



Activity report

2012

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Dear Reader,

Thirty-five years ago FiBL organized the first international IFOAM (International Federation of Organic Agriculture Movements) research conference entitled “Towards a Sustainable Agriculture”. This conference was of historic significance for a number of reasons. Firstly, it consolidated the global organic movement. Today IFOAM is an important international non-governmental organization. In November 2012 it celebrated its 40th anniversary in Bonn, Germany, and IFOAM and FiBL still work closely together to this day. Secondly, with this conference the organic movement was the first to send a strong signal of commitment to sustainability. Agricultural policy only began to give consideration to sustainability after publication of the 1987 UN report by the then Norwegian prime minister Gro Harlem Brundtland. And thirdly, at this occasion FiBL made itself known both nationally and internationally as a pacemaker of progress in farming and nutrition, a role FiBL fulfils to this day working from its now three offices in Switzerland, Germany and Austria.

Many people already consider the term “sustainability” to be worn out and arbitrary. However, the fact that this term has been misused should not lead us to abandon it given that we contributed to defining it. Consequently, a number of years ago FiBL integrated it into its claim of “Excellence for Sustainability”. Despite the proliferation of green-washing, the term contains the robust message that many of the resources needed for our survival are finite and no amount of human

ingenuity can replace them. For example, humus lost through decomposition takes decades or centuries to build up again. And in fifty to a hundred years we will have lost forever all the phosphorus washed into rivers and oceans with eroding soils or through the sewage systems. These are two of the areas where organic farming practices are a model of sustainability and which are amongst FiBL’s work priorities. With drive and determination, FiBL works on the further technical, ecological and societal development of organic farming. This is not an easy undertaking given that considerably lower government funding is devoted to specifically organic solutions and given that due to the small market share the agri-food industry has little interest in developing e.g. organic plant protection products, highly adapted organic cultivars or very gentle food processing methods. The activity report presented here outlines the innovations and solutions FiBL is working on with increasing success.

Organic farms are not lands of milk and honey that just burst with abundance without much work being put into them. Rather, organic farming is an attempt at marrying local farming knowledge with agro-ecological scientific knowledge and modern technology. Organic farming is thus not retro-farming – that could not feed us. Approaches and solutions which advance organic farming should help “green” the entire farming sector. Therefore, FiBL is always keen to tackle issues openly and engage in partnerships.



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“The development of organic farming is far from complete”

We asked representatives of the three FiBL Boards to look ahead and articulate their visions, their wants and their strategies for research, advisory services, and education and training. Martin Ott, President of the Foundation Council of FiBL Switzerland, speaks as an organic farmer, Werner Zollitsch, Chairman of FiBL Austria, is a livestock scientist and Jan Plagge, Member of the Board of FiBL Germany, contributes his perspectives as a former organic advisor and current President of the Bioland organic producers' association.

The organic farming sector considers itself to be taking the lead for the agricultural sector as a whole. How can this aspiration be met?

Plagge: This aspiration is being met every day by thousands of practitioners. There are so many examples of how organic farmers provided the impetus which put issues on the agenda for the entire sector. Look at soil cultivation, compost management, modern livestock housing construction, and the issue of energy.

Ott: Organic farming is indeed successful, is widely supported and is one of the hopeful alternatives for creating a sustainable society. Nevertheless, the development of organic farming is far from complete. To meet its ambitious objectives, it still needs much research and innovation.

Zollitsch: In order to meet this expectation, the findings of a permanent appraisal of strengths and weaknesses must be translated into suggestions for improvement that practitioners can take up.

What does this mean in practical terms?

Zollitsch: In my own area, i.e. organic livestock management, this means that we continuously and critically monitor the situation on organic farms with respect to animal health, animal welfare, and sustainable feed resources. Further development in organic livestock management can only be achieved by way of joint efforts in research, knowledge transfer and practical application.

Plagge: The key to success is to learn from exemplary organic practitioners. We need strong networks of innovative farms that work together with scientists to address the issues of the future.

What is your view of the current practical application of research results?

Zollitsch: Different tasks require different approaches. For example, the current efforts to develop untapped or little used feed resources with a view to meeting the 100 % organic feed target should continue with some modifications, while more complex challenges force us to fundamentally question

the entire fabric of knowledge creation, processing, and dissemination to practitioners.

Why do we need to question the current knowledge system?

Zollitsch: The sometimes unsatisfactory animal health status, for example in the areas of udder health, laminitis, or parasitoses, may in part be ascribed to shortcomings in knowledge transfer from research and advisory services to the practitioners. Knowledge is available at all levels – scientists, schools, advisors and farmers. But its implementation is not always successful.

Where do you see solutions?

Zollitsch: Those approaches that are based on substantial support by the farmers are the most successful ones, as Jan Plagge has already noted. A good example would be the herd health plans which are jointly developed by livestock farmers and experts. “Stable Schools” also offer entirely new possibilities: farmers meet on each others' holdings to exchange experiential knowledge and together they generate new approaches to solving practical problems. This does however require the break-up of the traditional division of roles between experts and practitioners. Traditional one-way knowledge transfer must be abandoned in favour of equitable participation of all players in knowledge exchange.

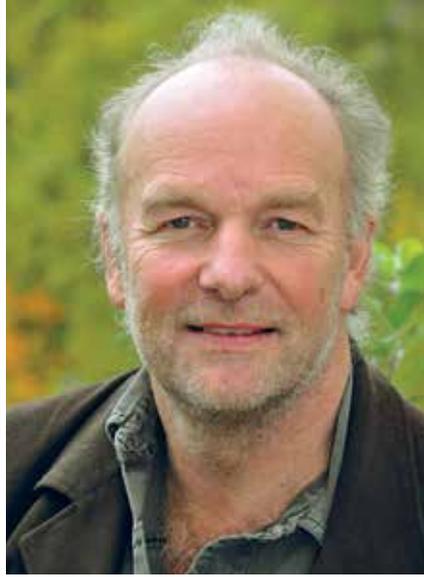
What do you think will be the main challenges for FiBL?

Zollitsch: I would like to limit my response to the area of livestock management as this is the area I know best. I think that organic livestock breeding with a strong focus on adapted and robust animals will be an important area of future research. And, very importantly, organic livestock management must be assessed in terms of its sustainability. Research must develop suitable methodologies for this task.

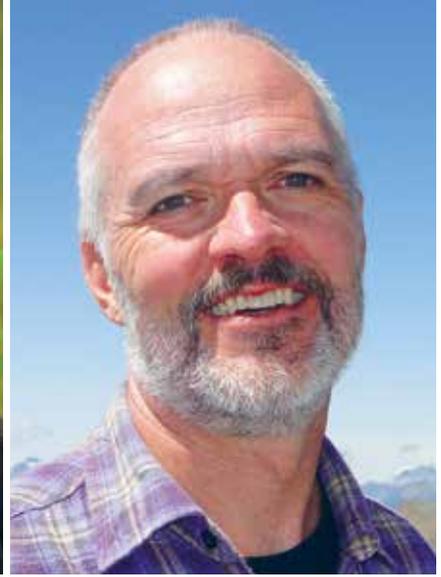
Plagge: For me, FiBL is the organisation and the network that provides the scientific component of the essential research efforts that are rooted in practice. In my view, the key challenge will be to develop this research in such a way that it can not



Jan Plagge, Member of the Board of FiBL Germany.



Martin Ott, President of the Foundation Council of FiBL Switzerland.



Werner Zollitsch, Chairman of FiBL Austria.

only address individual issues on individual holdings but also systemic issues in a set network of holdings.

Ott: In my view it is also important to continuously and meticulously assess modern advances and new techniques in terms of their suitability for organic farming. At the same time we must record, sift through and assess the reliability of the large body of experiential knowledge farmers have gained over the course of centuries, for this traditional knowledge is rapidly being lost. We also need completely new ideas to meet the major challenge of feeding the world and at the same time creating a farming culture that improves soils, fosters biodiversity, improves livestock health and sustainably advances social and economic conditions in the farming community.

What could those kind of new ideas look like?

Ott: I could, for example, envisage a new approach to organic inspection which promotes innovation instead of demanding delivery within the constraints of standards. A results-oriented approach may be much more valuable than inspections for compliance with defined organic farming methods. A soil testing device to be used annually by the inspector would be desirable. Farmers would then be awarded public-sector payments and the right to use the organic designation based on actual improvements in soils. It would also be useful, for example, if the inspector could cast a professional eye on the health of a dairy herd and check which measures are being taken by the farmer to improve livestock health, increase the animals' longevity and reduce their susceptibility to illness.

Plagge: I second that wholeheartedly. Organic farming today is defined by conditions, areas, lists – by what is permitted and what is prohibited. The focus is on compliance checks, albeit more thorough checks than in any other food production system. But for the future that's not enough. After all, we all want organic farming to make an impact. We strive for and promise healthy animals, high soil fertility and biodiversity. These are the impacts organic farming should have. Inspections would be much more attractive to both farmers and our customers if they were more focused on impacts and developments on the farms. This would also mean that farm advice could directly build on the inspection results.

Isn't that more of a request upon the inspection agencies? What can FiBL possibly contribute in this respect?

Ott: The inspection agencies will only follow suit if research provides the required capacities and if the organic associations adapt their standards. It is not within the inspection agencies' remit to fundamentally question inspections per se. That responsibility lies with the researchers and the organic movement itself.

Finally, what is most important for the further development of organic farming?

Ott: We need organic farmers who are ready to break new ground when it comes to their relationship with nature and their communication with nature, farmers who are willing to discuss widely these new approaches, trial new approaches to problems and carry out experiments on their farms, who are ready to open up their farms, as part of a group of farms, to developments which may at times entail setbacks. In short, we need farmers who don't wait to only introduce failsafe solutions to their barns and fields but who are ready to explore individual, original and personal solutions and new avenues. This can best be achieved, and I am speaking from my own experience as a farmer here, if researchers and advisors are sympathetic in the sense of being committed to the same ethics. A common curiosity for all that is alive is the basis of any good research project involving farmers and scientists together.

Plagge: Who "does" organic farming? Without the present and future organic farmers we can do nothing at all. It is their determination that gives legitimacy to forward-looking, participative research aiming at further expansion of organic farming in Europe and in the world.

Interview: ta



Tillage – the less, the better?

FiBL has been studying the combination of organic farming and reduced soil tillage for ten years in a field experiment in Frick. Soil fertility has definitely improved compared to conventional ploughing. What is more, reduced tillage can further enhance the potential of organic management to mitigate climate change.

The well-known DOK trial in Therwil (Canton of Basel-Land) has been running for almost 35 years. Among other things, Agroscope and FiBL are studying here how soil processes and microbial communities change under organic and conventional farming conditions.

In 2003 the FiBL soil sciences division set up another long-term experiment with the aim of improving gentle soil tillage methods under organic conditions. In the scope of reduced tillage, the soil in Frick is worked to a depth of only 5 cm using a “stoppelhobbel” (a highly modified skimmer plough) and loosened once or twice per crop sequence to a depth of 15 cm with a tiller. Compared to a standard plough, soil fertility improved continuously over the years: higher humus contents and more microorganisms and earthworms improved the stability of the topsoil and thus increased the water storage capacity of the soil. A greater humus content also means that more atmospheric carbon dioxide is sequestered in the soil, and model calculations indicate lower greenhouse gas emissions. Another benefit of reduced tillage is less diesel fuel consumption.

Two literature reviews comparing organic and conventional systems worldwide conducted at FiBL shows that on an annual per hectare basis, organic soils sequester up to 450 kg more carbon per hectare and year from the atmosphere and release less nitrous oxide than conventionally managed soils.

Filling the gaps in the knowledge

Nevertheless key conversion factors for the greenhouse gas emission model calculations are lacking because it is still not known for certain how much nitrous oxide is generated from which organic fertilizers. Hence default values for chemical fertilizers have been used in the past. By taking measurements in the field, FiBL researchers hope to find out whether organic soils actually do release fewer greenhouse gases due to lower rates of nitrogen fertilization and what role the fertilizer form plays.

It is indeed also conceivable that organic fertilization may lead to higher greenhouse gas emissions: the more intensive microbial respiration in the soil could result in the formation of anaerobic zones in which more nitrous oxide would be produced. Should this hypothesis prove true, then

Knowledge gaps in the area of greenhouse gases: Maike Krauss takes gas samples in the field and analyses them in the laboratory.

the problem would be serious for reduced tillage in particular since less oxygen is incorporated in the soil.

Maike Krauss and Colin Skinner hope to fill these gaps in the knowledge: as part of their PhD research at FiBL, they will measure greenhouse gas emissions throughout the growing season over several years in the DOK trial and in the Frick tillage study.

From field experiment to actual practice

Under the controlled experimental conditions in Frick, reduced tillage does indeed work. In actual practice, however, not ploughing is still quite controversial for organic farmers, as increased weed pressure and reduced nitrogen release rates can lead to yield losses.

“But organic farmers are innovative and very much interested in how they can further improve the fertility of their soils,” division head Paul Mäder affirms. Nine farms willing to test reduced tillage in their operations for three years in cooperation with FiBL consultants Hansueli Dierauer and Maurice Clerc and Peter Hofer from the Soil conservation technical centre of Canton Bern were quickly found. As expected, the pressure from seed-producing weeds increased. Weeds did not negatively impact yields on six farms, but three farms did experience yield losses. Yields were eight percent lower on average than in the standard ploughing variant. With reduced tillage, the study farms released on average 13 percent fewer greenhouse gases.

The on-farm studies will be continued for five years, with particular emphasis on weed control. *ta*

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Only the best heritage tomato varieties make it to the shop shelves. Timon Müller (Terraviva AG), Martin Koller (FiBL), Simona Matt (Coop) and Béla Bartha (ProSpecieRara) at a tasting session.

Heirloom varieties: Of Divas, Black Princes and Golden Pearmain

Consumers and chefs love heirloom vegetable and fruit varieties. For farmers however their cultivation is demanding and risky. ProSpecieRara has commissioned the FiBL advisors to provide support to farmers and growers – but first the project team itself must rediscover and get to know these old cultivars.

Baselbieter Röteli, Oxheart, Gelbe von Thun, Black Prince: Not only do these tomato varieties have lovely names, they also awaken memories of granny's garden and promise true tomato flavours. "To maintain heirloom varieties means to maintain agricultural heritage and increase agrobiodiversity", says Martin Koller, vegetable production specialist at FiBL. "Oxheart for example is a bit of a diva – it wants to be pampered", he explains. This variety is susceptible to blossom end rot (black spots on the fruit caused by calcium deficiency), irregular coloration, cracking at the stem node, and their leaves are susceptible to tomato leaf mold.

If heirloom varieties are once again to be grown at a large scale they must also be sold. It is for this reason that Swiss supermarket retailer Coop together with ProSpecieRara (PSR) have for the past ten years been making efforts to get these heirloom cultivars back onto the shop shelves. PSR maintains a repository of more than one thousand old garden and tillage crops. Gardeners work as seed-saving volunteers to maintain and bulk up the varieties. However, this in-situ conservation in home gardens is not sufficient for commercial cropping.

Scaling up

The project team, which consists of representatives of PSR, Coop, Terraviva AG, Sativa-Rheinau AG, FiBL and commercial producers, selects varieties from PSR's living seed bank that differ from modern varieties by their colour, taste and shape.

As a first step, the project team tests a selection of PSR varieties in small-scale preliminary trials in order to gain pointers on their cultivation. In the following growing trials the team assesses each variety all the way from the field to the shop shelf. In addition to issues of cropping practices and logistics the team also looks at how best to present these rare marvels in the shops. Subsequently, the Swiss seed company Sativa-Rheinau engages in the professional propagation and bulking up. At present, roughly ten organic vegetable producers grow PSR varieties for Coop. Despite higher prices however this production is still risky for the farmers. A fund was therefore established to compensate for possible yield losses during the trial phase.

Safeguarding and utilizing old knowledge

Since 2006 Coop has also been selling old apple varieties. FiBL fruit experts Franco Weibel and Andi Häseli are assessing which of the varieties are suited to both modern cropping systems and modern consumers. As in the case of the heirloom vegetables, the project team at first had to narrow down their list from the 1800 apple cultivars grown by PSR in 160 orchards. "We had to draw on the accumulated experience of the PSR orchard managers and pomologists", Franco Weibel explains. Especially Meinrad Suter's display garden in Baden turned out to be a real treasure trove. "In his orchard we were able to learn about the production and storage characteristics of many old cultivars and we were able to

assess their acceptance by today's consumers through numerous tasting sessions", Andreas Häseli adds. The knowledge of old cultivars has very nearly been lost.

With the help of Frits Brunner, one of Switzerland's most foremost experts on apple cultivars, the project team selected fifteen varieties for extended production on organic farms. The aim is to ensure that for each of the taste groups at least one variety is available: The Berner Rosen apple was selected as the main variety in the mild to sweet group; the Golden Pearmain apple is for those who like a strong and spicy flavour while the Sauergraeuch apple is decidedly acidic. Moreover, there should be sufficient numbers of varieties for each of the sales seasons. "At present we have enough autumn varieties but what is lacking are old varieties with good keeping qualities", Andi Häseli explains. Additional organic orchardists who will produce these varieties are also still needed.

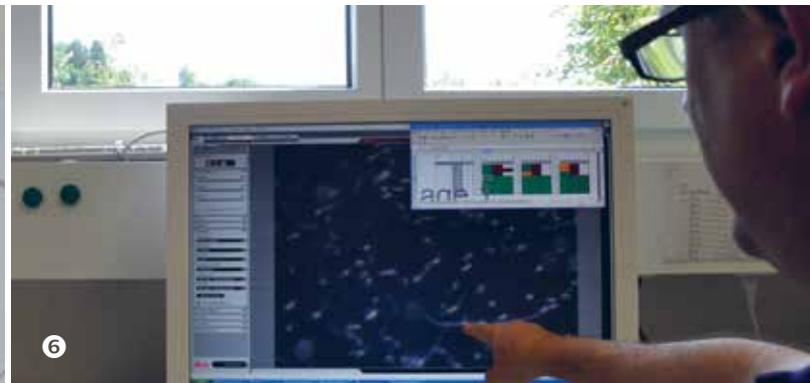
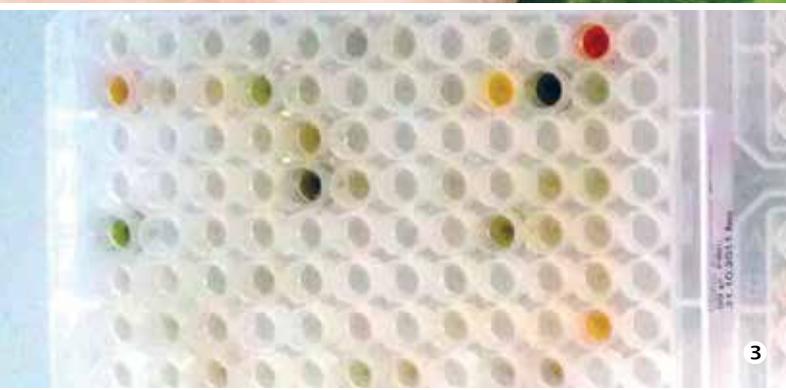
About 100-150 tons of apples from old varieties can be sold annually on the Swiss market, but only thirty percent of the apples produced as part of this project are cultivated in orchards under organic management. For the first six years of the yield period Coop offers a sales guarantee as well as a price premium. Production is however demanding and only suits experienced growers. Nevertheless the project team is optimistic and all involved are convinced that the best way to maintain old varieties is to reintroduce them into a diverse and attractive product range. *ta*

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Funded by: Coop Sustainability Fund



With the aid of public tasting sessions, heritage apple varieties were selected that hold visual and culinary appeal for the modern consumer.



① Copper is still used as the prime treatment for grapevine downy mildew. ② Matthias Hamburger (University of Basel, left) makes extracts of plants and microorganisms available to Lucius Tamm (FiBL). ③ ④ More than 1600 extracts are tested in the laboratory for their effectiveness in controlling downy mildew and other phytopathogens. ⑤ ⑥ Modern imaging methods are used to determine the degree to which the extracts can impede the pathogens' growth. ⑦ In glasshouse and outdoor field trials the most promising substances are subsequently assessed in terms of their suitability for practical application.

Plant extracts instead of copper

For nearly twenty years, Lucius Tamm has been searching for ways to dispense with the controversial use of copper in organic agriculture. A few years ago it seemed that the research potential had been exhausted. Now there is renewed hope in the form of extracts from plants and microorganisms, new testing systems and scientific partnerships.

The use of copper as a pesticide goes way back: this metal has been in use in agriculture for more than 150 years, and for more than twenty years FiBL has been looking for ways to cut back on or even eliminate copper use. Copper accumulates in soil and exerts long-term negative impacts on soil life. “Because it is effective against many different fungal and bacterial pathogens, copper is an outstanding pesticide. It is as versatile as a Swiss army knife,” says plant pathologist Lucius Tamm. “Hence replacing copper means more than just finding a new product, but also developing many control strategies for a wide variety of diseases.”

A key strategy in potato, grape and apple production is resistant varieties in combination with specific pruning techniques and hygiene measures. FiBL has already done much research and development work in this area. With the help of forecasting systems and improved application technology, organic farmers were able to cut back on copper use and substantially improve yield security. In the search for substitute products as well, FiBL experts have been successful in introducing alternative materials based on clay or potassium bicarbonate on the market.

Give up or start all over again

Lucius Tamm has collaborated in several EU projects for finding a copper substitute. The last project for some time, REPCO (Replacement of Copper Fungicides in Organic Production of Grapevine and Apple in Europe), was concluded in 2007. Back then Lucius Tamm concluded: “We tested every possible substance produced by industry and research institutions. None of the products fulfilled the demanding requirements of everyday practice. Either we give up or start all over again, and if we choose the latter, then we need to take a new approach.” Tamm chose the latter.

Why do we even need copper substitute products if the indirect strategies of resistant varieties and specific cultural practices work so well? Tamm is in no doubt: “Our organic farmers need effective and organically compliant plant protectants for emergencies.” Even with resistant varieties, new diseases are continuously cropping up. Getting new resistant varieties to the consumers is also difficult. “Furthermore, old heirloom varieties are often susceptible to disease. Nevertheless we still wish to keep growing them for crop species diversity and flavour. Plus global trade, international travel and climate change are continuous sources of new diseases

for farmers.” As a current example, Tamm cites *Alternaria* and *Marssonina* in apples. Increasing temperatures and wet summers are causing these fungus diseases to spread.

Looking for the needle in the haystack

Through the current EU project “ForestSpeCs”, Lucius Tamm came into contact with natural pharmacologists at the Universities of Helsinki, Surrey and Basel. The latter had archived thousands of extracts from plants and microorganisms and made them available to FiBL for efficacy testing. It is still like looking for a needle in a haystack, says Tamm. “But meanwhile, we have developed a testing system at FiBL that enables us to screen hundreds of extracts methodically and quickly for efficacy against various diseases. The federal stimulus programme enabled us to make crucial investments in equipment.”

The methodical searching of “libraries”, a standard practice in private pesticide research and development, is the exception rather than the rule in other research because there is hardly any public funding available for such efforts. Hence the support from the Coop Sustainability Fund is of tremendous importance to the development of alternatives to copper. In collaboration with the University of Basel, Lucius Tamm and his team have tested over 1600 different extracts to date. Whether the proverbial needle is among them remains to be seen, although some very interesting candidates have turned up.

Meanwhile the search for a copper substitute continues on a European level as well, with FiBL participation. The aim of the “Co-Free” project started in early 2012 is to further develop potential replacements for copper. But “Co-Free” is also pursuing the indirect control strategy. Another project goal is to find better ways of introducing resistant varieties on the market.

ta

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Funding: Coop Sustainability Fund; European Commission



Rolf Mäder is an expert on inspection, certification and provenance assurance.

Organic or not organic, that is the question

Organic or not organic? Being able to answer this question definitively in order to minimize abuse and fraud has long been a big wish of processing and sales companies and inspection authorities alike. FiBL looked into which analytical methods are being used, how well developed they are, and whether they are feasible in actual practice.

It would be nice if there were a simple, cost-effective and universally applicable method for verifying whether commodities are organically produced – similar to the way temperature or pH can be measured, for example. But for now, the only recourse is the standard, process-oriented inspection system: from the farmers to the processors to the markets, all levels of the supply chain must document exactly how they operate. The inspector checks vouchers, business documents

and bookkeeping for coherence. Additional inspections (e.g. for pesticide or veterinary medication residues) are performed in suspect cases. Such analyses provide indications, but not proof, as to whether the commodities in question are truly organic.

Over the past twenty years methods have been developed and tested that are designed to distinguish between conventionally and organically produced commodities on

the basis of typical features. “In our project we looked at two very promising methods more closely: stable isotope analysis, which is also known as isotope-ratio mass spectrometry (IRMS), and fluorescence spectroscopy (FS),” explains project worker Rolf Mäder of FiBL.

The IRMS method is based on the fact that the elements hydrogen, oxygen, carbon and nitrogen occur in forms with different weights (isotopes) and that the ratio of these isotopes in the soil varies by region and type of agricultural production. The isotope ratio of the soil, the fertilizers, the feedstuffs and the water is reflected in the plants growing on the soil as well as in the animals that eat these plants or additionally purchased feedstuffs.

The FS method is based on the measurement of reflected light. Organic production and conventional production give rise to plants that react to coloured light in systematically different ways.

Detection rate still unsatisfactory

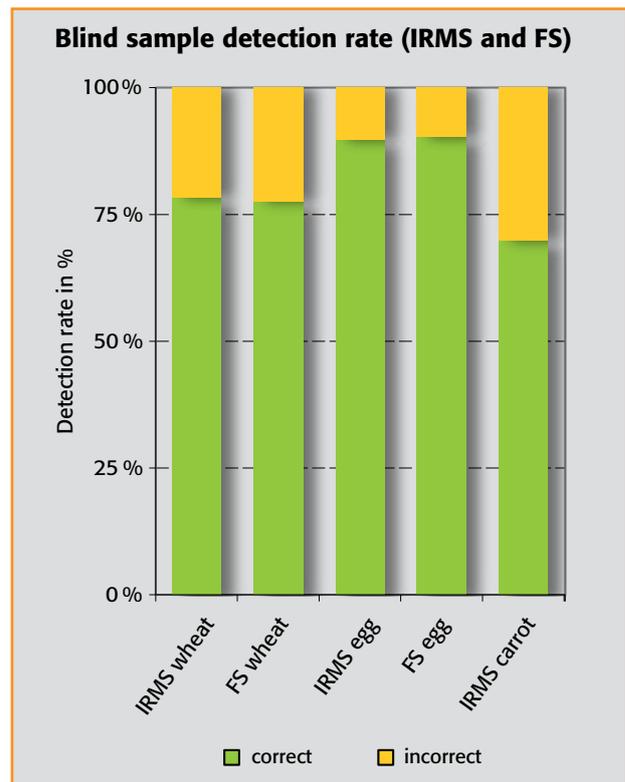
Two specialized laboratories examined eggs and wheat by each of these methods. In a first phase, the laboratories were furnished with samples designated as organic or conventional in order to determine reference values. In the second phase, the laboratories examined blind samples, meaning that they did not know whether they were from organic or conventional commodities. Potatoes, carrots and tomatoes were analysed with the IRMS method only. Even if the results were inconclusive, the laboratories still had to give their opinion.

The result: Depending on the product and based on the overall samples, commodities were correctly classified as organic or not organic 77 to 90% of the time with the FS method and 70 to 90% of the time with the IRMS method. Thus neither method was able to provide the irrefutable proof needed in cases of doubt.

New paths open up

This finding gave rise to an interesting new question that one of the laboratories investigated in greater depth: How suitable is the IRMS method for establishing the origin of a product from a certain operation or a specific region? The preliminary results are very promising, but indicate the need for a new systematic approach. In order to interpret results, it is first necessary to create a reference, for example from wheat and potatoes of a specific region. This reference serves as a “fingerprint” of the plant, to which researchers then compare the samples under investigation. It is thus possible to ascertain whether the tested wheat and potatoes came from the same or a completely different region.

“For determining the origin of a product, the IRMS method is a useful supplement to process monitoring,” concludes Rolf Mäder. “But in order for the IRMS method to become a standard quality assurance tool, the approach still needs refinement,” he adds. The sampling, sample preparation and analysis procedures need to be standardized. Fur-



Detection rates for the overall samples varied from 70 to 90 percent with the stable isotope method (IRMS) and from 77 to 90 percent with the fluorescence spectroscopy (FS) method.

thermore, it is necessary to establish and build a reference database which all participating laboratories can access.

FiBL is already pursuing this path in the scope of the new “Watermark” project. The goal: sophisticated analysis technology for determining the origin, region, or producer of products.

hh, rm



Bringing young and old together: The Landhof public community garden in Basel. Bastiaan Frich is one of the scheme's co-founders.

For a new urban-rural food geography

Our food system, from production to consumption, needs to become more sustainable. Urban areas play an important and as yet underestimated role in this respect. The EU Foodlinks Project looks at how short distribution channels and new producer-consumer networks may be promoted.

More and more people live in urban areas and have lost any direct connection with food production. At the same time, agricultural production continues to intensify while processing and trade are becoming ever more rationalized and centralized. These processes result in longer transport routes and mounting energy needs.

Citizens and consumers increasingly criticize this form of industrialized food production and call for more sustainable alternatives. Numerous towns have taken a range of actions with a view to making the provision of food for their citizens more sustainable. In Basel, for example, the Urban AgriCulture Netz association has established a public community garden with the support of the city administration. The “Landhof” greenspace is centrally situated in the city and is surrounded by multi-family residential housing. Since 2011, the local residents have communally grown vegetables,

fruit, berries and flowers on the site. Urban gardening has become a popular trend in many European cities.

Urban gardening builds awareness

“Initiatives of this kind have a great potential to make the system of food production and supply more sustainable,” notes Heidrun Moschitz, agrosociologist at FiBL. This is not so much about self-sufficiency. The focus is on raising the participants’ awareness of food production. Many urban dwellers have realized that the way the food supply is organized is a key component of sustainable urban development. In Europe the city of Malmö and the town of Andernach, the “Edible Town”, have set important precedents. In Bristol and London the city administrations support diverse activities in relation to sustainable urban food systems.

The EU Foodlinks Project examines such initiatives throughout Europe. One of the project's focal areas is to analyse the relationships between stakeholders, as the food system encompasses the entire value chain from production or importation to processing, distribution, consumption and recycling of raw materials.

So far this system has largely been controlled from the production side. In the alternative systems the interaction of citizens, consumers, the market, politics and administration plays a significant role. "Basel for example has a very lively urban food movement which is being supported by the authorities. But the responsibilities are spread out amongst several individual authorities. Moreover, food aspects were not included in the cities' sustainability strategy," says Heidrun Moschitz. She would like to gain an improved understanding of the lines of reasoning resulting from the different perspectives in civil society, politics and administration, so as to allow all involved to find common pathways and approach the issue productively.

Closer relationships, shorter paths

In another part of the project, FiBL researcher Otto Schmid investigates forms of collaboration aiming for the shortest possible pathways between consumption and production. Such forms of collaboration often result from a redefinition and active cultivation of relationships between consumers and producers, for example in the context of cooperative structures or in Community Supported Agriculture systems. Inspired by pioneering initiatives such as the Agrico cooperative near Basel or Les Jardins de Cocagne near Geneva, new networks have been springing up in many towns and cities, for example the regional horticultural cooperative ortoloco in the Zurich area. Other examples of short distribution routes include new farmers' markets, farm shops in cities, farms engaged in direct marketing that specifically involve consumers, or regional marketing platforms such as the RegioFair initiative by organic producers and processors in Central Switzerland. "These examples are characterized by new forms of communication and self-governance which also makes them attractive to younger people," says Otto Schmid.

The Foodlinks project aims at demonstrating to policy-makers the conditions needed that will allow those initiatives to grow which contribute to more sustainable food systems. For FiBL the project will provide the baseline information needed to establish, in the medium term, a centre of excellence addressing socio-political and social issues of sustainable food systems in urban areas. *dh*

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Funding: Seventh Framework Programme for Research and Technological Development in the EU

Further information: www.foodlinkscommunity.net, www.solinsa.net

SOLINSA: Towards a new knowledge network

SOLINSA is another project with participation by FiBL that addresses the issue of knowledge exchange in the farming sector. While Foodlinks focuses on the socio-political dimension, SOLINSA is concerned with the knowledge systems and training and education methods in the farming sector.

"In their orientation, agricultural colleges and advisory services have for decades been predisposed towards the post-war paradigm of continuous yield increases. However, we need new perspectives to meet the challenges of the 21st century. Regional economies, tourism, food production as well as landscape conservation and environmental protection need to become more closely meshed," says Project Manager Heidrun Moschitz. SOLINSA investigates methods which may support such innovations inside and outside of established structures.



Researching the urban food movement: Heidrun Moschitz (centre) in conversation with Tilla Künzli and Bastiaan Frich of Basel's Urban AgriCulture network in the Landhof public community garden.

Fish stomachs are fond of maggots

Innovative solutions are needed to halt overfishing of the oceans and to meet the rising demand for farmed fish reared under organic conditions. The FiBL aquaculture section is in the process of developing a new protein source for feeding culinary fish.

Every year between 20 and 25 million tons of fish are caught for the production of fishmeal. This fishmeal is used as a feed ingredient in animal feeds, primarily for fish farming. And the demand for it is rising. Overfishing of the oceans is not slowing down, stocks are in decline and yields are stagnant.

The price of fishmeal almost doubled between 2005 and 2011.

Researchers all around the world are looking for a sustainable alternative. Most of the fish species raised in fish farms are predatory fish and the opportunities for feeding plant-based proteins are limited. Some groups of researchers



therefore focus on the mass production of worms as well as larvae of beetle and fly species as a source of feed. In South Africa, the company Agriprotein Technologies already operates a plant where feed meal and pellets are produced from farmed housefly larvae.

***Hermetia illucens*: Omnivorous protein source**

On behalf of the Commission for Technology and Innovation (CTI) and Coop (Swiss supermarket retailer) FiBL is similarly searching for an alternative to fishmeal. Project manager Andreas Stamer has specialized on alternative feed proteins in fish nutrition. Since 2005 he has been working with Black soldier flies *Hermetia illucens* and has been looking for ways to generate high-quality protein-rich commercial fish feed. “Both the housefly and the soldier fly are very well suited: they both thrive on residues from the farming, drinks and food industries and produce a great deal of biomass. But the soldier fly displays certain advantages that make our work easier.”

Degreasing – a tough nut to crack

Food industry residues are used to raise large populations of larvae and produce large amounts of larvae-meal. FiBL is currently assessing the utilization of residues from the production of ready made meals.

After 15 to 20 days the larvae leave the substrate in search of a dry place to pupate. “This migration is what differentiates the soldier fly from the housefly. It means that we do not have to separate the larvae from the substrate with the help of vibratory sieves or other such mechanical processes”, project engineer Jens Wohlfahrt explains. The experts term this behaviour “self-harvesting”.

The larvae are then dried, ground, and partially degreased. The degreasing process has been a particular challenge for the team, Andreas Stamer explains. “We had to try and achieve the unachievable. It is generally thought that the conventional pressing processes are not suited for degreasing insect larvae. However, our project has shown that this can indeed be done.”

Up to 50 percent less fishmeal

Andreas Stamer is confident: “By early 2013 we should be able to present a solution for the industrial-scale, environmentally-friendly and cost-effective production of fish feed.” Initial feeding trials have yielded promising results: Soldier fly larvae meal could be substituted for up to 50 percent of the fishmeal without the fish getting sick or showing any signs of

malnutrition. Due to the fact that this meal does not contain all the nutrients required for the optimum development of the fish, fishmeal still needs to be fed as well. In organic aquaculture systems this fishmeal must be sourced from organic fish processing residues.

Fundamental research for organic fish farming

The demand for fish from organic aquaculture is on the rise in all of Switzerland but fish farmers tend to be reluctant to convert. FiBL is therefore steadily expanding its advisory and training activities in this field.



Black soldier fly larvae (Hermetia illucens).

The institute is also intensifying its research work: The Migros supermarket chain has commissioned FiBL to develop fundamental knowledge of organic aquaculture. In this work, project manager Timo Stadlander focuses on fish health and welfare. The objective of this research is to find solutions for cost-effective organic aquaculture systems and to implement these by offering specialized advisory services.

dh

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Partners: Coop Sustainability Fund, Hoffmann Nutrition AG (manufacturer of fish feed), New Valfish (fish farm), SubstainTec (technology partner)

Financing: Commission for Technology and Innovation (CTI), Coop, Migros

The research team and their animal colleagues: Andreas Stamer, Timo Stadlander and Jens Wohlfahrt (left to right) with Rainbow trout.



Wanted: “Robust and optimistic” hens

Many layer hybrids are not ideally suited to free range situations. The EU-funded “LowInputBreeds” project brings together the experience and expertise of egg producers and breeding companies. Joint breeding objectives have already been defined and cross-breeding work is now under way.

Globally there are only two major companies that engage in breeding layer hens. Both breed hens that perform best in cage systems where small groups of three to five hens share a tiny space. Conditions are optimized, at least in so far as a controlled climate and feeding are concerned. However, no account is taken of the birds’ natural behaviour. It is not surprising therefore that such layers have trouble coping with living in large flocks in varied free-range conditions. For instance, FiBL has shown that such hybrids make insufficient use of their range, and when faced with attacks from birds of prey they either display no flight response at all or if they do they hardly dare to come out of hiding again.

As part of the EU-funded “LowInputBreeds” project, FiBL poultry experts Veronika Maurer and Zivile Amsler have therefore set out to search for hybrid lines that are suited to free-range conditions. They have joined forces with researchers from the Netherlands and the Institut de Sélection Animale ISA (Hendrix Genetics), one of the leading breeding companies for laying hens. “For us it is important to consider the experiences and needs of the keepers of layer hens”, stresses Maurer. During the first phase of the project, she and her Dutch colleagues assessed the status quo on one hundred organic and non-organic free-range holdings each in France, the Netherlands and Switzerland.

Brown eggs carry the free-range image

The researchers found major differences in flock sizes on the holdings they studied, with an average of 2000 hens in Switzerland, 6000 in France and 12,000 in the Netherlands. In total the 300 farms are keeping 30 different types of hybrid layers or mixed groupings of hybrids. The most frequent lines kept are brown hybrids laying brown eggs, as French and Dutch consumers tend to associate brown eggs with free-range systems and white eggs with cage systems. In the Netherlands, “Silver” hens, a predominantly white-feathered breed laying brown eggs, are mostly kept by organic egg-producers. Pure white hybrids in free-range situations are only present in Switzerland and to a very limited extent in the Netherlands.

Based on their assessment of layer performance and mortality the researchers have found however that the not very common white hybrid layers are better suited to free-range conditions than the brown or “Silver” lines. They discussed their findings with the poultry farmers in national workshops and together defined breeding objectives for free-range laying hens. For example, a more even laying curve is more important to the producers than high peak performances. One producer summarized the commercial priorities as such: “What we need is a robust, optimistic hen that

can deal with unfamiliar situations and lays few floor eggs.” Based on these specifications, ISA have cross-bred new hybrids which are currently being tested in the Netherlands.

Fostering exchange

The researchers now carry out a detailed assessment of the layers’ management, performance and health on 20 organic and non-organic free-range holdings in each of the three countries.

What had been missing so far was an exchange between breeding companies and egg producers on how the different layer lines are performing in free-range systems. In addition to the breeding work, the project also fosters an ongoing exchange of experiences between the producers, as

they are very knowledgeable on disease and parasite control as well as feeding and general management. Veronika Maurer is convinced that this exchange between holdings and across country borders is crucial for successful layer management.

ta

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Funding: EU

www.lowinputbreeds.org

❶ The typical free range layers are still the “red hens”. ❷ The researchers take a very close look at each bird: Are there any comb injuries? Are feathers missing from the necks or backs? ❸ Are all wing primaries and secondaries present and intact? ❹ Do the birds suffer from foot pad dermatitis or are any of the claws missing?



❷



❸



❹

Optimal solutions, not architects' dreams

Financial hard times, the ups and downs of markets, or changes in family circumstances: organic farmers must continuously realign their operations. In livestock management, this frequently involves construction-related changes. The FiBL stall construction extension service offers holistic solutions.

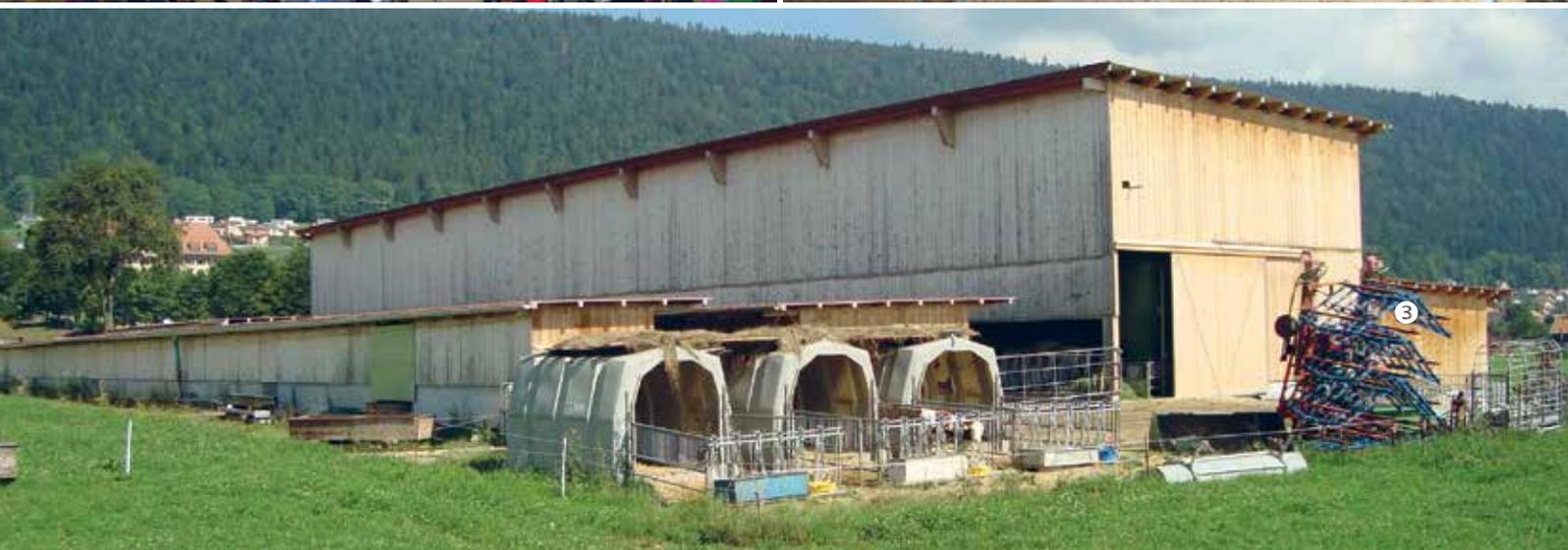
The clientele of FiBL agent Eric Meili consists not only of farms in difficult circumstances, but many innovative farmers as well. He has planned and carried out some 250 animal housing renovations and new constructions over the past twenty years. For the past year Stefan Schürmann has been assisting him in this work. In addition, FiBL agent Claudia Schneider offers solutions to farms planning to house cows with horns in their free stalls.

“The starting point of every consultation is the strategic orientation of the farm. The first thing we do is analyse the adjusted tax returns of the past three years,” Meili explains. “On this basis we then formulate business goals and integrate them in the construction plans.” The type of production, subsidies and investiture are used as a basis for setting

the cost ceiling. Modular construction has proven effective. Designing stalls, hayricks, feed storage areas, etc. as separate modules is the best way to fulfill the requirements specific to each farm.

“We sell ideas”

Rather than charging a fixed percentage of the construction volume as is customary in the stall design sector, FiBL agents charge an hourly rate. This is one of the key differences between us and other construction planners, Meili emphasizes. “This gives us the freedom to develop solutions that truly fit the needs of the farm rather than fulfilling architects' dreams and building everything as big as possible.” Meili and Schürmann are renovation specialists and hence



they sell ideas and not stall equipment. Their approach, however, is not always met with understanding or appreciation. For instance, due to family circumstances a farmer recently wanted to switch from a dairy to a cow-calf operation. Meili and Schürmann proposed remodelling the existing barn and adding an exercise yard. This would have only required an investment of 100,000 francs rather than 250,000 francs for a new building. But the client insisted on a new building, like the ones that he saw at agricultural trade shows and that some of his fellow farmers had.

For Meili and Schürmann, however, economical construction is an absolute must. There are too many farming operations living off and consuming their own capital. Part-time farming, with 10-50% or even more than 50% of the total income earned off-farm, is also an option considered in the search for the optimal solution. “Wanting to maintain full-time farms at all costs limits the range of viable solutions too much,” Schürmann insists.

Cut costs, but never at the expense of animal well-being

In cost-effective construction, it is essential not to sacrifice the welfare of the animals. FiBL thus provides solutions for free stalls that are tailored to the needs of cows with horns. “The higher costs are an investment in animal well-being and

animal health,” says Claudia Schneider. She is the expert when it comes to converting to free stalls and making structural adaptations to them.

In herds of cows with horns, it quickly becomes evident when the cows are not content: they injure each other in conflicts. Each stall corner and each piece of stall equipment therefore needs to be checked to make sure that it does not interfere with the species-typical behaviour of the cows or provoke conflict. In such cases the best solution is often something other than the most obvious stall design. “The conditions in the stall must be appropriate for the animals living in it and the persons working in it, and must also be adapted to the operation,” says Claudia Schneider. *ta*

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- ❶ Rebuilding after a fire: Housing for 22 horned cows with calves. Left: column-free hayrick with glue-laminated beams, hay crane. Right: Free stall with boxes. ❷ New construction for 36 horned cows with calves: Divided stall, feeding place with feeding barn, boxes for cows, deep litter for calves, feeding place in-between, liquid manure pit underneath. ❸ Stall for 80 dairy cows, Meili minimal stall, silage prohibition. Covered cubicles, feeding barn with hayrick, group igloos in the foreground. ❹ Remodeling: Free stall for cows with horns.





Conversion to sustainable forms of land use requires a great amount of technical knowledge and knowledge exchange between farmers.

Making know-how available for Africa's organic farmers

Climatic changes, infertile soils, low yields: African farmers have many challenges to overcome. The African Organic Agriculture Training Manual is a source of innovative instructional materials for African farmers, teachers and consultants.

Irene Kadzere is beaming from ear to ear. A worker in the African Organic Agriculture Training Manual project, she has just returned from the second African Organic Conference in Lusaka (Zambia). She and other FiBL colleagues presented the Training Manual to the representatives of the African Organic Agriculture Movement. "The feedback was overwhelming." Since the publication of the manual in September of 2011, FiBL has been receiving a great deal of positive feedback. "Organic agriculture is a hot topic in Africa: the Training Manual is falling on fertile ground and is being met with widespread enthusiasm across the entire continent," Kadzere joyfully reports.

Compiling and presenting organic knowledge

FiBL experts, educators and farmers jointly compiled and evaluated organic agriculture knowledge from the entire continent and presented it in over 1000 pages of innovative

instructional material. "We initially underestimated what collecting information from all of the different regions involved," project leader Lukas Kilcher admits frankly: "It was a monumental undertaking, but it paid off." In ten chapters and numerous fact sheets for farmers, the Training Manual deals with topics such as soil fertility, crop pest and disease management, raising livestock and marketing. The illustrations created especially for the Training Manual are of particular value. "With them we can present the content to farmers and educators in an instructive and engaging manner," says Kilcher.

The cooperative effort on the Training Manual is bearing additional fruit: Kilcher is pleased to note "the way casual contacts are turning into partnerships among the various stakeholders in organic agriculture. The value of this network is priceless." Another yet equally important outcome of the project work is a comprehensive list of addresses, links,

trends and statistics, market information and technical literature on the website www.organic-africa.net. This platform will hopefully strengthen the partnerships with and among the African stakeholders even more.

Testing the training material in actual practice

More than 30 organizations throughout Africa are now testing the Training Manual. They are using the various chapters on a trial basis in the classroom and in the field and thus testing the practical applicability of the manual. Regional and cultural differences must not be underestimated, and in each case the advisors and teachers have to adapt the instructional material to local conditions. The experiences from field testing shall serve as the basis for ongoing improvement of the instructional material.

The head of a women's and woman farmers' association in Benin is looking for funding for educational projects and translations into local languages. Translations are also required in southern Ethiopia because many trainers do not have a sufficient command of the English language. In order to address the emotional level, the Namibian partners wish to rewrite the chapters and adapt them to the cultural environment.

How farmers become entrepreneurs

Irene Kadzere is convinced: "Organic agriculture also works in Africa." For many farmers, making the switch is an opportunity to make the most out of their limited resources,

stabilize their yields, and sell their products at fair prices. The farmers are thus able to generate more added value and improve their incomes. "We not only wish to contribute to the farmers' ability to produce high quality food products, but also to them seeing themselves as entrepreneurs who are successfully marketing high quality organic commodities," says Lukas Kilcher.

Hence the next phase of the project has already begun: FiBL is working on a second, expanded version of the Training Manual with additional content. It will also be translated into French as well as other African languages. FiBL is also working on other communication means for the Training Manual: audiovisual media and SMS services shall be used along with social media and printed fact sheets for farmers. The project will now place a stronger focus on market access and improving access to suitable seed and organic pesticides and fertilizers. *ta*

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Partners: More than 30 African educational and advisory organizations as well as national organic farming associations

Funding: Bill and Melinda Gates Foundation, Syngenta Foundation for Sustainable Agriculture

To learn more: www.organic-africa.net



FiBL project officer Gian Nikolay (centre) and an instructor in Zambia discuss how to best adapt training materials to the local conditions.



Strategic improvement of critical points in production: Onsite soil management course at an orange plantation in Mexico.

Tapping sources for organic juices

The organic market is growing and the trade is becoming more global. Large trading firms supply international buyers. Hence the risk of getting products of less than desired quality and/or quantity is on the rise. Long-term partnerships established on the basis of fair prices and high quality are beneficial to both producers and buyers. FiBL offers commercial firms in the organic commodities trade a comprehensive service package for ensuring the quality, safety and availability of organic products over the long term.

Whereas health food stores were the main clients of organic farmers in the past, nowadays wholesale distributors are supplied by international commercial firms. Assurance of quality and the required delivery volumes are key issues in the international organic commodities trade. For ten years the Dutch company Ariza B.V. has dealt in organic fruit juices and juice concentrates, which are then processed to make drinks, yoghurts, baby food, etc. For example, Ariza buys apple juice concentrate from Germany, Turkey, China, Argentina and Eastern Europe, oranges from Mexico and Brazil, berries and fruit from Poland and Ukraine, and passion fruit and mangoes from Peru.

High demand for fruit juices

The demand for fruit juice concentrates is on the rise, and Ariza is continuously seeking trustworthy new suppliers.

Ariza entrusted this task to FiBL agent Paul van den Berge. “During the first visit with a producer group, I decide whether the potential for a long-term partnership with Ariza exists in principle,” van den Berge explains. Everything doesn’t have to be perfect, at least not at first, but the willingness to cooperate on making specific improvements is very important. Hence the interpersonal working relationship is also a decisive criterion.

If these preliminary fact-findings are positive, the FiBL agent then conducts a SWOT analysis to determine the strengths and weaknesses of the producer group as well as the potential opportunities and risks involved. This is where van der Berge’s many years of experience in the international organic commodities business come in. The SWOT analysis findings are used to develop improvement measures targeted to the specific situation. For example, soil management and



Personal contact with producers: Apple delivery in Qingtongxia, China.

tree pruning courses have been organized for a group of Mexican orange growers, with the aim of improving fruit quality.

“If the basic prerequisites are met, it is nearly always possible to build a sustainable partnership,” says van den Berge. However, there can be problems in certain regions (e.g. certain parts of Turkey) where young people are leaving the farms and thus no family succession is guaranteed.

Both large and small producers are needed

Could this growing worldwide trade in organic commodities push the small farmers out of the market? According to van der Berge, “Previously the impetus for growth in organic production came from smaller farms, which had already been operating with very few resources before switching and therefore did not need to make substantial changes in farming practices.” But these farms alone are no longer enough to meet the growing demand. Hence it is also necessary to motivate large, innovative and professionally managed farms to convert to organic production. To enable the small farmers to remain competitive with larger organic farming operations, fair trade certification is also important.

An example is a group of young apple growers in Mongolia. With dry summers and cold winters, the conditions of this region are ideal for organic apple production. The family farms each comprise two hectares and have both fair trade and organic certification. This means a guaranteed minimum price, guaranteed purchase and an extra premium.

Ariza hopes to professionalize the farms even further and familiarize the farmers with state-of-the-art organic farming methods and techniques. To this end, Ariza is planning to set up apple production facilities for demonstration purposes at the major production sites. FiBL apple production expert Franco Weibel has been assisting with the onsite planning; the first resistant apple trees should be planted by the autumn of 2012.

Thanks to the support of his FiBL colleagues in Frick, van den Berge is able to provide his international clientele with a well-rounded service package. Along with conducting courses and setting up demonstration facilities, the FiBL team also publishes fact sheets on organic apple production, which have been translated into Chinese with the help of Ariza and its Chinese business partner Naturz Organics. *ta*

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Funding: Ariza B.V.



An integral part of FiBL's service package: agricultural extension documents that are adapted to local conditions.

Agroforestry system to ensure cacao yields

The conventional monoculture production of cacao trees not only leads to higher levels of pest and disease infestation, but also to loss of soil fertility over the longer term. Cacao farmers are struggling with declining yields. In long-term studies in Malaysia and Bolivia, FiBL is comparing the yield security and economic efficiency of agroforestry systems versus conventional monoculture production.

In nature, cacao trees grow in rain forests. They like shade and soils with decaying leaves and branches. It is true that the trees grow faster and produce high yields sooner in monoculture plantations without shade-providing species. Because of higher pest and disease pressure and declining soil fertility, however, the yields also start declining rapidly. Inadequate yield security has caused many Malaysian cacao farmers to switch to more lucrative palm oil or rubber production. The long-term supply of cacao is in jeopardy.

How can neglected plantations be rejuvenated?

On a cacao plantation northeast of Kuala Lumpur, FiBL is testing new production strategies for stabilizing cacao tree

yields over the long term. The sponsor of these studies is Barry Callebaut, one of the world's leading cacao dealers and processors.

Cacao has been grown conventionally on the study plantation since the 1980s. The trees were hardly maintained at all once the yields started to decline. "The first thing we want to do is find out the best way to rejuvenate a neglected, low-yielding plantation," explains FiBL project manager Monika Schneider. To this end, she and agroforestry expert Joachim Milz of the consultancy firm Ecotop set up an elaborate field study. Normally old cacao trees are torn out and replaced with young trees. But it takes two and a half years before the young trees start to yield. With the aim of shorten-



Standard practice to date: monoculture with no shade-providing species and with heavy fertilizer and pesticide use.



Agroforestry system for smaller plantations. Various fruit trees provide by-products.

ing the non-productive time, in a second variant they pruned the old trees back almost to the stump. A new tree canopy is then formed from new growth shoots.

In a further step, Schneider and Milz hope to ascertain which production systems enable long-term yield security. Hence the two rejuvenation methods (“new planting” and “back pruning”) are each being implemented in two different agroforestry systems.

Plant communities provide shade and by-products

The agroforestry system developed by Joachim Milz is based on natural plant succession. It encompasses annual crops such as napier grass and manioc as well as various fruit and forest trees. This system is ideally suited for smaller family farms, which can use the by-products such as bananas, manioc root, or firewood for subsistence. A second agroforestry system with a less complex species composition is suited for larger plantations. In this system the cacao trees grow in companionship with precious hardwoods, which provide shade. But this system also includes plants that supply biomass for improving the soil, legumes such as the *Gliricidia* tree or the peanut species *Arachis pintoi* that binds atmospheric nitrogen. The previous intensive monoculture production with chemical-synthetic fertilizers and pesticides serves as a comparison.

The experiment has been running since 2011. Project manager Monika Schneider is satisfied with the progress thus

far, even though pest and disease control has been very challenging in all of the variants. “We are continuously having to develop the necessary know-how ourselves,” says Schneider. For there are only a few research projects with agroforestry systems in the entire world.

There is a cacao research station in the tropical lowlands of Bolivia. Here in the Alto Beni region, Monika Schneider set up a long-term study in 2008 in cooperation with El Ceibo, the governing body of the local cacao cooperatives, and with the Institute of Ecology of the University of La Paz. Agroforestry specialist Milz is involved in this study as well. According to Schneider, leafcutter ants were the greatest threat to the growing cacao trees in every system during the three year startup phase. It will take another three years before the cacao trees reach their full yield potential. The preliminary analyses show that the trees grow faster and yield sooner in the monocultures. But they also show that the trees in the agroforestry systems are less frequently infested with fungus diseases. *dh*

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Funding: Barry Callebaut, BioVision, Coop Sustainability Fund, Swiss Agency for Development and Cooperation (SDC), Liechtenstein Development Service (LED)



A long-term cacao trial in Bolivia also serves as an opportunity to provide basic and advanced training to local cacao farmers.



The self-fertile flowers of the soya bean are purple or white. The fruit is a short hairy pod which turns brownish-yellow or black as it matures. Pods usually contain two to four roundish seeds that vary in colour from white to yellow or brownish-black, depending on the cultivar.

Soya: local production rather than dependence on imports

Increasing local soyabean production is the goal of the soyabean research project, which was started in 2011. More and more farmers in Germany as well are getting interested in this crop. However, it is still seldom grown because there are many unanswered questions. A team of four FiBL workers is finding answers to questions on breeding, production, processing and nutrition.

There is a high demand for soyabeans in Germany, as not only are they a highly prized feedstuff but also a high quality foodstuff. The reason for this lies in the constituent components: soyabeans contain comparatively high amounts of protein and the protein composition is ideal for both livestock and human nutrition.

The majority of the soya used in Germany, however, is imported from overseas. Local production is low because very few cultivars of this heat-loving crop are adapted to the rather unfavourable climate conditions in much of Germany. Furthermore, soyabeans must be treated or processed for optimal digestion by livestock and humans. The goals of the soyabean research project are to help find suitable cultivars and answer the questions concerning processing.

Networking the stakeholders

FiBL agronomist and project leader Klaus-Peter Wilbois is especially positive about the prospects for organic soya: “Organic agriculture requires that regionally or even on-farm produced feedstuffs be used as much as possible. And covering the need for protein in the near future through local production, specifically of soyabeans and other legumes, certainly seems realistic.” Wilbois is coordinating the

collaboration among the project partners and the synthesis of the results, establishing networks with other stakeholders in soyabean production and processing, and is the primary project contact person.

FiBL team member Ludwig Asam has acquired practical experience in growing soyabeans on his organic holding and is contributing his know-how to the subproject devoted to the preparation of soya for feed. He stresses the importance of GMO-free soyabean production in Germany, also for the consumers: “The freedom to choose between GMOs and conventional products is already quite limited because nowadays only around 27 percent of the worldwide soya production is GMO-free. In contrast, local soyabean production has the potential to satisfy the growing demand and make both farmers and consumers less dependent on imports.”

Decentralizing the processing

Many farmers want to feed soyabeans grown on their own farms to their livestock. But that is not so easy, explains Asam: “Soyabeans must undergo heat treatment for optimum digestion by non-ruminants, and the negative impact on the key quality-determining parameters such as protein value and fatty acid spectrum should be minimal.” One of the key



Rhizobia living within nodules of the soya bean plants' root systems fix atmospheric nitrogen and increase soil fertility. Due to the oxygen-carrying leghaemoglobin they contain, the root nodules are of a red colour on the inside. In our soils these bacteria do not occur naturally and therefore the seed must be inoculated.

factors for increased local soyabean production lies in decentralized processing of the beans. A greater number of mobile or on-farm processing facilities would be desirable. At present most of the processing is of imported soyabeans, mainly in the large factories located near the ports of entry.

FiBL agricultural engineer Kerstin Spory is studying the existing types of facilities, how they function, and where they are being successfully implemented in processing: "In the scope of my research, I found it exciting meeting other people, in many cases farmers, who took a direct approach to the problem with the digestion-inhibiting substances and designed equipment to solve it themselves. The motto is: Think in terms of solutions, not problems."

Bringing the results to the farmer

Ann-Kathrin Spiegel is the FiBL soya team member who sees to it that the acquired production and processing knowledge is put into practice. She is continuously adding

new information to the project website www.sojainfo.de, sees to it that articles get published in professional journals, and is involved in the organization of field days where farmers can learn about and discuss soyabean production. *aks*

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Sponsored by the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) under the Federal Scheme for Organic Farming and Other Forms of Sustainable Agriculture (BÖLN)

A strong local soyabean production team. From left to right: Ann-Kathrin Spiegel, Klaus-Peter Wilbois, Kerstin Spory, Ludwig Asam.





Training measures are tailored to different target groups: inspectors, advisors, or technical staff of processing or exporting firms.

Turkey–EU: Promoting knowledge and quality in organic trade

Turkey is one of the main exporter countries of organic produce for the European Union. Experts in both Turkey and the EU are seeking to boost opportunities for exports of organic products into the European market and to optimize quality standards.

Over the past decade, the proportion of organic production in Turkey increased threefold. “If such a level of growth is not accompanied by a simultaneous and corresponding level of capacity building, there is a risk of overstressing the system”, explains Atila Ertem, President of the Turkish Association of Organic Agriculture Organizations (ETO). On the way from the field to European retailers there are some potential points of weakness which could for example result in the contamination of organic produce with plant protection products. Such contaminations may result from gloves used by workers handling both organic and non-organic produce or could arise from conveyor belts, transport containers and in storage facilities.

A bilateral cooperation project between FiBL Projekte GmbH, FiBL Switzerland and ETO aims at enhancing awareness of this problem along the entire chain and remedying the issues. “The project’s objective is to improve the knowledge base on how to handle organic products across the en-

tire value chain from farmers to processors and traders, from the competent authorities to exporters”, explains Boris Liebl, Project Manager at FiBL Projekte GmbH. The project team is ideally suited to achieving this aim: The Turkish colleagues are familiar with the conditions in their country and bring decades of experience in organic production in Turkey to the project while the German and Swiss colleagues contribute their experience in training specialists and developing sophisticated inspection and quality assurance systems.

A comprehensive training strategy

“While there is a lot of organic farming expertise in Turkey there are some gaps when it comes to target group-specific training and education conveying specialized knowledge on issues such as soil fertility, plant protection, sampling and assessment of residue analyses. Together with our Turkish colleagues we are developing a customized strategy for a most varied range of subject areas”, Boris Liebl explains. For exam-



On joint field trips, importers and exporters visit the production chains in Turkey and discuss important aspects of quality development.

ple, experts had opportunities to exchange information at an international organic farming conference in Izmir, in workshops with inspection bodies and in round table talks with importers and exporters. “Such international events provide an opportunity to discuss weak points, to increase awareness within the sector, and to find solutions”, the Project Coordinator in Turkey, Elisabeth Rüegg, explains.

During the first phase of the project a Swiss-Turkish expert group already analysed the crucial issues relating to main export crops such as nuts, raisins, apricots and figs. The result: Contamination is caused for example by spray-drift from neighbouring non-organic fields or by unknowingly applying unauthorized substances. Often the root cause is a lack of technical knowledge with regard to the latest organic treatment methods in production, storage and processing. The results of the analysis are now used to set out the topics for trainings, workshops and events.

Advisors hold a key position in terms of knowledge and quality awareness in organic farming. Therefore one of the main objectives of the project is to provide high-level further education to these multipliers.

Cultural exchange facilitates professional exchange

The project team’s composition – with 50% of the team members hailing from Turkey, the other 50% from Germany and Switzerland – contributes to cross-cultural exchange and understanding and in turn also to better appreciation in professional exchange. While European importers criticize some lack of concern for quality issues, Turkish producers

and exporters similarly complain of a lack of appreciation on the part of European buyers: “You can’t produce good quality at dumping prices, and in order to produce the best quality products there must be clear and binding agreements” Atila Ertem emphasizes.

In the summer of 2012 the project team invited German importers to Turkey where the group visited a variety of operators together with Turkish traders. “It is important that the producers gain a greater understanding of the expectations as to product quality. Who better to impart this than the immediate buyers?”, says Elisabeth Rüegg, outlining the aim of the trip.

A network of demonstration farms across the whole of Turkey is planned with a view to showing interested parties how varied organic farming is and how quality assurance and traceability can be implemented in detail. *hh*

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Funding: The project (Project No. TUR 11-01) is financially supported by the German Federal Ministry of Food, Agriculture and Consumer Protection via GFA Consulting Group GmbH.



Water resources: The “gentle cycle” is organic

Global demand for water has increased threefold since 1950. Farming significantly contributes to this increase: the farming sector is responsible for an astonishing 70 percent of global freshwater consumption. FiBL Austria has calculated the “water footprint” of organically and non-organically produced foods. This provides scientific evidence of the water savings potential of organic farming.

On behalf of the Hofer KG discount supermarket chain, the FiBL Austria team assesses and calculates the water consumption and aqueous emissions attributable to Hofer’s own-brand “Zurück zum Ursprung” (Back to the roots) organic range as well as the products’ greenhouse gas emissions and biodiversity impacts, comparing these parameters to those of equivalent non-organic products.

Blue, green and grey water

“A complete water footprint considers three components”, explains Stefan Hörtenhuber, FiBL Austria’s sustainability team member in charge of water assessments: “Blue water” is fresh surface and groundwater which is used directly in agricultural production for e.g. irrigation, for livestock, or for the production of mineral fertilizers. “Green water” evaporates from the soil and vegetation or transpires through plants. “Grey water” is the volume of water that is required to dilute water pollutants such as nitrates, phosphorous and pesticides to such an extent that the quality of the water remains above agreed drinking water quality standards. Grey water is therefore a measure used to convert water pollution into water consumption. Grey water is particularly relevant to quantifying environmental water footprints.

The FiBL water footprint model considers all three components. Based on models and studies representing international best practice, the FiBL model considers up-to-date Austria-specific data, distinguishing by crop type and production conditions at the regional level. Previously, data were only available at the broader level of Austria’s provinces. The FiBL model now allows the scientists to calculate in detail the water required to produce individual food items along the entire value chain from the field or livestock house to the supermarket shelf.

Balance tips in favour of organic products

The comprehensive water footprint calculations allow the FiBL team to underpin their assessments of foods in terms of water consumption and pollution with impressive figures: One kilogram of harvested non-organic wheat requires approximately 500 litres of green water, additional blue water if it is irrigated, and about 1000 litres of grey water. The latter is the volume of water needed to “absorb”, i.e. to dilute the nitrate loss in non-organic wheat production to the extent that the maximum permissible nitrate level in drinking water of 45 mg/l is not exceeded. The production of one



Stefan Hörtenhuber calculated the water footprint of 250 organic foods.

litre of non-organic milk has a footprint of up to 450 litres of green water and 500 litres of grey water.

The water footprints of organic wheat and organic milk are 20 percent and 15 percent lower, respectively, compared to their non-organic counterparts. Blue and green water consumption in non-organic and organic farming are quite similar; the decisive factor in comparisons between the two production systems is the grey water footprint. This reveals the water savings potential of organic farming, which generates significantly less water pollution. Especially the favourable nitrogen efficiency and the rejection of chemically-synthesized plant protection products have a positive impact on the water footprints of organic products.

While the figures calculated by FiBL Austria vary from product to product, the 250 organic foods assessed so far show an average reduction in water demand of 15 percent compared to the equivalent non-organic products. The organic advantage is particularly evident when it comes to vegetables (e.g. courgettes or carrots) or pork. The water savings potential of organic pork is 25 percent and more.

The water footprint model developed by FiBL Austria allows scientists to present scientifically complex facts with respect to water consumption and pollution in a way that is comprehensible for consumers. The sustainability effects, expressed in percentage figures, are printed on the packaging of Hofer's Zurück zum Ursprung own-brand organic range. Consumers can now see exactly what contribution they make to protecting water resources when they buy these organic foods. *ek*

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Funding: Werner Lampert Beratungsges.m.b.H., Vienna, "Zurück zum Ursprung"/Hofer KG, Sattledt, Austria.



Epicurean delights

Organic foods are special. They meet high standards not only in terms of the manner in which they are produced and processed but they are also big league players when it comes to taste.

There is plenty of scientific evidence for the quality of organic foods and their ecological, ethical and nutritional benefits. So as to let the food speak for itself, since 2010 FiBL Austria and the FREILAND association have regularly invited consumers to their popular “Tasting_forum”. The aim of these tastings is to present a range of organic foods of different levels of processing and to demonstrate the variety available. Building on the products presented for tasting we also address the issues surrounding the rather broad definition of food quality as used in the organic farming sector which includes both optimum product and process quality. Last but not least these events serve to network between a very diverse range of target groups.

Diversity of tastes as a concept

In addition to visual appearance, scent and texture, a food item’s taste is surely the most fundamental sensory impression leading to an assessment of its sensory qualities. For this reason, the diversity of tastes in organic foods is at the heart of the FiBL tasting fora. Participants can enjoy organic food with all their senses and discover both preferences and aversions during the assessments which are subjective by design.

Over the past two years twenty of these tastings have been held in a range of locations from the FiBL offices to cookery studios, on rooftop terraces and in universities as well as in the Schönbrunn Palace’s own creamery. Each forum

hosted between 50 and 100 interested consumers who could taste their way through a wide range of organic foods and never ceased to be amazed by the almost inconceivable diversity on offer as the products presented have been even more varied than the event locations. The sky is the limit when it comes to variety: Asian greens, different types of milk, rosé wines, chocolate, bacon, wild herbs, unusual varieties of tomatoes and cucumbers, spirits, raw milk cheeses, mustards, and pumpkin seed oils are only a small selection of product groups served at the tastings.

Pure epicurean delight is key

The design of the tastings is based on the products to be showcased and varies from event to event. What all tasting fora have in common is that they are not about rankings of products or cultivars but primarily about experiencing the unbelievable diversity of scents, aromas, colours and shapes of organic foods. What is also characteristic of each of the FiBL tastings is that based on the organic foods presented and with a view to the main target group amongst the participating consumers, up-to-date scientific findings on organic farming are presented at the event. In addition to our own FiBL experts we invite, in keeping with the theme of the individual tasting session, selected outside experts who very much put their own stamp on each of the events.

Reinhard Gessl and Elisabeth Klingbacher of FiBL Austria are responsible for the coordination, organization and scientific back-up of the tastings. In addition to giving people the possibility of experiencing the variety of organic foods, their primary aim is to establish connections between consumers as well as “multiplier” stakeholders and academics and practitioners in the organic farming sector. The fact that participants from different backgrounds become personally acquainted and appreciative of each other also helps

to promote sales or open markets – a side-effect that is very much intended.

Both the concept of the event and the product groups showcased are regularly picked up and discussed by Austrian quality media. However, what is much more important to the organizers is the active participation of the new media. Numerous food blogs discuss the showcased organic foods and at the same time communicate ideas and background information on organic farming in a low-key manner to tens of thousands of readers.

Moreover, in 2011 the “Tasting_forum” became an award-winning initiative when it was considered an exemplary project amongst entries submitted to “Netzwerk Land”, the Austrian Rural Development Programme 2007-2013. There is much to be said for continuing these tasting events next year. We have plenty of ideas! *ek*

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Funding: Austrian Rural Development Programme LE 07-13 with support from the Austrian federal government, the Austrian provinces, and the European Union.



Surprising culinary experiences.

Foundation Council and Boards

Foundation Council of FiBL Switzerland



Martin Ott
Bio-dynamic farmer, Fintan Foundation,
President of
the FiBL Foundation Council



Rolf Gerber
Head of the Landscape and Nature
Office of the Canton of Zurich



Oskar Sager
Head of Marketing,
Migros Cooperatives federation



Erol Bilecen
Head of Client Services,
Sarasin Sustainable Investment,
Bank Sarasin und Cie AG, Basel



Dr. Rolf Gerling
President of the Gerling Foundation



Dr. Ulrich Siegrist
Former Canton of Aargau
State Councillor,
Former National Councillor



Hildegard Fässler
National Councillor, Vice-President of
the FiBL Foundation Council



Susanna Küffer
Former Manager Association
for biodynamic agriculture



Prof. Dr. Hartmut Vogtmann
President Deutscher Naturschutzring
DNR



Nikolai Fuchs
Nexus Foundation



Claudia Lazzarini
Organic farmer in Cantone/Le Prese
Co-President Biogrischun,
Bio Suisse Steering Committee



Dr. Felix Wehrle
Former Head of Communication,
Former Member of Coop Executive



Dr. Urs Gantner
Head of Research at the Swiss Federal
Office for Agriculture (FOAG) in Berne



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Journalist, food advisor

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Resources and Applied
Life Sciences, Vienna



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Maria Anzbach
Organic farmer



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Frick
Director FiBL Switzerland
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of the LFI Rural Training
Institute, Lower Austria



Mag. Andreas Kranzler
Vienna
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Vienna



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Veterinarian

Board of FiBL Germany



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Dr. Felix Prinz zu Löwenstein
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Dr. Uli Zerger
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Executive Manager of the Foundation
Ecology and Agriculture (SÖL)
Director of FiBL Projekte GmbH

Focus on analysing sustainability

Over the past few years FiBL's research activities and advisory services have been strongly focussed on sustainability throughout the entire food sector. The aim is to ensure that organic farming can continue to lead the way forward. In addition, FiBL has intensified its international networking activities and its international initiatives in order to contribute to the growth of organic farming worldwide.

The development of organic farming in Europe is on a good trajectory: Austria has a share of 20% organic farmers, Switzerland 11.5% and Germany 4%. Organic farming benefits from public financial support in all EU countries and in Switzerland. According to the Swiss government's plans for its agricultural policy for 2014-2017, the support measures will be continued because organic farming is a holistic sustainability strategy. Similarly, in the EU the legislative proposals presented by Agriculture Commissioner Dacian Ciolo for the pending reform of the Common Agricultural Policy give preferential treatment to organic farming.

This shows that organic farmers must take the issue of sustainability very seriously if they wish to continue to lead the way in terms of environmentally and socially benign family farming and long-term economic sustainability. Over

the past few years therefore, FiBL's research activities and advisory services have been strongly focussed on analysing the sustainability of agriculture, the food industry, and food consumption. We have done this not only in Switzerland but also at our other institutes in Germany and Austria. Similarly, we have intensified our research into greenhouse gas (GHG) emissions and soil fertility in organic farming compared to other agricultural methods and we are measuring these parameters in numerous field trials.

Making organic farming mainstream worldwide

Unfortunately, if we look beyond the immediate horizon we can see that on a global scale organic farming is still struggling. Just about 1% of the global agricultural area, or 37 million hectares, are managed in accordance with organ-

Income and expenditure of FiBL Switzerland in 2011 and 2010

(in Swiss francs)	2011	2010
Income		
Research	6 748 416.94	6 847 412.58
Federal service mandate	4 720 000.00	4 720 000.00
Advice and training/education	1 586 867.63	1 492 136.29
Communication	1 276 347.08	1 336 045.31
International	3 586 466.35	2 822 113.79
Research farm	46 262.04	47 157.62
Restaurant, internal services	581 725.30	565 118.68
Donations, miscellaneous income	584 693.61	572 797.13
Total income	19 130 778.95	18 402 781.40
Expenditure		
Expenditure on personnel	12 068 978.53	11 712 896.61
Operational costs		
Materials for trials, consumables laboratory, analytics, project costs	4 872 615.19	5 066 301.51
Expenditure on premises, office supplies, other administrative and IT expenditure, advertising	1 296 048.49	1 339 098.97
Financial expenses	423 621.50	356 818.05
Depreciation	839 775.95	659 199.00
Total expenditure	19 501 039.66	19 134 314.14
Extraordinary revenue	382 247.15	734 301.85
Surplus for the year	11 986.44	2 769.11



FiBL activities are well covered by the media.

ic standards. While the figure of 1.4 million organic farmers sounds quite good, they do represent only a tiny minority. Year after year Helga Willer, FiBL's statistician, meticulously compiles the area under organic management, the number of organic farmers, the proportions of the most important crop types, and the development of the markets for organic produce in every country of the world. The results are published in the book entitled "The World of Organic Agriculture". Given the many examples of organic farmers in Africa, Asia and Latin America who have been able to improve their yields

and family incomes, the very slow expansion of organic farming is lamentable. In the context of numerous research and advisory projects FiBL has considerably expanded its cooperation with organic farming organizations, UN organizations, governments and experts in the field.

Organic farming is a farming method based on agroecology which can respond at local level to global challenges such as food crises, climate change, or biodiversity decline. However, organic farming can only really be taken seriously if it continues to expand in area. This expansion needs in-

Events and milestones in 2011

January	New EU FOODLINKS project on linking research and policy in the area of sustainable food production and consumption. New EU SOLINSA project on learning and innovation networks in agricultural knowledge systems (coordination by FiBL). Participation in the "2 Grad" (Two Degrees) exhibition in Basel with a contribution on organic farming and climate change.
February	Participation in the BioFach World Organic Trade Fair with a stall, presentations and workshops. Start of a project supported by the Swiss National Science Foundation (SNSF) for the development of an internet-based Bachelor degree programme in "Organic Farming" in cooperation with five Central and Southeast European universities.
March	New photovoltaic system on FiBL's roof. Participation in the development of the Swiss Federal Office for Agriculture's new Swiss agricultural research strategy.
April	The German Federal Government's Council for Sustainable Development positions organic farming as the "gold standard" of agricultural sustainability. Urs Niggli is one of the experts.
May	EHEC crisis: Background information for the media; participation in the news magazine show "Frontal21" on German television (ZDF).
June	Conclusion of project on climate-neutral arable crop and vegetable production (Klimaneutraler Acker- und Gemüsebau) on the Schlatthof farm in Aesch, Basel-Land, in cooperation with Coop.
July	Bio-Offensive – proactive organics: Establishment of a network of 33 reference farms that can be visited by farmers interested in converting. For the third time, Urs Niggli is invited by Prince Charles as an expert to a brainstorming session on sustainability in food consumption and land use. FiBL together with the Swiss Federal Office for Agriculture (FOAG), FAO and IFOAM organize a workshop on organic farming at the conference of the Commission on Genetic Resources for Food and Agriculture in Rome.
August	Eric Wyss, Deputy Director, leaves FiBL.
September	Presentation of manual on organic farming in Africa at the occasion of the IFOAM World Congress in South Korea. FiBL participates in the meeting of OECD, FAO, UNEP and UNCTAD for the preparation of a joint position paper on "The Greening of Economy with Agriculture" in Paris. The conference is supported by FOAG and the result is taken into account at the Rio+20 Conference.
October	Establishment of the Hungarian Research Institute of Organic Agriculture (ÖMKI). New 'Syprobio' project on improving production techniques in Mali, Burkina Faso and Benin. Prof. Dr. Philippe Matile, FiBL Founder Member, passed away.
November	Urs Niggli advises the state research institute MTT in Mikkeli, Finland on matters relating to establishing a new research institute for organic farming.
December	Conclusion of SASA project on market development in Albania. Conclusion of CaLas project on climate and organic agriculture. Conclusion of ECROPOLIS project on documenting sensory properties of a range of organic foods.

novation, building on the farmers' practical knowledge, on keen observation of nature and a willingness to learn from it, and meaningful and responsible application of scientific and technical progress. Over the past two years we have engaged in intensive discussions as to what this means for FiBL. Opinions often vary considerably but the FiBL team utilizes these tensions creatively. During the next decade numerous new production technology solutions will become available and these will bring with them major economic benefits, making the conversion to organic farming a more attractive proposition. After all, we want to see organics become mainstream!

Top-class research has its price

In terms of its own economics, FiBL Switzerland is currently on a roller coaster. As usual, we have a lot more ideas than we have money to make them reality. 2010 was not a good year and we had to sell the "family silver" of the Swiss Foundation for the Promotion of Organic Agriculture which founded FiBL in 1973. The 2011 balance sheet was much

better, thanks to project commitments from companies and trusts, successful EU tenders, donations and a bequest. For many years now, the basic funding provided by the Swiss Federal Office for Agriculture has stagnated at a level of CHF 4.7 million per annum which in 2011 covered a mere 25% of FiBL's cost of research activities and advisory services.

Experimental research involving plants or animals and measurements of environmental impact parameters have become very expensive. However, the FiBL team is ambitious and wants to carry out innovative top-class research. The knowledge thus generated is made available for free to the public and especially to organic farmers. FiBL is quite unique in the world in that it carries out expensive open-source and open-access research as a private, non-governmental institution. With this annual report and in deep gratitude we garland the many private and public sponsors who make our work possible. The FiBL team is very happy to work for you and with you.

Urs Niggli, Director of FiBL Switzerland

Events and milestones in 2012

January	New EU OrganicDataNetwork project on organic market information. New EU Co-free project: New strategies for reducing use of copper in organic production. New CORE Organic project: Reduced soil cultivation and use of green manures in organic arable crops (TILMAN-ORG, Managed by FiBL). Establishment of the company SubstainTEC GmbH for provision of services at the interface of research and product development.
February	Film premiere <i>Zwischen Zorn und Zärtlichkeit – Die Geschichte des Biolandbaus in der Schweiz</i> (Somewhere between anger and tenderness – A history of organic farming in Switzerland) at Cinema Monti in Frick, Switzerland. Participation in the BioFach World Organic Trade Fair with a stall, presentations and workshops.
March	Co-organization of Second World Conference on Organic Beekeeping in Mexico.
April	FiBL receives the 2012 Swisscanto Prix NATURE for its contribution to the development of organic farming in Switzerland. Concluding event of the Feed no Food project at the Gut Rheinau estate, Canton Zurich, in cooperation with Coop.
May	Extension of organic aquaculture research. Dominique Barjolle is appointed as new Deputy Director. Urs Niggli meets representatives from the areas of policy, research and organic farming in Konya (Anatolia, Turkey) with a view to establishing an organic region and extending organic research.
June	Co-organization of the first organic tillage farming day at the Strickhof farm, Canton Zurich. The Green Liberal Faction of the Swiss Federal Assembly visits FiBL. Second phase of organic market development project in Ukraine commences. Urs Niggli participates in the Rio+20 Summit in Rio de Janeiro. IFOAM and FiBL announce the formation of a new international organic research network (TIPI). National Councillor Stefan Müller-Altermatt submits a motion to the National Council calling for an increase of the federal financial contribution to FiBL. The motion is supported by 40 other National Councillors.
July	Innovation is becoming a focal theme of EU agricultural and research policy. FiBL takes part in a number of events organized by the IFOAM EU Group and the European Commission.
August	The Swiss National Science Foundation presents the results of its project on genetic engineering and co-existence (Gentechnologie und Koexistenz (NFP-59)) in which FiBL had participated. FiBL study on soil carbon sequestration resulting from organic farming methods is published in the renowned US American journal <i>Proceedings of the National Academy of Sciences (PNAS)</i> . National Councillor Stefan Müller-Altermatt gets two legislative amendments passed in the National Council's Committees for Economic Affairs and Taxation which place federal funding for FiBL on a firmer footing.
September	After the Federal Council supported the motion by Councillor Müller-Altermatt, the National Assembly also approves the motion in its autumn session. The EU Commission begins its hearings on the status of organic farming. The discussions cover the EU Organic Regulation as well as support measures, research, market development, the import regime, and consumer safety. Three to four FiBL representatives participate in the hearings.
November	Urs Niggli is conferred an honorary Doctorate at the Estonian University of Life Sciences in Tartu. At the occasion of IFOAM's 40th anniversary, the organizations' Sustainable Organic Agriculture Action Network (SOAAN), in which Urs Niggli (President) and Christian Schader are active, presents proposals for the further development of organic agriculture worldwide towards sustainability.



FiBL Switzerland: a thumbnail sketch

The Research Institute of Organic Agriculture (FiBL) was founded in 1973 and has been based in Frick since 1997. FiBL Switzerland currently employs around 130 staff. Their specialisms include sustainable soil management, crop production, holistic animal health, animal ethology and animal husbandry appropriate to local conditions, socioeconomics, analysis of the organic market and organic food processing. Many of the projects and surveys take place on more than 200 farms throughout Switzerland. The close links between different areas of research and the extensive exchange of knowledge between research and practice are regarded as particular strengths of FiBL.

FiBL is also committed to the development of organic agriculture at international level. The development of ecological research services and of advisory and certification services is being addressed in numerous projects in eastern Europe, India, Latin America and Africa.

FiBL Switzerland – some figures

	2011	2012
No. of visiting groups (persons)	27 (570)	36 (615)
No. of courses (participants)	32 (671)	27 (905)
Visitors to www.fibl.org	214 207	218 430
Visitors to www.bioaktuell.ch	284 692	312 030
New publications (technical guides)	19 (55)	12 (47)
Updated publications		
Views on FiBLFilm channel on YouTube (new videos)	4298 (12)	28 331 (26)

Employees of FiBL Switzerland

Secretariat, accounting and administration

The secretariat is the hub of our operations. Here contacts with representatives of research, advisory services, industry, trade, associations, foundations and official bodies are coordinated and maintained. The accounting department ensures that the financial aspects of the numerous and often complex projects are handled smoothly. The administration

department is the first point of contact with the institute. Telephone or e-mail enquiries receive skilled and friendly replies. The secretariat is also responsible for organizing courses and looking after the many visitor groups that arrive from all over the world.



Niggli Urs
Prof. Dr. sc. ETH
Director of FiBL
Switzerland and
Responsible for Quality
Management



Droll Beat
Member of board of
directors, head of finance
and accounting



König Monika
Secretariat, visitors



Sander Bernhard
Project Assistant



Barjolle Dominique
Dr. Ing.-Agr.
Deputy Director, Rural
economy research



Merz Anne
Administration, Head of
secretariat, Organisation
ABIM, Quality
Management



Leu Stefanie
Workshop secretariat,
secretariat



Schönknecht Maja
Finance and accounting



Bayer Erika
Secretariat,
trainee supervision



Rickenbach Rudolf
Administrative trainee



Williner Stefan
Human resources,
finance and accounting



Friedrich Roman
Support trainee



Rickenbacher Beat
EDPV



Winter Carmen
Administrative trainee



Götschi Sabine
Finance and accounting

Restaurant and conference centre

The team caters for the wellbeing of the staff – more than 200 in number – who work for FiBL, the inspection body bio.inspecta and the organic consultancy Agrofutura as well as the many guests from Switzerland and abroad. The remit includes running the restaurant, the conference centre with

its six training rooms and the guesthouse, cleaning and maintaining the entire infrastructure, caring for the surroundings, managing the vehicle fleet and organizing passenger transport.



Amsler Thomas
Head of group, Frick
conference centre



Bircher-Herzog Erika
Restaurant,
domestic services



Hummel-Wüthrich Iris
Restaurant,
domestic services



Schär Lisbeth
Restaurant,
domestic services



Hunziker-Krebs Trudi
Restaurant manager
domestic services



Cafaro Immacolata
Domestic services



Salinas Hohl Celia
Domestic services



Ackermann Anita
Restaurant



Hajdarpasic Ahmo
Transports,
domestic services and
maintenance



Sandmeier Daniel
Restaurant

FiBL farm

Since 2010 the 37-hectare FiBL farm has been run biodynamically. Both arable and livestock farming are practised on the farm, and specialty crops are also grown. Twenty per cent of the land is given over to nature conservation and bio-

diversity. The farm has a dairy herd of 22 cows and a breeding bull. It is also home to a small group of pigs and some laying hens. FiBL researchers conduct studies and trials in every branch of farming.



Dehlinger Bronya
Farm manager



Schädeli Alfred
Farm manager

Cross-cutting issues

Food quality



Bickel Regula
Dr. Dipl. Lm.Ing. ETH
Head of food quality

Sustainability assessment



Schader Christian
Dr. sc.
Head of sustainability
assessment

Organic farming and climate



Gattinger Andreas
Dr. sc. agr.
Head of organic farming
and climate

Soil sciences

The soil is of key importance in organic farming. In long-term field trials and on farms the soil sciences division investigates the efficiency of organic and conventional farming systems in terms of fertilizer and energy use. Of particular interest in this context are the microorganism communities in the soil and their role in the mineralization of organic matter and the formation of humus. To help maximize yields in agriculture and horticulture while also saving natural resources, the group explores reduced tillage systems, the use of beneficial soil bacteria and mycorrhizae and ways of improving nutrient cycles through crop rotation. Plant breeding for organic agriculture is another important area of research

and goes hand in hand with improvements to plant varieties and cultivation systems. Work on soil and climate includes quantifying greenhouse gas emissions from soil use in order to identify ways of mitigating climate change. Research is also conducted into ways of managing agricultural land that promote adaptation to climate change.

Research priorities

- › Efficiency of cultivation systems
- › Strategies for optimizing yields
- › Seed and the environment
- › Climate and soil



Mäder Paul,
Dr. phil,
Dipl. Ing. Agr. ETH
Head of group, DOK-trial



Arncken-Karutz Christine
MSc ETH
Cereal quality, breeding



Berner Alfred
MSc ETH
Soil tillage, fertilizers



Berset Estelle
MSc ETH
Soil biology, mycorrhiza



Fliessbach Andreas
Dr. sc. agr.
Soil biology, soil ecology



Gattinger Andreas
Dr. dipl. Ing. Agr.
Leader climate protection
& organic farming



Krauss Maike
Dipl. Geoökol.
Climate Change and
Organic Agriculture



Messmer Monika
Dr. sc. Agr.
Plant breeding for
organic agriculture



Nieltispach Bruno
Lab technician
Laboratory, Analytics



Perrochet Frédéric
Dipl.-Ing. Agr. FH
Field trials (DOK, preparats
trial, reduce tillage trial)



Scheifele Michael
Dipl. natw. ETH
Climate Change and
Organic Agriculture



Skinner Colin
Dipl. Geogr.
Climate Change and
Organic Agriculture



Thonar Cécile
Dr. Sc. ETH
Plant symbiosis and plant
nutrition

Plant protection and biodiversity

The division investigates and develops practical methods of controlling pests and diseases in fruit-growing, viticulture, vegetable-growing and crop-farming. In tackling disease the focus is on the use of copper compounds on stone fruit, vines and potatoes and on controlling disease indirectly by promoting soil health. Improvements in pest control are brought about by two means: firstly, by growing carefully selected, ecologically useful plants in and around the planting area to promote the development of beneficial organisms,

and secondly by experimenting with the deliberate release of organisms that are beneficial against problem pests. The division is also working on a range of methods for increasing the contribution to nature conservation made by organic farms.

Research priorities

- › Controlling plant pests and diseases
- › Evaluating new auxiliary substances and technologies
- › Promoting nature conservation in farming



Tamm Lucius
Dr. phil., MSc ETH
Head of group,
phytopathology



Daniel Claudia,
Dr. agr.
Biological pest control



Luka Henryk
Dr. phil., Ing. agr.
Biodiversity, taxonomy



Schärer Hans-Jakob
MSc ETH
Phytopathology,
seed pathology



Balmer Oliver
Dr. phil.
Functional biodiversity



Fuchs Jacques
Dr. sc. ETH
Phytopathology, compost



Oberhänsli Thomas
Dr. sc. ETH
Molecular biology, plant
pathology, microbiology



Speiser Bernhard
Dr. phil.
Potatoes, auxiliary
inputs, slugs and snails



Belz Elodie
MSc
Fonctional biodiversity



Ludwig Mathias
B.Sc.
Field trials, laboratory



Pfiffner Lukas
Dr. phil-nat, Dipl.-Ing.
Agr. ETH; Biodiversity,
nature conservation,
habitat management



Thürig Barbara
Dr. phil.
Phytopathology,
induced resistance

Crop production

Growing special crops such as fruit, berries, grapes, vegetables, herbs and ornamental plants poses major challenges for organic farms. The division explores practical solutions to the key problems associated with these crops. In fruit-growing we test new plants and old varieties under organic conditions, improve yield stability and cost-effectiveness with preventive, system-stabilizing techniques and optimize fruit quality. In viticulture the focus is on suitability for cultivation and vinification of mould-resistant grape varie-

ties. With new preparations and better forecasting models we are also improving stability of yield for traditional European varieties. Important aspects of vegetable-growing are cultivar trials and the use of green manure as a source of nutrients.

Research priorities

- › Fruit and berries
- › Viticulture and vinification
- › Vegetables and ornamental plants



Weibel Franco
Dr. sc. ETH
Head of group,
varieties and production
techniques



Gallati Philip
Dipl.-Ing. Oenologie
Vineyard FiBL



Koller Martin
Dipl.-Ing. FH
Vegetable production



Toschini Giovanna
Fruit trainee



Frei Joel
Trainee vine dresser



Giordano Ignazio
Dipl. Ing. FH; Fruit
and berry production,
experimental trials



Léville Dominique
Dipl.-Ing. IUUV
Viticulture, oenology



Tuschmid Andreas
Ing. HTL
Manager FiBL vineyard

Animal Science Division

The Animal Science Division carries out research on the well-being and health of all livestock categories on organic farms, safeguarding health and welfare at various levels. Sustainable livestock breeding, ethologically sound livestock management, bioactive feeds as well as complementary medical treatments are assessed as to their effectiveness and economics.

Research priorities

- › Sustainable livestock breeding
- › Animal welfare and the environment
- › Animal health and sustainability
- › Parasite control
- › Epidemiology and preventive animal health strategies
- › Complementary medicine for animals
- › Aquaculture



Maurer Veronika
Dr. sc. ETH
Head of group,
ectoparasites, list of
approved substances



Abb Katharina
med. vet.
Animal Health



Amsler-Kepalaite Zivile
Dipl. Agroecology
Field trials, laboratory,
poultry



Bieber Anna
MSc. agr.
Breeding cattle



Biegel Ulrike
med. vet.
Mistletoe therapy
for dogs and cats



Bludau Maren Jana
med. vet.
Udder health



Christen Ophélie
Dr. med. vet.
Mistletoe therapy
for horses



Heckendorn Felix
Dr. Sc. ETH
Endoparasites
in ruminants



Holinger Mirjam
MSc. agr. ETH
Fattening of boars



Isensee Anne
Dipl. Agrobiology
Husbandry, health cattle



Krenmayr Ilse
Dipl.-Ing. agr.
Veterinary parasitology
lab



Leiber Florian
Dr. sc. nat.
Animal nutrition



Lutz Bianka
Dipl. Agr. Biol.
Basic research
homeopathy
(maternity leave)



Maeschli Ariane
Dr. med. vet.
Health of dairy cows



Notz Christophe
Dr. med. vet.
Health of dairy cows



Perler Erika
Lab technician
Field and laboratory
trials



Probst Johanna
MSc. agr.
Animal husbandry



Spengler Neff Anet
Dr. agr.
Breeding,
animal husbandry



Stadlander Timo
Alexander
Dipl. Biol.
Aquaculture



Stamer Andreas
Dr. agr.
Aquaculture



Steiner Manuel
Lab technician
Laboratory assistant
in homeopathy



Walkenhorst Michael
Dr. med. vet.
Health of dairy cows



Werne Steffen
MSc. agr.
Endoparasites in
ruminants



Wohlfahrt Jens
Dr. rer. nat.
Aquaculture

Socio-economics

One of the issues being addressed by the socio-economics division is the question of how different parameters of agricultural policy impact on organic farming. The group is also exploring what core competencies – in areas such as business skills and sustainable management – will be required by farmers in the future. We use qualitative methods of consumer research to analyse the behaviour and confidence of consumers who buy organic products only occasionally. We also study what society requires of sustainable agriculture and what form efficient certification systems should take.



Stolze Matthias
Dr. sc. agr.
Head of group



Home Robert
Dr. sc. nat.; Agricultural knowledge systems, agricultural innovation networks



Moschitz Heidrun
Dr. sc. ETH
Rural sociology



Schmid Otto
MSc ETH, Rural development, standards



Bickel Regula
Dr. Dipl. Lm.Ing. ETH
Leader of food quality



Jahrl Ingrid
Dipl.-Ing.
Rural sociology



Müller Adrian
Dr. sc. nat. ETH
Climate protection, carbon offset mechanisms



Stolz Hanna
MSc
Consumer & market research



Geier Vanessa
Dipl.-Ing. Agr.
Biodiversity, Life Cycle Assessment



Jawtusich Julia
MSc
Ecolabels, certification systems



Oehen Bernadette
Dipl. Bot., MAS ETH,
Technology assessment, environmental risk analysis



Hecht Judith
Dr. agr.
Model-based policy analysis



Meier Matthias Samuel
Dr. sc. nat. ETH
Sustainability analysis, LCA



Schader Christian
Dr. sc.
Leader of sustainability analysis

Extension

While the cantonal offices deal mainly with the conversion to organic methods on farms, FiBL advisors focus on special areas and bring their knowledge to bear country-wide. In addition to answering questions on technical production issues they help farming families with whole-farm optimization and new business ventures. To this end they provide information by telephone, visit individual farms and hold group advice sessions. FiBL advisors also support demonstration trials on farms.

Research priorities

- › Policy impact assessment
- › The future of farming
- › Consumer behaviour
- › Agriculture and society
- › Efficient certification systems
- › Sustainability analysis

Priority areas

- › Arable farming and specialty crops
- › Animal husbandry and feeding
- › Farm management
- › Marketing
- › Standards
- › Training



Obrist Robert
MSc ETH
Head of group, projects in the regions



Chevillat Véronique
Dipl. Biol.
Biodiversity, coordination training courses



Früh Barbara
Dipl.-Ing. FH
Feedstuffs, non-ruminants



Meili Eric
MSc ETH
Milk & meat production



Bircher-Jegge Richard
Master farm manager
Sustainability, biodiversity



Clerc Maurice
MSc ETH
Tillage production farm network (Western Switzerland)



Häseli Andreas
Dipl.-Ing. Agr. HTL
Fruit production, viticulture, plant protection



Schneider Claudia
Dr. agr.
Ethology cows, feedstuffs



Böhler Daniel
Dipl.-Ing. Agr. (FH)
Arable farming, extensive meat production



Dierauer Hansueli
MSc ETH
Arable farming, weed control, feed production



Kupferschmid Cornelia
B.Sc. Agronomie
Organic seeds, Arable farming



Schürmann Stefan
Processing and marketing; advisory development



Lichtenhahn Martin
MSc ETH
Vegetable & herb production



Tschabold Jean-Luc
MSc ETH
Fruit production, viticulture (Western Switzerland)

Communication

FiBL delivers communication services tailored to specific target groups. Together with Bio Suisse, we publish “bioaktuell”, the magazine of the Swiss organic movement. For teachers, trainers and extension agents, we produce technical guidance notes, manuals and audiovisual media.

We use various dedicated websites to disseminate research findings, practical experience and data to scientists and farmers. These include www.bioaktuell.ch, www.organic-research.net, www.organic-africa.net and www.organic-world.net.

FiBL is involved in developing and contributing to an array of research groups and knowledge networks.



Kilcher Lukas
MSc ETH
Head of group,
training materials



Bär Markus
lic. phil. I
Editor for bioaktuell



Kleine-Herzbruch Natalie
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Internet



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Editor, technical leaflets,
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Schmutz Res
Dipl.-Ing. Agr. HTL
Editor www.bioaktuell.ch,
technical leaflets,
manuals

International Division

This division, with its advisory and research mandates, operates mainly in developing and transition countries. Our vision is the development of sustainable systems of farming and nutrition that will ensure that all people have access to sufficient food of good quality and at fair prices. Through technical research and advice we demonstrate how ecological practices can conserve resources and improve profitability, thereby helping to reduce poverty. Our work includes, for example, a long-term comparison of different cultivation systems in Kenya, India and Bolivia, support to research and

advice organisations in eastern Europe, and contracts for advisory services in Latin America. Plans are in hand to develop cotton production in Africa to promote adaptation to climate change.

Priority areas

- › Sustainable production systems/
sustainable food production (research and extension)
- › Market development
- › Policy advice



Huber Beate
Dipl.-Ing. agr. (FH)
Head of group, organic
legislation, certification



Eisenring Tobias
MBA, MSc
Organic market initiatives



Kägi Nora Melina
MSc
Research sustainable
production systems



Schneider Monika
MSc ETH
Research sustainable
production systems



Adamtey Noah
Dr. Phil. Agr. & Envir.
Project coordinator



Forichi Kadzere Irene
Dr.; Training material
for Africa, Development
of research projects



Lichtenhahn Martin
MSc ETH, Region: Eastern
Europe; initial and
further training, advisory
development



Jiří Urban
Dipl. Ing. agr.
Eastern Europe



Andres Christian
M.Sc. Agr. ETH
Sustainable agriculture in
the tropics



Forster Dyonis
Dr. sc. ETH
Participatory research,
India



Meili Eric, MSc ETH,
Western and Eastern
Europe, processing and
marketing, advisory
development



van den Berge Paul
Dipl.-Ing. HTL; Standards,
label accreditation,
traceability systems,
vegetable production



Bernet Thomas
Dr. sc. ETH
Market chain research,
development and
management



Garibay Salvador
PhD
Latin America,
Plant production,
tropical fruits, markets



Nicolay Gian L.
MSc ETH
Coordination Africa

Comings and goings 2010–2012

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 Barjolle Dominique
 Bickel Regula
 Bircher-Jegge Richard
 Bludau Maren Jana
 Botero Valencia Juan Carlos
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 Stadtländer Timo Alexander
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 Toschini Giovanna
 von Koerber Hellmut
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Staff departure

Baumgart Lukas
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 Belloli Erika
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 Winkler-Payot Sophie

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Community service

Fürst Moritz

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 IFOAM, DE-Bonn
 IG Bio Weide Beef, Hüttwilen
 Imhof Hansjürg, Schwerzenbach
 INRA, FR-Paris
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 International Finance Cooperation (IFC), US-Washington
 Int. Forschungsgesellschaft für Umweltschutz und Umwelteinflüsse auf Mensch, Tier, Pflanze und Erde e.V., DE-Ühlingen
 Intercooperation, Bern
 International Trade Centre UNCTAD/WTO, Genf
 Intl. Bank for Reconstr. + Developm., US-Washington
 IP-Suisse, Zollikofen
 ISCB Indo-Swiss Collaboration in Biotechnology, Lausanne
J. Heinrich von Thünen-Institut, DE-Westerau
 Jurapark Aargau, Frick
 Justiz u. Vollzugsanstalt, Lenzburg

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Landschaft, Basel-Stadt, Freiburg, Glarus,
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Montricher
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Münchenstein
- Migros-Genossenschafts-Bund, Zürich
- Ministry of Agriculture, BG-Sofia
- Misereor, DE-Aachen
- Mouron Patrik, Wädenswil
- MRW Direction générale de l'Agriculture,
BE-Namur
- Museo cantonale, Lugano
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posophischer Forschung und Kunst,
Dornach
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(SAV), Bern
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- Universität de Barcelona, ES-Barcelona
- Universität Hannover, DE-Hannover
- Universität Hohenheim, DE-Stuttgart
- Universität Kassel, DE-Witzenhausen
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- Universität Zürich, Zürich
- V**erano Group, RS-Beograd
- Verein Fintan, Rheinau
- Verein für biologisch-dynamische Landwirt-
schaft, Arlesheim
- Vier Pfoten, Stiftung für Tierschutz, Zürich
- Vision Landwirtschaft, Oberwil-Lieli
- Vlaamse Gemeenschap, Agentschap voor
Landbouw en Visserij, BE-Brüssel
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- Zumstein Marc, Küttigen
- Zukunftsstiftung Landwirtschaft,
DE-Bochum
- Zürcher und Schaffhauser Biobauern



FiBL Germany's team builds bridges to strengthen organic farming.

Advancing ideas – not just on organic farms

We live up to our name: Research Institute of Organic Agriculture. We do indeed work almost exclusively for organic farms and in cooperation with them. But in recent years we have been developing project areas in which non-organic farms also play a role.

Would it diminish the image of organic farming if in certain areas we also worked with non-organic farms and if these became more sustainable in the process? Not at all. We are serious about the premise that organic farming can also give a significant impetus to positive developments in the non-organic farming sector. For considerable advances have been

made in both sectors since FiBL Germany was established in the year 2000.

Four examples

1. The employment, with therapeutic objectives, of persons with disabilities in farming settings is a domain of the

Milestones in 2011

January	Project on "Expanding soyabean cultivation in Germany through adaptation by breeding and optimization of crop production" commences.
February	Publication of guidelines on sustainable packaging for organic foods (Nachhaltige Verpackung von Biolebensmitteln).
March	Organization of scientific conference on organic farming in Giessen, Germany.
April	EU project on food security in North Korea commences
May	New team structure implemented.
June	Pilot project on regional networking between rural service providers and "green" sheltered workshops (Vernetzung mit Grünen Werkstätten) named in the German National Action Plan on the Implementation of the UN Convention on the Rights of Persons with Disabilities.
July	Start of seminar series for food craftspeople.
August	Demeter becomes a member of the network for organic practice-based research (Verbund ökologische Praxisforschung).
September	Round table on knowledge transfer convened at the initiative of FiBL.
October	Won tender for the development of criteria for a nationwide label for regional products.
November	Bioland becomes shareholder in Bio mit Gesicht GmbH ("Organics with a face").
December	Won the oekolandbau.de tender.

Milestones in 2012

January	Project in Turkey commences.
February	Won tender for a series of seminars on ethologically sound livestock management.
March	Published concept for Regionalfenster ("Window on the region").
April	Publication of analysis of state of knowledge on quality, consumer protection and processing of organic foods.
May	Presentation of Regionalfenster concept to German Federal Agriculture Minister Ilse Aigner.
June	Participation in DLG-Feldtage (major trade exhibition for crop producers).
July	Permanent Secretary Kloos issues approval decisions for the contract for development of a regional label.
August	Establishment of the registered society Regionalfenster e.V..
September	Conference on the pilot project on regional networking between rural service providers and "green" sheltered workshops (Vernetzung mit Grünen Werkstätten) with Parliamentary Permanent Secretary Peter Bleser. Presentation of the guidelines.

organic sector. More than 60 percent of holdings employing staff with disabilities are under organic management. A pilot project funded by the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) has shown that experience gained on organic farms in this field can also be transferred to non-organic farms.

2. When we ran an initiative for groundwater protection in the German region of Lower Franconia (Unterfranken) we were so successful in recruiting organic farmers for the scheme that we were asked whether we could also develop groundwater protection measures for non-organic farms. We were able to put our experience with organic systems to good use in a project concerned with increased intercropping and the establishment of a value chain for cereals grown with reduced late fertilizer applications.

3. Our project on expanding soyabean cultivation in Germany through adaptation by breeding and optimization of crop production (Ausweitung des Sojaanbaus in Deutschland durch züchterische Anpassung und pflanzenbauliche Optimierung) aims at expanding soyabean production in Germany for the benefit of both the organic and the non-organic farming sector. The project receives funding under the Federal Scheme for Organic Farming and Other Forms of Sustainable Agriculture (BÖLN).

For both organic and non-organic farms the cultivation of the leguminous soyabean provides an interesting alternative to imported foods and feedstuffs which are often produced under questionable environmental and social conditions. In addition, cultivating legumes contributes to climate change mitigation as in non-organic farming it helps reduce applications of synthetic N fertilizers, the production of which is highly energy-intensive. Meanwhile German pol-

icymakers have come to recognize the relevance of domestic production of leguminous crops.

4. Regionality is one of the basic tenets of organic marketing. Together with a regional marketing agency, which also promotes non-organic regional foods, we therefore tendered for a BMELV contract to develop a regional label. After winning the tender we developed the idea of the Regionalfenster ("Window on the region"), an information section on food labels which gives exact details on the origin of the raw materials used. It is graphically designed in such a way that it does not give the impression of being a quality mark or label and thus does not compete with existing label schemes.

A threat to organic farming?

One might ask whether this knowledge transfer becomes a threat to organic farming if non-organic farmers manage their farms along "ethologically sound", "regional", "social" or "sustainable" lines.

Again the answer is "No". We can tackle threats by acting resolutely. Organic farming is more than the sum of its parts and an organic label denotes "system quality". The behaviour and activities of individual farmers communicate more about this quality to the consumer than guidelines and sampling data ever could. The farmers, with their personal authenticity, can show that organics is more than a single characteristic. The Bio mit Gesicht ("Organics with a face") initiative provides a way of setting organic farmers apart from non-organic farms which implement certain single aspects such as GM-free production, animal welfare or social standards.

Robert Hermanowski, Managing Director of FiBL Germany

Income and expenditure of FiBL Germany (FiBL Deutschland e.V. + FiBL Projekte GmbH)

(in euros)	2010	2011	2011
	FiBL Deutschland e.V.	FiBL Deutschland e.V.	FiBL Projekte GmbH
Income			
Research and development	1 267 414	1 547 003	124 828
Other	43 276	31 634	
Total income	1 310 690	1 578 637	124 828
Expenditure			
Personnel expenses	650 738	698 469	51 428
Material expenses			
Project costs	484 732	714 956	51 647
Premises, office supplies, other admin. expenses, IT and advertising	137 738	146 387	21 156
Depreciation	12 000	17 284	0
Total expenditure	1 285 208	1 577 096	124 231
Operating result	25 482	1 541	597

Employees of FiBL Germany

Agriculture

The projects of FiBL Germany address the entire range of farming issues. One project focuses on informing farmers how they can protect groundwater. A project in which there is very close contact between research and extension services deals with soil fertility. Issues covered in connection with crop-growing also include farm inputs, plant protection, and seed for organic agriculture – including the subject of freedom from genetic engineering. For many years FiBL Germany has also promoted the involvement of people with disabilities in agriculture; the aim is to create conditions that enable more disabled people to work on the land.

Priorities

- › Farm inputs
- › Soil fertility
- › Genetic engineering
- › Organic seed
- › Jobs for people with disabilities
- › Plant protection
- › Water conservation

Food

The issue of quality assurance is extremely important for organic food. Steps must be taken to ensure both that production and processing comply with statutory and private-sector standards and that organic foods meet consumers' expectations of product quality. FiBL develops strategies for assuring the quality of organic foods. Quality assurance is concerned primarily with traceability and with the distinction between organic and conventional products. In the "Organic Face-to-Face" project FiBL has developed a system of food traceability that is undergoing scientific tests of its effectiveness.

Priorities

- › "Organic Face-to-Face"
- › Consumer research
- › Quality assurance
- › Processing
- › Additives

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Scientific service

Nowadays it is virtually impossible for anyone involved in agriculture, food processing, trade or extension services to absorb all the latest information on organic agriculture. There is a growing demand for the complex information in print media and on the Internet to be made accessible. FiBL Germany tailors information on organic agriculture to the needs of specific target groups, which include scientists and organic food experts as well as the general public.

Priorities

- › Knowledge transfer
- › Internet
- › Communication

FiBL Projekte GmbH

FiBL Projekte GmbH is a joint institution of FiBL Germany and the Foundation Ecology & Agriculture (SÖL), with each organization holding 50% of the company's shares. The company carries out service projects for the organic food industry, such as

- › Catalogue of organic inputs
- › Guidelines and websites (e.g. www.oekolandbau.de)
- › Training courses for farmers and business operators
- › Trade fair appearances
- › Work on applied research projects run by the Verbund Ökologische Praxisforschung (V.Ö.P.)

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Rentenbank, Frankfurt
Software AG-Stiftung, Darmstadt
Stiftung Ökologie & Landbau (SÖL), Bad Dürkheim

Knowledge exchange at all levels

Close and efficient cooperation between researchers, advisors and practitioners is one of FiBL's hallmarks. FiBL Austria follows in these footsteps and sees this type of networking, as well as its endeavour to present knowledge in a way best suited to each of its target groups, as key to successful knowledge exchange.

FiBL Austria was established in 2004 and currently employs 18 people who are all funded in the context of specific projects. Current key areas of activity include applied research on arable and vegetable producing farms, comprehensive sustainability assessments in food production, information projects for consumers, applied research on organic livestock production, holding specialist conferences, and several lectureships.

Schlägl Centre of Excellence

In the organic farming sector it is often the farmers who try out new things. These activities are being supported

by the Biokompetenzzentrum Schlägl (Centre of Excellence for Organic Farming) which was established in 2011 by FiBL Austria and the Bioschule Schlägl, Austria's first organic agricultural school. The centre of excellence also develops research projects in cooperation with farms, farming associations, agricultural advisors and other stakeholders, carries out trials in the region and makes the results accessible.

This cooperative project receives financial support from the province of Upper Austria. Its key objectives include research with a practical focus and outreach to practitioners. Its broad range of activities includes, amongst others, a rye breeding project – the "Schlägl Rye" (in cooperation with the

Milestones in 2011

January	ÖPUL evaluation project commences: Evaluation of sown wildflower strips and biodiversity sites (ÖPUL = Austrian agri-environmental programme)
February	Conference on the importance of and support for pollinating insects in agriculture (Bienen fördern – reiche Ernte: Bedeutung und Förderung von bestäubenden Insekten in der Landwirtschaft). End of project on consumer testing and preference trials for organic fruit and vegetables at Viennese schools. Establishment of the Organic Centre of Excellence in Schlägl.
March	Bio-Net Conference 2011: New ideas for organic agriculture
May	Co-organization of the 8th Schlägl Biogespräche (talks and discussions on organic farming).
June	Bionet V project commences. Final report on pork from fattening boars – representative degustation and simulation of purchasing decisions.
September	18th FREILAND Conference on new directions in ethologically sound livestock management (Tiergerecht geht weiter! Neue Wege in der Nutztierhaltung)
October	Publication of study on organic soil management for climate mitigation (Klimaschutz durch biologische Bodenbewirtschaftung). Green Food Service project commences on behalf of FiBL Germany. TILMAN-ORG research project commences as part of CORE Organic II.
November	Organic vegetable growers' forum (Bioplattform für Gemüse) – 2011 conference for practitioners, advisors and researchers.
December	Haubensache Bio series of exclusive organic culinary events commences – "Organic stars served with wine and science", organized in cooperation with Agrarmarkt Austria Marketing GesmbH. Final report on evaluation of sown wildflower strips as part of the Austrian agri-environmental programme (ÖPUL).

Milestones in 2012

January	Project on management of sown wildflower strips commences. Publication of "organic knowledge" posters on topics such as climate, soils, genetic engineering, and biodiversity.
February	Coordination of MUBIL project commences in cooperation with the University of Natural Resources and Life Sciences, Vienna.
March	Bio-Net Conference on "Plant breeding in organic farming – Where to?" (Pflanzenzüchtung im Biolandbau – wohin geht die Reise?)
April	Maintenance breeding project for "Schlägl rye" commences.
May	Carbon footprint of organically and non-organically produced tomatoes in Casablanca, Morocco. Co-organization of the 9th Schlägl Biogespräche (talks and discussions on organic farming)
June	2 nd Haubensache Bio organic culinary event
July	Launch of www.bio-wissen.org website.
August	Project on sustainability in AMA quality mark programme (Nachhaltigkeit im AMA-Gütesiegelprogramm) commences in cooperation with the Austrian Federal Environment Agency and the University of Natural Resources and Life Sciences, Vienna.
September	19 th FREILAND Conference on positive livestock management (Zum Wohl! Vom guten Umgang mit Nutztieren).



Team of FiBL Austria.

Schlägl Monastery and the Austrian Agency for Health and Food Safety, AGES), a lively research culture as part of the Bio-Net project, advanced training with a practical orientation for teaching staff, and soil analysis for farmers.

Sustainability assessment and organic haute cuisine

The sustainability assessment teams of FiBL Switzerland, Germany and Austria respectively have been working in particularly close cooperation since 2011 in order to be able to offer the broadest possible portfolio of sustainability assessments and engage in a joint strategy. Project development and coordination as well as external representation (publications, events etc.) are all carried out in cooperation. FiBL Austria and its fellow institutes are keen to continue and expand their efforts in this field.

For the second time now, FiBL Austria and the agricultural marketing firm AMA Marketing GesmbH organized the exclusive organic culinary event Haubensache Bio, served with organic wine and science. This interdisciplinary series of events gives influential personalities from the areas of politics, business, science, society and the arts insights into organic cooking at haute cuisine level. The evenings' culinary aspect is spiced up with some sound science presented by FiBL Austria staff who explain to the high-calibre audience how organic farming can help solve many of the problems society faces.

Monitoring organics

The MUBIL project – the German acronym stands for “monitoring the impacts of conversion to organic farming” – analyses the long-term impacts of converting a 140 ha arable farm without livestock to organic farming methods. In this project we cooperate closely with the Institute for Organic Farming of the University of Natural Resources and Life Sciences, Vienna, which acts as project manager. FiBL Austria has been in charge of coordinating the project since 2012. We conduct field surveys to assess the impact of organ-

ic farming methods on soil fertility and biodiversity, with a focus on humus formation, improvements in soil structure, and the impact of hedgerows. On-farm we also study and evaluate a variety of organic fertilization systems with a view to closing nutrient cycles. The farmland has been ecologically enhanced by establishing sown wildflower strips, the biodiversity value of which has also been assessed.

Following conversion to organic farming, species numbers of arable weeds as well as of breeding birds, wild bees and other beneficials have increased. The soil responds more slowly to the changed conditions but there has already been a significant increase in water absorption and retention capacities and an improvement in the soil water regime.

FiBL Austria is a non-profit association and funds itself exclusively through projects and service provision. In 2010 FiBL Austria achieved a balanced financial result with an income of just under EUR 912,000 and expenditure of the same order. In the 2011 financial year, income and expenditure stood at EUR 898,500 and EUR 896,200 respectively.

Since 2005, the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management has financed projects in the areas of innovation, research and education. The governments of the provinces of Upper and Lower Austria respectively and the Lower Austrian Chamber of Agriculture support education measures and on-farm research for the development of crop management methods as well as in relation to topics in livestock nutrition. Sustainability assessments of foods were financed by private clients, while the public sector facilitated work on enhancing biodiversity with sown wildflower strips and on general issues in organic farming.

We would like to thank our clients in the public sector at the federal and regional levels, in the food trade sector, the Chambers of Agriculture, and the organic farming associations. We are also grateful to our Swiss and German colleagues for their active support of FiBL Austria.

Income and expenditure of FiBL Austria in 2010 and 2011

(in euros)	2011	2010
Income		
Research and innovation	486 334	558 545
Education	355 869	286 536
Other	56 234	67 872
Total income	898 437	912 953
Expenditure		
Personnel	555 273	508 714
Misc. expenditure	23 689	33 478
Project-related material costs	269 282	314 802
Office-related costs	47 986	54 906
Total expenditure	896 230	911 900
Operating surplus	2 207	1 053

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 SONNENTOR Kräuterhandels GmbH, Sprögnitz
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Support FiBL

Become involved as a sponsor and patron of FiBL, invest in organic farming and a sustainable future.

Charitable donations and contributions to FiBL Switzerland and FiBL Germany are tax deductible, and can also be made online via our homepage (<http://www.fibl.org/en/about-us/donate.html>). A receipt for donations can be issued on request.

Your donations and legacies to all three FiBL organizations are used as follows:

- ▶ To fund innovative research and consultancy projects for which funding sources have not yet been found.
- ▶ Donations and legacies are also important in providing FiBL with the freedom and independence to address vital issues of major relevance to society. Such issues include the contribution made by organic farming to climate change mitigation, the conservation of nature and biodiversity thanks to sustainable management practices, matters of animal welfare, nutritional habits and human health.
- ▶ Financing state-of-the-art research infrastructure and trial systems without taking recourse to banks.

If you have any queries relating to donations and legacies, the directors of FiBL Switzerland, Germany and Austria will be pleased to help (see contact details below).

FiBL Switzerland

The Swiss Foundation for the Promotion of Organic Agriculture (Schweizerische Stiftung zur Förderung des biologischen Landbaus) has charitable status in a number of cantons. The Research Institute of Organic Agriculture (FiBL), too, is registered as a charitable organization in the canton of Aargau. The Swiss Foundation for the Promotion of Organic Agriculture handles donations and legacies for FiBL activities. These donations are tax-exempt.

Details of the charitable donations account of FiBL Switzerland are as follows:

Swiss Foundation for the Promotion of Organic Agriculture, CH-5070 Frick, Account No: 80-40697-0

Transfers from abroad (euro area) to the Swiss Foundation for the Promotion of Organic Agriculture in Frick may be made free of charge via:

Swiss Post, PostFinance, Nordring 8, CH-3030 Berne

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Publications by FiBL staff

Please note that the following list is merely a selection of FiBL's publications. All the data sheets, dossiers and further publications put out by FiBL are available through the FiBL Shop at <http://www.shop.fibl.org>. Scientific publications are archived in the Organic Eprints database (<http://orgprints.org/>) and on <http://www.fibl.org/en/fibl/themes/publications.html>.

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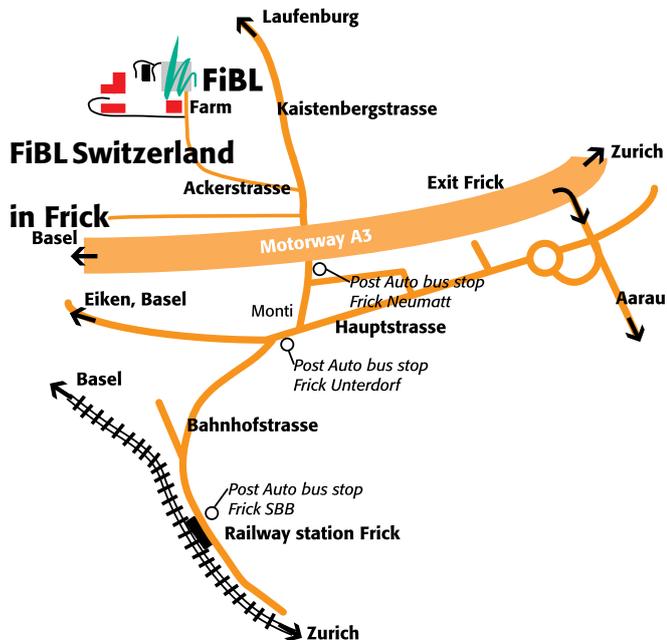
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