Are plants conscious (without having brains)?

**William Halmeck**, Ambassador of civilization serving a nation of youth.

Plants are more a collection of independent cells than are animals. Responses in plants are more localized rather than systemic like animals. There is no centralized processing center from which consciousness could emerge. There is no benefit to plant survival that consciousness would provide to warrant the selection of such an expensive phenomenon, and further, there is no evidence of structure or behavior that would support such a claim. The irresistible draw for some people to come to anthropomorphic conclusions is emotionally driven rather than scientific.

**Craig Weinberg**, Consciousness Conjecturerer

As a proponent of a view of physics as an effect of awareness rather than a cause I see the question of what is conscious as a matter of difference in degree and in kind rather than a binary yes or no. Plants interact intelligently with their environment, as to cells, bacteria, etc. Even molecules and atoms behave in an orderly way which could just as easily imply some form of conscious attention as not. Charles Darwin found that earthworms do lot things without having proper brains: Darwin was curious to know if such lowly creatures were intelligent. He spent considerable time observing how earthworms pulled leaves into their burrows. They plugged the burrow openings, in Darwin's opinion, to keep out chilled air. Darwin found they most often pulled leaves in by their tips, which is the most efficient method. When he substituted paper triangles for leaves, he noted the majority of earthworms drew them down their burrows by the apex. This led Darwin to state that worms have some degree of intelligence. He wasn't convinced that all earthworms were equal, though. He placed leaves on the surface of pots kept in a warm room. These worms worked in “a careless or slovenly manner … they did not care about plugging up their holes effectually”. Darwin covered the pots with nets and left them outdoors for several nights. He wrote, “And now, 72 leaves were all properly drawn in by their bases”. - Charles Darwin and earthworms. We have only begun to scratch the surface of non-human awareness. While there is a lot of pop-sci stories around these days that sensationalize new research in this area, there seems to me to be a trend toward a broadening of the definition of consciousness rather than a narrowing. To me, any blanket invalidation of consciousness for a natural phenomenon is scientifically unwarranted and premature, although there may be many types of consciousness which operate on scales of time and space so alien to our own that they are irrelevant to us for all practical purposes.

**Nachiappan Valliappan**, Wireless enthusiast, Free thinker

On an an interesting side note, a recent study by researchers from the University of Western Australia recently published that plants may be able to "hear" each other apart from responding to light, smelling chemicals in the air and tasting them in the soil. The group conducted an interesting chilli seeds experiment to confirm this behavior - Plants may be able to 'hear' others.
The problem, is that humans are always trying to equate intelligence with a central processing unit; i.e. a brain. But, this is not necessarily the case. In a game reserve in Africa several years ago, the Park wardens where noticing a sudden and percentage wise, large die-off Kudo; a large antelope species. They did all the standard testing for pathogens in the soil, the air, and in food sources. Ultimately, what proved to be the culprit(s) were the Acacia trees that were growing in certain areas of the park. Many plants, including Acacia, possess varying amounts of tannic acid in their leaves to try and deter grazing by various herbivore species. What appears to have happened, and this is incredibly strange, Acacia trees that were upwind of some of the other acacia groves, apparently released some sort of pheromone which caused the acacia trees downwind to produce much higher than normal levels of tannic acid; which is what killed the kudos. Apparently, the acacia trees that were being over-grazed, was due to conditions which created larger than normal populations of Kudo. There were many more kudo grazing on many more Acacia leaves. As a result, the trees that the kudu had over-grazed had apparently "warned" the other acacia trees downwind of their predicament, and these trees started producing the higher levels of tannic acid. Now, this is not something one would normally think of as "defensive thought", and yet testing proved that indeed, it had taken place. There are other places as well, where plants have warned other plants about predation. So what would we consider this? Some sort of plant intellect? Well, the issue is currently being hotly debated; and, there are many scientists on both sides of the issue.

Pete Ashly, mind wanders

Sure, but at a different time scale than animals and lower levels of function. Just watch this pea plant growing in time lapse. "Spirit sleeps in minerals, dreams in plants, thinks in animals and awakens in man". PS: A comment points out that the "reaching" behavior is random, but then again so am I at a party. The grasping behavior doesn't seem random though.

Caleb Hotchkiss, Undergrad physics degree.

Some would think so. My answer to "Is consciousness a progression?" describes a viewpoint that holds consciousness to be continuous from what we think of as human consciousness down to arbitrarily rudimentary forms of inanimate objects. This theory does not require a brain for an entity to be conscious.

Jeff Hall, Author of the blog "The Dimensions of Consciousness"

To answer this I would point you to my blog post entitled "A new definition of Consciousness" - http://therealjeffhall.blogspot.... In this post, I propose a spectrum of consciousness analogous to the electromagnetic spectrum. Some people including those who have already posted replies here confuse the very narrow idea of conscious awareness with the much broader concept of
consciousness as a fundamental property of the universe. Further narrowing the definition of consciousness to the idea of self awareness will never help in understanding the consciousness of a plant. Alan Watts discussed these ideas in the 1970s and in one of his talks he described the sound two pebbles make when struck together as a demonstration of consciousness at a very primitive level.

David Chidakel, writes the blog http://scienceaintsobad.com

Consciousness suggests "an inner life" or self awareness - a sense of "me". We have no reason whatsoever to believe that our vegetables have an inner life. We don't know which animals experience themselves in this way. Some experiments have been done with mirrors to see how an animal reacts to his or her Image. Is it another creature? Is there a "me" that I might be watching reflected in something shiny? Only a couple of creatures besides humans appeared to get a passing grade. I think elephants were one. Dandelions weren't included in the experiment.

Ryan Caley

It's possible that they can sense in which directions they are growing, they can sense that they are being attacked by a virus, or parasite. They could probably sense where light comes from, and so forth. There are different levels of consciousness I think. There is a whole plant level, where chemicals may be transferred around the whole plant and outside the plant. There is a cellular level also. I think both parts are conscious. I think anything that processes information is conscious. But I'm not an expert in this field.

Glyn Williams, is conscious some of the time.

No. Plants are not conscious. They are significantly less aware than an unconscious animal.

Gene Linetsky

Are you serious? Most people aren't conscious, let alone plants...

Vinay Kumar

Yes - plants are conscious. Perhaps more conscious than animals (including humans)