Succession Planting: Making the Most Out of Spaces

Succession Planting: Following one crop with another is the most important tool for maximizing a garden's yield. Creating a Succession Plan means fresh food from spring until snowfall.

Key Ideas:

- Plan in advance
- Start more seedlings
- Feed the soil
- Replace old crops quickly with new plants; fill empty beds with crops quickly
- Rotation
- Create a Planting Schedule
- Make a list of vegetables you want to grow
- Determine how many plots or beds you want (visually laying it out in a diagram is helpful)
- Pick early, quick growing crops to plant first, followed by long-season ones

---

Some Key Elements of Succession Planting

- Succession planting in intervals
- Variety selection by season
- Varieties with different days to maturity
- Succession cropping: following one crop with another
- Interplanting or Doubling Up

- Planting suggestions if garden space is limited:
    - Many crops can be planted closer together than most sources recommend

---

Hardiest Crops: plant as soon as the ground is workable

- Scallions, Brassica Greens, Kale, Kohlrabi, Beets, Chard, Spinach, Peas, Carrots, Dill/Cilantro, Parsnip

Cold-Hardy Crops: plant after last chance of heavy frost

- Leeks, Onions, Scallions, Lettuce, Brassica greens, Broccoli, Brussel Sprouts, Cabbage, Cauliflower, Chinese Cabbage, Kale, Kohlrabi, Radish Spring, Rutabaga, Turnip, Beets, Chard, Spinach, Peas, Potatoes, Carrots, Dill, Cilantro, Parsley, Parsnip

Frost Sensitive Crops: plant after last frost date

- Cucumbers, Melons, Squash Summer, Squash Winter, Beans, Corn, Eggplant, Pepper, Potatoes, Tomato, Carrots, Celeriac, Celery, Dill, Cilantro, Fennel, Parsley, Parsnip

Last Succession Planting Date

- **Aug 1** – Scallions, Broccoli, Cauliflower, Beets, Beans, Carrots, Fennel, Parsley
- **Mid-July** – Rutabaga, Cucumbers, Summer Squash
- **Mid-August** – Lettuce, Chinese Cabbage, Kale, Kohlrabi, Radish Winter, Turnip, Chard
- **Sept 1** – Radish Spring, Spinach, Dill, Cilantro
- **Mid-Sept** – Brassica Greens

Best Shade-Tolerant Vegetables

- Arugula
- Asian greens (bok choy, komatsuna and tatsoi)
- Chard
- Culinary herbs: chives, cilantro, garlic chives, golden marjoram, lemon balm, mint, oregano and parsley
- Kale
- Lettuce, Mesclun & Mustard Greens
- Peas and beans
- Root vegetables
- Scallions
- Spinach

*Most crops need at least 2 to 4 hours of sun per day

Interplanting or Doubling Up

- Pairing plants with different maturity rates, for example slow-growing kale and lettuce - lettuce heads will mature before the kale grows big enough to shade or crowd them
- Mixing plants with complimentary growth habits, such as lettuce which has a deep taproot and shallow-rooted scallions, also makes efficient use of space and increases yields - so does planting short crops, such as beets and radishes, along the bottom of a trellis planted with peas, beans or cucumbers

---

Growing Season Information for Hamilton

- Growing Season (Length in Days) = 168 days
- Last Frost Spring = April 29
- First Frost Fall = October 15

Below are examples of succession planting calculations for **crops that require direct seeding as soon as the soil can be worked** (beets, spinach, carrots, radishes, arugula and greens/salad mixes) and for **crops that can be transplanted or directly seeded** (* transplanting can help start seedlings earlier in the spring and allows plants to get ahead of weeds).

See chart.

Crop	Days to Maturity	Planting Frequency	Harvest Date Calculation	Subsequent Harvest Dates
Direct Seeding				
Beets Sow up to 8 weeks before first frost	60 days	14 day intervals	June 5 - Harvest Seeding date: April 6	June 19 – Harvest Seeding date: April 26
Spinach Sow up to 2 weeks before first frost (unless using protected cover)	40 days	7 to 14 day intervals	June 5 - Harvest Seeding date – April 26	June 12, 19 – Harvest Seeding date: May 3, 10

Crop	Days to Maturity	Planting Frequency	Harvest Date Calculation	Subsequent Harvest Dates
Carrots Early spring through mid-July. Plant storage types in mid-July only.	55 days	21 day intervals	June 5 – Harvest Seeding date: April 11	June 26 - Harvest Seeding date: May 2
Arugula Sow up to 1 month before first frost (unless using protected cover)	21 days (baby) 40 days (full size)	14 day intervals	June 5 – Harvest Seeding date: May 15 (baby) April 26 (full size)	Direct seed every 2 weeks throughout summer for continuous harvest
Radishes	30 days	7 day intervals	June 5 – Harvest Seeding date: April 11	Direct seed every 7 days (or adjust depending on demand) throughout summer for continuous harvest
Greens/Salad Mixes	21 days	7 day intervals	June 5 – Harvest Seeding date: May 15	June 12, 19, 26 - Harvest Seeding date: May 22, 29 & June 5
Transplanting				
Lettuce Sow up to 4 weeks before first frost (unless using protected cover)	50 days 30 days in cell or soil blocks	10 day intervals	June 5 – Harvest Transplant: May 16 Seeding date: April 16	June 12, 19 , 26 – Harvest Transplant: May 23, June 2 & June 12 Seeding date: April 23, May 3, & May 13
Bunching Onions/ Scallions	70 days 45 days – cell blocks	14 day intervals	June 5 – Harvest Transplant: May 9 Seeding date: March 25	June 19 & July 3 – Harvest Transplant: May 23 & June 6 Seeding date: April 8, 22

* For seedlings transplanted in early spring or late fall, these days should be adjusted to reflect slower growth of vegetables based on day length and temperature. Add up to 5 to 14 days.

Planting Varieties with Different Days to Maturity for Extended Harvesting

- Most seed companies offer a wide ranging selection of varieties for individual crops and you can usually find details online or by ordering seed catalogues (i.e. **variety description** and **days to maturity**)

Examples of Different Varieties and Maturity Dates:

Carrots	**Days to Maturity**	**Season**
Yaya	58 days	Spring and summer (early)
Nelson	56 days	Spring and summer (early)
Organic Jeannette F1 Hybrid Carrot	65-75 days	Spring and summer (early)
Organic Red Cored Chantenay Carrot	65 days	Spring/summer/fall (main)
Atlas (paris market)	70 days	Spring/summer/fall (main)
Organic Cosmic Purple Carrot, Organic Yellowstone Carrot, Atomic Red	70 days	Spring/summer/fall (main)
Organic Negovia F1 Hybrid Carrot	80 days	Summer/fall
Bolero	75 days	Storage carrot

Broccoli	**Days to Maturity**	**Season**
Organic Waltham 29 Broccoli	80 – 85 days	Transplant – summer Harvest - fall
Organic Belstar F1 Hybrid Broccoli	65 – 70 days	broccoli for spring, summer and fall crops
Organic Fiesta F1 Hybrid Broccoli	75 days	Late summer/fall
Organic Batavia F1 Hybrid Broccoli	60 days	Spring and fall

Cauliflower	**Days to Maturity**	**Season**
Edith F1 Cauliflower	68 days	Spring and fall harvest
Snow Crown	50 days	Transplant – spring
Denali	73 days	Transplant – summer/fall
Organic Skywalker F1 Hybrid Cauliflower	75 – 80 days	Transplant - summer

---

Succession Planting by Variety Selection and Season

Lettuce	**Variety**	**Days to Maturity**	**Season**
Organic Green Romaine	Organic Jericho Lettuce	28 days baby 57 days full size	Heat tolerant for summer harvests
Organic Green Romaine	Organic Green Towers Lettuce	60 days	All seasons
Red Butterhead	Red Cross	48 days	spring, summer and fall
Red Romaine	Organic Rhazes	42 days	spring and fall
Green Leaf	Green Star	53 days	summer and early fall
Organic Red Oak Leaf	Organic Oscarde Lettuce	55 days	cool seasons
Organic Green Oak Leaf Lettuce	Organic Emerald Oak Lettuce	60 days	cool seasons

Spinach	**Variety**	**Days to Maturity**	**Season**
	Space	39 days	Sow in spring Harvest in summer
	Emperor	35 days	Sow mid-summer/fall Harvest fall/winter
	Tyee	40 days	Sow spring/summer/fall Harvest summer/fall/winter/early spring
	Racoon	36 days	Sow late summer Harvest fall/winter/early spring
Broccoli	**Variety**	**Days to Maturity**	**Season**
	Gypsy	58 days	Transplant in spring Harvest in summer
	Belstar	66 days	Transplant spring/summer Harvest summer/fall
	Arcadia	63 days	Transplant - summer Harvest - fall/winter
Cauliflower	**Variety**	**Days to Maturity**	**Season**
	Snow Crown	50 days	Transplant- spring Harvest - summer
	Amazing	68 days	Transplant- summer Harvest - fall
	Denali	73 days	Transplant- summer/fall Harvest – fall/winter
Potatoes	**Variety**	**Days to Maturity**	**Season**
	Red Gold, Norland (red)		Early
	Yukon Gold, Adirondack blue		Early Midseason
	Gold Rush		Midseason
	French Fingerling		Late Midseason
	Russian Banana		Late

Reference Chart & General Overview: List of Popular Crops and Useful Information for Succession Planting Planning

Crop	**Family**	**Days to Maturity**	**Number of Days in Soil or Cell Blocks**	**Planting Frequency**	**Crop Planting/ Hardiness**	**Sun or Shade**	**Additional Info**
Arugula	Brassica	35 days	Direct seeding	14 day intervals	Hardy in cool weather	Full sun/ Part shade	Tolerates frost. Great for succession planting. Tolerates low fertility.

Crop	Family	Days to Maturity	Number of Days in Soil or Cell Blocks	Planting Frequency	Crop Planting/ Hardiness	Sun or Shade	Additional Info
Asian Greens	Brassica	40 days	Direct seeding	10 day intervals	Tolerates light frost	Full sun/ Partial shade	Benefits from some shading in hot weather. Continues to produce for several weeks from one planting.
Garlic	Alliums	Plant mid Oct – mid Nov	Direct seeding	Once	Hardy	Full Sun	Harvest scapes mid- June and bulbs between mid-July – mid-Aug
Eggplant	Solanacea	100 days	50 days	Once	Frost sensitive	Full Sun	Plenty of space - in raised beds or containers
Basil	Labiatea	60 days	25 days	2 – 4 week intervals	Frost sensitive	Full sun	Basil does not store well in fridge
Beets	Chenopods	60 days	25 days	2 – 4 week intervals	Frost tolerant	Full sun/ partial shade	Container: short rooted varieties work best
Swiss Chard	Chenopods	60 days	30 days	2 – 4 week Intervals	Tolerates moderate frost	Full sun/part shade	Prefers full sun early in the season, part shade in late summer
Kale	Brassica	60 days	30 days	2 – 4 week Intervals	Tolerates frost	Full sun in spring and fall, but can benefit from light shade during hot weather	Good for edible landscaping
Broccoli	Brassica	75 days	30 days	2 – 4 week intervals	Tolerates frost	Full sun. Can tolerate shade but will mature slowly	Edible landscaping - romanesco varieties are especially well-suited for ornamental plantings
Celery	Umbel	100 + days	70 days	Once	Will tolerate light frost, but can be damaged by moderate frost	Full sun (preferred) / Part shade	Prefers full sun, can tolerate shade
Celeriac	Umbel	140 days	45 days	Once	More frost tolerant than celery	Prefers full sun	

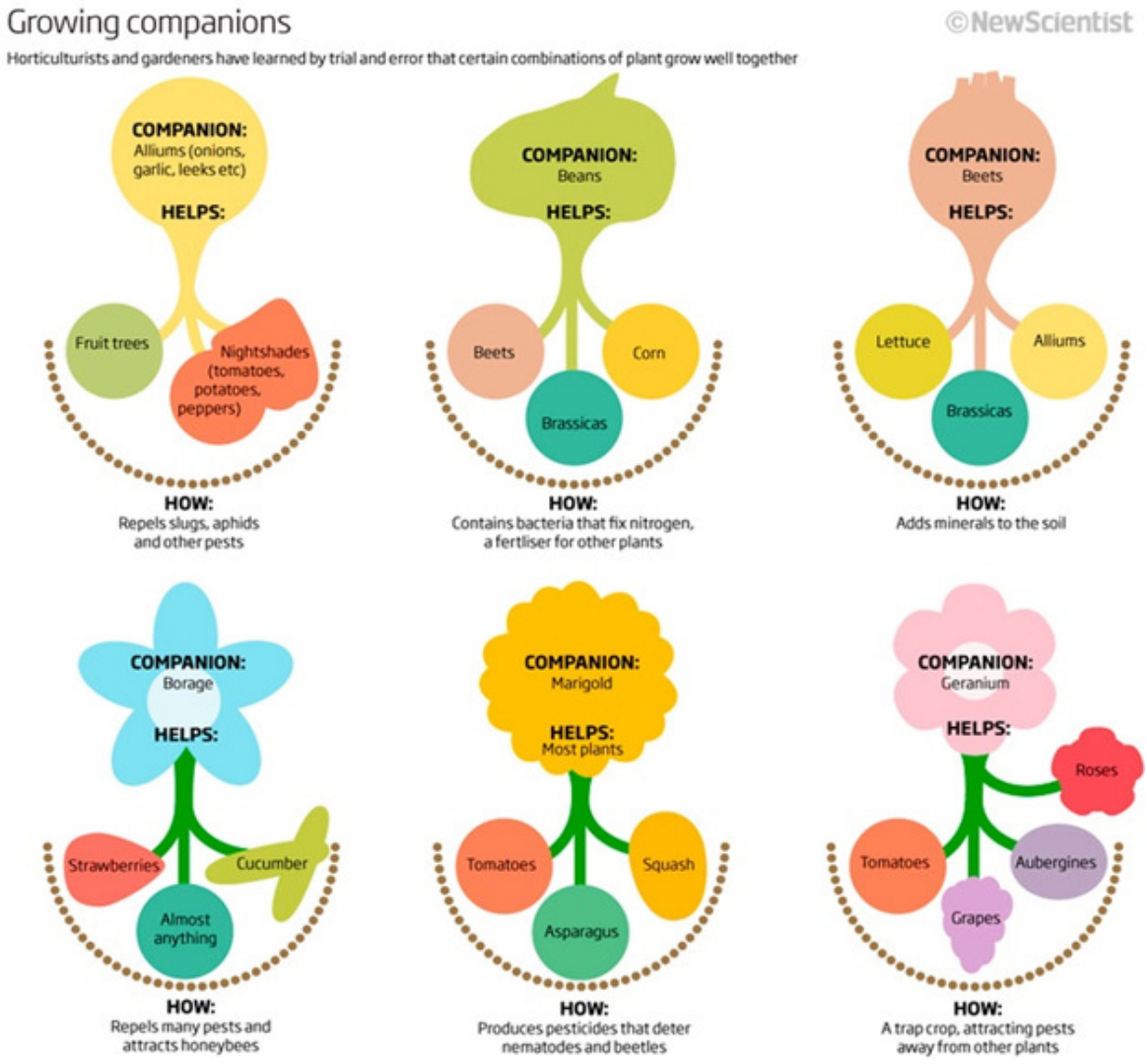
Crop	Family	Days to Maturity	Number of Days in Soil or Cell Blocks	Planting Frequency	Crop Planting/ Hardiness	Sun or Shade	Additional Info
Ground Cherries	Solanacea	110 days	70 days	Once	Frost sensitive	Sun	Raised beds are best, especially in heavy clay soils because the plants need good drainage
Chinese Cabbage	Brassica	80 days	30 days	2 – 4 week intervals	Hardy crop. Plant after last chance of heavy frost (resists light frost)		Spring crops may bolt prematurely if young plants are exposed to frost or a week of night time temperatures below 10 C
Cauliflower	Brassica	75 days	30 days	2 – 4 week intervals Last succession Planting Aug 1	Use varieties best suited for climate and season. Some are cold hardy and others frost sensitive.	Full sun. Can tolerate shade but will slow maturity. Light shade can be beneficial in warm weather.	In addition to tying heads to blanch white-headed varieties, requires good soil, timely planting and protection from pests are required.
Brussel Sprouts	Brassica	90 - 100 days	30 days	Once	Cold hardy and frost sensitive varieties. Plant after last heavy frost and harvest after frost.	Full sun - can tolerate light shade but will mature slowly.	Brussels sprouts are exceptionally rich in protein, dietary fiber, vitamins, minerals, and antioxidants. Grow in irrigated, fertile soil. Frost improves flavor.
Cucumbers	Cucurbits	50 days	15 days	21 day intervals	Frost sensitive	Full sun	Relatively easy to grow- provide good soil and plenty of moisture. Outdoor containers - use bush varieties and keep well watered.
Squash Summer	Cucurbits	50 days	15 days	30 day intervals	Frost sensitive	Full sun	Highly fertile soil and well drained. Edible flowers.
Squash Winter	Cucurbits	100 days	15 days	30 day intervals	Susceptible to frost and heat damage	Full sun	Direct seeding or transplanted. Most varieties grow vines that spread 6 feet or more. If space is tight, choose smaller or semi-bush varieties. Flowers are edible.

Crop	Family	Days to Maturity	Number of Days in Soil or Cell Blocks	Planting Frequency	Crop Planting/ Hardiness	Sun or Shade	Additional Info
Spinach	Chenopods	40 days	Direct seeding	7 day intervals	Cool hardy and frost sensitive - depending on varieties	Full sun/ Part shade	Needs consistent moisture, and well-drained and fertile soil. Will go to seed if too dry, or when days lengthen and temperatures warm. Use heat tolerant variety in summer.
Fennel	Umbel	80 days	30 days	2 – 4 week Intervals	Sensitive to frost	Sun	Direct seed mid-spring through early summer. Adequate irrigation and well-drained soil.
Beans	Fab	55 days	Direct seeding	10 day intervals	Frost sensitive	Full sun. Can tolerate partial shade, but will reduce yield.	Edible landscaping
Lettuce	Aster	50 days	30 days	10 day intervals	Adaptable to many growing conditions, but likes it cool	Yields best in full sun- part shade when it's hot.	Heat-tolerate varieties for long and hot summer days. Will withstand light frost.
Melon	Cucurbits	80 days	15 days	21 day intervals	Frost sensitive	Full sun	Choose short-season varieties (in cooler regions), warm soil with black plastic and protect young plants with fabric row covers.
Turnip	Brassica	40 days	Direct seeding	2-4 week intervals	Hardy crop	Full sun Part shade	Flavors are best if harvest when cool. Greens can be eaten raw or cooked.
Onion	Alliums	120 days	50 days	Once	Hardy crop - tolerates frost	Full sun	Requires well-drained soil and high fertility.
Scallion/ Bunching Onion	Alliums	75 days	45 days	2-4 week intervals	Hardy crop - tolerates frost	Full sun	Great for succession planting
Leeks	Alliums	120 days	65 days	Once	Hardy	Full sun/ Part shade	You can plant several varieties of leeks with different maturity dates at the same time and harvest in succession
Peas	Fab	55 days	Direct seeding	10 day intervals	Hardy crop	Yields best in full sun	Grow best during spring and early summer
Pepper	Solanacea	120 days	60 days	Once	Frost sensitive	Full sun	For early growth - choose the right variety, start in greenhouse, use black plastic or row covers.

Crop	Family	Days to Maturity	Number of Days in Soil or Cell Blocks	Planting Frequency	Crop Planting/ Hardiness	Sun or Shade	Additional Info
Radish	Brassica	30 days	Direct seeding	7 day intervals	Hardy crop	Yields best in full sun	Make plantings of cool-season spring radishes every week or two for a continuous harvest until hot weather hits.
Tomato	Solanacea	120 days	60 days	Once	Frost sensitive	Full sun	Tomatoes need at least 8 hours of direct sun daily. Containers – small determinate or miniature varieties work best.

*Factor in more or less days of maturity for early spring/fall and direct seeding. For example, Brassica from cool weather, spring transplanting. Subtract 10 – 14 days for late spring or early summer, warm weather transplanting. Add about 14 days for direct seeding.

Companion Planting can be useful in limited spaces.



Succession Planting – Succession Cropping: Following One Crop with Another

* Tool for maximizing a garden's yield

Harvest	Plant After…
Artichoke, globe	Green bean, pea
Broad bean, fava bean	Brussels sprouts, late spring cabbage,corn, squash, kale, cardoon
Bush green or snap bean	Main lettuce, endive, summer and winter spinach, kohlrabi, parsley
Pole green or snap bean (longer cropping season than bush bean)	Cauliflower, autumn sown cabbage
Beet	Broad, bush or pole green or snap bean, kale, pepper, chicory
Broccoli	Celery, leek, maincrop potato, corn, kohlrabi, tomato, sunchoke
Brussels sprouts	Early and second early potatoes, beet, celery, leek, mint, shallot, sunchoke
Cabbage (spring harvest)	Radish, beet, kohlrabi, onion
Cabbage (autumn harvest)	Early potatoes, cucumber, radish, pepper, celeriac, chives, squash, sunflower
Carrot	Bush or pole beans, autumn harvest cabbage
Cauliflower	Pea, maincrop potato, summer spinach, rutabaga
Celeriac	Broad bean
Celery	Garlic, mint, onion, shallot, savory
Chicory	Broad bean, Brussels sprouts, carrot
Chives	Broad or green bean, spring harvest cabbage, endive, corn, lettuce
Corn (sweet)	Autumn harvest cabbage, pea, kohlrabi, lettuce, New Zealand spinach
Cucumber	Maincrop potato, onion, pea, autumn harvest cabbage, carrot
Garlic	Broad or green snap bean, kale, cauliflower, broccoli, autumn harvest cabbage
Kale	Broad bean, pepper, early potato, carrot, rhubarb, celeriac
Kohlrabi	Pea, summer and winter spinach, broad bean, autumn harvest cabbage
Leek	Tomato, green bush or pole bean, cucumber
Lentil	Corn, cauliflower, corn salad, endive, kohlrabi, onion, radish
Lettuce	Potato, celery, leek
New Zealand spinach	Maincrop potatoes, corn, autumn harvest cabbage, Brussels sprouts
Onion	Spring harvest cabbage
Parsnip	Kale, broad bean, pepper, rhubarb, sunflower
Peas	Brussels sprouts, celery, spring harvest cabbage, autumn harvest cabbage, carrot, turnip, tomato, autumn harvest cauliflower, cucumber, squash, autumn-sown onions, winter spinach, leek
Pepper	Lettuce onion, radish, winter spinach
Potato (early)	Spring harvest cabbage, Brussels sprouts, strawberries, tomato
Potato (second early)	Kale, cabbage, savoy, pea
Potato (maincrop)	Sprouting broccoli, spring harvest cabbage

Harvest	Plant After…
Rutabaga	Broad bean
Spinach	Celery, second early potato, onion, tomato
Squash	Tomato, spinach, parsley, kohlrabi, chervil, cauliflower
Sunflower	Cabbage, winter squash
Tomato	Onion, green bean, radish, lettuce, pea, beet, autumn harvest cabbage,
Turnip	Pea, green bean

Useful Links

http://gardenplanner.motherearthnews.com/

http://www.motherearthnews.com/crop-guide-growing-organic-vegetables-fruits-zl0z1211zsto.aspx

http://www.motherearthnews.com/organic-gardening/shade-tolerant-vegetables-zm0z11zsto.aspx

http://www.themarketgardener.com/product/market-gardener/

http://www.gardening.cornell.edu/homegardening/sceneb771.html

http://www.johnnyseeds.com/t-spinachprogram.aspx?source=lettucepp

http://www.johnnyseeds.com/t-planting_programs.aspx?source=spinpp

> Johnny's Planting Programs are designed to take the guesswork out of succession planting, allowing you to easily extend your harvest throughout the growing season.

http://www.greencityacres.com/

> Spin - Small Plot Intensive Farming. If you've never heard about spin farming I recommend looking into it! Use of small spaces and quick turn over for continuous harvest. Effective use of space.

Luc Loiselle

loiselle.luc@gmail.com