

Probing Question: Does talking to plants help them grow?

September 4 2008, By Alexa Stevenson

In a 1986 interview, England's Prince Charles discussed his gardening habits, commenting "I just come and talk to the plants, really. Very important to talk to them; they respond."

The theory that plants benefit from human conversation dates to 1848, when German professor Gustav Fechner published the book "Nanna (Soul-life of Plants)." The idea is a popular one, and has spawned several more books and even an album — recorded in 1970 by an enterprising dentist — titled "Music to Grow Plants By." But will crooning compliments to your ficus really have any effect on its growth?

"There isn't a lot of research in this area," said Rich Marini, head of Penn State's horticulture department, "But there is evidence that plants respond to sound." In fact, plants react readily to a host of environmental stimuli, as the ability to respond to changing environments is vital to their survival. Explained Marini, "Wind or vibration will induce changes in plant growth. Since sound is essentially vibration, my guess is that vibration is causing a response."

Research supports Marini's guess. A 2007 paper from scientists at South Korea's National Institute of Agricultural Biotechnology proposed that two genes involved in a plant's response to light — known as *rbcS* and *Ald* — are turned on by music played at 70 decibels. "This is about the level of a normal conversation," said Marini. The Korean researchers found differing responses depending on the frequency of the sound. The higher the frequency, the more active was the gene response.

But other studies suggest that conversation may not be enough, notes Marini. A Canadian paper showed that seed germination is influenced by sound at 92 decibels — much louder than one would normally speak.

Regarding why plants would have evolved to respond to vibration in the first place, Marini speculated that it may have occurred as a way to help them survive in windy environments. "Plants exposed to wind produce a growth-retardant hormone called ethylene, which causes the plant to be shorter and to have thicker stems. So plants exposed to wind can better survive very windy conditions."

As to another popular theory, that plants respond to the carbon dioxide produced by human speech, Marini isn't buying it. Carbon dioxide levels do influence the rate of plant photosynthesis, he explained, but "people would have to speak to their plants for at least several hours a day to enhance photosynthesis enough to influence plant growth."

Of course, all the good vibrations in the world aren't going to help the plants if people forget to water them. The bottom line? "The best thing people can do to help their plants grow is provide them with light, water, and mineral nutrition," said Marini. While the studies suggest that sound may spur plants to faster growth, there is no definitive evidence that a gift of gab will turn people into green thumbs. Ideal conditions for growth have more to do with temperature than talk. But if you want to whisper sweet nothings to your begonias, well, nobody's stopping you.

Source: By Alexa Stevenson, Research Penn State

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