

Companion Planting in the Vegetable Garden

By Mark Keiffer, Fairfax Master Gardener

As we begin planning for our 2023 vegetable gardens, a perennial challenge is finding ways to deter pests and improve yields while reducing the need to apply potentially harmful pesticides. Many of us also want to increase plant diversity in our gardens because of evidence that plantings with a single crop suffer more pest damage than plantings with mixed crops or with herbs and flowers. Companion planting may be a good option to achieve these goals.

In her book, *Carrots Love Tomatoes: Secrets of Companion Planting for Successful Gardening*, the late Louise Riotte, longtime practitioner and advocate of companion planting, describes companion plants as “plants that assist each other to grow well, plants that repel insects, even plants that repel other plants.”



Companion planting vegetables & flowers

Companion planting, long used in traditional agriculture, is much discussed in gardening circles and literature. However, it’s important to separate folklore or anecdotal evidence from facts in companion planting as most agree that more research is needed to improve our understanding of the complex interactions in various plant pairings and to verify the benefits, as well as potential drawbacks. Nonetheless, more studies are being done and as stated in Rodale’s *Ultimate Encyclopedia of Organic Gardening*, “evidence from scientific studies and gardeners’ experimentation indicates several ways in which companion planting works.”

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This article summarizes how companion plants can help with pest management in the vegetable garden and provides a few example pairings to consider. It also lists other potential benefits of companion planting and gives some tips and cautions if you decide to try it out.

Examples of Companion Plants

Companion plants can help with pest management in several ways. Some strongly scented herbs or flowers emit odors that repel pests or mask the scent of a pest’s target vegetable causing pests to seek food elsewhere. Some vegetables can be used as sacrificial trap or decoy plants to attract and draw pests away from other plants. Companion plants can serve as food sources for beneficial insect predators or parasitoids to attract and sustain them as they search for pests. Along with providing food, companion plants can provide a breeding area for beneficial insects that serve as predators or parasitoids.

The following examples are referenced in multiple sources as effective companion plants to help with pest management in the home vegetable garden. Numerous other combinations are described in the reference publications.

Basil (*Ocimum basilicum*) is often recommended as a companion to vegetables to overcome both insects and disease and attract parasitoids after blooming. It is recommended for pairing with tomatoes to limit egg-laying behaviors of adult moths whose leaf-eating larvae are known as tomato and tobacco hornworms. Some research has shown that

basil can also serve as a masking plant companion with tomatoes to discourage thrips and to reduce egg-laying behaviors by the adult armyworm.

Radishes (*Raphanus sativus*) are recommended as a trapping plant to reduce flea beetle damage on vegetables. The roots and tender leaves of eggplant seedlings are especially vulnerable to flea beetle damage. Radishes, favored by this pest, are a cool-season plant that grows well from seed and can be planted weeks ahead of eggplant seedlings that prefer warmer temperatures. The radishes can attract the flea beetles while the eggplants get larger and become better able to withstand the inevitable attack of flea beetles. Radishes are also recommended for cucumber beetle control.

Nasturtium (*Tropaeolum majus*), an attractive annual loved by pollinators, has been found in studies to decrease squash bugs and reduce squash damage when planted as a trapping crop with zucchini squash. Some suggest that this benefit may also apply to winter squash varieties. Because squash is a large, sprawling plant, if space is limited it might be best to try bush varieties of nasturtium around the squash versus interplanting vining varieties. There is also evidence that nasturtium may work in a similar way against cucumber beetles.

Sweet Alyssum (*Lobularia maritima*) is an example of a companion plant that blooms throughout the growing season and has numerous, small flowers containing pollen and nectar to attract and support beneficial insects. It is highly attractive to natural predators such as lady beetles, hoverflies and parasitic wasps, as well as green lacewings. Adult lacewings feed on alyssum pollen and nectar, then lay their eggs. On hatching, their voracious larvae will feed on numerous plant pests. Alyssum prefers partial shade and can be planted beneath vegetables such as onions or taller nightshade family plants.

Marigolds (*Tagetes* spp.) may not actually have the long touted pest repellent powers from its odor based on research. Instead the odor may have masking properties when placed around the garden. There is evidence that the roots of African marigolds (*T. erecta*) and French marigolds (*T. patula*) produce biochemicals toxic to nematodes that damage vegetable roots. However, the research also indicates that the benefit is not immediate and marigolds need to be grown over multiple seasons to work against nematodes. Sources also cite evidence that marigolds can slow whitefly development and reduce the egg-laying behaviors of the onion root maggot and cabbage root fly.

Other Benefits

Examples of other potential benefits of companion planting suggested in the reference documents, include the following:

Reduced weed pressure This can involve the use of cover crops whose allelopathic residues can exude compounds that discourage the growth of weeds or “green” mulches around bases of plants to crowd out weeds.

Reduced disease pressure Low growing shade tolerant plants can be grown under taller vegetables to reduce splashing up of soil borne disease while cover crops can be used to reduce soil pathogens.

Improved soil fertility and structure Pair nitrogen-fixing legumes with heavy nitrogen feeders such as corn to reduce fertilizer needs. Some legume varieties also perform well as cover crops to improve soil health. Deep rooted plants help loosen up soils to open passage ways for water and air to better support other plants.

Improved pollination Flowers and/or herbs can be planted to attract and support bees known to pollinate target crops.

Physical benefits Plant corn to provide a living trellis for pole beans or larger plants like okra to shade low growing plants from hot sunshine.

Tips and Cautions

Based on experience and research for this article, the following are some points to keep in mind if you decide to experiment with companion planting:

Start slowly with a small number of companion plants with a clear goal in mind, e.g. try basil with your tomatoes to see if it reduces hornworms or blooming annuals in and around your vegetable beds to attract beneficial insects as predators or parasitoids.

Avoid creating competition with companion plants that end up consuming space and resources needed by your vegetable plants or adding maintenance.

Avoid potentially harmful companions as the wrong combinations that can have negative effects on yield and plant health. Most of the reference documents include information on combinations to avoid.

Provide blooms throughout the growing season by adding long-blooming flowers or allowing selected vegetables or herbs to go to flower to attract and sustain beneficial insects.

Use companion planting to supplement other good practices such as rotating crops, top dressing, reducing soil tilling and removing infected/infested plant debris.

Plan placement and timing of companions to ensure effectiveness in pest management and to prevent unintended damage, e.g., you may need to remove trapping plants later in the growing season to prevent “captured” pest eggs from hatching and migrating to crop plants or soil.

Replication of results is challenging as what works in one setting during one season may not work in a similar setting due to the many variables at play in localized environments.

Although much research remains to be done to determine if and how numerous recommended plant combinations work in your vegetable garden, it is clear that monocultures attract more pests than beds of mixed crops or those that include herbs and flowers with crops. Most agree that greater diversity in the garden is good as it can contribute to the goal of protecting the health and productivity of a community of plants in and around the home landscape, including in the vegetable garden.

The suggestions above can be a starting point for trials in your own vegetable garden. Experiment, record your own observations and evaluate and record your results to determine what works best in your garden. The ability to replicate results over time and locations may confirm the value of selected companion planting.

References

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