



Beans and corn
are often planted together



Marigolds release a chemical
that repels nematodes

Companion Planting

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Companion planting is the art of growing vegetables, herbs and flowers together in combinations that promote healthy plants. Protection from some insects, diseases and soil pathogens, can be obtained by planting different combinations of plants together. While some plants can benefit others, there are also some that can have the opposite effect. Some reasons why different plants are planted together are:

Natural Fertiliser: To provide nutrients to the soil and reduce the need for fertiliser. Legumes such as beans, peas and clover have nodules on their roots that enable them to fix nitrogen from the air making it available to neighbouring plants. Cutting down these plants and mulching them into the soil is also a good source of nutrients. Beans and corn are often planted together, where the corn provides support for the bean, and in turn the bean fixes nitrogen for the corn.

Pest Repellents: Some plants exude chemicals from roots or leaves that act as natural pesticides that suppress or repel harmful pests. Marigolds release a chemical that repels nematodes, which makes them a useful companion for a number of garden crops.

Weed Suppression: Some plants also release chemicals that can suppress the growth of other plants. These can be useful in reducing weed problems. Hay from grain rye used as mulch, leaches chemicals that prevent weed seed from germinating, but doesn't harm transplanted vegetable seedlings.

Spatial Interactions: Tall sun-loving plants can offer shade to lower shade-tolerant plants and makes better use of space and increases total yields from small gardens. Pumpkins or squash grown under corn is a good example of this, and the corn can also act to disorientate some insect pests so they can't find the pumpkins under the corn.

Beneficial Habitats: Some plants attract and provide a home for predatory and parasitic insects that feed on the bad insects keeping them in check. This can result in reduced pest damage and considerable reduction in the use of chemical pesticides. Dill grown with cabbages is a good combination as cabbage can provide physical support for the dill and the dill attracts the tiny wasp that feeds on cabbage-worms and caterpillars. Other plants can be more attractive to insects and are used as a trap to draw insects away from some crops.

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Common vegetable crops and useful companions and their interactions:

Crop	Companions and their Effect
Beans	Most vegetables and herbs. Beans acts as a nitrogen fixer. Corn provides support.
Beans (bush)	Corn and sunflowers provide shade. Sunflowers attract pollinators. Bush beans also grow well with cucumber and celery.
Cabbage family	Aromatic herbs deter cabbage worms. Dill attracts beneficial wasps. Tomatoes repel moth larvae that eat cabbages.
Celery	Celery improves the growth of leeks, cauliflower, cabbage and tomatoes and repels white cabbage butterflies.
Corn	Beans and peas add nitrogen to the soil, cucumber, squash and pumpkin get support from corn and in return anchor the corn.
Cucumber	Beans and peas add nitrogen to the soil, corn, and sunflowers provide shade and radish improves growth
Eggplant	Beans add nitrogen and marigolds encourage growth, deters insect pests and nematodes.
Lettuce	Carrot, cucumber, and radish improves growth and flavour
Parsley	Tomato and asparagus. Parsley improves growth and flavour and attracts bees and ladybirds and deters some pests
Peas	Carrots, radish, cucumber, corn, bean and squash. Adds nitrogen to the soil
Pumpkins	Corn provides support and shade and pumpkin acts as an anchor.
Radish	Peas add nitrogen, lettuce and cucumber improve growth and nasturtium repels aphids, beetles, whiteflies and other bugs.
Squash	Corn provides shade and support, marigold encourages growth and deters nematodes, and nasturtium deters insect pests.
Tomato	Parsley, basil, asparagus, chives, onions and cucumber improves growth and flavour and marigold and nasturtium deter nematodes and insect pests.

Some useful herbs and flowers and their effect:

Plant	Effect
Basil	Improves growth and flavour of tomatoes and repels flies and mosquitoes
Chives	Plant around the base of fruit trees to discourage insects from climbing the trunk.
Dill	Improves growth and health of cabbage. Attracts beneficial wasps that control cabbage pests
Marigolds	Plant throughout the garden as it keeps soil free of nematodes and discourages many other insects.
Nasturtium	Plant under fruit trees, deters aphids, bugs, pumpkin beetles and general pests of the cucurbit family.
Petunias	Plant throughout the garden and with tomatoes to repel tomato worm and asparagus beetle
Pigweed	Pumps nutrients from subsoil and is beneficial to potatoes, onions and corn. Keep weeds thinned and under control. Also attracts leaf miners away from other crops such as peppers.

Bad companions:

Sometimes when plants are grown together only one of them will benefit. This can occur when tomatoes are grown with cabbages, the tomato benefits but the cabbage does not.

Bad combinations occur when different plants grown together don't thrive and become stunted and fail. This could be due to too much competition, both struggling for light or space, or nutrients. Chemical secretions from some plants can also act as growth inhibitors for other plants near them, for example walnuts secret a chemical through their roots that is poisons to most plants. Fennel is a herb that most plants dislike because of the chemicals released, but it can be good for attracting beneficial insects.

Some other bad combinations include:

- Onions with corn, cabbage, peas and beans.
- Corn does not like tomatoes
- Potatoes don't like pumpkin, squash, tomato, cucumber and sunflower
- Cucumbers don't like aromatic herbs

Good companions:

Herbs and flowers make very good companions to vegetables and can be grown throughout the garden. Aromatic herbs help to deter many damaging insects and flowers attract pollinators. Beneficial insects that feed on pest insects can be very effective and minimise the need for pesticide sprays.

Animals such as chickens can also be beneficial in the garden, eating bugs and caterpillars that damage plants and scratching the soil surface, which reduces the chance of weeds growing. Their droppings are also a source of nutrient rich fertiliser.

Companion planting using things such as nitrogen fixing plants, insect repelling plants and chickens makes good common sense. With a little thought and using clever combinations of plants in the garden, you can develop a successful and chemical free garden.

References:

- <http://www.organicgardening.com/feature/0,7518,s1-5-19-108,00.html>
- <http://www.gardentoad.com/companionplants.html>
- <http://www.attra.org/attra-pub/complant.html>
- <http://www.commongroundinpaloalto.org/index.asp?page=herbcompanion>
- <http://www.canadiancountrywoman.com/garden/companionplants.php>