

National

Botanists uproot perennial theory of the brainy plant

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Science editor

The gardening gloves are off. Frustrated by more than a decade of research that claims to reveal intentions, feelings and even consciousness in plants, more traditionally minded botanists have finally snapped. Plants, they say, are not conscious.

The latest salvo in the plant consciousness wars has been fired by British, American and German biologists who argue that practitioners of “plant neurobiology” have become carried away with the admittedly impressive abilities of plants to sense and react to their environment.

While plants may curl their leaves in response to touch, grow faster when competitors are near, and spring traps for prey, the vexed biologists argue that that is no reason to believe plants

choose their actions, learn, or occasionally get hurt in the process, as some plant neurobiologists assert.

Bothered by claims that plants have “brain-like command centres” in their root tips and possess the equivalent of animal nervous systems, the critics counter that there is no proof of sentient vegetation, or structures within plants that would grant them what the neuroscientist Antonio Damasio has called “the feeling of what happens”.

Writing in *Trends in Plant Science*, where plant neurobiology debuted in 2006, Lincoln Taiz, a botanist at the University of California, Santa Cruz, and seven like-minded researchers, state: “There is no evidence plants require, and thus have evolved, energy-expensive mental faculties, [like] consciousness ... and intentionality, to survive or reproduce.”

Taiz added: “Our criticism of the plant neurobiologists is they have



failed to consider the importance of brain organisation, complexity and specialisation for consciousness.”

The broadside drew a robust response from Monica Gagliano, at the University of Sydney, who conducts research on plants’ cognitive abilities, such as perception, learning and consciousness. She said the criticism had failed to take account of all the evidence and had focused only on work that backed the authors’ views. “The process of generating knowledge through rigorous science is about

‘There’s no evidence that plants evolved mental faculties’

Lincoln Taiz
Botanist

understanding the evidence-base behind a claim. Where is their experimental data?”

The debate is shaping up to be the biggest botanical bunfight since the Romantic era when plant biologists argued about sex in plants. As the purists said that nothing so obscene would be happening in the flower beds, others envisioned plants not only having sex but being full of lust.

Taiz said the rise of plant neurobiology was driven by the environmental crisis. “They want to raise people’s consciousness about plants as living organisms and reach them on an emotional level. I’m very sympathetic ... but it’s clouding their objectivity. They have to be prepared for plants maybe not having consciousness. It’s bad science. It takes the whole scientific enterprise and reduces its credibility.”

Gagliano said: “If we fail to continuously question our own assumptions ... we are in deep trouble and miss the opportunity for true scientific discovery. This opinion piece ... makes no headway towards a better scientific understanding of consciousness.”

Where the debate leaves Prince Charles, who positively instructs his geraniums, is unclear. “Far be it from me to criticise him, or anyone else, for talking to their plants,” Taiz said. “I’d be concerned, however, if they ever talked back.”