
Companion Planting

Companion planting is the practice of planting different crops in close proximity to each other in order to influence nutrient uptake, pest control, pollination, and other factors necessary for crop productivity. Companion plantings seem to be a widely accepted practice, but are all the purported benefits supported by sound science? Some gardeners have determined compatible companion plants through their own observations. Some companion planting principles make sense intuitively, but others seem to be shrouded in mystery.

North American Indians historically planted corn, beans and squash together in an intercropping system called “Three Sisters”. Beans are nitrogen-fixers and can supply small amounts of this macronutrient to the soil. The corn stalks provide structure for beans to climb, and squash vines provide a living mulch with their broad leaves that shade the soil, reducing evaporation and inhibiting weed seed germination. These three species have similar environmental requirements, and when planted with suitable spacing, don’t unduly compete with each other for water and nutrients, thus allowing all three species to survive and grow together in a compatible manner. However, does this mean these plants “like” each other? – not necessarily.

Using a scientific view, plants must either adapt to their environment or alter it to survive. The presence of a single plant modifies environmental variables including temperature, soil moisture content, soil pH, solar radiation availability, and nutrient availability. Plants with a narrow range of tolerance for environmental change will be less adapted to their new environment and may not survive. Other species tolerate or even require environmental changes to become established in their stead – sometimes we call these plants weeds. Some plants also release compounds toxic to other plants (this is called alleopathy). Remember, it’s a jungle out there and not everybody plays nice.

As for companion planting, many vegetable gardeners swear by it. They read lists compiled by “experts” and accept it as the gospel. The problem with using the phrase “companion plants” is that it is broadly used to describe plant interactions in the realms of science, pseudoscience, and the occult. One simply needs to conduct a web search to see that there are several thousand references on companion planting. Some are credible and supported by research – others are not.

On less credible sites and in some popular books are the pseudoscientific claims that companion plants can be determined by “sensitive crystallization” of their extracts (i.e. to discover which plants “love” each other), or through study of a plant’s “rhythm, its vibration, its music, and its note.” These supernatural interactions often pique gardener’s interest, but scientists and professionals often cringe at the lack of scientific data to support these claims.

Dr. Linda Chalker-Scott, an Extension Horticulturist with Washington State University, has reviewed the subject. Here are her bottom line recommendations on companion planting:

- The phrase “companion plant” is too vague to be useful to plant scientists and professionals.
- The terms “intercropping” and “plant associations” are more definable and credible.
- Documented benefits from plant associations include physical, chemical, and biological alterations that can improve the establishment and survival of desired plant species.
- Pseudoscientific, mythological and occult applications of “companion plantings” are not scientific and will damage your credibility as a professional.
- Traditional “companion plant” charts have entertainment, not scientific, value.

My observations are limited. In my garden, I have noticed other plants do not do well when planted within a couple of feet of a sunflower. A quick Google search showed the sunflower’s allelopathic effect has been documented scientifically. I have also noted benefits when planting cereal rye and hairy vetch together as a winter cover crop. The interaction is very similar to the “Three Sisters” where the cereal rye provides a trellis for the nitrogen fixing hairy vetch. The hairy vetch also acts as living mulch.

If you are using companion planting and it works for you, then please continue to do so. I just hope you consider the science behind companion planting before placing too much stock in it’s positive outcomes.

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Adapted from original Backyard Gardener publications by Jeff Schalau, Agent, Agriculture & Natural Resources, University of Arizona Cooperative Extension, Yavapai County

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