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Topic 1 - Ecological approaches to systems' health

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INSPIRING FARMERS FOR HEALTHY FARMING

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Abstract: The health and nutritional value of agricultural food products is strongly linked to, and inherently dependent on the production process and farm system. However, there are currently only limited options for transferring and measuring farm-health principles at farm level (Vieweger and Döring, 2015). In our previous work we have shown how organic farmers have developed their own strategies and philosophies for running healthy farming systems and increase the health of soils, plants, animals and humans. Such tacit farmer knowledge and awareness of a holistic systems-approach to health in food production can contribute crucial information and practical understanding for food system sustainability. The current project builds on these earlier findings, using participatory multi-actor approaches to collaborate with the established international network. The farmer groups in Germany, Austria and the UK aimed to 1) conceptualize health criteria on farms, such as 'Is a nutrient or humus balance calculated?', 'How much time is spent for observation and reflection?', 'Are regionally adapted breeds and varieties used?'; and 2) develop a concept for farmer-to-farmer learning, defining most appropriate conditions and methodologies for the multiplication of this knowledge. With a co-learning approach, we aim to allow a flexible integration of farmer knowledge and experience, thereby inspiring farmers to reflect on the potential ways they can improve health in their system, and further develop their individual methods over time; this approach also aims to help research identify general drivers of farm health.

Introduction: There is an ever-growing list of pressures on food systems including climate change, biodiversity loss, environmental contamination, pathogen resistance and soil degradation. The current situation calls for a comprehensive and holistic systems-approach to finding solutions, linking up individual disciplines and jointly collaborating towards transformative change. In our former project, an international group of farmers agreed on a list of ten statements that describe how they achieve health on their organic farms (Vieweger et al., 2017, Table 1). Although several of these ten statements are already commonly known, accepted and in line with the IFOAM principles (IFOAM, 2005) (e.g. statement 1) some of the farmer statements are rarely addressed or spoken about in the sector, describing more holistic and softer approaches (e.g. statement 5). While they scarcely feature in the organic regulatory or advisory framework, these skills were highlighted by the farmers as being particularly import for running a healthy farm.

Table 1: Principles of health, developed by organic farmers in the UK, Austria and Germany in the course of several workshops (slightly abbreviated; full length principles are available online at http:/tinyurl.com/HealthNetworks)

Statement	Farmers who aim to run healthy farming systems…
1 Soil health	are aware that soil health is fundamental and the base for health in all other domains: plant, animal, human, ecosystem
2 Biodiversity	recognise and closely observe changes in; and they aim for high and increasing biodiversity in their system, which contributes to the function of the agro-ecosystem
3 Systems thinking	are aware of working in and with nature's systems and include all domains according to their being, as part of the agro-ecosystem
4 Observation skills	develop the ability to closely observe key health-related processes on their farm and react appropriately
5 Intuition and self-observation	develop the intuition and ability for self-observation as part of the observation process of the farm, are aware of their own strengths and weaknesses and know their own resources and those of the farm
6 Overview	ensure the manageability and overview of land and processes (diversity, integrity and sustainability), their responsible design and optimal organization of capacities on the farm, so that the complexity and size of the farm does not negatively affect health
7 Long-term thinking and acting	improve health by planning in an increasingly broad and long-term perspective of the system, e.g. through long rotations, perennials, habitats for wild animals, hedges or trees
8 Shifting goals	shift their main goals away from mass production towards multiple outcomes: quality production, optimum yields, resilience, animal welfare, biodiversity, etc.
9 Impart health	get across the story and value of the product and the farm through close communication with, and involvement of customers, consumers, retailers, processors, etc.
10 Indicators	The first and most apparent indicators of health on the farm are (in alphabetical order): biodiversity, economic sustainability (financial viability), external inputs, food quality, health of people on the farm, number of veterinarian visits and treatments, use of antibiotics/wormer/ medicine, plant vitality, soil fertility, soil workability, weeds, pests and diseases, and yield

There is a need now to develop mechanisms for transferring this tacit knowledge and monitor and assess health effects on organic farms. We therefore followed two aims: (A). Together with the farmers, we developed and described a concept for Knowledge Transfer and Exchange (KTE) for the identified farmer statements of health. Project farmers jointly agreed on optimal conditions and the most appropriate and change-inspiring approaches to bring these specific strategies into the wider farming community. (B). Secondly, the project group ventured to elaborate farmers' criteria for health monitoring and asked if there are specific criteria more useful in different environments or countries. We aimed to identify commonalities and differences in the described criteria for translating these health statements into practice, and if they vary between farms and over time.

Material and methods: During three workshop events in autumn 2018 the farmers in Austria, Germany and the UK individually discussed criteria for health monitoring and their suitability for the implementation of their ten statements. Secondly, the farmer groups elaborated a first concept for a farmer-to-farmer learning approach (e.g. inspired by the concept of stable-schools (Vaarst et al., 2007)), and discussed what the most appropriate conditions, environment and

methodology would be. The project farms in each country demonstrated their own interpretation of the health statements and showed what they mean in specific farm systems, family systems, economic systems, etc. Based on the outcomes of this initial work, the farmers and researchers jointly organised an individual farm-school event on one farm in each country during 2019. At these events, the farmer-to-farmer learning strategies were 'tested' in a wider group of farmers in the region. These interactive and collaborative events aimed to further refine the health assessment approach, and to review the effectiveness and usefulness of the farmer learning methodology.

Results: A general view that emerged in all the farmer groups was that their ten health statements are intrinsically linked and interacting with each other and they should not be individually assessed or measured in isolation, but that all ten statements should be considered with equal importance and looked at in the whole picture.

Farm-school concept: Each farmer group in the three countries described how this knowledge could best be transferred to other practitioners, how they themselves would prefer to learn from others, and how they suggest inspiring others with their own successes. This work was described as an individual and personal learning process, but with the strong need for a continuous discourse with others. Being part of a long-term farmer working group focussing on the ten health statements was seen as most useful by all farmers. Regularly meeting on one of the farms and sharing experiences and learnings peer to peer, and the joint discussion of challenges was agreed to be one of the major needs for this learning process. Also, practical demonstration and example was a crucial component of all three developed farmer-to-farmer learning concepts.

Each group organised an individual farm-school event during 2019 and tested their approach with a wider group of farmers in their region. All three had individual needs with regards to the practical framework of the events, to be able to share inspiration and learn from each other. With regards to group size, the Austrian farmers preferred a total number of 10 members as the maximum, to ensure meaningful interactions, in Germany there were 15 and in the UK 20. While they all agreed that the groups should meet 2-3 times a year, over several years, the optimal duration of each meeting varied in the three countries: a one-day event was preferred for the farmers in Germany and the UK, in Austria a 2-day meeting was stated to allow deeper immersion in the subject and added the benefit of social exchange in the evening (personal bonding to enhance trust in the group).

Monitoring criteria/questions: The farmer groups also discussed whether numeric measurement and comparable metrices would be necessary, if they (and which) would be able to provide meaningful insights to this complex subject. They concluded that the currently available and reductionist options of criteria such as carbon sequestration, biodiversity index, economic returns etc. would not provide enough information to draw the required holistic picture. This farmer learning process emerged as being a highly dynamic, individual and continuous process, where direct and numeric comparison may not deliver useful results. Instead, the groups developed a list of questions, which they would ask farmers who wish to monitor or assess their own implementation of the statements. Each group agreed 10-15 questions for each of the ten statements. Examples are for statement (stm) 1: 'Is there a long-term soil monitoring plan for the farm?', 'Does the farmer take crop and plant health (and weed diversity) into account when looking at soil health?'; stm 2: 'Does the farmer recognise and improve biodiversity processes?', 'Does the farmer understand that he/she has to allow space and scope for biodiversity, even if that risks a reduction in productivity?'; stm 3: 'Is the natural yield potential for the farm known/reflected on?', 'Are breeds and varieties used that are adapted to the region/climate?'; stm 5: 'Does self-reflection happen regularly?', 'Are there certain times reserved for self-reflection?'; stm 6: 'Are there measures in place for reducing stress on animals and humans?', 'Does the farmer regularly review the effectiveness of resource use?'; ', stm 8: 'Are

quality criteria defined, and reviewed regularly?', 'Is there a strategy in place linking food production to marketing and the wider food system?' , , etc.

Discussion: The farmer groups developed the first ideas on how to implement the farm-school concepts in practice. As in other areas of organic agriculture, farm schools were seen as an appropriate way of imparting health promoting attitudes and inspiring newcomers. However, this work needs to be carefully refined and further described for each country. Each farm and farmer are at different stages of health awareness or development, and the practical implementation of these ten health statements will most certainly look different in each farm system. Essential however is the awareness, attention and continuous review of health concepts on the farm. The currently developed farm school concepts will need some further adaptation and support to roll-out in a wider group or region for a lasting and long-term 'kick-off' of such regional working groups (grass-roots development). This project will run until autumn 2020 and finalised outcomes will be prepared for the congress in September.

Conclusions: Implementing the organic principle of health on organic farms is a complex and multifaceted task which requires individual approaches on each farm. Transferring knowledge on how to promote health on organic farms can therefore not be based on a simple roll-out of recipe-like recommendations. Instead, it needs a dynamic process based on intensive social interaction with peers, personal engagement and self-reflection, and open-ended questions more than quantifiable health metrics. While this process may be slow our results and experiences with the organic farmer workshops show that this approach is more appropriate for bringing about and handling the system shifts required for better health on organic farms.

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