



How do trees communicate?

KS2 KS3 Ages 7-14 ⌚ 3 min read

Trees communicate — though not in any way that involves thoughts, intentions, or language. They exchange chemical signals through the air and nutrients through underground fungal networks, and the effects of this exchange can look remarkably like co-operation.

Chemical airborne signals

When a tree is being attacked by insects — caterpillars stripping its leaves, for example — it releases volatile organic compounds into the air. Neighbouring trees of the same species detect these chemicals and respond by increasing production of tannins and other defence chemicals in their own leaves, making themselves less palatable to the insects. By the time the caterpillars reach the neighbours, they find the leaves have already become harder to digest. The tree didn't "decide" to warn its neighbours — the stressed tree released chemicals as a byproduct of its own defence response, and those chemicals triggered a response in nearby trees.

It's similar to how the smell of smoke makes you alert to fire, even when you haven't seen a flame yourself. You didn't get a message; you detected a chemical and responded. Trees detecting stress chemicals from neighbours and "pre-loading" their own defences is the same mechanism. No message was sent; a chemical was released; a response was triggered. The communication is real, but it's chemical and automatic rather than intentional.

The Wood Wide Web

Underground, trees are connected by networks of mycorrhizal fungi — fungi that grow into or around tree roots in a mutually beneficial relationship. The tree provides the fungus with sugars produced by photosynthesis. The fungus, with its vast network of thin threads (hyphae), greatly extends the tree's ability to absorb water and minerals, and also connects trees to each other. Through these fungal networks, trees can transfer carbon and nutrients to each other — including from large, established trees to younger seedlings that can't yet photosynthesise enough to sustain themselves.

Are trees really being "helpful"?

This is where the science and the storytelling can part ways. The nutrient transfers are real and well-documented. Whether they represent trees "looking after" their offspring or simply a consequence of the fungal network moving nutrients along concentration gradients (from high to low) is a matter of interpretation. Plants have no nervous systems and no capacity for intention. The outcomes can look social; the mechanism is chemistry and physics. Both things are true.