A Companion Planting Guide

For Your Polytunnel Garden

Created For First Tunnels by Elizabeth Waddington

Contents

First things first, I would like to remind readers that companion planting is not an exact science. You may be surprised, after reading a lot of advice online and elsewhere about the best combinations, to learn that we actually know very little about plant interaction.

Most companion planting is often not rigorously scientific. Rather, is it a series of suggestions which have anecdotally worked well for other gardeners, and which are based on some 'best guesses' about beneficial plant combinations.

Companion planting has been surprisingly little studied, and yet many gardeners find it extremely useful to take a companion planting approach in their organic gardens.

In this guide, we will introduce you to the basics of companion planting. We will talk about the goals – what we are trying to achieve through this practice, and the different types of companion planting you can consider for your garden.

Then we will go on to look in more depth at companion planting in a polytunnel. This should help you to understand what crops will grow well together, and how to companion plant with herbs, and flowers in your annual and perennial garden areas. I will share some of my own favourite plant combinations along the way.

Elizabeth Waddington

1. What is Companion Planting?

Companion planting is exactly what it sounds like. It is all about working out which plants will be good companions for one another. It involves thinking about the benefits which plants can confer on each other, and the various ways in which they, and the life around them, interact.

In an organic garden, it is very important to remember that everything is connected. In order to work with nature rather than fighting it, we need to look at plants and our gardens holistically. We cannot simply consider a specific plant in isolation or we risk missing the bigger picture.

Companion planting is often a case of common sense. The more we learn about the various needs of the different crops and other plants we grow, the easier it is to determine which other plants might be good neighbours for them, and which will not. But while we do know that some plants are or are not compatible with others, for fairly obvious reasons, it is important to remember that some plants can make good companions and we do not know exactly why.

Companion planting sometimes seems to work for reasons we do not yet fully understand. And what seems to work well in one location may not work as well in a different garden. Even your neighbour might experience different results to you.

With companion planting them, experimentation is key. Over time, you will gain experience as a gardener and get to know your own garden better. You will find some companion planting combinations which work particularly successfully for you.

In this guide, we will try to guide you as you begin your companion planting journey. We'll share some combinations of common crops which other gardeners have found to work well, as well as some that typically do not. And we will share some of the herbs and flowers which can work particularly well as companion plants.

We'll also take a look at companion planting for fruit trees, berry bushes, fruiting canes and other perennial plants – so you can consider creating healthy ecosystems with those plants, as well as with annual crops.

2. The Goals Of Companion Planting

In order to understand companion planting, and why it is such a good idea, we need to take a look at its goals.

Companion planting can be useful to:

- Make The Most Of Your Space
- Improve Environmental Conditions For Neighbouring Plants
- Maintain Fertility in Your Growing Areas
- Repel, Confuse or Distract Pest Species
- Attract Beneficial Wildlife

When thinking about which plants to grow together in your garden, it is important to consider these goals and bear them in mind when choosing the right plants for the right places.

To Make The Most Of Your Space

Companion planting is often a trade off between making the most of the space available and avoiding excessive competition between different plants.
Making the most of your space is important if you want to get as high a yield as possible. This is especially important in a polytunnel, where space can often be a lot more limited.

Making the most of the space in your polytunnel can involve a range of different strategies. But planting different crops (and other companion plants) in the same areas together can be an important part of the puzzle.

Companion planting to make the most of your space might involve:

- Planting quick growing crops between slower growing ones in annual beds.
- Placing plants with different root systems and requirements between or alongside others.
- Layering plants, with shorter non-competitive ones below taller ones.

Remember, plant spacing guidelines are all about making sure that the plants get the water and nutrients they need to grow optimally. But just because plants of a particular crop have to be spaced a certain distance apart, that does not mean that no other plants can be placed between them.

As long as plants will not compete too vigorously with one another, they can be positioned much closer together, for dense planting schemes. The right companion planting schemes can increase the yield from the space overall, even when the yield of one particular crop may be somewhat diminished.

To Improve Environmental Conditions For Neighbouring Plants

Another important goal for companion planting is adding plants as companions which improve environmental conditions for their neighbours.

One plant may improve the environment for another by:

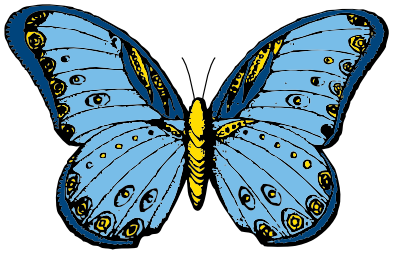
Providing support.
Increasing humidity.
Creating shade.
Reducing water loss by providing ground cover.

In the famous three sisters planting scheme, for example, corn provides support for climbing beans, and squash provides ground cover to reduce water loss.

To Repel, Confuse or Distract Pest Species

Companion plants might also be chosen as part of an integrated pest management strategy in an organic garden. Certain plants have strong scents, which can mask the scent of other plants growing nearby, thereby making them harder for certain pests to 'find'. Some of these aromatic, strongly-scented plants are also said to repel certain species.

In addition, there are 'trap crops' – a type of companion plant which can help keep main crops safe by drawing pests to them. Pests can be drawn to trap crops to keep them away from the crops for which they would usually be a problem.



To Attract Beneficial Wildlife

Companion plants can also aid in organic pest control by drawing in beneficial predatory insects and other wildlife, which will eat pest species (like aphids, for example) and help keep their numbers down.

Drawing in as wide a range of wildlife as possible in your garden is always a good idea. The greater the biodiversity of plant and animal life within a system, the greater the number of beneficial interactions between species there can be. And the greater the number of beneficial interactions, the more stable and resilient the system will become.

Another key group of species drawn in my companion plants are bees, and other pollinators. Of course, these are crucial for good fruit set on insect-pollinated crops. Our goal should be to make sure there are plenty of enticing flowers for pollinators in our gardens throughout as much of the year as possible.

3. Types of Companion Planting

Now that we have covered the main goals of companion planting, it is time to look at how exactly these goals can be achieved in your garden. There are a number of different ways in which companion plants can be integrated into planting schemes in your polytunnel garden.

Intercropping

Interspersed Companion Plants

Living Mulches

Border Planting

Polycultures and Guilds

Intercropping

The first type of companion planting to consider is intercropping. This simply involves growing one type of plant or crop between rows of another. This type of companion planting certainly helps you make the most of your space, and can integrate well in a more traditional planting scheme, with ordered rows of fruits and vegetables.

Examples of this include growing rows of nitrogen fixing peas or beans between rows of potatoes, growing lettuces between brassica plants, or intercropping rows of onions and carrots. However, there are a wide range of crops that can be overlapped in space and time to make the most of the space and to confer other benefits on one another.

Interspersed Companion Plants

Companion planting, however, does not just have to take such an orderly approach. Sometimes, planting areas may be arranged much more loosely, with beneficial companion plants simply placed randomly into the mix, between other plants.
Mixed seeds may even be broadcast over an area, for different edible plants and their companions to come up as they may in certain cases.

Living Mulches

In and around polytunnel beds, you might also use living mulches.

Low-growing plant species which no not compete too much with the main crops in a bed or growing area (due to their different root systems or different nutritional needs) can be used to improve environmental benefits by covering the soil around your crops and conserving moisture just like other types of mulch. However, as living mulch is made of living plants, it can often confer other companion planting benefits too.

This is another type of companion planting to consider around certain crops in your polytunnel garden.

Border Planting

Companion planting also includes planting beneficial plant species around the edges of a bed or growing area, where they can serve as a partial protective barrier for the main crops.
Aromatic herbs or alliums (onion family plants), for example, placed around the edges of the beds can help to keep the main crops in those areas safe.

Polycultures and Guilds

It is worthwhile remembering that companion planting is not always about adding just one additional type of plant. Often, the best companion planting schemes are those which add several different species to each growing area.

Collections of different types of plant are polycultures – the antidote to depleted and vulnerable 'mono-crop' systems which include just one species over a particular area. There are many polycultures to consider for your polytunnel – both annual and perennial schemes.

Polycultures are carefully planned to make sure that the system works naturally and as effectively as possible. It is important to take a holistic view and think about all the plants and wildlife together, rather than as distinct and separate things. Over time, you should be able to find polycultures that work effectively for you in your polytunnel garden.

Guilds are a specific type of polyculture, where all the plants centre around one key plant. This is commonly a term used to refer to the planting around fruit trees. But it can also be used to refer to planting around another perennial, or a specific annual crop. All of the plants in a guild are specifically chosen to benefit the plant at their heart.

4. Companion Planting For Common Polytunnel Crops

Which Common Fruits and Vegetables Grow Well Together?

The first stage in developing healthy growing areas and healthy plants is thinking carefully about which of your main crops will grow well together.

This involves thinking about which crops like similar growing conditions and will grow well together in the same bed.

It also involves thinking about levels of competition. You need to balance the benefits of companion planting with the plant's needs and make sure that competition for water and nutrients is not too excessive.

Sometimes, there may be some competition within a planting scheme, and yield of one plant may be reduced. However, even where yield of one crop is reduced, overall yield can still be higher when you grow more than one plant species in a given area.

Crop	Plant With	Avoid
Beetroot	Chard, spinach, lettuce, Brassicas, root crops, smaller legumes.	Runner beans (and other plants which overly restrict sunlight). Runner beans and beetroot are said to restrict each other's growth.
Beans	Most leafy and nitrogen-hungry crops, for nitrogen fixation. Plant climbing beans with sweetcorn for them to climb, and squash for ground cover. (See 'three sisters' plan below)	Onions and other alliums.
Broccoli	Other Brassicas, beets, lettuce, most legumes, onions and other alliums, celery, cucumbers.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.
Brussels sprouts	Other Brassicas, beets, lettuce, most legumes, onions and other alliums, celery, cucumbers.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.
Cabbage	Other Brassicas, beets, lettuce, most legumes, onions and other alliums, celery, cucumbers.Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.
Carrots	Onions and other alliums, radishes, perhaps other roots like parsnips etc..Sometimes legumes, tomatoes, cucumbers.	Potatoes. (Parsnips can be in the same bed but not directly adjacent as these will compete and share pests and diseases.)
Cauliflower	Other Brassicas, beets, lettuce, most legumes, onions and other alliums, celery, cucumbers.Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.
Celeriac	Leeks, and other alliums. Other root crops. Lettuce, radish or other quick crops to make the most of the space between these slower growing plants and cover the soil to retain moisture. Tall, climbing plants – e.g. legumes, for shade.	Make sure celery is not immediately adjacent, as these are closely related.
Celery	Leeks, and other alliums. Lettuce, radish or other quick crops/ Tall, climbing plants – e.g. legumes, for shade.	Make sure celeriac is not immediately adjacent, as these are closely related.
Chard	Beetroot, lettuce, other leafy greens, brassicas, alliums, beans and other legumes, radishes, celery.	Potatoes, cucumbers, sweetcorn, courgettes, squash.
Courgettes	Sweetcorn, beans, radishes.	Avoid planting with other cucurbits if you wish to collect seeds.
Cucumbers	Shallow-rooted crops, like lettuce below, beans, peas, cordon tomatoes etc. potentially on same support structure.	Avoid planting with other cucurbits if you wish to collect seeds.
Garlic	Many crops due to the strong smell and pest-repelling or pest confusing properties of alliums.	Legumes.

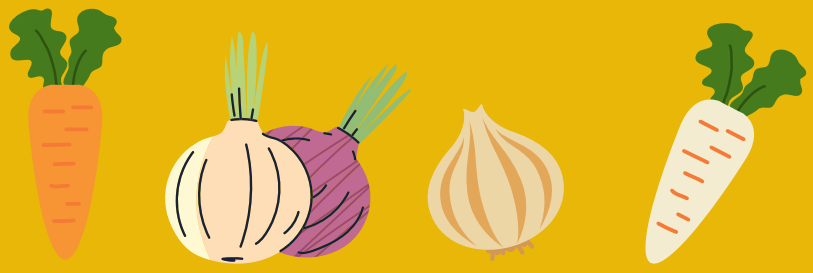
Kale	Other Brassicas, beets, lettuce, most legumes, onions and other alliums, celery, cucumbers.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.
Kohlrabi	Beets, chard, other brassicas, lettuce, most legumes, onions and other alliums, celery, cucumbers.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.
Leeks	Many crops due to the strong smell and pest-repelling or pest confusing properties of alliums.	Legumes.
Lettuce	Brassicas, slow growing roots, legumes, other leafy greens, radishes, alliums, and below many other taller/ climbing crops.	Suitable for planting between/around many other crops but should be pulled before they need the space.
Onion	Many crops due to the strong smell and pest-repelling or pest confusing properties of alliums.	Legumes.
Pak choi etc.	Other brassicas, lettuce and other leafy greens, radishes.	Tomatoes, peppers, courgettes, squash.
Parsnips	Other roots (including carrots if not directly adjacent), onions and other alliums.	Potatoes. (Carrots can be in the same bed but not directly adjacent as these will compete and share pests and diseases.)
Peas	Most leafy and nitrogen-hungry crops, for nitrogen fixation.	Onions and other alliums.
Peppers	Legumes, alliums. Carrots, spinach, lettuce. With tomatoes and other members of the same plant family only with plenty of other companion plants in a polyculture.	Brassicas, potatoes.
Potatoes	Legumes OR alliums. Lettuce or radishes intercropped early on.	Brassicas, tomatoes, peppers, cucumbers, courgettes, squash, carrots, parsnips.
Radishes	Many other crops (as a trap crop for pest control and as a quick crop to make the most of the space) including with lettuce, peas, beans, cucurbits, brassicas, carrots, parsnips, tomatoes etc..	As a trap crop for a number of pests, radishes can be grown alongside many crops, but you should be careful how you place them and when they are removed.
Spinach	Alongside other leafy greens, below taller/ climbing crops which help prevent bolting.	Potatoes, larger squash.
Squash	Sweetcorn, beans, radishes.	Avoid planting with other cucurbits if you wish to collect seeds.
Sweetcorn	Beans, squash/courgettes, cucumbers, peas.	Tomatoes.
Tomatoes	Legumes and cucumber on trellis with cordon tomatoes. Alliums, carrots, lettuce, peppers and other members of the same plant family only with plenty of other companion plants in a polyculture.	Brassicas, Potatoes, Sweetcorn.
Turnips	Other Brassicas, beets and other root crops, lettuce, most legumes, onions and other alliums, celery, cucumbers.	Tomatoes, peppers, courgettes, squash, other particularly nitrogen hungry crops.

Ideas for Combining Crops Within a 4 Year Crop Rotation With 4 Polytunnel Beds

Bed 1:

Tomatoes (cordoned), climbing beans, cucumber, peppers, garlic, and root crops to overwinter.

Bed 2: Carrots, parsnips, onions, peas to overwinter.



Bed 3: Early peas, lettuce and radishes, followed by 'three sisters' – sweetcorn, French beans, courgettes/ summer squash. Leafy greens to overwinter.

Bed 4: Broad beans/Peas, brassicas, beetroot, chard and other leafy greens. Broad beans and brassicas to overwinter.

Of course, this is just one suggestion. And the crops mentioned could and should also be added to with other beneficial companion plants.

Companion Planting With Herbs

Annual/ Biennial Culinary Herbs to Include in Crop Rotation:

Basil – particularly great with tomatoes, peppers, garlic…

Chervil – beneficial alongside brassicas and lettuce, for example.

Coriander – perhaps in the shade of peas or beans to prevent summer bolting. Helps brassicas, lettuce, spinach.

Dill – great near brassicas, lettuce, cucumbers, corn… avoid near carrots.

Parsley – good near tomatoes and peppers, carrots, peas, onions. Avoid planting by lettuce and other competing leafy greens.

Perennial Culinary Herbs to Place Around the Edges of Beds or Close By:

Bergamot – attracts bees and other pollinators, to great for all insect pollinated crops.

Chives – great, like other alliums, for repelling pests, plant with tomatoes, carrots, brassicas and many other crops. Avoid near legumes.

Hyssop – great near brassicas, for example and near many other plants for pollinator attraction.

Lemon Balm – best in pots as can grow aggressively. But good for attracting pollinators and repelling or distracting a range of pests.

Marjoram – good for tomatoes, peppers, and many other plants – attracting aphid predators.

Mint – best in containers as it can spread aggressively. But good near alliums, brassicas, peas and many other plants as it helps repel or distract a range of pest species.

Oregano - good for tomatoes, peppers, and many other plants – attracting aphid predators.

Rosemary – said to deter pests on brassicas, carrots for example.

Sage – helps brassicas, beans, carrots – avoid alliums.

Tarragon – said to be particularly beneficial near aubergines.

Thyme – fantastic for brassicas, tomatoes, potatoes and many other plants, attracting predatory insects.

Companion Planting With Flowers

Of course there are many flowers which can work very well in polycultures a polytunnel, or elsewhere in your garden. Here are some excellent options to consider:

Alyssum – intercrop as a living mulch with brassicas, lettuce, for example. Helps attract predatory insects to reduce aphid and other pest populations.

Borage – excellent nectary plant for bees and other pollinators and attracts predatory insects – companion plant widely in fruit and vegetable gardens (perhaps allowing to self-seed). Also edible.

Calendula – beautiful edible and useful annual also good for intercropping or companion planting with a range of common crops.

Clovers – nitrogen fixing, good for living pathways or as cover crops.

Comfrey – excellent perennial for edge planting – deep rooted dynamic accumulator which can be used for mulches and liquid feeds in your polytunnel. Also attracts bees and has medicinal uses.

Cosmos – attract pollinators, trap crop for aphids. Good close to insect pollinated plants or for borders of beds as trap crop.

Echinacea – good for bees and other pollinators, placed in perennial edge planting. Useful medicinal plant.

French Marigolds – great universal companion plant for vegetable gardens. Attract beneficials and may help control nematodes in the soil.

Lavender – fragrant and useful insect attracting perennial plant for edge planting.

Lupins – nitrogen fixing legume, good for bees, used for intercropping or interspersing.

Nasturtiums – edible, trap crop for aphids and distracts, repels or confuses many pests. Plant with squash, courgettes, cucumbers, brassicas etc...

Phacelia – shallow rooted nectary plant, good for living mulch or potentially as a cover crop/ green manure.

Sunflowers – trap crop for aphids, thrips etc., great with corn, beans etc..Edible flower, seeds.

Sweet Peas – nitrogen fixing, attracts pollinators, good near brassicas, spinach, lettuce (trellised it can provide shade as well as nitrogen)...

Vetch – nitrogen fixing companion plant or used in cover crops.

Companion Planting Perennial Crops

The perennial herbs and flowers mentioned above can also be excellent companions for other perennial crops in your polytunnel.

You may well be aware of common perennials such as artichokes, rhubarb and asparagus. But may be less familiar with other perennial crops that you could grow in your polytunnel.

But growing a range of perennial crops in your polytunnel could be a great low maintenance option to consider instead of, or in addition to, growing typical annual crops.

Consider, for example, creating polycultures which combine perennial herbs (mentioned above) with perennial members of the Allium family and perennial cabbage family plants. The herbs and alliums help to keep pest problems to a minimum.

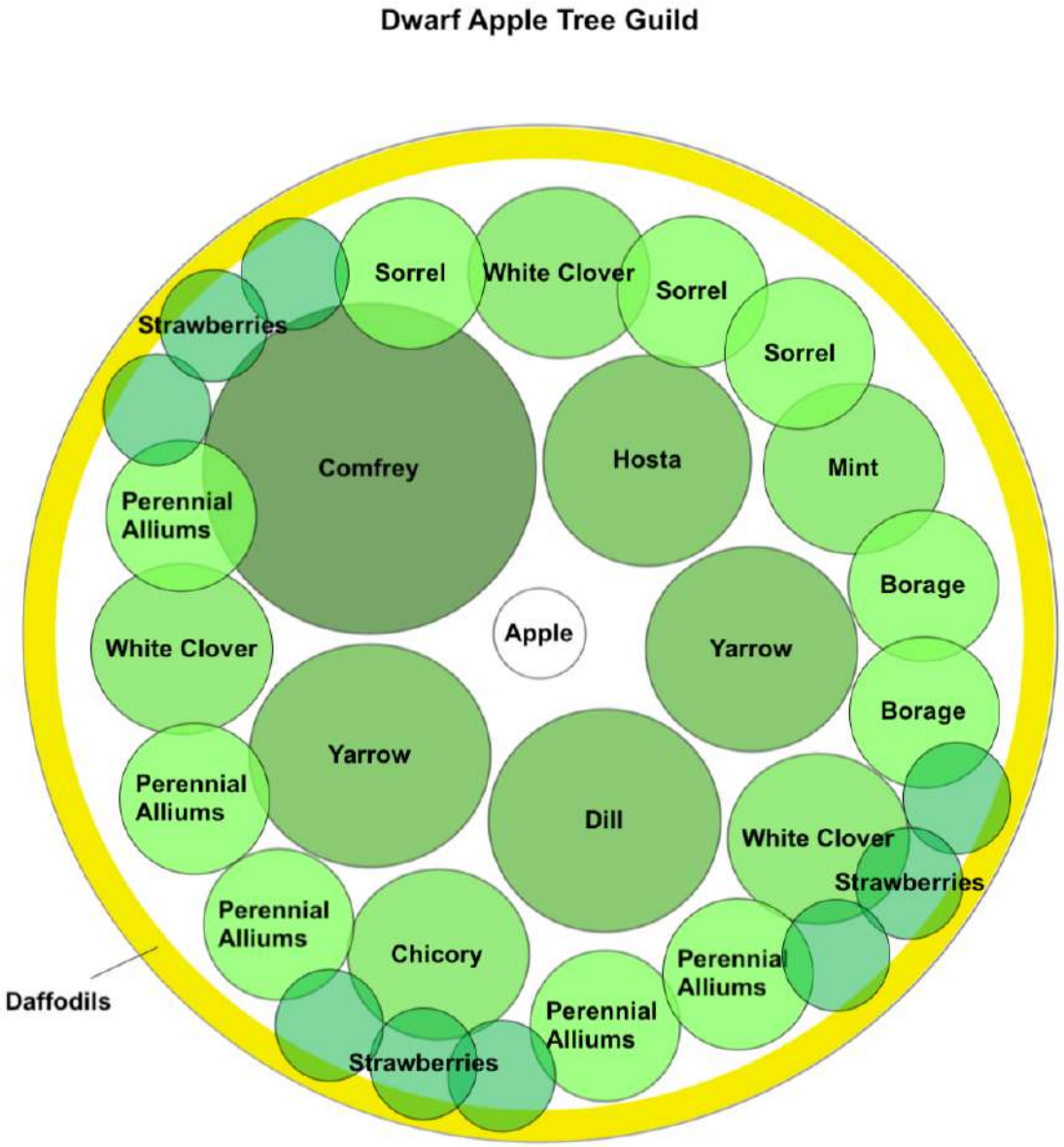
Companion Plants For Fruit Trees and Soft Fruits

Remember, you may also be able to grow dwarf fruit trees, fruit bushes, fruiting canes and ground cover fruits like strawberries in your polytunnel.

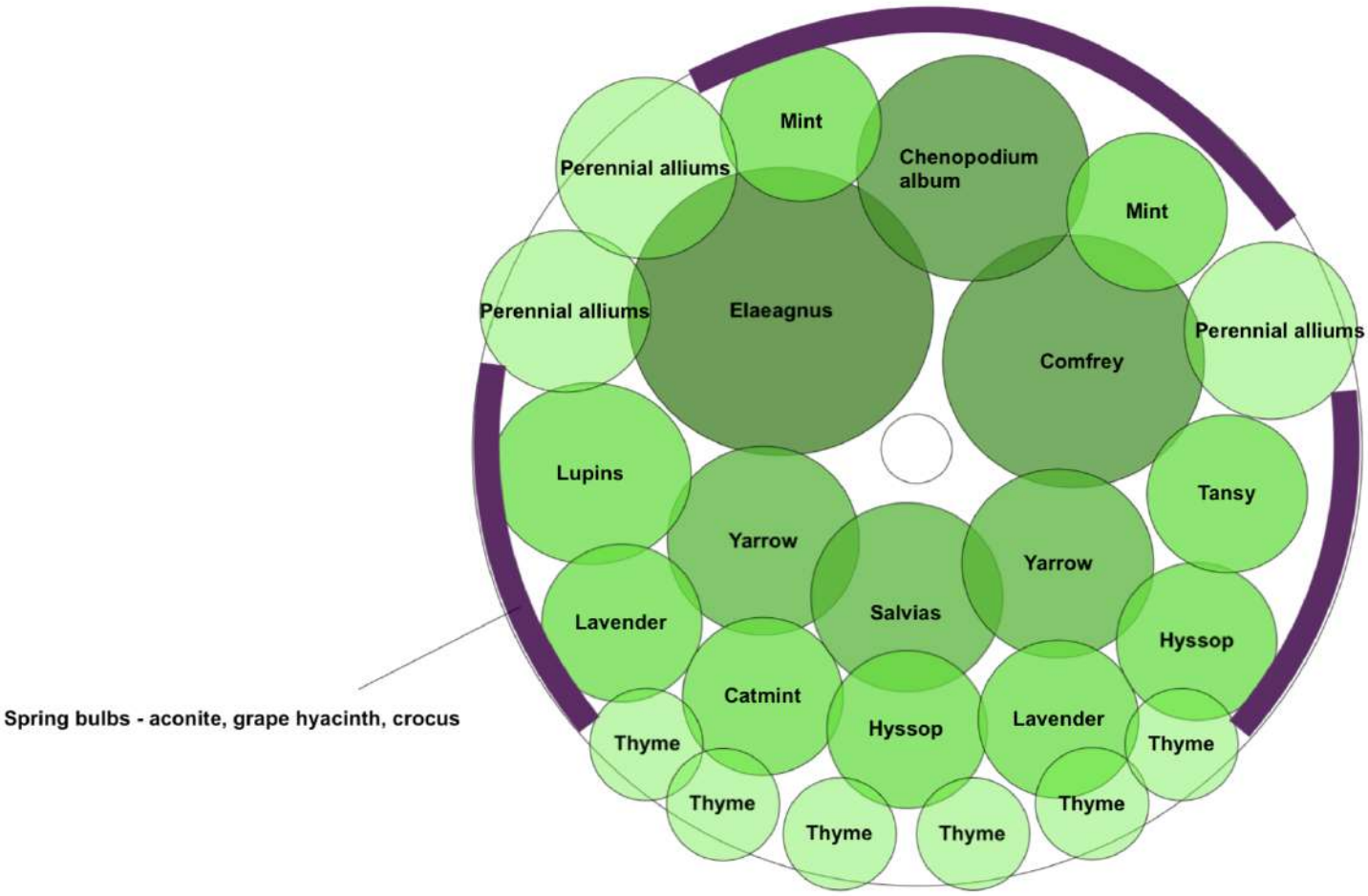
When you are doing so, these will definitely benefit from companion planting. The creation of polyculture guilds around these key edible crops will help increase yield and ensure plant health over time. You can even consider joining guilds together to create a small food forest or forest garden design.

Example Fruit Tree Guilds:

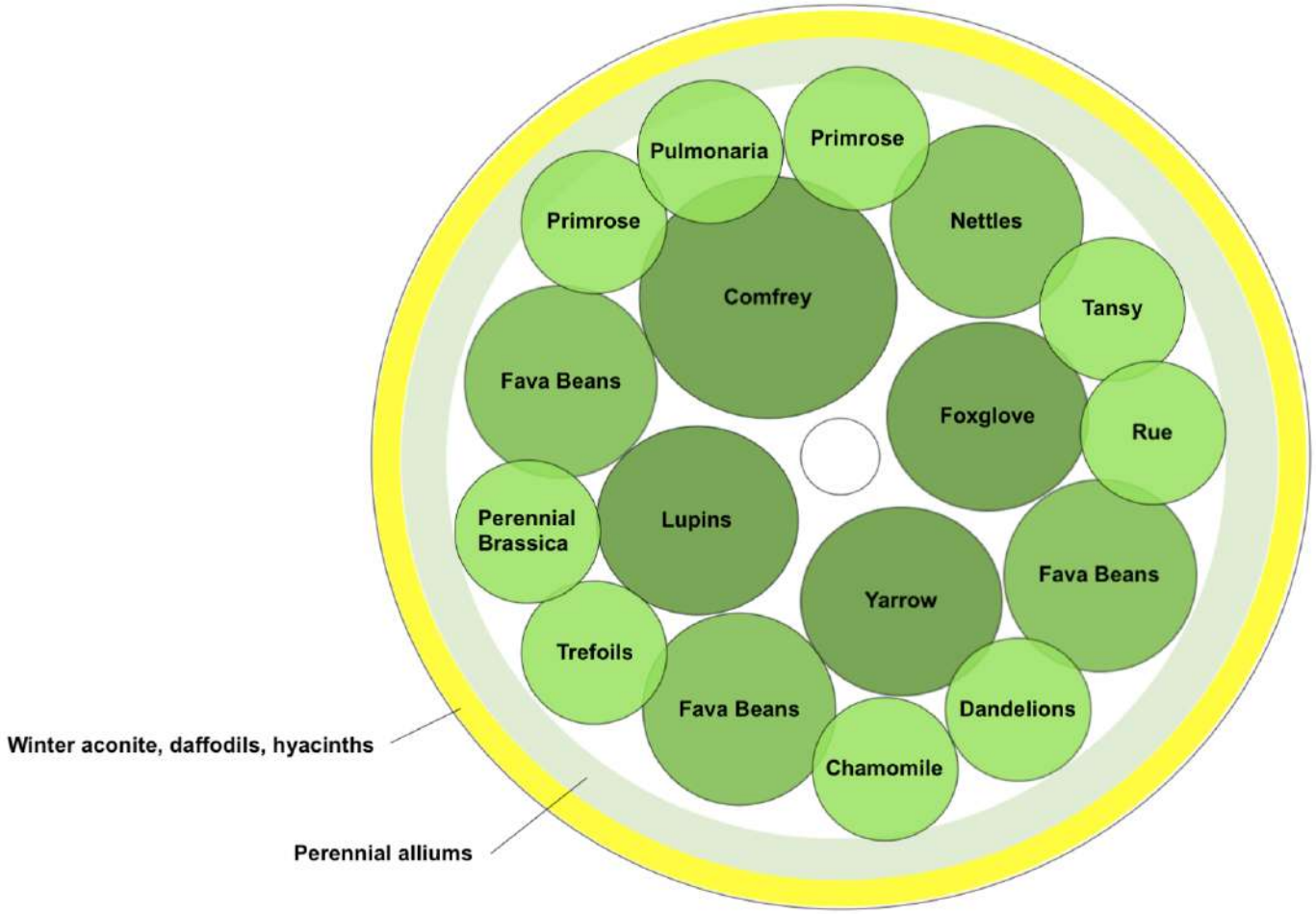
There is no one-size fits all approach to creating a guild for fruit trees and bushes. It is important to consider plants which fulfil all the functions of a guild mentioned above. And also to consider the location of the plants and their specific requirements. However, here are a few guild examples which may work well in a polytunnel:



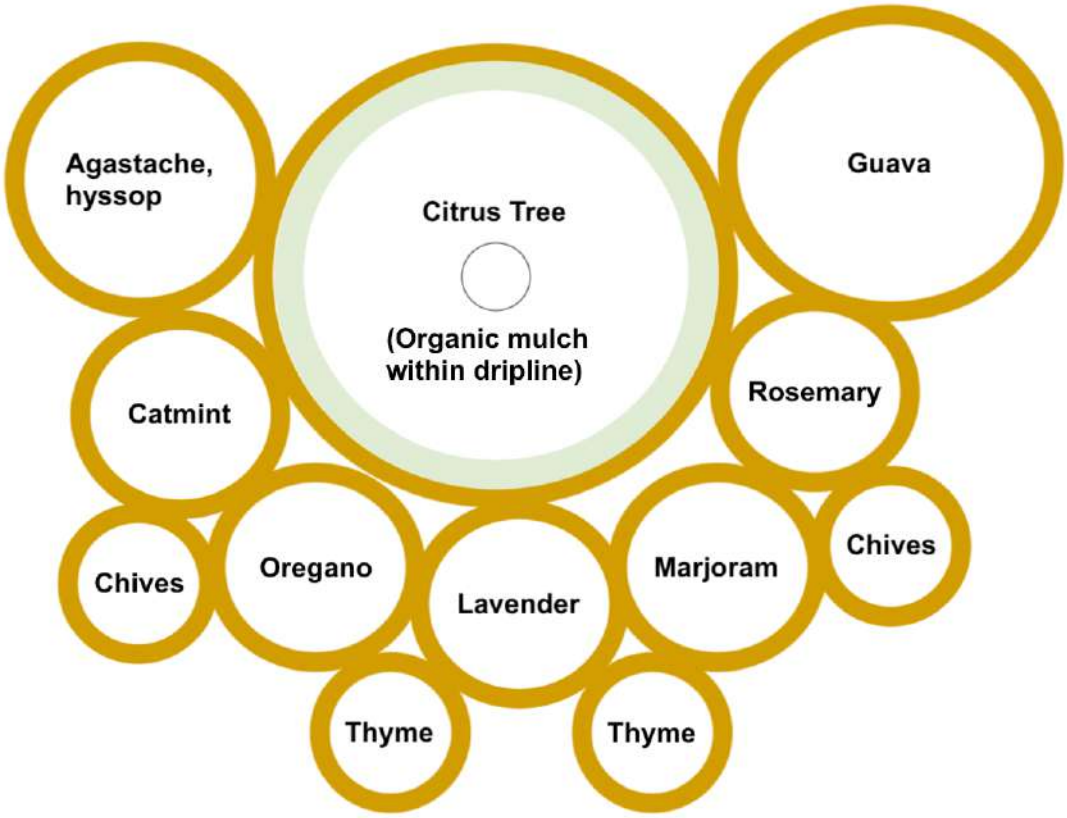
Dwarf Cherry/ Plum Tree Guild



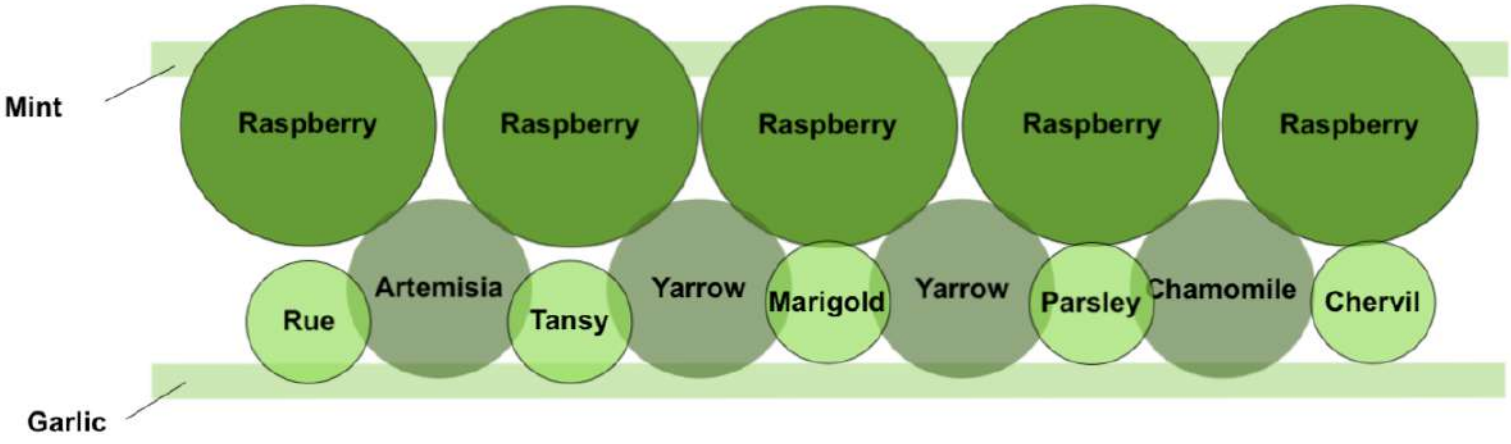
Peach / Apricot Tree Guild



Citrus Tree Container Guild

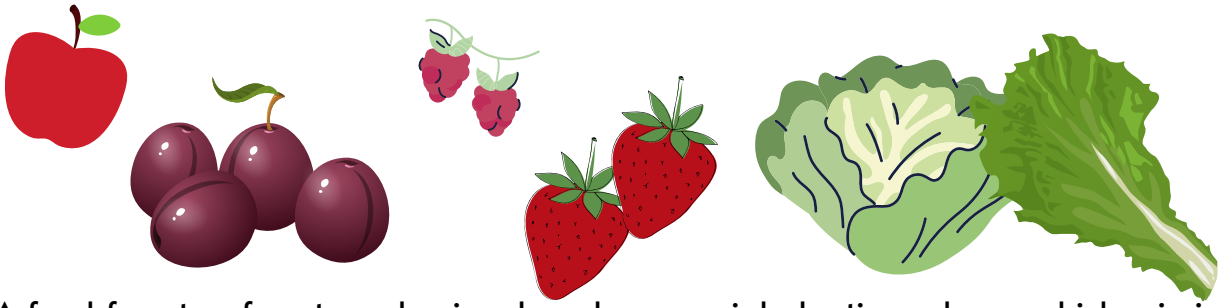


Raspberry Trellis Guild



Remember, these are just a few examples, and there are many, many different plants which can be beneficial in guilds in your polytunnel or elsewhere in your garden.

Food Forests



A food forest or forest garden is a largely perennial planting scheme which mimics a natural forest of woodland ecosystem. However, unlike a natural ecosystem, it is designed to provide food, and a range of other human yields. It does not need to be huge in size, and you could potentially consider creating a small miniaturised food forest or forest garden in a polytunnel.

In a syntropic food forest system, all the plants are carefully chosen to work together in a thriving ecosystem. This is, in many ways, the ultimate expression of companion planting.

Many guild plants such as those in the guild examples above will often be used in a forest garden. However, as well as being chosen to support individual trees, the species in a forest garden are chosen for their own yields, and to benefit the system as a whole.

A food forest has a range of layers in its planting:

- Trees (These can be dwarf trees in a polytunnel)
- Shrubs (Both berry bushes/ food producing shrubs and nitrogen fixers)
- Herbaceous perennials
  (perhaps with some biennials and self-seeding annuals too)
- Climbers
- Ground cover plants
- Roots and Tubers

Other elements, such as the wildlife visiting the garden, and the complex web of life below the soil, are also taken into account.

While you can also, of course, consider creating a food forest outside in another part of your garden, it could be an interesting idea to create a polytunnel food forest because it will increase the range of plants you are able to grow, and make it possible to create a design using plants which usually thrive in a warmer climate than your own. If you heat your polytunnel, you could also create a companion planting food forest scheme using subtropical or even tropical plants.

Go beyond the basics and explore more developed and biodiverse forms of companion planting and you can reap many rewards - in your polytunnel, and elsewhere in your garden.