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BIOFACH2020

into organic

“Organic delivers!”…a positive impact on soil

The consequential costs of inappropriate land use are huge

Interview with Prof. Dr. Freyer

Under the banner “Organic delivers!” the main congress theme of BIOFACH 2020 will highlight the positive impacts of organic production methods. The second conversation in the BIOFACH interview series on this topic explores the positive effects of organic farming on soil.

Soil is a valuable asset and one of the most precious resources we have. It is the basis for producing our food. According to the FAO (Food and Agriculture Organization of the United Nations), a third of soils worldwide are already degraded. Soil degradation means a permanent or irreversible change in soils or their loss. It is fact that it takes around 1,000 years to build up a 2-3 cm layer of humus. Organic farming methods have been proven to contribute to the formation of valuable humus. This not only increases soil fertility but improves soil structure and makes soils resistant to drought. Humus-rich soils store CO2.

Agricultural scientist and soil expert Prof. Dr. Bernhard Freyer heads the Division of Organic Farming at the University of Natural Resources and Life Sciences (BOKU), Vienna. Since his student days he has been working on organic farming and its positive effects on soils in Europe, Africa and the USA. His research areas include crop production, agricultural ecology, biological farming, development collaboration, innovation research and environmental sociology with a special focus on the conversion of farms to organic agriculture, crop rotation management and interdisciplinary and transdisciplinary system research in the urban-rural context.

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He says that that our soils are being exploited, leached and compacted by agro-industrial production systems, then artificially revitalised with chemical fertilisers so that they can continue to supply us with food. Disruptive weeds and insects don't stand a chance under this shower of pesticides. But we pay a high price, including the degradation and desertification of soils.

Prof. Dr. Freyer, what are the greatest challenges nowadays for soil as a resource?

To date there have been no provisions within the framework of ecologically motivated direct payments to farmers to undertake crop rotation in a way that will allow us to achieve a sustained improvement in soil fertility. This is a major oversight and huge failure on the part of policy-makers. This could be managed accordingly by means of levies for the direct payments. And we would gain a lot. For healthy soil management there needs to be about 15% clover or alfalfa in the crop rotation. Even farms without livestock can exploit these either by selling it as forage, for example as part of a collaboration between farms, for seed production or as components of green manure. The positive effects are an increase in soil fertility, a lower requirement for mineral nitrogen fertilisers, reduced weed pressure and less to no erosion. If we had reacted in good time, farming would not be the major climate sinner that it is now. Today, given the current changes in the climate, that will no longer be enough. In many regions of the earth we also need agroforestry systems to stabilise and/or rehabilitate the soil. This is all sufficiently well-known but rarely implemented except by organic farmers.

What are the positive effects of organic farming on soil?

The most important positive effects of organic farming are the higher humus content and the aggregate stability of the topsoil that provides a habitat for soil organisms. Water infiltration, i.e. the possibility of water penetrating into the soil, and water retention capacity are comparatively higher in organic soils. This is not just important for crops, which can be supplied with water over a longer period, but also for the capacity of soils to store nutrients. Nutrients are not leached out but are available to the crops and can be replenished by the soil. A major benefit of organic farming for soils is the higher microbial activity and diversity of soil organisms, which support nutrient availability and play a role in protecting the crops.

Organic farming maintains soil fertility and builds up new fertile soil. This is not just important in our latitudes, but above all also in countries in the Global South. Can organic soil management help us reach sustainable development goals (SDGs) sooner and if so which?
Organic farming prevents soils from eroding. Combined with the higher water retention capacity, these are the two main functions that can prevent the worse in the event of extreme weather, for example the erosion of fertile, mineral-rich topsoil. These effects are naturally also very important in Global South countries. In addition, the reduction in costly operational inputs like mineral fertilisers and pesticides can make farming possible even if farms have limited liquidity. Sustainable production, healthy food and climate-friendly cultivation are factors that speak for themselves and affect various SDGs in a positive sense. In this context there are always complex effects at work.

What do we have to do to expand organic farming faster and worldwide - can conventional farming learn from organic agriculture?
There needs to be a realignment of the entire agricultural research segment, funding policy, education and the media. In addition, the World Bank, as an important funding source, needs to revise its guidelines, tie them to ecological stipulations and if these are met provide more funding to create incentives. Above all, we need to rapidly do away with old cliches and in the future fund cultivation systems based on ecological agricultural research that are capable of rehabilitating the broken system while also thoroughly eliminating high-risk practices that are not in line with the system. In short: Biodiversity promotes soil fertility, reduces weeds and disease pressure, stops erosion, increases water availability, helps to minimise damage and produce healthy food.

Do you believe that there is also an ethical and social component to the conservation of soil?

Now, this is where it all begins - and the orientation of our lifestyle is then the resulting variable of a fundamental ethical and social attitude that has no other option but to withdraw from the current agricultural, food and health system. Are we going to starve then? Most certainly not, because the current agriculture and food production system is extremely inefficient in the quantities it supplies. So changes in agriculture and food alone will not suffice; a large number of industries need to be shut down and re-established. And there is plenty of innovation capacity around to get this done.

The relationship between ethical and social aspects and the agriculture and food industry is muddled and completely off the rails. The regulatory framework in which we are embedded is an obstacle to a change of direction that is socially and ethically sound. We are clinging to the stereotypes of a neoliberal rationale that have long since been swamped by reality. It's yesterday's system and it is tired, burnt-out, susceptible to errors and in many cases contrary to SDG provisions.

The consequential costs of inappropriate land use can barely be balanced any longer. These costs are enormous but have been concealed until now. For the sake of simplicity and convenience they are kept out of the balance sheets. But it's catching up with us, because ultimately the resources are finite. The investment costs for a change of direction need to be taken over by society as a whole, not just by the agricultural sector. The principle of responsibility has to be rethought. It's an all-encompassing problem with an incalculable number of things that need to be fixed in the agricultural, food production and associated health system. This means that it needs to be a global restructuring project, because: "There is no right life in the wrong one." (Th. W. Adorno).

The interview was conducted by Karin Heinze, BiO Reporter International

Biographical details, Prof. Dr. agr. biol. Bernhard Freyer

Born 11.8.1958 in Stuttgart
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- Since 1998 full professor at the Institute for Organic Agriculture (IfÖL) at the University of Natural Resources and Life Sciences (BOKU), Vienna.
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