



**Freie Hochschule
für Geisteswissenschaft**

Sektion für Landwirtschaft
Section for Agriculture
Section d'Agriculture
Sección de Agricultura

Creating fertile soil from nature to culture

Report of the Agriculture Conference
at the Goetheanum in Dornach/Switzerland 2017

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Creating and maintaining fertile soil

All creatures living on the earth depend directly or indirectly on the very thin layer of soil which covers a large portion of the globe. It is something we inherit from nature and the work of earlier generations. Its continued health is vital for our future survival on earth. The question we are facing now, is how to maintain and increase this fertility of the soil?

The many contributions and lively break time discussions that occurred during the Agriculture Conference at the Goetheanum brought new inspiration and hope for the ongoing work of improving soil fertility!

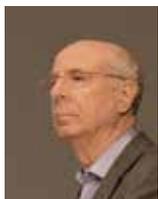
Participants felt especially honoured that HRH The Prince of Wales – Prince Charles – gave the opening video speech. Why was Prince Charles asked to open the conference? Many people will be aware that he has an organic farm and sells many organic products. He also has a country house surrounded by a most beautiful garden. He takes an active part in designing and developing the garden and involves himself in the practical work of the farm. It is wonderful to visit that garden and experience how the surrounding landscape is enhanced through the art of gardening. It is all done with a great deal of feeling for what is living in nature and sensing how it might be developed further.

Prince Charles has also written a book with the title: "Harmony - a new way of looking at our world". Among other interesting topics in his book, he also writes about nature and agriculture:

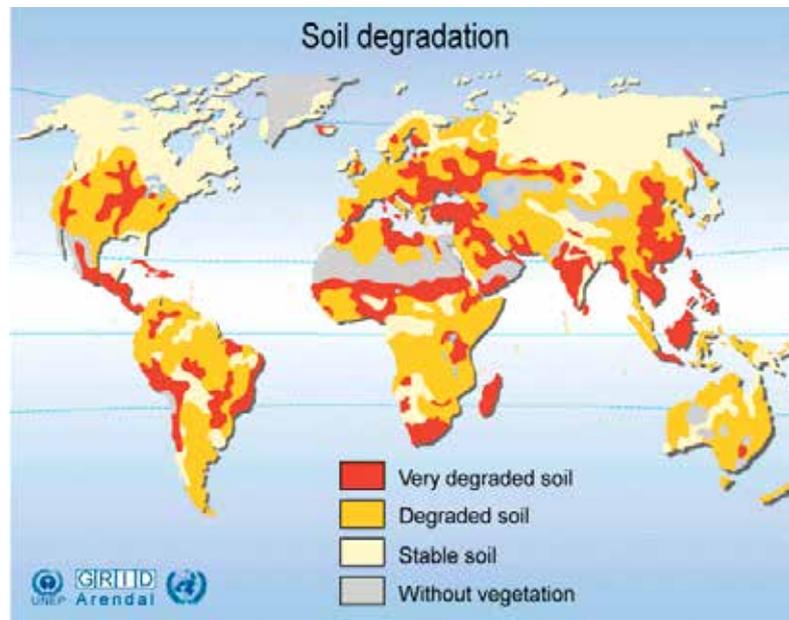
"Essentially it is the spiritual dimension to our existence that has been dangerously neglected during the modern era – the dimension which is related to our intuitive feelings about things."

About his farm, he writes: "David Wilson has been the farm manager at the Duchy Home Farm for the past 25 years and he and I have also worked out a plan to begin experimenting with 'biodynamics'. This approach to food production takes farming a step closer still to the natural processes that govern agriculture and all other life cycles on Earth, especially in relation to the health and resilience of the soil – ultimately the most important resource we have. Early results have been promising."

The book and the conference speech show that Prince Charles is familiar with biodynamic agriculture and has a great concern for the soil. He also expresses a kind of conscience of our time on several other crucial subjects.



Thomas Lüthi, Co-leader of the Section for Agriculture



Source: UNEP





Opening Message from Prince Charles

Videomessage from HRH, Prince of Wales

Ladies and Gentlemen, I was most touched to be asked to contribute a few thoughts to the opening of your international biodynamic conference and all the more so when I learned that your theme this year is soil – an issue about which I care very much indeed.

Now it hardly needs me to tell a conference of biodynamic farmers that the way in which we manage farmland in general and our soils, in particular, is of central importance to ensuring the future ecological health of our planet. Indeed Rudolf Steiner was one of the first people in the modern era to recognise explicitly the principles of inter-connectedness in relation to farming and to describe the links between the fertility of the soil and the health of plants, animals, and people. It is truly remarkable that so many of the farming principles and practices highlighted in Steiner's 1924 agricultural lectures are still so pertinent today. If only the visionary advice he gave had been more widely recognised and adopted perhaps much of the damage that intensive farming has inflicted on a long-suffering planet – the degradation of soils, the decimation of the biodiversity that once co-existed and actually assisted food production and the diminished health and vitality of our food, could have been prevented. Instead, it has taken up until now for people finally to realise that we have engineered a mammoth crisis in terms of loss of soil fertility.

Of course viewing things in the way Steiner articulated was not new, even in 1924. Those same powerful inter-connections were known to many ancient civilisations but somehow this wisdom was abandoned during the age of reductionist scientific thinking which still persists so strongly. I can't help believing that at a deeper level many farmers still have an intuitive, underlying understanding of those

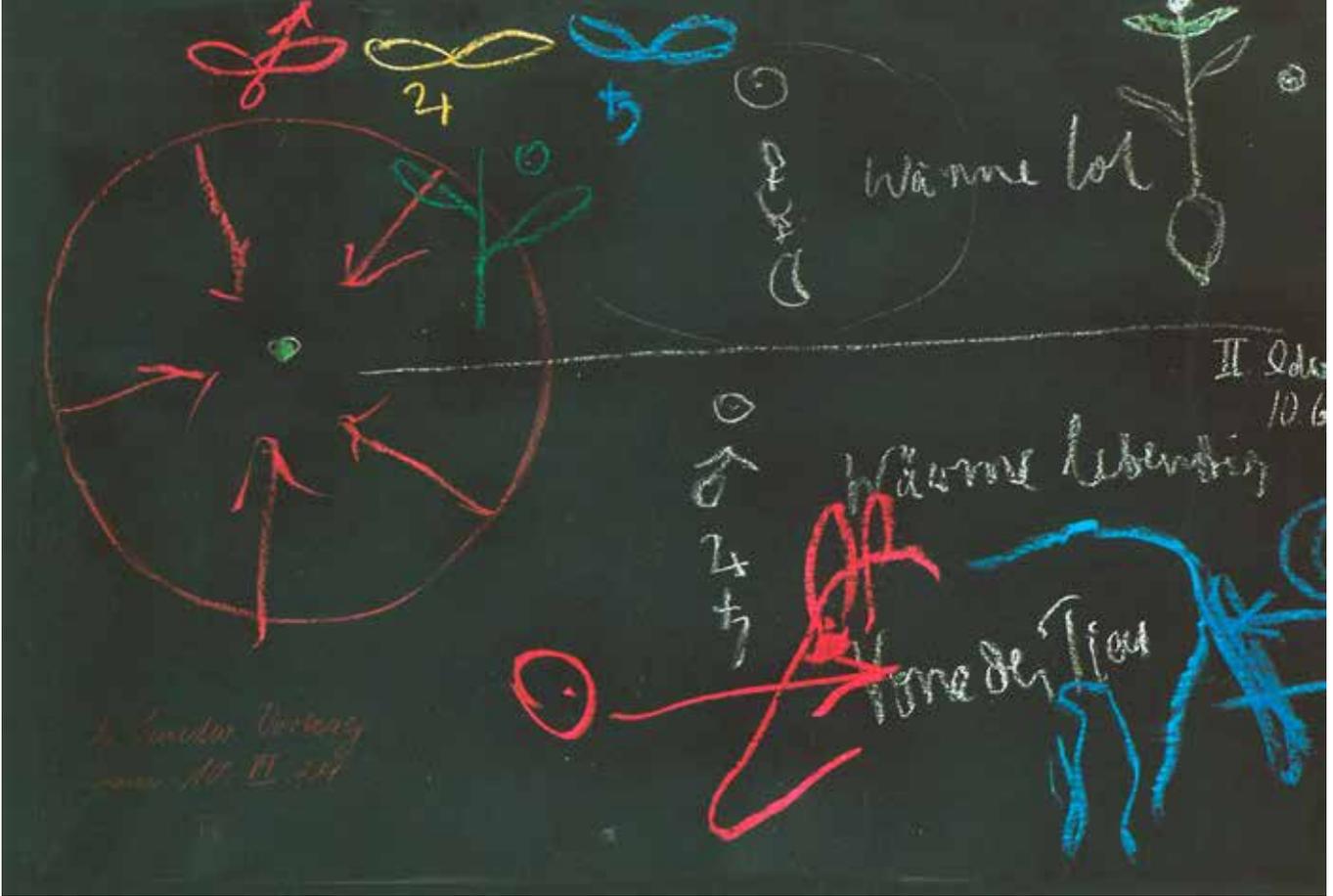
connections and know in their heart of hearts that agro-chemicals and monocultures are doing long term harm. In an ideal world, they would much prefer to care for the land in their charge in ways that would maintain and improve it through adopting a more holistic approach. The problem they face is that the prevailing economic system fails to put a price on the benefits of such approaches leaving the majority of farmers trapped on a treadmill of intensive production with little choice but to produce food whose apparent cheapness fails to reflect the true costs of its production.

The question, of course, is whether anything can be done to change this situation. Well, fortunately for us, nature is remarkably resilient and there is no doubt in my mind that the natural capital which has been lost during the chapter of intensive farming could be rebuilt if only there was a fundamental change of approach.

(...)

Ladies and Gentlemen, I have spent many years and a good deal of breath extolling the benefits of working with nature, harnessing positive forces through healthy soil, healthy crops and healthy animals to provide healthy food for people. (...) Of course, we are a long way away from a future where an essential role of farmers will be to act as carbon stewards, rotating their crops with fertility building grass and clover pastures grazed by livestock – which Rudolf Steiner referred to as the soul of the landscape. But we are certainly closer than we were.

Ladies and Gentlemen, this comes with my warmest good wishes for a most successful meeting and my fervent hope that you can make progress in this most pressing of tasks, rebuilding the health and vitality of our soils and making our future food systems more sustainable.



Chalkboard drawing from Rudolf Steiner, 2nd Lecture of GA 327
 “The forces of the Earth and of the cosmos”

Welcome

Michaela Glöckler

The sub-title of this conference – “From Nature to Culture” – is not only true for agriculture but it is also a general archetype for all human development – culturally, historically and personally for each individual. We struggle for our humanness. It does not come about of its own accord. Every single person is called upon to ‘cultivate’ himself.

I am very pleased to be able to bring something from a medical point of view at the beginning of this conference. Interdisciplinary collaboration can yield the insights we need nowadays. This means that no profession can be considered more or less important than any other – each one relates to the other on an equal level in a spirit of common endeavour.

We doctors can learn from farming how to see the earth as a living organism. Farmers can learn from medicine to understand why it is that the agricultural individuality stands on its head – which means that the spirit is beneath the soil! What is found above the soil is to a certain extent the consequence of what has been ‘recognised’ under the ground in the root realm. Medicine can also help to identify organs in the greater organism of nature and understand them in relation to their comparable function in the human organism. In the Agriculture Course (GA 327), Rudolf Steiner compares the soil to the diaphragm.

We can feel the diaphragm when we push our fingers under our ribs. We can feel how this great breathing muscle, the diaphragm, rhythmically rises and falls as we breathe in and

out. Singers consciously train their diaphragm breathing. We can also feel however that as the diaphragm rises and falls, the organs in the chest cavity – the heart and lungs – rise and fall too. The same thing happens to the organs of the abdomen. The whole organism with its organs is in a continuous rhythmic movement thanks to the diaphragm. In its activity, the diaphragm makes a clear distinction between the chest and belly cavities hence its name ‘diaphragma’. The word ‘schizo-phrenic’ has the same root; it means a split, a separation of soul forces in the consciousness.

During embryonic development, the diaphragm forms after the third week in the upper part of the embryo and only moves down below around the twelfth week. All the processes in the embryo that occur both above and below, help to form the diaphragm. The diaphragm is the organ that forms as an organ manifestation of the relationship between above and below. When we laugh the diaphragm moves up and down between above and below. Perhaps successful soil cultivation is like laughing for the soil...



Michaela Glöckler (Switzerland): Emeritus leader of the Medical Section at the Goetheanum, where she worked since 1988. Lecturer and trainer of medical doctors (IPTM) nationally and internationally. Co-founder of the European alliance ELIANT (www.eliant.eu).

Marienhöhe

Three generations of work on building up soil fertility

Fridtjof Albert

I would like first of all to express my thanks to the Goetheanum, the place from which so much inspiration for the work we are doing today, has come. I am now 800 km away from my farm and it is not easy for me to speak about it since it is also a living being. Marienhöhe Farm is situated on 230 ha of glacial moraine. In common with much of the Brandenburg region to the north-east of Berlin, half of it is covered in pine forest. The climate is continental with an average annual precipitation of 400 millimetres. Ground water is 75 meters below – an agriculturally unfavourable situation.

The first phase

The story of the farm begins in 1928, just a few years after the Agriculture Course of 1924. The group of young people who had been corresponding actively with Rudolf Steiner during the run-up to the course – Erhard Bartsch, Franz Dreidax, Max Karl Schwarz and Almar von Wistinghausen – set out afterwards, to find a farm on which to try out and put those ideas into practice. They wanted a farm whose fertility reserve had been severely impoverished. By starting from zero they wanted to demonstrate what this new approach could achieve. This is, as you will certainly agree, an unbelievable risk to take and it demonstrates the enormous trust in anthroposophy – and in what Rudolf Steiner presented – that these people had, and that is hard to imagine existing today. It was this farm



which was offered to Erhard Bartsch. At the time the farm consisted of a completely barren hilltop surrounded by a thirty-year-old pine forest. There was hardly a tree or bush to be found growing on it, the sandy soil was being blown about by the wind and sand dunes were forming on the fields. There were twelve cows in the barn and every one was infected with brucellosis. This meant that no calf had been born on the farm during the previous two years.

The first measure undertaken was to plant hedges. Boundaries were needed and differentiated spaces had to be created within this endless open expanse. The other thing to address was the health of the livestock. The animals were not slaughtered as the vets recommended but instead ways were sought and found to cure them of brucellosis.

In the Agriculture Course, Rudolf Steiner speaks of the farm organism and of the agricultural individuality. What does this actually mean? Keeping cows and making fine manure compost is one aspect, the moral quality and inner commitment of those responsible, is the other. The meditative element was a powerful motif during those early years.

The new approach brought significant results. Within a very short time the change in fertility became visible and already after ten years, Marienhöhe became a model farm that people from far and wide came to visit and learn about biodynamic agriculture. Then came the second world war and afterwards its ending. When the war end-



ed, Marienhöhe was on the front line of battle. Erhard Bartsch was of the conviction that if the farm individuality is real it could not be abandoned and that they should remain true and faithful to the farm. All the farm workers, therefore, hid in the forest and then when it was safe, returned to the farm to find it in ruins. This situation tells something of the farm's being and how these people were able to say: "We want to continue. We will take on all the difficulties facing us, we will accept them and carry on with the farm".

Then came the period of the GDR and its compulsory production quotas. These required every farm to produce and deliver a range of products. It was never a question of whether the farm was able to do so, it was simply a requirement. This led to a draining away of the farm's lifeblood. There was, for instance, no more straw for bedding which meant that moss and sawdust had to be used which in turn led to an extreme acidification of the soil. In 1957, 33 years after it had been started, there came a moment when it felt impossible to continue. Erhard Bartsch, who was at the time living in Austria, spoke to those working there and said: "Please go back. It is important that we learn to live without any security in outer existence, that we continue our work and trust that the spiritual world will come to our aid." That was an extraordinary demand to make. But the people followed his advice and returned. This is one of the miracles that has happened.

The second 33 year period

A new chapter in the development of this individuality and of the farm community had been started – a process of internalisation. The collectivisation of agriculture was complete by 1960 and all privately owned farms had been integrated within massive conventionally run state-owned Farms. It was only Marienhöhe that still ex-

isted independently as a biodynamic farm. There really seemed to be no hope to keep it as such. In 1961 the wall was built and it was then not even possible for the people working at Marienhöhe to flee the country. In 1963 there came a point when it was no longer possible for the farm to meet the production quotas at all. So a delegation went to the managing committee and told them that they could no longer meet the targets. The expected response was: "If you cannot manage the farm, then we will have to take it off you". Instead, however, the chairman stood up and said: "Well, we don't want to be inhuman. What can you supply?" This question was not even thinkable in the scheme of how the country was run, but the people from Marienhöhe had in preparation thought up a suggestion in case such an unexpected question would be asked. And then the reply from the officials came: "Well, go ahead and do that then". It had seemed that the end was inevitable and that there would be little point in contacting the authorities. As it turned out the very people in charge and with the power to end it all, offered a helping hand. This is a recurring motif.

When we came to the farm as youngsters shortly before the wall came down, the inner substance created by this second generation was tangible to us. It had enabled the farm to survive throughout this period. This substance could only have been the result of spiritual activity and not external success. This spoke to us deeply and confirmed our resolve to join and develop the work further.

The third phase

In 1990 the wall came down and the GDR collapsed. Marienhöhe in effect collapsed with it. No one wanted the grain anymore. The milk that was delivered was no longer paid for because the dairy had gone bust. We then started our own processing and direct marketing of the main ag-



ricultural products. A new land ownership form was also needed. At the same time as the GDR land was being privatised, Marienhöhe was being put into a charitable trust.

Manure and soil fertility

After the turnaround, many researchers took an interest in the farm – for it presented itself as a practical long-term trial. What was surprising was that although potash and phosphate levels were very low, the plants didn't appear to suffer from any deficiency. It begs the question as to what is actually going on here? Has it to do with active nutrient mobilisation? Perhaps. But I tend to think that this is not so relevant considering the total nutrient content and the reserves present in these silicate-rich soils. I rather imagine it has to do with the creation of new substances. It is a hypothesis that I want to express. After all in the Agriculture Course Rudolf Steiner pointed out that in the living realm under certain conditions, one substance can be transformed into another. It is perhaps an incentive to start thinking more in this direction.

We make a compost out of waste plant materials, soil and a lot of wood ash and use it for the grassland. We work differently with manure. In part of our cow barn, the animals are tied up for feeding and milking. Beautiful dung is dropped here each day that is neither trodden in nor subjected to anaerobic conditions. It is removed daily to a composting site and built up in 40 cm thick layers. A pile roughly two meters long is created. The preparations are then added. We begin with yarrow. Next day another two-meter length is laid down and the chamomile is put in. And so it continues day by day. The whole thing is then covered with old hay. It fairly quickly starts to warm up and maintains a temperature of 60 degrees for about three days before slowly cooling off. Earthworms now start taking up residence. The red manure worms transform the entire

heap into a completely homogeneous, brown and crumbly mass. At this stage, another 40 cm layer of manure is put on top by hand. The piles are in this way gradually built higher. The composting process is relatively fast. Losses are very low and this has been confirmed by research that has been carried out. Nitrogen losses were about 10%, carbon losses 30% as a result of breathing processes. This well-matured manure has been found excellent for legume crops.

I still wanted to share something about the being of the preparations. In contrast to a previously held opinion that it is primarily horn manure which should be applied to sandy soil – a situation in which silica forces are already very strong – we have found the opposite to be true. The plants need to be taught how to work with the light forces in the right way. And this is where a timely application of horn silica comes in.

We can see that with such a management approach all kinds of assistants will come to our aid. On our farm, for instance, we find large numbers of the red wood ants which are in danger of extinction in other places. These ants are to be found crawling everywhere because they have made their home in the hedges and in the forest etc. Visitors to the farm often ask what is going on here with all these many ants. I only mention these things in order to see them as realities. Rudolf Steiner says – and I never understood it before – that there are things that can help in quite radical ways. I have often asked myself what such radical things might be. I had not yet seen them myself. But one can suddenly come to realise it. And if we ask ourselves how a farm

such as ours can withstand such confused and stormy times, then surely it has to do with such things.



Fridtjof Albert (Germany): Since 30 years farmer at Marienhöhe.

www.hofmarienhoehe.de

Soil fertility from the perspective of spiritual science

Ueli Hurter

In the Agriculture Course, Rudolf Steiner draws on spiritual science to create a new vocabulary of practical conceptual images for us farmers and gardeners. With this denomination - practical conceptual images - I want to express that the topics can be approached through practice, through thinking (conceptually) and through imagination (pictures/images).

I have chosen four practical conceptual images from the Agriculture Course with which to address our theme of soil fertility. My aim is primarily to present the archetype of each one.

The polarity between above and below

The concept of soil fertility implies that the soil is capable of bearing fruit. Let us take a concrete example from my own farm – in mid-October wheat is sown at the rate of 200Kg / ha. After germination and following a winter rest, tillering, growing, shooting, flowering, filling out and ripening occurs and the grain that is harvested weighs 4000Kg / ha. That is the phenomenon of soil fertility – one grain of wheat is placed in the soil and after a full growing cycle, it becomes 20 grains. What is really happening here? Processes from above and below are permeating one another on and in the soil. By the end of a growing cycle what was below the ground – in terms of density, weight, and quantity – is now found in the upper realm – 1 meter above the soil, ripened and permeated with the qualities of light and warmth – and is transformed into a food product for making bread.

The Agriculture Course teaches us to broaden our perception to include the heights and the depths while keeping both feet on the ground. We are led step by step from the soil to the growing wheat plant, up to the tree tops, the weather phenomena, the sun's seasonal position and on to the outermost planets, to Saturn – there we cross a threshold and turn back. We see the qualities from above as they gradually descend, separate out, begin to condense and come into manifestation. The same thing happens below. I look down through the soil, into ever deeper layers until I reach the bedrock – a threshold is reached and then I turn back. What is below now becomes a wellspring that comes into manifestation as it rises. It is all about changing the perspective so that instead of looking outward from a point, we look inward from the periphery. Instead of seeing Saturn



Walther Roggenkamp following a theme of Rudolf Steiner: light and darkness. Source: Goetheanum art collection

physically far away, we perceive how the earth moves 'dynamically' within the Saturn sphere.

The soil as a diaphragm

The soil is described as an organ comparable to the human diaphragm. The diaphragm is a muscular tissue that separates the breast cavity from that of the abdomen. It is actively engaged in the process of breathing and, together with the rib cage, creates a zone of suction which draws the lungs out and makes breathing possible. It 'breathes' in us and we can also breathe consciously. Let us take these characteristics of the diaphragm to illuminate our understanding of the conceptual image of the soil as the diaphragm of nature!

In contrast to the human being, the farm organism has its head beneath the earth and its belly above while the soil itself is like the rhythmic organ of the diaphragm. How can this reversed situation be understood? The plant is a living organism which brings together what is above and below as part of its living existence. It has gradually evolved to become an ever more strongly rooted, soil-creating plant of earth. And if the region of the roots is the head of the farm organism, then the root must be a sense organ that perceives the mineral realm of the earth – that sees,



smells, tastes etc. This shows itself in the plant's physiology through the upward flow of dissolved mineral substances. The superior planets (those beyond the sun) influence the plants from below via the silica in the soil. The inferior (inner) planets work downwards on to the upper parts of the plants through the calcareous substances and help, via root secretions, to open up and enliven the soil. The plant experiences the soil and causes an upward flow of dissolved salts – and the plant enlivens the soil with a downward stream of sugars.

Having looked at the organ itself, I would like to consider the relationship between the organ and its organism. Here too we find a reversal taking place – a perceived object now becomes something in the process of becoming. The soil is an organ, it is part of a greater whole, it is part of an organism. Soil fertility, therefore, is a function of the whole organism. Everything that I do on the farm ultimately affects the soil. Are we really aware of this? The variety of wheat we choose, a new cattle handling facility – everything affects the soil. I don't always immediately see the effects but I can sense them, just as I can sense how much my agricultural work is influenced by the soil – the fodder quality, health of the calves, storage capacity of the carrots etc. We can speak of inter-dependency or a living reciprocity between organ and organism.

Substances as spiritual carriers

In the Agriculture Course, the normally accepted separation of matter and spirit is superseded by a new understanding of substance. Take for example silica: the rock crystal can be considered the end result of a physical process. If we try to grasp the activity of silica however it appears as something reflective and mirror-like. We can then explore the soul gesture of silica which Steiner describes as being 'noble', 'self-sufficient'. And finally, the being of silica can be described as the 'noble gentleman'.

Based on this approach we then create new substances that can be spirit carriers – the preparations. We take materials from the natural world such as rock crystal and a cow horn and by leading them through the various stages of preparation, make them dynamically effective. Horn silica and horn

manure may be described as the dynamised forces from above and below. The compost preparations can be seen as the dynamised inter-relationship of organ and organism. Through these new substance compositions, spiritual forces can be drawn in. These new life forces and strengthened ripening forces can be the source of soil fertility. Soil fertility is thus both a cultural and an agricultural task.

The individualising principle

The human being thinks. The biological-material foundation for doing this is the brain. The substance of the brain must be completely dead so that our thoughts can be clear and purposeful. Dead brain substance is necessary for the spiritual clarity of our thinking. The cow does not think with thoughts that she is conscious of. The substance rising out of her metabolism into her brain does not become entirely dead and mineral-like as it does in our brain – which is why she can grow horns. The horns have the power to return the semi-freed forces from the stream of food back into the organism and allow the ego potentiality to remain connected with the organic processes. The cow's dung carries this ego potentiality within itself. This is what we use as fertiliser. The ego potentiality contained within the manure works upon the roots of plants so "that they grow in the right way in relation to gravity" (GA 327, lecture 8). The farm develops as an individuality.

It is remarkable that a cultural concept like individuality is introduced in the Agriculture Course and made into an agronomic concept. Rudolf Steiner widens the natural science foundation of agriculture to include the spiritual view of the human being. Our human path of development is a progressive process of individualisation – and it remains the driving force of cultural development to this day. The individual human being breaks free from collective rules and conventions and increasingly makes his own decisions. Anthroposophy is fully in tune with this stream of development. Recognition of personal freedom and the resulting responsibility is fundamental.

Becoming more individual means in the first place becoming more specific. But, in stepping out of a collective human context, I also become increasingly a representative of all humanity. I become more unique by becoming more universal. The process of individualisation is at the same time a process of becoming more universally human. And in the case of agriculture, individualisation means first of all that there is a closed cycle of substances within the organism. It also means however that such a place on earth is representative of the whole earth and of nature.



Ueli Hurter (Switzerland): Co-leader of the Section for Agriculture at the Goetheanum and farmer at L'Aubier. www.aubier.ch



Silting in the DOK trial: conventional/mineral treatment.
 Pictures: FiBL/Andreas Fliessbach, November 2002



Silting in the DOK trial: biodynamic treatment.

How can the fertility of our soils be maintained?

Results of the long-term DOK trials

Paul Mäder

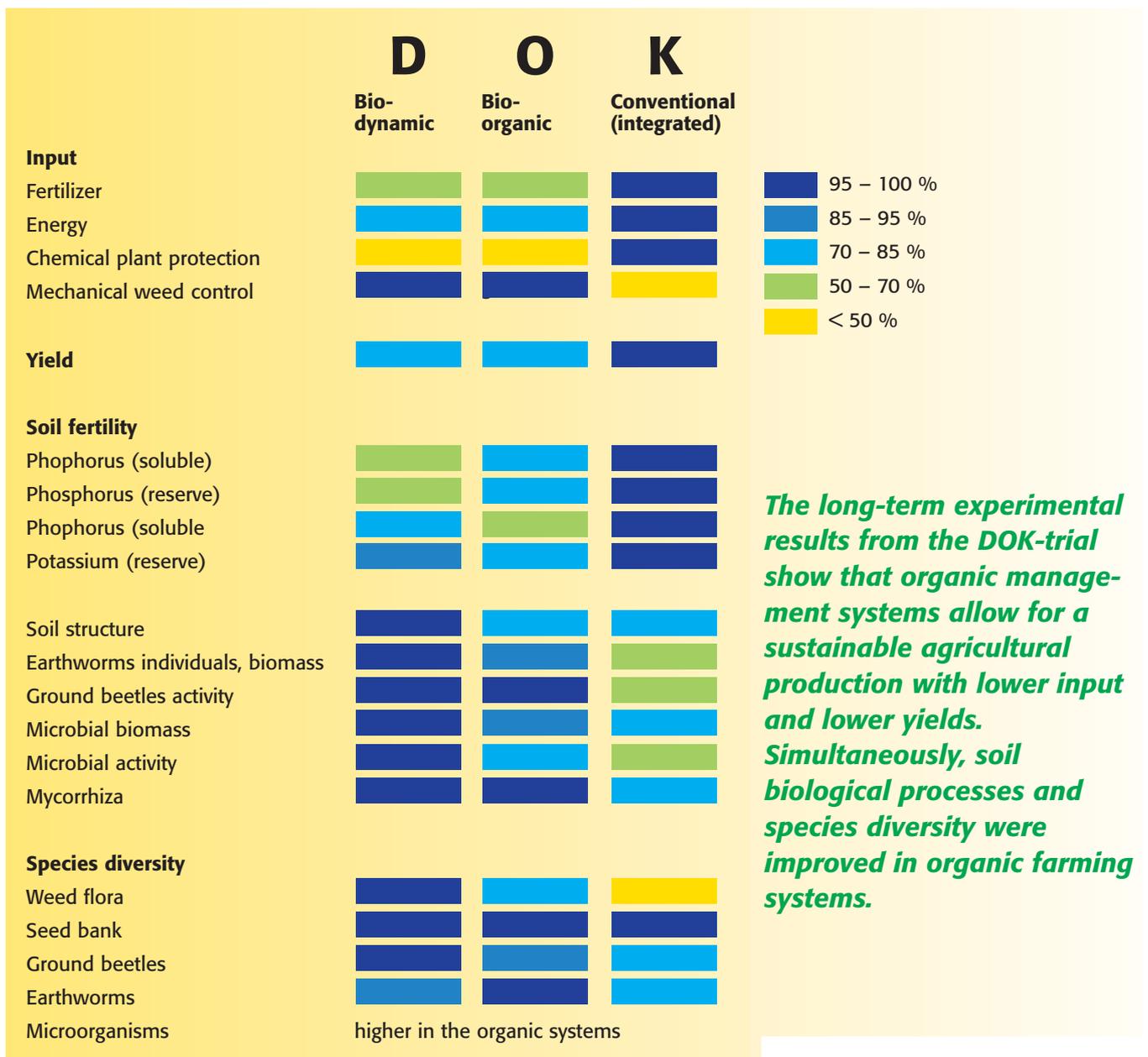
Agricultural soils are highly endangered all over the world. Farmers bear a great responsibility for this very thin skin that the fertile soil of our planet earth represents. With their



Paul Mäder at work. Picture: Pino Covino

research, scientists help to understand the complexities of the soil and recommend its wise use. The concept of soil fertility has changed quite significantly in a few years. During the 1950s soil fertility was synonymous with yield bearing capacity. Later the ratio of fertiliser input and yield became relevant – a more fertile soil can produce more with less fertiliser. Today it is the ecosystem functions that stands in the foreground – can the soil absorb heavy rain? Can it regenerate clean drinking water? Can it sequester carbon dioxide from the atmosphere? Can it support the resilience of an agricultural system?

What kind of agricultural approach is most successful in harmonising steady yields with a positive ecological balance? This is the question that inspired the launch of the DOK trial. This is a long-term field trial whose aim is to compare three agricultural systems with one another – biodynamic (D), organic (O) and conventional (K). It came about in 1973 on the initiative of scientists and farmers con-



Overview of the results of 21 years of the DOK trial. Source: FiBL.

connected to anthroposophy and following a successful political campaign in the national parliament of Switzerland. The practical trial began in 1978 which means that next year is its 40th anniversary. The scientists continue to work closely with farmers to keep the trial conditions as close as possible in line with current farming practice – a participative form of research that has been carried through for several decades!

The research has produced a wealth of research results. These were published in 2002 in the well-known journal Science and then summarised in a special brochure produced after 21 years of trials (three crop rotation cycles). The table above gives an overview of the results.

The conclusions drawn from this and many other trials and scientific investigations may be summarised in the follow-

ing way: “The long-term results of the DOK trial show that organic growing systems with significantly lower inputs offer a more resource-friendly approach despite lower yields. At the same time, organic methods encourage soil life and increase the diversity of wild flora and fauna.” (Fließbach et. al., 2000)



Paul Mäder (Switzerland): Director of the department of soil science at the Organic Research Institute (FiBL) in Frick / Basel. Guest lecturer at Basel University, the Swiss Technical College in Zürich (ETH) and the University of Barcelona. www.fibl.org



Following the trace of the spirit's working in nature

Reflections by Martin v. Mackensen on a Michael Letter* of Rudolf Steiner

The Michael Letters were written each week by Rudolf Steiner during the last period of his working life. We have been working with them during the Agriculture Conference for many years and the book has become the basis of our anthroposophical study together. These texts are notable for their conciseness which is a distinct advantage for us farmers in that we can get to the end of them before falling asleep! Even a small section read at the start of a meeting can be very helpful in preparing participants so the meeting becomes worthwhile.

I would like to use the example of a wheat plant to describe the experience of leaving behind sense perception and thinking in the way described in the letter. When I go outside at this time of year I come across a tiny little wheat plant and I perceive its current form with my senses. Sense perception is a striking against the form. That is the first step. I then go out in spring and find the plant has changed. I consciously visualise this change and compare these different stages of development in order to understand the

plant's inner dynamic. This is a second step, and as I take it, I partially leave the realm of sense reality, while coming closer to the wheat plant. As a third step I am able, by drawing on my experience of the sense world and through my own inner activity, to fully awaken an interconnected manifestation of the plant in myself in all its stages of development and including all the seasonal and site-related factors that affect its growth. It means that I now have an imagination of wheat. Then as a fourth step, it is sometimes possible for one brief moment to penetrate to its being, its inner essence. The separation of subject and object is overcome and I become one with the wheat – its sensory appearance only shimmers from afar and the normal thought concepts are stripped away too.

There is one part of the plant that is hidden from sight, it is the root. Without an engaged dig with the spade, it will not be found. A student once built a spade holder for my bike so that I could always carry a spade with me – it was a wonderful present! It is with the root that the plant creates soil. This can be seen in pioneer zones such as in the high mountains, there we can find plants but as yet no soil. If we carefully remove such a plant we will discover that around

* Rudolf Steiner: Anthroposophical Leading thoughts (GA 26).
The Sense and Thought-Systems of Man in Relation to the World.



the roots there is some soil beginning to form. Soil fertility comes about through root activity. It lies hidden and this reveals something of the whole journey through this letter – the cultural task that we are required to fulfill concerns an inner strengthening that leads to a super-sensible understanding of oneself and the world.

In the 6th paragraph, the rose is taken as an example to describe our sensory relationship to the plant world. I think that choosing the rose was no coincidence. It points towards the Rosicrucian principle. This states that the knowledge I have gained belongs not to me, but to the world. By engaging with the world through the senses throughout life I enrich myself with perceptions and the thoughts linked to them. These must then be inwardly transformed so that they do not feed my ego but enable me selflessly, to give them back to the world and my fellow human beings. What I have become through knowledge needs to be given back to mankind. Only then is it truly human.

The letter describes how instead of observing the physical reality of a plant with our senses, we can start perceiving elemental beings. The way that leads to this can, I think, can be traced and understood in the letter. If I have been able to create a strong and clear image of the plant within myself, one that is not externally visible but is nonetheless real, I can then focus my attention on the connections and relationships. This means focusing less on where there is something and more on where there is nothing. I will begin to perceive a context of relationships, I will see the elemental beings. They are soul embodiments of these contextual relationships simply seen from the other side.

I now have a daring question. If the thought life of a human being, as a result of a free initiative, can be inwardly strengthened to the point of being able to perceive, how is it then in the case of an animal? The animal cannot separate itself from its sensory experience. It is tied into the archetypes of world wisdom, it has no need for development.

The animal's organs are formed of this wisdom, this potent world of ideas. When we make use of such organs for making preparations, what is it that we are doing? In these organs, we find in a fixed form what we as human beings have as free potential in our thinking. It is only the 'unfinished' human being who is able to separate out its thinking. The cow cannot do so, it has no free thought life. The special connection of the cow to the starry cosmos is due to the particular nature of the ruminants metabolic organs. We make use of this wisdom-rich functional relationship for the preparations and put it in the service of soil fertility.

By inwardly separating myself from the world of sense perception as well as my conceptual thinking, I find myself standing face to face with my own destiny. What is meant by destiny? I can remember certain moments that have led me towards the situation I now find myself in. There is a sense of being guided. The guiding power that I experience, however, is myself. That is what I see when I look into the past. I learn to be ever more attentive and awake to the present moment and to take on that which comes towards me from the future. Everyone has experienced sudden insights: 'But of course that is why this happens now!' The world creates my destiny, it comes from the world, I take it up, I am active within it, I identify with it. This discovery of destiny and development of karma is an individual journey inspired by Michael. Michael, the time spirit of today demands nothing, yet counts on each individual's own activity. His interest needs our heart-filled thinking and willingness to act.



Martin v. Mackensen (Germany): Farmer on the Dottenfelderhof, Director of Landbauschule Dottenfelderhof e.V.
www.dottenfelderhof.de

Experiential sketches on soil development and composting

Large scale biodynamic composting in Northern India

Sundeep Kamath

I would like to take you to the state of Punjab in the North of India. Punjab means the land of the five rivers and it has been one of the most fertile regions of the world. It is the most intensively cultivated region in the country with a very high cropping intensity. And it was also the cradle of the so-called Green Revolution with an indiscriminate use of chemical fertiliser and chemical pesticides as part of a government programme of which we see the huge damages for water and soil today. One idea from this so-called Green Revolution was given by all government advisers. They recommended the farmers to burn the crop residues. This was totally contrary to the traditional practice of mulching or composting, and our simple farmers thought this was the new technique. This has now caused another man-made disaster. The smog from this burning is all over the state as far as Delhi. Flights and trains are cancelled and people with respiratory diseases like Asthma fill the hospitals during this time.

A founding member of our biodynamic association, David Hogg, along with a member of our managing committee, came up with a possible solution for this problem. They have bought thousands of tons of this crop residue from the

farmers and have started an industrial biodynamic compost factory. They made a lot of heaps of compost and invested a lot into mechanisation to make compost on a large scale. There is water input and there is cow dung which comes from a goshala, a cow shelter. We need only about three months in India to make the compost because of the weather. And this compost is then given back to the farmer. Rudolf Steiner says in the second lecture that "From the perspective of an ideal farm, any manures or the like that are brought in from outside would indeed have to be regarded as remedies for a sickened farm". Dear friends, we must consider that all these farms are sick and they really need this help from outside.



Compost turner



Sundeep Kamath (India): General Secretary of the Biodynamic Association India. www.biodynamics.in



Bruno Follador (USA) emphasised the importance of having a balanced approach to accelerating the composting process and then by way of contrast showed pictures of piles of uncared-for waste and a fleece covering ripped apart by the wind that he had taken on

one of his advisory trips. Compost clearly needs a lot of attention and consciousness directed towards it if it is to yield good results. He concluded with a quote from the French philosopher Simone Weil: 'Attention is the rarest and purest form of generosity'.

www.natureinstitute.org/soil

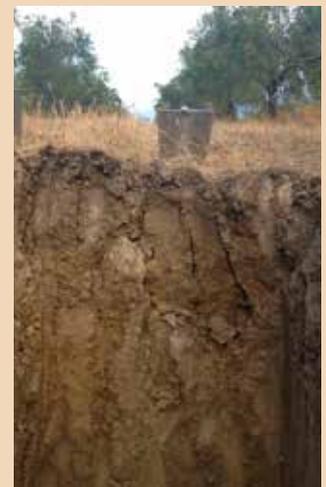


Marisol Garrido (Spain) is an agricultural scientist with several decades of experience. The fertility of Mediterranean soils is very important to her.

Because normal soil analysis is not accurate enough for her, she has developed a system that uses aerial photographs of the soil's colour to determine its mineral content and geological rock formation.

www.demeter.es

www.biodinamica.es



Agriculture as an agent for societal change

Steffen Schneider

I think all farmers would tell you that building and maintaining soil fertility stands at the core of any agricultural work. That is just as true of Biodynamics. Additionally, though, and maybe more uniquely also at the core of Rudolf Steiner's indications on agriculture, is the recognition of its "multifunctionality". In other words, our work in farming stands at the foundation and crossroads of culture and spirituality, the economy and ecology. With these themes playing in my work and life I am struggling to make sense of our times, a time where the foundations of our ecological, social, economic, and spiritual well-being are under tremendous attack.

I suggest that living in this time means to consciously recognize, cultivate and act in the three foundational domains of our human existence. They are our relationship to our own self, to others and to place. Note how this reflects the essential "multi-functional" character of agriculture. Our times are calling for each one of us to perceive these domains as ONE WHOLE and to conduct our lives in conscious awareness of and balance within all three of these domains.



Hawthorne Valley farm in Ghent, New York, USA

I believe strongly in the unique task of a renewed agriculture in initiating and driving cultural and societal renewal. And it all starts with soils. Why is it that to this day soil, or dirt as we often call it, is stuck in a huge societal blind spot? At the Institute for Mindful Agriculture we've come to see that at least a partial answer to this question lies in a disregard of the aforementioned "threefold nature" of our existence today. But how do "self" and "other" play into this challenge around place, soil and agriculture? Connecting our individual striving with care for soil and compassion for our fellow beings can be observed and practiced within an agricultural context better than almost anywhere.

It might seem completely counter-intuitive to turn to agriculture as one of the important factors in addressing the urgent issues we are facing as a global community. Farmers have disappeared from the Census and their average age is hovering close to 60. And urbanization continues to empty out the rural communities. Despite and because of these facts I believe that agriculture stands at a singularly important point as we struggle to find a way into the future. On farms practicing holistic, regenerative biodynamic methods we can experience and participate in some of the most important and fundamental dynamics of our human existence on earth. This can help re-connect us with others and the living world, creating a solid and healthy foundation to discover one's own purpose in life, all the while serving the food needs of our fellow human beings, as a co-evolutionary deed on Mother Earth.



Tobias Bandel (Germany) uses the simplest of means to raise awareness for the soil, the farmer's best friend. He helps people to understand and appreciate the value of compost and make good use of it (again) in many countries of the world. His descriptions of the impressive composting work being undertaken in Kenya and Honduras wake enthusiasm for composting on a grand scale in a professional and locally adapted way.

www.soilandmore.com



Steffen Schneider (USA): Farmer at the Hawthorne Valley Farm, Founder of the Institute for Mindful Agriculture, President of the Biodynamic Association of North America.

www.hawthornevalleyfarm.org

Warmth – from compost to oven to heart

Jasmin Peschke

Members of the audience hold hands and become aware that their neighbour's hands are warmer or colder than their own. They do not perceive the actual temperature – of say 36°C – they only feel that it is different. My feet for instance are only cold in relation to the rest of me. One of the characteristics of warmth is that it penetrates everything, knows no boundaries and is pivotal to the transformation of substance. Warmth forms connections – on the level of substances when metals melt and in the social realm when people meet. Warmth has healing properties as is demonstrated by the effect of fever on infections and sclerotising diseases.

The human individuality is based on warmth and so is the farm individuality. Warmth is found everywhere on the farm. Compost lies upon the soil and is therefore in the zone where the biodynamic preparations are active. Plants don't grow in cold earth and will only ripen in an atmosphere of warmth and light. The cow shed is always warm. The kitchen is the warmest place in the house and is where the proverbial fire is crackling in the stove. Food

preparation is a creative ripening process that draws out the flavour. What is cooked with love can be experienced through taste. Actively realised ideas can be pursued with a fiery enthusiasm. And there is an outpouring of human warmth when human beings meet in empathy for one another.

In his 'Occult Physiology' Rudolf Steiner says that it is humanity's mission actively to transform inner warmth into empathy for all living beings. Warmth is a very important element and has a major part to play in our work on the farm.



Jasmin Peschke (Switzerland): Trained ecotrophologist. She has been involved with anthroposophy and nutrition for more than 30 years and is now the international coordinator for food and nutrition within the Section for Agriculture at the Goetheanum.



Paola Santi (Italy) has brought the traditional farm Fattoria Di Vaira in southern Italy, back to life with the help of a large community. Its heavy soil and pronounced summer drought is a challenge to the farmers. Much attention is given therefore to sustainable cultivation and biodynamic composting. Soil biodiversity is a benchmark for evaluating the work carried out to improve soil vitality and is continually being assessed.
www.fattoriadivaira.it



Friedrich Wenz (Germany) is a pioneer of minimum tillage. He explained the five steps of regenerative soil improvement: 1. Bring about a nutrient balance 2. Keep the soil continually covered using green manures and catch crops. 3. Sheet composting to increase soil life. 4. Stimulate soil metabolism by managing the processes of decomposition 5. Spray horn silica and compost teas on the leaves to increase vitality.
www.humusfarming.de





Mound culture as a way to improve soil fertility

Walter Sorms

I have a great love for archetypes. This is why I am particularly interested in fundamental principles. If something is thriving such images bring inner joy to me and if something on the farm is suffering, they compel me to continue seeking a solution. They also help me to realise that the same goal can be achieved in different ways. For this reason, I would like to recall a few principles of life before addressing the theme of soil cultivation.

1. All living organisms on the earth consist of protein. There are of course many other substances involved but each organism has its own particular protein. It is the physical anchor without which life on earth could not unfold. Is this law also applicable to the earth itself? Edwin Scheller explored this question and found that everywhere all over the earth – in all soils, on the ocean floor, on glaciers – there is a special, identical protein that no other living organism possesses. It must, therefore, have been created by the earth's own metabolic process just as with other life forms. It seems that Scheller had discovered the protein of the

earth. To me, it indicates even more clearly that our planet can be seen as a living organism with its own spiritual archetype through which it organises and develops itself. That is the true life of the soil.

2. Everything living is continually renewing and developing itself. When it doesn't do so, it stagnates and dies. This applies as we know not only on the physical level but also in the realms of soul and spirit. What has grown old is dissolved and through the forces of metabolism something new condenses.

3. No creature on the earth can exist independently of the rest of life. We are existentially dependent on one another. In order that life on earth can thrive, a whole universe of beings with the most diverse capacities must come into relationship with and serve one another. If everyone gives their surplus energy to the others, there will be a lot of life. Life arises out of surplus and at the same time, it produces a surplus – a wise arrangement. This is what we must focus on in our work.

Active nutrient mobilisation

From my perspective, these are the most important elements concerning active nutrient mobilisation. Once the seeds have germinated in the soil the seedlings are totally dependent on the topsoil for their nutrition. If the earth is able to give freely of itself, the plants will grow strongly and quickly. They increase their vitality and assimilate far more sun energy than they will ever need for themselves. Through their roots they pass on the excess of phloem sap to the soil and thereby feed the soil life. Plants that grow vigorously maintain their own special soil flora and depending on what they need, can either encourage or hinder the micro-organisms by supplying them with all manner of enzymes, hormones, acids etc. The plant is in this way able to guide the processes going on in the soil and to actively mobilise soil nutrients. It forms very close relationships with fungal mycorrhiza which are able amongst other things, to dissolve and absorb soil minerals that are not directly accessible to the plants. The most well-known symbiotic relationship between plants and soil bacteria is found in the root nodules of the legume family, where nitrogen-fixing bacteria are directly linked into the plant's flowing sap. These nodule bacteria are very unusual in that they are the only forms of life on the earth which do not require protein or its mineral precursors in order to live. Nitrogen from the air is sufficient for them so long as they are supplied with a steady energy supply from the plant juices. This characteristic makes them a source of new protein just as the plants are the source of new energy and the rocks the suppliers of minerals. This knowledge is fundamental to our work as farmers and gardeners and gives us security. The fertility of the earth can secure predictable harvests so long as we understand these connections.

Soil cultivation

Soil cultivation has several purposes. The earth starves if there are no plants growing on it. This is why the period between the growth of one crop and the next must be kept to a minimum. The more precisely we are able to sever the green tops from their roots just below the soil surface, the longer will we be able to allow catch crops to grow without inviting an invasion of undesired species. We have recently made good experiences using a special cultivation implement from Stuttgart. Everything growing above the earth dies and slowly returns to the soil. Earthworms play the greatest role in this. They live from the dead plant material lying on the surface. If soil cultivation is carried out during the warmer seasons and plant material is worked in shallowly, the soil mysteriously gains a good structure and is light, fluffy and easy to work.

I am only aware of one indication in the Agriculture Course that refers to soil cultivation. "In any given locality on



the earth there is a particular level marking the boundary between what is above and below the earth's surface, everything which is raised above this normal level of the district will show a special tendency to life, a tendency to permeate itself with ethereal vitality. You will, therefore, find it easier to enliven ordinary mineralised soil and make it fertile by incorporating humus substance or any decaying waste material if you build it up into mounds of earth. The earth substance itself will then acquire the tendency to become inwardly alive and plant-like"(GA 327, lecture 4). It was this spiritual insight that inspired me 14 years ago, to use the ridging methods and equipment developed by Julian Turiel. His ridging plough consists of a very carefully constructed frame to which various tools can be attached. The ridging bodies create ridges of around 20 cm in height. With a second pass some 9 days later we adjust the implement so as to split the original ridges down the middle and create new ones. This re-ridging means that the other half of the field is also cultivated. We grow vegetables and cereals on ridges of varying sizes and generally have good results. The soil crumbles readily and is soft and full of life. The plant residues that are worked in, break down rapidly. The entire field is then like a large compost heap. It confirms the validity of the previously described principles of ridge culture. I believe that this method is well suited to bio-dynamic growing. It is fun and helps to increase soil fertility.



Walter Sorms (Germany): Farmer and co-manager of Hofgut Rengoldshausen for 31 years. Long-term friend of Edwin Scheller. www.rengo.de



Historical settlements in Kenya - vulnerable towards land grabbing? Picture: Nikolai Fuchs

To whom does the land belong? Between land grabbing and common property

Nikolai Fuchs

The building of soil fertility is essentially a farm management question. But there are also outer conditions and circumstances that make success more or less likely. Just consider a tenancy that is coming to an end – will the tenant still invest in the soil's fertility during this last year?

It is widely assumed today that sustainability is best achieved through the private ownership of land. This is frequently not the case, however. Throughout the world, soil quality is in decline and the already limited soil reserves are rapidly disappearing. Life itself, in fact, disproves this basic assumption. What kind of land ownership structure could then secure an increase in soil fertility and a caring approach to the land?

During the food crisis of 2008, there was growing awareness that the land available for food production is limited. Heavily populated countries began looking for land in other countries – and generally where land ownership laws are weak. People are then driven off the land which many of them had been farming for generations but over which they have no official ownership title. This acquisition of land is known as land grabbing. The price of land then rises and those with a genuine interest in farming it are denied access to it. Expensive land also means that higher yields must be gained from farming it and this, in turn, leads to more intensive farming methods and greater soil depletion. Fred Pearce in his book *The New Fight over Who Owns*

the Earth writes: "Few questions will be more important in the 21st century than the destiny of the land we hold in common". This development, therefore, brings with it the issue of the legal ownership of land. What actually needs to happen? The question of who owns the land has been a concern ever since mankind began to settle. Who should the land really belong to? The UN has declared access to food, a basic human right. This underlying principle applies from the moment I am born. From then on I am not able to choose whether to eat or not. But what about the land that grows the food to which I as a citizen of the earth have a right to? Is it not actually mine?

Since the GLS Trust was founded in 1961 we have gradually changed our approach: When the Trust still had money from industrial donations we were able to buy the land outright or pay off a farm's debts so that it could be transferred to a charitable trust. Such donated funds are no longer available to us and charitable trusts no longer have the same appeal. We are living in a different time and new times demand new solutions. As the saying goes 'when there's a problem, there's a solution'. I have just referred to the crisis of 2008. In 2009 the World Agriculture Report was published. This world changing report showed that what will feed the world in the long term is ecological agriculture and a network of small farmers and not industrialisation and ever more technology. That is a real turning point. The



other very important moment in 2009 was when the Nobel Prize for Economy was presented to Elinor Ostrom. She was someone who had worked hard for over 40 years to ensure that property held in common such as common fishing grounds along the coast have a guaranteed long-term future. The ‘tragedy of the commons’ (Hardin) – namely their over exploitation – can be circumvented by following certain procedures. When crisis strikes, it is always good to look out for the positive things that are happening at the same time.

Silke Helfrich, an expert on common ownership, came to the conclusion that in order for something to become a common, it needs to be made into one. A decision can be taken to actively view the land as a common. In contrast to something like air which is really available to everyone, land cannot be accessible in the same way. The availability of land is not infinite and this means there are rival claims to it. Property held in common needs, therefore, to be managed by those using and having an interest in it (stakeholders). With regard to land, this means the farmers, foresters, hunters, perhaps even the processors and also the consumers. These are the people who can create an appropriate community around the land, develop their own rules of engagement and be in control of its use. These are the kind of techniques needed in future for managing common property. All this has led the GLS Trust and the GLS Bank to rethink their approach to the land question. One legal form for holding property in common that we are exploring is the cooperative model. Cooperatives operate according to the principles of self-help, self-management, and self-responsibility. They are value based organisations that generally pursue goals that go beyond that of the pure profit motive. 2000 square metres of land are theoretically available for every human being on earth. How can this land be put to appropriate productive use? It was this thought which led us in 2015, to found the BioBoden Cooperative together with other partners. We wanted to take on land and make it available for organic and biodynamic agriculture. Our aim

was to maintain and extend a regionally based, organically managed and diverse agriculture that would not only provide future generations with their means for physical survival but also promote biodiversity. We don’t see ourselves as investors in land even if we are a capital holding cooperative. At the request of farmers, the BioBoden cooperative buys fields and farm holdings in order to guarantee their long-term availability for organic agriculture. In this way, land is gradually released from being a speculative asset. As well as BioBoden there is also Kulturland which facilitates a community buy-out of a farm. Kulturland supports community buy-outs of farms. Also in other European countries, there are initiatives for buying land to keep it in common ownership with the aim of ensuring its sustainable use, especially in France with ‘Terre de Liens’.

There are also privately owned farms without a successor whose owners want to secure a long-term future for the farm. For cases such as this, we have formed the Biohöfe Stiftung in partnership with Stiftung Ökologie & Landbau. This is a trust into which whole farms can be gifted. It is operated as a charitable trust since we believe this to be the most appropriate way of holding land for future generations.

I would like to see our farms open up a little more and develop structures that provide the opportunity for people to connect and invest in the future of agriculture using various legal instruments – such as an association, cooperative, trust or maybe a limited partnership or regional share company etc. Let us create opportunities for people to help carry responsibility for our farms. Thank you.



Nikolai Fuchs (Germany): Trained farmer. On Council of GLS Trust e.V. which has been encouraging community owned farms for 50 years. On advisory council of the BioBoden Cooperative.
www.gls-treuhand.de www.bioboden.de

Fertilising must enliven the earth

Klaus Wais

Organic agriculture defines itself primarily by the renouncement of using soluble mineral fertilisers and especially synthesised nitrogen fertilisers. The fertilisation process should mimic and at best intensify the natural processes in the household of nature, the so-called ecosystem. The aim is to increase soil fertility and thereby sustain and improve crop yields. Through weathering and the accumulation of humus over many centuries, nature has been able, under our climatic conditions, to transform bare rock into fertile plant habitats. This natural inheritance can be either destroyed in just a few decades or maintained and further enhanced by the skill of the farmer. The most important component of soil fertility is generally considered to be the humus content and the degree to which it permeates the top layer of soil. How then does it come about that finely weathered minerals are permeated with humus?

Building up and breaking down

This process is part of a continuing cycle of building up and breaking down organic materials. The building up process is always dependent on plants that grow in the light. Only the process of photosynthesis can produce organic substance out of the mineral elements water and carbon dioxide. The resulting carbohydrates are the basis for all subsequent changes in substance that occur in plants, animals, and human beings. Not only do plants form carbon frameworks, they also create the potential for all life processes on the earth by releasing free oxygen into the air. Animals, human beings and life in the soil gain vitality from this potential as they break down these plant substances.

Without this process breaking down, a plant would use up its creative capacity and no further growth would be possible. In this way plants and animals complement one another creating a cycle of substances and forces – such as the nitrogen cycle and carbon cycle. It is easier to speak of the building up and breakdown of organic substance. Apart from the elements Carbon, Nitrogen, Oxygen, Hydrogen, Phosphorous, and Sulphur, there is a whole series of substances connected with them in very small amounts. Steiner refers to these in the Agriculture Course as ‘earth’ substances. Plants are responsible not only for the absorption of carbon but also for creating protein by fixing nitrogen in association with bacteria in their root nodules.

The interaction of above and below

If the farm is conceived of as a higher organism, then all the plants appearing above ground form an organ that builds up

substance. In the Agriculture Course, this organism is compared to an inverted human being, as a kind of individuality standing on its head. The soil is like the human diaphragm and separates the organs that build up the substance of the farm above the earth from the head region below the earth. “An ongoing temporal interaction connects the two realms” (GA 327, lecture 2). Beneath the earth in the soil, processes of decomposition take place. This

means that organic substances which are formed by the light in the ‘belly’ of the farm, must find a way of entering the soil. The simplest way is through the roots. A stream of assimilated substances is released by the mature plant through its roots to stimulate soil microbes. Crop residues and green manures that remain on the surface are usually worked lightly into the soil to be incorporated by micro-organisms. All these are natural soil building processes. The first level of cultivation occurs when the farmer collects up waste material and composts it in a heap. If he uses it then to spread on the meadows and pastures a further level is reached, in that the farmer uses some of the plant material to produce animal feed for the animal then to convert into manure. This is the real basis of crop production. The plants needed for human survival can then grow and be productive. It is these cultivated plants that are very demanding of soil fertility and fertilization. Human beings take these food plants out of the cycle of vegetative growth, transformation into fertiliser and breakdown in the soil.

We can thus describe the following levels of fertilization:

Level 1: Root formation, crop residues, green manures

Level 2: Composting of plant materials

Level 3: Fodder crops – livestock – animal manure

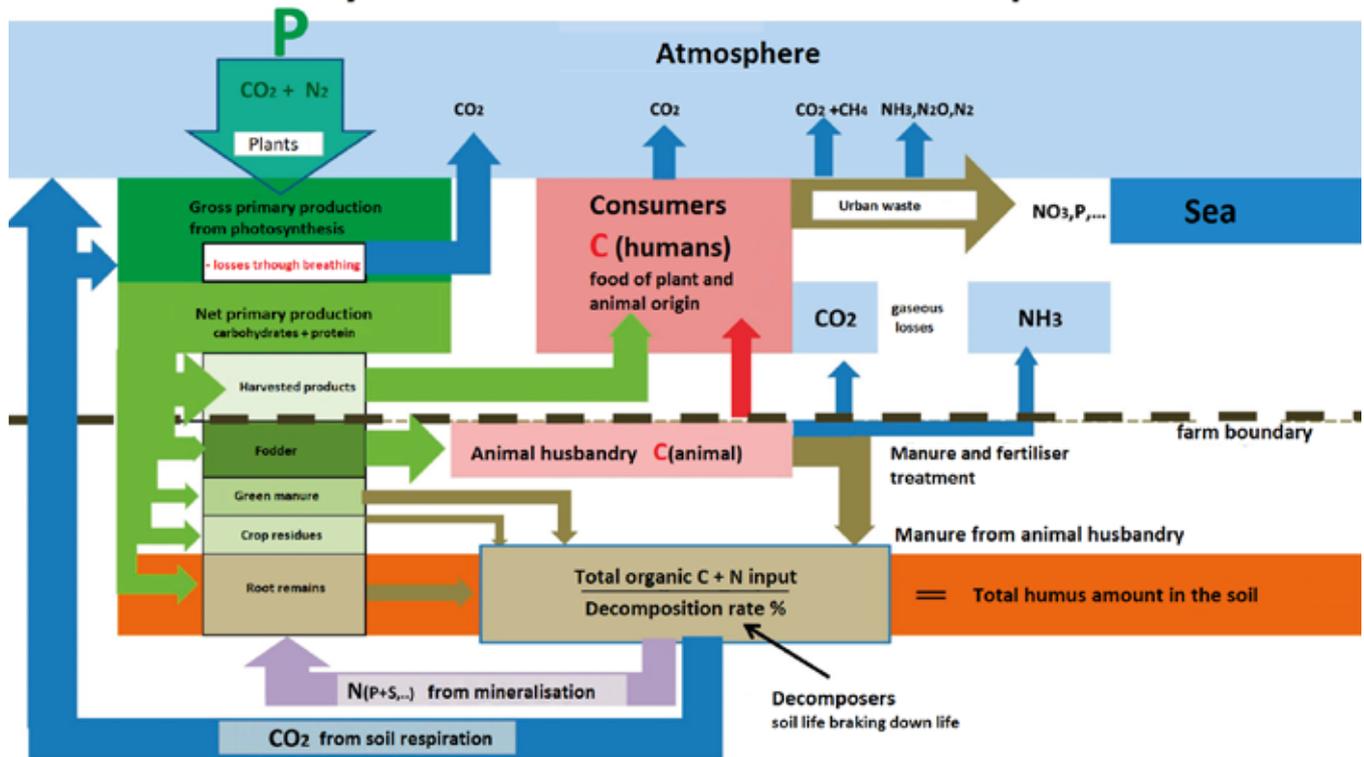
Level 4: field crops – food plants – human being

Fertilisation and nutrition

A common principle underlies all these levels – the substances created by plants from the light form the basis for ‘animal’ breakdown processes – we feed the soil life, we feed the animals, we feed ourselves.



C + N cycles on a farm without external input use



Source: Klaus Wais

From a chemical perspective, photosynthesis is the ‘up-building’ pole of activity and respiration the ‘decomposing’ pole. The complex composition of substances in the flowering plant represents the high point in the ‘up-building’ process. This is also the moment when plants for making the biodynamic preparations are harvested. At the opposite end of the scale, the processes of decomposition in the soil culminate in mineralisation. As part of a new growth cycle, the plant is then able to bring these dissolved salts back to life.

To bring this plant substance to life, however, light is needed. As plant material decays, it is taken hold of by animals in order to create the foundations for inner sensation and the beginnings of consciousness. These soul sensations are then developed further by human beings as self-consciousness. The basis for this lies in the metamorphosis of the plant. The outer plant is broken down, turns inside out and becomes its opposite. The root works on the head, the fruits stimulate the metabolism. This liberation of forces through decomposition is described in many different ways in the Agriculture Course: To replace the animal structure and retain these forces, a good ‘skin’ is needed around the compost. In the case of the cow, the forces released by the digestive processes are rayed back by the horns into the substance of the manure. Only in the human being are these forces transformed into warmth of soul and power of thought. In GA 230 (pp 187–189) Rudolf Steiner describes the differences between animal and human digestion. In the human being the spiritualising potential of the plant is retained, in the animal, it is

‘thrown back to the earth’ – this applies specifically to the cow’s digestion. In this way the cow becomes a bearer of fertility. In the Agriculture Course the following is said about the horn manure preparation: “Plant-like forces develop in the cow’s metabolic system.” These also arise in the soil if we feed the life of the soil. It is this kind of spiritual plant, this generalised life and vitality which we release into the soil when we fertilise it and which we concentrate in the horn manure preparation beneath the soil in winter.

The earth longing to become a tree

Steiner describes the quality of fertile soil using the image of the earth that longs to become a tree, to take on the form of a plant sheath. The rising sap in springtime is an external image of how the streaming ‘earthy nature’ is trying to become tree. This sap, this juice of the tree, is described in the Lectures to Workmen as the universal life of the earth. It loses vitality as it rises up the plant and its vitality must be renewed in the chemistry of the leaf by the light. This is where the horn silica preparation comes in. And so the cycle of life can begin once more.

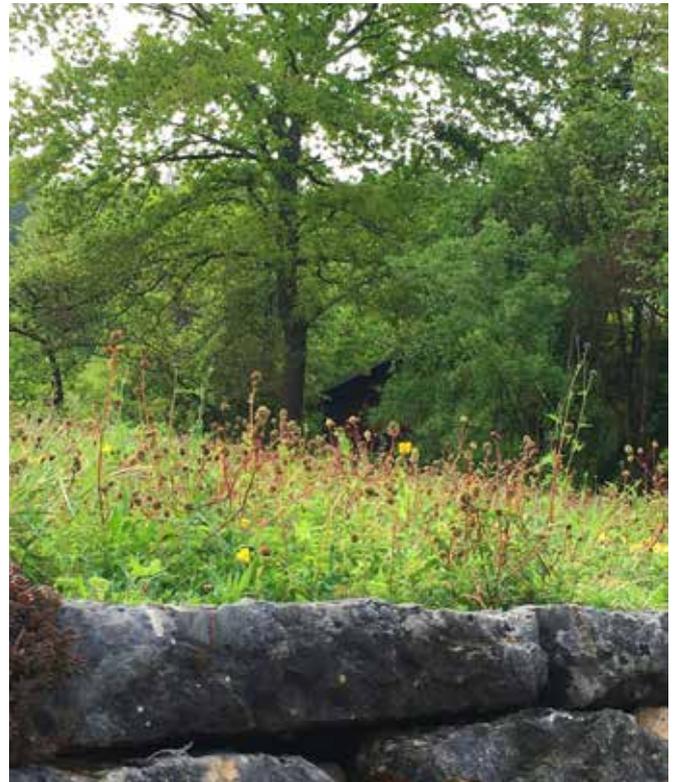


Klaus Wais (Germany): Studied agricultural science, has been farming for the last 28 years on the urban fringes of Stuttgart. www.hof-am-eichenhain.de

The elements of the earth and elemental beings

Working group with Brigitte von Wistinghausen and Anna Cecilia Grün. Report: Martina Geith

'Anthroposophical Leading Thoughts no. 25 – The Sense and Thought Systems of Man in Relation to the World' provided the context for introducing the practice of imagination and inspiration. Through the refreshing clarity of her presentation and the guidance she gave, Anna Cecilia Grün enabled many participants to have genuine meetings with – the being of the oak tree growing outside the Holzhaus, the spiritual aspect of the elements in the fertile soil of the Goetheanum garden and the soul of our earth. Brigitte von Wistinghausen accompanied this meditative work by encouraging a self-reflective attitude towards our sense perceptions and our thinking and sharing information drawn from her own Goethean research work. To the question about whether spiritual perceptions may be shared and discussed, the response came: 'Learn to speak in a responsible and helpful way about it'. This was a reflection of the warmth felt towards the participants and to the spiritual world. It was a quality which permeated our work together.



New soil

Working group with Isabelle Bissonet and Karl Ebermann. Report: Luc Ambagts

In the light-filled Südatelier of the Goetheanum, I speak with a farmer. He wants to know how I work with the earth. Now for someone like myself who works in an office, it is not so easy to answer.

The farmer, after all, is a specialist in working with the earth. It must be easier for him I thought. Then I remembered how I had renovated the roof of my kitchen the previous summer. And so I told him of my struggle to position the heavy beams in exactly the right place – with a slight slope so that the water runs off. I was intrigued to find out how the farmer would reply. But, just like me, he hesitated: "I always keep a bowl of earth on our table, with a candle in it – either soil or compost. If the contents of the bowl become too dry after a few days or a week, I empty it outside and refill it with new soil taken from somewhere else."

This question about working with the earth was the third one to be asked. The first two were: How do I stand and how do I walk on the earth?



After a short introduction by each of the workshop leaders, a practical exercise was used to explore the theme. So for example, while sitting quietly on a chair, we were asked to

visualise for oneself how the solid element, the essential earth force can be experienced in oneself, in the skeleton and how we can at the same time inwardly enter into the earth. The exercise was brought to a conclusion by sharing the experience in pairs and small groups.

“Walking is actually a form of turning above and through the earth“ was one of the discoveries made during the course of the exercises. As each person listened into themselves a deep meditative stillness could be felt in the room. Our

group was held in two languages – German and French. This encouraged me on one occasion to express my experiences in French, «parce que je parle un peu de français». It was then wonderful to observe how patient everyone was and that the struggle to find simple words means that what is essential can be more easily described.

It was great to experience during an Agricultural Conference that this kind of meditative understanding could arise - “as solid as the earth”.

Living substances

Workshop with Carlo Noro and Michele Lorenzetti (Report).

We had a really exciting workshop in the Glashaus. It was the first time that Carlo Noro and I had been with such a diverse group of people from all corners of Europe and from many tropical countries too. When we prepared for the workshop back home in Italy, we agreed that if soil fertility is to be enhanced, the preparations must be worked with in a consistent and exact way. So, with this idea in mind, we started to interact with a gathering of more than 50 people. We soon discovered how much effort and attention is invested in the art of making horn manure preparation. We realised that conditions in each country are very different especially in terms of climate. It was very interesting to hear of the challenges faced by people in countries like Poland and Finland. They asked about the best time to put the manure in the horn. Now in those countries, cold winter weather arrives very early and for someone used to the Italian climate, it is not easy to know what to do. We came to realise that the only solution is to put the manure in the horn during August. Everyone was aware of the importance of having good quality manure for this delicate alchemical process. As workshop leaders, we described how the first step towards obtaining a very high-quality preparation begins with the pasture. The food the cow eats determines the quality of the preparation. On our grazing land which lies to the south of Rome, good quality pasture starts to grow in October and that is when we make the horn manure preparation – from the middle of October. But in Poland and Finland, this is not possible! Following a fixed timetable for this work is clearly not possible since climatic conditions vary so greatly from country to country. As biodynamic farmers,



we need to adapt our work with the preparations to suit specific local conditions.

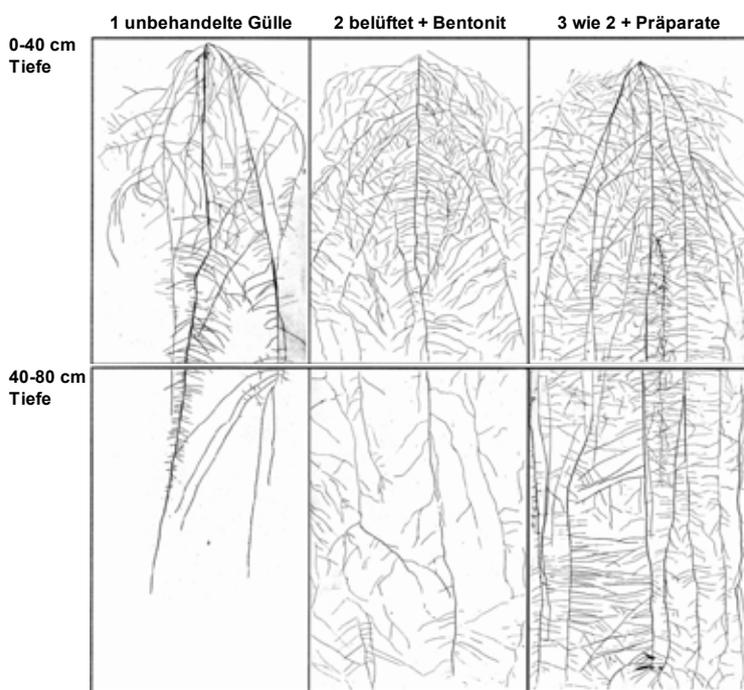
The exchange of experiences proved to be very fruitful. People were especially appreciative of our emphasis on the use of living materials that are full of vitality for without living materials, there can be no forces. Everyone agreed with this. By the end, we had reached a common understanding of quality and the quality process and of the importance of paying attention to a large numbers of details when making the biodynamic preparations. It was a very good experience and one that we hope can be continued in coming years.

Soil fertility and the preparations

Uli Johannes König

The biodynamic preparations were given a central position by Rudolf Steiner in the Agriculture Course. They were prepared for in a very systematic way. In the last lecture, we find a formulation which is perhaps surprising: 'When you have done all this you will see that the farm individuality actually becomes an individuality'. What does 'all this' refer to? Right at the beginning, we learnt that since the beginnings of the 19th century the forces of nature have been in decline, and that mankind now has the task of creating something new. This is the issue that I would like to address today in relation to the preparations.

We have heard many different aspects during this conference. We learnt about the diaphragm, that amazing rhythmic organ which both human beings and the earth possess. Let us bring the enormity of this image to mind. The soil of the earth, this diaphragm is spread out across the whole world. It is one huge living organ that breathes rhythmically between earth and cosmos! We also explored the micro-cosmic details of soil formation and the wondrous thought of the 38 cattle units of soil microbes in the soil that have to be fed. On the one hand the whole vulnerable earth and on the other an almost unimaginable power of abundance and life. With this in mind let us make sure that we take care of and develop this organ in the right way.



Root growth of dwarf beans with different treatments, including the biodynamic preparations.

The effect of the preparations

How do we bring this organ of the soil to life? What part do the preparations play in this process?

Ever since the 1920s, the dark coloration of the soil has been taken as a significant visible and measurable effect of the preparations. Our scientific long-term trial in Darmstadt also shows that biodynamic soil has a darker colour (diag. 1). There is no difference between the organic and conventional plots in this regard. The darker colour must, therefore, be connected with the preparations and not the cow manure with which the organic variant was also treated. This is a very clear effect of the preparations – and other trials confirm this!

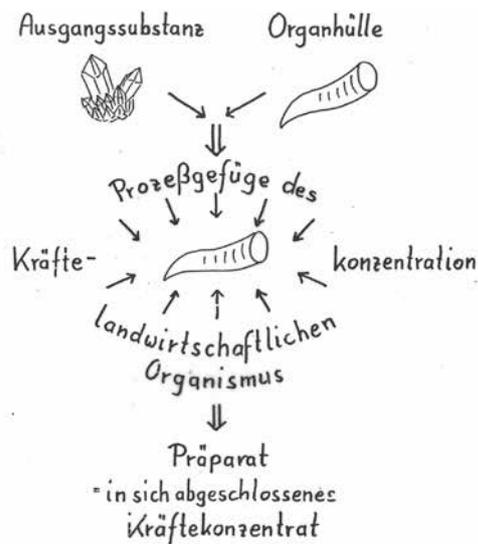
The interest of plant roots in the soil

Another phenomenon: If I imagine the root as being the plant's head, what inner activity is reflected by the roots in the diagram? Visible sensory activity can be seen in the root on the right (treated with the preparations). The root is very finely ramified and its interest in the soil can be readily experienced! It is what underlies Edwin Scheller's concept of 'active nutrient mobilisation'. But it is solely an effect of the preparations. Now just imagine how it would be if instead of a clover monoculture, our grasslands were stocked with a diverse range of species, each with a different interest in the soil and intensively treated with the preparations.

Interest as the key to experiencing the preparations

What prevents me from enthusiastically applying the preparations? Is it perhaps due to the (subconscious) inner doubt with which I approach the world on a daily basis? Try out the following exercise: Look at a tree and see what changes when you look at it skeptically or with interest. The difference can be huge! If you approach the preparations with interest you will find that the distance you feel towards them becomes smaller. Many things important to our work will then be revealed to us by the being of the preparations. Having once become aware how the earth and cosmos are connected by the preparations, how they draw closer to one another, how the enormous agricultural individuality that extends out as far as Saturn and the fixed stars, how all this comes together and forms a whole and gains a boundary skin; it will no longer be possible to doubt the effectiveness of the preparations.

Filled with enthusiasm I will then use the different preparations more frequently and in more differentiated ways – soil



Basic production principle of the preparations.

cultivation and green manuring require the inner organising qualities of the compost preparations (barrel preparation or CPP included). Complementing this, the horn manure's open gesture towards the cosmos helps the plant find its place within the earth-cosmos polarity. Then there is the winter dormant period followed by the explosion of growth in springtime. Do we find the right moment for spraying horn manure or do we miss it? Or the horn silica preparation which introduces more order and steadiness. The importance of this preparation should not be underestimated especially with perennial crops (not just for the ripening of carrots) that need a period of winter dormancy.

Start of a new evolutionary process

There is a further question regarding the future evolution of nature. The key to renewal is connected with the mystery of protein, not only in the soil but for the earth as a whole and for mankind. Steiner spoke of individualisation as being necessary right down into the world of substance. The human being has emancipated himself from nature and can, therefore, act out of freedom. When we make the preparations there are two aspects – the substances (flowers, manure etc.) and the organs (sheaths). Both come from nature, both are the end products of evolution and we bring them together. They are then subjected to the seasonal forces of our agricultural organism. At the end of this process, we have the preparation that we can work with in an entirely free way. These new substances are to a certain degree free of the old ways of nature and can contribute towards the individualisation of the farm organism. But it is also important that our food mediates individualising forces to human



Photo: Charlotte Fischer

beings. The natural protein in our food must be individualised and become human protein so that we can develop consciously and become free. This is where the preparation process culminates – in the human being freely taking hold of evolution at the point where it has come to an end and bringing it into an artistic-natural-organic process. The preparation substance that will in its turn lead to the individualising, freedom-supporting forces in nature comes into being in order to create a new future for both mankind and the earth. The new evolution is part of the mystery of protein.

Our biodynamic preparations bring up lots of questions, even after 90 years. That is what is so fascinating about them! May I wish you all lots of questions in the coming year and for the further development of your farm individuality as well!



Uli Johannes König (Germany): Since 1989 researcher at the Forschungsring für Biologisch-Dynamische Wirtschaftsweise e.V., Darmstadt. The main focus is composting, soil fertility and developing the biodynamic preparations. www.ibdf.de



The biodynamic preparations in context

Individual approaches to preparation work - Case studies of worldwide practice

Ambra Sedlmayr

On Saturday afternoon the study on the preparations that the Section for Agriculture conducted over three years was presented. The presentation lived of the dynamics and spontaneity of what was happening on stage: four people who had been chosen for the study as representatives of their region were presented and interviewed by four members of the research team. In these short dialogues, the big diversity and richness of preparation work, as it has developed all over the world became palpable. To report on the research project itself, we chose to use a text written by Ambra Sedlmayr. A German and an English version of the report are available for download or as printed copies at the Section for Agriculture (www.sektion-landwirtschaft.org). In summer 2017 a book based on this report shall be published.

Current questions around preparation work

Can we as a movement find a new social approach to handling the questions that arise out of our engagement with the preparations? Can we find an approach to sharing our own practice and understanding openly, neither feeling we have to have the final answers nor feeling awkward about our insecurities and unresolved questions? Can we be tolerant towards the path each individual takes with regards to preparation practice? Can we create a culture of sharing and exchange that will become the foundation for a new form of quality assurance, that arises from each individual's active learning and caring for the preparations?

A research project with social and scientific aims

With the aim of steering the biodynamic movement in the direction of becoming a research community on the preparations, as outlined above, the Section for Agriculture at the Goetheanum carried out an international research project, with both scientific and social aims. Fourteen case studies of preparation makers worldwide were undertaken. The case studies were selected to include the biggest diversity of geographic, climatic and social conditions in which preparation work has been well established. Each case study describes both the personal

path and approach to the biodynamic preparations and the details of current preparation practice. In this way, the personal approach and practical work can be seen in context and as a coherent whole. The diversity of practices that have been developed out of the recommendations made by Steiner are for the first time made visible side by side, in a comparable way. The unit of which preparations are a part of and in which they take effect is taken into focus, rather than the effect of preparations in isolated and controlled conditions.

A taster of the results: varying viewpoints and environments produce a diversity of preparation practices around the world. The study shows that preparation makers seek ways to deepen their understanding of the preparations so that they can become ever more able to make valid judgements in their preparation work. A number of methods for learning about the preparations have been identified, such as goetheanistic observation, meditation, formative forces research, and living with questions. It was said that the biodynamic preparations take a farmer on a journey of discovery beyond the material realm, and thereby spur his or her personal development. This is relevant for farming; as farmers deepen their understanding of the workings of nature due to the questions posed by the preparations, they become ever better farmers.

Preparation work is very often conducted by a group of farmers. The 'preparation groups' provide a space for beginners to learn about preparation work and for the more advanced to share experiences and questions. The group also provides a social buffer, since it normalises preparation work. At the Truttenhausen farm in Alsace for example, some 40-50 people can be found stuffing cow's horns just alongside a public footpath, meeting an open interest from bypassers, rather than the suspicion an individual doing this work by himself often feels exposed to. Working in a group allows for the sharing of the many tasks associated with the production of the preparations. It often is a challenge for each individual to find their place within the group. One needs to find a balance between giving up responsibility and taking on all responsibility on oneself. Preparation groups require more attention to the social side of preparation work than professional preparation makers or

farmers who work on their own. The study shows that each social form of preparation making (group, farmer, business) pose different challenges and opportunities with regards to the three core dimensions that come to play in preparation work: the side of social development, of practical diligence and of inner, esoteric work. An important question in deciding for any social form or focus is the understanding of what preparation quality is. Different preparation makers emphasise the importance of different phases for achieving high-quality preparations. Carlo Noro, who runs a preparation making business in Italy, for example, places a great deal of care into obtaining ingredients of the highest possible quality, considering the ingredients to be key for ensuring high-quality preparations. The group of Zeeland in the Netherlands, focuses on finding locations to bury the assembled organs that correspond to the indications of the Agriculture Course and that have a similarity to the qualities of each of the preparations. Andreas Würsch of Switzerland, on his turn, invests most care in the storage phase and aims at transforming the preparations into colloidal „flawless organisms“ while in store.

Within the cases studied, the intention of making preparations according to Steiner's indications is prevalent. Steiner's indications, however, point towards living principles. His recommendations, therefore, can scarcely be followed like mere recipes, but need to come alive in each preparation maker. Through engagement with the preparations, they can be made an individual's own impulse and created anew in each place. The diversity of preparation practice found in the case studies reveals this re-creation out of local environmental conditions, social situations, and personal priorities. Some practices have been recorded that seem outlandish at first, but they receive

their meaning and purpose from the wider inner and outer context in which they have developed. This is the case, for example, of a small-scale self-sufficient farm in Sweden where preparations are made with sheep manure and organs.

It was possible to find valid viewpoints even on completely opposite approaches to preparation practice. A clear example of this is the question of finding substitution plants and organs for producing the preparations. Andrea D'Angelo of Brasil explained her understanding that the plant world has a universal character. This means that the European preparation plants can be used all over the world. Devon Strong from California, in turn, said that local plants and animals have a different relationship to the land and to the elemental beings of a place than imported materials. Hence he defended the use of local ingredients for producing the preparations. Especially the use of buffalo manure and organs seemed important to him for North America.

An important aim of the Section for Agriculture for conducting this study is to promote farmer's engagement with the biodynamic preparations in a way that furthers and strengthens their inner personal relationship with the preparations. A deepening of the relationship and understanding of the preparations is possible when one stays true to oneself with regards to one's questions and insecurities while being open to receive new fructifying impulses from experiences, observations and the exchange with colleagues.

English: By Ambra Sedlmayr



Ambra Sedlmayr (Portugal): Agricultural and Environmental Sociologist, worked for the Section for Agriculture from 2012 to 2016. Contact: ambra@posteo.pt

Theme of the year 2017/18

The biodynamic preparations

Jean-Michel Florin, Ueli Hurter, Thomas Lüthi

The preparations lie at the heart of biodynamic agriculture. They are unique in relation to the many other new developments in agriculture. Unlike nitrogen fertilisers, agro-chemicals and GM technology which lead to an ever greater mechanisation of agriculture, they provide a way of strengthening the human element. This approach, which goes way beyond simply protecting life, has been carried out by the biodynamic movement for over three generations and there is today renewed interest in the preparations. This is true for farmers, gardeners, and wine growers as well consumers and the wider public. We want to take up this theme over the year with the aim of stimulating a strong impulse to work with the preparations. We would like to explore the preparations in three different ways:

Practical - investigative

The preparations demand in the first place, practical engagement. If they are not made, they won't exist. Making the preparations is a skilled practical procedure that mainly involves the harvesting of flowers, their containment in materials of animal origin and their maturation through the seasons to become humus-like substances. Expertise can be acquired with this work and we can all learn from each other. After they have been made and stored the preparations are ready to be applied. Here too there are a wide range of practices and many open questions. How does hand stirring compare with machine stirring? When is the best time to apply them? The effects of the preparations can be experienced in the health and balance of



Photo: Charlotte Fischer

the farm over many years. Only relatively seldom can direct effects be observed – which makes an exchange about these observations particularly interesting.

Understanding can arise from practice. The phenomena relating to the plants used, the animal organs and the processes of transformation can be understood with the help of phenomenological studies. These can provide deeper insights into the workings of nature. Classical scientific knowledge about minerals, plants, and animals can also help towards understanding the place of the primary substances in nature. Both classical and more recently developed research methods can be of help in understanding how the preparations work – an area open to wide discussion.

Personal - spiritual

The nature of the preparations is such that a personal relationship needs to be developed with them. This means that each person makes the preparations in their own way. It is also an appropriate approach comparable to the personal interpretation accorded to a piece of music. Only by developing a personal connection is it possible to gain a deeper understanding of the preparations. It is as though the effect were due to the “combined interaction of Man and preparation”. What qualities does this personal relationship have? Is it possible to share these experiences? Are there also too personal and subjectively judged areas, so that objectivity can be lost?

This intimacy with the preparations makes it possible to have a sense for their spiritual dimensions. According to Rudolf Steiner, it is about activating new spiritual forces in the world of nature so that they can continue nourishing us. What is this spiritual-evolutionary relationship between human beings and nature? What is coming to an end and what is being born? With what part of my nature am I able to take responsibility for and co-create this partnership between human being and the earth?

Public - communal

The preparations are now in the public eye. Every week new publications appear in the popular press or in scientific magazines, books, and films in which the preparations are written about or presented in picture form. The extent to which this occurs is something quite new. The days when the preparations could be shyly referred to at the end of a farm walk are long since past. People are open and keen to hear about the preparations. How should we present them to the public? How do we do justice to the practical mundane aspects as well as those of a personal-spiritual nature? Can we find our way between the banal and the sacramental?

Apart from the wider public domain, there is also the more immediate community around the place where the preparations are made and used. The social context surrounding the preparations may be developed in different ways. We can share our methodology with one another. We can also empower each other and make these preparation days into festive occasions for the communities living around the farms.

We would like to encourage you over the coming year, to take the preparations as a theme for your work on farms, in regional groups and nationally. A good basis for this work is the recently published study: “The Biodynamic Preparations in Context – individual approaches to preparation work, case studies of worldwide practice”. It was published by the Section for Agriculture in autumn 2016 and is available in English and German, printed or as a pdf document.

The International Agricultural Conference at the Goetheanum from 7th to 10th February 2018 will be on the theme of the preparations.

The Section for Agriculture is happy to receive any comments and suggestions you may have regarding both the year’s theme and the next conference. A list of reading material related to the theme will be published and kept up to date on the Section’s website.



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