

THE BIODYNAMIC GARDEN - CROP ROTATION

Biodynamics – holistic, sustainable, cosmic

Biodynamic (BD) methods work toward developing the garden as a balanced and sustainable unit - an ecosystem in its own right. Organic practices such as crop rotation, recycling through composts, seaweed/fish/worm juice solutions, and increasing plant and animal biodiversity are practiced. The emphasis is on building soil fertility. The rhythmic influences of the sun, moon, planets and stars are recognised and worked with where possible. BD gardening differs from organics in that specific plant, animal and mineral based preparations are used - the preparations 500 to 508 - in conjunction with these cosmic influences.

Using the sidereal rhythms to plant, schedule and crop rotate.

As discussed earlier, biodynamic calendars refer to these Moon-constellation phases as root days, leaf days, flower days and fruit days, as linked to the respective elements of earth, water, air and fire.

I organise my seed collection to reflect the planting rhythms. I sort and store plants according to the four elements:

Element	Constellation	Plant Part	Examples
EARTH	Taurus (the bull), Virgo (the virgin) Capricorn (the goat)	ROOT	beetroot, carrot, potatoes, turnip, celeriac, garlic, etc
WATER	Pisces (the fish), Cancer (the crab), Scorpio (the scorpion)	LEAF	lettuce, spinach, silverbeet, rhubarb, chives, cabbage, etc
AIR	Gemini (the twins), Libra (the scales), Aquarius (the waterbearer)	FLOWER	sunflower, broccoli, cauliflower, globe artichoke, etc
FIRE	Aries (the ram), Leo (the lion), Sagittarius (the archer)	SEED/FRUIT	tomatoes, beans, pumpkin, peas, wheat, etc

Within these four elements, I then separate into cool season (autumn/winter) and warm season (spring/summer) sowing. So come spring, on a leaf day, I can easily locate those specific seeds in my seedbox; simpler than hunting through lots of packets, jars and containers!

Succession Planting

Succession planting aims to avoid feast and famine (especially famine) in the garden and means you don't plant your whole crop at one single planting, but stagger it through the growing season. Succession planting also spreads the risk of a failure if there is an unforeseen frost, or pest or disease attack, etc.

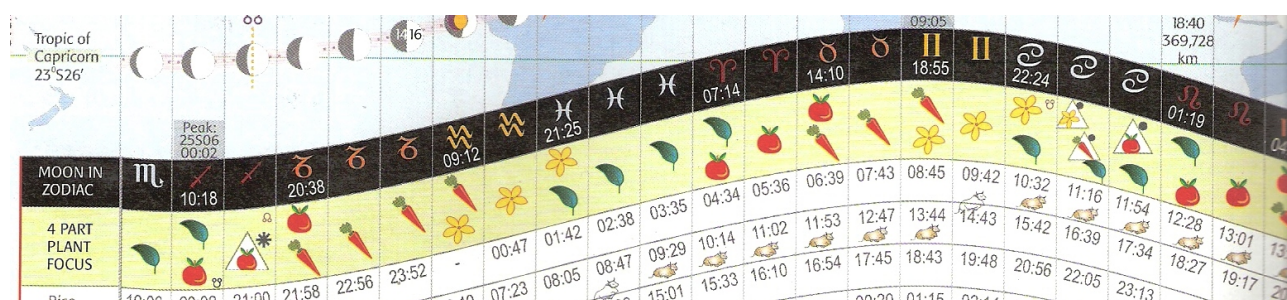
By sowing at intervals, you should also have a progressive harvest. But you need to take into account the conditions - as the weather warms, the interval between sowings will lengthen (plants are growing more quickly) and as it cools, you'll need to sow at closer intervals.

Frosts, soil temperatures, etc will also determine the overall length of growing season for a crop, so you need to work within that. There's only a certain window you can plant beans, for example. You'll also need to work with the plant varieties themselves - seed packets (or their website descriptions) give an estimate of days to harvest for each variety (eg. Scarlet Runner beans take around 70-90 days, whereas Northeaster climbing beans take 56 days) to calculate how many sowings you might get in a season.

It's constant striving to get succession right and be able to feed yourself from the garden year-round. Home gardeners can always preserve the harvest, give gluts to friends and neighbours or swap with other gardeners through produce exchanges, and buy to meet hungry gaps. But for commercial growers, succession planting is important, to meet market demand/supply and gaps, and to meet cash flow needs.

Succession and the Sidereal Rhythms:

The element/constellation system extends to succession planting. Working with the sidereal cycles helps spread out the harvest. For example, by planting my lettuces on every third 'leaf' phase, I can usually avoid a salad glut and still have strong germination and growth.



Crop Rotation

Crop rotation is a key to organic and BD gardening where the focus is on building soil not exhausting it. Every time you harvest from your garden you are removing nutrients, but judicious use of composts as well as plant selection and cultivation will help maintain - and improve - fertility.

If we were to grow the same plant family in the same plot season after season, the soil would soon become exhausted and plants become diseased.

Clever crop rotation can help manage weeds and pests, increase soil fertility (eg using tap-rooted plants to bring up nutrients from deeper in the soil, or legumes to fix nitrogen from the air into plant available N in their root nodules) and soil structure.

First, you need to know what family your crop belongs to:

Family	Crop
Alliaceae/Liliaceae (Alliums)	garlic, leek, onions, shallots, chives, spring onions
Asteraceae/Compositae	chicory, endive, witlof, artichoke, sunflower, lettuce, dandelion
Brassicaeae/Cruciferae (Brassicas)	mustard, mizuna, kale, broccoli, collard, cauliflower, cabbage, brussel sprouts, kohlrabi, chinese cabbage, turnip, rocket, radish
Chenopodiaceae	orach, spinach, quinoa, buckwheat, silverbeet, beetroot
Cucurbitaceae (Cucurbits)	watermelon, rockmelon, cucumber, pumpkin, squash, zucchini, gramma, choko, gourd
Graminae/Poaceae (Grasses)	corn, wheat, lemongrass, rye, oats, barley
leguminosae (Legumes)	chickpea, lentil, runner bean, climbing bean, broad bean, pea, snow pea, snake bean
Solanaceae	capsicum, chilli, tomato, potato, eggplant, pepino
Umbelliferae/Apiaceae	celery, celeriac, dill, chervil, parsnip, coriander, carrot, fennel, parsley

Rules of thumb for crop rotation:

- Never follow a crop with the same crop, nor a plant from the same family
- Allow at least two seasons break between planting the same family/crop in the same bed - some plants may need more of a break, eg. garlic is best given three years break between plantings in the same plot of ground
- Ensure you include a legume crop (usually as a preceding crop) in the rotation
- Follow heavy feeders (eg. corn, cucumber, lettuce) with light feeders (eg beetroot, carrot, garlic, silver beet)
- Always add compost before/as you plant the next crop, especially for heavy feeders
- Always include a green manure crop that you grow for the soil alone and dig it into the soil at peak production (just before flowering) to give beds a rest and to replenish the soil. A good green manure will include a legume (for Nitrogen) and a cereal (for Carbon and organic matter). Adding mustard will help 'biofumigate' the soil (mustard releases chemical compounds to suppress pathogens and pests, such as nematodes, fungi and some weeds)
- Consider the rotation over time as well as space
- Record where you grow crops, and when!
- Crop rotation is not the same as companion planting, but preceding crops can benefit/inhibit following crops (eg Elliot Coleman says chicory/endive raddichio are beneficial to following crops, alliums after legumes don't do as well, carrots and beets can have a detrimental affect on the next crop) It pays to check out local gardening wisdom (and scientific research) on this.

Next, divide your garden or plot up into beds (4 beds is a good start) that you rotate. You could have any number of beds. A simple rotation might be:

	bed 1	bed 2	bed 3	bed 4
<i>autumn/winter yr1</i>	peas (L)	green manure	carrots (U)	broccoli (B)
<i>spring/summer yr1</i>	tomatoes (S)	beans (L)	green manure	carrots (U)
<i>autumn/winter yr2</i>	spinach (C)	potatoes (S)	broccoli (B)	green manure
<i>spring/summer yr2</i>	green manure	beetroot (C)	tomatoes (S)	lettuce (A)

It can be as simple or complex as you like; just follow the rules of thumb.

Crop rotation and the sidereal rhythms

Crop rotations can also be managed using the sidereal cycles, still making sure you keep the families apart. It's good practice to rotate your garden beds through the four signs.

Follow 'flower' crops with 'leaf', 'root' and then 'fruit/seed' crops. Again, follow the rules of thumb. Be sure to apply compost before the 'fire' plants and include a green manure in the rotation. So the basic rotation above could be tweaked as follows:

	bed 1	bed 2	bed 3	bed 4
<i>autumn/winter yr1</i>	peas (L) 'fruit'	kale (B) 'leaf'	green manure	cauli (B) 'flower'
<i>spring/summer yr1</i>	carrot (U) 'root'	beans (L) 'fruit'	lettuce (U) 'leaf'	green manure
<i>autumn/winter yr2</i>	broccoli (B) 'flower'	parsnip (U) 'root'	broadies (L) 'fruit'	spinach (C) 'leaf'
<i>spring/summer yr2</i>	green manure	broccoli (B) 'flower'	beetroot (C) 'root'	tomatoes (S) 'fruit'
<i>autumn/winter yr3</i>	lettuce (U) 'leaf'	green manure	broccoli (B) 'flower'	carrot (U) 'root'

Try using some index cards to play around with rotation ideas. List the crops you want to grow according to their families and elements on each card and then play around with options for plots and seasons ...

More information:

www.astro-calendar.com

www.biodynamicsvictoria.org

www.biodynamics.net.au

www.fourseasonfarm.com

newsteadgarden.wordpress.com

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