

Companion Planting: So Happy Together!

by Kelle Carter

Each season on our Research Farm we grow every herb, flower, and vegetable offered in our catalog; in addition, we perform field trials of potential new introductions or quality checks. This adds up to a total of nearly 1,200 different varieties, a smorgasbord of biodiversity! Of course many of you do not have the space or the time to grow at this level of multiplicity (even though that pile of catalogs with dog-eared pages seems to suggest otherwise). No matter how much space you have, be it a deck with containers or a small garden plot, there is nothing more important in organic gardening than diversity.

Many people think of organic gardening as growing without the use of pesticides or herbicides. This is obviously a fundamental part of organics, however, what many do not understand is that it is more than simply a switch from conventional chemicals to OMRI approved materials. Organic gardening is composed of numerous aspects that make up a whole interconnected system. This system relies upon insects, birds, shade, sun, and all other aspects of a living and working community. By growing numerous types of crops you create habitats for beneficial insects or animals, deter problem pests, and enrich your soil to create a living ecosystem of beneficial bacteria and helpful fungi.

Companion planting is not a new idea to the gardening world. There is evidence of farmers using these same techniques dating back to ancient Roman times. Many people are familiar with the idea of planting the "Three Sisters," a Native American technique that combines corn, squash, and beans. These are time-tested planting methods that some dismiss as old wives tales. They would rather plant in organized, monoculture plots that tend to have the same appearance as different color cars parked in a mall parking lot.

By planting only one crop or separating crop by type, you are actually creating a situation that requires a dependence on pesticides or herbicides, organic or not. If you examine a wooded forest lot or a marsh that has not been infringed upon by humans, you will see an interrelated system that works in natural harmony within itself. There are bugs that feed the birds, small mammals that maintain a manageable level of ground growth, and larger mammals that manage the level of smaller ones; the system requires no external inputs. This is the type of environment that can be created in one's garden space, making it harmonious for the birds and the bees, while providing a peaceful retreat for family and friends to enjoy.

A companion planting plan integrates Mother Nature's traits as well as your choice of crops. Some underlying techniques in companion planting include:

Mix up monocrops. If you want to grow a lot of one crop (tomatoes seem to be the choice in many gardens), plant several small plots in various areas of your garden and mix the crop with one other vegetable or flower.

Interplant herbs and flowers. By planting flowers and herbs among your vegetables, you can attract beneficial insects and birds, which are natural predators to those pests that eat your brassica leaves. Flowers and herbs can also confuse pests and deter them from finding your prize crop.

Provide refuge for beneficials. Create habitats in your garden for creatures that prey on those pesky ones. Such beneficials include toads, lizards, snakes, birds and various insects. These organisms need food, water, shelter and breeding grounds in order to find a happy home in your garden. Groundcovers, hedgerows, rock piles, and perennial plants provide needed shelter. Birdbaths and bird feeders also encourage necessary critters.

Use organic pesticides as the last resort. Many of the OMRI approved chemicals may be safer; however, they still have some toxic residues that can harm the natural balance in your garden. They work very well at killing the pests, but they can also harm helpful insects like butterflies and bees.

Know your weeds. Identify the weeds and wildflowers that pop up in your garden space and learn which ones attract native beneficial organisms. It is okay to leave a few of them growing in your garden (as long as you do not let them go to seed).

Although there is limited scientific "research" regarding companion planting, there is evidence from gardening experiments and scientific studies that shows potential benefits from this technique. These benefits include:

- * Hiding or masking a crop from pests,
- * Producing odors that deter or confuse pests,
- * Providing trap crops which draw pest insects away from other plants,
- * Acting as nurse plants that provide breeding grounds for beneficial insects,
- * Providing food to sustain beneficial insects as they search out their prey,
- * Creating a habitat for favorable creatures.

There are hundreds of ideas and companion planting schemes to be tried and tested in your garden. Refer to the chart provided by The Encyclopedia of Organic Gardening for an abundance of ideas to try. Below are some companion crops that can help you strive for organic greatness:

Marigolds: These reseeding annual flowers have a distinctive smell that is even apparent to our noses. This stench can deter pests because they typically find it unappealing. Plant them very thickly throughout vegetable plots. Our French Brocade Marigold has the added benefit of nematode suppression because its roots emit a substance that repels nematodes in the immediate area.

Mints: The odoriferous members of this family, especially catnip, help to repel aphids and cabbage pests. Be advised that certain mints can grow out of control and take over a garden space. To make sure you do not start a new problem by fixing an old one, you can grow mints in containers and place around your garden. Another trick is to remove both ends of a coffee can and plant the mint into the can to restrain the roots and force them to grow down rather than out.

Rue: This plant deters Japanese beetles. Grow as a garden border or scatter rue leaf clippings in an infested area. Be careful: Rue causes a poison ivy-like rash for some people, so wear gloves.

Sweet Basil: This herb is a must for any garden. Grow among vegetables to repel aphids, mites, and mosquitoes. Basil acts as a fungicide and can slow the growth of milkweed bugs.

Plant	Companion(s) and Effects
<i>Asparagus</i>	Tomatoes, parsley, basil
<i>Basil</i>	Tomatoes (improves growth & flavor); said to dislike rue; repels flies & mosquitoes
<i>Bean</i>	Potatoes, carrots, cucumbers, cauliflower, cabbage, summer savory, most other veggies & herbs
<i>Bean (bush)</i>	Sunflowers (beans like partial shade, unless you live up north, sunflowers attract birds & bees for pollination), cucumbers (combination of heavy and light feeders), potatoes, corn, celery, summer savory
<i>Bee Balm</i>	Tomatoes (improves growth & flavor).
<i>Beet</i>	Onions, kohlrabi
<i>Borage</i>	Tomatoes (attracts bees, deters tomato worm, improves growth & flavor), squash, strawberries
<i>Cabbage Family (broccoli, brussels sprouts, cabbage, cauliflower, kale, kohlrabi)</i>	Potatoes, celery, dill, chamomile, sage, thyme, mint, pennyroyal, rosemary, lavender, beets, onions; aromatic plants deter cabbage worms
<i>Caraway</i>	Loosens soil; plant here and there
<i>Carrot</i>	Peas, lettuce, chives, onions, leeks, rosemary, sage, tomatoes
<i>Catnip</i>	Plant in borders; protects against flea beetles
<i>Celery</i>	Leeks, tomatoes, bush beans, cauliflower, cabbage
<i>Chamomile</i>	Cabbage, onions
<i>Chervil</i>	Radishes (improves growth & flavor)
<i>Chive</i>	Carrots; plant around base of fruit trees to discourage insects from climbing trunk
<i>Corn</i>	Potatoes, peas, beans, cucumbers, pumpkin, squash
<i>Cucumber</i>	Beans, corn, peas, radishes, sunflowers
<i>Dead Nettle</i>	Potatoes (deters potato bugs)
<i>Dill</i>	Cabbage (improves growth & health), carrots
<i>Eggplant</i>	Beans
<i>Fennel</i>	Most plants are supposed to dislike it.
<i>Flax</i>	Carrots, potatoes

<i>Garlic</i>	Roses & raspberries (deters Japanese beetle); with herbs to enhance their production of essential oils; plant liberally throughout garden to deter pests
<i>Horseradish</i>	Potatoes (deters potato beetle); around plum trees to discourage curculios
<i>Hyssop</i>	Cabbage (deters cabbage moths), grapes; keep away from radishes
<i>Lamb's Quarters</i>	Nutritious edible weeds; allow to grow in modest amounts in the corn
<i>Leek</i>	Onions, celery, carrots
<i>Lemon Balm</i>	Here and there in the garden
<i>Marigold</i>	The workhorse of pest deterrents; keeps soil free of nematodes; discourages many insects; plant freely throughout the garden.
<i>Marjoram</i>	Here and there in the garden
<i>Mint</i>	Cabbage family; tomatoes; deters cabbage moth
<i>Nasturtium</i>	Tomatoes, radish, cabbage, cucumbers; plant under fruit trees; deters aphids & pests of curcurbits
<i>Onion</i>	Beets, strawberries, tomato, lettuce (protects against slugs), beans (protects against ants), summer savory
<i>Parsley</i>	Tomato, asparagus
<i>Pea</i>	Squash (when squash follows peas up trellis), plus grows well with almost any vegetable; adds nitrogen to the soil
<i>Petunia</i>	Protects beans; beneficial throughout garden
<i>Potato</i>	Horseradish, beans, corn, cabbage, marigold, limas, eggplant (as a trap crop for potato beetle)
<i>Pot Marigold</i>	Helps tomato, but plant throughout garden as deterrent to asparagus beetle, tomato worm & many other garden pests
<i>Pumpkin</i>	Corn
<i>Radish</i>	Peas, nasturtium, lettuce, cucumbers; a general aid in repelling insects
<i>Rosemary</i>	Carrots, beans, cabbage, sage; deters cabbage moth, bean beetles & carrot fly
<i>Rue</i>	Roses & raspberries; deters Japanese beetle; keep away from basil
<i>Sage</i>	Rosemary, carrots, cabbage, peas, beans; deters some insects

<i>Soybean</i>	Grows with anything; helps everything
<i>Spinach</i>	Strawberries
<i>Squash</i>	Nasturtium, corn
<i>Strawberry</i>	Bush beans, spinach, borage, lettuce (as a border)
<i>Summer Savory</i>	Beans, onions; deters bean beetles
<i>Sunflower</i>	Cucumber
<i>Tansy</i>	Plant under fruit trees; deters pests of roses & raspberries; deters flying insects, also Japanese beetles, striped cucumber beetles, squash bugs; deters ants
<i>Tarragon</i>	Good throughout garden
<i>Thyme</i>	Here and there in garden; deters cabbage worm
<i>Tomato</i>	Chives, onion, parsley, asparagus, marigold, nasturtium, carrot, limas
<i>Valerian</i>	Good anywhere in garden
<i>Wormwood</i>	As a border, keeps animals from the garden
<i>Yarrow</i>	Plant along borders, near paths, near aromatic herbs; enhances essential oil production of herbs

Companion planting, like many other aspects of gardening, is an art that can be polished and refined each season. Check out [Great Garden Companions](#) by Sally Jean Cunningham for an easy-to-use, practical gardening reference book with a plethora of information, from techniques for beginning your first garden to the complexities of insect and plant relationships. Also see [Carrots Love Tomatoes](#) by Louise Riotte, a classic guide to companion planting, in print for over twenty-five years. There are unlimited choices and an abundance of crop pairs that can assist you in finding that perfect balance of life in the living ecosystem that is your garden.

Have fun and don't be afraid to mix apples with oranges.

Kelle Carter
Field Coordinator
Seeds of Change

Resources:

Cunningham, Sally Jean. 2000. *Great Garden Companions*. Emmaus, Pa.: Rodale Press.

Ellis, Barbara W., and Fern Marshall Bradley. 1992. *The Organic Gardener's Handbook of Natural Insect and Disease Control: A Complete Problem-Solving Guide to Keeping Your Garden & Yard Healthy Without Chemicals*. Emmaus, Pa.: Rodale Press.

Rodale, J.I., ed. 1978. *The Encyclopedia of Organic Gardening*. Emmaus, Pa.: Rodale Press.

Succession Planting (or "Don't Stop Now") - Part 2

by Steve Peters

Memorial Day weekend has come and gone, and homeowners throughout North America have followed a time-honored tradition. Over these hallowed three days, gardens are duly planted, and then often ignored (except for weeding, of course!) until early August, when the harvest season commences. In fact, as we gardeners know, the gardening season never stops, and we all have favorite strategies to get our plants in early to maximize the season. But let's not forget that there are many opportunities later in the summer to continue planting all kinds of crops and reaping those harvests for many months to come.

It is true that summer annuals (crops sensitive to frost) requiring 100 or more days to maturity have a limited planting window that ends, for the most part, by mid- to late June—summer solstice time, if your first fall frost date is some time in October. This would include all tomatoes, peppers, and eggplant (all from transplants), melons, and most corn, bean, squash and pumpkin varieties. Almost all other vegetables, however, have extended planting seasons that, in some crops, can last all summer long. For successful production, the most important factors to remember are: 1) your first average fall frost date, 2) days to maturity (from direct seeding or transplanting) of the specific variety you are sowing, and 3) whether the plant is frost-tender or frost-tolerant. In addition, as the summer progresses toward mid- or late August, the day length begins to shorten noticeably, and the number of useful daylight hours for ripening a plant also lessens. For example, lettuce planted in mid-May may require 55 days to form a full head, but that same lettuce variety planted in mid-August may require 70 days to form a full head, because there are many less hours of effective sunlight in September and October compared to June and July.

The following is an approximate guide for planting opportunities after the summer solstice (June 21) for our common garden vegetables, if the average first frost date is mid-October. Adjust accordingly for earlier or later first frost dates in your area.

Last Planting: Early to Mid-July

Bush Beans - many varieties are ready in 50–60 days and can be planted until mid-July; late plantings avoid the ravages of the Mexican Bean Beetle

Broccoli - direct seed into a well-prepared nursery bed, and then transplant throughout the garden when seedlings are 4–6 weeks old

Cabbage - same as broccoli; however, varieties over 90 days to maturity may not reach full maturity if planted in July

Chinese Cabbage - same as broccoli

Cauliflower - same as broccoli

Corn - plant only varieties such as Hookers or Triple Play that mature in 60–70 days.

Cucumber - the longest maturing varieties require 75 days

Chicory - leaves can be harvested in 60–70 days, or roots can be harvested in 100 or more days

Okra - loves the heat, and matures quickly

Leeks - from transplants

Radicchio - same as chicory

Rutabaga - a cold-hardy root that requires a fairly long, cool season for best results

Summer Squash - great for quickly filling in empty spots in a mid-summer garden

Last Planting: Late July–Early August

Carrot - varieties requiring 80–100 days to reach full maturity, eg. Kurota Chantenay, Japanese Imperial Long, Scarlet Keeper, and St. Valery, may not reach full size if planted at this time

Chard - can be planted even later but yields will decline

Collard - same as broccoli above

Kale - same as broccoli

Pea - a narrow planting window of opportunity for producing a fall crop

Last Planting: Mid–Late August

Beet - if grown with protection such as a cloche or hoop house, can be planted well into the fall season

Beetberry - vigorous cool-season re-seeder produces tasty spinach-like leaves and mildly sweet berries

Broccoli Raab - same as broccoli above

Endive - wait until the end of August as soil temperatures begin cooling, and keep soil moist for best germination results

Lettuce - plant every three weeks throughout the summer for continual harvests; can be planted in September but yields decline significantly

Mustard - sow in nursery bed and then transplant throughout the garden

Orach - germinates in warm soils but thrives in cool weather

Purslane - can be planted all summer when soil temperatures are warm

Spinach - planting at this time produces tasty greens in October

Turnip - fall roots are extra sweet

Last Planting: Early–Mid September

Arugula - versatile, quick green that will re-seed and emerge early the following spring

Cress - rapid-growing green that can be planted throughout the winter if grown under cloches or a hoop house

Huazontle - tasty, vigorous green related to lambsquarter (Chenopod family) that also produces nutritious seeds if planted earlier

Komatsuna - quick-maturing Asian green that can be planted in nursery bed and transplanted like other brassicas (broccoli, kale, etc.)

Onion - in climates with minimum winter temperatures above 10° F (Zone 8 and warmer), short–mid day length-adapted varieties such as Riverside and Valencia can be planted throughout the southern U.S; long day length-adapted varieties such as Siskiyou Sweet can be planted in western Oregon and Washington

Radish - quick-growing roots have milder flavor in cool soils

Spinach - planting at this time produces small plants in the fall that go dormant during the winter and resume growing in early spring; harvest begins in late March, assuring continual production throughout the spring

Most of the common summer annual flowers that require warm soil temperatures for germination can still be planted until the end of June. When planted late, however, the bloom season is limited to the last few weeks before the fall frosts. These species would include Amaranth, Celosia, Coreopsis, Cosmos, Daisies, Marigolds, Morning Glories, Strawflowers, Sunflowers, and Zinnias.

In a climate where the minimum winter temperatures are above 0° F (Zone 7 or warmer), many annual flowers that are particularly cold-hardy may be planted during the last month of summer (August 20–September 20). Some species, notably Larkspur, Bachelor Buttons, and Nigella, will even overwinter in Zone 5. These plants will begin growing during the fall, stop growing during the winter, and resume growth the following spring as soil temperatures rise. It is recommended to cover the young plants with straw or leaf mulch during the winter, although this may be unnecessary if winter conditions are mild.

The most reliable and well-known flower species that can be planted during late summer for early blooms during the subsequent spring include Bachelor Buttons, Calendula, Flax, Larkspur, Nigella, Snapdragon (actually a biennial or short-term perennial in very mild-winter regions), and Sweet Pea. Other species that may over-winter successfully if conditions

are favorable, although not as reliably as the previously-listed species include Alyssum, Agrostemma, Borage, Cleome, Lavatera, and Scabiosa.

There are also a few annual or biennial herbs that are quite winter-hardy and can be late-summer planted and will survive the winter in regions in Zone 7 or warmer. These herbs include Cilantro, Dill, Fennel, and Parsley. It is worth trying these in colder climates too, especially if you have protected microclimates in your garden. A south-facing wall or even a boulder to hold the sun's warmth can make a difference.

Another opportunity for summer planting involves most of the perennial flowers. These plants are typically started in greenhouses during the winter. Those of us without a greenhouse, however, can prepare a nursery bed in our garden specifically for direct seeding of perennials during the summer. It is important to keep the bed free of weeds, as most perennials are very slow growing and are not competitive with fast-growing annual weeds. Be sure that your nursery bed has adequate irrigation and has at least average fertility. Plant your perennial seed at least ten weeks before the first fall frost to allow for the plants to become established before the onset of winter. The following summer, when the plants are one year old, it will be time to move these plants from the nursery bed to their permanent location in the garden. The most common perennial flower species that would be suitable for this type of propagation would include Anthemis, Bergamot, Campanula, Columbine, Shasta Daisy, Delphinium, Echinacea (requires 60–90 day cold stratification for germination), Foxglove, Gaillardia, Hollyhock (actually a biennial), Lobelia, Penstemon, Pinks (Dianthus), Evening Primrose, Rudbeckia, Salvia (many species), Snapdragon, and Yarrow (Achillea).

Planting seeds throughout the summer means that we can enjoy a bountiful harvest for a much longer time, but it also is significant in other ways. As gardeners, we are often limited for space, so it is important to maximize every square foot of available soil area. In essence we are trying to capture the greatest amount of solar energy possible in the space available to us. The best way to do this is to have 100% coverage of your garden's surface area at all times. From the information above, it should be clear that there are many plants that continue to grow and thrive throughout the summer and fall and early spring seasons. By growing different species together, no soil surface is left bare. This maximizes soil cover, intensifies soil biological activity and above-ground insect activity, and increases overall plant yields. Of course, it is essential to maintain fertility in such an intensive system, so keep that compost pile going!

The following are examples of crops growing together simultaneously for at least part of their life cycle:

Sowing buckwheat between tomato plants keeps weeds suppressed, adds carbon to the soil, and improves soil structure. The buckwheat can be mowed with a Kama (hand sickle) before it competes with the tomatoes and left as mulch. This technique also works well with squashes and cucumbers, which have lots of bare soil around them as they develop. If you use floating row cover to control pests, the buckwheat can actually lift the row cover off the plants. Remove the row cover when the squash flowers and again, cut the buckwheat and leave as a mulch.

Transplanting lettuce into a stand of broccoli (or other brassicas such as kale or cauliflower) maximizes available garden space of two species that have different plant

architectures but similar growing requirements. The lettuce is harvested as the brassica plants fill in, having acted as a living mulch to suppress weeds and hold soil moisture. The brassica plants also provide a little protection for the lettuce as it develops.

Planting radishes and carrots together allows for an early harvest of radishes followed by a later carrot harvest. The radishes also help to mark the slower germinating carrot rows so an early cultivation can be done before the carrots emerge.

There are many more examples of inter-planting for maximum production. Quick-growing plants such as radish, arugula, or cress can be sown into already-established beds of tomato, pepper, corn, or beans. Plants that are easily transplanted such as brassicas, greens, or basil can be planted into open spots throughout the garden to insure that no space is wasted. The primary limitation is the availability of water. If water is available, the only limitation is your own imagination!

The tradition of planting everything on Memorial Day and then calling the garden planted is really a myth. The far more ancient traditions of gardening cultures, such as China's, follow a sequential planting much like that outlined above. Many Asian vegetables, for example, are bred to mature very quickly, and often do better when planted later in the season. In a society where arable land is scarce, gardening all year round is more than just an efficient system. It means that the people have enough to eat. So keep on sowing for a bountiful, beautiful garden, and an extended harvest of the finest food available, organically grown in your own backyard.

Steve Peters
Product Development Manager
Seeds of Change