

Week 5 Composting, Worm Composting and the Onion Family.

Composting

Composting is at the heart of organic growing. You'll find lots of articles telling you "How to compost." The following deals with the basic ideas.

Here are a few questions about composting. Try and answer them before you continue.

1. What does useful garden compost look like?
2. What can you compost?
3. What do the biodegrading organisms need to thrive?
4. Apart from in a heap, how else can you compost fresh organic matter?
5. How would you build a hot compost heap?
6. Does it matter if your compost heap doesn't heat up!

What does useful garden compost look like?

Organic matter exists in three states.

Fresh organic matter. This is organic matter that is still recognisable. Very little decomposition has taken place.

Humified organic matter. The original ingredients are not recognisable. They are partially decomposed.

Humus. This is the final stage of decomposition.

Biodegrading organisms, such as bacteria, fungi and worms, feed on fresh organic matter. In a fairly complex food chain, these organisms release plant nutrients as the fresh material degrades into humified organic matter. In the soil, the nutrients are found in the gums and resins that help bind particles together in crumbs.

The final composting product, humus, is mainly composed of lignin. It is low in plant nutrients but is useful for improving soil structure. It helps "open up" clay soil and aids moisture retention in sandy soils. Peat and leaf mould are mainly humus and contain tiny amounts of plant nutrients.

Since the main purpose of composting is to feed the soil, our primary aim is to produce loads of humified organic matter! So, don't be a too zealous composter! Don't convert all your precious organic waste into humus.

What can you compost?

The raw materials for composting can be anything of plant or animal origin. However if you use cooked kitchen waste or meat etc. you'll encourage rats into your garden. (Put this valuable rat attracting stuff in a worm composting bin. See later.)

What do the biodegrading organisms need to thrive?

The biodegrading organisms that help with your composting need five main things in order to thrive. They need: 1. oxygen; 2. moisture; 3. warmth; 4. sugar for energy; 5. protein building nitrogen compounds.

The oxygen and moisture will come from the atmosphere. The warmth will be provided by the sun and can be maintained by insulation. The sugars will come from woody carbon based material such as straw, cardboard, stalks and stems. The protein building nitrogen compounds will come mainly from green leafy material.

Like us, the organisms need more sugars than protein in order to thrive. Your compost mixture needs 25 to 30 times more carbon than nitrogen to degrade effectively.

Apart from in a heap, how else can you compost fresh organic matter?

Some growers just loosely spread their fresh organic matter on the surface of the soil and let soil organisms get on with the job. Others dig trenches and incorporate it into the soil. As long as the conditions are right for the organisms, the soil will be fed. However, if accidentally you produce an airless, anaerobic mess you'll lose potential soil fertility. Denitrifying bacteria, will convert the organic waste into atmospheric nitrogen gas rather than beneficial nitrates in the soil.

How we'll build our hot compost heap.

At Ynys Las we're going to compost our fresh organic matter in a heap. We're going to try and create ideal composting conditions so that bacteria and fungi thrive and degrade fresh organic matter quickly. The heap should become very hot and will be a natural way to:

- Produce natural fertiliser which we'll use in about a month's time:
- Rid ourselves of weeds and their seeds plus pest damaged plants. It will be too hot for rats!

We've saved a huge pile of weed roots and stems from clearing our plots. We've collected a cross section of kitchen waste (used tea bags, cardboard, vegetable scraps etc.) and kept a separate pile of grass cuttings from mowing the lawn. We're going to mix these ingredients as we build the heap. Using twice as much brown as green material, we'll water the driest stuff to make it damp but not soggy. If we can persuade course members to save their urine, we'll add that to the water too. Urine is a great compost accelerator!

The target is to build a heap about a cubic metre in size. Evidence shows that in our climate this provides ideal insulation for degrading organisms working in the centre of the heap. We'll cover the heap with some layers of old carpet to both keep our bacteria friends warm and stop rain leaching out the nutrients!

In a few weeks, when the heap cools down, we'll remove and use the humified organic matter from the centre of the heap. We'll probably incorporate it into the brassica bed or use it on our community courgette and pumpkin plot! Any remaining fresh organic matter can be incorporated into a new heap.

Does it matter if the compost heap fails to heat up?

No! Not really. If your compost heap doesn't warm up you've got two choices.

1. Rebuild the heap and correct what seems wrong. Either incorporating some more green stuff like grass clippings, spinach leaves etc., or adding more water.
2. Give up your hot composting ambitions and leave the heap alone for 6 -12 months. Worms, woodlice, slugs, millipedes and the bigger soil organisms will move in and do the job more slowly. Nature is forgiving! Cool composting works too.

Remember, cool composting is the best you'll probably get from a large heap in winter or from a small volume compost bin at any time of the year!

Worm Composting

An alternative interesting way to compost organic waste is to use worms. This is particularly useful:

- a) In an urban setting where compost heaps may not be acceptable;
- b) Where there is a great deal of cooked organic waste which would attract rats if added to a compost heap.

Red "brandling" worms

Often when compost is removed from a compost heap you find large numbers of red worms living in the decomposed material. They are often collected and sold as "brandling" worms in fishing shops. A small industry has evolved, using huge numbers of these worms, to degrade organic waste in controlled conditions above the ground. The end product is highly fertile compost that can be added to the soil around growing plants.

It is possible to make a perfectly functional worm composting bin from a plastic dustbin.

The design requires no more work than drilling some drainage holes in the base of the bin and some ventilation holes near the lid. The base of the bin should be filled with a 10 cm. layer of pebbles to allow liquid in the decomposing waste to drain away. On top of the pebbles you'll need to put a 10 cm. layer of damp torn cardboard. The worms will live in this for their first few days in the bin. The worms can be obtained from around compost heaps, fishing shops or from a specialist supplier.

You'll need several hundred worms to process the waste reasonably quickly. These should be placed on the damp card and allowed to settle for a day or two before adding small amounts of organic waste. Keep the bin in a convenient sheltered place that will neither get too hot or cold and the worms will usually work quite efficiently.

Occasionally, if the bin gets either too hot, wet or cold, the worms will "go on strike" and stop processing the waste. They'll probably gather near the lid of the bin. The creatures may also "rebel" if the plant waste contains too much of one ingredient (They don't seem to like onions or orange peel!). Use your common sense, change the conditions and gently push the worms back in the bin! Unlike other "pets" the worms don't need lots of attention when you go on holiday. Try and give them a large feed before you leave them. Add bulk to their food at these times. Mix some more shredded damp card with your organic waste.

When the bin is nearly full, carefully scoop out the top 10 cm. of partly degraded waste. Most of the worms will be in this material. Remove and use the black gluey compost beneath. Replace the worms and partly degraded waste back in the bin.

The life cycle of the compost worm is similar to the earthworm. The worms are reproductively quite responsible and will regulate their population to the amount of food available!

There are some excellent purpose made "worm composting containers" and some thorough books devoted to the art of worm composting.

An excellent place to obtain more information is:

Wiggly Wigglers, Lower Blakemere Farm, Herefordshire HR2 9PX

www.wigglywigglers.co.uk

The Onion Family

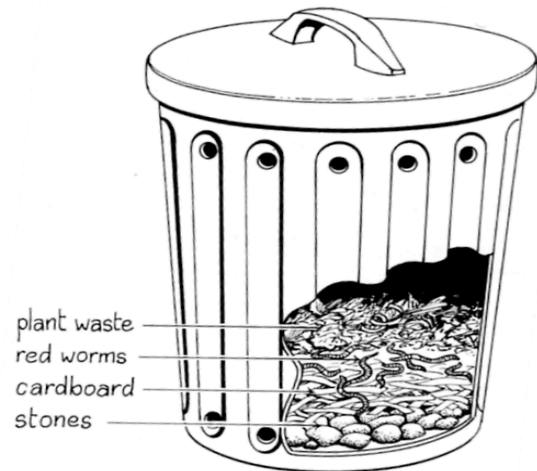
Organic gardeners might grow the following "onion" crops: onion, onion sets, spring onions, pickling onions, leeks, shallots and garlic.

Growing

The onion family needs soil with high fertility containing lots of phosphate. In autumn, after brassicas in the rotation, spread compost on the soil where you plan to grow these crops. Fork the compost in over winter allowing frost to break up the surface soil. This will also encourage birds to seek out pests. Add wood ash in the spring and rake the surface of the onion bed smooth to a fine tilth. Grow onions from seed in potting compost under protection in February/ March. Plant out in the plot in April in rows about one cm deep, 10 cm. apart. The rows want to be about 20 cm apart. Make sure the leaf tips don't droop over and touch the soil. This encourages rot.

August sown Japanese onions should be planted in the same way.

Onion sets are onion seedlings raised in fairly sterile conditions whose growth has been arrested the previous autumn. It makes good sense to grow them on as early as possible. Early onions can avoid the worst of summer



fungal problems. Warm the soil by covering it with agricultural fleece in February. A couple of weeks later, plant the sets in rows about 10-15 cm apart. The rows should be about 15 cm apart. If you want large onions increase the spacing. However large onions often don't store as well as small ones. Cover the sets for a couple of weeks with fleece. This helps prevent birds from pulling the sets up. Remove the fleece as soon as the first green shoots appear. As bulbs begin to develop give the plant a boost with liquid feed etc.

Spring Onions and pickling onions should be sown directly in the soil in rows 10 cm. apart. Thin them to 2 cm apart... eating the thinnings! Then pick and eat them as needed.

Spring onions can be grown in succession from spring onwards. You can sow them in August too and let them over winter. You'll need to keep on top of weeds.

Onion Problems

Growing onions in rotation alongside carrots works well. (The carrots don't need the compost in the previous autumn!). Onion fly maggots are more of a problem with onions grown from seed than sets. Sometimes onions flower and go to seed very quickly (Called "bolting"). Snap the flower stem and pick early then eat. The onion will have a thick stem and will not keep well. Lots of onions with thick stems, is probably a sign of too many nitrates and not enough potassium in the soil. Remember to add wood ash to next year's onion plot.

Onion white rot is a fungal mould. Warm wet weather is a precursor for its arrival. Symptoms are a fluffy mould at the base and roots followed by black spots on the onion skin. Destroy infected onions by burning or in a hot compost heap. Make sure that infected onions don't get into store. You'll lose the lot!

Storing Onions

Harvest the bulbs on a dry sunny summer day. Wear thick gloves and rub off all vestiges of soil. Store in a warm, dry airy location until the foliage is brittle and dry. Snap it off a few centimetres from the bulb. When the roots and remaining stem is really brittle put the onions in string bags and suspend them in a cool, dry airy place. Check regularly for fungal attacks.

Leeks

Leeks are greedy vegetables. Grow your first crop under glass in February. The second crop can be planted in a seed bed in May and can be used as a catch crop after early potatoes. Plant them out when they attain the thickness of a pencil.

Treat the soil as for onions. Smaller leeks have a better texture than giants! So plant your leeks 10-15 cm apart in rows 20 cm apart. Use a dibber to make a hole about 10 cm. deep for each plant. Drop the leek plant into the soil then use water to wash soil onto the roots. This helps to blanch the stem. After six weeks give them a weekly liquid feed. You can increase the blanching by earthing up around the stems. They're in the soil a long time so plan how you are going to weed between the plants. Harvest as you need them. Those that go to seed are inedible.

Problems.

In a good organic garden, leeks should be trouble free. A brown fungal infection aptly called "rust" can affect leeks. Fertile soil and liquid feed are the best defence, but pull up any affected leeks and hot compost or burn them. There is a moth that lays eggs near leeks. The caterpillars can burrow into the plants. Disturbing the soil in winter and encouraging bird predators is a sensible organic defence.

Shallots

Milder flavoured and smaller than main crop onions, shallots are grown from bulbs. Treat the soil as for onions. Plant out in early spring about 15 cm apart with the bulb tips just below the soil. Weed and water but in early summer draw the soil away from the bulbs to help them ripen. Lift when the foliage dies back, dry as onions, and store. You should be able to keep some specimens for the next crop.

Garlic

Garlic is a vegetable that is easy to grow. Treat the soil as for onions. Plant the cloves 15 cm apart in early spring. Keep the soil weed free and harvest like other onions. Make sure you share the food you lace with garlic with all your close friends. Anyone left out will suffer!

