

ABUNDANT BORDERS



Creating a network of local food production in the Scottish Borders

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MANAGING RESOURCES

We tend to think of resources as being limited. We never have enough time, we don't have enough money, we don't have enough sunshine here in Scotland.

Permaculture helps us to think differently about the world and gives us a design method for creating a self-sustaining future.

It allows us to focus on caring for the land and for people.

It helps us to think about creating abundance for sharing rather than focussing on shortages.

It gives us ways of turning problems into solutions.



PERMACULTURE GARDENS

So what does that mean in our gardens?

- Your garden is personal to YOU

What do YOU want?

- Your goals should be achievable

What can YOU do? What works for a fit, young person may not work for older and less able folk

- It should be a place for people as well as plants

A garden isn't a plant museum but should be welcoming, a place where YOU and your visitors can feel comfortable

If this module was being delivered face to face, we would now focus on building a community garden. The principles hold true for gardens of all shapes and sizes so we will focus on what challenges and opportunities exist in your own garden.



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GARDEN DESIGN

**TAKE 5 MINUTES TO WALK ROUND YOUR OWN GARDEN.
THINK ABOUT WHAT IS ALREADY THERE.**

Think about and make a note of:

- Shape
- Height
- Season
- Storage
- Access / Paths
- Slopes
- Sun
- Wind
- Water

A good starting point is to draw a plan.



SHAPE

Most houses, particularly newbuilds, will have a rectangle to the front and a rectangle to the back with maybe a path, a patio/seating area, a shed, a veggie patch all set out in their own separate, contained areas. Permaculture gardening encourages us to be more creative, for good reason!

Edge

The most productive, abundant places in nature are where two different habitats meet. For example, where a forest meets a field. Deep inside the forest few species are adapted to survive. In the centre of the field we also see relatively few species but where the two meet we see species adapted to both habitats AND others which can tolerate either environment.

If we can create more edge we can encourage more variety.

And it also creates a more attractive garden as we develop more natural looking spaces.



HEIGHT

Modern agriculture, and many gardens and allotments, is on a flat surface. It uses only one layer, like a field of sprouts or cabbages. Forest Gardening adds height naturally as the garden is built up in layers. And we can also add height by being creative with the vertical space in our gardens.

We can grow plants:

- Up trees and along hedges
- Up/along fences and walls
- In hanging baskets, hanging structures
- Up/along walls on trellises
- Up posts /poles
- Up/in/along drainpipes
- Window boxes
- On rooftops

Think Creatively.



Image by GLady from Pixabay

SEASONS and SUCCESSIONS

Planting/harvesting throughout the seasons means that the ground can be used throughout the year.

Spring: Pick wild garlic and early green salads such as lovage, sorrel and perennial spinach

Summer: Most plants will grow and crop throughout the summer season

Autumn: Harvest nuts, fruits and autumn root vegetables

Winter: Pick brassicas (e.g. sprouts) and crops that will over winter like spinach and kale

If soil is bare it is not only unproductive and unattractive it is being starved. If you don't want a winter food crop then plant a green manure so that the soil is still being fed and the soil ecosystem is being supported.



SEASONS and SUCCESSIONS

Many gardens, and allotments, have bare, unproductive ground over the winter months. Permaculture encourages us to think of the growing season as being 365 days a year!

Succession planting means that the same piece of ground can be used many times throughout the year.

Same vegetable, staggered planting

e.g. Plant lettuce seeds a couple of weeks apart to get a steady crop throughout the season

Same vegetable, different time to crop

e.g. early season and maincrop potatoes planted at the same time will crop at different times

Different vegetables in succession

e.g. Plant peas for a summer crop and replace with kale once they have finished cropping

Paired planting

e.g. inter-plant radishes with kohlrabi. The radishes will be harvested before the kohlrabi starts to grow and use the space



CROP ROTATION

Crop rotation means that the ground stays productive over many years.

Our ancestors would have been very familiar with the idea of having different crops growing in the same field in different years. Many early agricultural communities used a four-year rotation, with a non-food crop like clover as part of the cycle. Rotation keeps the soil and the garden ecosystem healthy.

If plants are always grown in the same place then pests are attracted again and again. Some of these pests, like carrot fly, can stay in soil for many years.

Each plant takes nutrients from the soil in ways specific to that plant. Growing the same plant in the same ground can exhaust particular nutrients. Planting a different plant with different requirements helps maintain a healthy soil profile.



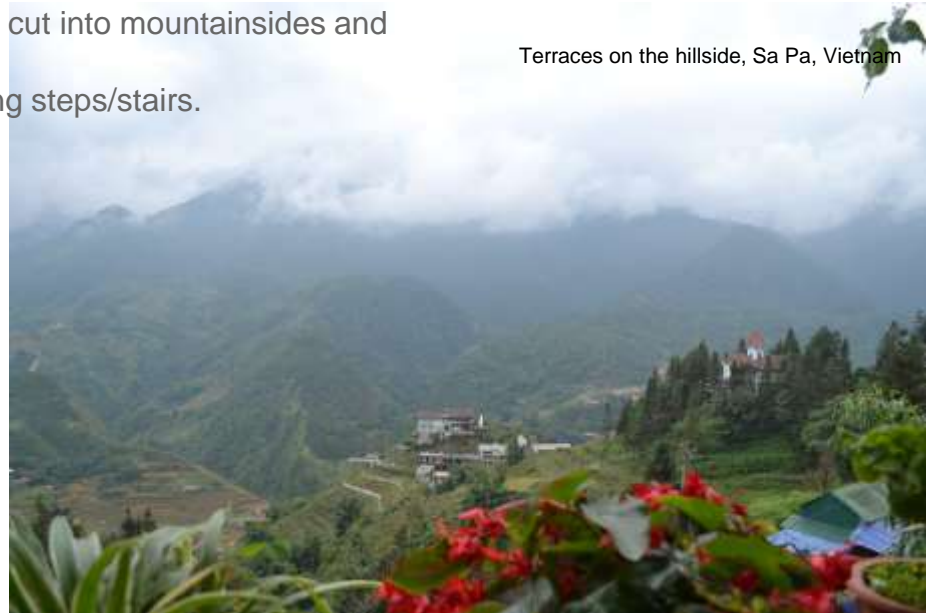
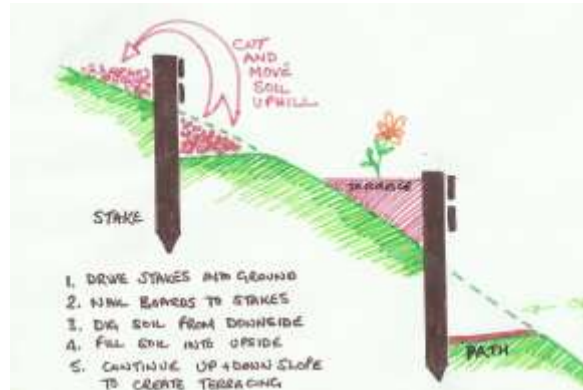
SLOPES and CONTOURS

A sloping garden can seem like a challenge, but what an opportunity too.

Growing on a slope can be challenging, even dangerous. Terraces create paths and flat beds, making the land easier to cultivate.

In Asia, as illustrated, elaborate terraces have been cut into mountainsides and make inhospitable landscapes productive.

Making terraces can be much easier, just like making steps/stairs.



Terraces on the hillside, Sa Pa, Vietnam

STORAGE

Permaculture is all about maximum output from minimum input.

Where we store tools, resources and yields from the garden is an important part of garden design.

Try to make the transitions from indoor needs to outdoor resources as simple as possible.

Fuel: if you burn wood collected from the garden (or delivered) storing wood near to the house makes sense as it is within easy reach

Tools: sheds are often unsightly and tend to be sited in a remote part of the garden. If this is the case, keep a few tools in a porch or other handy place so that you can do a wee bit in the garden without having to traipse down to the main tool store

Compost: while it is unsightly, and possibly unhygienic, to site a compost heap near to the house consider having a smaller bin/bucket near to the kitchen door which can be regularly emptied onto the main compost. Making recycling of food waste, and other materials, easy greatly increases the chance of it being done!

Food store: if you have had a successful crop then you may well have food stored in an outside larder. If that is sited near to the house it makes it easier to use the food and means less goes to waste



Image by kgardener from Pixabay

ACCESS and PATHS

We are used to seeing paths in urban settings made from concrete, flagstones and tarmac. These materials have been transplanted into our gardens but we can be much more creative, and environmentally friendly, if we think a little more creatively. Some considerations (there will be more):

- **How much traffic will the path take?**

If an area is to be regularly accessed by heavy machinery, or cars, then a hard surface might be needed

- **Who is using the path?**

Children can quickly turn grass pathways to dust or mud. Do you need disabled access? Stone or cobble can be difficult for older visitors to the garden

- **How wet is the area?**

If an area is wet then wooden paths might be slippery and will quickly rot

- **Do you need a path at all?**

Will stepping stones suffice? The more path the less growing space

- **Is the area prone to deep rooting weeds**

This can be a problem for gravel/wood chip paths

- **What do I have to hand?**

Think what spare materials you might have, timber planks, wood chippings as making use of this material on pathways creates an asset from waste



Image by Jill Wellington from Pixabay

SUN

The most valuable resource to Scottish gardeners is the sunshine! Sunlight is needed for photosynthesis, the process by which green plants manufacture food from carbon dioxide and water. The quality, quantity, and duration of sunlight influences plant growth.

Most gardens have some light and some shade, everything from light-dappled shade from taller plants to pitch-dark shade from the shadow of buildings. The sunny and shady areas in the garden will change throughout the day as the sun crosses the sky and throughout the year as the winter sun never reaches the same height as the summer sun.

We can capture sun and heat to promote growth by using a:

- Greenhouse
- Indoor windowsill
- Cloche
- Lean to
- Glass/Polythene Dome
- Polytunnel
- Be creative – recycle old windows, glass doors, shower screens, etc



WIND

For most gardeners wind isn't a resource, more something to protect tender plants from. But remember, many plants use the wind for pollination and on a larger scale wind is a huge, renewable asset.

In most places there is a prevailing wind direction, the direction from which the wind blows most often. In areas of high winds you can see the way that the trees bend. Here in the Scottish Borders it is from the south west, though the northerly winds are less frequent but more damaging as they bring colder temperatures as well as damage from the wind strength.

Wind Power

- Wind can be used to turn electricity generators
- Windmills use wind to grind grain to flour
- Wind power can be used to drive water pumps
- Wind Chimes
- Rotating bird scarers / CDs on lines / Kites

Wind Shielding

Do not use solid breaks like panel fencing as these can be blown over and also can create wind turbulence. Use/plant screens that allow some air through

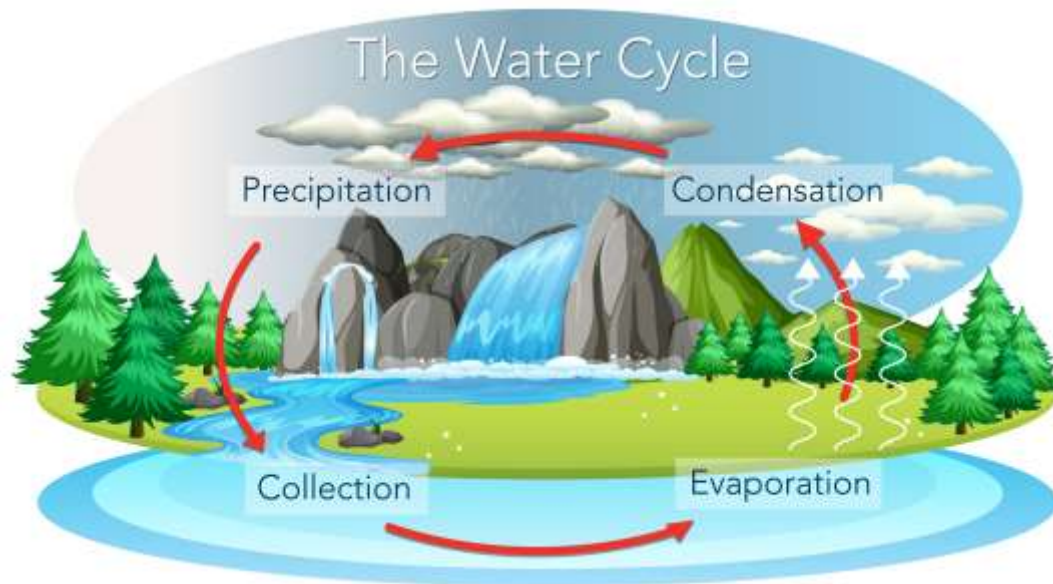
- Hedges and trees
- Brushwood/ Willow hurdles
- Tall perennials, like lupins and tansy



WATER

Water is a valuable commodity. Without water there is no life.

The water cycle is driven by the sun, causing water to evaporate from the seas. The water condenses as clouds and then falls as rain (snow, dew). Water is stored in the soil, in rivers and underground and returned as rivers flow into the sea for the cycle to continue.



WATER

Having enough water in the south of Scotland isn't usually a big problem, but summers are getting drier and even in the wettest years there are dry spells, so we need to plan more carefully to preserve water.

Collect and store rainwater

- In the soil. Soils with plenty of organic material are good at holding water, so look after your soil
- In the plants. Plants are good at holding water, another good reason to avoid bare soil
- Collection. All the roofs in your home can be used to harvest rainwater. Put guttering onto sheds, greenhouses and outbuildings and fit interceptors onto downpipes
- Clever watering. Create a halo small trench around plants. This will hold water when it rains and when you water



Image by Lena Lindell from Pixabay

WATER

- Waste water. We throw away washing up water and bathwater, both of which can be collected and used in the garden. Water can be collected and filtered through a perforated bucket filled with straw
- A reed bed system, where bacteria on the roots of reeds break down the waste, is an option for larger scale waste water recycling
- Irrigation systems. The Romans created fabulous aqueduct systems for moving water around their lands. In a small garden drip irrigation, where a network of pipes carry a low flow constant delivery of water direct to plant roots can be an answer in very dry spots
- Ponds create wildlife habitats and can also be used for irrigation. Site a pond on higher ground and allow overflow at times of heavy rainfall





Any Questions?

We will have a Q&A each Wednesday morning 10am to 12 noon to answer questions in real time.
But please feel free to post your questions to the group at any time.

LET THE PROBLEM BE THE SOLUTION

The 6th Permaculture Principle urges us to **Produce No Waste**. Ultimately, we are looking to create a closed loop system in our garden. This transformation is not easy or quick, but is something to work towards. In order to make progress, we need to think differently about waste. A bit like weeds, we just need to change our thinking in relation to items we would normally take to the tip. Here are our top 20 tips.

1. Don't waste your waste

Every household produces kitchen waste, vegetable peelings, egg shells etc and waste paper from a home office, or from children's play. Compost this material rather than throwing it in the council bin. Set up your kitchen and garden to make this as easy as possible.

2. Collect autumn leaves

Gardens and paths can be covered with leaves every autumn. This is often seen as a nuisance and people even buy expensive leaf blowers. Leaf mould is a great soil improver and mulch. Collect the leaves and keep them in a black bin sack with a few holes in the side. In a year or two you will have fabulous leaf mould for the garden.

Councils often collect leaves from parks and gardens. Why not ask them, and your neighbours, for their leaves.



Image by Birgit Böllinger from Pixabay

LET THE PROBLEM BE THE SOLUTION

3. Rhubarb Leaves

You can't eat the leaves but they do make a great insecticide for caterpillars and aphids, due to the high levels of oxalic acid. Boil 1.5kg of leaves in 1.5l water for 20 mins. Cool, strain and add a little soap powder before spraying on plants.

4. Old CD's

String old CD's on a length of twine supported by canes/posts. This will deter birds from newly planted seedlings.



Image by Di Reynolds from Pixabay

5. Plastic Bottles

If you have old, clear plastic bottles then use to make cloches. Cut off the bottom and remove the cap to allow water in. Place over a seedling to give it individual protection.

Or bury in the ground next to a plant and water through the bottle so the water goes straight to the roots. This is particularly good for cucumbers in planters as they are prone to rot off at the roots.

LET THE PROBLEM BE THE SOLUTION

6. Eggboxes, Toilet Roll Holders

You can create seed pots out of old eggboxes, toilet roll holders and inners from kitchen rolls.

The longer tubes are particularly good for peas, which need space for roots and for tall seedlings like leeks and parsnips.

The tubes can be put straight into the ground as the cardboard will naturally degrade.

Eggboxes are good for holding seed potatoes while they chit.

Egg shells can be used to raise soil pH and deter pests.

7. Pet Hairs

Keep any fur that you have groomed and put on a bird table or hang in a bush for use by nesting birds, they love it.



8. Tea Bags

Tea bags can be composted, though some bags do contain microplastics so shouldn't be used. They can be used to fill gaps in the lawn.

Place a moist tea bag on a bare spot and sprinkle with seed. The bag provides moisture as the seeds grow and the bag decomposes.

LET THE PROBLEM BE THE SOLUTION

9. Trimming and Pruning

Don't discard twigs and branches. Some will make poles to support climbing plants, others to make trellis and smaller twigs woven into screens.

10. Tree Stumps

Large tree stumps are difficult to remove so consider making them into a garden seat or a bench.



11. Tyres

Tyres are difficult to dispose of so they are easy to pick up from garages and farms.

- Stack to grow potatoes and horseradish
- Line old tyres with used plastic bags with small holes and fit loose wooden slats along the bottom. Fill with soil. Use wooden posts to arrange tyres in layers and plant crops in each tier. Watering the top layer lets water filter through to the other layers
- Tyres make great kids swings.

LET THE PROBLEM BE THE SOLUTION

12. Planters

Many old, discarded items can be used as planters. Tyres, wheelbarrows, sinks, bathtubs, chimney pots... be creative! Just make sure you make holes in the bottom for drainage. For a natural finish, smear the outsides with yoghurt and lichen will grow.

13. Jam Jars

Old jars can be recycled in food preservation but can also be used to make lanterns. Put a tealight in the bottom of the jar and use tapers when lighting. Citronella candles will help deter biting insects in the evening.



14. Guttering

Left over plastic guttering can be used to grow herbs and salads. Fill the guttering with compost and then plant the seeds. For herbs, the guttering can be attached to a wall in a zig zag. Water at the top and the water will move down the guttering. Place the herbs needing the least water at the top and those needing wetter conditions at the bottom.

LET THE PROBLEM BE THE SOLUTION

15. Wood Ash

If you have a wood burning stove you will generate a lot of wood ash. Wood Ash, not coal ash, can be used as a fertiliser and will raise the pH of acidic soils. Small amounts sprinkled around plants deters slugs.

16. Tin Buckets

Old galvanised buckets can be reused as barbeques. Simple punch holes in the sides and base and fill with charcoal. Use a wire rack as the grill and stand on a flat surface, like a paving stone.



17. Compost Bags

Save any empty bags as these can be used again as grow bags. Fill with homemade compost, push out excess air and seal the open end. Lay flat and plant out tomatoes about 18 inches apart through x-shaped holes cut into the plastic.

LET THE PROBLEM BE THE SOLUTION

18. Fizzy Drinks Cans

Fizzy drinks cans make great birdfeeders.

- Cut in half
- Place a wire mesh cylinder into the can base
- Top off with the ring pull section of the can

19. Coffee Grounds

- Can be composted
- Used directly as mulch
- Use directly or diluted as fertiliser
- Deter slugs and other pests



20. Pallets

Pallets are a huge asset to the permaculture gardener

- Garden Furniture
- Compost bins
- Planters
- Trellis
- Fencing
- Bed edges
- Plant stands



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ABUNDANCE

Principle 3 of Permaculture requires us to **obtain a yield**. Often what we grow is too much for our own needs. A fully grown apple tree can yield upwards of 200lbs of fruit! In community gardens we work together to create abundance to share. We have covered many ideas during the course so here are a few reminders for creating and sharing abundance.

- Look out for seed swapping events, it's a perfect opportunity to grow food without spending any money
- Look out for harvest festivals, it's a perfect opportunity to exchange your surplus for that of others
- Donate surplus to local food initiatives
- Share knowledge with others and they will share with you
- Propagating from cuttings is perfect for getting plants for free
- Share/ Exchange those you don't need for ones you do need
- Be kind to your worms and they will do a lot of the hard work for you. 500g of composting worms will eat 1.5kg of waste in a week



ABUNDANCE

Encourage natural predators in the garden and they will do much of the pest control for you.

- Installing a pond or keeping some shady/damp areas encourages frogs and toads to prey on slugs
- Create overwintering homes for ladybirds and lacewings. They are voracious aphid-eaters:
 - Bundle short sections of bamboo canes together and leave in a sheltered spot or
 - Cut the base from a 2 litre plastic drinks bottle. Slide some rolled up corrugated cardboard into the bottle and cover at the base with a little mesh to stop it falling out. Tie string round the top of the bottle (leave cap on) and hang in a sheltered space
- Common pipistrelle bats can eat up to 3,000 midges per night. Encourage them into the garden with a mixture of flowering plants, trees and shrubs and include night blooming versions. You can also make/buy batboxes
- Ants and flies are repelled by mint



ABUNDANCE

- Look out for local plant varieties. The best seeds to choose are locally adapted, traditional varieties. These plants have evolved over centuries to grow well in local conditions and so can give better yields. For example, there are a huge number of heritage apple varieties to choose from compared to the few apple varieties that you can buy in supermarkets.

Make friends with your weeds. Many plants that you may think of as useless do have great value:

- Eat them
 - Mulching
 - Compost
 - Liquid Feeds
-
- Mix what you grow to encourage diversity and prevent pests and disease getting a grip



ABUNDANCE

Feed the birds. Birds are lovely visitors to the garden.

- Grow sunflowers and teasel and leave the seed heads on overwinter
- Leave the hips on roses over winter
- Leave some fruit on the bushes at harvest time
- Make a bird feeder
- Make a bird box
- Make a bird table
- Make a bird house





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FURTHER INFORMATION

Books

- The Permaculture Way, Graham Bell
- The Permaculture Garden, Graham Bell
- Creating a Forest Garden, Martin Crawford
- Permaculture 1, Bill Mollison and David Holmgren
- Permaculture, A Design Manual, Bill Mollison
- People and Permaculture, Looby Macnamara
- The Grafters Handbook, R J Garner
- The Wild Food UK Foraging Pocket Guide
- A Handbook of Scotlands Trees – Reforesting Scotland

On-line

- The Permaculture Association - www.permacultureassociation.org.uk
- Permaculture Scotland - <https://Scotland.permaculture.org.uk>
- Abundant Borders - www.abundantborders.org.uk
- Royal Horticultural Society - www.rhs.org.uk
- Foraging Gudes - Wildfooduk.com

Facebook groups

<https://www.facebook.com/groups/virtualcommunitygarden/>
<https://www.facebook.com/groups/foodcommunities/>
<https://www.facebook.com/groups/permaculturescotland/>
<https://www.facebook.com/groups/reforestingscotland/>

THANK YOU

We are a small, growing charity (SCO49008) supported by several organisations.

We are grateful for their support - without which we wouldn't be able to do what we do.

Thank you

