

Benefits of Companion Planting in Gardening

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Introduction

Companion planting is the art of growing plants in proximity to each other because of their ability to enhance or complement each other (Figure 1). The practice has been used by farmers and gardeners in both industrialized and developing countries for many reasons. Many plants produce natural substances in their roots, flowers, leaves that can attract or repel insects depending on your garden needs. The benefits of companion planting include pest control, nitrogen fixation, providing support of one plant by another, enhancing nutrient uptake, and water conservation among other benefits. Hence companion planting can lead to increased yield, less reliance on pesticide, and increased biodiversity, helping to bring a balanced eco-system to your garden and allowing nature to do its job. Nature integrates a diversity of plants, insects, animals, and other organisms into every ecosystem so there is no waste. The death of one organism can create food for another, meaning revolving benefits all around. Companion planting is considered to be a holistic concept due to the many interrelated levels it cooperates with the ecology.



Figure 1: Companion planting involving corn, beans, squash and sunflower. The corn acts as a natural beanpole, while the beans contribute nitrogen to the soil for the other crops to use. Squash vines can discourage raccoons, while its leaves provide shading to control weeds and reduce water loss by evaporation. Sunflower attracts beneficial insects such as pollinators.

Companion planting is not a new concept; many of the modern practices were used many centuries ago in ancient gardens. The practice is considered to be a form of *polyculture*, which means the raising of multiple crops in the same space, reflecting the diversity of natural ecosystems, and avoiding large stands of single crops or *monoculture*.

By using companion planting, many gardeners find that they can discourage harmful pests without losing the beneficial allies. There are many varieties of herbs and flowers that can be used for companion plants, but the suggested way succeed is to keep experimenting to find what works for you. However, you may want to include plants that are native to your area so the insects you want to attract already know what to look for. Plants with open cup shaped flowers have been reported to be the most popular with beneficial insects. Some selected vegetable plants and their suitable and unsuitable or poorly suited companions are listed in Table 1. Suitable companions provide benefits such as nitrogen fixation, production of invigorating exudates, repelling or trapping of insect and other pests, and weed suppression among other benefits. The unsuitable or

poorly suited companions are those that are detrimental to the crop by either inhibiting its growth or encouraging pest or disease proliferation.

Benefits of companion planting

Aesthetics

One benefit derived from companion planting includes combining beauty and purpose, giving you an enjoyable, healthy environment. You can turn your backyard into a garden paradise. You can make gardening fun and appealing, and only limited to your imagination. There are countless ways you can incorporate companion plants in your backyard garden, orchard, and flower beds.

Application in trap cropping

Trap cropping is the planting of a trap crop to protect the main crop from a certain pest or several pests. The trap crop can be from the same or different family group, than that of the main crop, as long as it is more attractive to the pest. A crop may be selected because it is more attractive to pests and serves to distract them from the main crop, for example planting collards to draw the diamond back moth pest away from cabbage.

Improving soil fertility

Soil fertility can be improved by incorporating plant that can fix atmospheric nitrogen. Legume plants such as beans, peas and clover, have root nodules that harbor Rhizobium bacteria that help to fix nitrogen through a symbiotic relationship with plants. The symbiont plants will have nitrogen for their own use and for the benefit of the neighboring non nitrogen-fixing plants.

Biological pest control

Companion planting can enhance biological pest suppression through *allelopathy*, which is a biological phenomenon where an organism produces one or more biochemicals that influence the growth, survival, and reproduction of other organisms.

Some plants exude chemicals from roots or aerial parts that suppress or repel pests and protect neighboring plants. For example, African marigold is reported to release thiopene which act as a nematode repellent; hence it can act as a good companion for a number of garden crops.

Beneficial spatial interactions

Companion planting can provide beneficial spatial interactions where tall-growing, sun-loving plants may share space with lower-growing, shade-tolerant species, resulting in higher total yields from the land. Spatial interaction can also yield pest control benefits by acting as a deterrent for pest. Such a benefit for example, has been reported when members of the gourd family are interplanted with sweet corn and beans. It is believed that such intercrop disorient the adult squash vine borer and protect the vining crop from this damaging pest. In turn, the presence of the prickly vines is said to discourage raccoons from ravaging the sweet corn and beans, while the bean crop provides nitrogen for the plants.

Nurse cropping

Nurse cropping involves planting a crop in the same field with another crop, to provide benefits such as minimizing the growth of weeds. For instance, tall or dense-canopied plants may protect more vulnerable species through shading or by providing a windbreak. Nurse cropping can be viewed as another version of spatial interaction where by you can quickly grow a crop in an unused area next to another crop that has a longer growing cycle. An example is growing broccoli and lettuce. By the time broccoli gets large enough, the lettuce below will benefit from the shading of the large waxy leaves, extending the growing season of lettuce and preventing bolting.

Providing security through diversification

By simply mixing plants in your garden you are giving yourself some security in case of a crop failure. If pests or adverse weather conditions reduce or destroy a single crop or cultivar, others remain to produce some level of yield.

Table 1: Vegetable Crops, their Suitable and Unsuitable or Poorly Suited Companions

Crop	Suitable Companions	Unsuitable or Poorly Suited Companions
asparagus	tomato, parsley, basil	onion, garlic, potato
basil	tomato	rue
beans	carrot, cabbage, cauliflower, corn, cucumber, rosemary	leek, garlic, shallots, chives
beans, bush	Irish potato, cucumber, corn, strawberry, celery, summer savory	onion, garlic
beans, pole	corn, summer savory, radish	onion, beets, kohlrabi, sunflower
beet	cabbage, onions, kohlrabi	Pole beans, field mustard
cabbage family	aromatic herbs, celery, beets, onion family, chamomile, spinach, chard	dill, strawberries, pole beans, tomato
carrots	pea, lettuce, onion, rosemary, tomato	dill, parsnip, radish
celery	onion & cabbage families, tomato, bush beans, nasturtium	parsnip, potato
corn	Irish potato, beans, English pea, pumpkin, cucumber, squash	tomato
cucumber	beans, corn, pea, sunflowers, radish	Irish potato, aromatic herbs
eggplant	beans, marigold	
lettuce	carrot, radish, strawberry, cucumber	
onion family	beets, carrot, lettuce, cabbage family, summer savory	beans, English peas
parsley	tomato, asparagus	
pea, English	carrots, radish, turnip, cucumber, corn, beans	onion family, gladiolus, Irish potato
potato, Irish	beans, corn, cabbage family, marigolds, horseradish	pumpkin, squash, tomato, cucumber, sunflower
pumpkins	corn, marigold	Irish potato
radish	English pea, nasturtium, lettuce, cucumber	hyssop
spinach	strawberry, faba bean	
squash	nasturtium, corn, marigold	Irish potato
tomato	onion family, nasturtium, marigold, asparagus, carrot, parsley, cucumber	Irish potato, fennel, cabbage family
turnip	English pea	Irish potato

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