

Sunflowers found to share nutrient-rich soil with others of their kind

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A team of researchers at the University of Alberta has found that sunflower plants send fewer roots into nutrient-rich patches of soil when another sunflower is attempting to access the same patch. In their paper

published in the journal *Proceedings of the Royal Society B*, the group describes their study of neighborly location in sunflowers, and what they learned from it.

To humans, plants seem isolated in their existence. Even though they may grow in groups, they do not seem to interact or even acknowledge the existence of other plants around them. But prior research has shown that plants do react to one another, most often underground, where it cannot be observed. In this new effort, the researchers have found that individual sunflower plants are aware of other sunflower plants, and sometimes behave in ways that benefit them both rather than simply fending for themselves.

The experiments consisted of monitoring sunflower plants in a lab environment under variable conditions. All of the conditions involved how the plants "behaved" when encountering a particularly nutrient-rich [patch](#) of soil.

In the first study, the researchers placed isolated sunflower plants near a rich food source and watched how it behaved. As expected, the plant sent more roots into the area, allowing it to consume more nutrients. But they also found that when they placed two sunflower plants an equal distance from the same food source, both sent fewer roots than they would have were they alone. This was a clear sign that the plants were not only aware of the presence of the other, but were working together to allow both of them to gain the greatest benefit.

In another experiment, the researchers placed sunflower plants at different distances from the rich soil patch and found that the [sunflower](#) nearest the soil patch sent out just as many new roots as if it were isolated. In other experiments, the researchers planted multiple plants at different distances from the nutrient-rich patch to see how they would respond. They report that [plants](#) that were growing with a neighbor

actually decreased root length in such shared patches—and they did not increase them when they were close to very high-quality soil areas. The researchers conclude that sunflowers work together to gain the most benefit from the [soil](#) for themselves and for those around them.

More information: Megan K. Ljubotina et al. Effects of neighbour location and nutrient distributions on root foraging behavior of the common sunflower, *Proceedings of the Royal Society B: Biological Sciences* (2019). [DOI: 10.1098/rspb.2019.0955](https://doi.org/10.1098/rspb.2019.0955)

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