

Can plants show us how health is infectious?

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A basic hypothesis of Whole Health Agriculture is that if disease is infectious, then health can be too. We assert that the “health of soil, plant, animal and man is one and indivisible”. This raises the question (amongst others), if so, then how is it transmitted or communicated?

The work of Italian researcher [Stefano Mancuso and his team](#) might provide some answers. They are showing how plants communicate, or "signal," with each other, using a complex internal analysis system to find nutrients, spread their species and even defend themselves against predators.

To a large degree, this is known and scientifically accepted but Mancuso's research goes a step or two further and aims to alter the conventional perception of plants as simple organisms to one which recognises that they are “complex ecological structures and communities that can gather, process and share important information.”

There is a measure of scientific acceptance of that proposition too. However, Mancuso's perspective – vision is probably a more accurate word – of “plant consciousness” is highly contentious, but, which if at all true, is potentially transformative.

In an interview with writer Amy Fleming, published in the [Guardian](#), he seems to shy away from the term “consciousness”. But, as one of the founders of the study of plant neurobiology, he is probably stuck with it. He tells Fleming that “Consciousness is a little bit tricky in both our languages. Let's talk about awareness. Plants are perfectly aware of themselves.”

According to Mancuso “when one plant overshadows another – the shaded plant will grow faster to reach the light. But when you look into the crown of a tree, all the shoots are heavily shaded. They do not grow fast because they know that they are shaded by part of themselves.” This, he says, is because “they have a perfect image of themselves and of the outside”.

It doesn't matter whether Mancuso uses the word “awareness” or “consciousness”, it is, to put it mildly, a controversial idea. In her article, Fleming draws attention to a critique of plant neurobiology in the journal [Trends in Plant Science](#). The authors, a group of plant scientists from the US and Europe, concluded that “the likelihood that plants, with their relative organizational simplicity and lack of neurons and brains, have consciousness to be effectively nil

Mancuso though explains to Fleming that “you need to imagine a plant as a huge brain. Maybe not as efficient as in the case of animals, but diffused everywhere.” Plants, he says, use a different strategy, so much so that you can remove 90% of a plant without killing it. “They are very good at diffusing the same function all over the body.”

Amy Fleming's article is titled “The secret life of plants: how they memorise, communicate, problem solve and socialise”. In fact, it is probably a life which is not so much a secret as unknown and waiting to be discovered and talked about.

Mancuso's mission is to do just that. He has written several [books](#), given [TED](#) talks, and has published numerous scientific [papers](#). His latest [book](#), "The Incredible Journey of Plants" has just been published by Other Press.

If you don't want to wade through any of that, just read Fleming's excellent [article](#) which covers plant consciousness, plant memory, the ability of plants to detect and communicate, and crucially what Mancuso calls plants intelligence.

How different production systems and practices, including a Whole Health approach, relate to Mancuso's concepts and observations is an open question.

His [research](#) provides evidence that plants communicate and transmit information in several ways and pathways – e.g. physical, chemical, molecular, aromatic, vibrational, fungal. There is plenty of evidence in the scientific literature that these characteristics (e.g. [phenolic compounds](#)) can change as a result of external conditions such as stress. So, it is reasonable to suggest that fertilisation, cultivation, rotation and species/variety choice will also have an impact. But is it too far-fetched to hypothesise that other organisms in the soil-plant-animal-man community share pathways, wavelengths and messaging, and that these can be adversely or beneficially affected by the farming method?

Fleming ends her article by quoting Mancuso's observations about how our society can learn from plants diffuse and decentralised networks and how they may be more resilient than those with "a top-level control centre, and various different organs governing specific functions".

Here is an important insight for those of us seeking to develop a whole health agriculture. These plant networks function in a co-operative and symbiotic way so that, to use the old phrase, "the whole is greater than the sum of the parts". How it is and how it works is yet to be discovered,

However, the popular narrative of today amongst many alternative people – farmers, researchers, foodies, commentators and even some policy makers – is that the soil is "it", "numero uno", virtually the be-all and end-all, not an equal part of a whole but the pre-eminent and pre-dominating part; not unlike, dare I say it, "a top level control centre"

In this context, I was struck by Mancuso's comment that plants "are masters of starting symbiotic relationships with other organisms: bacteria, mushrooms, insects, even us." It might be, therefore, that there is an argument for re-calibrating the popular narrative that the soil is "it" and to consider the soil and the plant and the animals (below ground as well as a above ground) as equal, symbiotic and/or co-operative parts that are "one and indivisible".

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