile • Ground cover • Wildlife Hedge • Scented • Companion

Hyssop (H. officinalis)

Partridge Berry *Mitchella repens*

3 3 4 pH 0.1m/0.4ft 4 to 9

Partridge Berry (M. repens)

Partridge berry is a creeping, mat-forming, prostrate, evergreen subshrub with small, dark, glossy leaves and long-lasting red berries available late summer. Flowers are fragrant. The slightly aromatic cranberry sized fruit hangs well on the bush and has a faint flavour of wintergreen. They are eaten raw but have little taste. Make a tea from the leaves.

Partridge Berry is an excellent creeping groundcover for a shady spot on neutral to acid soils that succeed in the shade of trees. As the plant creeps the stems form new roots at the nodes.

Propagation: Seed. Division of naturally layered stems in the spring. Cuttings. Heat tolerant in zones 9 through 1.

• Self-fertile • Ground cover • Wildlife • Scented

Sweetfern *Comptonia peregrina*

3 3 3 pH 1.5m/5ft 3 to 6

Sweetfern (C. peregrina)

Sweetfern is a medium-sized, attractive, nitrogen-fixing deciduous shrub growing to 1.5m (5ft) and native to eastern North America. The long, narrow leaves are fern-like in appearance. Greenish-brown, burr-like nutlets contain 1 to 4 edible seeds eaten as a pleasant nibble. The aromatic leaves, fresh or dried, are used to make a tasty tea or used as a seasoning.

Sweetfern requires an acid, well-drained soil of low to medium fertility in partial shade. It will tolerate full sun if the soil does not dry out in the summer. Sweetfern is useful for erosion control, groundcover and for improving poor soils. Sweetfern is clumping and a suckering plant with flat, shallow roots.

Propagation: Seed (difficult). Root cuttings in winter. Plants sucker freely. Layering in spring. Heat tolerant in zones 8 through 3.

• Self-fertile • Nitrogen Fixer • Groundcover • Wildlife • Scented • Erosion control

Other suggested groundcovers

See *Juniper species* above Shore Juniper, *Juniperus communis* forms: '***Depressa Aurea***', '***Dumosa***', '***Effusa***', '***Repanda***' and '***Prostrata***'.

See *Rubus species* Nepalese Raspberry and Dewberries.

See Dogwoods *Cornus species* (Bunchberry).

See *Chaenomeles species* Flowering Quince (*C. x superba* Dwarf quince).

See *Vaccinium species* Cranberries, Lingonberries.

Additional Edible Shrubs

These shrubs have either already been featured in our other books or have a slightly lower edible rating than the main plant choices. The plants are ordered by scientific name.

Sweetshrub *Calycanthus species*

3 2 2 3m/10ft 5-10

Aromatic bark is dried and used as a substitute for cinnamon.

• Scented • Wildlife Shelter

Ceanothus *Ceanothus species*

3 3 3 1m/4ft N GC 4-9

A refreshing and stimulating tea from the dried leaves.

•NF •Hedge •GC •Soil Stabilizer •Nectary •Wildlife Food

Plum Yew *Cephalotaxus species*

5 1 3 6m/20ft GC 6-9

A very lovely sweet edible fruit. Seed – raw or cooked. Seed Oil.

• Hedge • Wildlife Shelter

Redbud *Cercis species*

4 2 4 4m/15ft N 4-9

Flowers raw or pickled. Young leaves/seedpods like snowpeas.

• Wildlife Food • Nectary •NF

Mountain Pepper *Drimys lanceolata*

3 2 4 4m/15ft 7-10

Fruit & seed as a pepper/allspice substitute. Edible aromatic berries.

• Hedge • Scented

Shallon *Gaultheria species*

5 3 4 1m/4′ A GC 3-9

Fruits raw or in pies and jams. Eat young leaves raw or as a tea.

• GC • DA • Wildlife • Scented • Hedge

Sea Buckthorn *Hippophae species*

5 5 5 6m/20ft N 3-7

Fruit raw or cooked is very rich in vitamin C.

• NF • Wildlife Shelter & Food • Soil Stabilizer • Windbreak

Honeysuckle *Lonicera species*

4 2 3 5m/17ft GC 3-9

Sweet and pleasant tasting fruit. Raw or preserved as jams/drinks.

•Scented •Wildlife Food •Nectary

Goji or Boxthorn *Lycium species*

4 3 3 2.5m/9ft 5-9

Fruit - mild sweet liquorice flavour. Cooked young shoots.

•Soil Stabilization •Hedge

Barberry *Mahonia species*

3 3 4 0.3+m/1ft GC 4-9

Acid flavour fruit is as large as a blackcurrant and easy to harvest.

•GC •Hedge •Scented •Nectary •Wildlife Shelter & Food

Sumac *Rhus species*

4 3 3 3m/10ft GC 3-9

Small fruit eaten raw or cooked. Dry for cakes and porridge.

•Soil Stabilizer •Scented •Wildlife Shelter & Food • Hedge •Coppice

Rose *Rosa species*

5 2 3 2m/7ft 3 to 9

A sweet fruit (hips) rich in vitamin C. Flowers – raw or cooked.

•Hedge •Scented •Wildlife Shelter & Food •Nectary

Rosemary *Rosmarinus officinalis*

2 3 4 2m/5ft GC 6-11

Young shoots, leaves, and flowers raw or cooked.

•Hedge •Scented •Wildlife Food •Nectary •Invert shelter •GC

Sage *Salvia officinalis*

4 5 5 0.6m/2ft GC 5-10

Leaves and flowers – raw or cooked. A prevalent herb.

•Accumulator •Invert shelter •GC •Scented •Wildlife Food •Nectary

Elderberry *Sambucus species*

4 3 5 6m/20ft 3-9

Fruit & flowers cooked - delicious jams, preserves and pies.

•Pioneer •Hedge •Scented •Wildlife Food & Shelter •Nectary

Thyme *Thymus vulgaris*

4 3 5 0.2m/0.7ft GC 5-11

Leaves and flowers – raw in salads, as a garnish or cooked flavouring.

•GC •Accumulator • Invert shelter •Scented • Nectary

Chilean guava *Ugni molinae*

5 0 3 2m/7ft 7-11

A delicious flavour fruit tasting of wild strawberries.

• Hedge • Nectary

Support Shrubs

Support shrubs are plants for a food forest with other non-edible benefits that help the ecosystem to thrive. They might have other design benefits, act as nitrogen fixers or dynamic accumulators, repel or distract pest species, or attract a range of beneficial wildlife. The plants are ordered by scientific name.

Alder *Alnus species*

2 3 5 3m/10ft 2-9

•Nitrogen fixer •Nectary •Wildlife Shelter •Hedge •Coppice

False Indigo *Amorpha species*

2 2 3 1m/4ft 2-9

•NF •Nectary •Invert shelter • Soil Stabilizer • Shelterbelt •Scented •Coppice •Hedge

Mountain Mahogany *Cercocarpus*

0 1 3 4m/14ft 6-7

•NF •Nectary •Hedge •Wildlife •Soil Stabilizer •Nectary

Bladder Senna *Colutea arborescens*

0 2 4 4m/14ft 4-6

•NF •Invert shelter •Hedge •Soil Stabilizer •Wildlife

Common Broom Cytisus species

0 0 4 0.2m/1ft 5-8

•NF •GC •Invert shelter •Nectary •Soil Stabilizer •Wildlife •Coppice

Mountain Avens *Dryas octopetala*

1 1 2 0.1m/0.4ft 3-6

•Nitrogen Fixer •Groundcover •Minor Edible (tea)

Woodwaxen Broom *Genista pilosa*

1 2 3 1m/3ft 4-6

•Nitrogen fixer •Groundcover •Invert shelter •Nectary

Chinese Indigo *Indigofera decora*

2 1 3 1m/4ft 5-7

•NF •Groundcover •Scented •Invert shelter •Minor Edible

Lavender *Lavandula species*

2 3 5 1m/4ft 5-9

•Hedge •Scented •Nectary •Wildlife •Minor Edible

Amur maackia *Maackia amurensis*

1 0 4 6m/20ft 4-7

•Nitrogen Fixer •Scented •Invert. Shelter •Minor Edible

Locust *Robinia species*

0 1 3 3m/12ft 4-8

•NF •Accumulator •Wildlife •Hedge •Invert. Shelter •Coppice

Gorse *Ulex europaeus*

1 1 5 1.5m/5ft 5-9

•NF •Wildlife •Hedge •Nectary •Invert shelter •Scented •Pioneer

Table 1. A summary of the edible parts and use of a shrub. The plants are listed by scientific name, with the page number for reference in brackets.

	Leaves Bulk Raw	Leaves Bulk Cooked	Leaves flavour Raw	Leaves Flavour Cooked	Flowers Raw	Flowers Cooked	Fruit Raw	Fruit Cooked	Tea/Drink	Shoots Raw	Shoots Cooked	Stem Cooked	Seed Raw	Seed Cooked
Aloysia citriodora *(p24)*			●	●										
Amelanchier species *(p16)*							●	●	●					
Arctostaphylos uva-ursi *(p27)*							●	●						
Asimina triloba *(p24)*							●	●						
Atriplex species *(p25)*	●	●	●	●										●
Berberis species *(p16)*	●					●	●	●						
Calycanthus species *(p29)*														
Caragana species *(p25)*														●
Castanea pumila *(p18)*													●	●
Ceanothus species *(p29)*									●					
Cephalotaxus species *(p29)*								●					●	●
Cercis species *(p29)*	●	●			●								●	●
Chaenomeles species *(p21)*								●						
Comptonia peregrina *(p28)*			●	●					●				●	●
Cornus species *(p20)*							●	●						
Corylus species *(p22)*													●	●
Crataegus species *(p22)*							●	●						
Drimys lanceolata *(p29)*								●						●
Elaeagnus species *(p20)*							●	●						
Gaultheria species *(p29)*			●				●	●	●					
Hibiscus species *(p23)*	●	●			●	●								
Hippophae species *(p29)*							●	●						
Hyssopus officinalis *(p27)*			●	●	●	●				●	●			
Juniperus species *(p23)*							●	●	●					
Lespedeza species *(p18)*		●				●			●			●		●
Lonicera species *(p29)*							●	●						
Lycium species *(p30)*							●	●			●			
Mahonia species *(p30)*							●	●						
Mitchella repens *(p28)*							●		●					
Rhus species *(p30)*							●	●						
Ribes species *(p19)*	●						●	●	●					
Rosa species *(p30)*					●	●	●	●						
Rosmarinus officinalis *(p30)*			●	●	●	●				●	●			
Rubus species *(p17)*							●	●	●	●	●			
Salvia officinalis *(p30)*			●	●	●	●								
Sambucus species *(p30)*					●	●		●	●					
Thymus vulgaris *(p30)*			●	●	●	●				●	●			
Ugni molinae *(p30)*							●	●						
Vaccinium species *(p26)*							●	●	●					

Trees

This section includes trees for the upper tree canopy (formed with larger trees) and lower tree layer (with smaller, often fruiting trees).

Angelica Tree *Aralia elata* see **Aralia species** under Herbaceous Plants.

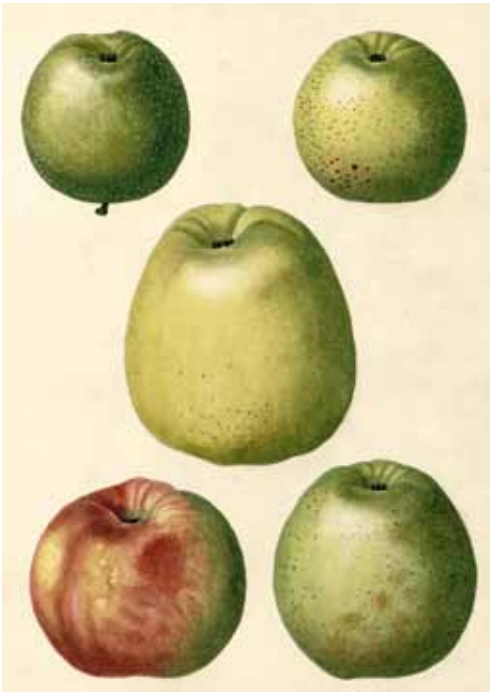
Apple *Malus species*

5 2 4 pH 9m / 30ft 2 to 10

Apples are small to medium-sized deciduous trees, typically growing from 4–12m (14–40ft) tall, with edible fruit produced in autumn. Orchard Apples (*Malus domestica)* are commercially cultivated for their edible fruit and grafted onto rootstocks to control their size and disease resistance. They are a hybrid of mixed origins, including *M. dasyphylla, M. praecox, M. pumila, M. sieversii and M. sylvestris*. There are a great many named varieties with different flavours ranging from sour to sweet and textures from dry and mealy to crisp and juicy. There is also a wide range in ripening seasons with the first fruits being ready in mid-summer whilst other cultivars are not picked until late autumn. It is possible to provide freshly harvested fruit from mid-summer to early winter and stored fruit for the rest of the year with careful choice. They prefer a sunny position but will succeed in partial shade, producing less fruit.

Orchard Apple (M. domestica)

Orchard apples are grown on rootstocks that influence the tree size and the age at which it has fruit and yield. M26 and MM106 are suitable rootstocks for small to medium-sized areas. MM111 and M25 are vigorous standard trees for large sites; M9 and M27 are dwarfing when space is limited. There is a vast choice of apple cultivars for dessert (eating), culinary (cooking) use, dual-purpose or cider making. Crab apples bear smaller, tarter fruits offering both shelter and food for visiting birds. The fruits often persist on the tree throughout winter. Praire Crabapple (*M. ioensis*) is an attractive North American native with fruit about 3cm (1in) in diameter that is eaten raw or cooked and used for jelly, cider, and as a good pollinator for other apples. The ornamental Siberian Crabapple (*M. baccata*) has edible sour red to yellow fruit about 1cm (0.4in) in diameter; sub-species and cultivated forms have considerably larger fruits. Dried fruit is used in winter and also makes an excellent jelly.



Apple (M. pumila)

Propagation: Seed – stored seed requires stratification for three months. Many species are hybrids and will not breed true from seed. Cuttings of mature wood in winter. Commercially, apple trees use grafting or budding. Most apples are self-incompatible and must cross-pollinate to develop fruit. The root pattern is flat with shallow roots.

• Self-sterile and Self-fertile species • Dynamic Accumulator • Wildlife • Coppice

Beech *Fagus species*

4 2 4 pH 30m / 100ft 4 to 8

European Beech (F. sylvatica)

Beech is a genus of deciduous trees native to temperate Europe, Asia and North America. Several have edible leaves and nuts. Two recommended species are the large European Beech (F. sylvatica) and the smaller American Beech (*F. grandifolia*). Both are dynamic accumulators. European beech: young leaves have a nice mild flavour good raw in mixed salads; older leaves are tough. New leaf growth is available for two periods of three weeks each year, in spring and then mid-summer. The seed has a pleasantly sweet flavour but is small and fiddly. It is dried and ground into a powder and used with cereal flours when making bread and cakes. It is rich in oil and contains 17-20% of edible semi-drying oil; this stores well without going rancid and is said to be equal in delicacy to olive oil.

The American Beech occurs in the eastern United States and southeastern Canada. It is the only Fagus species in the Western Hemisphere. American beech has edible leaves and seeds similar to European beech. The seed is small, very sweet and nutritious and sold in local markets in Canada and America. The root pattern divides from the crown into several primary roots and can sucker.

• Self-fertile • Dynamic Accumulator • Nectary • Coppice • Hedge

Birch *Betula species*

3 3 5 pH 20m / 65ft 2 to 9

Birch species are small to medium-sized deciduous hardwood trees or shrubs. They are fast-growing, relatively short-lived pioneer species that often invade bare land. The root pattern is a heart root, dividing from the crown into several primary roots. Birch species are in the family Betulaceae, with several useful species like alders, hazels, and hornbeams. They will withstand considerable wind exposure and can be grown in drier conditions than alders, and tolerate areas with periodic inundation. The UK native species Silver Birch (*B. pendula*) (Heat Zones 7-1), with a weeping habit, and Downy Birch (*B. pubescens*) are suitable pioneer species. Apart from being magnificent trees for wildlife, these two very similar species also have an extensive range of uses. These include the sap, which can be taken off in the spring and make sweet drinks, beer or vinegar. The inner bark of both species is edible when cooked or dried and ground into a meal and used as a famine food when other starch forms are not available or are in short supply. It can be added as a thickener to soups or mixed with flour for making bread and biscuits. More palatable is the tree sap with a sweet flavour and eaten raw or cooked. It is a very diluted sugar solution often concentrated into a syrup by boiling off the water. A mature tree provides four to seven litres per day with the flow best on sunny days following a frost. Fill the tap hole afterwards to protect the tree. Prolonged or heavy tapping will kill the tree. Use the young birch leaves raw or cooked; they make good tea. Leaves are an excellent addition to the compost heap, helping to improve fermentation.

The medium to large American native species Yellow Birch (*B. alleghaniensis*) and Black Birch (*B. lenta*) grow in light shade, and both have edible sap used as a sweet wintergreen syrup. In the wild, birches often form even-aged stands on sandy, well-drained, acidic soils. Many species tolerate heavy clay and nutritionally poor soils.

Propagation: Seed – needs a long stratification.

• Self-fertile • Dynamic Accumulator • Nectary • Coppice • Pioneer

Downy Birch (B. pubescens)

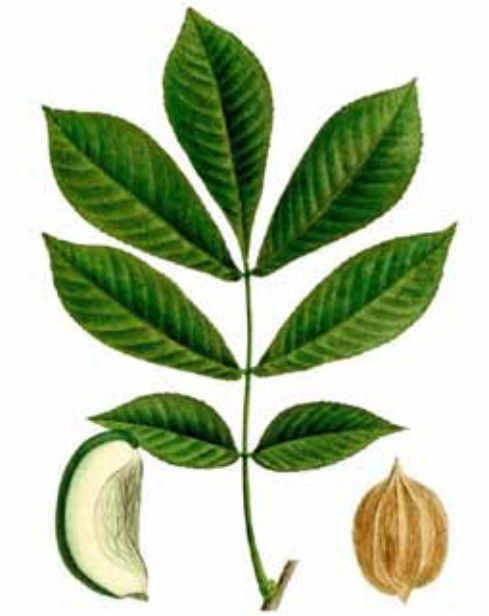
Hawthorns *Crataegus species – See Shrubs.* Several edible hawthorns are small to large trees more suited to the tree canopy. Mayhaw (*C. aestivalis*), Arnold Hawthorn (*C. arnoldiana*), Scarlet Hawthorn (*C. ellwangeriana*), Downy Hawthorn (*C. mollis*), Chinese Haw (*C. pinnatifida*), Dotted Hawthorn (*C. punctata*), Blue hawthorn (*C. schraderana*), and Tansy-Leaved Thorn (*C. tanacetifolia*) are worth considering.

• Self-fertile • Wildlife • Nectary • Hedge • Scented • Coppice

Hickory & Pecan *Carya species*

4 3 3 pH 40m/130ft A 4 to 11

Hickories are large vigorous deciduous trees with a medium to long lifespan found in temperate forests. Several species have excellent edible nuts, rich in oils and B vitamins, and are native to North America. They have a lovely autumn colour. The root pattern is a taproot.



Shellbark Hickory (C. laciniosa)

Pecan (*C. illinoinensis*) fast-growing, very large tree with big sweet and delicious nuts. Eat the nuts raw or cooked; they make an excellent dessert and are added to ice cream, used in cakes and bread. Milk is made from the nut and used to thicken soups, season corn cakes, and in hominy. Harvest in late autumn; eat immediately or store in a cool place in the shell for up to six months. The nut oil is edible and a staple crop. In leaf, they cast a heavy shade, but because they are late coming into leaf (usually late spring) and lose their leaves early in the autumn, they are eminently suitable for mixed woodland planting with shrubs and other trees beneath them. Hickories are smaller trees with tinier nuts and prefer more humid conditions. Shellbark Hickory (*C. laciniosa*) and Shagbark Hickory (*C. ovata*) both have excellent nuts and grow to about 30m (100ft). Use the nuts in a similar way to pecans. Several North America hybrids produce delicious nuts, especially the Hicans, which are hybrids between *C. illinoinensis* and any other Carya species. Hicans have large and tasty nuts but are less productive than pecans.

Pecan trees are monoecious having separate male and female flowers on the same tree. Pollen is not released when flowers are receptive. For optimum cross-pollination planting at least three cultivars with one of each pollination, type (I or II) is recommended. Type I cultivars include '***Cape Fear***' and '***Pawnee***.' Type II cultivars include '***Chickasaw***', '***Elliot***', '***Forkert***', '***Gloria Grande***', '***Kiowa***', '***Stuart***' and '***Sumner***'.

Propagation: Seed – requires a period of cold stratification. Graft on a seedling rootstock.

• Self-sterile • Dynamic Accumulator • Nectary • Coppice

Honeypod mesquite *Prosopis glandulosa*

3 2 4 pH 7m/24ft N A SF 8 to 11

Honeypod mesquites are large, fast-growing, deciduous, thorny shrubs or small trees growing to 7m (24ft) high for warm temperate areas. The pods and the gum from the bark are an edible balanced carbohydrate, and they are useful nitrogen-fixing plants. Eat the immature sweet seed pods like string beans either raw or cooked. The pods can be 20cm (8in) long containing 5-18 seeds. Cooked young seedpods have the juice squeezed out which is drunk like milk as a summer beverage. Eat mature pods without any processing. Make flour meal by pounding and adding water. Form into cakes and eat dry, or make into a mush. Make bread, pancakes from ground seeds. Make a tea from the flowers.

When dormant, the plant is very cold-tolerant and can survive temperatures down to about -22°C (-8°F), but young growth is much more tender and can be severely damaged at -1°C (30°F). It tolerates moderately saline soil and drought.

The plant has a deep, suckering root system known to penetrate 18m into the ground extracting moisture from the water table. Honeypod mesquites are ideal pioneer species for restoring the soil and re-establishing native woodland. They fix 30-40 kg of nitrogen per hectare with 30% canopy cover. Use established trees as a tree crop for alley cropping, windbreaks or timber belts. Trees provide shade, shelter and erosion control. Heat tolerant in zones 12 through 7.

Propagation: Seed – if dried scarification will speed up and improve germination.

• Self-fertile • Nitrogen Fixer • Wildlife • Pioneer • Erosion control

• Windbreak

Honeypod mesquite (P. glandulosa)

Oak *Quercus species*

5 3 5 pH 30m / 100ft SF 3 to 11

Holm Oak (Q. ilex ballota)

Oaks are deciduous or evergreen trees or shrubs in the beech family, Fagaceae. They are native to the Northern Hemisphere from cool temperate to tropical areas in North America, Asia, Europe and Africa. North America has over 90 species. Oak trees have characteristic nuts called acorns that follow the inconspicuous flowers. Both the acorns and leaves contain tannic acid which protects the tree from fungi and insects. Tannins are used in photography, dyeing, clarifying wine, and as astringents in medicine. Tannins make the acorns slightly acidic or bitter and poisonous to humans. Several oaks have low tannin levels that are leached out of the acorn to make them edible. Washing the acorns thoroughly in running water removes the water-soluble tannins. The whole acorn is used or dried and ground into a powder first. It can take several days or even weeks to leach the acorns properly. One method is to wrap them in a cloth bag and place them in a stream. Leaching the powder is quicker. A simple taste test can tell when the acorns are ready. The traditional method of preparing the seed was to bury it in boggy ground over winter. The germinating seed was dug up in the spring when it would have lost most of its astringency. Many oaks can tolerate semi-shade.

Holly Oak (*Q. ilex*) slow-growing, large, ornamental, evergreen tree with edible sweet or bitter acorns eaten raw or cooked; leach before use. The 3cm (1.1in) acorn is a staple balanced carbohydrate crop (0-15% protein, 0-15% oil, with at least one over 5%). They are dried, ground into a powder and used as a thickening in stews or mixed with cereals for making bread. Holly oaks are tolerant of maritime exposure and trimming; they are grown as a shelterbelt tree or hedge in maritime areas. Holly Oak is heat-tolerant in zones 9 through 2. The sub-species Holm Oak (*Q. ilex ballota* or *Q. rotundifolia*) has sweet-tasting edible seed cultivated in Portugal and Spain. Valonia Oak (*Q. ithaburensis* subsp. *macrolepis* or *Q. macrolepis*) is a smaller European native with low tannin, large acorns 4cm (1.6in) long.

Several oaks with edible acorns are medium to large shrubs. Fruticosa Oak (*Q. fruticosa*) a European evergreen grows to 2m (6.5ft). In comparison, Gambel Oak (*Q. gambelii*) and Dwarf Chinkapin Oak (*Q. prinoides*) are larger North American deciduous shrubs growing to 4m, with sweet-tasting acorns.

Several North American species are worth considering. Nearly all are large deciduous trees. For a smaller species choose Sawtooth Oak (*Q. acutissima*) which has bitter but abundant acorns.

White Oak (*Q. alba*) is a dynamic accumulator with sweet acorns containing 6% protein and 65% carbohydrates. White oak is potentially valuable for use in reforestation projects and disturbed sites. It has exhibited excellent growth and survival on

cast overburden and graded topsoil that overlies mine spoils in Ohio, Indiana, and Illinois, USA. Cultivated White Oaks are grown for edible seed; trees take about 30 years before they start to bear good crops but continue to yield commercial crops for 120 years. The plant is heat tolerant in zones 8 through 1.

Swamp White Oak (*Q. bicolor*) has larger sweet flavoured acorns up to 3cm (1+in) long, and unlike most oaks, they are attached to the tree by a long stem. A relatively fast-growing tree in the wild, living 300-350 years. The swamp white oak typically grows on hydromorphic soils (soils developed in an excess of moisture that tends to suppress aerobic factors in soil-building). They are found in broad stream valleys, low-lying fields and lakes or pond margins but not permanent flooding areas.

Bur Oak (*Q. macrocarpa*) acorns are very large up to 5cm (2in). A good tree for soil rehabilitation, it has been successfully planted on coal spoils in the north-central and northern Great Plains and the Western Interior Coal Province in the USA. Established plants are drought resistant, tolerant of atmospheric pollution and have a thick, fire-resistant bark. Dwarf Bur Oak (*Q. macrocarpa depressa*) is a dwarf variety growing to 2m (7ft) tall with corky branches and smaller seeds than the species, usually about 1cm (0.4in) long.

Swamp Chestnut Oak (*Q. michauxii*) with large sweet edible seed up to 35mm (1.4in). Swamp Chestnut Oak is a wetlands plant found in inundated bottoms, stream borders and swamps, and used on degraded bottomland hardwood forests of the Southeastern USA for restoration.

Chinkapin Oak (*Q. muhlenbergii*) cooked acorns are pleasant tasting, sweet with little tannin. Trees respond well to coppicing. Heat tolerant in zones 8 through 2.

Chestnut Oak (*Q. prinus*) is a slow-growing tree in the wild, though it can live 400 years. The seed is large, up to 4cm (1.6in) long, eaten raw or cooked. It is not usually a large tree due to the dry habitat and ridgetop exposure in its normal range. Heat tolerant in zones 8 through 3.

Additional European oaks include Sessile Oak (*Q. petraea*) and English Oak (*Q. robur*). Both trees are coppiced/pollarded on a long cycle (up to 50 years). Older Sessile Oak trees have a thick corky bark used to protect them from forest fires. The Pontfadog Oak, once considered to be the oldest oak tree in the UK, was over 1,200 years old, an age that was due to regular pollarding for much of its life. English Oak (*Q. robur*) is a close relative to the sessile oak, sharing much of its range. Acorns are chopped and roasted as an almond substitute. Dried, they are ground into a powder and used as a thickening in stews or mixed with cereals for making bread.

• Self-fertile • Shelterbelt • Hedge • Nectary • Wildlife • Coppice (some)

Pear *Pyrus species*

5 1 3 pH 5m/18ft 4 to 8

Pyrus species are temperate deciduous trees or shrubs up to 20m (66ft) high with scented white flowers in spring and green or brown fruits. Several species of pears are valued for their edible fruit, while others are ornamental cultivated trees. Depending on the species and cultivar, fruit is available from summer to late autumn. The European Pear or Common Pear (*Pyrus communis*) is native to Europe and southwest Asia and widely planted in North America. Many cultivars are available for commercial and garden fruit production. Choice of cultivar depends on the site conditions, garden size, taste, use (eating or cooking), disease resistance and storage. For high yields, pears need pollination from a different cultivar that flowers at the same time. European pear trees can be dwarf to large trees depending on the rootstock. Good croppers with similar pollination needs include '***Beth***' with small, sweet, juicy fruits, '***Beurré Hardy***' a vigorous upright tree with large fruit, '***Conference***' a heavy cropper that can set fruit without pollination, '***Concorde***' a compact early fruiting tree, and '***Williams Bon Chrétien***' with musky flavour fruit.

Common Pear (P. communis)

Asian pears have similar cultivation needs to European pears. Nashi Pear (*P. pyrifolia*) is a medium-sized tree with round, firm, crisp and juicy fruit when fully ripe. Chinese Asian Pear (*P. ussuriensis*) is a medium to large tree with fruit 4cm (1.6in) in diameter. The fruit size and quality vary tremendously from tree to tree. Suitable forms have somewhat dry but pleasantly flavoured fruit; other forms are less pleasant and often smaller. The hybrid Chinese White or Ya Pear (*P.* × *bretschneideri*) is more widely grown in East Asia. Chinese white pears are juicy, white to light yellow fruit shaped like the European pear (*P. communis*) rather than the round Asian Nashi pears.

• Self-sterile and Self-fertile – but most species are not Self-fertile • Nectary • Coppice • Wildlife

Persimmon *Diospyros species*

5 3 3 pH 20m/60ft 4 to 10

Japanese Persimmon (D. kaki)

Diospyros is a genus of deciduous and evergreen trees and shrubs mainly native to the tropics. Several medium to large-sized deciduous species grow in temperate regions and are valued for their tasty fruit. American Persimmon (*D. virginiana*) (Heat-tolerant in zones 9 through 1) has an exquisitely rich flavoured fruit which is about the size of a plum when fully ripe. The unripe fruit is harsh and astringent. The fruit may not ripen properly in a cool summer, though if it is frosted it develops a good flavour. The fruit is cooked or dried and used in bread, cakes, pies and puddings. The fruit can also be harvested in the autumn, preferably after a frost, and bletted. Use the fruit pulp to make molasses. Make sassafras flavoured tea, high in vitamin C, from the dried leaves. The seed makes a peanut flavoured oil. Two other possible species to consider are Japanese Persimmon (*D. kaki*), with bright yellow foliage and orange fruit in autumn, and Date Plum (*D. lotus*) which are hardy to -15°C (5°F). Both species have exquisitely rich flavoured fruit when fully ripe. The smaller fruit of Date Plum acquires a date-like flavour when dried. Persimmons prefer a sunny position with neutral to alkaline soil. Several varieties are available that have less astringent fruit and crop earlier. The root pattern is a tap root and suckering.

Propagation: Seed. Cuttings of half-ripe wood in summer. Layering in spring.

• Self-fertile (*D. kaki*) • Self-sterile (*D. lotus* and *D. virginiana*) separate male and female trees needed. • Nectary • Wildlife • Coppice (*D. virginiana*)

Pine *Pinus species*

4 2 5 pH 20m/65ft SF 3 to 11

Pines are shrubs or large, coniferous evergreen trees with long needle-like leaves. Several species have large edible seeds, called pine nuts, that are eaten raw or used for cooking and baking. Harvesting seed is time-consuming and usually carried out by hand. Only a few pine trees produce pine seeds that are large enough to harvest, and it takes 8 to 25 years for trees to begin producing. Many species have a straight tapering root growing vertically downwards. Commonly harvested seeds include Mexican Pine (*P. cembroides*) (growing to 8m/26ft), the Colorado Piñion (*P. edulis)* (growing to 15m/50ft), the Italian Stone Pine (*P. pinea*) (growing to 10m/32ft) used in Pesto alla Genovese, and the Korean Pine (*P. koraiensis*) (growing to 20m/65ft). Cones fall or remain on the tree for years. They are all excellent carbon farming staple crops.

Mexican Pine has good pea-size seeds up to 15mm (0.6in) long, delicious roasted, the highest in protein and lowest in starch of all the piñons. The seed contains about 15% protein, 62% fat and 18% carbohydrate.

Colorado Piñion has delicious seeds with a slightly resinous flavour used raw or cooked. The seed is 2.5 cm (1in) long and rich in oil, protein and thiamine.

Italian Stone Pine has ivory-coloured, delicious seeds widely used in French and Italian dishes. The cones take a full three years to mature. When harvested, the seeds are kept in their cones to ensure they are fresh.

Korean Pine has large seeds with a soft texture and a hint of resin in the flavour. They are about 15mm (0.6in) and rich in oil.

Swiss Stone Pine or Arolla Pine (*P. cembra*) and the larger Siberian Pine (*P. cembra var. sibirica*) growing to 30m (100ft) have a much valued delicious oil-rich seed 10mm (0.4in) long, with a slight flavour of turpentine. The seed also produces an edible drying oil.

Chinese White Pine (*P. armandii*) esteemed as a great delicacy has an oil-rich seed with a slightly resinous flavour.

Singleleaf Piñon (*P. monophylla*) has an oily seed, with an agreeable almond-like flavour, used in sweetmeats, pastries. They are a carbon farming staple crop with the lowest protein and fats and the highest starch of the piñons. The seeds are 2 cm (0.8in) long with a thin shell.

Nepal Nut Pine (*P. gerardiana*) is rich in oil with a pleasant flavour and resin hint and used like pistachio nuts. They are a good size, up to 2.5cm (1in) long.

Italian Stone Pine (P. pinea)

Whitebark Pine (*P. albicaulis*) has a large, sweetly-flavoured, oil-rich seed of 10mm (0.4in) with a thick shell. Used raw, cooked or ground into a powder and used as a flavouring in soups or cereal flours when making bread, biscuits and cakes. Trees produce a small number of cones annually. Plants often colonize exposed mountain slopes in the wild, their root system anchoring them firmly.

Japanese Stone Pine (*P. pumila*) is shrubby growing to 3m (9ft) with 10mm (0.4in) sized seed. The seed is rich in oil with a slightly resinous flavour and a pleasantly soft texture.

Scots Pine *(P. sylvestris*) and Monterey Pine (*P. radiata*) have less appetizing edible seed. They make excellent shelterbelt trees. Monterey Pine is fast-growing and very tolerant of maritime exposure and salt-laden winds. They increase in height 1 and 2.5m (3 and 8ft) per year even in exposed positions.

Pines grow well in acid soils, most require good soil drainage and prefer sandy soils. Several species tolerate extreme conditions of elevation and latitude (e.g. Japanese Stone Pine and Whitebark Pine). Many pinyon pines have adapted to grow in hot, dry semi-deserts. Stone pines need shelter to fruit in cold regions.

Propagation: Seed or grafting. Pines are mostly monoecious, having the male and female cones on the same tree.

• Self-fertile • Wildlife • Shelterbelt

Plum, cherry, peach, apricot & almond *Prunus species*

5 3 3 pH 6m/20ft 2 to 9

The genus Prunus are deciduous or evergreen shrubs and trees with showy spring flowers and good autumn leaf colour; some have attractive ornamental bark. Prunus includes several species developed for fruit and nut production, for example, apricots, cherries, peaches, nectarines, almonds and plums. Other species are useful in food forests for their seed and fruit. Most edible fruit from this genus is eaten raw, cooked or dried for later use. Edible seeds, but if they are bitter eat in strict moderation. Several Prunus species will succeed in light shade but fruit better in a sunny position.

Apricot (P. armeniaca)

The seed of all members of this genus could probably be used for oil extraction, although in temperate climates the plum is perhaps the most reliable choice. The extracted oil is semi-drying. Consume in small quantities if it tastes strongly of bitter almonds. Most genus members are shallow-rooted, forming a plate near the soil surface, and will produce suckers if the roots are damaged.

Apricot (*Prunus armeniaca*) dwarf to medium tree, attractive fragrant flowers. The best fruit forms are soft and juicy with a deliciously rich flavour. The fruit is about 5cm (2in) in diameter and contains one large seed. Yields up to 55kg from larger trees are possible. The seeds are edible and in warmer climates are sweet. In colder temperate areas they are often bitter and used as bitter almonds in making marzipan. The Italian liqueur *amaretto* and *amaretti biscotti* use the sweeter seeds rather than almonds. The pressed seed contains up to 50% of an edible semi-drying cooking oil known as *oil of almond*. It is a protein-oil staple crop (16+ per cent protein, 16+ per cent oil). The fruit is available from mid to late summer. Earlier coppers include '***Flavorcot***' and '***Tomcot***'. Later recommended croppers are '***Goldcot***', '***Golden Glow***' with smaller fruit, and '***Vigama***'. '***Alfred***' is less prone to canker.

Apricots flower early making them vulnerable to frost damage. They are widely cultivated in temperate areas with long hot summers but will drop their fruit buds if there is summer drought. They dislike clay and saline soils. Heat tolerant zones 8 through 1.

Manchurian Apricot (*P. mandshurica*) medium tree with attractive spring blooms and excellent winter hardiness (USDA Zone 3). The fruit, usually cooked in flavorful jams and jellies, is smaller and inferior to Apricot (*P. armeniaca*). Oil from the seed is a potential source of biodiesel.

Almond (*P. dulcis*) attractive dwarf to small tree native to Iran growing best in Mediterranean climates with warm, dry summers and mild, wet winters. It can be induced to flower too early in the season in more temperate maritime areas and is then liable to be damaged by frosts. As long as there is no late spring frost, they produce a good crop in many temperate regions; choose a late flowering variety. Almond seeds are a staple crop eaten raw, roasted, sprouted and used in cakes, confectionery, pastry or dried and ground into a powder for use in confections. There are two common varieties, Sweet Almonds (*P. dulcis var. dulcis*) are predominantly sweet and Bitter Almonds (*P. dulcis var. amara*) are bitter. Bitter Almonds are not eaten raw but used as an oil or for flavouring food including marzipan.

Peach (P. persica)

Almonds will produce a good crop within three years and are fully bearing by five. The nuts are available in autumn when the husk splits. Trees are hardier when grown on a plum rootstock. Almond seedlings are the preferred rootstock when plants are grown on hot, dry soils; peach rootstocks are better for heavier soils. Partially self-fertile, two cultivars have better yields. Planted near peaches, they hybridize making bitter nuts. Heat tolerant in zones 8 through 5.

Peach (*P. persica*) dwarf to small tree native to Northwest China and closely related to the almond. When fully ripe, the fruit of the best forms is very juicy with a rich, delicious flavour. The fruit is a good source of vitamins A, C, potassium, niacin and zinc. It is high in fibre and low in calories. Peaches have been successfully grown in temperate zones. They are one of the first fruit trees to flower in early spring when few insects are around to pollinate their delicate pink blossoms; hand-pollination will produce bigger crops. Clingstone fruit adheres to the stone while freestone comes away easily. The flowers are edible and eaten raw or cooked and added to salads, used as a garnish or brewed into a tea. Nectarine (*P. persica nucipersica*) are dwarf to small trees of the same species but regarded commercially as different fruits. The skin of nectarines lacks the fuzz texture of peaches. Peaches and nectarines are heat-tolerant in zones 8 through 1.

Plums are small to medium-sized deciduous stone fruit trees that include Gages (*P. domestica*), Damsons (*P. insititia*), Myrobalan plums (*P. ceracifera*) and Japanese plums (*P. salicina*). They are fully hardy but flower early in spring often requiring a warm sheltered position to avoid blossom frost damage. Rootstocks are chosen to limit their size and encourage earlier fruiting. Choose a self-fertile cultivar that does not require a cross-pollinator to set fruit if you only have one tree. Plums are propagated by grafting or budding as named cultivars will not come true from seed. Seed or cuttings are larger, slower to fruit trees than ones grafted onto a chosen rootstock.

Allegheny Plum (*P. alleghaniensis*) small tree with a juicy fruit 2cm (0.8in) in diameter. The flesh is pleasantly acid and used raw or cooked. The fruit has a tough, thick skin. Like many of the plums, it is a fast-growing but short-lived tree.

American Plum (*P. americana*) small to medium-sized tree. The fruit is about 25mm (1in) in diameter, with succulent and juicy flesh, though it is somewhat acid with a tough skin. The best forms are pulpy and pleasant tasting. The fruit is cooked or dried for later use.

Chickasaw Plum (*P. angustifolia*) large shrubs or small tree. The fruit is up to 18mm (0.7in) in diameter, large and thin-skinned with a soft juicy sweet pulp. They are deliciously flavoured and perfect eaten straight from the tree.

Sand Plum (*P. angustifolia var. watsonii*) medium-sized shrub with tasty fruit 14mm (0.5in) in diameter, eaten raw or cooked. It has an acid taste and used in preserves and pies.

Myrobalan Plum/Cherry Plum (*P. cerasifera*) small to medium-sized tree with mealy but juicy fruit hanging on the tree until mid-autumn. They are the size of a small plum with a thin skin and a nice sweet flavour. Myrobalan plums make an excellent windbreak hedge though they cannot stand too much exposure. They are often used as a rootstock for the cultivated plums, giving them a semi-dwarfing habit.

European Plum (*P. domestica*) dwarf to small tree with large mealy, soft, juicy fruit with a delicious flavour ranging from very sweet to acid. The more acid fruits are usually only used for cooking purposes. Most prunes (dried plums) are from fruits of this species. The seed is edible and used raw or cooked. If too bitter, avoid eating them. It contains about 20% of edible semi-drying oil with an almond smell and flavour. Flowers are edible and used as a garnish for salads, ice cream or brewed into a tea.

European Plum (P. domestica)

Beach Plum (P. maritima)

Widely cultivated in temperate zones, many named varieties can supply fresh fruits from late summer into winter. Many cultivars are fully self-fertile, though some are partially self-sterile, and others require cross-pollination. '***Czar***' is a purple self-fertile plum, tolerant of late frosts, light shade and wetter conditions. The fruit is available late summer. Both '***Marjorie's Seedling***', early fruiting in autumn with blue fruit, and '***Pershore***', fruiting in late summer with yellow fruit, have good disease resistance. '***Warwickshire Drooper***' is a vigorous, heavy cropping self-fertile tree with a weeping habit and yellow fruit available in early autumn. Plums prefer full sun, but cultivars are available for light shade. Purple fruited '***Belle de Louvain***' is light shade tolerant but late frost damages flowers. The plant is heat tolerant in zones 8 through 3.

Damson (*P. insititia or P. domestica* subsp. *insititia*) medium-sized tree with small dark-purple to blue plum-like fruit about 25mm (1in) in diameter. The fruit is high in sugars and more acid than plums with a distinctively rich flavour. They are very acceptable raw when fully ripe, especially after being touched by frost. Trees are wind-resistant and can be grown as a shelterbelt hedge. '***Farleigh Damson***' and '***Prune Damson***' are both self-fertile and suitable for colder, wetter areas.

Greengage (*P. domestica* subsp. *italica*) cultivars of the European plum. Often considered to be the finest of the dessert plums, they have a delicious flavour. The green, globose fruit is usually 30-40mm (1.5in) in diameter. Flowers are

edible and used as a garnish for salads and ice cream or brewed into a tea. Greengages are of excellent quality, though their delicate skins make it challenging to get them to market in good condition. The fruit is picked late summer to early autumn. Reliable and vigorous cultivars include '***Oullins Gage***' fruiting mid to late summer, '***Cambridge Gage***' and '***Imperial Gage***' fruiting late summer, and '***Reine Claude de Bavais***' a compact tree fruiting in early autumn.

Hog Plum (*P. hortulana*) small to medium-sized tree with thin-skinned tasty fruit about 12mm (0.5in) in diameter. This tree is of very little value in colder temperate areas, requiring hotter summers to fruit well.

Beach Plum (*P. maritima*) large shrub with fruit about 15mm (0.6in) in diameter, that is very variable in quality. The best forms are sub-acid to sweet. Beach Plum has an extensive root system useful for binding sand along the coast. The fruit seldom ripens when grown in the interior of America. The cultivar '***Eastham***' has large well-flavoured fruit and is a heavy cropper. '***Hancock***' is an early ripening form with sweet juicy fruit. '***Squibnocket***' is of high quality and is also a suitable sand binder.

Wild Goose Plum (*P. munsoniana*) large shrub or small tree with thin-skinned, juicy, aromatic fruit used for desserts.

Canadian Plum (*P. nigra* or *P. americana var. nigra*) dwarf to small tree with a sour flavoured small fruit with thick skin, 2.5cm (1in) diameter. The fruit flavour is improved if it has a few touches of frost before harvesting. Careful selection of varieties gives a tastier fruit cultivated as fruit trees in Canada and America. Canadian Plum is closely related to American Plum (*P. americana*).

Japanese Plum (*P. salicina*) dwarf tree with early ripening fruit. The fruit is sweet and juicy, with a unique taste. The plum-shaped fruit is up to 7cm (3in) long and very resistant to rotting. Japanese Plums require a long warm summer. It is widely cultivated in China's temperate areas and other Asia regions for its edible fruit and is increasingly grown in N. America.

Sloe (*P. spinosa*) large shrub, making excellent living fences and windbreaks. The exceedingly astringent fruit is usually cooked, used in jellies, syrups, conserves, and as a flavouring for sloe gin and other liqueurs. In France, they use the pickled unripe fruit like an olive. The leaves of Sloe are used as a tea substitute and the when dried the fruits added to herbal teas. Edible flowers are crystallized or sugared.

Sweet cherry (*P. avium*) vigorous dwarf to medium-sized tree native to Europe, including Britain and naturalized in North America, New Zealand and Australia. The fruit, 20mm (0.8in) in diameter, is sweet or bitter but not acid and used in pies or preserves. The fruit contains about 78% water, 8.5-14% sugars. Sweet cherry is a pioneer species, and quickly colonizes clearings by seeds and suckering, forming secondary woodland, but is often out-competed later by other hardwood species. It is used extensively in Europe for the afforestation of agricultural land. Sweet cherry is a parent of many cultivated forms of sweet cherries, especially the black-fruited forms. Self-fertile cultivars are '***Stella***' with dark red fruits, '***Sunburst***' with black fruits in mid-summer, and '***Lapins***' with black fruits in late summer.

Sweet cherry (P. avium)

Sour Cherry (*P. cerasus*) small tree with pleasantly acid fruit about 18mm (0.7in) in diameter. The seed, when refined, makes a salad oil and the leaves a tea substitute. Sour Cherry plants make a good hedge in an exposed maritime position.

Dwarf Sour Cherry (*P. cerasus var. frutescens*) dwarf tree similar to Sour Cherry with smaller fruit 10mm (0.4in) in diameter.

Mongolian Bush Cherry (*P. fruticosa*) small shrub with 15mm (0.6in) diameter fruit. The fruit has a tart cherry-like flavour. Mongolian Bush Cherry trees are said to have withstood temperatures down to -45°C (-50°F) in their native habitat.

Japanese Bush Cherry or Plum (*P. japonica var. nakai*) large ornamental shrub with a good-sized fruit up to 50 mm (2in) in diameter. The fruit has a sweet, agreeable flavour, good in pies.

Bird Cherry (*P. padus*) medium-sized ornamental tree with bitter-tasting fruit used mainly for making jam and preserves. The fruit is about the size of a pea and contains one large seed. The flowers are edible and the young leaves used as a boiled vegetable in Korea.

Dwarf American Cherry (*P. pumila*) medium-sized shrub with a good-sized fruit, up to 10mm (0.4in) in diameter. The fruit has a rich and pleasantly acid taste when fully ripe though they are sometimes slightly bitter. Dwarf American Cherry is the largest of the N. American cherries. Established plants are very drought resistant.

Nanking Cherry (*P. tomentosa*) large shrub with juicy, sub-acid to sweet fruit about 12mm (0.5in) in diameter used raw or in juice, jam, wine, and in pickled vegetables. The raw fruits are widely used in Asia. Nanking Cherry trees require a sheltered position and long warm summers. In the UK the fruits are not freely borne. They flourish in well-drained, slightly acidic soil.

Chokecherry (*P. virginiana*) large shrub or medium-sized tree with a bitter, dark and juicy fruit used in pies and jellies and up to 8mm (0.3in) in diameter. The fruit seed is very nutritious and eaten raw, cooked and added to pemmican. Several named varieties are available with less astringent fruit and sold in local markets. Use the bark and twigs are a tea substitute. For erosion control, Chokecherry has an extensive root system forming thickets of suckers. They are pioneer species of abandoned fields and cutover lands.

Duke Cherry (*P. x gondouinii*) small tree with soft-textured, sour to semi-sweet fruit valued mainly for its cooking qualities. Duke Cherry is a hybrid of *P. avium x P. cerasus*. Valued for its hardiness in unfavourable climates.

Dwarf Bush Cherry (*P. x jacquemontii*) medium-sized shrub with red, ovoid fruit 12mm (0.5in) in diameter. The fruit is fleshy and juicy with a pleasant taste. Resistant to several of the fruit diseases common to cherries. Established plants are very drought tolerant and have lovely cherry blossoms in spring and foliage colour in autumn.

• Self-sterile and Self-fertile species • Nectary • Coppice (*Prunus avium)*

Pomegranate *Punica granatum*

3 3 3 pH 5m/18ft SF 8 to 12

Pomegranates are attractive, deciduous, bushy shrubs or small trees growing 4 to 10m (13 to 33ft) cultivated in warm temperate zones for their edible fruit. The fruit is available from mid-autumn into winter and stores well. The sizeable juicy fruit is eaten raw and has a refreshing taste with a sub-acid flavour. Use the fruit juice in soups, sauces, jellies, ice cream, cakes, smoothies and alcoholic beverages, such as cocktails and wine. It contains 1.5% protein, 1.6% fat, 17% carbohydrate, and is high in vitamin C. The fresh seed is soft and can be eaten raw. Use dried seed as a seasoning in dal, fried samosa, stuffings and chutneys.

Pomegranates are not very hardy in temperate zones but will tolerate temperatures down to about -11°C (12°F). A sunny wall will help ripen the fruit. They are drought tolerant. The dwarf cultivar '***Nana***' (1m/3ft) is hardier, but its fruit is lower quality.

The root pattern is flat with shallow roots spreading near the soil surface and suckering. Heat zone: 12-7. Plants are grown as hedges in Mediterranean climates.

Propagation: Seed. Cuttings of semi-hardwood in summer or hardwood in winter. Layering. Division of suckers in the dormant season.

• Self-fertile • Hedge

Pomegranate (P. granatum)

Quince *Cydonia oblonga*

4 2 3 pH 7m/25ft SF 5 to 9

Quince (C. oblonga)

Quince is a large deciduous shrub or small tree growing to 6m (20ft) with delicious aromatic, pineapple-flavoured, pear-shaped fruit available in autumn. In warm temperate or tropical climates, the fruit is soft and juicy and suitable for eating raw. Cook before eating in colder climates as it remains hard and astringent. Use the fruit in jellies, jams, pies and preserves. It is rich in pectin. The cooked fruit adds a delicious flavour to cooked apples. Make an aromatic drink by adding the dried crushed seed to water, simmering for 5 minutes and sweetening to taste. The attractive pale pink blossoms are edible.

Quinces will succeed in semi-shade, but with reduced fruiting. They dislike very dry or waterlogged soils. Species varieties including '***Maliformis***' that ripens well in cooler summers, '***Portugal***' is vigorous with excellent fruit, '***Smyrna***' fruit matures early, and '***Champion***' has smaller mild flavoured fruit produced in abundance. **Chinese Quince** (*Pseudocydonia sinensis*) is a similar sized tree with low-quality fruit.

Heat tolerant in zones 9 through 3. The root pattern is flat with shallow roots near the soil surface.

Propagation: Seed requires stratification. Cuttings of mature wood. Layering in spring. Suckers, removed in spring.

• Self-fertile • Nectary

Nannyberry *Viburnum species*

4 3 3 pH 9m/30ft SF 2 to 8

Guelder Rose (V. opulus)

Viburnums are deciduous or evergreen shrubs or small trees often with showy fragrant white or pink flowers, followed by red, blue or black berries. Several species are edible for humans, but others are mildly poisonous. Many species are attractive garden plants with exciting flowers, berries and autumn colour.

Nannyberry / Sheepberry (*Viburnum lentago*) deciduous, medium-sized tree or very large shrub with pleasant tasting edible berries eaten raw, cooked or dried for winter use. The fruit varies in size and quality growing to 15mm (0.6in) long and is available from early autumn into winter. It is very sweet, pulpy, somewhat juicy with a thick skin and a single large seed. The fruit is said to be best after a frost, but it is sometimes dry.

Nannyberry is an easily grown plant succeeding in most soils but ill-adapted for poor soils and dry situations. Best if given shade from the early morning, sun in spring. A very hardy plant, tolerating temperatures down to about -30°C (-22°F). A fast-growing but short-lived species in the wild. The shrubby form makes it an excellent screen or hedge. Nannyberry readily sprouts from the shallow roots and forms thickets.

Propagation: Seed germination can be slow, sometimes taking more than 18 months but is quicker with 'green' sown seed. Cuttings of soft-wood and half-ripe wood in summer. Cuttings of mature wood in winter.

Several ornamental large shrubs have tasty edible fruit including the Northern American natives Witherod Viburnum (*V. cassinoides*), Highbush Cranberry (*V. trilobum*) and Guelder Rose (*V. opulus*) native to Europe, northern Africa and central Asia. They make excellent attractive hedges and screens although the leaves fall in winter.

Witherod Viburnum fruit is sweet and well flavoured with scant flesh; hanging on the plant well into the winter. The oval fruit is about 10mm (0.4in) long and contains a single large seed. Use the leaves as a pleasant tasting tea substitute.

Highbush Cranberry has juicy but acidic, smaller fruit about 8mm (0.3in). It improves in taste after a frost. The fruit is rich in vitamin C and an excellent substitute for **American Cranberries** (*Vaccinium macrocarpon*).

Use **Guelder Rose** fruit as a cranberry substitute when making, jellies and preserves. It is up to 8.5mm (0.3in) in diameter but with a large seed. They have a sour taste and are better cooked than raw.

• Self-fertile • Specialist Nectary • Wildlife • Hedge

Walnut *Juglans species*

3 3 3 pH 25m / 80ft 3 to 9

Over 18m (60ft) high, several fast-growing large walnut trees species are useful in food forests. All trees are deciduous with native species available in Northern America and Europe. Important species are Common Walnut (*J. regia*), and Black Walnut (*J. nigra*) (heat-tolerant in zones 9 through 5). The raw edible seed is a rich source of protein, dietary fibre, B vitamins and several dietary minerals, particularly manganese. It has 14% carbohydrates, 15% protein and 65% fat. The nuts ripen in autumn and can be eaten at this stage but tend to have a rubbery texture. Usually it is better to dry them which will also mean they keep well. Eat the nuts raw or use in confections, cakes or ice cream. They have a delicious flavour. The nut is ground into a meal and used as a flavouring in sweet and savoury dishes. For more extended storage, unripe nuts are pickled in vinegar. The nut oil is edible but goes rancid quickly. It has a pleasant flavour and is used in salads or for cooking. In spring the sap is tapped and boiled down to a syrup or sugar or added to maple syrup. The northeastern US native Butternut (*J. cinerea*) is the most cold-resistant walnut, tolerating temperatures down to about -35°C (-31F). It requires 105 frost-free days to ripen a crop. Heartnut (*J. ailanthifolia var. cordiformis*) is resistant to the canker disease. It has a good quality nut with a mild and pleasant flavour. The shell is thin and easily cracked. It has a superior taste to Japanese Walnut (*C. ailanthifolia*).

Walnut species have similar cultivation requirements: a neutral to alkaline soil. Black walnut can tolerate dryer soils. Walnuts take light shade in the early stages of development, but full sun is ideal. The root pattern is a taproot. Walnuts are good trees for irregular and strip intercropping systems. Interplanting walnuts with a nitrogen-fixing plant, such as Silverberry (*Elaeagnus × ebbingei)* or Autumn Olive (*Elaeagnus umbellata*) and various Alnus species results in a 30% increase in tree height and girth. **Note:** Walnuts secrete chemicals into the soil which inhibit other plants, especially apples (*Malus species*), members of the Ericaceae, *Potentilla spp*, tomatoes, and the white pines (certain *Pinus spp*.).

Propagation: Seed – three months stratification. Grafted trees begin cropping after about four years. Several walnut species are partially self-fertile, but cropping is improved when cross-pollinated.

• Self-sterile • Nectary • Accumulator • Coppice (*J. cinerea, J. nigra)* • Scented

Common Walnut (J. regia)

Additional Edible Trees

These trees have either already been featured in our other books or have a slightly lower edible rating than the main plant choices. The plants are ordered by scientific name.

Maple *Acer species*

4 2 4 30m/100ft A 3-9

A sugar sap use as a drink or concentrated into a syrup.

•Accumulator •Coppice •Nectary

Monkey Puzzle *Araucaria araucana*

5 1 3 30m/100ft 7-11

Delicious seed soft like a cashew nut with a slight pine nut flavour.

•Shelterbelt •Wildlife Shelter

Strawberry Tree *Arbutus unedo*

4 2 2 9m/30ft 7-11

Sweet fruit, with a lush tropical fruit texture raw or cooked.

•Wildlife Food •Scented •Hedge

Loquat *Eriobotrya japonica*

4 3 2 9m/30ft 8-11

Fruit - acid, sweet aromatic flavour raw or cooked in pies & sauces.

• Wildlife Shelter & Food

Fig *Ficus carica*

4 2 1 6m/20ft 6-10

The fruit is sweet and succulent often dried for later use.

•Wildlife Food

Maidenhair Tree *Ginkgo biloba*

5 5 2 30m/100ft 3-8

Raw seed with a sweet flavour, or cooked in soups & stews. Edible oil.

•Coppice •Scented

Bay Tree *Laurus nobilis*

3 3 4 12m/40ft 8-10

Leaves fresh or dried; a spicy, aromatic flavouring.

•Hedge •Scented

Medlar *Mespilus germanica*

4 1 1 6m/20ft 5-8

Fruit raw (bletted) or cooked.

•Nectary

The following trees are in the shrub section. *Alnus species*, *Robinia species*, *Hippophae species*, *Cercis species*.

Mulberry *Morus species*

5 3 3 10m/30ft 5-9

A delightful acid flavoured fruit – raw, cooked or used in preserves.

•Shelterbelt •Coppice •Wildlife Food

Sassafras *Sassafras albidum*

5 3 3 25m/80ft 5-9

Young aromatic leaves raw or cooked. Fruit, berries & flowers.

•Companion •Scented •Wildlife Shelter & Food •Nectary •Coppice

Sorbus *Sorbus species*

5 2 4 15m/50ft 4-6

Delicious fruit raw or cooked - usually bletted if eaten raw.

•Wildlife Food •Nectary •Coppice •Shelterbelt

Lime/Basswood *Tilia species*

5 3 4 30m/100ft A 3-9

Mild tasting salad or sandwich young leaves. Flowers, fruit & sap.

•Accumulator •Wildlife Food •Nectary •Coppice •Shelterbelt

Chinese Cedar *Toona sinensis*

3 2 4 20m/65ft 6-11

Young shoots and leaves have a good onion flavour .

• Scented • Coppice

Jujube *Ziziphus jujuba*

4 3 3 10m/30ft 5-10

Sourish-sweet tasting fruit fresh, dried liked dates or cooked.

• Hedge • Nectary

Support Trees

Support trees have non-edible benefits, for example, nitrogen fixers, dynamic accumulators, they repel or distract pest species or attract beneficial wildlife.

She-Oak *Casuarina species*

1 0 5 N 18m/60ft 8-11

•Nitrogen Fixer •Soil Stabilizer •Minor Edible •Shelterbelt

Laburnum *Laburnum anagyroides*

0 1 4 N 6m/20ft 4-8

• Nitrogen fixer • Scented

Table 2. A summary of the edible parts and use of a tree. The plants are listed by scientific name, with the page number for reference in brackets.

	Leaves Bulk Raw	Leaves Bulk Cooked	Leaves flavour Raw	Leaves Flavour Cooked	Flowers Raw	Flowers Cooked	Fruit Raw	Fruit Cooked	Tea/Drink	Shoots Cooked	Seed Raw	Seed Cooked
Acer species *(p46)*									●		●	●
Araucaria araucana *(p46)*											●	●
Arbutus unedo *(p46)*							●	●				
Betula species *(p34)*	●	●							●			
Carya species *(p35)*									●		●	●
Crataegus species *(p35)*							●	●				
Cydonia oblonga *(p44)*							●	●				
Diospyros species *(p38)*							●	●	●			
Eriobotrya japonica *(p46)*							●	●				●
Fagus species *(p34)*	●								●		●	●
Ficus carica *(p46)*							●	●	●			
Ginkgo biloba *(p46)*											●	●
Juglans species *(p45)*									●		●	●
Laurus nobilis *(p46)*			●	●				●	●			
Malus species *(p33)*							●	●	●			
Mespilus germanica *(p46)*							●	●				
Morus species *(p46)*		●					●	●		●		
Pinus species *(p38)*											●	●
Prosopis glandulosa *(p35)*						●			●		●	●
Prunus species *(p39)*			●	●			●	●	●		●	●
Punica granatum *(p43)*							●	●	●		●	●
Pyrus species *(p37)*							●	●				
Quercus species *(p36)*											●	●
Sassafras albidum *(p47)*	●	●	●	●					●			
Sorbus species *(p47)*							●	●				
Tilia species *(p47)*	●				●	●			●			
Toona sinensis *(p47)*		●		●					●	●		
Viburnum species *(p44)*							●	●				
Ziziphus jujuba *(p47)*							●	●				

Herbaceous Plants

In a broad sense, the edible herbaceous layer is non-woody plants usually dying back in winter and includes vegetables, flowers, herbs, cover crops, mulch producers and soil-building plants.

Alfalfa, Lucerne *Medicago sativa*

4 3 4 pH 1m/4ft N A SF 4 to 10

Alfalfa, also called lucerne, is a medium-sized nitrogen-fixing perennial in the legume family cultivated as an important forage crop in many countries. Ancient Greeks and Romans produced alfalfa as livestock fodder. It is excellent green manure and a cover crop.

The seed is commonly sprouted and added to salads, used in sandwiches or cooked in soups. Alfalfa sprouts are a common ingredient in dishes made in South Indian cuisine. They are high in vitamin K and are a moderate vitamin C source, B vitamins, phosphorus and zinc. Sprouted seed is ready in about 4-6 days. The dry seeds are ground into a powder and used as a mush, or mixed with cereal flours for making a nutritionally improved bread.

Leaves and young shoots are eaten raw, cooked or dried for later use. They are a good source of protein and rich in vitamin A, B and C. The leaves are a rich source of vitamin K. A very nutritious food in moderation.

Alfalfa has a deep taproot (to 6m/20ft) and, once established, tolerates drought, nutritionally poor soils and arid conditions. The root brings up nutrients from deep in the ground, making them available for other plants with shallower root systems. The roots fix large quantities of atmospheric nitrogen making alfalfa one of the very best green manures. It does not tolerate waterlogging or very acidic soils. Alfalfa is an excellent companion plant for fruit trees and grapevines. Heat zones 8 through 5.

Alfalfa (M. sativa)

Propagation: Seed.

• Self-fertile • Nitrogen Fixer • Dynamic Accumulator • Nectary • Wildlife • Invertebrate Shelter • Hedge • Green manure

Anise Hyssop *Agastache foeniculum*

5 1 3 pH 1m/3ft SF 4 to 9

Anise Hyssop native to north-central and northern North America, is a small to medium-sized perennial plant in the mint family growing to 1m (3ft). The leaves and flowers smell and taste of aniseed and are added to salads or as a flavouring in cooked foods including pizza, cookies, desserts and acid fruits. Chew the flowers raw straight from the plant for a lovely sweet anise flavour. Eat the leaves sparingly as they dry the mouth. Leaves make a pleasant tea.

Anise hyssop needs full sun and temperatures above -10°C (14°F). The flowers bloom for a long season, often from early summer until first frosts. Anise hyssop growth is clumping with a limited spread and a flat, shallow root pattern. Heat tolerant 12 through 5.

Anise Hyssop (A. foeniculum)

Korean Mint (*A. rugosa*) is similar to Anise hyssop with edible aniseed-flavoured leaves, and flowers produced all summer and into autumn. The aroma becomes weaker in shady conditions. In southern Korea, it is a popular herb known as Baechohyang or Banga. Add it to stews or pancakes for flavour towards to end of cooking to preserve the flavour. Mexican Giant Hyssop (*A. mexicana*) has young lemon-scented leaves with similar uses to Anise hyssop. It's native to southern North America. It thrives in semi-arid regions.

Propagation: Easily grown from seed, by division in spring, or by basal cuttings of young shoots.

• Self-fertile • Invertebrate shelter • Nectary • Scented • Wildlife

Spikenard *Aralia Species*

4 3 3 pH 1m/3ft SF GC 4 to 9

Wild Sarsaparilla (A. nudicaulis)

Aralia, commonly known as Spikenard, is a genus of deciduous or evergreen trees, shrubs and rhizomatous herbaceous perennials. They mostly occur in mountain woodlands native to Asia and the Americas.

Udo (*Aralia cordata*) upright, large herbaceous perennial growing to 3m (10ft) but commonly reaching 1.8m (6ft). The plant yields new shoots every spring, which are blanched and then eaten as a vegetable popular in Korea and Japan.

Udo prefers a deep loam soil and a sheltered semi-shady position. The young growth in spring is frost-tender; choose a place sheltered from the early morning sun where they won't defrost too quickly. The plant growth habit is a clumper with limited spread. Heat tolerant in zones 9 through 6.

The smaller relative Wild Sarsaparilla (*A. nudicaulis*) is also edible although not as tasty as Udo. Use young shoots with a sweet-spicy taste and a pleasant aromatic smell like a leafy herb to season cooked food. Use the round, purplish-black berry to make jelly or wine. The rootstock is a substitute for sarsaparilla and used to make 'root beer' or a refreshing herbal tea. A good groundcover native to northern and eastern North America. The much larger American Spikenard (*A. racemosa*) (1.8m/6ft) has young shoot tips used as a potherb or a flavouring in soups. The spicy cooked root with a liquorice-like flavour is a substitute for sarsaparilla.

In the same genus Angelica Tree (*A. elata*) (6m/20ft) is a large deciduous shrub or small open tree with young edible shoots; a popular wild food in Japan in spring, the plant is known as Taranoki and the shoots as Taranome. Cook them or blanch them and use in salads. Angelica trees can grow in semi-shade (light woodland) and full sun.

Propagation: Seed. Root cuttings. Division of suckers in late winter is easy.

• Self-fertile • Specialist Nectary • Wildlife • Groundcover (some)

Bee Balm (M. didyma)

Bee Balm, Bergamot *Monarda didyma*

3 2 3 pH 1m/3ft SF 4 - 10

Bee balm is an aromatic herbaceous perennial with hot, sweet citrus flavoured leaves native to Canada and the United States. It is a good companion plant, growing well with tomatoes. Eat leaves and young shoot tips, raw or cooked, as a flavouring in salads, fruit salads or drinks. The flowers are rich in nectar and are very attractive to bees. Garnish salads with the flowers (available in

summer). Make excellent aromatic tea from the fresh or dried leaves and flower heads. The leaves, stems and roots carry a delicious fragrant orange-like perfume when crushed.

Bee balm prefers some shade but succeeds in a sunny position and does well in heavy clay and wet soils. It has a running growth habit with a rhizomatous root pattern. The plant is heat tolerant in zones 10 through 1.

Propagation: Seed. Cuttings of soft basal shoots in spring. Division is easy.

• Self-fertile • Invertebrate shelter • Nectary • Companion • Scented •Wildlife

Perennial Brassica *Brassica oleracea*

4 0 3 pH 1m/3ft A SF 5 to 10

The species *Brassica oleracea* includes several clump-forming edible perennials including Nine-star Broccoli, Daubenton's Kale and Tree Collards. Daubenton's perennial kale (*B. oleracea var ramosa*) is a heritage vegetable popular in Victorian times living up to six years. Tasty greens are available 12 months of the year, even in mid-winter. Use as you would annual kale, in soups, stews and stir-fries. Nine-star perennial broccoli (*B. oleracea botrytis aparagoides*) is shorter-lived and more of a sprouting cauliflower. Tree collard (*B. oleracea var. acephala*) can reach up to 12 feet tall and supply a continual supply of greens, sweeter and tastier than regular collards. Tree collards are sweeter during the colder months. Tree collards get woody after three years; replaced with cuttings from the previous year.

• Self-fertile • Invertebrate shelter • Nectary • Dynamic Accumulator

Perennial Brassica (B. oleracea)

Chicory, Radicchio, Succory, Witloof *Cichorium intybus*

4 3 3 pH 1.5m/5ft A SF 3 to 7

Chicory is a small to medium-sized, fast-growing perennial. By careful selection of cultivars and sowing times, fresh leaves can be obtained all year round and make an excellent winter salad. Eaten raw or cooked, the leaves are somewhat bitter, especially when the plants are flowering. Reduce bitterness by blanching; exclude light to the leaves by removing all the leaves and then earthing up the new growth or covering the plant with a container. Blanching leads to a corresponding loss of vitamins and minerals. Unblanched leaves are much less bitter in winter and make an excellent addition to salads at this time of year. Eat flowers raw; they are an attractive addition to the salad bowl but bitter. The boiled young roots form a very edible vegetable when cooked like parsnip. Use roots to season soups, sauces and gravies, and to impart rich deep colour. Roots over two years old are more bitter.

Chicory grows on any soil but grows best on mellow, deeply tilled, fertile soil or sandy loam; it tolerates growing in very acid and very alkaline soils. A cool-weather crop, it handles only moderate summer temperatures and requires well-distributed rainfall, with good drainage. The winter salad cultivars are typically sown in early summer to make sure that they do not flower in their first year of growth. By late autumn they have formed an overwintering rosette

Chicory (C. intybus)

of leaves rather like a cabbage. The plants run to flower in the following summer and fail to make an overwintering rosette of leaves for that winter. Chicory is a very ornamental plant with a clumping habit, deep taproot and limited spread.

Propagation: Seed. Heat zones 8 through 1.

• Self-fertile • Dynamic accumulator •Wildlife • Nectary • Invertebrate shelter

Lovage *Levisticum officinale*

3 3 2 pH 2m/6ft SF 5 to 9

Lovage (L. officinale)

Lovage is an imposing multi-stemmed large perennial with showy flowers and large fragrant leaves. The flowers attract bees, wasps and insect predators such as hoverflies. Leaves, available from spring to late autumn, and stems are eaten raw or cooked and used as a savoury flavouring in salads, soups and stews imparting a pleasant yeasty/celery flavour. Young leaves have more taste. Dried leaves used in winter have a robust, savoury flavour and are used as a tea or broth. The young stem can be blanched and used like celery in salads or tasty flavouring in cooked foods. Seed, available in autumn, eaten raw or cooked has a strong yeast flavour, use in casseroles and soups or flavouring cakes, soups and salads. Use whole or grind into a powder and use as a spice, similar to fennel seeds. Flowers available in summer are edible. With a strong savoury taste, the cooked roots are grated in salads or used to make tea.

An easily grown plant, preferring a rich moist but well-drained soil in a sunny position but tolerating some shade. Cut back to the ground during the growing season to produce a new flush of young leaves. Lovage has a clumping plant habit with limited spread and a rhizomatous root pattern.

Propagation: Seed – easily self-seeds. Divide in spring or autumn.

• Self-fertile • Companion • Invertebrate shelter • Specialist Nectary

Canadian Milkvetch (A. canadensis)

Milk Vetch *Astragalus species*

4 5 4 pH 4m/14ft N SF GC 3-10

Several species in the genus Astragalus are ideal for food forests being nitrogen fixers and having other essential uses. The genus is native to temperate regions of the Northern Hemisphere. Common names include milk vetch, locoweed and goat's thorn. Astragalus species produce a substance highly toxic to grazing herbivores. All the species mentioned here are nitrogen fixers, provide shelter for beneficial invertebrates, and are generalist nectaries.

Groundplum Milk Vetch (*Astragalus crassicarpus)* small scrambling perennial growing to 0.5m (1-2ft). The stems are sometimes prostrate. Unripe seed pods are thick and fleshy resembling green plums and 25mm (1in) in diameter. Raw pods taste like a sweet pea. When cooked, the pods taste like string beans. They are also pickled. Intolerant of root disturbance; plant in their final positions while small. It is a clumping plant with limited spread and with a rhizomatous root pattern. Excellent nitrogen fixer.

Canadian Milkvetch (*A. canadensis*) is a medium-sized perennial growing to 1m (3ft) with edible roots. Liquorice milkvetch (*A. glycyphyllos*) is an excellent low-growing nitrogen-fixing groundcover.

Propagation: Seed.

• Self-fertile • Nitrogen Fixer • Invertebrate shelter • Nectary

Mitsuba *Cryptotaenia japonica*

5 1 0 pH 1m/4ft SF 4 to 8

Native to Japan, Korea and China, Mitsuba or Japanese Parsley is a medium to large evergreen perennial, for a semi-shaded position growing to 1m (3ft). Use the leaves and stems as a flavouring; they have a clean, refreshing, slightly bitter parsley flavour. Use young raw leaves in salads. In hot dishes add at the end as the taste reduces when heated. Blanched stems are a celery substitute. Use Mitsuba seed as a seasoning and sprouted in salads and soups. The seed is available from late summer. Closely related Honewort (*C. canadensis*) is native to North American and has similar edible properties to Mitsuba with excellent tasting leaves.

Propagation: Seed or division in spring or autumn.

• Invertebrate shelter • Specialist Nectary • Self-fertile

Mitsuba (C. japonica)

Rosybells, Scootberry *Streptopus lanceolatus (syn. S. roseus)*

4 2 1 pH 1m/4ft SF 3 to 8

Rosybells is an attractive medium-sized perennial, understory, mixed-wood forest plant preferring full or semi-shade and acidic soils. Native to North America and found in central and southern Europe, eastern Asia and eastern Russia. The plant is most often found near shaded stream banks and in moist thickets. Add young leaves and shoots to salads to impart a cucumber flavour or cook and use as greens. The fruit is a long red berry ripening mid-summer into autumn and eaten raw or cooked. It has a sweetish watermelon flavour and eaten in moderation.

Rosybells has a clumping habit with a rhizomatous root pattern. Flowers appear from late spring into summer. Twistedstalk or Wild Cucumber (*S. amplexifolius*) is a larger edible plant growing to 1m (3ft).

Propagation: Seed – slow to germinate. Division.

• Self-fertile • Nectary

Rosybells (S. lanceolatus)

Scorzonera, Salsify *Scorzonera hispanica*

4 0 1 pH 1m / 4ft 5 to 9

Scorzonera or Black Salsify is native to Southern Europe and the Near East; a medium-sized perennial growing to 1m (3ft). It succeeds in any soil in sun or light shade. Scorzonera contains proteins, fats, asparagine, choline, laevulin and minerals including potassium, calcium, phosphorus, iron, sodium, and vitamins A, B1, E and C. Eat the tender young shoots and leaves raw in early spring. Eat the flower buds and petals raw from late spring in salads. Cooked the root has a sweet, agreeable flavour. Scorzonera has a clumping habit and a deep taproot.

Propagation: Seed. Division in autumn or as growth commences in spring. The plant is self-fertile.

• Self-fertile • Invertebrate shelter • Specialist Nectary

Scorzonera (S. hispanica)

Spring Beauty *Claytonia species*

4 1 3 pH 0.2m / 1ft 3 to 7

Pink Purslane (C. sibirica)

Pink Purslane *Claytonia sibirica* (syn. *Montia sibirica*) is a small evergreen herbaceous perennial growing to 0.2m (8in) with pink or white flowers from late spring. Pink Purslane is an excellent and trouble-free salad plant in leaf all year. The raw leaves have a distinct earthy aftertaste rather like raw beetroot. Leaves can turn bitter in the summer if the plant is growing in a hot, dry position. Cook leaves as a green vegetable. The leaves are small, produced in abundance, and easy to harvest.

Pink purslane forms a dense prostrate carpet that spreads indefinitely making it an excellent groundcover plant for a shady position. This species is a short-lived perennial, but usually self-sows freely. It prefers moist peaty soil but will tolerate nutritionally poor soil and very acid soils. It succeeds in full sun preferring some shade and can grow in full shade.

Carolina Spring Beauty (*C. caroliniana*), native to eastern North America, is a small flowering, woodland perennial herb. It grows from early spring and is one of the earliest spring ephemerals. Eat the leaves raw or cooked. They have a mild flavour, best mixed with more robust tasting leaves. The root, with a pleasant nutty flavour, is rich in starch and eaten raw or cooked. Carolina spring beauty prefers a lime-free, damp peaty soil in full sun. Heat tolerant in zones 6 through 1.

Propagation: Seed. Division in spring or autumn.

Alpine Spring Beauty (C. megarhiza) and Spring Beauty (*C. virginica*) both have succulent, juicy and mild flavoured leaves eaten raw or cooked. Miner's Lettuce (*C. perfoliata*) is an annual with tasty young leaves, stalks and flowers.

• Self-fertile • Groundcover (Pink Purslane) • Nectary

Herbaceous Groundcover Plants

Several edible herbaceous plants make excellent groundcovers that will significantly reduce weeding and benefit other plants and protect the soil.

Balsamroot Sunflower *Balsamorhiza sagittata*

4 2 2 pH 0.3m/1ft GC 4 to 8

Balsamroot sunflower is a small attractive perennial growing to 0.3m (1ft) making an excellent groundcover. Eat the young shoots raw or cooked and add to salads or use as a herb. Boil large leaves and petioles as a spinach substitute; large quantities cause sleepiness. They have a light pine flavour. Peel the young flowering stem and eat like raw celery. Eat the seed raw or cooked. The uncooked seed, rich in oil, is ground into a powder to form raw cakes. The seed is roasted, ground into a powder and used with cereals when making bread. The edible roots are resinous and woody with a taste like balsam. Eat them raw or cooked.

Balsamroot sunflower is hardy to at least -25°C/-13°F. The plant has a clumping habit with limited spread and a taproot. Deltoid Balsamroot (*B. deltoidea*), native to western North America, is taller than Balsamroot sunflower growing to 0.6 m (2ft) with similar edible properties.

Propagation: Seed. Balsamroots strongly resent root disturbance making division difficult.

• Ground cover • Specialist Nectary • Invertebrate shelter

Balsamroot Sunflower (B. sagittata)

Daylily *Hemerocallis species*

5 2 3 pH 1m/4ft GC 3 to 10

Daylilies are hardy evergreen or herbaceous perennials with large and attractive funnel-shaped blooms in late spring or early summer similar to lily flowers. They are straightforward to grow, with many of the forms tolerant of almost total neglect. All parts of the plants are edible with the flowers used more frequently. Daylilies are widely used as a food crop in China and Japan. The genus comprises about 20 species, most if not all of which can be grown outdoors in temperate climates. The flowers of most species are very short-lived and die within a day of opening, but the plants produce a succession of flowers for a month or more.

Daylily (H. fulva)

Eat the flowers raw when fully open. The petals are quite thick, crisp and juicy with a delicate sweetness at their base due to the nectar they contain. They are nutritious, containing reasonable quantities of protein and carbohydrates as well as iron and vitamin A. They are a great addition to the salad bowl. Cook flower buds; they taste like green beans. In the Orient, the flowers are dried and used as a flavouring and thickener in soups and sauces. The young shoots have a pleasant sweet flavour and make an excellent cooked vegetable. Depending on the species, young shoots are harvested from late winter and for much of the spring. Many species also produce edible nutty flavoured young roots eaten raw or cooked.

Many *Hemerocallis* species are an excellent weed-excluding ground cover, succeeding under and around trees and shrubs. Plant clump-forming species such as *H. dumortieri*, *H. lilioasphodelus* and *H. middendorffii* about 50cm (18in) apart. Running species such as *H. fulva* are planted up to 1m (3ft) apart. Since the plants die down for the winter, the dead leaves are left on the ground to ensure adequate cover.

The yellow-flowered *H. dumortieri* is a vigorous, clump-forming plant and one of the first species to come into flower, in early summer. Perhaps the best edible flowers are from *H. fulva*, a vigorous running species flowering in mid-summer. The beautiful variety ***Flore Pleno*** has orange flowers 15cm (6in) long. ***Europa*** is a very vigorous form that is especially good for groundcover. *H. lilioasphodelus* is a yellow-flowered clumping species growing to 1m (3ft) tall, and look very attractive in a salad. The plant has a long flowering season during summer, and individual flowers live longer than in most species, sometimes for three days. *H. middendorffii esculenta* is a vigorous clumping plant growing about 60cm (2ft) tall. Smaller *H. minor* grows to 50cm (20in) tall, flowering in late spring/early summer. The flowers are about 5cm (2in) long.

Daylilies are easily grown perennial garden plants. They succeed in most soils, from light and dry ones to heavy clays, though they are happiest in a rich and moist soil. They tolerate quite a bit of shade but grow better and flower more freely when in a sunny position. Flowers from plants in the shade live longer. Hardiness varies from species to species; there are plants suitable for the coldest temperate gardens. *Hemerocallis* is native to Asia, primarily eastern Asia, including China, Korea, and Japan.

Propagation: Seed: Division is quick and easy, succeeding at almost any time of the year.

• Wildlife • Ground Cover

Hot Tuna, Tsi *Houttuynia cordata*

4 3 2 pH 0.6m/2ft SF GC 5 to 10

Hot tuna is a medium-sized ornamental perennial growing to 0.6m (2ft) in wet soil or shallow water and shade or semi-shade. The tender young shoots and leaves are harvested in the spring when about 8cm (3in) long. They are intensely aromatic with a ginger-ish flavour and an orange-like smell that makes a marvellous flavouring in salads. By autumn leaves have a distinct bitterness. Hot tuna is cultivated as a salad crop in Vietnam and China.

Grow as a groundcover in moist, boggy areas. Plants have a widely spreading rhizomatous root system and can be invasive. Heat zones 12 through 1.

Propagation: Seed. Division in spring. Very quick and easy. • Self-fertile • Ground cover

Hot Tuna (H. cordata)

Lemon Balm *Melissa officinalis*

5 5 3 pH 0.7m/3ft A SF GC 4 to 6

Lemon balm is a medium-sized, bushy herbaceous perennial growing to 0.7m (2ft) with fragrant leaves. Eat Lemon balm leaves raw or cooked. They have a pleasant lemon-like aroma and flavour used mainly as a flavouring in salads and cooked foods. Make a lemon-flavoured tea from the fresh or dried leaves. Once harvested, the fragrance is long-lasting. Cooking or drying the leaves will reduce the flavour. The alcoholic beverages Chartreuse and Benedictine use the leaves as a flavouring.

Lemon balm is easy to grow, succeeding in partial shade and dry soil. Once established, it is drought tolerant. Cut the plant back hard after flowering to produce a fresh flush of leaves. Lemon balm is a companion plant, especially for brassicas.

Lemon balm has a clumping habit. The root pattern is fibrous, dividing into many fine roots and stoloniferous rooting from creeping stems above the ground. The plant is heat tolerant in zones 12 through 1. Native Range: Southern Europe.

Propagation: Seed. Plants can often self-sow so freely as to become a menace. Division in spring or autumn. Very easy.

• Self-fertile • Invertebrate shelter • Nectary • Companion • Dynamic Accumulator • Scented • Ground cover

Lemon Balm (M. officinalis)

Maianthemum species

Maianthemum are rhizomatous perennials with erect or arching stems and small star-shaped flowers and red berries.

False Spikenard *M. racemosum (syn. Smilacina racemosa)*

4 2 2 pH 1m/4ft SF GC 2 to 8

False Spikenard is a medium-sized, clump-forming herbaceous plant that is excellent for food forests, preferring light shade but tolerating deep shade. It has gentle, sweet-scented flowers produced in late spring. The fruit is smaller than a pea but grows in large terminal clusters, making it easy to harvest. The fruit ripens from late summer and has a delicious bitter-sweet flavour suggesting bitter molasses. It hangs well on the plant until mid-autumn. It is eaten raw, cooked or made into jellies and jams. The fruit stores well. Rich in vitamins, the fruit has been used to prevent scurvy. Eat young leaves raw or cooked. Young shoots emerging in spring can be cooked and used as an asparagus substitute.

False Spikenard is easy to grow, requiring lime-free, neutral to slightly acid soil and a shady position. The plants have a running habit spreading indefinitely by rhizomes. Plants can be grown as a ground cover when planted about 45cm (1.5ft) apart but take a few years to become established.

Propagation: Seed (slow to germinate). Division in spring or early autumn is easy. Native Range: North America.

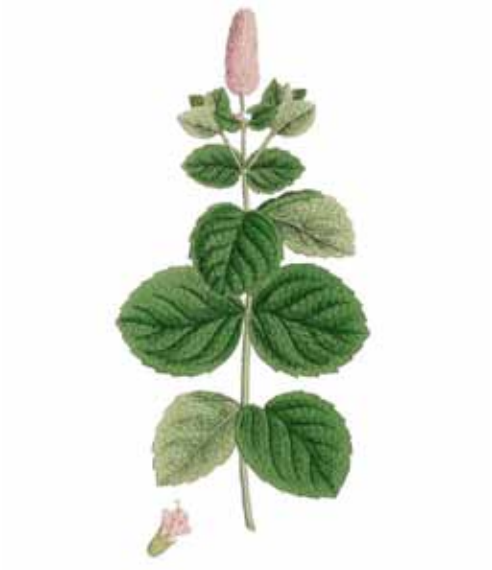
Little False Solomon's Seal (*M. stellatum)* is a creeping, woodland, herbaceous, rhizomatous perennial with narrow, pointed leaves. Smaller than its close relative *M. racemosum*. False Lily-of-the-valley (*M. canadense*) with less edible fruit makes a good ground cover for deep shade and will tolerate very acidic soils.

• Self-fertile • Ground cover

False Spikenard (M. racemosum)

Mint *Mentha species*

4 3 3 pH 0.6m/2ft SF GC 3 to 10



Apple Mint (M. x villosa alopecuroides)

Mint species are grown for their aromatic edible leaves eaten raw or cooked. Use as a flavouring in salads or cooked foods, or as a herb tea. Many mints thrive in moist spots in partial shade. Some mint species are invasive growing quickly by a network of runners.

Popular mints are Peppermint (*Mentha × piperita*), Spearmint (*M. spicata*), Scotch Spearmint (*M. x gracilis*), Cornmint (*M. arvensis*) and Apple Mint (*M. suaveolens*). You may also want to try: Water Mint (*M. aquatica*), Horsemint (*M. longifolia*), Pennyroyal (*M. pulegium*), Corsican Mint (*M. requienii*) and Apple Mint/Bowles' Mint (*M. x villosa alopecuroides*). All have excellent tasty leaves.

Propagation: Seed. When growing plants with a particular aroma, it is best to propagate them by division.

• Self-fertile • Dynamic accumulators • Ground covers • Invertebrate shelter • Nectary • Scented

Pink Purslane *Claytonia sibirica*

(*syn. Montia sibirica*) see Spring Beauty *Claytonia species* above.

Sea Kale *Crambe maritima*

4 0 3 pH 0.6m/2ft SF GC 4 to 8

Sea Kale (C. maritima)

Sea Kale, native to Europe, northern Africa and southwestern Asia, is a medium-sized maritime plant that adapts well to borders and vegetable gardens. The young raw leaves have a pleasant, nutty flavour and go well in a mixed salad. Eat cooked young leaves like spinach. Older leaves are bitter. Young shoots, available in spring, have a delicate nutty flavour with a crisp texture. Eat them raw or cooked. The shoots are usually blanched and cooked like asparagus. Plants produce two or three crops a year. Eat young flower buds in summer raw or cooked. Harvest flowering shoots when about 10-15cm (4-6in) long and before the flowers have opened. They are tasty raw or lightly steamed and used like sprouting broccoli. The cooked root is rich in starch and sugars.

Sea Kale is a clumping plant with a long taproot that prefers a slightly alkaline soil in full sun. Some shade, drought and poor saline soils are all tolerated. Place plants 60cm apart for a ground cover.

Propagation: Seed. Division in spring or autumn. Heat tolerant in zones 9 through 6.

• Self-fertile • Ground cover • Nectary • Wildlife

Strawberry *Fragaria species*

5 0 3 pH 0.3m/1ft 3 to 10

Fragaria is a genus of prostrate to small flowering plants in the rose family commonly known as strawberries for their edible fruits. The taste of strawberries varies by species and cultivar ranging from sweet to tart. Commercial strawberries are cultivars of the garden strawberry, a hybrid known as *Fragaria* × *ananassa*. Strawberries have vitamin C and half as much iron as spinach. Many species of strawberry are excellent food forest plants tolerating moderate shade and are good ground covers. All *Fragaria* species mentioned provide food or shelter for beneficial birds or other vertebrates, are generalist nectary plant, and dynamic accumulators. Harvest fruit in summer and autumn. Leaves through the year.

Woodland Strawberry (F. vesca)

Beach Strawberry (*F. chiloensis)* (Western Americas) has large, sweet and succulent fruit with a delicate flavour. Use the leaves for tea. A perennial ground cover acting as a firebreak as it provides little fuel. Woodland Strawberry (*F. vesca)* (Northern Hemisphere) has exquisitely flavoured sweet and succulent fruit. Fruits are usually tiny and fiddly. The fruit is rich in iron and potassium. Eat young leaves raw or cooked, add to salads or use as a potherb. Musk Strawberry (*F. moschata)* (Europe) fruit is small, aromatic, sweet and succulent. An excellent flavour considered significantly superior to cultivated strawberries but not freely produced. Virginia Strawberry, a North American native, (*F. virginiana*) has delicious sweet and succulent fruit. Eat raw, cook or make into preserves. The small fruit is up to 20mm (1in) in diameter. Green Strawberry (*F. viridis)* (Europe, Central Asia) has greenish-tinged with red fruit. They are sweet and succulent with a rich musky pineapple-like flavour. Delicious, though not produced freely. Eat raw or cooked.

Garden Strawberry (*F.* × *ananassa* – cultivated) has many cultivars with fruits of the best cultivars that are sweet and succulent with an exquisite pineapple flavour. The fruit of some cultivars is up to 3cm (1in+) in diameter. Eat young leaves raw.

Propagation: Seed. Division of runners, preferably done in summer, allows the plants to become established for the following years.

• Dynamic Accumulator • Ground Cover • Nectary • Wildlife

Sweet Woodruff *Galium odoratum*

3 3 3 pH 0.2m/0.7ft 5 to 9

Sweet woodruff is a small, mat-forming, vigorous rhizomatous perennial growing to 20cm (8in). It is widely cultivated for flowers and sweet-smelling foliage. Sweet woodruff spreads by both creeping roots and self-seeding to form an attractive ground cover in moist, shady areas.

Use the coumarin-scented (like freshly mown hay) leaves as a flavouring in cold drinks or add them to fruit salads. They are used raw or cooked. An aromatic tonic 'Maitrank' is made by soaking the leaves in white wine with orange and pineapple. The green-dried leaves and flowers make a deliciously fragrant tea. The sweet-scented flowers, available in mid-spring to summer, are eaten or used as a garnish.

Sweet Woodruff (G. odoratum)

Sweet woodruff is a very ornamental plant preferring a moist, calcareous, alkaline soil in shade or semi-shade. It can tolerate very acid and very alkaline soils as well as dry soils. In dry soils with full sun, the leaves quickly become scorched. In optimum growing conditions, it is aggressive, spreading rapidly and becoming invasive. Its growth is rarely detrimental to other plants above 60cm (2ft) as they grow through it. It is an ideal carpeting plant for bulbs to grow through. Native Range: Northern Africa, Asia, Europe. Naturalized in scattered locations in the United States and Canada.

Propagation: Seed. Division. Cuttings of softwood after flowering.

• Self-fertile • Ground Cover • Scented • Atmospheric pollution

Tarragon *Artemisia dracunculus*

4 2 3 pH 0.6m/2ft SF GC 5 to 8

Tarragon (A. dracunculus)

Tarragon (*Artemisia dracunculus*) is a medium to large, woody perennial herb in the sunflower family. The variety French Tarragon (*A. dracunculus var. sativa*) is best with its pungent anise-flavoured edible leaves. French tarragon is a commonly used herbal flavouring used in many traditional recipes. It aids the digestion of oily foods. Dry leaves in late summer for later use. Propagate by root division as the seed is sterile. Use fresh leaves in salads, dressings and sauces. Young shoots are edible and used as a potherb. On poor dry soil, French tarragon is hardier and more aromatic. It is easily grown in a well-drained circumneutral or slightly alkaline loamy soil. Native to temperate Europe and Asia, it is also found in western North America, though many of these populations may have resulted from introduction and naturalization. Established plants are drought tolerant. Heat tolerant in zones 7 through 1. The plant is a clumping with limited spread and has a rhizomatous root. Russian Tarragon (*A. dracunculoides*) is more hardy and vigorous and can be grown from seed, but the flavour and aroma are weaker. Russian tarragon prefers poor soils and happily tolerates drought and neglect. It produces many more leaves than French tarragon, from early spring onwards, that are mild and good in salads and cooked food.

Fringed sagebrush (*A. frigida*) is a very ornamental plant. It has gained the Royal Horticultural Society's Award of Garden Merit and used in landscaping for erosion control and revegetation of rangeland. Use Beach Wormwood (*A. stelleriana*) as a flavouring. It grows well in maritime areas. It requires well-drained sandy soil in a sunny position and is drought tolerant.

All Artemisia species mentioned here are edible, provide shelter for beneficial invertebrates including insects and other arthropods, and are strong-scented pest-confusers; all but French tarragon are good groundcovers.

• Ground Cover • Invertebrate shelter • Specialist Nectary • Scented • Wildlife

Violet *Viola species*

5 3 3 pH 0.1m/0.4ft A SF GC 4 to 8

The genus Viola contains about 500 prostrate to small species including pansies and violets. Most species are found in cooler regions of the northern hemisphere and are annuals, perennials or small shrubs. Many are excellent plants for food forests established in shady areas and moist poorly drained soil. Violets are mostly clump-forming evergreen or semi-evergreens with the evergreens better for groundcover. All members of this genus have more or less edible leaves and flower buds.

Sweet violets (*Viola odorata*) are very ornamental, evergreen woodland plants growing about 10cm (4in) tall and forming an excellent weed-excluding groundcover carpet. Harvest edible leaves all year round, and the edible fragrant flowers in late winter and early spring. Eat young leaves, usually available all through the winter, and flower buds raw or cooked. Young leaves have a mild flavour and make a good salad used in bulk with more robust flavoured plant leaves. Leaves become tough with age. Use as a thickener for soups. The leaves are small but are produced in abundance and are easy to harvest. Fragrant sweet, mild flavoured flowers are eaten raw and used to decorate salads and desserts. In late winter the flowers are a welcome decoration for the salad bowl. Make a soothing tea from the leaves and flowers.

Sweet violet (V. odorata)

Plant sweet violets densely to make a groundcover. Suitable for cut flowers. Sweet violets tolerate sandstone and limestone soils. Sweet violets spread rapidly by a rhizomatous root pattern with creeping stems.

Propagation: Seed – often self-sowed freely (requires cold stratification). Divide in autumn or just after flowering.

Native North America edible violets worth considering include Canadian White Violet (*V. canadensis*), Labrador Violet (*V. labradorica*), Marsh Blue Violet (*V. cucullata*), Blue Violet (*V. sororia*) (does not spread by runners, but freely self-seeds to the point of being weedy). European violets include Wood Violet (*V. riviniana*), and Horned Violet (*V. cornuta*) (native to Spain and the Pyrenees).

• Self-fertile • Ground cover • Dynamic Accumulators

Wood Sorrel *Oxalis acetosella*

3 2 3 pH 0.1m/0.4ft SF GC 3 to 7

Wood Sorrel is a small British native perennial growing to 10cm (4in) tall and forming a spreading clump 30cm (1ft) across. It prefers moist shady conditions. Both leaves and flowers have an excellent acid lemon-like flavour. Add the leaves to salads, soups, sauces raw or cooked. Use the leaf in moderation due to oxalic acid. The flowers are available in spring and eaten raw as a decorative addition to salads. Plants are a groundcover in woodland or under the shade of shrubs and spaced about 45cm (18in) apart.

Wood Sorrel (O. acetosella)

Propagation: Seed. Division in spring; easy. When well sited, the plants run aggressively and also self-sow.

Other species to consider with edible leaves include Red wood sorrel (*O. Oregana*), Mountain wood sorrel (*O. montana*), Great wood sorrel (*O. grandis*), Violet wood sorrel (*O. violacea*).

• Ground Cover • Self-fertile

Additional Edible Herbaceous Plants

These herbaceous plants are featured in our other books or have a lower edible rating. The plants are ordered by scientific name.

Hollyhock *Alcea rosea*

3 2 3 2.5m/8ft 5-9

Mild flavoured young leaves raw or cooked. Flower petals and buds.

•General Nectary

Asparagus *Asparagus officinalis*

4 3 2 1.5m/5ft 2-9

Young shoots eaten raw or cooked. Considered a gourmet food.

•General Nectary

Turkish Rocket *Bunias orientalis*

4 0 0 1m/3ft 6-9

Leaves and young stems, available early in the year to late autumn.

•General Nectary

Bellflower *Campanula species*

4 0 3 1m/4ft GC 3-9

Tasty edible leaves. Beautiful and delicious flowers.

•General Nectary •Groundcover

Chamomile *Chamaemelum nobile*

2 5 4 4-8 0.2m/0.7ft A GC

Use fresh or dried flowers for herb teas.

•GC •Companion •Accumulator •Scented •Inv. Shelter •Nectary

Globe Artichoke *Cynara scolymus*

3 5 2 1.5m/5ft 5-9

Flower buds raw or cooked. Flower stems. Also Cardoon *C. cardunculus*.

•Wildlife

Wall Rocket *Diplotaxis tenuifolia*

4 0 0 0.6m/2ft 5-9

Intensely flavoured leaves raw in salads, Similar to rocket.

•General Nectary

Sea Holly *Eryngium maritimum*

3 3 2 0.5m/2ft 4-8

Eat blanched young shoots cooked like asparagus.

•Nectary •Invertebrate Shelter •Wildlife •Soil Stabilizer •Scented

Meadowsweet *Filipendula ulmaria*

3 3 3 1.2m/4ft 3-9

Young leaves as flavouring or in a tea. Flowers are a flavouring.

•Wildlife •Scented

Fennel *Foeniculum vulgare*

5 3 4 1.5m/5ft 3-10

Aromatic delicious aniseed flavour. Eat leaves, leaf stalks,flowers, seed.

•Specialist Nectary •Invert. Shelter •Scented

Sunflowers *Helianthus species*

3 0 3 3m/12ft 4-10

Seeds raw or cooked or make edible oil.

•Specialist Nectary •Invert. Shelter •Wildlife

Hosta *Hosta species*

3 0 3 GC 0.3m/1ft 4-8

Petioles (leaf stems) raw or cooked; fibrous with a sweet flavour.

•Groundcover

Mallow *Malva species*

5 3 3 A 1m/3ft 3-10

Edible leaves and flowers for salad. Try *M. moschata* or *M. alcea*.

•Nectary •Invertebrate Shelter •Dynamic Accumulator

Sweet Cicely *Myrrhis odorata*

4 3 3 1m/4ft 4-8

Leaves: a delicious sweet aniseed flavour for salads.

•Specialist Nectary •Invertebrate Shelter •Scented •Wildlife

Watercress *Nasturtium officinale*

4 3 2 A 0.5m/2ft 4-6

Leaves as a garnish or add to salads, a strong hot flour.

•Dynamic Accumulator •Wildlife •Nectary

Oregano *Origanum vulgare*

4 3 5 A GC 2ft 4-10

Leaves: excellent flavouring. Also try **Sweet Marjoram** *O. majorana*.

•Nectary •Inv. Shelter •Scented •Groundcover •Accumulator •Wildlife •Companion

Garlic Cress *Peltaria alliacea*

4 0 3 0.3m/1ft GC 5-9

Leaves: a strong garlic/mustard flavour. Flowers edible.

•Groundcover •Scented

Primrose *Primula vulgaris*

3 3 0 0.3m/1ft GC 5-10

Mild-flavoured young leaves & flowers raw or cooked.

•Groundcover •Scented •Nectary

Rhubarb *Rheum species*

3 5 2 3m/10ft GC 6-9

Nearly 60 species of Rhubarb are used for food, medicine or both. Use the leaf stem, with an acid flavour, raw or cooked.

Sorrel *Rumex species*

5 3 4 0.6m/2ft A 3-7

Leaves, with a delicious lemon-like flavour, raw or cooked

•Wildlife •Dynamic Accumulator

Trifolium species

3 3 4 4-9 0.6m/2ft N A GC

Young leaves in salads, soups etc. Flowers are edible.

•Groundcover •Accumulator
•N. Fixer •Nectary • Inv. Shelter

American Vetch *Vicia americana*

2 1 4 1m/4ft N A GC 4-7

Eat young shoots, mature seeds and immature seedpods cooked.

•Groundcover •Accumulator
•N. Fixer • Nectary • Inv. Shelter

Ostrich Fern *Matteuccia spp.*

2 1 2 1m/4ft GC 4-6

Eat young fronds raw or cooked – the flavour is like asparagus.

•Groundcover

Sensitive Fern *Onoclea sensibilis*

2 2 2 0.5m/2ft GC 4-8

The young leaves called 'fiddleheads', as a vegetable or raw.

• Groundcover

Support Herbaceous Plants

Support herbaceous plants have other non-edible benefits that help the ecosystem to thrive.

Yarrow *Achillea millefolium*

3 4 4 4-8 0.6m/2ft

•Accumulator •Groundcover •Invert shelter •Nectary •Scented

Asarum species

3 3 2 0.1m/0.4ft 3-9

•Groundcover •Shade

Aster species

3 0 2 1.2m/4ft 6-9

•Groundcover •Invert Shelter •Specialist Nectary

Wild Indigo *Baptisia spp.*

1 3 2 1m/3ft 3-9

•Nitrogen Fixer •Invert Shelter •Nectary

Tick Trefoil *Desmodium species*

0 0 3 3-9 1m/3ft

• N. fixer •Accumulator •Invert Shelter •Drought Tolerant

Echinacea *Echinacea species*

1 5 2 1m/4ft 3-10

•Pioneer •Invert Shelter •Nectary •Drought •Wildlife

Ox-Eye Daisy *Leucanthemum vulgare*

2 2 2 0.6m/2ft 3-9

•Groundcover •Specialist Nectary •Scented

Bird's Foot Trefoil *Lotus corniculatus*

1 1 4 0.3m/1ft 3-8

•Nitrogen Fixer •Groundcover •Invert Shelter •Nectary

Sainfoin *Onobrychis viciifolia*

1 0 4 1m/4ft 5-9

•Nitrogen Fixer •Specialist Nectary •Soil Stabilizer •Groundcover

Pencilflower *Stylosanthes biflora*

0 2 0.5m/2ft 4-8

•Nitrogen Fixer •Invert shelter •Wildlife

Comfrey *Symphytum species*

3 5 4 1m/4ft 3-9

•Accumulator •Groundcover •Invert shelter •Nectary

Aaron's rod *Thermopsis villosa*

0 0 3 4m/14ft 5-8

•N. Fixer •Invert. Shelter •Nectary

Table 3. Edible parts and use of herbaceous plants.	Leaf Bulk Raw	Leaf Bulk Cooked	Leaf flavor Raw	Leaf Flavor Cooked	Flowers Raw	Flowers Cooked	Fruit Raw	Fruit Cooked	Tea/Drink	Shoots Raw	Shoot Cooked	Stem Raw	Stem Cooked	Seed Raw	Seed Cooked
Agastache species (p49)	●	●	●	●	●	●			●						
Alcea rosea (p62)	●	●			●				●						
Aralia species (p50)											●				
Artemisia species *(p60)*			●	●							●				
Asparagus officinalis *(p62)*										●	●				
Astragalus species *(p52)*														●	●
Balsamorhiza species *(p55)*		●								●	●	●		●	●
Brassica species *(p51)*		●													
Bunias orientalis *(p62)*	●	●										●	●		
Campanula species *(p62)*	●	●			●										
Chamaemelum nobile *(p62)*			●	●	●	●			●						
Cichorium intybus *(p51)*	●	●	●	●	●										
Claytonia species *(p54)*	●	●													
Crambe maritima *(p58)*	●	●			●	●				●	●				
Cryptotaenia species *(p53)*	●	●										●	●	●	
Cynara species *(p62)*		●			●	●						●	●		
Diplotaxis tenuifolia *(p62)*	●		●												
Eryngium maritimum *(p62)*											●				
Filipendula ulmaria *(p63)*				●		●			●						
Foeniculum vulgare *(p63)*			●	●	●	●						●	●		●
Fragaria species *(p59)*	●	●					●	●	●						
Galium odoratum *(p59)*			●	●	●				●						
Helianthus species *(p63)*														●	●
Hemerocallis species *(p55)*					●	●					●				
Houttuynia cordata *(p56)*			●	●						●	●				
Levisticum officinale *(p52)*	●	●	●	●	●	●			●			●	●	●	●
Maianthemum species *(p57)*	●	●					●	●			●				
Malva species *(p63)*	●	●			●	●									
Medicago sativa *(p49)*														●	●
Melissa officinalis *(p56)*			●	●					●						
Mentha species *(p58)*			●	●					●						
Monarda didyma *(p50)*			●	●	●					●	●				
Myrrhis odorata *(p63)*	●		●												
Nasturtium officinale *(p63)*	●	●	●	●											
Origanum vulgare *(p63)*			●	●	●	●									
Oxalis species *(p61)*	●		●	●	●										
Peltaria alliacea *(p64)*	●	●	●	●	●	●									
Primula vulgaris *(p64)*	●	●	●	●	●	●									
Rheum species *(p64)*												●	●		
Rumex species *(p64)*	●	●	●	●											
Scorzonera hispanica *(p54)*	●				●					●					
Streptopus lanceolatus *(p53)*	●	●	●	●			●	●							
Trifolium repens *(p64)*			●	●	●	●									
Vicia americana *(p64)*											●				●
Viola odorata *(p60)*	●	●	●		●				●						

Running Bamboos

The best edible bamboo shoots in temperate zones come from running bamboos. They spread mainly through their roots and rhizomes and can become invasive. Running bamboo species are highly variable in their tendency to spread, and with careful plant choice and positioning, make an excellent addition to a forest garden.

Canebrake Bamboo *Arundinaria gigantea*

3 1 4 pH 9m/30ft 5 to 9

Canebrake bamboo, native to south-eastern N. America, is a large evergreen bamboo growing to 9m (30ft). It forms dense thickets along riverbanks, in swamps and low woods by rhizomatous underground stems. Young shoots are cooked or used as a potherb. The seed is edible but small and difficult to collect in quantity. Cooked it is used as a wheat substitute. The plant's extensive running root system provides stream-bank stabilization, sediment retention, and bioaccumulation of nutrients and toxins. The plant is ideal for controlling soil erosion, especially along the sides of rivers. When restrained the plant makes an excellent, dense hedge or screen. Arundinaria gigantea tecta is a smaller subspecies commonly called dwarf canebrake and grows to about 1.5m (5ft). Conditions for dwarf canebrake are similar to the larger version. Canebrake bamboo tolerates full sun and dappled or light shade.

• Hedge • Wildlife Shelter • Soil Stabilization

Canebrake Bamboo (A. gigantea)

Chishima Zasa Bamboo *Sasa kurilensis*

4 1 3 pH 2m/9ft GC 6 to 9

Chishima Zasa is an exceptionally hardy, low growing, broad-leaf, running bamboo with bright evergreen leaves growing to 2m/6ft. A very hardy species, it grows wild further north than any other bamboo, succeeding even in areas with heavy snow. It tolerates temperatures down to about -20°C/-4°F (some report down to -30°C/-22°F) and is shade tolerant. The plant has rampant roots and used in soil stabilization schemes or a tough, vigorous groundcover for difficult sites. Edible young shoots are so popular in Japan that a license is required to collect them. The seed is only produced at intervals of many years and used as a cereal.

• Soil stabilization • Wildlife Shelter • Groundcover

Chishima Zasa Bamboo (S. kurilensis)

Phyllostachys *Phyllostachys species*

5 3 4 pH 6m/20ft 6 to 10

Black Bamboo (P. nigra)

Phyllostachys bamboos, native to Asia, are usually 5m to 10m (15-30ft) tall. They spread aggressively by underground rhizomes. Several species have become naturalized in Australia, the Americas and southern Europe, and have edible young shoots eaten raw or cooked. Some larger species growing to 30m (100ft) tall are known as *timber bamboo* and used as construction timber and furniture.

Golden Bamboo (*P. aurea*) young shoots, said to be the genus's sweetest, can be eaten raw and have very little bitterness. Growing to 6m (20ft) the canes are about 15mm in diameter. The shoots are harvested in the spring when about 8cm above the ground, cutting them about 5cm below soil level. The seed is edible, produced at intervals of several years. Used like rice or ground into a flour and used as a cereal. Big-Node Bamboo (*P. nidularia*) is similar in size and tolerates light shade. The young shoots are cooked and highly prized in China, both for their earliness and delicate flavour, they taste somewhat like hominy corn. They prefer rich damp soil in a sheltered position. Sweetshoot Bamboo (*P. dulcis*) growing to 7m (23ft) has excellent young shoots free of acidity. Use them in salads, soups, or stews. Sweetshoot is one of the most highly esteemed edible bamboos in China. The shoots are 4-6cm (1.6-2.4in) in diameter. Stone Bamboos (*P. nuda*) young shoots have a delicious flavour. Of excellent quality, they are only slightly acrid raw, boiling them for a short time makes them suitable for salads. Other species with fabulous edible shoots include Greenwax Golden Bamboo (*P. viridiglaucescens* – 6m/20ft), Kou-Chiku (*P. sulphurea viridis*) (4m/13ft), Black Bamboo (*P. nigra* 7m/23ft) and Tortoiseshell Bamboo (*P. edulis* 8m/26ft). Madake (*P. bambusoides* 8m/26ft) is a good biomass crop and Yellow-Groove Bamboo (*P. aureosulcata*) with a running rootstock limited in the cooler temperate areas. In warmer climates (e.g. US South West) it can spread indefinitely if not confined with an underground barrier.

• Hedge • Plant Support • Soil Stabilization • Wildlife Shelter

Simon Bamboo (P. simonii)

Simon Bamboo *Pleioblastus simonii*

3 0 4 pH 4m/14ft 5 to 9

Simon bamboo is an easily grown evergreen, running, medium-sized bamboo that tolerates maritime exposure and semi-shade. It can stand temperatures down to -25°C/-13°F and grows to 4m/14ft. The rootstock is running and invasive forming dense thickets of slender canes. The ultimate spread is 2.5m/8ft. It is the third most commonly cultivated species in Japan where the canes have many uses. Unlike many bamboos, Simon bamboo quite often flowers and sets viable edible seed. Young shoots have a very bitter flavour that is considerably reduced by changing the water at least once during the cooking process – though this will also remove quite a few of the nutrients.

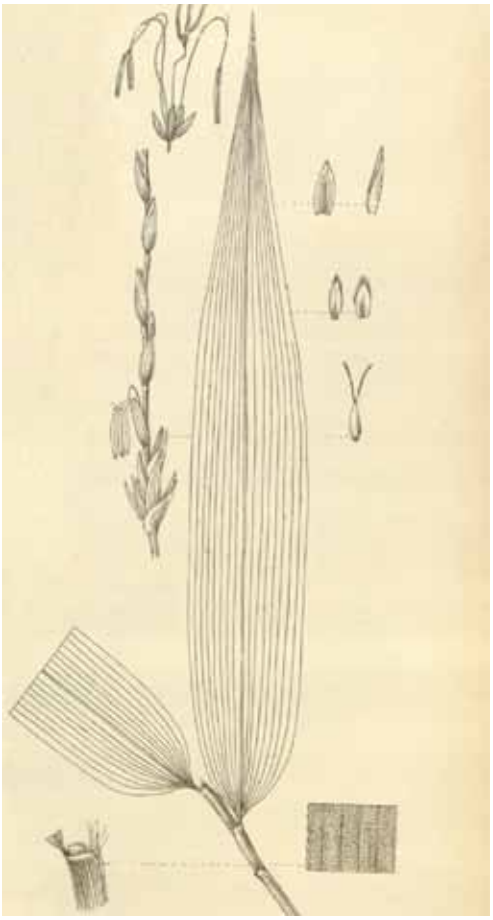
• Hedge • Plant Support • Soil Stabilizer • Wildlife Shelter

Temple Bamboo *Semiarundinaria fastuosa*

5 0 2 pH 7m/24ft 6 to 9

Temple Bamboo young edible shoots are almost free of any acridity and produced in late spring. Although small, they are of good quality when cooked. Harvest shoots as they come through the soil in spring; taking too many from any plant will weaken the clump. Temple Bamboo is an attractive very tall bamboo with upright, straight stems in a neat, columnar appearance. The plant has a running rootstock but is slow-moving and generally well behaved in colder climates. The plant is resistant to maritime exposure and makes a good shelter hedge. Plant close if a quick thick hedge is required since it is a slow spreader – 60cm/2ft is a reasonable distance. Temple Bamboo is a striking specimen plant and highly effective as a tall screen; it eventually forms a broad clump or a small to medium-sized grove.

• Hedge • Wildlife Shelter • Shelterbelt



Temple Bamboo (S. fastuosa)

Table 4. A summary of the edible parts and use of a bamboo. The plants are listed by scientific name, with the page number for reference in brackets.

	Shoots Raw	Shoots Cooked	Seed Cooked
Arundinaria gigantea *(p67)*		●	●
Phyllostachys species *(p68)*	●	●	●
Pleioblastus simonii *(p68)*		●	●
Sasa kurilensis *(p67)*		●	●
Semiarundinaria fastuosa *(p69)*		●	

Bulbs

Onion Family *Allium species*

5 3 3 pH 0.3m/1ft A SF GC 4 to 11

Welsh Onion (A. fistulosum)

All members of this genus are, at least theoretically, edible. Their flavours range from mild onions and leeks right through to pungent onion and garlic. All parts of the plants are edible. The flowers tend to have a more robust flavour than the leaves, and the young developing seed-heads are even more potent. Eat the leaves and flowers in salads, and you can have a plentiful supply all through the year. Use cooked leaves as a flavouring with other vegetables in soups or used as a cooked green – although this is probably too much of a good thing for most people. Some favourite species are listed below. Unless stated otherwise, all members of this genus require well-drained soil and a sunny position. In general, they do not grow well with weed competition, though there are exceptions.

Allium cepa**.** This species includes the common onion and the charming and productive form called the Everlasting Onion. Everlasting Onions grow similarly to chives, quickly forming a large clump. The leaves have a mild onion flavour and are used as spring onions in salads or as a flavouring in cooked foods. The plant is evergreen and very hardy providing edible leaves all year round, even in severe winters. The Potato Onion (*A. cepa aggregatum*) growing to 1.2m (4ft) has strong floured leaves with a strong onion flour good raw or cooked. Use the flowers raw as a garnish on salads. They are somewhat dry and are less pleasant than many other species. The Egyptian Walking Onion (*A. cepa proliferum*) forms small edible bulbs at the top of the flowering stem. They have a strong onion flavour and are often used as pickled onions or added to salads. As long as the bulbils are dried adequately at harvest time, they store well. The leaves make a nice flavouring in salads though should not be harvested in quantity because this would reduce the yield of bulbils. The leaves are produced from late autumn, though we have found that harvesting them at this time will often encourage diseases such as mildew.

The Nodding Onion (*A. cernuum*) grows about 45cm/18in tall. Not only is it an exceedingly beautiful plant, but both flowers and leaves have a delicious strong onion flavour – the flowers look lovely in a mixed salad. The leaves are available from quite early in the spring until late autumn and the flowers in mid-summer. The cultivar '***Major***' is a more vigorous form with larger flower clusters. Full sun to semi-shade.

The Welsh Onion (*A. fistulosum)* is similar to Everlasting Onion in growth habit and flavour. It is not winter hardy; in severe winters it dies back to the ground, recovering in warmer weather in the spring.

Daffodil Garlic (*A. neapolitanum)* grows to 30cm/1ft tall, forming a gradually expanding clump. Young leaves have a delicious sweetness followed by a moderately strong garlic flavour. A plant for a warm sunny position, it is not very winter hardy in colder temperate zones. It comes into growth in the autumn, provides its leaves all through the winter then flowers in the spring and dies down until the following autumn.

Chives (*A. schoenoprasum*) are a very productive crop supplying mild, onion flavoured leaves from late winter until late autumn. Full sun to semi-shade.

Three-cornered leek (*A. triquetrum*) is naturalized in south-western Britain where it often forms large colonies in lightly shaded places. It is an ideal plant for growing at the base of a hedge or on a woodland edge. Like Daffodil Garlic

Chives (A. schoenoprasum)

it grows in the winter and is dormant in the summer. Use the leaves, with an onion-garlic flavour, in quantity in salads. Three-cornered leeks are not very cold tolerant though, by giving it the protection of the trees and shrubs in the woodland they succeed in many areas. Full sun to full shade.

Found in rich beech and maple woods the Eastern North America native Ramps or Wood Leek (*A. tricoccum*) has edible, mildly sweet flavoured leaves, resembling leeks eaten raw or cooked. Use the flowers, with a hot onion flavour, raw as a garnish on salads. Semi-shade to full-shade.

Garlic Chives (*A. tuberosum*) form a slowly spreading clump about 30cm/1ft tall. As the common name suggests, the leaves have a delightful flavour very much like a cross between garlic and chives. They are available from the middle of spring until late autumn. The plant is capable of growing all year round in warmer climates.

Wild Garlic or Ramsons (*A. ursinum*) is native in the UK and forms large colonies in woodlands. They provide garlic flavoured leaves from late winter until late spring. Full sun to full shade.

The Wild Leek or Perennial Sweet Leek (*A. ampeloprasum*) is a native of Britain, growing in hedgerows. Harvest the tough leaves, with a pleasant mild to strong garlic flavour, from winter to spring. Flowers have a similar taste to the leaves, but they have a somewhat dry texture and best used as a flavouring in cooked foods.

The North American native Wild Garlic or Canada Garlic (*A. canadense)* should not be confused with the British native wild garlic (*A. ursinum*). This species grows about 45cm/18in tall and can spread quite freely when well sited. Eat the delicious mild flavour leaves raw or cooked when available from early spring until the autumn. They make a tasty salad and can also be used as greens or as a flavouring in cooked foods. Eat the flowers raw; they are a little bit stronger in flavour than the leaves, especially as the seeds begin to form – they can be used as a flavouring and garnish on salads. Full sun to semi-shade.

Additional Bulbs with Edible Flowers

Trout Lily (E. americanum)

Canada Lily (L. canadense)

Lily *Lilium species*

4 2 2 1m/4ft 4-9

Flowers used fresh or dried in salads, soups, and rice dishes.

• Nectary • Scented

Trout Lily *Erythronium americanum*

4 1 3 0.6m/2ft GC 3-7

Leaves raw or cooked and added to salads. Flowers, flower buds and flower stems are edible raw or cooked.

• Groundcover • Nectary

Climbers

Climbing or trailing woody-stemmed plants grow through the other food forest layers. Several climbing plants are edible or have additional benefits for a forest garden.

Akebia *Akebia species*

4 2 3 pH 12m/40ft GC 4 to 8

Chocolate Vine (A. quinata)

Akebia species are vigorous twining, semi-evergreen climbing shrubs with edible fruit available in autumn. Chocolate Vine (*A. quinata*) growing to 12m (40ft) or more, twines into trees and shrubs. It is very amenable to trimming in early spring. The root pattern is branching from the crown into several primary roots and can sucker. Unsupported chocolate vine scrambles over the ground, the branches rooting into the earth and making an adequate ground cover amongst taller plants. It requires a well-drained moisture retentive soil and will succeed in acid or alkaline conditions. Whilst the dormant plant is hardy to about -20°C/-4°F, the young growth in spring, even on mature plants, is frost-tender and so it is best to grow the plants in a position sheltered from the early morning sun. The fruit can be 5-10cm (4in) long and has a delicate flavour and a soft, juicy texture. There are two other genus members with similar growth habits and uses: Three Leaf Akebia (*A. trifoliata*) and *A. x pentaphylla*, also known as the Chocolate vine. Three leaf akebia fruit has a delicate flavour and a soft juicy texture when eaten raw. Enhance the flavour with a little lemon juice. The dried young leaves of all three species make an acceptable tea substitute.

Propagation: Seed, cuttings or layering.

• Groundcover • Self-sterile • Scented

Grapevine *Vitis species*

5 2 2 pH 15m/50ft SF GC 2 to 10

Grapevines are vining plants predominantly from the Northern hemisphere including North America and eastern Asia. Many grape species have tasty fruit, harvested in autumn for fresh fruit or fermentation into wine. The most common, Wine Grape (*V. vinifera*), with sweet, juicy and delicious fruit, is also used for dried fruits including raisins, sultanas and currants. Fox Grape (*V. labrusca*) is a better choice for colder conditions. Eat the red fruit raw, dry for winter use or use in pies and preserves. The fruit, best after a frost, has a distinctive musky aroma and taste that is not acceptable to all people. Eat young leaves cooked as greens or wrap around other foods and then bake to impart a pleasant flavour. Eat young vine tendrils raw or cooked. The plant sap, harvested in the spring or early summer, has a sweet taste and makes a lovely drink. The sap harvested in quantity weakens the plant. Oil is obtained from the seed if large amounts of grapes are available from winemaking. Riverbank Grape (*V. riparia*) is indigenous to North America and very cold hardy. The fruit is juicy and somewhat acid, eaten raw or dried for later use. The uses of leaves, young tendrils and sap are similar to Fox Grape. Muscadine Grape (*V. rotundifolia*) need more heat and are well-adapted to their native warm and humid southern US climate, requiring fewer chilling hours. The fruit has a pleasant musky flavour, good to eat raw and excellent in jellies and pies. Grapevines produce fruit on shoots from the previous growing season. Grapes need a sheltered site in full sun.

Propagation: Hardwood cuttings in late autumn or winter. Softwood and semi-ripe cuttings from late spring to mid-summer. The roots are multi-branching growing to various depths into the soil. Depending on the grape variety, climate, and soil in which they grow, the grapevine root system differs in rooting pattern and depth. Grapevine roots are not aggressive and do not produce as vigorously as many tree roots do.

• Self-fertile • Wind-pollinated. • Wildlife Food • Nectary

Muscadine Grape (V. rotundifolia)

Kiwifruit *Actinidia species*

5 2 2 pH 9m/30ft 3 to 9

Actinidia species include deciduous shrubs and vigorous, strong-growing vines native to temperate eastern Asia. All members of this genus produce edible fruits, though they do not all do well in temperate conditions. The flowers are sweetly scented. The root pattern divides from the crown into several primary roots. The best-known species is Fuzzy Kiwifruit (*A. deliciosa*) growing to 9m (30ft). The fruit, rich in vitamin C, is very juicy with a delicious flavour. It ripens in late autumn and can store for 3-4 months. Yields of 8-30 tonnes per hectare are possible. For a good yield of fruit, prune the plants to keep them small – if left unpruned, they will romp away and grow to the top of trees.

There are two main difficulties with Fuzzy Kiwifruit. The first is that, although the dormant plants are cold hardy, the young shoots in spring are very susceptible to frost damage. Therefore, it is best to grow them on a westerly aspect (Northern Hemisphere) to protect from the morning sun but still get plenty of warm sunshine. The second problem is that plants are usually either male or female, so you need to grow at least one male plant for every 4-5 females to get fruit. Some cultivars do not need a male for fertilization, though they have inferior fruits. When grown from seed, the vast majority of seedlings are male, so it is best to buy named varieties. Of the other species, probably the best to try in temperate climates is Tara Vine or Hardy Kiwi (*A. arguta*) which is even hardier than Fuzzy Kiwi. Its fruit is somewhat smaller but not covered with hairs, and so can be eaten without peeling. Super Hardy Kiwi (*A. kolomikta*) fruit has a sweet and agreeable flavour raw, cooked or dried for later use. It contains up to 5 times the vitamin C of blackcurrants. The ovoid fruit is hairless and pale orange when fully ripe and is up to 25mm (1in) in diameter. Young leaves are cooked and used as a potherb or added to a soup. Other species worth considering are Chinese Kiwi (*A. chinensis*) which has small fruit with a delicious flavour. It succeeds in semi-shade, but full sun is best for fruit production. Purple Hardy Kiwi (*A. purpurea*) is possibly no more than a form of *A. arguta*, differing in its longer narrower leaves. The fruit is similar in taste and size.

Fuzzy Kiwifruit (A. deliciosa)

Propagation: Softwood cuttings or layering.

• Nectary • Scented

Additional Edible Climbers

These climbers are featured in our other books or have a slightly lower edible rating. The plants are ordered by scientific name.

Honeysuckle *Lonicera periclymenum*

4m/14ft 4-8

Suck the base of the flowers to extract the nectar.

•Groundcover •Scented •Wildlife •Nectary

Maypops *Passiflora incarnata*

6m/20ft 7-11

Sweet fruit raw or cooked. Leaves raw or cooked. Flowers – cooked.

•Wildlife Food •Nectary

Magnolia Vine *Schisandra chinensis*

9m/30ft 4-8

The sweet/sour flavour fruit raw or cooked. Young leaves cooked.

•Scented •Wildlife •Nectary

Hog Peanut *Amphicarpaea bracteata*

1.5m/5ft 4-9

Sweet and delicious seed – raw or cooked used as a peanut substitute.

•Nitrogen fixer •Invert. Shelter •Groundcover

Aerial Yam *Dioscorea bulbifera*

10m/33ft 9-12

Eat well-cooked Aerial tubers boiled, baked, or fried.

•Nectary

Caucasian spinach *Hablitzia spp*

3m/10ft 3-9

Edible greens and shoots raw or cooked like spinach.

Hops *Humulus lupulus*

6m/20ft 5-7

Cook young leaves and shoots or eaten raw in salads.

•Wildlife

Sweet Pea *Lathyrus latifolius*

2m/7ft 5-9

Seed and young seedpods cooked.

•Nitrogen fixer •Invert. Shelter •Groundcover •Nectary

Carrion Flower *Smilax herbacea*

4 1 2 2.5m/9ft 4-8

Leaves and young shoots are delicate and palatable vegetables eaten raw or cooked and used like asparagus. Fruit – raw or cooked and used in jellies and jams.

•Scented •Wildlife

Wild bean *Phaseolus polystachios*

2 0 3 3m/10ft 6-10

Eat the seeds fresh, cooked or dried for later.

•Nitrogen fixer •Groundcover
•Wildlife •Nectary •Invert. Shelter

Support Climbers

Support climbers are non-edible and help a forest ecosystem to thrive. They might act as nitrogen fixers or dynamic accumulators, repel or distract pest species, or attract a range of beneficial wildlife.

Wisteria *Wisteria species*

2 1 3 8m/27ft 4-9

•N. Fixer •Scented •Nectary
•Invert. Shelter • Minor Edible

Butterfly Pea *Clitoria mariana*

0 0 3 1m/3ft 6-9

•Nitrogen fixer •Invert. Shelter
•Nectary

Wild Bean *Strophostyles umbellata*

0 0 2 1m/4ft 6-9

•Nitrogen fixer •Invert. Shelter
•Wildlife •Nectary

Vetch *Vicia species*

1 1 3 2m/6ft 4-8

•Nitrogen fixer •Accumulator
•Nectary •Invert. Shelter

Table 5. A summary of the edible parts and use of a climber.

	Leaves Bulk Raw	Leaves Bulk Cooked	Leaves Flavour Cooked	Flowers Raw	Flowers Cooked	Fruit Raw	Fruit Cooked	Tea/Drink	Shoots Raw	Shoots Cooked	Seed Raw	Seed Cooked
Actinidia species *(p73)*			●			●	●	●				
Akebia species *(p72)*						●	●	●				
Amphicarpaea species *(p74)*											●	●
Dioscorea bulbifera *(p74)*							●					
Hablitzia tamnoides *(p74)*	●	●										
Humulus lupulus *(p74)*	●								●			
Lathyrus latifolius *(p74)*												●
Lonicera periclymenum *(p74)*				●								
Passiflora incarnata *(p74)*	●	●			●	●	●	●				
Phaseolus polystachios *(p75)*											●	●
Schisandra chinensis *(p74)*		●				●	●					
Smilax herbacea *(p75)*	●	●				●	●					
Vitis species *(p72)*		●				●	●	●	●	●		

Shade (F) Full Shade (S) Semi-Shade (N) No Shade (D)Dry (M)Moist (We)Wet (Wa)Water Well-Drained (Y)Yes (N)No **Soil** (L)Light (M)Medium (H)Heavy

Growth (F) Fast (M) Med (S) Slow Hardiness Size Season (W) Winter (Sp) Spring (Su) Summer (A) Autumn **pH** (A)Mildly Acid (B)Mildly Alkaline

Genus & Species	Common Name	Form				m	ft				Soil	pH												Page
Acer pseudoplatanus	Sycamore	Tree	2	F	4-7	30	100	SN	M	Y	LMH	ANB	1	4	WSp							●		46
Acer saccharinum	Silver Maple	Tree	3	F	3-9	30	100	SN	M	N	LMH	ANB	1	4	WSp	●			●				●	46
Acer saccharum	Sugar Maple	Tree	4	M	4-8	30	100	SN	M	Y	LMH	ANB	2	4	WSp	●			●				●	46
Acer saccharum nigrum	Black Maple	Tree	4	M	4-6	25	83	SN	M	Y	LMH	ANB	1	2	WSp	●			●				●	46
Achillea millefolium	Yarrow	Perennial	3	F	4-8	0.6	2	SN	DM	Y	LMH	ANB	4	4	NA	●		●	●	●	●	●		●	65
Actinidia arguta	Tara Vine	Climber	5	M	4-8	15	50	SN	M	N	LMH	ANB	0	2	AW				●					73
Actinidia chinensis	Chinese Kiwi	Climber	4	M	6-9	7.5	25	SN	M	N	LMH	ANB	2	2	AW				●					73
Actinidia deliciosa	Fuzzy Kiwi	Climber	5	M	6-9	9	30	SN	M	N	LMH	A	1	1	AW				●					73
Actinidia kolomikta	Super Hardy Kiwi	Climber	4	F	3-8	10	33	SN	M	N	LMH	ANB	0	0	AW				●					73
Actinidia purpurea	Purple Hardy Kiwi	Climber	4	M	5-9	10	33	SN	M	N	LMH	ANB	0	1	AW				●					73
Agastache foeniculum	Anise Hyssop	Perennial	5	M	4-9	0.9	3	N	DM	Y	LM	ANB	1	3	SpSuA				●	●	●		●	49
Agastache mexicana	Mexican Giant Hyssop	Perennial	3	M	6-10	0.8	3	N	DM	Y	LM	ANB	0	2	SpSuA				●	●	●			49
Agastache rugosa	Korean Mint	Perennial	4	M	7-10	1	4	N	DM	Y	LM	ANB	3	2	SpSuA				●	●	●			49
Akebia quinata	Chocolate Vine	Climber	4	F	4-8	12	40	FSN	M	Y	LMH	ANB	2	3	A			●						72
Akebia trifoliata	Three Leaf Akebia	Climber	4	F	5-8	9	30	FSN	M	Y	LMH	ANB	2	2	A									72
Akebia x pentaphylla	Chocolate Vine	Climber	4	F	4-8	9	30	FSN	M	Y	LMH	ANB	0		A									72
Alcea rosea	Hollyhock	Perennial	3	F	5-9	2.4	8	N	DM	N	LMH	ANB	2	3	SpSu				●					62
Allium ampeloprasum	Wild Leek	Bulb	5	M	5-9	1.8	6	N	DM	Y	LMH	ANB	3	2	AWSp				●				●	70
Allium canadense	Canadian Garlic	Bulb	4	F	4-8	0.5	2	SN	MWe	N	LM	ANB	2	2	SpSuA				●			●	●	70
Allium cepa aggregatum	Potato Onion	Bulb	4	M	4-8	1.2	4	N	M	Y	LM	ANB	3	3	WSpSuA				●				●	70
Allium cepa proliferum	Walking Onion	Bulb	5	M	4-8	1.2	4	N	M	Y	LM	ANB	3	3	WSpSuA				●				●	70
Allium cernuum	Nodding Onion	Bulb	5	S	5-9	0.5	2	N	M	Y	LMH	ANB	2	2	SpSuA				●				●	70
Allium fistulosum	Welsh Onion	Bulb	5	M	5-9	0.6	2	N	M	Y	LMH	ANB	2	2	SpSuA				●				●	70
Allium neapolitanum	Daffodil Garlic	Bulb	5	M	7-10	0.3	1	N	DM	Y	LM	ANB	2	2	WSpA				●			●	●	70
Allium schoenoprasum	Chives	Bulb	5	M	5-11	0.3	1	SN	M	Y	LMH	ANB	2	3	WSpSuA	●		●	●		●		●	70
Allium tricoccum	Wood Leek, Ramp	Bulb	4	S	5-9	0.3	1	S	M	Y	LM	ANB	2	3	WSpA				●				●	70
Allium triquetrum	Three-Cornered Leek	Bulb	5	M	7-10	0.4	2	FSN	M	Y	LM	ANB	2		SpSuA				●				●	70
Allium tuberosum	Garlic Chives	Bulb	5	F	4-8	0.3	1	N	DM	Y	LMH	ANB	2	3	SpSuA			●	●				●	70
Allium ursinum	Wild Garlic, Ramsons	Bulb	5	M	4-8	0.3	1	FSN	M	N	LM	ANB	3		WSp				●				●	70
Alnus cordata	Italian Alder	Tree	0	F	5-9	25	83	SN	DMWe	N	MH	ANB	0	4	NA		●					●		31
Alnus glutinosa	Common Alder	Tree	0	F	3-7	25	83	SN	MWe	N	MH	ANB	3	5	NA		●				●	●	●	31
Alnus incana	Grey Alder	Tree	0	F	2-6	18	60	SN	DMWe	N	MH	ANB	0	3	NA		●				●		●	31
Alnus rubra	Red Alder	Tree	2	F	6-8	20	66	SN	MWe	N	MH	ANB	2	4	NA		●				●		●	31
Alnus rugosa	Speckled Alder	Tree	0	F	2-6	22	73	SN	MWe	N	MH	ANB	2	3	NA		●				●		●	31
Alnus serrulata	Smooth Alder	Shrub	0	F	3-9	4.5	15	N	MWe	N	MH	ANB	2	2	NA		●				●		●	31
Alnus sinuata	Sitka Alder	Shrub	1	F	2-9	4	14	SN	MWe	N	MH	ANB	1	3	NA		●							31
Alnus viridis crispa	American Green Alder	Shrub	1	F	4-8	3	10	SN	MWe	N	MH	ANB	2	3	NA		●							31
Aloysia citriodora	Lemon Verbena	Shrub	4	M	7-10	3	10	SN	DM	Y	LM	ANB	3	3	SpSuA				●				●	24

Genus & Species	Common Name	Form	Edibility Rating	Medicinal Rating	Other Uses Rating 1=Low to 5=High (very useful)	m	ft	Light	Moisture	Drought Tolerance	Soil	pH	Dynamic Accumulator	Nitrogen Fixer	Groundcover	Nectary	Wildlife	Invertebrate Shelter	Pest Confuser (smell)	Weed Potential	Coppice	Page
Amelanchier alnifolia	Saskatoon	Shrub	5	M	4-6	4	14	SN	M	N	LMH	ANB	2	3	SuA				●		●				16
Amelanchier lamarckii	Juneberry	Shrub	5	M	3-3	6	20	SN	M	N	LMH	AN	0	0	SuA				●		●				16
Amelanchier obovalis	Southern Juneberry	Tree	3	M	5-9	1.5	5	SN	M	N	LMH	ANB	0	1	SuA				●		●				16
Amelanchier stolonifera	Running Juneberry	Shrub	5	M	4-8	1.5	5	SN	DM	N	LMH	AN	1	0	SuA				●		●				16
Amorpha canescens	Leadplant	Shrub	2	M	2-9	1.2	4	SN	DM	Y	LM	ANB	2	3	NA		●		●	●					31
Amorpha fruticosa	False Indigo	Shrub	1	M	4-8	4.5	15	SN	DM	Y	LM	ANB	0	3	NA		●		●	●		●			31
Amorpha nana	Fragrant False Indigo	Shrub	0	M	4-8	0.6	2	SN	DM	Y	LM	ANB	1	2	NA		●		●	●					31
Amphicarpaea bracteata	Hog Peanut	Climber	5	F	4-9	1.5	5	FS	M	N	LMH	ANB	1	3	AW		●	●		●					74
Aralia cordata	Udo	Perennial	4	F	4-9	1.8	6	FS	M	N	LMH	ANB	2	0	Sp				●		●				50
Aralia elata	Angelica Tree	Tree	3	M	4-9	6	20	SN	M	Y	LMH	AN	2	2	Sp				●		●				50
Aralia nudicaulis	Wild Sarsaparilla	Perennial	4	M	4-8	0.4	2	FS	M	N	LMH	ANB	3	3	SpA			●	●		●				50
Aralia racemosa	American Spikenard	Perennial	3	M	4-8	1.8	6	FS	M	N	LMH	ANB	3	2	SpA				●						50
Araucaria araucana	Monkey Puzzle Tree	Tree	5	S	7-11	30	100	SN	M	Y	LMH	ANB	1	3	A						●				46
Arbutus unedo	Strawberry Tree	Tree	4	M	7-11	9	30	SN	DM	Y	LM	ANB	2	2	W						●				46
Arctostaphylos manzanita	Manzanita	Shrub	3	M	7-10	2	7	SN	DM	Y	LM	A	1	3	Su				●		●				27
Arctostaphylos uva-ursi	Bearberry	Shrub	3	M	4-8	0.1	0.4	FSN	M	Y	LM	ANB	4	4	Su			●	●		●				27
Artemisia dracunculoides	Russian Tarragon	Perennial	2	M	5-8	1	4	SN	DM	Y	LM	ANB	1		SpSuA						●			●	60
Artemisia dracunculus	French Tarragon	Perennial	4	M	5-8	0.6	2	SN	DM	Y	LM	NB	2	3	SpSuA				●	●	●	●		●	60
Artemisia frigida	Fringed Sagebush	Perennial	2	M	3-10	0.3	1	N	DM	Y	LM	ANB	2	3	SpSuA			●	●	●	●	●		●	60
Artemisia stelleriana	Beach Wormwood	Perennial	1	M	3-9	0.5	2	N	DM	Y	LM	ANB	0	3	SpSuA			●	●	●	●			●	60
Arundinaria gigantea	Canebrake bamboo	Bamboo	3	F	5-9	9	30	SN	M	Y	LMH	ANB	1	4	SpSu						●				67
Asarum canadense	Wild Ginger	Perennial	3	S	3-9	0.1	0.4	FS	M	Y	LMH	ANB	3	3	NA			●							65
Asarum europaeum	European Wild Ginger	Perennial	0	S	4-8	0.1	0.4	FS	M	Y	LMH	ANB	2		NA			●	●						65
Asarum shuttleworthii	Mottled Wild Ginger	Perennial	2	F	5-9	0.1	0.4	FS	M	Y	LMH	AN	0	2	NA			●							65
Asarum splendens	Chinese Wild Ginger	Perennial	3	S	5-9	0.2	0.7	FS	DM	Y	LM	AN	0	3	NA			●							65
Asimina triloba	Papaw	Shrub	4	S	5-8	4.5	15	SN	M	Y	M	ANB	2	3	AW						●		●		24
Asparagus officinalis	Asparagus	Perennial	4	F	2-9	1.5	5	SN	M	Y	LMH	ANB	3	2	Sp				●		●				62
Aster cordifolius	Common Blue Wood Aster	Perennial	2	M	3-7	1.5	5	N	M	Y	LMH	ANB	1	2	NA				●	●	●				65
Aster lanceolatus	White Panicle Aster	Perennial	0	M	4-8	2	7	SN	M	Y	LMH	ANB	1	2	NA				●	●	●				65
Aster macrophyllus	Bigleaf Aster	Perennial	2	M	3-7	0.6	2	SN	DM	Y	LMH	ANB	1	2	NA			●	●	●	●				65
Aster novae-angliae	New England Aster	Perennial	0	M	4-9	1.5	5	SN	M	Y	LMH	ANB	2		NA				●	●	●				65
Aster novi-belgii	Michaelmas Daisy	Perennial	0	M	4-8	1.2	4	SN	M	Y	LMH	ANB	0	2	NA				●	●	●				65
Aster puniceus	Purplestem Aster	Perennial	0	M	3-8	1.3	5	SN	M	Y	LMH	ANB	2	2	NA				●	●	●				65
Aster scaber	Chwinamul Aster	Perennial	3	F	6-9	1.2	4	N	M	Y	LMH	ANB	0	2	NA				●	●					65
Astragalus canadensis	Canadian Milkvetch	Perennial	3	M	7-10	1	4	N	D	Y	LM	ANB	2	3	SpA		●		●	●					52
Astragalus crassicarpus	Groundplum Milkvetch	Perennial	4	S	6-9	0.5	2	N	D	Y	LM	ANB	1	3	SuA		●		●	●	●				52
Astragalus glycyphyllos	Licorice Milkvetch	Perennial	1	F	3-7	0.2	0.7	N	D	Y	LM	ANB	0	4	NA		●	●	●	●	●				52

Edibility Rating · Medicinal Rating · Other Uses Rating *1=Low to 5=High (very useful)* · Dymanic Accumulator · Nitrogen Fixer · Groundcover · Nectary · Wildlife · Invertebrate Shelter · Pest Confuser (smell) · Weed Potential · Coppice

Genus & Species	Common Name	Form				m	ft				Soil	pH												Page
Astragalus membranaceus	Huang Qi	Perennial	0	M	5-9	0.3	1	N	D	Y	LM	NB	5	3	NA		●		●	●					52
Atriplex canescens	Four-wing Saltbush	Shrub	4	F	6-9	1.8	6	N	DM	Y	LM	ANB	1	3	WSpSuA						●		●		25
Atriplex hortensis	Common Saltbush	Annual	4	F	5-9	1.8	6	N	M	Y	LM	ANB	2		WSpSuA										25
Atriplex semibaccata	Grey Saltbush	Shrub	2	F	9-11	0.5	2	N	DM	Y	LMH	ANB	0	3	WSpSuA						●		●		25
Balsamorhiza deltoidea	Deltoid Balsamroot	Perennial	4	M	4-8	0.6	2	N	DM	Y	LM	ANB	1		SpSuA				●						55
Balsamorhiza sagittata	Balsamroot Sunflower	Perennial	4	M	4-8	0.3	1	N	DM	Y	LM	ANB	2	2	SpSuA			●	●	●					55
Baptisia australis	Wild Blue Indigo	Perennial	0	S	3-9	1.5	5	N	DM	Y	LM	AN	2	2	NA		●		●	●					65
Baptisia tinctoria	Wild Yellow Indigo	Perennial	1	S	4-8	0.9	3	N	DM	Y	LM	AN	3	2	NA		●		●	●					65
Berberis aggregata	Salmon Barberry	Shrub	3	M	5-9	1.5	5	SN	DM	N	LMH	ANB	2	1	A				●		●				16
Berberis angulosa	Large-flowered Barberry	Shrub	3	M	5-9	1	4	SN	DM	N	LMH	ANB	2	1	A				●		●				16
Berberis aristata	Indian Barberry	Shrub	4	M	5-9	3.5	12	SN	DM	N	LMH	ANB	3	3	SuA				●		●				16
Berberis asiatica	Asian Barberry	Shrub	4	M	7-10	3.5	12	FSN	DM	N	LMH	ANB	3	2	A				●		●				16
Berberis buxifolia	Magellan Barberry	Shrub	4	M	4-8	2.5	9	SN	DM	N	LMH	ANB	2	3	SuA				●		●				16
Berberis canadensis	Canada Barberry	Shrub	3	M	4-8	1.8	6	SN	DM	N	LMH	ANB	2	1	SpA				●		●				16
Berberis cooperi	Coopers Barberry	Shrub	3	M	4-8	1.5	5	SN	M	N	LMH	ANB	2	1	A				●		●				16
Berberis darwinii	Darwin's Barberry	Shrub	4	M	7-9	3	10	SN	M	N	LMH	ANB	2	3	A				●		●				16
Berberis vulgaris	European Barberry	Shrub	3	M	3-7	3	10	SN	DM	N	LMH	ANB	3	4	SpA				●		●	●			16
Betula alleghaniensis	Yellow Birch	Tree	3	F	3-7	12	40	SN	M	Y	LMH	ANB	2	4	Sp	●			●				●		34
Betula lenta	Black Birch	Tree	3	F	3-7	24	79	SN	M	Y	LMH	ANB	3	4	Sp	●			●				●		34
Betula pendula	Silver Birch	Tree	3	F	2-6	20	66	N	DM	Y	LMH	ANB	3	5	Sp	●			●		●				34
Betula pubescens	Downy Birch	Tree	3	F	2-9	20	66	N	DMWe	N	LMH	ANB	3	5	Sp	●					●				34
Brassica oleracea acephala	Collards	Perennial	4	F	5-10	0.9	3	SN	M	Y	LMH	ANB	0	3	WSpSuA	●			●	●					51
Brassica oleracea botrytis aparagoides	Nine Star Broccoli	Perennial	4	F	5-10	0.8	3	SN	M	Y	LMH	ANB	0	3	WSpSuA	●			●	●					51
Brassica oleracea ramosa	Daubenton's Kale	Perennial	4	F	5-10	0.9	3	SN	M	Y	LMH	ANB	0	3	WSpSuA	●			●	●					51
Bunias orientalis	Turkish Rocket	Perennial	4	F	6-9	0.9	3	N	M	N	LMH	ANB	0		SpSuA										62
Calycanthus floridus	Carolina Allspice	Shrub	3	M	5-10	2.7	9	SN	M	Y	LM	ANB	2	2	WSpSuA						●				29
Calycanthus occidentalis	Californian Allspice	Shrub	3	M	6-9	3	10	SN	M	Y	LM	ANB	1	2	WSpSuA				●		●				29
Campanula carpatica	Carpathian Bellflower	Perennial	3	S	3-8	0.3	1	SN	M	Y	LM	ANB	0	2	WSpSuA			●	●						62
Campanula glomerata	Clustered Bellflower	Perennial	4	M	4-9	1	4	SN	M	Y	LM	ANB	0		WSpSuA				●						62
Campanula portenschlagiana	Dalmatian Bellflower	Perennial	3	F	3-7	0.3	1	SN	M	Y	LM	NB	0	3	WSpSuA			●	●						62
Campanula rapunculus	Rampion	Biennial	4	F	4-8	0.9	3	SN	M	Y	LM	NB	0		WSpSuA				●						62
Caragana arborescens	Siberian Pea-tree	Shrub	5	F	2-7	6	20	N	DM	Y	LM	ANB	1	4	SuA		●		●	●	●				25
Caragana boisii	Siberian pea-shrub	Shrub	4	F	2-9	2	7	N	DM	Y	LM	ANB	0	4	SuA		●		●	●	●				25
Caragana brevispina	Long-Stalked Pea-shrub	Shrub	4	F	4-9	2.5	9	N	DM	Y	LM	ANB	1	3	SuA		●		●	●	●				25
Carya hybrids	Hybrid Hickories	Tree	4	M	4-11	40	132	N	DM	Y	LMH	ANB	3	3	A	●			●				●		35
Carya illinoinensis	Pecan	Tree	4	M	5-9	50	165	N	M	N	LMH	ANB	1	2	A	●			●				●		35
Carya laciniosa	Shellbark Hickory	Tree	3	S	5-9	30	100	N	M	N	LMH	ANB	1	3	A	●			●				●		35

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Carya ovata	Shagbark Hickory	Tree	3	S	4-8	30	100	N	DM	N	LMH	ANB	1	4	A	●			●				●		35
Castanea dentata	American Chestnut	Tree	3	M	4-8	30	100	SN	DM	Y	LMH	AN	1	3	SuA				●				●		18
Castanea pumila	Chinquapin	Shrub	4	S	4-8	4	14	N	DM	Y	LMH	AN	1	2	SuA				●				●		18
Castanea sativa	Sweet Chestnut	Tree	5	M	5-7	30	100	N	DM	Y	LMH	AN	2	5	SuA				●		●		●		18
Casuarina cristata	Belah	Tree	0	F	8-11	12	40	N	DM	Y	LMH	ANB	0	3	NA						●				47
Casuarina cunninghamiana	River She-Oak	Tree	0	F	8-11	18	60	N	DM	Y	LMH	ANB	0	5	NA		●				●				47
Casuarina glauca	Gray She-oak	Tree	1	F	8-11	18	60	N	DM	Y	LM	ANB	0	3	NA		●				●	●			47
Casuarina littoralis	Black She-oak	Tree	0	F	8-11	8	27	N	DM	Y	LMH	ANB	0	3	NA		●				●				47
Casuarina torulosa	Forest Oak	Tree	0	F	8-11	15	50	N	DM	Y	LMH	ANB	0	3	NA		●				●				47
Casuarina verticillata	Drooping She-oak	Tree	0	F	8-11	10	33	N	DM	Y	LMH	ANB	0	3	NA		●				●				47
Ceanothus americanus	New Jersey Tea	Shrub	3	F	4-9	1.2	4	SN	DM	Y	LM	ANB	3	3	Su		●		●		●				29
Ceanothus prostratus	Mahala Mat	Shrub	0	M	6-9	0.1	0.4	SN	DM	Y	LM	ANB	0	3	Su		●	●	●						29
Cephalotaxus fortunei	Chinese Plum Yew	Shrub	5	S	6-9	6	20	FSN	M	N	LMH	ANB	1	3	A			●			●				29
Cephalotaxus harringtonia	Japanese Plum Yew	Shrub	5	S	6-9	5	17	FS	M	N	LMH	ANB	0	3	A						●				29
Cercis canadensis	Redbud	Tree	3	M	4-9	12	40	SN	M	Y	LM	ANB	2	2	SpSuA				●		●				29
Cercis occidentalis	Western Redbud	Shrub	3	M	5-9	4.5	15	SN	DM	Y	LM	ANB	0	3	SpSuA		●		●		●				29
Cercis siliquastrum	Judas Tree	Tree	4	M	6-9	12	40	SN	DM	Y	LMH	ANB	0	4	SpSuA		●		●		●				29
Cercocarpus montanus	Mountain Mahogany	Shrub	0	M	6-7	4	14	N	DM	Y	LMH	ANB	1	3	NA		●		●						31
Chaenomeles cathayensis	Chinese Quince	Shrub	4	M	4-8	3	10	SN	M	Y	LMH	ANB	2	0	A				●		●				21
Chaenomeles japonica	Dwarf Quince	Shrub	3	M	5-8	1	4	FSN	M	Y	LMH	ANB	0	3	AW				●		●				21
Chaenomeles speciosa	Japanese Quince	Shrub	3	M	4-8	3	10	FSN	M	Y	LMH	ANB	2	3	A			●	●		●				21
Chaenomeles x superba	Dwarf Quince	Shrub	3	F	5-8	1	4	FSN	M	Y	LMH	ANB	0	3	A			●	●		●				21
Chamaemelum nobile	Chamomile	Perennial	2	F	4-8	0.2	0.7	SN	DM	Y	LMH	ANB	5	4	Su	●		●	●	●					62
Cichorium intybus	Chicory, Radicchio	Perennial	4	F	3-7	1.5	5	N	M	Y	LMH	ANB	3	3	WSpSuA	●			●	●	●	●			51
Claytonia caroliniana	Carolina Spring Beauty	Perennial	3	M	5-9	0.1	0.4	N	M	Y	LM	A	0	1	Sp				●						54
Claytonia megarhiza	Alpine Spring Beauty	Perennial	3	M	4-8	0.2	0.7	N	M	Y	LM	A	0		Sp				●						54
Claytonia perfoliata	Miner's Lettuce	Annual	4	F	6-10	0.2	0.7	FSN	DM	Y	LMH	ANB	1	2	Sp			●	●			●			54
Claytonia sibirica	Pink Purslane	Perennial	4	M	3-7	0.2	0.7	FSN	DM	Y	LMH	ANB	1	3	Sp			●	●						54
Claytonia virginica	Spring Beauty	Perennial	3	M	5-7	0.2	0.7	S	M	Y	LM	A	1		Sp				●						54
Clitoria mariana	Butterfly Pea	Climber	0	M	6-9	0.8	3	SN	DM	Y	LM	N	0	3	NA		●			●					74
Colutea arborescens	Bladder Senna	Shrub	0	F	4-8	3.6	12	SN	DM	Y	LMH	ANB	2	4	NA		●			●	●				31
Comptonia peregrina	Sweetfern	Shrub	3	M	3-6	1.5	5	SN	DM	Y	LM	A	3	3	SpSu		●				●				28
Cornus canadensis	Bunchberry	Perennial	4	F	2-7	0.3	1	SN	M	N	LMH	AN	2	2	SuA			●			●				20
Cornus florida	Flowering Dogwood	Shrub	2	M	5-9	6	20	SN	M	Y	LMH	AN	2	3	SuA	●					●		●		20
Cornus kousa	Kousa Dogwood	Tree	5	S	5-8	10	33	SN	M	N	LMH	ANB	0	2	SuA						●				20
Cornus mas	Cornelian Cherry	Shrub	4	M	4-8	5	17	SN	M	N	LMH	ANB	2	3	SuA						●				20
Cornus sericea	Red Osier Dogwood	Shrub	2	F	2-7	2.5	9	SN	MWe	N	LMH	ANB	2	4	SuA				●		●				20
Corylus americana	American Hazel	Tree	3	M	4-8	3	10	SN	M	N	LMH	ANB	1	2	A				●		●		●		22

Genus & Species	Common Name	Form				m	ft				Soil	pH													Page
Corylus avellana	Common Hazel	Tree	5	M	4-8	6	20	SN	M	N	LMH	ANB	2	5	A				●		●		●		22
Corylus cornuta	Beaked Hazel	Shrub	3	M	4-7	3	10	SN	M	N	LMH	ANB	1	3	A				●		●		●		22
Corylus maxima	Filbert	Shrub	5	M	4-8	6	20	SN	M	N	LMH	ANB	0	5	A				●		●		●		22
Crambe maritima	Sea Kale	Perennial	4	M	4-8	0.6	2	SN	DM	N	LMH	NB	0	3	SpSu				●		●				58
Crataegus aestivalis	Mayhaw	Shrub	3	M	6-11	9	30	SN	MWe	N	LMH	ANB	2	5	A				●		●		●		22
Crataegus arnoldiana	Arnold Hawthorn	Tree	5	M	5-9	7	23	SN	DMWe	N	LMH	ANB	2	0	A				●		●		●		22
Crataegus durobrivensis	Caughuawaga Hawthorn	Shrub	4	M	4-8	5	17	SN	MWe	N	LMH	ANB	2	2	A				●		●		●		22
Crataegus ellwangeriana	Scarlet Hawthorn	Tree	5	M	5-7	6	20	SN	MWe	N	LMH	ANB	2	2	A				●		●		●		22
Crataegus mollis	Downy Hawthorn	Tree	4	M	4-8	9	30	SN	MWe	N	LMH	ANB	2	2	A				●		●		●		22
Crataegus pedicellata	Scarlet Hawthorn	Shrub	5	M	4-8	7	23	SN	MWe	N	LMH	ANB	2	2	A				●		●		●		22
Crataegus pinnatifida	Chinese Haw	Tree	3	M	5-9	7	23	SN	MWe	N	LMH	ANB	3	2	A				●		●		●		22
Crataegus punctata	Dotted Hawthorn	Tree	3	M	4-8	10	33	SN	MWe	N	LMH	ANB	2	2	A				●		●		●		22
Crataegus schraderana	Blue Hawthorn	Tree	5	M	5-9	6	20	SN	MWe	N	LMH	ANB	2		A				●		●		●		22
Crataegus tanacetifolia	Tansy-Leaved Thorn	Tree	5	M	6-8	10	33	SN	DMWe	Y	LMH	ANB	2	3	A				●		●		●		22
Cryptotaenia canadensis	Canadian Honewort	Perennial	3	M	4-8	1	4	S	M	N	LMH	ANB	0		SpSu				●	●					53
Cryptotaenia japonica	Mitsuba	Perennial	4	M	4-8	1	4	FSN	M	N	LMH	ANB	1		SpSu				●	●					53
Cydonia oblonga	Quince	Tree	4	M	5-9	7.5	25	FSN	M	N	LMH	ANB	2	3	A				●						44
Cynara cardunculus	Cardoon	Perennial	3	F	5-9	2	7	N	DM	N	LMH	ANB	5	1	SuA				●		●	●			62
Cynara scolymus	Globe Artichoke	Perennial	3	F	5-9	1.5	5	N	M	Y	LMH	ANB	5	2	SuA				●		●				62
Cytisus decumbens	Prostrate Broom	Shrub	0	M	5-8	0.2	0.7	N	DM	Y	LM	ANB	0	4	NA		●	●	●	●	●	●			31
Cytisus scoparius	Common Broom	Shrub	1	F	5-8	2.4	8	SN	DM	Y	LMH	ANB	3	4	NA		●		●	●	●	●			31
Desmodium canadense	Showy tick Trefoil	Perennial	0	F	3-6	0.9	3	SN	DM	Y	LMH	ANB	0	3	NA		●			●	●	●			65
Desmodium glutinosum	Pointed-leaved Tick Trefoil	Perennial	0	F	3-9	0.9	3	SN	M	Y	LM	ANB	0	3	NA		●			●					65
Dioscorea bulbifera	Aerial Yam	Climber	4	F	9-12	10	33	SN	M	Y	LMH	ANB	2	1	SuA				●			●			74
Diospyros kaki	Japanese Persimmon	Tree	4	M	7-10	12	40	SN	M	Y	LMH	ANB	3	3	A				●						38
Diospyros lotus	Date Plum	Tree	5	M	7-9	9	30	SN	M	Y	LMH	ANB	1	2	A				●		●				38
Diospyros virginiana	American Persimmon	Tree	5	M	4-8	20	66	SN	M	Y	LMH	ANB	1	3	A				●		●		●		38
Diplotaxis tenuifolia	Perennial Wall Rocket	Perennial	4	F	5-9	0.6	2	SN	DM	N	LMH	ANB	0	0	SpSuA										62
Drimys lanceolata	Mountain Pepper	Shrub	3	S	7-10	4.5	15	S	M	Y	LM	AN	1	4	A				●		●				29
Drimys winteri	Winter's Bark	Shrub	3	M	7-10	7.5	25	S	M	Y	LM	AN	2	3	A				●		●				29
Dryas octopetala	Mountain Avens	Shrub	1	M	3-6	0.1	0.4	N	M	N	LMH	ANB	1	2	NA		●	●							31
Echinacea angustifolia	Purple Coneflower	Perennial	0	M	3-8	1.2	4	N	DM	Y	LMH	ANB	5	2	NA				●	●					65
Echinacea purpurea	Purple Coneflower	Perennial	1	M	3-10	1.2	4	N	DM	Y	LM	ANB	5	2	NA				●	●					65
Elaeagnus angustifolia	Oleaster	Shrub	4	M	2-7	7	23	N	DM	Y	LMH	ANB	2	4	SuA		●		●			●	●		20
Elaeagnus commutata	Wolf-willow	Shrub	3	M	2-6	3	10	N	DM	Y	LMH	ANB	2	4	SuA		●		●		●				20
Elaeagnus macrophylla	Broad-leaved Oleaster	Shrub	5	M	6-9	3	10	FSN	DM	Y	LMH	ANB	2	3	Sp		●		●		●				20
Elaeagnus multiflora	Goumi	Shrub	5	M	5-9	3	10	SN	DM	Y	LMH	ANB	2	3	SpSu		●		●		●				20

Genus & Species	Common Name	Form				m	ft				Soil	pH													Page
Elaeagnus orientalis	Trebizond Date	Shrub	4	M	4-8	12	40	N	DM	Y	LMH	ANB	2	2	A		●		●		●				20
Elaeagnus umbellata	Autumn Olive	Shrub	4	M	3-7	4.5	15	N	DM	Y	LMH	ANB	2	3	A		●		●		●	●	●		20
Elaeagnus x ebbingei	Ebbing's Silverberry	Shrub	5	M	5-9	5	17	FSN	DM	Y	LMH	ANB	2	4	Sp		●		●		●		●		20
Eriobotrya japonica	Loquat	Tree	4	M	8-11	9	30	SN	DM	Y	LMH	ANB	3	2	WSp				●		●	●			46
Eryngium maritimum	Sea Holly	Perennial	3	M	4-8	0.5	2	N	DM	Y	LM	ANB	3	2	Sp				●	●	●				62
Erythronium americanum	Trout Lily	Bulb	4	S	3-7	0.2	0.7	S	M	Y	LM	ANB	1	3	SpSu										71
Fagus grandifolia	American Beech	Tree	2	S	4-8	10	33	FSN	DM	Y	LM	ANB	2	3	SpSuA	●			●				●		34
Fagus sylvatica	European Beech	Tree	4	M	4-7	30	100	FSN	DM	Y	LMH	ANB	2	4	SpSuA	●			●		●		●		34
Ficus carica	Fig	Tree	4	M	6-10	6	20	N	DM	Y	LMH	ANB	2	1	SuA				●		●	●			46
Filipendula ulmaria	Meadowsweet	Perennial	3	M	3-9	1.2	4	SN	MWe	N	LMH	NB	3	3	SpSu				●		●				63
Foeniculum vulgare	Fennel	Perennial	5	F	3-10	1.5	5	N	DM	Y	LMH	ANB	3	4	WSpSuA				●	●	●	●			63
Fragaria chiloensis	Beach Strawberry	Perennial	3	F	4-10	0.3	1	SN	M	Y	LMH	ANB	1	3	SpSuA	●		●	●		●				59
Fragaria moschata	Musk Strawberry	Perennial	3	F	5-9	0.5	2	SN	M	Y	LMH	ANB	0	2	SpSuA	●		●	●		●				59
Fragaria vesca	Woodland Strawberry	Perennial	3	F	4-8	0.3	1	SN	M	Y	LMH	ANB	3	3	SpSuA	●		●	●		●				59
Fragaria virginiana	Virginia Strawberry	Perennial	3	F	3-7	0.3	1	SN	M	Y	LMH	ANB	2	2	SpSuA	●		●	●		●	●			59
Fragaria viridis	Green Strawberry	Perennial	3	F	5-9	0.3	1	SN	M	Y	LMH	ANB	0	3	SpSuA	●		●	●		●				59
Fragaria x ananassa	Garden Strawberry	Perennial	5	F	4-8	0.3	1	SN	M	Y	LMH	ANB	0	3	SpSuA	●		●	●		●				59
Galium odoratum	Sweet Woodruff	Perennial	3	M	5-9	0.2	0.7	FS	DM	N	LMH	ANB	3	3	SpSu			●	●						59
Gaultheria hispidula	Creeping Snowberry	Shrub	4	F	5-9	0.1	0.4	S	MWe	N	LM	AN	1	4	SpSuA			●			●				29
Gaultheria procumbens	Creeping Wintergreen	Shrub	4	M	3-6	0.2	0.7	FS	DM	N	LM	AN	3	4	WSpSuA	●		●			●				29
Gaultheria shallon	Salal	Shrub	5	M	6-9	1.2	4	FSN	DM	N	LM	A	2	3	Su			●	●		●				29
Genista pilosa	Silkyleaf Woodwaxen	Shrub	0	S	5-8	0.3	1	SN	DM	Y	LM	ANB	0	3	NA		●	●	●	●	●				31
Genista pilosa procumbens	Creeping Woodwaxen	Shrub	0	S	6-8	0.1	0.4	SN	DM	Y	LM	ANB	0	3	NA		●	●	●	●	●				31
Genista sagittalis	Arrow Broom	Shrub	0	M	3-8	0.3	1	SN	DM	Y	LM	ANB	0	3	NA		●	●	●	●	●				31
Genista tinctoria	Dyer's Greenweed	Shrub	1	M	4-7	0.6	2	N	DM	Y	LM	ANB	2	3	NA		●		●	●	●				31
Ginkgo biloba	Maidenhair Tree	Tree	5	S	3-8	30	100	N	DM	Y	LMH	ANB	5	2	A								●		46
Hablitzia tamnoides	Caucasian Spinach	Climber	4	F	3-9	3	10	FSN	M	Y	LMH	NB	0	1	Sp										74
Helianthus decapetalus	Thinleaf Sunflower	Perennial	0	M	2-8	1.2	4	SN	M	Y	LMH	AN	0	2	NA				●	●	●	●			63
Helianthus giganteus	Giant Sunflower	Perennial	3	F	4-8	3.6	12	N	M	Y	LMH	ANB	0	0	A				●	●					63
Helianthus maximilianii	Maximillian Sunflower	Perennial	3	M	5-10	2.4	8	N	M	Y	LMH	ANB	0	0	A				●	●					63
Hemerocallis dumortieri	Dumortier's Daylily	Perennial	4	M	4-8	0.5	2	SN	DM	N	LMH	ANB	1	3	SpSu			●	●		●				55
Hemerocallis fulva	Tawny Daylily	Perennial	5	M	3-10	1	4	SN	DM	N	LMH	ANB	2	2	SpSu			●	●		●	●			55
Hemerocallis lilioasphodelus	Yellow Daylily	Perennial	4	F	4-8	0.6	2	SN	DM	N	LMH	ANB	2	2	SpSu			●	●		●				55
Hemerocallis middendorffii	AmurDaylily	Perennial	5	M	4-8	0.9	3	SN	DM	N	LMH	ANB	1	2	SpSu			●	●		●				55
Hemerocallis species	Daylily	Perennial	4	M	3-10	1.2	4	SN	DM	N	LMH	ANB	1		SpSu			●	●		●				55
Hibiscus sinosyriacus	Rose Of Sharon	Shrub	4	M	6-9	3	10	SN	M	Y	LMH	ANB	2	3	SpSuA				●						23
Hibiscus syriacus	Rose Of Sharon	Shrub	4	M	5-9	3	10	SN	M	Y	LMH	ANB	2	2	SpSuA						●	●			23
Hippophae rhamnoides	Sea Buckthorn	Shrub	5	M	3-7	6	20	N	DMWe	N	LMH	ANB	5	5	A		●				●				29

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Hippophae salicifolia	Willow-Leaved Sea Buckthorn	Tree	5	F	3-7	15	50	N	DMWe	N	LMH	ANB	3	5	A		●				●				29
Hosta crispula	Curled Plantain Lily	Perennial	2	S	4-8	0.6	2	SN	M	N	LMH	ANB	0		Sp			●							63
Hosta longipes	Rock Hosta	Perennial	3	M	4-8	0.3	1	FSN	M	N	LMH	ANB	0	3	Sp			●							63
Hosta longissima	Swamp Hosta	Perennial	2	M	4-8	0.2	0.7	SN	MWe	N	LMH	ANB	0		Sp			●							63
Hosta montana	Mountain Hosta	Perennial	2	M	4-8	1	4	SN	M	N	LMH	ANB	0		Sp			●							63
Houttuynia cordata	Hot Tuna, Tsi	Perennial	4	F	5-10	0.6	2	FS	MWeWa	N	LMH	ANB	3	2	Sp			●							56
Humulus lupulus	Hops	Climber	4	M	5-7	6	20	SN	DM	N	LMH	ANB	5	3	Sp						●				74
Hyssopus officinalis	Hyssop	Shrub	2	M	5-10	0.6	2	N	DM	Y	LM	NB	3	5	SpSu			●	●		●				27
Indigofera decora	Chinese indigo	Shrub	2	M	5-7	1	4	N	M	Y	LM	ANB	1	3	A		●	●		●					31
Juglans ailanthifolia	Japanese Walnut	Tree	3	M	4-8	20	66	N	M	Y	LMH	ANB	1	5	A	●			●						45
Juglans ailanthifolia cordiformis	Heartnut Walnut	Tree	4	M	4-8	20	66	N	M	Y	LMH	ANB	1	4	A	●			●						45
Juglans cinerea	Butternut Walnut	Tree	3	M	3-7	25	83	N	M	Y	LMH	ANB	3	3	A	●			●				●		45
Juglans nigra	Black Walnut	Tree	3	F	4-9	30	100	N	M	Y	LMH	ANB	3	4	A	●			●				●		45
Juglans regia	Walnut	Tree	4	M	7-9	20	66	N	M	Y	LMH	ANB	3	4	A	●			●						45
Juglans x bisbyi	Buartnut	Tree	3	M	4-8	20	66	N	M	Y	LMH	ANB	0	2	A	●			●						45
Juniperus communis	Common Juniper	Shrub	3	S	4-10	9	30	SN	DM	Y	LMH	ANB	3	4	A			●			●				23
Juniperus conferta	Shore Juniper	Shrub	2	S	6-10	0.2	0.7	SN	DM	Y	LMH	ANB	0	3	A			●			●				23
Juniperus deppeana	Alligator Juniper	Tree	3	S	7-9	18	60	N	DM	Y	LMH	ANB	0	0	A						●				23
Juniperus drupacea	Syrian Juniper	Tree	3	M	6-9	15	50	N	DM	Y	LMH	ANB	0		A						●				23
Juniperus horizontalis	Creeping Juniper	Shrub	2	M	4-9	1	4	N	DM	Y	LMH	ANB	1	3	A			●			●				23
Juniperus occidentalis	Western Juniper	Tree	3	S	4-8	18	60	N	DM	Y	LMH	ANB	2	3	A						●				23
Juniperus scopulorum	Rocky Mountain Juniper	Tree	3	S	3-7	10	33	N	DM	Y	LMH	ANB	2	4	A			●			●				23
Laburnum anagyroides	Laburnum	Tree	0	F	4-8	6	20	SN	DM	Y	LMH	ANB	1	4	NA		●		●						47
Lathyrus latifolius	Perennial Sweet Pea	Climber	1	F	5-9	2	7	SN	DM	N	LMH	ANB	0	2	NA		●	●	●	●		●			74
Laurus nobilis	Bay Tree	Tree	3	S	8-10	12	40	SN	DM	Y	LMH	ANB	3	4	SpSuA				●		●				46
Lavandula angustifolia	English Lavender	Shrub	2	S	5-8	1.2	4	N	DM	Y	LMH	ANB	3	5	SpSu				●		●				31
Lavandula latifolia	Broadleaved Lavender	Shrub	2	S	6-9	0.4	2	N	DM	Y	LMH	ANB	2	5	SpSu				●		●				31
Lavandula stoechas	French Lavender	Shrub	0	S	7-10	0.8	3	N	DM	Y	LMH	ANB	2	4	NA				●		●				31
Lavandula x intermedia	Lavender	Shrub	2	S	5-9	1.2	4	N	DM	Y	LMH	ANB	2	5	SpSu				●		●				31
Lespedeza bicolor	Shrub Lespedeza	Shrub	3	M	4-8	3	10	SN	DM	Y	LM	ANB	0	4	SpSuA		●		●	●		●			18
Lespedeza capitata	Roundhead Bush Clover	Shrub	1	F	4-8	1	4	N	M	Y	LM	ANB	2	3	NA		●		●	●					18
Lespedeza formosa	Oriental Bush Clover	Shrub	0	F	5-9	2	7	N	M	Y	LM	ANB	0	3	NA		●		●						18
Lespedeza maximowiczii	Bush Clover	Shrub	0	F	4-8	3.5	12	N	M	Y	LM	ANB	0	3	NA		●		●						18
Leucanthemum vulgare	Ox-Eye Daisy	Perennial	2	M	3-9	0.6	2	N	M	Y	LMH	NB	2	2	Sp			●	●		●	●			65
Levisticum officinale	Lovage	Perennial	3	M	5-9	1.8	6	SN	M	N	LMH	ANB	3	2	SpSuA				●	●	●				52
Lilium brownii	Hong Kong Lily	Bulb	3	S	4-8	1.2	4	SN	M	Y	LM	ANB	2		A						●				71
Lilium canadense	Canada Lily	Bulb	3	S	4-8	1.5	5	SN	M	Y	LM	AN	1	0	NA						●				71

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Lilium lancifolium	Tiger Lily	Bulb	4	M	4-8	1.2	4	SN	M	Y	LMH	ANB	2		A						●				71
Lilium longiflorum	White Trumpet Lily	Bulb	3	M	7-9	1	4	SN	M	Y	LM	ANB	2	2	A						●				71
Lilium philadelphicum	Wood Lily	Bulb	3	S	4-8	1	4	SN	M	Y	LMH	ANB	1		NA						●				71
Lilium superbum	Turk's-cap Lily	Bulb	3	S	4-9	2.4	8	SN	M	Y	LM	AN	0		SuA						●				71
Lonicera caerulea	Edible Honeysuckle	Shrub	4	F	3-9	2	7	N	M	N	LMH	ANB	0	0	Su				●		●				29
Lonicera periclymenum	European Honeysuckle	Climber	1	M	4-8	4.5	15	FSN	M	N	LMH	ANB	2	3	NA			●	●		●				29
Lonicera sempervirens	Trumpet Honeysuckle	Shrub	0	F	4-9	5	17	N	DM	N	LMH	ANB	1		NA			●	●		●				29
Lonicera villosa	Mountain Fly Honeysuckle	Shrub	3	S	3-9	1.5	5	N	M	N	LMH	ANB	0	0	Su				●		●				29
Lotus corniculatus	Bird's Foot Trefoil	Perennial	1	M	3-8	0.3	1	N	DM	Y	LMH	ANB	1	4	NA		●	●	●	●	●	●			65
Lotus uliginosus	Greater Bird's Foot Trefoil	Perennial	0	M	5-9	0.4	2	N	MWe	N	LMH	ANB	0	3	NA		●		●		●				65
Lycium barbarum	Goji Boxthorn	Shrub	4	M	6-9	2.5	9	SN	M	Y	LMH	ANB	3	3	SpSuA				●			●			30
Lycium chinense	Chinese Boxthorn	Shrub	4	M	5-9	2.5	9	N	M	Y	LMH	ANB	3	3	SpSuA				●						30
Maackia amurensis	Amur maackia	Shrub	1	S	4-7	6	20	N	DM	N	LMH	ANB	0	4	NA		●			●					31
Mahonia aquifolium	Oregon Grape	Shrub	3	F	4-8	2	7	FSN	DM	N	LMH	ANB	3	3	SuA				●		●				30
Mahonia nervosa	Cascade Barberry	Shrub	3	S	5-9	0.6	2	FSN	DM	N	LMH	ANB	2	3	SuA			●	●		●				30
Mahonia repens	Creeping Mahonia	Shrub	3	S	4-8	0.3	1	SN	DM	N	LMH	ANB	3	4	SuA			●	●		●				30
Maianthemum canadense	False Lily-of-the-valley	Perennial	1	F	3-7	0.1	0.4	FS	M	N	LMH	ANB	1	2	NA			●							57
Maianthemum racemosa	False Spikenard	Perennial	4	M	2-8	1	4	FS	M	Y	LMH	AN	2	2	SuA				●						57
Maianthemum stellatum	False Solomon's Seal	Perennial	4	M	3-7	0.6	2	FS	M	Y	LMH	AN	2	0	SpSuA				●						57
Malus baccata	Siberian Crabapple	Tree	2	M	2-7	15	50	SN	M	Y	LMH	ANB	1	2	A	●			●		●		●		33
Malus domestica	Apple	Tree	5	M	3-8	9	30	SN	M	Y	LMH	ANB	2	4	SuA	●			●		●		●		33
Malus ioensis	Prairie Crabapple	Tree	2	S	3-8	5	17	SN	M	Y	LMH	AN	0	2	A	●			●		●		●		33
Malus pumila	Apple	Tree	4	M	3-9	7	23	SN	M	Y	LMH	ANB	2	3	A	●			●		●		●		33
Malus sieversii	Crabapple	Tree	3	M	4-10	8	27	SN	M	Y	LMH	ANB	0	0	A	●			●		●		●		33
Malva alcea	Mallow	Perennial	5	F	4-8	1.2	4	SN	M	Y	LMH	ANB	1	2	SpSuA				●	●					63
Malva moschata	Musk Mallow	Perennial	5	M	3-10	0.8	3	SN	M	Y	LMH	ANB	2	2	SpSuA				●	●					63
Malva sylvestris	High Mallow	Perennial	3	F	4-8	0.5	2	SN	M	Y	LMH	ANB	3	3	SpSuA	●			●						63
Matteuccia struthiopteris	Ostrich Fern	Fern	2	M	2-7	1	4	S	M	N	LMH	AN	1	2	Sp										64
Medicago sativa	Alfalfa, Lucerne	Perennial	4	M	4-8	1	4	N	DM	Y	LMH	ANB	3	4	SpSuA	●	●		●	●	●	●			49
Melissa officinalis	Lemon Balm	Perennial	3	F	4-8	0.7	3	SN	DM	Y	LM	ANB	5	3	SpSuA	●		●	●	●	●	●		●	56
Mentha aquatica	Water Mint	Perennial	3	M	5-9	1	4	SN	MWeWa	N	LMH	ANB	3	3	SpSuA			●	●	●				●	58
Mentha arvensis	Corn Mint, Field Mint	Perennial	3	F	4-8	0.5	2	SN	DM	N	LMH	ANB	2	3	SpSuA			●	●	●	●	●		●	58
Mentha longifolia	Horsemint	Perennial	2	F	5-9	1	4	SN	M	N	LMH	ANB	2		SpSuA			●	●	●	●			●	58
Mentha pulegium	Pennyroyal	Perennial	3	F	6-9	0.4	2	SN	M	N	LMH	ANB	3	0	SpSuA			●	●	●	●	●		●	58
Mentha requienii	Corsican Mint	Perennial	3	M	5-9	0.1	0.4	SN	M	N	LMH	ANB	2	3	SpSuA			●	●	●	●			●	58
Mentha spicata	Spearmint	Perennial	4	F	3-9	0.6	2	SN	M	N	LMH	ANB	3	3	SpSuA			●	●	●	●	●		●	58
Mentha suaveolens	Apple mint	Perennial	2	F	5-10	1	4	SN	M	N	LMH	ANB	2	2	SpSuA			●	●	●	●			●	58

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Mentha x gracilis	Ginger Mint	Perennial	3	F	5-9	0.5	2	SN	M	N	LMH	ANB	2		SpSuA			●	●	●	●			●	58
Mentha x villosa alopecuroides	Apple Mint, Bowles' Mint	Perennial	4	F	4-8	0.6	2	SN	M	N	LMH	ANB	2	3	SpSuA			●	●	●	●			●	58
Mespilus germanica	Medlar	Tree	4	M	5-8	6	20	SN	M	Y	LMH	ANB	1	1	AW				●						46
Mitchella repens	Partridge Berry	Shrub	3	S	4-9	0.1	0.4	SN	M	Y	LM	AN	3	4	Su			●			●				28
Monarda didyma	Bergamot, Bee Balm	Perennial	3	M	4-10	0.9	3	SN	M	N	LMH	ANB	2	3	SpSuA				●	●	●			●	50
Morus alba	White Mulberry	Tree	4	M	4-9	18	60	SN	M	Y	LMH	ANB	3	4	SpSuA						●	●	●		47
Morus nigra	Black Mulberry	Tree	5	F	5-9	10	33	SN	M	Y	LMH	ANB	3	3	SpSuA						●		●		47
Morus rubra	Red Mulberry	Tree	3	F	4-9	15	50	SN	M	Y	LMH	ANB	2	2	SpSuA						●		●		47
Myrrhis odorata	Sweet Cicely	Perennial	4	M	4-8	1	4	SN	M	N	LMH	ANB	3	3	WSpSuA				●	●	●			●	63
Nasturtium officinale	Watercress	Perennial	4	F	3-11	0.5	2	N	WeWa	N	LMH	ANB	3	2	SpSuA	●					●	●			63
Onobrychis viciifolia	Sainfoin	Perennial	1	F	5-9	1	4	N	M	Y	LM	NB	0	4	NA		●	●	●		●				65
Onoclea sensibilis	Sensitive Fern	Fern	2	F	4-8	0.5	2	FS	MWe	N	LMH	AN	2	2	Sp			●							64
Origanum majorana	Sweet Marjoram	Perennial	3	M	6-9	0.6	2	SN	DM	Y	LMH	ANB	3	3	SpSuA			●	●	●	●			●	63
Origanum vulgare	Oregano	Perennial	4	M	4-10	0.6	2	SN	DM	Y	LMH	ANB	3	5	SpSuA			●	●	●	●			●	63
Origanum vulgare hirtum	Greek Oregano	Perennial	4	M	4-8	0.6	2	SN	DM	Y	LMH	ANB	3	3	SpSuA			●	●	●	●			●	63
Oxalis acetosella	Wood Sorrel	Perennial	3	F	3-7	0.1	0.4	FSN	M	N	LMH	ANB	2	3	SpSuA			●	●						61
Oxalis grandis	Great Wood Sorrel	Perennial	2	F	5-7	0.2	0.7	FS	M	Y	LMH	ANB	1	1	SpSuA						●				61
Oxalis montana	Mountain Wood Sorrel	Perennial	2	M	3-9	0.1	0.4	S	M	Y	LMH	ANB	0	1	SpSuA			●							61
Oxalis oregana	Red Wood Sorrel	Perennial	3	M	6-9	0.2	0.7	FSN	M	Y	LMH	ANB	1	3	SpSuA			●							61
Oxalis violacea	Violet Wood Sorrel	Bulb	3	F	4-8	0.3	1	SN	DM	Y	LMH	ANB	1		SpSuA										61
Passiflora incarnata	Maypops - Passion Flower	Climber	3	F	7-11	6	20	N	M	Y	LMH	ANB	3	2	WSpSuA						●	●			74
Peltaria alliacea	Garlic Cress	Perennial	4	M	5-9	0.3	1	SN	M	N	LM	ANB	0	3	WSpSuA										64
Phaseolus polystachios	Wild Bean	Climber	2	F	6-10	3	10	SN	M	Y	LMH	ANB	0	3	A		●	●	●	●	●				74
Phyllostachys angusta	Stone Bamboo	Bamboo	3	M	7-10	5	17	SN	M	N	LMH	ANB	0	2	Sp						●				68
Phyllostachys aurea	Golden Bamboo	Bamboo	5	F	6-11	6	20	S	M	N	LMH	ANB	0	0	Sp						●	●			68
Phyllostachys aureosulcata	Yellow-Groove Bamboo	Bamboo	4	F	5-11	6	20	SN	M	N	LMH	ANB	0	2	Sp						●				68
Phyllostachys bambusoides	Madake	Bamboo	4	F	6-9	8	27	S	M	N	LMH	ANB	1	3	Sp						●				68
Phyllostachys dulcis	Sweetshoot Bamboo	Bamboo	4	F	7-10	7	23	SN	M	N	LMH	ANB	0	2	Sp						●				68
Phyllostachys edulis	Tortoiseshell Bamboo	Bamboo	4	F	6-10	8	27	S	M	N	LMH	ANB	1	0	Sp						●				68
Phyllostachys flexuosa	Zig-Zag Bamboo, Drooping timber bamboo	Bamboo	3	F	5-9	6	20	S	M	N	LMH	ANB	0	2	Sp						●				68
Phyllostachys glauca	Silver Bamboo	Bamboo	3	F	6-10	5	17	FSN	M	N	LMH	ANB	0	3	Sp						●				68
Phyllostachys nidularia	Big-Node Bamboo	Bamboo	5	F	6-9	6	20	SN	M	N	LMH	ANB	0	4	Sp						●				68
Phyllostachys nigra	Black Bamboo	Bamboo	4	F	7-10	7.5	25	S	M	N	LMH	ANB	3	0	Sp						●	●			68
Phyllostachys nuda	Stone Bamboo	Bamboo	4	F	7-10	5	17	SN	M	N	LMH	ANB	0	2	Sp						●				68
Phyllostachys praecox	Violet Bamboo	Bamboo	3	F	6-10	6	20	FSN	M	N	LMH	ANB	0	3	Sp						●				68

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Phyllostachys rubromarginata	Reddish bamboo	Bamboo	3	F	7-10	8	27	SN	M	N	LMH	ANB	0	2	Sp						●				68
Phyllostachys sulphurea viridis	Kou-Chiku	Bamboo	4	F	6-9	4	14	SN	DM	N	LMH	ANB	0	3	Sp						●				68
Phyllostachys viridiglaucescens	Greenwax golden bamboo	Bamboo	4	F	6-9	6	20	S	M	N	LMH	ANB	0	1	Sp						●				68
Phyllostachys vivax	Giant Timber Bamboo	Bamboo	3	F	7-10	10	33	S	M	N	LMH	ANB	0	2	Sp						●				68
Pinus albicaulis	Whitebark Pine	Tree	4	S	4-8	20	66	N	DM	Y	LM	AN	2	3	A						●				38
Pinus armandii	Chinese White Pine	Tree	4	M	6-9	15	50	N	DM	Y	LM	AN	2	2	A						●				38
Pinus cembra	Swiss Stone Pine	Tree	4	S	3-9	15	50	SN	DM	Y	LMH	AN	2	3	A						●				38
Pinus cembra sibirica	Siberian Pine	Tree	4	S	1-6	30	100	N	DM	Y	LM	AN	2	3	A						●				38
Pinus cembroides	Mexican Pine	Tree	4	S	5-8	8	27	N	DM	Y	LM	AN	2	4	A						●				38
Pinus edulis	Colorado Pinyon	Tree	4	S	5-8	15	50	N	DM	Y	LM	AN	2	3	A						●				38
Pinus flexilis	Limber Pine	Tree	3	M	4-7	25	83	N	DM	Y	LM	AN	2	3	A						●				38
Pinus gerardiana	Nepal Nut Pine	Tree	3	S	6-9	25	83	N	DM	Y	LMH	AN	2	3	A						●				38
Pinus jeffreyi	Jeffrey Pine	Tree	3	M	5-8	25	83	N	DM	Y	LM	AN	2	3	W						●				38
Pinus koraiensis	Korean Pine	Tree	4	M	4-7	20	66	N	DM	Y	LM	AN	2	3	A						●				38
Pinus monophylla	Single Leaf Pinyon	Tree	4	S	6-8	10	33	N	DM	Y	LM	AN	2	5	A						●				38
Pinus nigra laricio	Corsican Pine	Tree	1	F	5-9	30	100	N	DM	Y	LMH	ANB	2	0	A						●				38
Pinus pinea	Italian Stone Pine	Tree	4	M	7-11	10	33	N	DM	Y	LM	ANB	2	4	SpSu						●				38
Pinus pumila	Japanese Stone Pine	Shrub	3	S	3-7	3	10	N	DM	Y	LM	AN	2	3	A						●				38
Pinus radiata	Monterey Pine	Tree	1	F	3-11	65	214	N	DM	Y	LM	AN	2	3	W						●	●			38
Pinus sylvestris	Scot's Pine	Tree	2	F	3-7	25	83	SN	DMWe	Y	LM	ANB	3	5	SuA						●				38
Pleioblastus simonii	Simon bamboo	Bamboo	3	F	5-9	4.5	15	SN	M	N	LMH	ANB	0	4	Sp						●				68
Primula vulgaris	Primrose	Perennial	3	M	5-10	0.3	1	SN	M	N	LMH	ANB	3	3	WSpSuA			●	●						64
Prosopis glandulosa	Honeypod Mesquite	Tree	3	F	8-11	7	23	N	M	Y	LMH	ANB	2	4	SuA		●		●			●			35
Prunus alleghaniensis	Allegheny Plum	Tree	3	F	4-8	3.5	12	SN	M	Y	LMH	ANB	1	2	SuA				●		●				39
Prunus americana	American Plum	Tree	3	M	3-8	6	20	SN	M	Y	LMH	ANB	2	3	SuA				●		●				39
Prunus angustifolia	Chickasaw Plum	Tree	3	M	5-9	3	10	SN	M	Y	LMH	ANB	1	3	Su				●		●				39
Prunus angustifolia watsonii	Sand Plum	Shrub	4	M	5-9	3	10	SN	M	Y	LMH	ANB	1	2	Su				●		●				39
Prunus armeniaca	Apricot	Tree	4	M	5-7	9	30	SN	M	Y	LM	ANB	3	4	SuA				●		●				39
Prunus avium	Sweet Cherry	Tree	4	F	3-7	18	60	SN	M	Y	LMH	ANB	2	4	Su				●		●				39
Prunus cerasifera	Myrobalan Plum	Tree	4	M	5-8	9	30	SN	M	Y	LMH	ANB	1	3	SuA				●		●				39
Prunus cerasus	Sour Cherry	Tree	1	M	3-7	6	20	SN	M	Y	LMH	ANB	2	3	Su				●		●				39
Prunus cerasus frutescens	Dwarf Sour Cherry	Tree	3	M	3-7	1	4	SN	M	Y	LMH	ANB	1	3	Su				●		●				39
Prunus domestica	Plum	Tree	5	M	4-9	12	40	SN	M	Y	LMH	ANB	2	3	SuA				●		●				39
Prunus domestica italica	Greengage	Tree	5	M	5-8	5	17	SN	M	Y	LMH	ANB	2	2	SuA				●		●				39
Prunus dulcis	Almond	Tree	4	M	6-9	6	20	N	M	Y	LMH	ANB	3	3	A				●		●				39
Prunus fruticosa	Mongolian Bush Cherry	Shrub	3	M	4-8	1	4	N	DM	Y	LMH	ANB	1	1	Su				●		●				39
Prunus hortulana	Hog Plum	Tree	3	F	5-9	9	30	SN	M	Y	LMH	ANB	1	2	A				●		●				39

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Prunus insititia	Damson	Tree	5	M	5-9	6	20	SN	M	Y	LMH	ANB	1	3	A				●		●				39
Prunus japonica nakai	Japanese Bush Cherry	Shrub	3	M	4-8	0.5	2	SN	M	Y	LMH	ANB	3	1	Su				●		●				39
Prunus mandshurica	Manchurian Apricot	Tree	3	M	3-7	15	50	SN	M	Y	LMH	ANB	2	3	SuA				●		●				39
Prunus maritima	Beach Plum	Shrub	4	M	3-7	2.5	9	N	DM	Y	LMH	ANB	1	3	SuA				●		●				39
Prunus munsoniana	Wild Goose Plum	Tree	3	F	5-9	8	27	SN	M	Y	LMH	ANB	1	2	SuA				●		●				39
Prunus nigra	Canadian Plum	Tree	4	M	4-7	9	30	SN	M	Y	LMH	ANB	1	2	SuA				●		●				39
Prunus padus	Bird Cherry	Tree	3	F	3-6	15	50	SN	M	Y	LMH	ANB	2	2	Su				●		●				39
Prunus persica	Peach	Tree	5	F	5-9	6	20	N	M	Y	LMH	ANB	3	3	SpSu				●		●				39
Prunus persica nucipersica	Nectarine	Tree	4	M	4-8	6	20	N	M	Y	LMH	ANB	3	2	SpSu				●		●				39
Prunus pumila	Dwarf American Cherry	Shrub	4	M	3-8	0.6	2	N	DM	Y	LMH	ANB	1	2	SuA				●		●				39
Prunus salicina	Japanese Plum	Tree	2	M	5-8	4	14	SN	M	Y	LMH	ANB	1	2	Su				●		●				39
Prunus spinosa	Sloe - Blackthorn	Shrub	3	M	4-8	3	10	SN	M	Y	LMH	ANB	2	4	A				●		●				39
Prunus tomentosa	Nanking Cherry	Shrub	3	M	3-9	1.5	5	SN	M	Y	LMH	ANB	1	2	Su				●		●				39
Prunus virginiana	Chokecherry	Shrub	3	F	2-7	3.6	12	SN	M	Y	LMH	ANB	2	4	SuA				●		●	●	●		39
Prunus x gondouinii	Duke Cherry	Tree	2	M	4-8	6	20	SN	M	Y	LMH	ANB	1	2	Su				●		●				39
Punica granatum	Pomegranate	Tree	3	M	8-12	5	17	N	DM	Y	LMH	ANB	3	3	AW				●						43
Pyrus bretschneideri	Asian Pear	Tree	4	M	4-8	6	20	SN	M	Y	LMH	ANB	0	0	A				●						37
Pyrus communis	Common Pear	Tree	2	F	4-9	13	43	SN	M	Y	LMH	ANB	1	3	AW				●				●		37
Pyrus communis sativa	Pear	Tree	5	M	4-8	5	17	SN	M	Y	LMH	ANB	0	3	AW				●				●		37
Pyrus pyrifolia	Nashi Pear	Tree	4	M	5-9	10	33	SN	M	Y	LMH	ANB	1	0	A				●						37
Pyrus ussuriensis	Chinese Pear	Tree	4	F	3-7	15	50	SN	M	Y	LMH	ANB	0	2	A				●						37
Quercus acutissima	Sawthorn Oak	Tree	2	M	5-9	5	17	SN	M	N	MH	ANB	2	3	A								●		36
Quercus alba	White Oak	Tree	3	S	3-9	20	66	SN	DM	N	MH	ANB	2	4	A								●		36
Quercus bicolor	Swamp White Oak	Tree	4	M	4-8	25	83	SN	MWe	N	MH	ANB	2	3	A								●		36
Quercus douglasii	Blue Oak	Tree	3	S	8-11	12	40	SN	DM	N	MH	ANB	2	4	A										36
Quercus fruticosa	Fruticosa oak	Shrub	3	F	7-10	2	7	N	M	N	MH	ANB	2	2	A										36
Quercus gambelii	Gambel Oak	Shrub	3	S	4-8	4.5	15	SN	DM	N	MH	ANB	2	3	A						●				36
Quercus ilex	Holly Oak	Tree	5	S	4-10	25	83	SN	M	N	LMH	ANB	2	3	A						●				36
Quercus ilex ballota	Holm Oak	Tree	5	S	6-9	25	83	SN	M	N	LMH	ANB	2	3	A						●				36
Quercus ithaburensis macrolepis	Valonia Oak	Tree	4	M	6-9	15	50	SN	DM	N	MH	ANB	2	0	A						●				36
Quercus kelloggii	Black Oak	Tree	3	M	8-11	25	83	SN	M	N	MH	ANB	2	4	A						●				36
Quercus macrocarpa	Bur Oak	Tree	3	S	3-8	15	50	SN	DM	N	MH	ANB	2	4	A				●				●		36
Quercus michauxii	Swamp Chestnut Oak	Tree	2	M	5-9	30	100	SN	MWe	N	MH	ANB	2	3	A				●				●		36
Quercus muehlenbergii	Chinkapin Oak	Tree	3	M	4-8	20	66	SN	M	N	MH	ANB	2	3	A				●				●		36
Quercus petraea	Sessile Oak	Tree	2	S	5-8	40	132	SN	MWe	N	MH	ANB	3		A						●				36
Quercus prinoides	Dwarf Chinkapin Oak	Shrub	2	M	4-8	4	14	SN	DM	N	MH	ANB	2	2	A				●						36
Quercus prinus	Rock Chestnut Oak	Tree	4	S	4-8	20	66	SN	M	N	MH	ANB	2	3	A										36

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Quercus robur	English Oak	Tree	4	S	4-8	30	100	SN	MWe	N	MH	ANB	3	5	A						●				36
Quercus x hybrid	Burgambel Oak	Tree	3	M	3-8	30	100	SN	DM	Y	MH	ANB	2	3	A				●		●		●		36
Rheum australe	Himalayan Rhubarb	Perennial	3	M	5-9	3	10	SN	M	Y	MH	ANB	3	2	SpSu										64
Rheum nobile	Sikkim Rhubarb	Perennial	3	M	6-9	1.5	5	SN	M	Y	MH	ANB	2	1	SpSu										64
Rheum officinale	Chinese Rhubarb	Perennial	1	M	6-9	2	7	SN	M	Y	MH	ANB	3		SpSu			●							64
Rheum palmatum	Turkey Rhubarb	Perennial	3	M	6-9	3	10	SN	M	Y	MH	ANB	5	2	SpSu			●							64
Rheum palmatum tanguticum	Da Huang	Perennial	3	M	5-9	2	7	SN	M	Y	MH	ANB	5	0	SpSu			●							64
Rheum spiciforme	Rhubarb	Perennial	2	F	5-9	0.3	1	SN	M	Y	MH	ANB	1		SpSu										64
Rheum x cultorum	Rhubarb	Perennial	4	F	3-7	1.5	5	SN	M	Y	MH	ANB	3	2	SpSu										64
Rhus aromatica	Fragrant Sumac	Shrub	4	S	3-9	1.2	4	N	DM	Y	LMH	ANB	2	2	A			●	●		●				30
Rhus copallina	Winged Sumac	Shrub	4	F	4-10	2	7	N	DM	Y	LMH	ANB	2	3	A				●		●				30
Rhus glabra	Smooth Sumach	Shrub	4	M	3-9	3	10	N	DM	Y	LMH	ANB	3	3	A				●		●	●			30
Rhus typhina	Staghorn Sumac	Shrub	4	F	4-8	6	20	N	DM	Y	LMH	ANB	2	3	A				●		●	●			30
Ribes alpinum	Alpine Currant	Shrub	3	M	2-7	1.2	4	SN	M	Y	LMH	ANB	0	4	Su			●	●		●				19
Ribes americanum	American Blackcurrant	Shrub	2	M	3 -7	1.8	6	SN	M	Y	LMH	ANB	1		Su				●		●				19
Ribes aureum	Golden Currant	Shrub	4	M	3-8	2.4	8	SN	DM	Y	LMH	ANB	1	0	Su				●		●				19
Ribes missouriense	Missouri Gooseberry	Shrub	3	F	4-8	2	7	SN	M	Y	LMH	ANB	0	0	SuA				●		●				19
Ribes nigrum	Blackcurrant	Shrub	5	F	4-8	1.8	6	SN	M	Y	LMH	ANB	3	2	SuA				●		●				19
Ribes petraeum	Rock Red Currant	Shrub	3	M	5-9	1.8	6	SN	M	Y	LMH	ANB	0	0	Su				●		●				19
Ribes rubrum	Redcurrant	Shrub	4	M	4-8	1.2	4	SN	M	Y	LMH	ANB	1	2	Su				●		●				19
Ribes sativum	White Currant	Shrub	3	M	5-9	1	4	SN	M	Y	LMH	ANB	0		Su				●		●				19
Ribes triste	American Red Currant	Shrub	3	M	3-8	0.5	2	SN	M	Y	LMH	ANB	1	0	Su				●		●				19
Ribes uva-crispa	Gooseberry	Shrub	5	M	4-8	1.2	4	SN	M	Y	LMH	ANB	1	2	SuA				●		●				19
Ribes x culverwellii	Jostaberry	Shrub	5	F	5-9	1.8	6	SN	M	Y	LMH	ANB	0	0	SuA				●		●				19
Robinia hispida	Bristly locust	Shrub	0	F	4-8	3.5	12	N	DM	Y	LMH	NB	1	3	NA		●		●	●	●	●			31
Robinia pseudoacacia	Black Locust	Tree	3	F	4-9	25	83	N	DM	Y	LMH	ANB	2	4	SuAW	●	●		●	●	●	●	●		31
Robinia viscosa	Clammy Locust	Tree	0	F	3-7	13	43	SN	DM	Y	LMH	ANB	0	3	NA		●		●	●	●				31
Rosa banksiae	Banksia Rose	Shrub	2	F	6-9	10	33	N	M	Y	LMH	ANB	1		SuA				●		●				30
Rosa carolina	Pasture Rose	Shrub	2	M	4-8	1.5	5	SN	DM	Y	LMH	ANB	1		SuA				●		●				30
Rosa rugosa	Rugosa Rose	Shrub	5	M	3-9	2	7	SN	DM	Y	LMH	ANB	2	3	SuA				●		●	●			30
Rosa villosa	Apple Rose	Shrub	4	M	4-8	1.8	6	SN	M	Y	LMH	ANB	1	1	SuA				●		●				30
Rosmarinus officinalis	Rosemary	Shrub	2	M	6-11	1.5	5	N	DM	Y	LM	ANB	3	4	WSpSuA			●	●	●	●			●	30
Rubus deliciosus	Rocky Mountain Raspberry	Shrub	2	M	4-8	3	10	N	M	Y	LMH	ANB	0		Su				●		●				17
Rubus fruticosus	Blackberry	Shrub	5	F	5-9	3	10	FSN	M	Y	LMH	ANB	3	2	SuA				●		●	●			17
Rubus idaeus	Raspberry	Shrub	5	M	4-8	2	7	SN	M	Y	LMH	ANB	3	3	SuA				●		●				17
Rubus nepalensis	Nepalese Raspberry	Shrub	5	M	7-10	0.2	0.7	SN	M	Y	LMH	ANB	0	3	SuA				●		●				17

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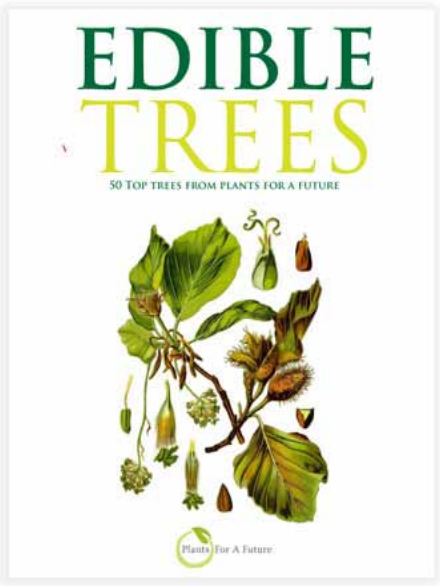
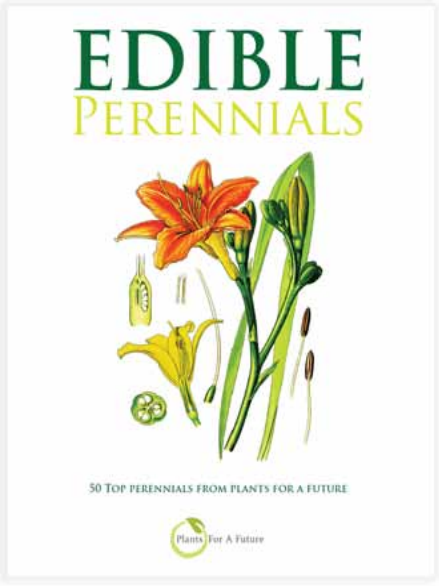
Rubus occidentalis	Black Raspberry	Shrub	4	M	3-7	3	10	SN	M	Y	LMH	ANB	2	1	Su				●		●				17
Rubus parviflorus	Thimbleberry	Shrub	3	M	3-7	2.5	9	SN	M	Y	LMH	ANB	3	3	Su				●		●				17
Rubus phoenicolasius	Japanese Wineberry	Shrub	5	M	4-8	3	10	SN	M	Y	LMH	ANB	0	1	SuA				●		●	●			17
Rubus spectabilis	Salmonberry	Shrub	3	M	4-8	1.8	6	SN	M	Y	LMH	ANB	2	3	Su				●		●				17
Salvia officinalis	Sage	Shrub	4	M	5-10	0.6	2	N	DM	Y	LM	NB	5	5	WSpSuA				●	●	●			●	30
Sambucus nigra	European Elderberry	Shrub	4	F	5-7	6	20	SN	M	N	LMH	ANB	3	5	SuA				●		●				30
Sambucus nigra spp canadensis	American Elderberry	Shrub	4	F	3-9	4	14	SN	M	N	LMH	ANB	3	3	SuA				●		●				30
Sambucus racemosa	Red Elderberry	Shrub	3	M	3-7	3	10	SN	M	N	LMH	ANB	2	2	SuA				●		●				30
Sasa kurilensis	Chishima Zasa	Bamboo	4	F	6-9	2.5	9	S	M	N	LMH	ANB	1	3	Sp						●				67
Sassafras albidum	Sassafras	Tree	5	M	5-9	25	83	SN	M	Y	LMH	AN	3	3	SpSuA				●		●				47
Schisandra chinensis	Magnolia Vine	Climber	4	M	4-8	9	30	FS	M	Y	LMH	ANB	5	2	SuA				●		●				74
Scorzonera hispanica	Scorzonera	Perennial	4	M	5-9	1	4	SN	M	Y	LMH	ANB	0	1	SpSu				●	●					90
Semiarundinaria fastuosa	Temple Bamboo	Bamboo	5	M	6-9	7.5	25	SN	M	N	LMH	ANB	0	2	Sp						●				69
Smilax herbacea	Carrion Flower	Climber	4	F	4-8	2.5	9	SN	M	N	LMH	ANB	1	2	SpSuA						●				74
Sorbus americana	American Mountain Ash	Tree	1	S	2-6	10	33	SN	M	Y	LMH	ANB	2	2	NA				●		●		●		47
Sorbus aria	Whitebeam	Tree	3	M	4-8	12	40	SN	M	Y	LMH	ANB	1	4	A				●		●		●		47
Sorbus aucuparia	Rowan Mountain Ash	Tree	2	M	3-6	15	50	SN	M	Y	LMH	ANB	2	3	A				●		●		●		47
Sorbus decora	Showy Mountain Ash	Tree	1	M	2-9	10	33	SN	M	Y	LMH	ANB	1	2	NA				●		●		●		47
Sorbus devoniensis	Devon Whitebeam	Tree	3	M	6-9	13	43	SN	M	Y	LMH	ANB	0	2	A				●		●				47
Sorbus domestica	Service Tree	Tree	5	M	6-10	15	50	SN	M	Y	LMH	ANB	0	2	A				●		●		●		47
Sorbus thibetica	Tibetan Whitebeam	Tree	3	M	5-9	20	66	SN	M	Y	LMH	ANB	0	0	A				●		●				47
Sorbus torminalis	Wild Service Tree	Tree	4	M	5-9	20	66	SN	M	Y	LMH	ANB	0	2	A				●		●		●		47
Streptopus amplexifolius	Twistedstalk	Perennial	4	M	4-8	1	4	FS	M	N	LM	ANB	2	1	SuA										53
Streptopus roseus	Rosybells	Perennial	4	M	3-7	0.5	2	FS	M	N	LM	ANB	2	0	SuA										53
Strophostyles umbellata	Perennial Wild Bean	Climber	0	F	6-9	1	4	SN	DM	Y	LM	ANB	0	2	NA		●			●	●				74
Stylosanthes biflora	Pencilflower	Perennial	0	F	4-8	0.5	2	SN	DM	Y	LMH	AN	0	2	NA		●			●	●				65
Symphytum grandiflorum	Large-flowered Comfrey	Perennial	0	F	3-9	0.4	2	FS	M	N	LMH	ANB	0	4	NA	●		●	●	●					65
Symphytum officinale	Common Comfrey	Perennial	3	F	3-9	1.2	4	SN	M	N	LMH	ANB	5	4	Sp	●		●	●	●					65
Symphytum tuberosum	Tuberous Comfrey	Perennial	2	F	4-8	0.6	2	SN	M	N	LMH	ANB	0		NA	●		●	●	●					65
Symphytum uplandicum	Russian Comfrey	Perennial	3	F	4-8	1.2	4	SN	M	N	LMH	ANB	5	4	Sp	●		●	●	●					65
Thermopsis villosa	Aaron's rod	Perennial	0	S	5-8	1.5	5	SN	DM	Y	LMH	AN	0	3	NA		●			●	●				65
Thymus vulgaris	Thyme	Shrub	4	M	5-11	0.2	0.7	N	DM	Y	LM	NB	3	5	SpSuA			●	●	●	●			●	30
Tilia americana	American Basswood	Tree	3	M	3-9	25	83	SN	M	Y	LMH	ANB	3	3	SpSu	●			●		●		●		47
Tilia cordata	Small Leaved Lime	Tree	5	M	3-7	30	100	SN	M	Y	LMH	ANB	3	3	SpSu	●			●		●		●		47
Tilia platyphyllos	Large Leaved Lime	Tree	5	M	4-6	30	100	SN	M	Y	LMH	ANB	3	4	SpSu	●			●		●		●		47
Tilia tomentosa	Silver Lime	Tree	3	M	4-7	25	83	SN	DM	Y	LMH	ANB	1	2	SpSu	●			●				●		47
Tilia x europaea	Common Lime	Tree	5	M	3-9	35	115	SN	M	Y	LMH	ANB	3	3	SpSu	●			●		●		●		47

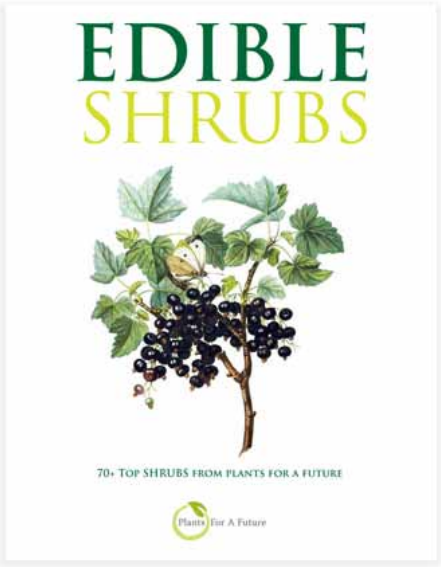
Genus & Species	Common Name	Form				m	ft				Soil	pH													Page
Toona sinensis	Chinese Cedar	Tree	3	F	6-11	20	66	N	M	Y	LMH	ANB	2	4	SpA								●		47
Trifolium pratense	Red Clover	Perennial	3	M	5-9	0.6	2	N	M	Y	LMH	ANB	3	4	SpSuA	●	●	●	●	●	●				64
Trifolium repens	White Clover	Perennial	3	M	4-8	0.1	0.4	N	M	Y	LMH	ANB	2	4	SpSuA	●	●	●	●	●		●			64
Ugni molinae	Chilean Guava	Shrub	5	M	7-11	2	7	N	DM	Y	LMH	ANB	0	3	SuA				●		●				30
Ulex europaeus	Gorse	Shrub	1	F	5-9	1.5	5	N	DM	Y	LMH	AN	1	5	NA		●		●		●	●			31
Vaccinium angustifolium	Lowbush Blueberry	Shrub	3	S	2-6	0.2	0.7	SN	DM	Y	LM	A	1	0	SuA			●			●				26
Vaccinium corymbosum	Highbush Blueberry	Shrub	4	M	3-8	2	7	SN	M	Y	LM	A	1	0	SuA						●				26
Vaccinium macrocarpon	American Cranberry	Shrub	3	M	3-7	0.2	0.7	SN	MWe	Y	LM	A	1	4	A			●			●				26
Vaccinium myrtillus	Bilberry	Shrub	4	S	3-7	0.2	0.7	SN	M	Y	LM	A	3	1	SuA				●		●				26
Vaccinium oxycoccos	Small Cranberry	Shrub	4	F	3-7	0.1	0.4	SN	MWe	N	LM	A	1	2	A			●	●		●				26
Vaccinium vitis-idaea	Lingonberry	Shrub	3	M	3-8	0.3	1	SN	M	Y	LM	A	2	3	A			●			●				26
Viburnum cassinoides	Witherod Viburnum	Shrub	3	M	2-8	2.5	9	SN	M	N	LMH	AN	1	0	AW				●		●				44
Viburnum lentago	Sheepberry, Nannyberry	Tree	4	M	2-8	9	30	SN	M	N	LMH	ANB	1	0	AW				●		●				44
Viburnum opulus	Guelder Rose	Shrub	3	M	3-8	5	17	SN	MWe	N	LMH	ANB	3	3	A				●		●	●			44
Viburnum trilobum	Highbush Cranberry	Shrub	3	M	2-7	3	10	SN	M	N	LMH	ANB	1	0	SuA				●		●				44
Vicia americana	American Vetch	Perennial	2	F	4-7	1	4	SN	M	Y	LMH	ANB	1	4	SpSuA	●	●		●	●					64
Vicia cracca	Tufted Vetch	Climber	1	F	4-8	1.8	6	SN	M	Y	LMH	ANB	1	3	NA	●	●		●	●					64
Viola canadensis	Canadian White Violet	Perennial	3	M	3-8	0.4	2	SN	M	Y	LMH	AN	1	2	SpSu	●		●							60
Viola cornuta	Horned Violet	Perennial	3	F	6-11	0.2	0.7	SN	M	Y	LMH	AN	0	0	SpSu	●		●							60
Viola cucullata	Marsh Blue Violet	Perennial	3	M	3-8	0.2	0.7	SN	MWe	Y	LMH	ANB	1	3	SpSu	●		●			●				60
Viola labradorica	Labrador Violet	Perennial	3	F	3-8	0.1	0.4	FSN	M	Y	LMH	AN	0	2	SpSu	●		●							60
Viola odorata	Sweet Violet	Perennial	5	F	4-8	0.1	0.4	SN	M	Y	LMH	ANB	3	3	SpSu	●		●							60
Viola riviniana	Wood Violet	Perennial	3	F	4-8	0.2	0.7	SN	M	Y	LMH	AN	0	3	SpSu	●		●			●				60
Viola sororia	Wooly Blue Violet	Perennial	3	F	4-8	0.1	0.4	SN	M	Y	LMH	AN	1	3	SpSu	●		●				●			60
Vitis labrusca	Fox Grape	Climber	3	F	4-9	15	50	SN	DM	Y	LMH	ANB	1	2	A				●		●	●			72
Vitis riparia	Riverbank Grape	Climber	3	F	2-6	15	50	SN	DM	Y	LMH	ANB	0	2	SuA			●	●		●	●			72
Vitis rotundifolia	Muscadine Grape	Climber	4	F	5-9	25	83	SN	DM	Y	LMH	ANB	0	1	A				●		●				72
Vitis vinifera	Wine Grape	Climber	5	F	6-10	15	50	SN	DM	Y	LMH	ANB	2	2	A				●		●				72
Wisteria floribunda	Japanese Wisteria	Climber	2	M	5-9	8	27	N	M	Y	LMH	AN	0	2	SpSu		●		●	●		●			75
Wisteria frutescens	American Wisteria	Climber	1	M	4-8	12	40	N	M	Y	LMH	AN	0	3	NA		●		●	●					75
Wisteria sinensis	Chinese Wisteria	Climber	1	M	5-9	25	83	N	M	Y	LMH	AN	1	3	NA		●		●	●	●	●			75
Ziziphus jujuba	Jujube	Tree	4	F	5-10	10	33	N	DM	Y	LMH	ANB	3	3	A				●						47

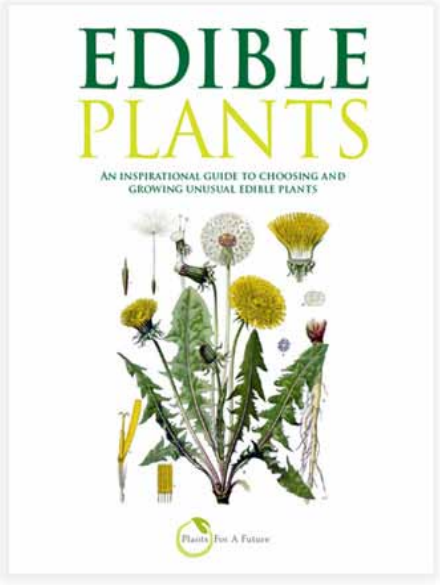
The Bookshop

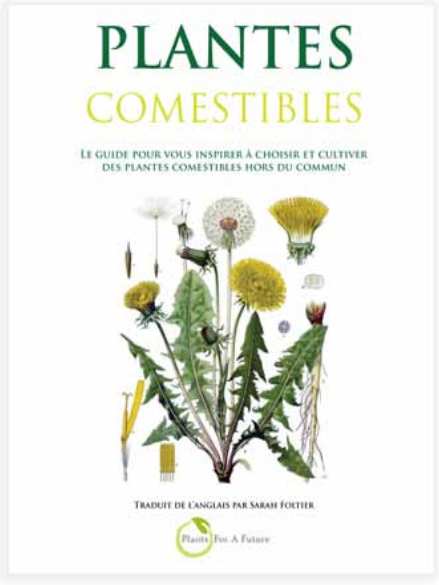
The charity aims to research and provide information on ecologically sustainable horticulture as an integral part of designs involving high species diversity and permaculture principles. Approaches such as forest gardening use a minimal input of resources and energy, create a harmonious eco-system and cause the least possible damage to the environment while still having the potential to achieve high productivity. In 2012 we decided to publish the first of a series of illustrated reference books. We intended to offer selected information from our website and database in an attractive format, expand our user base and hopefully produce some book sales revenue to supplement our income from donations. We now have seven books available in paperback and digital form: *Edible Trees*, *Edible Perennials*, *Edible Shrubs*, *Edible Plants*, *Plantes Comestibles*, *Woodland Gardening*, and now *Plants for your Food Forest*. More information on each book is available on the PFAF website at pfaf.org/user/shop.aspx

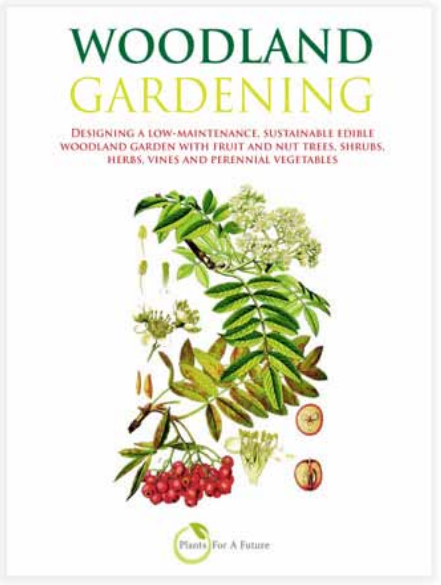












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The PFAF Database

On the pfaf.org website you can search for over 7000 edible and medicinal plants using a number of search criteria including: common and Latin names, keyword, family, habitat and use (medicinal, edible or other).

Search techniques include:

search by name

search by keyword

you can browse the common and Latin names of plants by alphabetical letter

you can browse plants by their family, habitat and use (medicinal, edible or other)

you can search for a plant by its use, for example whether it can be used for:

edible: e.g. coffee, chocolate, gelatine, oil

medicinal: e.g. acrid, antacid, antibiotic

other: e.g. alcohol, beads, bottles, fencing, fuel

special uses: e.g. nitrogen fixer, hedge

You can do a more detailed search using the Search Properties section. This allows you to search for a number of plant features at once. For example, you might want to search for a plant that needs a light sandy soil, that is between 1m and 5m high, and likes shade - the database will then present a list of plants that have all three of these features.

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