



## Health concepts in organic agricultural systems

*The basis of the principles and practice of the organic agriculture movement is the connectedness of soil, plant, animal, man and ecosystem through health. But ‘What is health?’; ‘How can health be measured?’* **Anja Vieweger** and **Thomas Döring** have led a project, sponsored by the Ekhaga Foundation, to clarify and critically assess ‘organic health’ concepts; review current approaches to define and measure health, and bring together disconnected debates.

Aspects of health in agricultural contexts are mostly approached in separate discussions within soil science, plant science, animal science and human medicine, with little interaction or communication among these disciplines.

Our study looked at the five agricultural domains of humans – animals, plants, soils and ecosystems and investigated which criteria are used to describe health within each of them and to identify any links or common ground. This was done by performing a quantitative text analysis on health criteria in (a) the current scientific literature and (b) expert statements from conducted interviews. Nearly 50 descriptors of health were rated according to their suitability as criteria of health. Additionally, in two international, interdisciplinary expert workshops, health concepts in agriculture and the IFOAM principle of health<sup>1</sup> were discussed.

### Health: pinning down the meaning

In the first workshop, the cross-disciplinary use of the notion of resilience emerged as a universal and measurable criterion. Participants agreed that resilience can be applied to a wide range of subjects – soils, plants, animals, humans and ecosystems<sup>2</sup>. Similar results emerged from the quantitative text analysis, which indicated that the terms most often used to describe health in all five domains are function, resilience, maintenance and resistance (see Figure 1). Other terms are frequently used in one domain (e.g. productivity and sustainability in soil health), but much less frequently or not at all in the others. Overall 42 different terms were used as criteria of health in the studied texts, showing the high diversity of conceptual approaches. At least 24 different terms were used in each domain; with the exception of animal health, where we found only 12.

### Communicating health

As concepts are not equally shared among the domains, it becomes clear that the specific ‘languages spoken’, terms and concepts used in different domains can lead to obstacles and difficulties when the organic principle of health is applied in a general way. This underlines the importance of clear communication of the meaning of health in different domains for research, the formulation of principles and rules and their translation into practice.

The second workshop identified important next steps towards a better understanding, application and communication of the IFOAM principle of health in the areas of practice, policy and research including: a) clear identification and demonstration of health concepts in organic agriculture; b) continued dialogue among disciplines and stakeholders; c) a gap analysis for regulations and standards of organic agriculture; d) establishment of a reference system (e.g. long-term trials) for research purposes.

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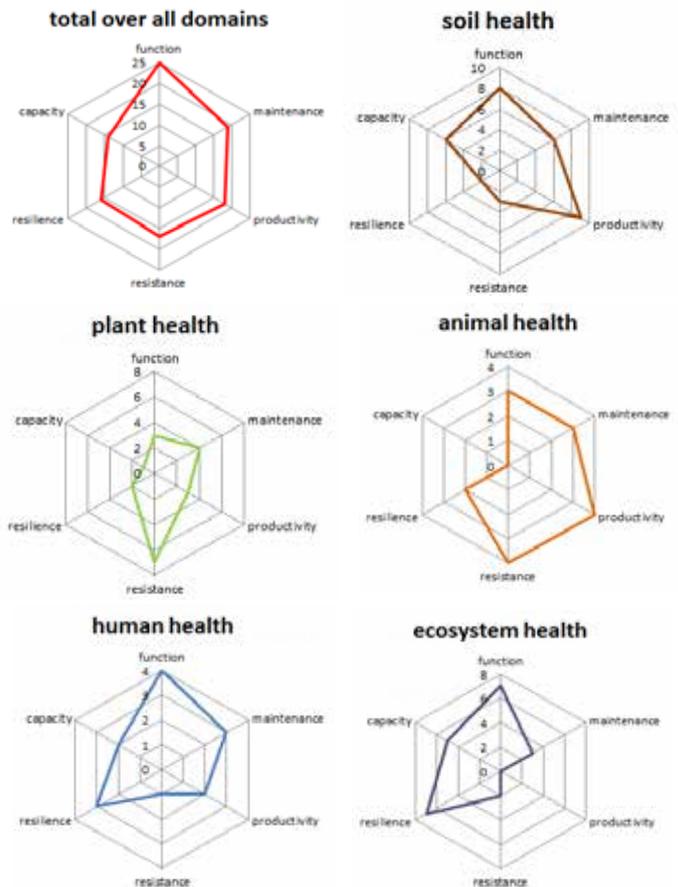


Figure 1: The six terms used most frequently to describe health by the authors of the 75 analysed papers; the graphs show how often these overall ‘top-six’ terms are used in each of the five domains.

### One health or linked healths?

The literature of the past century reveals that many studies describe health links covering parts of agricultural systems; e.g. interactions between soil and plant health; and the ‘One-Health’ approach, addresses links between human and animal health. However, the system as a whole and links between all domains is not very well described.

Therefore, an intensified and continued interdisciplinary dialogue between soil science, plant pathology, veterinary science and human medicine, is necessary for a more comprehensive understanding of health in agriculture.

### References

- IFOAM, (2005). The Principles of Organic Agriculture [http://www.ifoam.org/sites/default/files/ifoam\\_poa.pdf](http://www.ifoam.org/sites/default/files/ifoam_poa.pdf) [Last accessed 6 Sept 2013].
- Döring TF, Vieweger A, Pautasso M, Vaarst M, Finckh MR, Wolfe MS. (2014) Resilience as a universal criterion of health. *J Sci Food Agric* DOI: 10.1002/jsfa.6539