Recent discoveries in quantum physics, microbiology, and ecology verify something gardeners have long known. Everything in nature is related. There are no solid lines between the plants' roots, the soil, and the bacteria and fungi tying it all together.

To help understand why garden crops do or do not thrive, we are led into the enigmatic field of companion planting.

Just as we work and feel best around our friends, plants will grow better in their preferred company. Although the reasons may be obscure, a lot of observation and a little intuition can reveal mutual attractions and aversions. The garden teaches us the value of old-time practices, fresh experiments, and keeping three eyes open.

Following the advice of Steiner, Albrect, Howard, Rodale, and others, we build up a live soil humus with an inherent microbial intelligence. Native Americans did not have to do all that reading; they simply did not plow, compact, or put chemicals on their soils in the first place.

Right off the bat, they taught us companion planting with the "three sisters"- corn, beans, and squash.

Corn belongs to the grass family. It's shallow, fibrous root system requires extra nitrogen. B eans, on the other hand, have a deep tap root and a symbiotic relationship with soil bacteria that accumulate nitrogen.

Squash grow well in the shade of the beans, which climb up the corn stalks.

The squashes' big leaves provide shade that keeps the soil moist and the weeds from sprouting.

An Iroquois corn patch produced three times as much grain per acre as European wheat farmers were getting, along with extra vegetables to boot.

In the spring garden, lettuce, carrots, peas, beets, and radishes all grow well together. Altho ugh carrots are companion plants with peas as well as onions, peas do not grow well next to onions.

The pea and bean families do not like the onion family, which includes garlic, leeks, and

shallots.

Radishes repel cucumber beetles and are harvested quickly.

Cabbage grows well with beets and potatoes; they can be planted together in early spring. We grow kale and Chinese cabbages in the fall for several reasons: they like cooler weather, and are not bothered by bugs as much then.

In our crop rotation, potatoes follow a grass or clover sod because untilled land has more fungal activity underground. Plenty of compost and loose soil keep the potatoes from attracting beetles. After a season of cultivating, the microbial domination has shifted in favor of bacteria.
This is well suited for the cabbage family.

Companion planting is related to crop rotation, since certain crops prepare the soil for the next one.

Potatoes and beans planted together help to repel the each other's pesky beetles. However , they are planted in different seasons, so we do not use this particular combination.

We plant alternate rows of bush beans and cucumbers.

Along with their mutual attraction, the timing works well.

The quick-maturing beans yield a few pickings before the cuke vines invade their rows and hide the future pickles in their shade.

Cucumbers also like dill in the garden and in the jar. Similarly, basil and tomatoes grow and taste good together. Herbs add a whole new dimension, aroma, and beauty to the garden.

They have also long been observed to be good companion plants.

Parsley and her sisters in the umbelliferae family have blooms that supply nectar to beneficial insects.

Fennel and wormwood are the herbal exceptions, as other plants generally do not like them.

When folks see flowers in the garden, they often this we are trying to keep bugs away. Noth ing could be further from the truth.

We love flowers because they attract insects, most of which are beneficial.

Marigolds excrete a toxin for certain nematodes, but flowers are grown for the birds and the bees.

Companion Planting, by Helen Phibrick and Richard Gregg, was published in 1966. It became a source of conversation and experimentation in my parents' organic gardens.

It makes sense that plant species will show sings of sympathy and antipathy with each other.

The garden combinations of flowers, herbs, and vegetables are endless.

Therefore, we must consider this a recent science wide open for exploration.

Every garden and every year is a new opportunity to marvel at and unearth nature's mysteries, wisdoms, and interconnectedness.