

## Letter to the Editor

# The dignity of plants

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In his Letter to the Editor entitled *Bioethics: On the road to absurd land* (Plant Signal Behav 2008; 3:612), Simcha Lev-Yadun expressed his fear that the discussion going on in Switzerland about the dignity of plants could lead us down to an absurd and dangerous path. Progress in medicine and agriculture could be slowed as a result. What is this all about?

The Swiss constitution maintains that the dignity of creatures should be respected. Plants are living beings, so they also have dignity. The Executive Federal Council directed the Federal Ethics Committee on Non-Human Biotechnology (ECNH), of which I am a member, to work out the basis for these constitutional norms. In April this year, we presented the report: *The dignity of living beings with regard to plants. Moral consideration of plants for their own sake*.<sup>1</sup>

The background for our consideration in the Committee was provided by many discoveries in recent years that suggest a new 'sensitive' picture of plants. It has, for instance, been revealed that plants are active in sensing numerous parameters from their environment, communicate extensively and actively; they interact with their surroundings. They can choose between different possibilities and change their behaviour accordingly. On the cellular level, similarities between animals and plants are far greater than previously assumed (communication with electrical action potentials, similar vesicle trafficking and signaling molecules, etc.). They have an innate immune system. At a rudimentary level, their roots can distinguish between self and non-self.

Plants and animals are very young in terms of the earth's history, being some 400 to 500 million years old. In the preceding three billion years, only single cell life forms existed. During this for us unimaginably long period, the cells continued to develop, very slowly and with great flexibility. Cells developed that did not necessarily have an optimal form or size, but had an optimal flexibility. During these three billions of years, the basis for cellular communication as well as the most important metabolic procedures was laid. Cells were connected into dynamic networks of relationships:

they communicated, constantly acting and reacting in response to numerous environmental stimuli and communicated with each other. From these unicellular life forms, plants and animals developed parallel to each other, but each in a different direction.<sup>2</sup>

Thus plants, animals and humans have common roots. The similarities on the cellular level can be explained by our evolutionary relationships. Optimal adaptation requires an efficient and quick information system: animals developed a brain and nervous systems, plants could have developed analogous structures.

On the next higher levels of individual living beings, the tissue and organismal levels, animals and plants are radically different. Nevertheless, in the course of evolution both developed, in very different ways, great flexibility in order to adjust to a constantly changing environment.

We do not know if plants are capable of subjective sensation. There is no scientific proof that plants feel pain. But it is also quite clear that we cannot simply rule this out. There is circumstantial evidence for this, although not a complete chain of evidence. However, claims that plants have no subjective sensations are as speculative as the opposite. We simply do not know. We cannot deny with certainty that plants lack an ability to actively perceive. Thus far, plant abilities to perceive their environment has been widely underestimated.

But what could be the consequences of these new findings?

How should we approach this situation of 'not knowing'?

These questions were posed by the Ethics Committee over the past four years, as it was discussed in the Executive Federal Council's assignment on the dignity of plants. *Dignity* in terms of plants is a difficult concept; it is religiously charged and comes from history of mankind. However, the notion could be understood as a sign, a metaphor, that plants are entitled to a value, a worth independent of human interests. *Dignity* could be a sign that plants are to be respected and that there are also certain obligations towards them.

If we look at plants as simple things, passive machines that follow the same set of programs, if plants are only seen as organisms satisfying our interests and demands, then an attribute like *dignity* seems absurd; it does not make sense. But if we see plants as active, adaptable, perhaps even as living beings capable of subjective perceptions, possessing their lives on their own, independent of us; then there is good reason to accept that plants have *dignity* that is valid.

For a long time, animals were considered to be soulless machines. But in recent decades, they have—at least partly—escaped this mechanistic trap. We start to acknowledge their right to dignity and respect. Animals are not just things anymore. As a result of this, in Switzerland (and elsewhere), regulations for species-appropriate care

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of farm animals have been developed. Here again, I do not go along with Simcha Lev-Yadun. It is not just a nice idea that organic hens are raised differently than their sad relatives in battery cages. It is a question of respect for perceptive fellow beings, even if it means having to pay a bit more for eggs.

The discussion of the dignity of plants is still miles away from this point. Anything and everything can be done with plants today; there is no ethical consideration, no awareness of any problem. But it is slowly getting harder to justify this attitude toward plants.

Philosophers and experts on ethics, but also molecular biologists and scientists, sit in the ECNH. We have tried to work out the ethical basis for attributing dignity to plants. Many questions were controversial, but in one there was agreement: plants should not be treated in a completely arbitrary way. Plants are living beings and must be respected for their own sake. Arbitrary injury or destruction of plants is not permissible. The Committee could not agree on the meaning of 'arbitrary.' For some, this was the senseless picking of roadside flowers, for others—I among them—the massive and total instrumentalisation and industrialisation of plants. In my view, the 'terminator' technology (GURT technologies) and other methods to produce sterility with the exclusive goal of making plants available for the maximizing of economic profit of humans, as well as the patenting of plants, violate their dignity.

That plants are entitled to *dignity* should not reduce or limit their use. Nor should research be forbidden. Just as recognizing the dignity of animals does not mean taking them out of the food chain or forbidding animal research. Dignity means much more than that, when it comes to plants—as with animals, principles of proportionality must be considered. So dignity of plants is not an absolute value, but is achieved by the balancing of morally relevant interests: the good, or interests of a plant should be weighed up against the interests of humans.

In this line, it is also clear that interests of plants must be weighed differently than those of animals.

What the ECNH delivered with the report, *The dignity of living beings with regard to plants*, are grounds for more discussions, a guide for future arguments. It contains no specific consequences or requests. There are still lot of discussions ahead. We are just at the beginning.

Back to Simcha Lev-Yadun. It is not the discussion about the dignity of plants that seems absurd and dangerous to me; but on the contrary, the refusal to understand plants as something other than living automatons and to draw conclusions from that acknowledgement.

Because the way we deal with plants influences our relationships to the living world, to plants, to animals, and to ourselves too.

#### Note

Koechlin's latest book is *PflanzenPalaver. Belauschte Geheimnisse der botanischen Welt (Plant Chat. Overheard Secrets from the Botanical World)* (256 pages with color photos; in German, 2008 Lenos Verlag). [www.blauen-institut.ch/pg\\_blu/pa/a\\_pflanzenpalaver\\_buch.html](http://www.blauen-institut.ch/pg_blu/pa/a_pflanzenpalaver_buch.html)

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2. Jürg Stöcklin, 2007, Die Pflanze. Moderne Konzepte der Biologie.