New Plant Language Discovered

Dodder, a parasitic plant, may exchange RNA with its host plant in a sort of conversation.

People tend to be fixated upon the question of whether talking to your plants stimulates them to grow, but scientists have known for several decades that various plant species talk among themselves — not with words, but by releasing chemical signals into the air that warn other trees about impending insect attacks. Most of the nearly 50 studies on the subject have found evidence of plant communication.

Add to that proof a study in the Aug. 15 issue of the journal Science by a Virginia Tech researcher, who has discovered that different plant species can share genetic information at the molecular level.

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Jim Westwood, a professor of plant pathology, physiology, and weed science at the university, found evidence of this new communication mode by investigating the relationship between dodder, a parasitic plant that oddly looks like strands of spaghetti, and the flowering plant Arabidopsis and tomato plants to which it attaches and sucks out nutrients with an appendage called a haustorium.
Several past studies have indicated that dodder use chemical cues to find their host plants. But Westwood has uncovered a genetic means of communication as well — an exchange of RNA, a substance that translates information in the DNA forming an organism’s genetic blueprint. He reports that many thousands of mRNA molecules were being exchanged between the parasite and host, creating this open dialogue between the species that allows them to freely communicate.

“The discovery of this novel form of inter-organism communication shows that this is happening a lot more than any one has previously realized,” the scientist said in a Virginia Tech press release. “Now that we have found that they are sharing all this information, the next question is, ‘What exactly are they telling each other?’”

One possibility: Dodder may be telling the host to lower its defenses and allow it to drain nutrients.

A study published in Nature in 2013 also found that damaged leaves on trees can communicate with one another electrically, in a fashion similar to the way that the nervous system in a human or animal will transmit signals from one injured organ to another.