



COURTESY OF TEXAS A&M

The allelopathic properties of *Helianthus* species do not cause poisoning of your soil. The allelochemicals released into the soil affect only some plants, and you can overcome this by adding a little topsoil

Will growing Sunflowers poison soil?

Question: My friend told me if I grow sunflowers that they will poison my soil. Is this true?

Answer: Let's investigate this claim and give you a word to impress your friend the next time you meet.

There is an interesting phenomenon in the plant world where some species of plants use chemical warfare to protect their environment. The word for this interaction is called allelopathy.

A German botanist in 1937 coined this term which originates from the Greek *allelon* 'mutual', and *pathos* 'to suffer.' However, this type of plant



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competition has been studied for many years. In fact, Pliny the Elder, in 77 A.D., wrote about plants exhibiting this trait. (And you thought he only had something to do with beer?!) The actual definition of allelopathy according to the Oxford Dictionary is "the chemical inhibition of one plant by another, due to the release into the environment

of substances acting as germination growth inhibitors." Plants that are allelopathic release substances called allelochemicals into the soil. These chemicals can affect plants in a good or bad way, depending on what you are trying to grow. There is no definitive list of all allelopathic plants. The list of plants that have some allelopathic properties is extensive. The list includes some species of asters, oregano, rosemary, rhododendron, pecan, walnut, sunflowers, various grasses, and on and on. It is important to note that many plants have adverse effects on some plants, but not on other

plants. It is a complicated relationship! Most of the research being done is directed towards commercial agriculture. Think of the possibilities in reducing the use of chemical weed killers, for instance. One common allelopathic plant in our area is the black walnut. Black walnut releases a chemical called juglone. It is very toxic to members of the nightshade (Solanaceae) family, which includes tomatoes and potatoes. Black walnut roots, leaves and nuts are all loaded with juglone, so you would be wise not to locate your vegetable garden near a black walnut tree. Also, I would avoid

collecting walnut leaves to add to your compost pile if you are using that compost around your vegetable garden. Now, back to the original question! Sunflowers do have some allelopathic properties, although garden varieties contain much less chemical than the wild varieties. You may notice some seed germination inhibition where you planted sunflowers last year. You can overcome this by adding a little fresh soil where you are planting the new seeds. I personally grow sunflowers every year and haven't noticed any problems, although people who feed birds sunflower

seeds may see effects under their bird feeders. Another common vegetable garden plant to consider is broccoli. Do not plant broccoli where you grew it the previous year—it will inhibit healthy growth of your new plants. The next time you see your friend, lead off the conversation something like this: "The allelopathic properties of *Helianthus* species do not cause poisoning of your soil. The allelochemicals released into the soil affect only some plants, and you can overcome this by adding a little topsoil to negate the germination inhibition in this allelopathic relationship."

You'll either impress your friend or find yourself with a lot more free time to surf the internet about allelopathy!



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Do you have a gardening or insect question? Contact the Douglas County Master Gardeners at douglasmg@oregonstate.edu or 541-672-4461 or visit 1134 SE Douglas Ave., Roseburg. Douglas County Master Gardeners are trained volunteers who help the OSU Extension Service serve the people of Douglas County.