



Activity report 2008

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Dear reader

“FiBL doesn’t sit in Frick!”



Research into organic agriculture at FiBL would be pointless if it were not intimately linked to practice. FiBL’s staff spare no effort in constantly measuring their questions, ideas and findings against actual practice and taking them further together with practitioners.

So today we can say: FiBL doesn’t just “sit” in Frick; it “happens” on what is now more than 300 farms which are helping the development of organic farming by working closely with FiBL’s researchers on key issues. Many FiBL experts also work on the commissions of Bio Suisse, the organic farming federation – where they again come into contact with practitioners and professionals in organic agriculture.

This practical relevance leads to real and fruitful partnerships based on equality rather than superiority. Without this closeness and the constant interchange with actual practice FiBL would not be what it is today and organic farming, too, would not have achieved its current position.

Such closeness to organic farming operations means that FiBL’s findings are immediately incorporated into practice. Many of the world’s research institutions have difficulties in this area and must constantly ask how their findings can be communicated to farmers. FiBL does not need to do this; its knowledge is acquired in collaboration with farmers.

This is the manner in which we shall continue to work together on the development of organic agriculture, for there is still a long way to travel on the path of learning and discovery.

Martin Ott, President of the Foundation Council of FiBL Switzerland

Weaving the web



The future of organic farming requires well-functioning networks. These depend to an important extent on cooperation and coordination. The many new questions to which organic agriculture urgently needs answers call for effective cooperation between as many actors

as possible – despite the fact that funds are limited. This applies both to issues in the realm of research and those that arise in ordinary practical work on the farm.

FiBL lays the foundation for such networks through political and social engagement; it involves farmers, advisors and researchers in implementation and publicizes the outcomes through communication and advisory services. As an engaged networker, FiBL is in a strong position when staying power is needed to work on the ongoing development of organic farming.

At heart, however, the value of networks always lies in the networking of people and their ideas. If FiBL succeeds in maintaining and preserving this valuable asset, we can face the future of organic farming with optimism. – On page 15 you can read about the development of a marketing partnership in Lower Franconia which has water conservation as its aim. Or see page 26 to learn how people with a disability can be integrated into farming and find meaningful work.

Dr. Uli Zerger, Board member of FiBL Germany

A hub in the knowledge system



Society’s expectations of the development of organic farming can only be met if there is a reciprocal, open and efficient transfer of knowledge between practice, extension, training and research. Within this knowledge system FiBL Austria is available to act as a hub in the flow of information between research (whether at universities or elsewhere) and practice.

On the basis of partnership and cooperation, we help to ensure that scientists and academics are made aware of problems arising from practice and that the findings of scientific research are implemented in practical applications.

Successful examples of this role are the projects “Ruminant health in organic farming” and “Bionet Österreich”. – On page 38 you can learn how farmers, researchers and advisors use “Bionet” to assess the relevance of research findings and farmers’ experiential knowledge for farming practice.

Prof. Dr. Werner Zollitsch, Chairman of FiBL Austria

What was, what is, what is to come?

Highs, lows and future hopes of the three FiBLs

What have been the most notable events of the last two years?

Urs Niggli: The construction of the laboratory building was very important; at a cost of 5.5 million Swiss francs this represents a huge investment in FiBL's scientific future. I should like to take this opportunity to thank in particular the lottery fund of the cantons of Aargau and Zurich and the Migros-Genossenschafts-Bund cooperative for their generous support. The support of our sponsors and patrons has also been enormously important in enabling this project to come about.

The departure of Otto Stich as president of the Foundation Council affected us greatly. Otto Stich was always a very active and interested supporter of FiBL and we hope he will remain so!

Does the construction of the new laboratory building mean that we shall no longer run into FiBL researchers on organic farms?

Niggli: Try finding an institute that does as much research as we do on organic farms! The farms are and will remain our most important "research laboratory". There are now more than 300 farms carrying out research with us.

And which events were the highlights in Germany and Austria?

Robert Hermanowski: An outstanding event for FiBL Germany was the setting up of the "Organic Face-to-Face" company (Bio-mit-Gesicht GmbH). FiBL Germany's important role in this is reflected in the fact that FiBL has provided the director and the office space.

In addition the time has been used to cultivate and develop networks and, in the face of increased competition, to acquire partners with whom we can collaborate in bidding for projects. We have also enlarged the board, in order to intensify cooperation with organic farming associations.

Andreas Kranzler: In Austria highlights were getting the contract for setting up Bionet – a national network for people involved in organic arable farming –, our involvement in EU projects on food quality, and the positive development of the ruminant project. And in general terms I would single out the excellent cooperation with partners both within and outside the organic scene.



Urs Niggli, Director of FiBL Switzerland



Robert Hermanowski, Director of FiBL Germany

The activity profiles of the three FiBL locations are very different. At FiBL Germany research continues to play a minor role. Is that intentional?

Hermanowski: It is certainly not planned. But without basic funding, “free research” is very difficult to finance. The financial foundation of FiBL Germany must therefore be secured through service provision. We are, however, making greater efforts to combine research and services by marketing what we can offer as a package: research, development and implementation or advisory services all from the one provider.

A survey of the staff of FiBL Germany in 2007 showed that work satisfaction at FiBL Germany is very high, despite low pay increases and great pressure to achieve. That’s a satisfying finding, isn’t it?

Hermanowski: Yes, that’s true. I was really pleased by that, because one can’t expect it as a matter of course.

Alongside pleasing events there are of course always less satisfactory ones. What have been the annoyances?

Niggli: The withdrawal of the Swiss Federal Veterinary Office’s basic funding for animal health research was a major blow. Over the last eight years we have developed a very well-functioning strategy for minimizing antibiotics in milk production; this can be extended very quickly to non-organic farms too. The discussion of the use of streptomycin against fire blight on fruit trees shows how critically the public views the use of antibiotics in food. In the milk sector we have a



Andreas Kranzler, Director of FiBL Austria

solution which works. I sincerely hope that such successes in preventive medicine will lead the Office to resume its funding.

And in Austria?

Andreas Kranzler: I am disappointed that there are still some organic organizations in Austria that adopt a short-sighted mode of competitive thinking and fail to see the advantages of long-term cooperation.

What is the overall picture of the acceptance of FiBL by organic organizations in Austria?

Kranzler: After initial difficulties, FiBL is valued in Austria as a competent and reliable partner. I am proud that we have been able to establish ourselves as part of the Austrian organic scene. That is also reflected in the fact that skilled and prominent people from the organic sector have joined FiBL Austria.

FiBL has a new tag line: “Excellence for Sustainability”. In what way does this slogan sum up FiBL’s aims?

Niggli: Because we excel in many important fields such as soil protection, nature conservation, biological diversity, healthy nutrition, high-welfare livestock management and holistic animal health.

Since 2001 there has been FiBL Germany and since 2004 FiBL Austria. What is your verdict on cooperation so far? And will other branches be added?

Niggli: The three FiBLs are a model of success in Europe. Cooperation functions primarily on an informal basis. To secure this success, we must in the near future go down new roads. For example, there are ideas for a sort of “umbrella” over the three FiBLs, but they are not yet concrete. In recent years I have also been involved in setting up the Bioinstitut in Olomouc in the Czech Republic and the IBLA in Luxembourg.

Hermanowski: That is my view too. My big wish for the future is to see the national FiBLs come together to form a European institute.

Kranzler: All FiBL locations will benefit from the enlargement and reinforcement of the international FiBL network, of that I’m sure.

Interview: mm



A self-regulating orchard – does it work?

Over the past years many methods for direct and indirect control of pests and diseases in fruit production have been developed around the world. In a new apple plantation FiBL has combined this multitude of new approaches for the first time in a system trial emulating practical applications.

Organic apples can only be sold in the marketplace if their external quality characteristics are similar to those of non-organic apples. Meanwhile most Swiss organic fruit producers have reached that goal. However, the effort required to maintain yield security is high. For susceptible varieties such as Gala, growers have to use numerous treatments to protect their trees from pests and diseases.

Many organic producers are critical of this development and would like to shift their focus again towards self-regulating systems. The fact that Switzerland has the highest proportion of scab-resistant apple cultivars is evidence of the will to implement such a strategy.

FiBL entomologist Eric Wyss has been researching the indirect control of aphids for many years. Our approach of promoting the aphids' antagonists with the aid of sown strips of wildflowers and appropriate hedging plants has often only been partially successful" says Eric Wyss. The aphid problem was then solved by introducing neem, a natural insecticide produced from extracts of the Indian Neem tree. "However, it can't be our aim that the only distinguishing feature between organic and non-organic fruit production is simply another suite of sprays" he states.

A land of milk and honey for beneficials

Research on pest and disease control has yielded many promising results over the past few years. "For the first time now we have combined all this knowledge in a pilot plantation

mirroring real-life conditions" Eric Wyss reports. In cooperation with Franco Weibel, FiBL's fruit production expert, the entomologist has planted the disease-tolerant cultivars Topas and Ariwa in alternate rows, with the distances in-row and between rows increased by 25% over what is customary in conventional orchard plantings.

The aim is to establish the maximum possible plant species diversity in this new plantation. In the tramlines the researchers sowed ecotypes, i.e. locally specialized genetically unique populations, in this case from Jurassic horse pastures. These ecotypes repeatedly and abundantly flower despite frequent mowing. The various woody hedge plants were specially selected for their potential to positively influence beneficial organisms. All the hedges were surrounded with a newly developed herbaceous fringe. In-row between the trees they planted mouse-ear hawkweed (*Hieracium pilosella*). The researchers were impressed at how strongly this native plant suppressed unwanted weeds with its root secretions. Nesting boxes were installed, heaps of stones and branches piled up and the researchers even dug a fox den in order to attract further wild animals to control pests in the plantation.

Their efforts appear to be paying off: Initial surveys already show increased populations of beneficial insects, spiders and birds compared to two nearby commercial reference orchards. Over the coming years it will be seen how things work out, both ecologically and economically, in the long-term. *ta*

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Funding: Swiss Federal Office for Agriculture, Hans Eggenberger Foundation

**Aim to produce apples entirely without pesticides:
Eric Wyss (left) and Franco Weibel.**



QLIF off to a successful start

The EU project “Quality Low Input Food QLIF” was started in 2004, with FiBL playing an important part. Lucius Tamm, who is in charge of the crop production component, gives a positive interim report.

Analysis and optimization of the entire production chain is QLIF's ambitious goal. – Has this goal been achieved?

Lucius Tamm: Yes, the project consortium has thus far been able to fulfill every one of the high expectations. The project received an excellent interim evaluation from the European Commission. The more than 20 scientific publications are a testimony to the output thus far. Plus there are several more publications in press. And most importantly: We have been able to answer many questions relevant to organic agriculture.

Such as?

Our colleagues at Newcastle University have determined the content of healthy fatty acids in milk from various countries. Organically produced milk nearly always had higher contents than conventionally produced milk. In the past it was always assumed that differences in quality in animal products were not as great as those in plant products. Another example: On various occasions organic farmers have been criticized for producing products contaminated with unhealthy microorganisms such as *E. coli* because they apply manure and slurry as fertilizers. Using lettuce as an example, our project partners from the University of Bonn were able to show that this is not true at all.

Plant disease management is a major challenge for organic growers. What progress has been made in that area?

One of the premises of organic agriculture is that a healthy soil also produces healthy crops. We were thus interested in the question of what exactly are the natural potentials and limits of soil microorganisms in terms of reducing populations of soil- and air-borne pathogens.

We have known of these phenomena for some time.

Organic growers have noted for some time that their soils are able to protect crops from diseases. This phenomenon is known as suppressivity. Up until now it has not been clear precisely what effect is exerted by the site and various agricultural practices, such as the type of organic fertilizer used. Previous experiments were mostly conducted on highly standardized soils and rarely on soils used for agricultural production. In the QLIF project, we examined for the first time soils from very different regions on which standard agri-

cultural practices were employed. We were thus able to assess the effects of the various sites in terms of long- and short-term agricultural practices.

We found out that different soils definitely have different effects and that organic soils inherently possess high levels of suppressive properties. These soils are able to inhibit colonization by various pathogens, and plants in the sensitive seedling stage are thus protected from pathogens such as *Pythium ultimum*, for example. In undisturbed soils, short-term measures such as applications of organic fertilizers do not result in substantial increases in these properties. In contrast, however, soils rapidly lose these positive properties if the soil microorganisms are severely harmed.

A sobering finding for farmers.

On the contrary! The research shows the value of careful and sustainable soil management. This component of the project forms the basis for our research on plant health and shows great potential for degraded soils. But it also points out the natural limitations. For organic farmers, this means: The high level of soil fertility must be maintained and not jeopardized.

We have of course been working on other cropping strategies in the scope of the QLIF project. We have been focusing on the following crops: wheat, tomatoes, lettuce, and apples. Different approaches were required, depending on the crop. In tomatoes, for example, we focused on healthier seed. Seed treatment with compost extracts was effective against the bacterial disease *Clavibacter*. We were able to reduce Fusarium infestations in wheat by cultivar selection. A natural product that induces resistance to *Bremia lactucae* was very successful in lettuce. And our research in apple production focused on the connection between nitrogen fertilization and susceptibility to disease.

What's next in the QLIF project?

The core concept of QLIF is that the entire production chain from seed quality to food product quality is always taken into account. This means that along with the effects of agricultural practices on plant health, the effects on quality, profitability, and the environment were also taken into account. The next step is to compile all of these individual findings and discuss and evaluate the tradeoffs.

Interview: ta

FiBL researchers Lucius Tamm and Barbara Thürig are conducting practical field experiments in order to determine the sources of disease-suppressing properties of soils.

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Funding: EU and the Swiss Federal Office for Education and Science



Rewarding a contribution to climate protection

With its careful use of humus, organic farming can help to mitigate climate change and its impacts. And yet this contribution rarely brings any financial rewards. FiBL wants to change all that, drawing on the findings of its field trials and pilot studies.

More and more people are worrying about the climate and are keen to buy foods that have been grown using climate-compatible methods. For many years now, Andreas Fliessbach, a soil biologist at FiBL, has been comparing the effects of organic and conventional cultivation systems on soil. His findings from the DOK trial show that cultivation systems which use manure and especially manure/compost as fertilizer are extremely beneficial for soil stability.

These systems also support the sequestration of atmospheric carbon dioxide (CO₂) in stable humus compounds. “Soils which are treated with organic fertilizers can easily sequester 200 kg of CO₂ per hectare per year in stable humus forms”, says Fliessbach.

Organic farmers also refrain from using chemical/synthetic fertilizers, which take large amounts of fossil fuels to manufacture and whose use further entails emissions of nitrous oxide, which is 300 times more harmful than CO₂. Organic farming also produces far fewer climate-damaging gases overall.

Organic farming – a carbon sink

“Organic farming has great potential to mitigate climate change, especially in developing countries”, says Heinz Schmid from FiBL. The problem is that these carbon sink services are not taken into account in the official or voluntary

“carbon markets”. Schmid’s task is to raise awareness of these research findings in the organizations which aim to cut CO₂ emissions and coordinate emissions trading.

No-till – the next organic trump card?

Besides organic fertilizer, which is the main focus of the DOK trial, reduced soil cultivation – in other words, a “no-till” approach to farming – is a key element of climate-compatible agriculture. Once the weed problem has been resolved for these systems, organic farming will have another ace up its sleeve.

Preliminary results from a long-term trial conducted by the FiBL on reduced tillage without the use of herbicides show that these systems can work well, even under organic conditions. Alfred Berner, who headed the trial, is still sparing with his recommendations, however: experience has shown that the perennial weed problem in no-till systems can recur with renewed vigour after a few years.

“In addition to this basic work, we are conducting pilot projects in various developing countries to find out which economic and extension conditions must be in place for farming families to switch to organic farming.” For Heinz Schmid, however, it is important that not only farming but the entire production chain is optimized in terms of its climate change mitigation performance. *ta*

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Funding: Climate fund: Contributions by sponsors, International Trade Centre

Reduced tillage trial: Swiss Federal Office for Agriculture, the Dutch BD-Vereniging, Stiftung zur Pflege von Mensch Mitwelt und Erde foundation, the Sampo association for anthroposophical research and art, Software AG Stiftung foundation, Evidenzgesellschaft
DOK trial: Swiss Federal Office for Agriculture

Andreas Fliessbach (left) and Alfred Berner: Their field trials document organic farming’s contribution to climate protection.



Organic farms blooming

Colourful wildflowers in grain fields and singing larks are a rare sight these days. Butterflies, the common hare and other wildlife are also seldom seen. FiBL's project entitled "Diversity blossoms on organic farms" shows how farmers can arrest the rapid species decline attributable to habitat loss on agricultural land.

The "Diversity blossoms on organic farms – wildlife-friendly organic production" project is based on a network of model farms. Several organic farms in the Grisons, Jura, Lucerne and Berne regions have received substantial advice and support in implementing methods which are beneficial to wildlife. "Organic farming, combined with the conservation and promotion of semi-natural areas, harbours great potential to support a high level of biological diversity. To do so adaptive management and wildlife-friendly practices are needed in the area under cultivation", reports project coordinator Lukas Pfiffner.

Enhanced quality on organic lands

In a nationwide analysis the FiBL research team established that more ecological compensation measures – particularly species-rich meadows and hedges – are to be found on organic farms than on other types of farm. But of course, nature conservation depends not only on the quantity of such areas, but also their quality. "For instance, we show farmers how they can improve the nature conservation value of hedges and extensive meadowland with targeted management and adaptive cutting times", explains FiBL advisor Véronique Chevillat – a tangible contribution to greater species diversity in agriculture.

Nature conservation pays, also financially

FiBL economist Christian Schader has worked out scenarios reflecting different weighting systems for nature conservation. "Apart from their environmental value, we mainly wanted to know the economic effects that can be expected from certain measures", explains Schader. "We have identified opportunities for all the model farms to improve their conservation measures without any economic disadvantages for farmers. Depending on the region and financial reward of such measures, nature conservation can even provide an additional source of income for the farms."

Notice boards raise awareness

Ramblers out for a day of relaxation, however, are not always pleased to see un-mown, withering borders along field

Establishing and maintaining ecological compensation elements needs knowledge and skill: FiBL researcher Lukas Pfiffner (left) and FiBL extensionist Véronique Chevillat (centre) give organic farmer Patrick Stalder (right) hands-on advice on how to set a hedge.

verges. Notice boards serve an educational function here by explaining the significance of borders and their management, so that people understand and value organic farmers' services to the environment.

FiBL's advisory service will continue to assist and support the model farms in the future. Regular monitoring and field-walking should ensure that any problems with weeds or grass invasion are detected and dealt with opportunely. So that the patches of wildflowers will continue to bloom on organic farms and offer a habitat for wildlife. *na*

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Funding: Mava-Stiftung, Temperatio, Assistance, Sur-la-Croix, Soliva, Cantons of Lucerne and Berne, Entlebuch Biosphere Reserve



Scarce Fritillary



Pearly Heath



Scarce Copper



Large Blue

Attracting more butterflies to Jura

Butterflies in particular are extremely sensitive to certain farming practices. Populations of some species have declined significantly. The "Diversity blossoms on organic farms" project first gathered data on the butterfly fauna on grassland holdings in Jura. With the help of this information, the project team worked out appropriate measures aimed at protecting and encouraging the butterflies. For instance, by adopting a low-impact, staggered regime of mowing or maintaining blossom-rich ecotones along forest edges the farmers can convert their land into attractive habitats for the butterflies.

“We’re not untidy farmers”

The promotion of biodiversity on Czech farms has so far made little headway. There is a lack of knowledge and acceptance. The Bioinstitut is pioneering work on both fronts.

Organic farmer Josef Folta prefers to tour his farm on horseback. “That’s the best way to see what’s going on, and it gives me a chance to observe nature.” Since last year Josef Folta has been involved in the project “Organic farmers for nature”. In this project the Bioinstitut of the Czech Republic brings together farmers who want to play an active part in promoting species diversity on their farms.

This sense of community with like-minded organic farmers is important to Folta. For in the Czech Republic, care of the landscape and promotion of biodiversity are not a matter of

course, even among organic farmers. Czech farmers are regarded primarily as food producers. A “tidy” or completely cleared countryside is regarded as desirable, and grants are regarded as compensation for lost profit rather than a reward for conservation of the countryside.

Organic farmer Ivan Pur is glad that farmers involved in the project take a different view: “When I leave grass unmown and my cows are trampling through dry grass in the autumn, my neighbours regard me as an untidy farmer”, he says. Yet his farm is a haven for rare corncrakes and orchids; there are more of both on his land than in the neighbouring nature reserve.

Three-way international cooperation for greater species diversity in agriculture: (from left) Jiří Urban and Radomil Hrdadil, Bioinstitut of the Czech Republic; Lukas Pfiffner, FiBL Switzerland; Peter Meindl, FiBL Austria.



Lacking guidance

“The project was prompted by a comparison study which found that organically farmed fields had few advantages over conventional meadows with regard to biodiversity”, explains Jiří Urban, Director of the Bioinstitut. The project was welcomed by the organic farmers because recommendations for promoting biodiversity in the Czech Republic have previously covered only large nature reserves and have not extended to farms.

Explaining the “untidiness”

Project manager Karolína Dyrťová and her team have surveyed the botanical, entomological and ornithological status quo on nine model farms and identified the ecoelements present. They have then worked with the farmers to draw up individual management plans that are now being gradually implemented. As part of this process the Bioinstitut was able to call on the many years’ experience of the FiBL teams from Switzerland and Austria.

The farmers involved are continually learning more; a monthly newsletter keeps them up-to-date with the project. Information boards have been set up at selected farms. “These boards explain the purpose of our nature conservation measures to people in the area”, says Marie Karbusická, co-owner of an organic family farm on the edge of the Riesengebirge National Park. “This helps them to understand that we are doing something for nature and are not just untidy farmers!”

“The first phase of the project was a success”, is the verdict of Karolína Dyrťová. “Now we have to continue the good work, so that the project doesn’t remain limited to just a handful of enthusiasts.” Jiří Urban would like to see the measures taken thoroughly evaluated. “We would then have good arguments for encouraging our subsidy system to give greater weight to landscape management.” *kc/na*

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The Czech Bioinstitut

The Bioinstitut of the Czech Republic was founded in 2004 as a partner organization of FiBL Switzerland. It now employs seven staff. Its principal activities are the transfer of knowledge from research to practice and information campaigns relating to organic agriculture in the Czech Republic and the countries of central and eastern Europe. Since 2007 the Bioinstitut has been working with FiBL Switzerland and FiBL Austria on the project “Wildlife-friendly organic production”.



Tidy landscapes are still regarded as desirable in the Czech Republic. Measures for promoting biodiversity on farms therefore need to be explained to the public. Organic farmer Ivan Pur shows Kateřina Čapounová, communications officer at the Bioinstitut, one of the information boards on his farm.



Wanted: Partners in water protection

“Constant dripping wears the stone” also holds true in groundwater protection. For many years now groundwater protection has been an issue of concern to FiBL. In 2007 a campaign commenced which touches the hearts of Robert Hermanowski and Klaus-Peter Wilbois of FiBL Germany: Groundwater protection through organic farming. At long last.

The campaign entitled “Protecting groundwater through organic farming”, an initiative of the Aktion Grundwasserschutz (Groundwater Protection Campaign), started in Germany in the Bavarian region of Lower Franconia. What are the challenges in that area?

Klaus-Peter Wilbois: In terms of groundwater protection, the hydrogeological and climatic conditions in south-eastern Lower Franconia pose particular challenges. This region is amongst the areas with the lowest precipitation found in Bavaria; at the same time we often find very shallow soils overlying Muschelkalk and Keuper formations. Both conditions mean that the risk of nitrate leaching is high.

What is it that makes organic farming a groundwater-friendly and sustainable form of agriculture?

Klaus-Peter Wilbois: Numerous comparative studies clearly show that organic farming results in far less nitrate leaching than non-organic farming. This is primarily due to the fact that in organic farming nitrogen inputs are up to 50% lower and, moreover, nitrogen is more efficiently metabolized.

What other criteria are of importance?

Klaus-Peter Wilbois: The self-regulation of soil nitrogen through legume production, an important source of nitrogen in organic farming, plays a big role. These plants only accumulate a lot of nitrogen if the soil nitrogen content is low. They lower their production if there is too much soluble nitrogen in the soil.

Another aspect is the cost of imported nitrogen which is many times higher than what it costs to buy in conventional

mineral N-fertilizers. Therefore, organic farmers are automatically much more careful with their nitrogen.

FiBL developed the concept behind the campaign. The first thing you did was to assess the demand. Is that not like putting the cart before the horse?

Robert Hermanowski: Not at all. The idea to develop the market in partnership has been well received by all the players, both processors and producers. The fact is, it has been shown that demand is much higher than supply. This creates a marketing pull.

What is the role of the trading companies that buy organic products produced in a groundwater-friendly manner?

Robert Hermanowski: The point is that companies become aware of their role in and responsibility towards society. For example, companies that buy organic products also appear at events and advocate groundwater protection. Their function goes well beyond simply trading in and processing organic products.

What are your plans?

Robert Hermanowski: Based on confirmed demand, organic holdings which are able to produce the required products will be approached in a systematic fashion.

For non-organic holdings, information and advice is to demonstrate the opportunities offered by conversion to organic farming. They will all see that “There’s something happening in the region!” And they all have the opportunity to become part of a marketing partnership with regional buyers. Tempting, isn’t it?

Interview: mm

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Funding: District government of Lower Franconia

**Protecting groundwater through organic farming:
Robert Hermanowski (left) and Klaus-Peter Wilbois
take a drop to mark the campaign launch.**



Continuously improving quality assurance

Credibility is the organic sector's elixir of life. Greater cross-border cooperation is needed if this credibility is to be maintained in the face of growing and increasingly international trade flows.

The market for organic products is growing extraordinarily fast, trade flows are becoming more and more international and in many places there are bottlenecks in the procurement of raw materials produced to organic standards. This means that there is also a growing incentive for farmers who do not take the stringency of organic standards too seriously to seek a foothold in this lucrative market. Even with one of the best quality assurance systems of the entire food industry, the organic sector is not immune to malpractice.

Established cooperation with Bio Suisse and Demeter

“Organic products that are as far as possible free of agrochemical residues are the one and only standard for the credibility of organic agriculture”, says Gabriela Wyss, who is in charge of food quality and safety at FiBL. This is why Bio Suisse, Demeter and FiBL have for some years been cooperating closely in this area.

Every year Gabriela Wyss is charged with assessing around 30 residue cases which have been brought to light by the internal monitoring processes of Bio Suisse and Demeter licensees or by the food monitoring authorities. Wyss first examines whether the case is one of deliberate deception or whether other problems in the product chain could have resulted in the increased residue levels. Her verdict is that only around 10 percent of the cases brought before her represent an attempt at deception. More often the problems arise from accidental cross-contamination or mix-ups during transport, storage or processing of the products. “I enjoy the challenge of analysing these problems and working out solutions with those involved”, says Wyss.

One such recent analysis targeted the problem of pest control in grain stores. Detailed recommendations were drawn up to help store managers improve the monitoring of stored-product pests and the cleaning of storage areas. The use of beneficial organisms is also studied and appropriate breeding schemes are set up.

Forward-looking quality assurance

“The possibility of deception in organic products is currently a popular topic in the media”, says the monitoring and certification expert Beate Huber. Nevertheless, and despite increasing trade flows, there has been no increase in the number of problems.

Proactive risk management is being strengthened to ensure that the situation does not deteriorate in future. This involves increasing the cross-border exchange of information between inspection and certification bodies, trading enterprises, labelling organizations and public authorities. Huber and Wyss therefore organize workshops with these stakeholders in which cases of deception are analysed, causes identified and solutions worked out. Approaches might include, for example, improving communication in situations where deception is suspected or confirmed, and publicizing the names of companies whose certification has been withdrawn. Increasing the number of residue investigations would be difficult to fund and would not in itself guarantee the prevention of malpractice. FiBL is therefore also involved in developing preventive measures and new monitoring procedures. *ta*

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Funding: Bio Suisse, Demeter, Swiss Federal Office for Agriculture

Attempted deception or accidental contamination? Gabriela Wyss (left) investigates the origin of pesticide residues on behalf of Bio Suisse and other organic stakeholders. Together with Beate Huber she is also involved in proactive risk management.



Best organic quality for baby food

Processing organic foods is a matter of finding a balance between two extremes: the highest level of food safety and the highest possible quality. A European research project is looking into ways this balance can be optimized using the example of baby food.

Consumers are eager to buy organic products because they assume that the products are free of pesticide residues and contain fewer additives. At the same time, they expect the highest possible level of nutritional quality, excellent flavour and production methods that are environmentally friendly. This poses a huge challenge for the processing industry.

At what points along the production chain from cultivation to the processed end product are the different quality aspects critically influenced? Food scientists and processing experts are looking for an answer to this question as part of a European research project. They chose pureed carrots for babies as the focus of the study. In terms of food safety, baby food is considered the most challenging product group of all.

Strategies to retain valuable nutrients

“Many operations have primarily focused their processing optimization efforts on avoiding undesirable substances, and there is still room for improvement in terms of retaining valuable nutrients”, states FiBL processing expert Ursula Kretzschmar. This has been demonstrated by a survey of experts and processors in the baby food industry.

Furthermore, it has been shown – perhaps surprisingly – that the market situation can represent a major problem for qual-

ity assurance: If there is a shortage of a certain raw material, processors feel pressured to buy lower quality products as well.

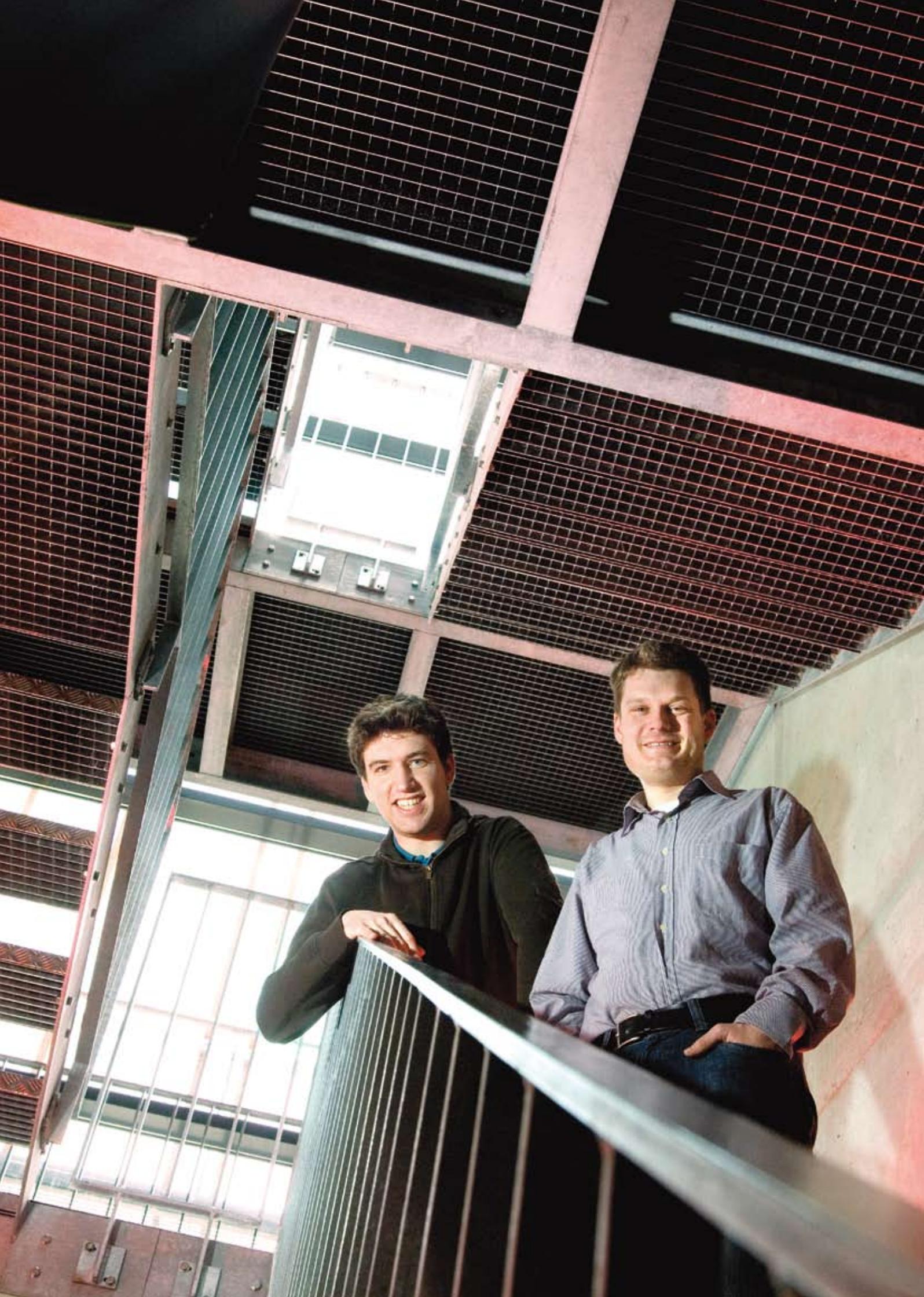
In addition to the quality of raw materials, every processing step is critical. “Specific areas where there is room for improvement include the relationship between processing time and the changes in temperature between the carrot puree processing steps”, explains Kathrin Seidel, who conducted the survey.

The HACCP approach is widely used in the industry to estimate health hazards using critical control points. This approach has been expanded by Ursula Kretzschmar and her colleagues into a QACCP system that they can use to identify points that are critical for quality, instead of those critical for health hazards. Their findings are being tested at an experimental facility and the different process steps are being coordinated so that the quality of the end product can be optimized in terms of valuable nutrients and food safety. Three processing plants that are involved in the project will then implement the QACCP system on a large scale. “From the beginning, the project has been based on an in-depth exchange between researchers and practitioners”, states Ursula Kretzschmar. *ta*

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Funding: Swiss Federal Office for Agriculture in the context of transnational cooperation among eleven European countries (Core Organic)

Using baby food as a test case to optimize processing quality: Ursula Kretzschmar (right) and Kathrin Seidel.



Modelling possible futures

The current agricultural reforms in Swiss agriculture are a source of uncertainty for organic farmers (though they are not alone). Using a new predictive model, the economic impacts of agri-policy proposals can now be calculated specifically for organic farming businesses.

Although the Swiss agricultural policy package for 2011 has only just been adopted, the debate about further agri-policy changes is already underway. Up for discussion are changes in the direct payment system, liberalization measures in the WTO context, as well as a potential free trade agreement with the EU. “Anyone wishing to make an informed contribution to this debate needs an instrument capable of calculating the impacts of policy proposals”, says agricultural economist Jörn Sanders. Up to now, there has been no predictive model for Switzerland that has taken the specificities of organic farming adequately into account.

Sanders developed the CH-FARMIS model for the Swiss organic farming sector, taking a predictive model for the agricultural sector from Germany known as FARMIS as his starting point. After a three-year development period, calculations for the various liberalization scenarios are now available.

The model results show, for example, that while organic businesses would also be affected negatively by an opening of agricultural markets, the extent of their impact would be much smaller than in the case of conventional agriculture. Moreover, the calculations suggest that organic arable farming in particular, with its varied crop rotation, can expect to experience severe economic problems as a result of liberalization.

Flexible and international

“One huge benefit of CH-FARMIS is its flexibility”, says Sanders, clearly pleased. Depending on the type of question asked, the impacts of planned measures can be examined in relation to various business groups. No other agricultural sector model is capable of taking better account of farm-internal systemic factors typical of organic farming. The model is already being increasingly used in international projects.

The future intention is for the model to be used for calculating not only economic but also ecological impacts. FiBL staff member Christian Schader is currently extending the model by adding the most important environmental parameters of nitrogen and phosphorus output, energy consumption and biodiversity. In the course of this, Schader works closely with the life cycle assessment team from Agroscope Reckenholz-Tänikon. “By integrating environmental parameters, we will be able in future to analyse the environmental impact of agri-policy measures in a sound and thorough way”, explains Schader. Sanders and Schader are convinced that with CH-FARMIS the Swiss organic sector will be able to explore its potential even better in future, and also to recognize problems at an early stage. *ta*

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The FARMIS predictive model: Jörn Sanders (left) and Christian Schader are linking economy and ecology.



Frische
Vollmilch

Frische
Vollmilch

Frische
Vollmilch

Shedding light on the black box

A human being is a black box – at least when it comes to purchasing behaviour. When shopping for food, processes take place inside this black box and then it happens: the person buys something. But what, and why precisely that? The consumer research of FiBL expert Hanna Stolz throws light on this issue.

A woman stands in front of a stall on which there are three bags of apples. She scratches her head; which bag should she choose? A few minutes earlier she was given ten francs and told to buy just three products: milk, yoghurt and apples. The apples look more or less the same – and are in fact all of the same quality. What varies is the additional information and the price. One bag bears the label “grown without the use of pesticides”, another says “organically grown” and the third provides no additional information. Which bag will she pick up?

Consumers under scrutiny

This purchasing test has been carried out and videoed with 365 men and women in Switzerland, France and Germany. In addition, the test purchasers' attitudes to food and their socio-demographic data were identified by means of a questionnaire. Hanna Stolz is carrying out this research as part of the EU project on “Quality Low Input Food” (QLIF). Her work focuses on people who buy organic food from time to time rather than consistently – a target group which harbours much untapped buying potential.

The next step is to analyse the data. This work is based on the assumption that human behaviour can be studied by scien-

tific methods and that the attitudes and socio-demographic characteristics of consumers determine what purchasing decision is made. The data can be used to calculate the probability that a particular purchase option will be chosen.

The process used is known as multivariate analysis, because it involves analysis of a number of interrelated factors – these include attitudes to price, quality and food security as well as personal data such as household income, age, gender and education.

Differentiated messages

The results will yield concrete recommendations for the organic sector, indicating how consumers can best be made aware of the advantages of organic food. “For example, it could turn out to be better to point out the individual features of a product for the occasional organic purchaser”, explains Stolz. “Thus one might describe yoghurt as ‘without artificial additives and flavourings’ or milk as ‘from pasture-fed cows’, rather than concentrating on labelling the product as ‘organic’”. After all, one can't expect consumers to know exactly what the distinctive features of organic farming are for each particular product. *mmm*

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Funding: EU and the Swiss Federal Office for Education and Science

Focussing on occasional organic buyers: Hanna Stolz.

Below: The experimental design: Three choices are available for each product. Prices are the variable.





FIDL
Kerja Suominen

Organic

	Organic	Conventional	Other
1. Is the product organic?			
2. Is the product conventional?			
3. Is the product other?			
4. Is the product organic?			
5. Is the product conventional?			
6. Is the product other?			
7. Is the product organic?			
8. Is the product conventional?			
9. Is the product other?			
10. Is the product organic?			
11. Is the product conventional?			
12. Is the product other?			
13. Is the product organic?			
14. Is the product conventional?			
15. Is the product other?			
16. Is the product organic?			
17. Is the product conventional?			
18. Is the product other?			
19. Is the product organic?			
20. Is the product conventional?			
21. Is the product other?			
22. Is the product organic?			
23. Is the product conventional?			
24. Is the product other?			
25. Is the product organic?			
26. Is the product conventional?			
27. Is the product other?			
28. Is the product organic?			
29. Is the product conventional?			
30. Is the product other?			

100% Organic

Buying good products with a good conscience

Organic food tastes good, organic food is of high quality – but how do things stand in the production process? Does production make careful use of resources? Is nature conservation a high priority? What are conditions like for the workers? An EU project is sounding out the organic sector on these points.

“I prefer to buy products that are not only organic but also fairly traded”, says Katja Bahrtdt of FiBL. She is keen to discover what guides the purchasers of organic products in other countries. The EU project on which FiBL researcher Katja Bahrtdt is working is called “Farmer Consumer Partnerships”; it has been running in Switzerland, Germany, Austria, Italy and Great Britain since 2007.

The criteria of price and quality are deliberately excluded from the study. The focus is instead on social aspects and animal welfare. “There is probably no one argument that takes top place in every country”, says Bahrtdt. Nevertheless, she is sure that some arguments are universal. Organic consumers are generally sensitive to issues of regional production, sustainability and fair trade.

The goal: Comprehensive social and environmental responsibility

The project was initiated under a higher-level concept being supported by the European Commission – the concept of Corporate Social Responsibility (CSR), which includes criteria for social commitment, animal welfare and environmental conservation.

Implementing these criteria throughout the entire production chain presents a challenge. What does it mean in practice for the organic sector? “It involves, for example, ensuring that the working conditions under which products are packed

meet certain standards, that people with disabilities are given jobs or that production makes sparing use of resources”, explains Bahrtdt.

The project is divided into three stages. In the first stage, which is already concluded, the researchers interviewed farmers and processors who had already made progress in the field, were committed to social issues or particularly active in matters of nature conservation and animal welfare. The motives mentioned in the interviews were then “condensed” to form a list of 15 arguments.

In all the countries studied, ensuring fair prices for farmers is an important argument. For example, the customers of a dairy in Germany voluntarily pay an additional five cents for each litre of milk in order to ensure that farms in the region survive. “Exemplary and entirely in keeping with the concept of CSR”, is Katja Bahrtdt’s enthusiastic comment.

In the second stage, the ranking of these arguments in relation to purchasing decisions is explored in consumer studies. The third stage involves the development of new communication strategies designed to help farmers place their products successfully on the market. Ultimately consumers should be able to say with conviction: “That’s another good reason, why I prefer organic! I am happy to pay more for it, because the price is fair.” *mm*

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Funding: Swiss Federal Office for Agriculture in the context of transnational cooperation among eleven European countries (Core Organic)

Katja Bahrtdt asks a consumer about the reasons for her choice.

Engaging in work and in life

Some 8.6 million people in Germany are living with a disability; 6.7 million of them are registered as severely disabled. This means that one person is ten is disabled. For some years FiBL Germany has been considering how people with a disability can play a bigger part in agriculture and how agriculture in general can demonstrate a commitment to social issues.

“Together we can do it” is the title of the brochure which describes ways in which people with disabilities can be integrated into the world of farming. People with disabilities need care and supervision, but they also provide help on the farm and are a source of enrichment. But farms which want to give work to someone with a disability do not find it easy to obtain information. “We explain the possibilities for taking on people with a disability on the farm, the points that need to be considered and how it can be financed”, says Rebecca Kleinheitz, who has written the book in collaboration with Robert Hermanowski.

“The description ‘disabled’ only means that the person has had to overcome obstacles in the course of their life”, says the qualified rehabilitation therapist. Someone does not have to have a learning disability or be in a wheelchair to be disabled

in the eyes of the law; the term also applies to someone who has severe diabetes, an alcoholic or a person who is mentally ill.

Varied forms of integration

The many different facets of this integration are illustrated by the twelve farms that Rebecca Kleinheitz has visited and described; readers hear about a farm on which two men live in “psychiatric family care”, one which employs two people with learning disabilities and one which operates as a self-help project, helping addicts towards a drug-free life by providing facilities for them to live and work together on the farm.

Dealing with the same subject at a different level is the involvement of FiBL's Witzenhausen site, represented by Thomas van Elsen and Marie Kalisch, in the EU project SoFar



Everyone has experienced the positive and refreshing effect of working outdoors, be it with plants or with animals. For people with a disability, such work can help them greatly – even heal them.



Many farmers have never thought about employing someone with a disability. Why not? Such people can not only enrich the farm with their personality; they can also be a real help in daily work. (Picture: Antonius Hof farm)

(Social Farming). Social farms provide a range of social services, including social, educational and therapeutic activities such as care of the elderly on farms, school farms, rehabilitation and integration. Key aspects of the project are inventorying the current situation, public relations work, the networking of networks and dialogue with other countries in Europe, with the aim of improving the conditions for social farms and services.

The aim is to generate involvement at ever more extensive levels, from the individual farm to wide-ranging social involvement in rural areas – but much remains to be done. Robert Hermanowski, however, can say with confidence: “The integration of people with a disability is important for society as a whole, because the quality of a society can be judged by the way in which weaker people are treated.” *mm*

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Funding for the brochure «Gemeinsam schaffen wir was – Beschäftigung von Menschen mit Behinderung»: Landwirtschaftliche Rentenbank

Funding for SoFar: European Union

Links: <http://www.gruene-werkstatt.de/>; <http://www.sofar-d.de>



Horns in loose cattle housing – it *is* possible

Loose cattle housing systems are becoming more common for organic operations and will soon be required. This is good for cows. What is not so good, though, is that they are being polled due to the potential for injury. Claudia Schneider shows how horned cattle can also be successfully raised in loose housing.

Horns help keep the social structure of a herd stable. A short display of aggression is all that is needed and cows will side-step each other. But when there isn't enough space in the barns there is a risk of injury. For this reason many cows in loose cattle housing are polled.

Drawing on experience

What size barn is needed so that horned cattle feel comfortable, too, and skirmishes are kept to a minimum? Claudia Schneider put more than 60 loose cattle housing systems with horned cattle under a microscope. She examined the animals for injuries, located problem sites in the barn and measured the areas used for feeding, resting and moving around, as well as the holding pens. She also gathered information by interviewing the farmers.

Most of the practitioners mentioned that having the right feed rack system is a key factor: The system should also allow lower ranked cows to feed undisturbed. Fifty-seven percent of the farmers stressed that, in addition to the total space available, having wide enough passageways is important. One successful way to prevent injuries in the resting area is to have front exits on the cubicles.

Based on her analyses, Claudia Schneider also considers the equal distribution of easily available water tanks to be critical. The functional areas for feeding, resting, and moving around should also be clearly separated.

Site-specific solutions

“Every barn is different”, Schneider points out. “What works well in one barn may be difficult elsewhere.” Because in addition to building-design considerations, the human-animal relationship and herd management are enormously important. Can a new animal be carefully introduced into the herd? Does the livestock owner have enough time to observe the herd and to identify problem animals?

Claudia Schneider: “With my work I am now able to pinpoint solutions that will save time for dairy operations while still taking animal welfare into account.”

People are key

Silvia Ivemeyer is studying the influence of the human-animal relationship on udder health, likewise in loose housing. She has observed the interactions between the animals and their attendants (trust, milking process). Hypothesis: Animals are more susceptible to disease when they are stressed by other animals or the dairy farmer, because stress weakens the immune system.

Ivemeyer will not be able to produce a magic bullet that prevents udder diseases, though. Ivemeyer is convinced that “beside a certain level of hygiene, management approaches that foster a low-stress environment for people and animals alike are more important than any individual factors”. *ta*

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Funding: Horned cattle in loose housing systems: Sampo association for anthroposophical research and art, and the Schweizer Tierschutz and Zürcher Tierschutz animal welfare organizations
Human-animal relationships: Coop Sustainability Fund (within the context of pro-Q)

The human-animal relationship is important to both: Claudia Schneider (left) studies horned cattle in loose housing systems; Silvia Ivemeyer studies how udder infections can be prevented by handling cows in a positive manner.

Lowering stress levels with positive interaction

High pre-slaughter stress leads to impaired meat quality. Stress occurs during on-loading at the farm, during transport and at the abattoir. A positive human-animal relationship results in calmer animals and improved meat quality.

Many livestock owners start to feel jittery the night before: they feel uneasy about transporting their animals to the abattoir. “Although slaughter is just as much a part of the agricultural cycle as the birth of a calf, there’s always an element of guilty conscience”, believes Anet Spengler, expert in livestock farming at FiBL.

It is a well-known fact that pre-slaughter stress in animals is responsible for a considerable decline in meat quality. Some methods do in fact allow low-stress handling during transport and prior to slaughter, but these are not universally implemented and could also be improved.

What can livestock owners do to minimise the stress suffered by their animals? In her Master’s thesis Johanna Probst aimed to determine whether increased contact between animals and their owners could relax the situation. She divided each of two fattening groups on a large cattle fattening farm into two subgroups. She then enhanced the human-animal relationship of one subgroup in each case by stroking and talking to the animals, while the other subgroup received no special treatment. Probst began her experiment 4 weeks before the

Close human-animal contact leads to calmer animals: Johanna Probst on a cattle fattening farm.



due date of slaughter, and visited the farms five times at 4–5 day intervals. She spent a total of 40 minutes with each animal.

Noticeable impact, depending on breed

In the first fattening group, which consisted entirely of Brown Swiss bulls, the animals displayed different behavioural responses during on-loading. Those with no human contact displayed more anxiety than those which were used to human interaction. On the other hand, no difference was detected in the blood and meat from treated and untreated animals. “Over the generations dairy cattle have become more familiar with humans than beef cattle, and they are less stressed when confronted with humans they don’t know, for instance at the abattoir”, explains Probst.

The second fattening group consisted of crossbred Limousin X dairy cattle. The animals accustomed to stroking and talking were much more trusting, which had a positive effect on their behavioural responses at the abattoir. Abattoir person-

Lower lactate and glucose levels in the blood indicate lower stress levels in the treated animals. Florian Leiber from the Institute of Animal Sciences at the ETH discusses the laboratory results with Anet Spengler and Johanna Probst.

nel had to propel them forward about 30% less than those from the other group. The significantly lower lactate and glucose levels in their blood were another indication that these animals were under less stress. Raised levels are considered an indicator of stress. The standard meat quality inspections carried out by the Institute of Animal Sciences at the ETH in Zürich also showed noticeable differences: The meat from the treated animals displayed a better water holding capacity, meaning that it lost less water during cooking.

“Of course, people working in the field do not have this amount of time to build up a human-animal relationship”, emphasises Anet Spengler. Our findings indicate, however, that it is definitely worthwhile for livestock-owners to plan their workflow to allow as much human-animal contact as possible. Particularly in ethologically sound management systems such as suckler farming, where animals are reared with minimal human input, considerable improvement should be possible with a little extra effort. Further trials involving larger numbers of animals, and animals from suckler farming, will be carried out in the near future. *ta*

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Funding: Sur-la-Croix Foundation and Graf Fabrice, von Gundlach & Payne-Smith Foundation





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9578

Fewer antibiotics, longer life for cows

To reduce antibiotic use in organic milk production, to lengthen the useful life of cows and to achieve uniformly high milk quality: These are the “pro-Q” project’s main objectives. Six years into the project, FiBL veterinarian Christophe Notz takes stock.

What were the biggest challenges for the “pro-Q” team?

Christophe Notz: The approach we use on the participating organic farms is to put milk production and udder health under a microscope. We look at all aspects of the farming environment which could negatively influence udder health. The challenge was that herd management and hygiene had to be customized for each farm. Time and again, different factors emerged as decisive for udder health: milking technique, the feed or even the family situation. These are dynamic systems we are dealing with, which require dynamic consulting and management practices.

What has specifically changed on the participating farms with pro-Q?

On average, the farms have been able to significantly reduce their use of antibiotics, from 38 treatments per 100 cows per year, to 26. The average for Switzerland is 62 treatments. At the same time, the useful life of the cows has increased from 3.3 to 3.5 lactations and even the milk quality has been slightly improved.

Three-quarters of the 99 farms surveyed are satisfied to very satisfied with pro-Q, according to a questionnaire done as part of a dissertation. We are particularly pleased with this result in light of the fact that each farm is also required to contribute financially to pro-Q. We also had farms that withdrew from the project. One, because they were happy with what they had achieved, another because they felt the services we offered were not comprehensive enough. In autumn 2007, we held a “pro-Q day” at which we discussed the results with

the farmers. We were especially pleased that several of the farmers who had dropped out decided to participate again after this day. This shows that with the pro-Q project we have an approach to herd management that offers unparalleled opportunities in Switzerland and probably elsewhere as well.

Is an average of 26 treatments per 100 cows per year the best that can be achieved?

No. Currently, nearly one-half of the pro-Q farms treat fewer than 10 percent of their animals with antibiotics. And one-fifth of the farms were able to produce milk completely free of antibiotics in the second year of the project. This backs up our conviction that in general organic milk could be produced without antibiotics in the medium term. We are given financial support for this project by various stakeholders, including the Biomilchpool organic milk pool and the Coop Fonds für Nachhaltigkeit sustainability fund.

Antibiotic-free milk as a selling point?

Some producers are already using this claim. In view of the markets being opened up this would be a real trump card. In the United States organic milk is already required to be produced free of antibiotics.

What is next for pro-Q?

We can easily imagine addressing other important issues having to do with sustainable animal production within the pro-Q network. For example, the use of concentrated feed, which will come under increasing pressure in view of rising prices and the increasing consumption of animal products. *ta*

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Funding: Coop Sustainability Fund, participating farmers

**Wants to further reduce the use of antibiotics:
FiBL veterinarian Christophe Notz.**



Stumbling blocks to grape cultivation

The Swiss consume about 40,000 tonnes of table grapes each year. More than 99% are imported grapes grown by conventional methods. Again and again these are found to contain pesticide residues. Domestic, residue-free organic grapes are therefore in high demand. Cultivation and marketing are, however, proving to be a challenge.

“Sweet fruit, bitter aftertaste”, was the title of a report on pesticide residues in imported grapes which appeared in a 2002 issue of “Saldo” consumer magazine. The article prompted the professionalization and expansion of organic table grape cultivation in Switzerland.

“Because of the high disease and insect pressure, and the vulnerable cultivars grown, grape cultivation in southern countries of origin involves the widespread use of pesticides”, explains Andreas Häseli, fruit and viticulture advisor at FiBL.

The small group of Swiss organic producers that decided in 2002 to develop the local production of table grapes, with the Frilog trading company and major distributor Coop as the main buyers, has now swelled to eight. Six new vineyards have been established, and a total area of 7 hectares is now devoted to organic grape-growing.

Andreas Häseli’s task was to carry out practical trials with the grape growers, and to test more than 20 cultivars with FiBL experts from the crop production division. To address key problems with powdery (*Uncinula necator*) and downy mildew (*Plasmopara viticola*), priority is being given to the search for hardy cultivars. This is where the next stumbling block comes in. Consumers prefer large, crisp grapes with few seeds. This was ascertained by Häseli’s co-advisor Jean-Luc Tschabold in a survey he carried out on behalf of Migros. Large varieties however, tend to split open and are more susceptible to downy mildew. A canopy helps to alleviate this problem, but at the same time increases the likelihood of powdery mildew.

“Now, after three years of trials and practical experience, we are in a position to release our initial cultivar recommendations for the various growing systems”, says Häseli.

Another difficulty with organic table grape production is that, depending on the variety, bunches are too dense or tightly-packed. Adapting the timing of defoliation can help here.

There is a major shortage of white cultivars. Consumers prefer white varieties, but until now the emphasis has mainly been on the red “Muscat bleu”. For the moment Andreas Häseli can only recommend cultivation under cover for the white varieties with large berries which are so much in demand.

Andreas Häseli’s second task was to provide a seamless flow of communication between the producers and trading partners. “It has not always been easy, as the price for organic table grapes is under strong pressure from imported grapes which are 3-4 times cheaper. At the same time we have had to grapple with some quite fundamental growing problems to guarantee harvests”, says Häseli. ta



Andreas Häseli carrying out practical trials with organic grape producer Stefan Jegge (left).

Demand for white grapes is very high (photo right).



A heart for boars

After 2009, it will no longer be legal to castrate piglets without anaesthesia in Switzerland. Boar finishing, however, is even greater progress in terms of animal welfare. FiBL's advice is helping organic swine producers take their decision.

Around 1.3 million boar piglets are castrated annually without anaesthesia in Switzerland. The purpose of castration is to avoid the unpleasant boar odour in pork. After 2009, castration without anaesthesia will no longer be legal. A transition period will be granted until 2011 in the event that no practical alternatives are available by then. The pork production sector has been conducting intensive research for alternatives, in the scope of the "ProSchwein" project. There are two main routes that are of interest to organic producers: Castration with various anaesthetizing methods and boar finishing.

FiBL consultant Barbara Früh, market analyst Katja Bahrdt, and veterinarian Christophe Notz are testing the feasibility of the various methods under organic swine production conditions. According to Christophe Notz, general anaesthesia with an anaesthetizing device is effective; however, correct use of the device requires training and a certain routine. In addition, a device costs ca. 15,000 Swiss francs and as a consequence is only profitable in herds of 300 or more sows. However, no organic pig farm in Switzerland is that large.

"At the present time we are testing the inter-farm use of the anaesthetizing device and clarifying legal and hygiene questions," says Früh. "For smaller operations we recommend general anaesthesia or local anaesthesia via an injection."

Boar finishing is the most humane method

"Regardless of the anaesthesia method, however, the animal is still castrated" expresses Barbara Früh as a matter of con-

cern. "The most humane way is to fatten intact boars." The Kagfreiland animal welfare organization as well as various innovative farmers have demonstrated that boar finishing works. The risk of odour-tainted pork can be reduced considerably by separate housing for boars and sows and by feeding sugarbeet chips during the last few days before slaughtering. The possibility of a smell only arises anyway when pork is roasted.

"Ready-to-eat specialties such as sausage and ham can be produced with no problems," emphasizes Früh. Our taste tests show that products from boar finishing are very well-received. More than 80% of the consumers surveyed rated the flavour as "good" to "very good."

As a long-term solution, Barbara Früh is thus clearly in favour of boar finishing. Because 5% to 10% of boar meat is still odour-tainted, however, wholesale distributors are still reluctant to accept uncastrated pigs. Früh is therefore focusing on smaller butchering operations and direct marketing. "Using visits to operations and workshops, we are educating farmers and processors in the production and marketing of boar meat products. We are showing interested organic farmers the pros and cons of the different anaesthetizing methods," says Früh.

Marketing via wholesale distributors will only be possible with improved methods for detecting odour-tainted meat in the slaughterhouse as well as through raising methods that result in a lower percentage of odour-tainted animals. *ta*

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Funding: Bio Suisse "Ferkelfonds" piglet fund, Graf Fabrice, von Gundlach and Payne-Smith Foundation, Vier Pfoten-Stiftung für Tierschutz (foundation for the humane treatment of animals), Swiss Federal Office for Agriculture

Barbara Früh: "Boar finishing is the most animal-friendly method."

Bionet: Concerted commitment for practical research

Organic farmers, advisors and researchers in Austria have joined forces to set up the Bionet network. Their aim is to bring together research findings and experiential knowledge. In the first two years, members have carried out more than 60 trials. The results are available to all interested organic farmers.

Regional trials and demonstrations are very important for efficient, regionalized extension and training. Such trials enable effective training through hands-on learning; in addition, scientific findings can be adapted to local parameters. Previous organic training programmes in Austria have seldom integrated such elements. The Bionet Austria project running since 2005 is seeking to close these gaps in education and training.

“Bionet Austria is based on a twofold strategy”, explains coordinator Andreas Kranzler. “The practical usefulness of new findings from research on the one hand and farming knowledge acquired by experience on the other is examined under Austrian site conditions.”

The project has attracted a great deal of interest among or-

With and for practitioners

Bionet unites organic research, organic advisory work and organic practice. The project brings farmers together and strengthens cooperation between extension and research. The Lower Austrian Chamber of Agriculture, FiBL Austria, the Raumberg-Gumpenstein Research and Education Centre for Agriculture and the organic association BIO AUSTRIA have been active throughout Austria under the leadership of the Rural Institute of Further Education (LFI Austria). FiBL Austria is responsible for project coordination. Other cooperation partners are the Institute for Organic Agriculture of the University for Crop and Soil Science, the Lower Austrian Coordination Office (LAKO) and the agricultural colleges. Organic advisors from the organic associations and chambers of agriculture in the individual Austrian states are responsible for regional project management.



Susanne Mergeli chairs a workshop at which extensionists and researchers sort farmers’ research suggestions.



Practitioners' seminar with extensionists and farmers: Martin Fischl (right) of the Chamber of Agriculture of Lower Austria presents a trial of grain legumes.

ganic farmers in Austria. Two years on, more than 40 farms are already involved in Bionet. After an intensive screening phase, the trials team has set up more than 60 trials.

At an annual meeting of farm managers, the farmers contribute ideas for research, and in workshops researchers and advisors sort the issues and concerns that have arisen in practice into issue areas. Current priorities include the variety selection and crop management of winter wheat, issues of rhizoctonia control in potato-growing, and aspects of intercropping and suitability for cultivation of various species of grain legumes and oilseed crops.

At practitioners' seminars initial results are presented directly in the field and explored in more detail at winter "farming days". In addition, FiBL Austria maintains a separate website for the project (www.bio-net.at) where interested organic farmers can download up-to-date trial results.

The project is planned to run until 2013, with suitable new farms being continuously added to the network. The aim is to build up a database of well-documented organic farms. These

trial farms will in future be available for further research and training activities.

ak/mb

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Funding: The "Ministry of Life" (the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management), Vienna; Lower Austria Rural Institute of Further Education; Chamber of Agriculture of Lower Austria

Long-term trials, threefold

Kenya, India and Bolivia: FiBL is investigating the feasibility of organic farming in three different climatic zones. It is too early yet for reliable results, but the trials are already generating great interest among farmers.

How can organic farming help to raise the incomes of farming families in poor countries? What effect does it have on soil fertility, biodiversity and resource use? Governments, politicians and sponsors need solid scientific data in order to promote organic farming.

FiBL, as part of a consortium of public and private sector sponsors, is investigating the economic and ecological potentials of organic farming at three different locations. The trials in India, Kenya and Bolivia are designed to explore a set of specific questions relevant to each region and its climate conditions.

Kenya: Maize, beans and vegetables for self-sufficiency

The trial in Kenya is predominantly oriented towards self-sufficiency. Maize, beans and vegetables are being grown here under sub-humid conditions. The trials are being conducted on both fertile and depleted land.

Results of the first year of the trial are already available. With respect to yield, organic methods were able to keep up with conventional techniques on the good soils. However, on the soils with a low humus and nutrient content, the organic methods could clearly not compete with the processes using mineral fertilizers. “An exciting start”, says project manager Christine Zundel. “The coming years will show whether organic farming with its careful humus management can rebuild the structure of these degraded soils.”



Trial managers Swapnil Jain (left) and Shweta Metha discuss organic and conventional cultivation methods with a group of cotton farmers from the Nimar Valley in central India.

Photo: bioRe Association India



Self-sufficiency has top priority at the trial location in Kenya. After the maize has been harvested (left), cabbage is planted. Trial team in discussions with Martha Musyoka (right).

India: Organic or genetically-modified cotton?

The trial in India centres on growing cotton for export under semi-arid conditions. According to Christine Zundel “the farmers are unsure whether it makes more economic sense for them to cultivate organic or genetically-modified ‘Bt-cotton.’”

Cotton is cultivated here in rotation with soy and wheat. In the first year organic soybeans produced the same yields as conventional methods. Because expenditure on auxiliary inputs was about 60% less, the return – the yield times the price less production costs – was accordingly higher for the organic method. Regarding cotton, organic yields in the first year of production were considerably lower than those from conventional or genetically-modified methods. If you compare the returns, however, organic cotton cultivation can again keep pace.

“Our trials are conducted for periods of at least ten years. These initial results are only an indication that organic could be an economically-viable alternative to GM cotton”, emphasizes Zundel.

Bolivia: Agroforestry instead of monoculture

The latest trial was launched in spring 2008 in a humid region of Bolivia. Project manager Monika Schneider and her team are comparing cocoa cultivated in agroforestry systems with cocoa in monoculture.

It will be some time yet before initial results are available. “An important aspect of our trials, however, is that they can be used for demonstration and educational purposes” says Schneider. “If the farmers see that the systems work, they will use them, even if publication of our scientific data is still some years away.” *ta*

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Funding: Swiss Agency for Development and Cooperation, Berne; Coop Sustainability Fund, Basel; BioVision Foundation, Zurich

India Organic: Trade fair sets the standard

Three years ago FiBL and our Indian partner institution, the International Competence Centre for Organic Agriculture ICCOA, established the India Organic trade fair. It has become the most important organic event in India. Thanks to additional local and international partners the fair is poised to expand a great deal – something that also applies to the Indian organic market.

At the end of 2007, the third India Organic trade fair took place. One hundred and eighty-five exhibitors presented their products and services over four days to more than 15,000 visitors from the up-and-coming Indian organic sector. The private Indian centre co-founded by FiBL and specializing in organic farming, ICCOA, started the fair – a unique event in the Indian organic landscape.

Tobias Eisenring, who has been responsible for FiBL projects in India since 2007, helped ICCOA organize and manage the trade fair. “The fair is part of a SECO project for developing the Indian organic sector”, says Eisenring. India Organic has now become a success story.

“The time was ripe for a large national organic trade fair, as the Indian organic sector has been evolving at a fast pace

over the past few years”, notes ICCOA director Manoj Kumar Menon. Menon feels the fact that India Organic provides a platform for all of the actors in the Indian organic sector and that it is not solely a commercial event has been important to their success. In addition to inviting internationally recognized Indian companies, ICCOA also invites farmers’ groups to exhibit their organic products every year. Parallel to the fair there is a scientific conference at which organic researchers from India, and from around the world, present the results of their most recent research. The food festival adds yet another dimension.

“ICCOA is not just a successful trade fair organizer, it is also developing into a specialized centre that offers its services beyond Indian borders as well”, explains Menon.

FiBL director Urs Niggli speaks at the opening session of India Organic in late 2007 in Delhi.



Boosting domestic and export markets

India Organic is clearly focused on developing the Indian organic market because there is huge potential there. Indian consumers – India has 1.1 billion inhabitants and has a rapidly growing middle class – are not interested just in organic products, they also are interested in the rationale behind and the values of organic agriculture, particularly biodynamic farming.

Furthermore, India Organic is also becoming a key force behind export activities. On behalf of SIPPO (now Osec) FiBL and ICCOA bring together potential foreign buyers and Indian suppliers. This “matchmaking” involves recognizing the

needs and visions of the (mainly European) buyers and finding compatible local suppliers. A part of this process is identifying cultural differences and smoothing them over. In order to facilitate long-term partnerships, Eisenring has organized visits to Indian organic farms in conjunction with the trade fair and has assisted Indian companies that want to export their goods.

In addition to the local investors, a well-known international trade fair organizer has recognized the potential of India Organic and will take part in the next fair. This will be the start of a new chapter in the India Organic success story. *ta*

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Key websites: www.iccoa.org; www.indiaorganictradefairs.com/

Funding: Swiss State Secretariat for Economic Affairs (SECO)

**More than 180 exhibitors and 15,000 visitors:
India Organic's potential has not yet been fully tapped.**





bioaktuell.ch: Practical knowledge on the web

Bio Suisse, cantonal organic advice centres and FiBL have got together to provide organic practitioners with all the information they need via the new Internet platform www.bioaktuell.ch. Gilles Weidmann from the staff of FiBL and Bio Suisse association coordinator Christian Voegeli describe the website's background and its objectives.

What information is available on the new Internet platform – and for whom?

Gilles Weidmann: bioaktuell.ch is aimed at all Swiss organic farmers, with and without Bio Suisse's "Bud" label. It is provided and operated by Bio Suisse, cantonal advice centres and FiBL. Sections devoted to crop science, animal husbandry and the market contain practical recommendations and guidelines in compact, easily understood form. Links to more detailed information on each subject are provided. Also included are FiBL's lists of addresses, plant varieties and suppliers, as well as the latest version of the complete Swiss organic standards and regulations. Through the links provided users can contact organic advisors and access other useful addresses. The news items and details of events are also selected with the needs of organic farmers in mind.

Was a needs assessment carried out beforehand?

Christian Voegeli: Yes. The needs – like the organic scene itself – are of course very wide-ranging. People have wanted a platform of this sort for some time. It seems to us that the time is now right – a survey has shown that more than two-thirds of all organic farms now have Internet access and use it regularly. The demand for information in electronic form is increasing. Furthermore, we keep hearing that organic farmers have difficulty finding the information that they need and making contact with people who can help them when they have queries and problems. The new portal is a great help in this respect.

Gilles Weidmann: From the point of view of the information providers there is also an increasing need to target users ac-

curately. With its clear focus on organic farmers, bioaktuell.ch provides an opportunity to present information in a place where it can be accessed.

bioaktuell.ch has been online since November 2007. What is your verdict on performance so far?

Christian Voegeli: With around 1000 visitors per week we are of course not achieving the same figures as www.bio-suisse.ch or www.fibl.org. As the content expands, interest in the platform will increase. We want organic farmers to discover the benefits for themselves. We are currently encouraging farmers, advisors, product managers and researchers to put their information on the platform.

What about interactivity? Will there be forums, blogs and so on at bioaktuell.ch?

Gilles Weidmann: Of course an active dialogue between everyone involved is what we are planning and hoping for. But because resources are limited, these activities must be wanted and maintained by the interested parties themselves. The infrastructure is there. We see it in very pragmatic terms: anything which participants find useful will be a success.

Has bioaktuell, the magazine of the organic movement, come to the end of its useful life?

Christian Voegeli: No. Quite the opposite. Online and print media will complement each other perfectly. In just the same way, bioaktuell.ch will not replace personal advice services – but it may help to make them more efficient and more target-specific.

Interview: ta

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Funding: FiBL, Bio Suisse, cantonal contributions, advertising

Lending their weight to the new Internet platform for organic practitioners: Bio Suisse association coordinator Christian Voegeli (left) and FiBL editor Gilles Weidmann.



FiBL Switzerland in brief

The Research Institute of Organic Agriculture (FiBL) was founded in 1973 and has been based in Frick since 1997. It is one of the world's leading research centres for organic farming. FiBL operates a vineyard which produces its own wine, a fruit-growing area, a farm with farm shop and a restaurant, all of which are run on organic lines. FiBL employs 125 staff. It works closely with those involved with practical applications of organic agriculture. Research and advisory projects are being carried out on more than 200 organic farms all over Switzerland.

Fruit, wine, vegetables and potatoes are the main subjects of crop research at FiBL. Trials are conducted on resisting pests and diseases by promoting beneficial organisms, applying direct control measures, and improving cropping techniques. One division of the institute is dedicated to the quality of organic products and the processing involved. Another key emphasis is on measures to increase soil fertility. Veterinarians are engaged in research into udder health and parasites; they

optimize husbandry, feeding and pasture regimes and test homeopathic remedies and plant preparations. The socio-economics division analyses business problems at organic farms, pricing of organic goods and cost recovery levels, agricultural support measures and marketing issues. FiBL is a sought-after partner in European Union research projects.

In conjunction with its research FiBL operates an advisory service, so that results can quickly have an impact on practice. Alongside the provision of advice to individual farms and to groups, the most important advisory channels are courses, the monthly journal "bioaktuell", the website www.bioaktuell.ch and FiBL's data sheets. The international cooperation division organizes tailor-made projects for market development, certification and applied research in developing countries.

FiBL set up the independent institutes FiBL Germany (2001) and FiBL Austria (2004). It also co-founded the Bioinstitut in the Czech Republic (2004) and the Institut fir biologesch Landwirtschaft an Agrarkultur Luxemburg (IBLA, 2007).

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Income and expenditure 2007 und 2006		
	(in Swiss francs)	
	2007	2006
Income		
Research projects	5 226 304.65	5 258 499.26
Service mandate for Swiss federal agencies	4 800 000.00	5 000 000.00
Advisory service and training	1 033 481.62	1 300 412.20
Communication (periodicals, data sheets, Internet)	870 911.96	878 108.47
International cooperation	3 275 258.89	2 737 819.26
Pilot farm	56 193.70	57 043.62
Catering, housekeeping	450 466.45	424 038.85
Donations, miscellaneous income	427 084.97	413 427.06
Total income	16 139 702.24	16 069 348.72
Expenditure		
Personnel expenses	9 857 708.95	9 689 311.45
Material expenses		
Experimental/trial material, laboratory, analytics, projects	4 375 045.14	3 970 014.47
Premises, office supplies, other administrative, information technology, advertising	1 193 678.36	1 205 856.68
Financial result	196 407.28	122 815.49
Depreciation	650 279.30	1 238 156.95
Total expenditure	16 273 119.03	16 226 155.04
Non-recurring income/expenditure	136 409.99	200 979.61
Net profit for the year	2 993.20	44 173.29

Development in FiBL Switzerland's finances in 2006 and 2007

In 2006 and 2007 FiBL carried out research, advisory, information and development projects to the value of 16 million Swiss francs per year. As a non-profit-making foundation we are committed to high ethical standards. We seek to live up to these standards, without being swayed by possible economic, political or social advantages.

Our work focuses on innovation in sustainable agriculture, species-appropriate livestock management and healthy nutrition. Our success in this work is due to the support of many donors, as the impressive list on pages 48/49 shows.

In 2006 the Swiss Federal Veterinary Office announced that it was withdrawing its annual grant for research into health prevention for farm animals. This affects important research in the areas of antibiotic-free milk production and the natural control of gastrointestinal parasites in cattle, sheep, pigs and poultry. In 2007 FiBL was short of 200,000 francs for this work; in 2008 the deficit will be 500,000 francs. In view of the significance of these issues for ecology and healthy nutrition, the decision of the Veterinary Office is hard to understand. By contrast, cooperation with the Swiss Federal Office for Agriculture (BLW) remains unflagging.

It is encouraging to note that "ethical buying" is growing in importance. The many brands on the shop shelves bear testi-

mony to this, and it has made FiBL's work more attractive. An excellent model is the Coop sustainability fund, which makes considerable sums available to FiBL for the development of organic agriculture and species-appropriate animal management. Research is also funded by other companies such as Migros and the manufacturers of natural remedies HISCIA and Weleda.

Through its many international contacts, FiBL is involved in a large number of development cooperation projects (SECO, DEZA), and EU research, too, now provides FiBL with important research mandates. In the period covered by this report we were involved in 17 EU projects.

You, dear donors and patrons, have kept faith with FiBL, some for as much as 35 years. We respond to the trust you place in us with a commitment: we endeavour to use your donations as efficiently as possible and in the ways that you would wish. We are most grateful for each and every donation which helps to further the cause of organic agriculture, the environment and respect for life.

Martin Ott und Urs Niggli

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Thut Stefan
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Cornish Peter
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Soil science

Efficiency of cropping systems

The natural resources available for producing food, such as fertile soil, biological diversity, water and fertilizer nutrients are becoming increasingly scarce. At the same time agriculture needs to become more independent of non-renewable fossil energy, which is used in the form of synthetic nitrogen fertilizers and fuels. By comparing different cropping systems for their resource use efficiency, we can make a crucial contribution to the further development of agriculture. Thanks to three long-term field trials and targeted studies on individual farms, FiBL is uniquely placed to carry out this type of research. Of special interest to us is the diversity of microorganism communities in the soil and their function in building up and mineralizing organic matter (humus). This is highly topical in view of climate change, because soils are capable of removing carbon from the atmosphere.

Strategies to optimize yields

The major challenge of the future is to produce more high-quality foods, applying methods which place much less pressure on the environment and use natural resources with care. Organic farming provides an ideal starting point for this, as it is already sustainable and the quality is high; only its productivity needs slight improvement. Our research concentrates on crop rotation, the improvement of animal-soil-plant nutrient cycles, adaptive reduced tillage, the application of beneficial soil bacteria and root symbiotic fungi (mycorrhiza), along with various preparations that have a catalytic impact on soil processes. The emphasis is on arable farming and horticulture.

Ecotoxicological assessment of biological and chemical pressures on soils

Soil fertility has always been the basis of organic agriculture, and today it is a main focus of the global debate on sustainability. Over the past 20 years FiBL has built up a high level of methodological and technical expertise with respect to the biological, physical and chemical issues surrounding soil fertility. In the framework of a risk assessment system we are exploring the effects of conventional and genetically modified organisms on soil fertility. We are also investigating regionally and temporally specific indicators of pesticide contamination of the soil, and are developing methods to produce food safely on sites damaged by previous land uses.

Seed and environment

The Swiss Organic Farming Ordinance and the EU Regulation on organic production stipulate that organic seeds and vegetative propagating material must be used in organic crop farming. As the seed markets are not yet fully established and there are still numerous exemptions, FiBL is coordinating the supply of organic seeds by maintaining an Internet database. Of increasing importance in the sustainability debate is the question of whether plant breeding for low-input and sustainable

systems should set different priorities in terms of objectives. The many small breeders engaged in this area are not capable of solving these research questions on their own. As cereals are a key crop in organic farming, we are clarifying the essential elements of the interaction between genetics (plants) and environment (site factors such as soil and climate, as well as cropping intensity). How the plant root and soil interact under reduced tillage conditions is of special interest to us.



Horticultural production methods

Problem-solving and innovation in the value chain of organic fruit

Fruit production has always been a technology-intensive industry requiring a great deal of auxiliary input. Despite this – or perhaps because of it – all-natural quality is in high demand. Already 11 % of the stone fruit sold by market leader Coop is organic, and they consider 20 % to be a realistic figure. The market for cherries, plums, pears, berries, grapes and nostalgic fruit varieties still holds untapped potential. The main obstacle facing the expansion of fruit cultivation is currently a lack of varieties which are economically viable for organic production. It is also vital that we reconsider our present methods of cultivation (plantations on dwarfing rootstock well suited to mechanization) and develop more natural fruit orchards with a greater capacity for self-regulation (up to and including agroforestry systems).

Our research projects concentrate on testing numerous new varieties and also old ones grown under organic conditions, improving yield security and economic viability with preventive and natural practices, carefully examining any weak points in transportability and shelf life, and optimizing the quality of the fruit in terms of content, taste and nutritional value.

Optimizing production and quality in organic viticulture and vinification

Organic wines are currently experiencing a positive change of image among consumers. In Europe biodynamic wines in particular are considered some of the highest quality wines available. Swiss organic production competes with good-quality, affordable wines from abroad. Top quality, specialty products and the reduction of production costs are possible strategies to cope with this situation. Organic production today is based on heritage varieties which are susceptible to disease and need a great deal of pest management. This is far from ideal, both from an ecological and an economic point of view. Fungus-resistant varieties (PIWIs) are an elegant solution, but their proportion on organic vineyards today is only 10%. Our research projects concentrate on questions surrounding the PIWI varieties: monitoring their suitability for cultivation, resistance and wine quality, adapting vinification to the new varieties and supporting their market introduction. The further development of an organic crop protection regime for traditional European varie-

ties is constantly being advanced (new preparations, improved computerized forecast models). Furthermore, we are investigating the question of low-sulphite and sulphite-free organic wines and, in field and cellar trials, are analysing the question of whether and why organic – and in particular biodynamic – viticulture leads to a distinctive terroir quality.

Optimizing production systems and quality formation in organic vegetable and ornamental plant production

Growing organic vegetables and ornamentals is usually highly specialized and therefore prone to problems. The high expectations of the market as regards product appearance and quality require extensive research and development. Entirely new methods of cultivation must even be developed for certain crops such as green asparagus. On largely livestock-free vegetable farms, the level of self-sufficiency with nutrients is very limited. In theory green manuring with clovers could bring some improvement, but in practical terms there are still too many knowledge gaps. Organic seeds continue to be in short supply; enhanced development of organic seed dressing and ongoing testing of organic varieties are the most efficient methods of dealing with this problem. Consumers of organic vegetables expect great visual and sensory diversity (of nostalgic varieties, too); they want them to taste good, have a long shelf-life and promote their health. Organic vegetable growers can only satisfy such high expectations if they have the support of research. In addition to vegetables, we also address production and marketing matters concerning herbs and ornamentals.



Phytopathology

Improving potato production techniques

Organic quality potatoes are an important market commodity and a high value crop for growers. Although considerable progress has been made in terms of plant protection (from various foliar and tuber pathogens and pests such as *Phytophthora infestans*, *Rhizoctonia*, wireworms), yields are highly variable from year to year and the percentage of non-marketable produce is exceptionally high, which in turn reduces profitability. Our applied research projects focus on the questions of which new cultivars and heirloom or exotic varieties are suited for organic production, how fertilization, plant protection, and crop rotation can be optimized, and how substantial improvements in quality can be achieved.

Fundamentals of soil-plant-disease interaction

Plant health also depends on soil fertility, specifically soil structure (air and water balance), nutrient levels, and microbiological activity. Disease-reducing soil properties can be weakened as well as enhanced by cultivation techniques. Soil preparation, fertilization, and use of good quality compost are priorities. The goal of our research projects is to gain a better understanding of these interactions in field crop, vegetable, fruit, and

grape production so that they can also be applied to organic production. Furthermore, stable agricultural systems, which are highly adaptable to the hazards of climate change, are of fundamental interest to us. We are especially interested in “clover soil fatigue,” i.e. the effect of pathogens that proliferate in crop rotations with many legumes. Good legume growth is a key factor in the productivity of sustainable cropping systems.

Testing and developing fungicides and resistance inducers compatible with organic standards for fruit, grapes, vegetables and potatoes

Various plant protection products and plant tonics are approved for organic crop production. These products may be of botanical (e.g., fennel oil) or mineral (e.g., argillaceous earths) origin. The requirements for the products are becoming more stringent: on one hand increased efficacy is being demanded for existing products and on the other hand the requirements regarding ecotoxicity and human toxicity are increasing. Along with the testing and development of novel natural products and organisms, finding alternatives to copper-based fungicides is of the highest priority.

Recent research has shown that crops possess a number of defence mechanisms, which can be activated to varying degrees and which are collectively known as resistance induction. The systematic use of these natural defence mechanisms may be of great benefit to organic production.

Plant protection: Strategies and epidemiologies for fruit, grapes, vegetables and potatoes

Plant diseases cause considerable losses in yield and quality in organic production. Organic production relies on preventative measures more than any other agricultural production method. Such measures include the use of healthy seed, hygiene measures, resistant cultivars, cultivar mixes, cultural practices (such as pre-sprouting potatoes) and optimum soil fertility. Direct control measures are a last resort. These consist of special fungicides, biocontrol organisms and elicitors (resistance inducers). Plant protection products require optimum application techniques and timing, especially when efficacy is only partial. The use of warning systems as decision aids in timing applications is on the rise. These warning systems are based on the analysis of weather data. The use of such warning systems can substantially improve pest and disease control in organic production as well.

Seed quality and breeding

Healthy seed and vegetative propagating material is of paramount importance for organic production. Seed must be true to variety, must not be contaminated with genetically modified organisms (GMOs), must have a high germination percentage and vigour, and must be disease-free. Along with the compulsory use of organically grown seed, there must be methods in place that enable (i) the early detection of quality-related problems, (ii) acceptable levels of seed production in the field, and (iii) seed treatment in line with organic standards.

This project will promote the production of high quality, healthy vegetable seed. For a few key crops, we are searching for organically appropriate methods and products to treat seed for seed-borne pathogens.

Evaluating auxiliary inputs and technologies for organic production

The use of auxiliary inputs such as plant protection products, fertilizers, disinfectants and products to control veterinary pests is regulated in various bodies of public legislation (Switzerland, EU, United Nations Food and Agriculture Organization FAO) and private-sector standards (Bio Suisse, International Federation of Organic Agriculture Movements IFOAM). A formal approval process confirming compliance with organic standards, however, is lacking in Switzerland as well as in the rest of the world. With its list of approved auxiliary inputs (Hilfsstoffliste), FiBL has established a standard for scientific testing and approval since 1996. Today there are comparable procedures in place in Germany, Austria and the United States. The strict and transparent regulation of auxiliary inputs is an important tool in gaining consumer trust. International standardization of the regulations and criteria for approval of new products is thus of paramount importance.

Organic agriculture is an innovative food production system. Great strides are being made in technology, with strict attention to social, ethical and ecological criteria as well. We will use simple criteria to evaluate new animal breeding, plant breeding, food processing and food packaging technologies (e.g., nanotechnology) thoroughly. Our expertise should help not only the organic production sector but other groups in society as well in making a judgment.



Entomology

Nature conservation and farming

There are numerous studies substantiating the positive effects of organic agriculture on animal and plant species diversity. Organic agriculture is thus especially well suited to the development of viable, diverse cultural landscapes. Nevertheless, it is evident that organic farmers could make even greater improvements in nature conservation: flora and fauna can benefit greatly from suitably adapted cultural practices and systematic assessment of landscape structures. We plan to evaluate the workability of these different methods on pilot farms and in pilot regions. An additional priority of this project cluster is the provision of consultancy services to farmers. Nature conservation should become an enterprise that is also economically profitable. In collaboration with the Schweizerische Vogelwarte bird observatory and Bio Suisse, FiBL is striving to preserve intact, diverse ecosystems and promote biodiversity.

Biodiversity for the farmer's benefit

When deployed intelligently, biodiversity can also be of direct benefit to the farmer: pest populations can be reduced by systematic promotion of predatory and parasitic beneficials through carefully selected companion plantings within and around the crops. These promotion measures must be adapted to the crop and to the pest complex. Moreover, they must be technically and economically feasible. Thanks to basic and applied research, strategies for functional biodiversity are being developed for various crops.

Beneficials for pest control

Nearly every pest is known to have a beneficial as a natural enemy. These beneficials may be fungi, viruses, bacteria, predatory or parasitic insects or arachnids. There are some very efficient beneficials for some pests, and these are being used effectively on a commercial scale. The use of these beneficial organisms enables reduction in the use of standard pesticides. Through systematic research and development, we hope to discover additional beneficials and test them against pests in various crops. The goal is to collaborate with industry and get new products approved and on the market.

Protecting plants from pests

Direct plant protection measures are frequently used as a last resort in organic production due to the limited selection of approved products available to organic farmers. In order to ensure profitable production and high quality of certain crops, however, these products are important. Selective and effective plant protection methods in line with organic standards are being developed in collaboration with industry partners. Novel insecticides, physical controls, pheromones and plant tonics are thus priorities for research.



Animal health

Complementary and alternative medicine for animals

Animals in organic operations are usually treated with orthodox veterinary measures when they get diseases. There is much interest, however, in alternative or complementary treatment methods. The gap between their widespread use and the lack of scientific proof of their activity and efficacy, however, creates a need for basic research, which must be conducted in controlled systems under laboratory conditions. Testing such medications under field conditions is also essential. Hence the goal of this module is to demonstrate the activity of potentized substances on biological systems in the laboratory and to test the efficacy of residue-free, natural medications on diseased animals. Up-to-date recommendations will be based on practical experience and backed up by controlled, scientific methods. Emphasis will be on field studies to assess the applicability of the experimentally tested protocols.

Epidemiology and development of preventative strategies for animal health

The health of farm animals is influenced by many factors. These include the environment, feeding, husbandry, social behaviour in the herd/flock, and management and care provided by humans. The scientific analysis of all of these factors and their effect on animal health will provide valuable information for both consultancy and practical applications. In these analyses, we will determine which factors contribute to health in farm animal herds/flocks (epidemiology). FiBL's „pro-Q“ pilot farm network with over 150 dairy operations will serve as a database and foundation for such analyses. The goal is the elaboration of factor catalogues that focus specifically on the unique situations and conditions of organic production. The results of the epidemiological research will build on these catalogues and serve as the foundation for holistic, practice-oriented animal health programmes designed to prevent animal diseases. The rudiments of such animal health programmes are already in place in the area of udder health and they will be further developed to include other disease complexes and animal species.

Animal health and quality

The knowledge gained is being implemented in herd/flock health management systems. Farmers who sign up to such management systems benefit from comprehensive, holistic animal health consultancy. This involves close cooperation between the farmers and extension services and veterinarians. The special feature of the systems is that they combine animal welfare, disease prevention and complementary medicine with a high quality of milk and meat. The management programmes are applicable to different production systems (organic, IP, conventional), different problem areas (udder health, fertility) and different animal species. Special emphasis is also placed on the profitability and sustainability of livestock management.



Veterinary parasitology

Analysing the parasite infestation situation in animals in organic operations

Organic operations face greater parasite problems, as on one hand the animals come into contact more often with parasites due to the compulsory access to pastures and runs, and on the other hand because prophylactic medication is not allowed. A targeted implementation of antiparasite treatments is possible with the help of a situation analysis on the farm level. Considerable reduction in the number of treatments can often be achieved this way, without compromising the health of the animals.

Controlling endoparasites in ruminants

Grazing animals are infected with worm parasites that need to be controlled for economical as well as animal welfare reasons. The current standard practice on both organic and con-

ventional operations is to de-worm the animals with synthetic anthelmintics. Their use is not without problems (resistance, effect on soil organisms), however. In past years, diverse non-drug procedures (e.g., pasture management, bioactive forages, selection of resistant animals) have been developed and their efficacy has been confirmed. The goal for the coming years is to implement these strategies and in particular to exploit their additive effects. Special attention shall be paid to the profitability of new control strategies of this nature. These methods promise great strides for all livestock producers, regardless of production method and herd size.

Controlling endoparasites in nonruminants

Worm parasites and coccidia are one of the worst health problems in poultry, swine and rabbit production. In rabbit production, for example, the economic losses are enormous, and all producers struggle with major problems. Preventative approaches in nonruminants are less sophisticated and also less effective than in ruminants and horses. For these reasons, alternative treatments (such as phytotherapy) supplement preventative measures in these animal species.

Controlling ectoparasites

Problems with insect and mite parasites are likely to increase in the future, as global warming creates more favourable living conditions for these pests. As a consequence, their importance as vectors of diseases (e.g., bluetongue) and as problems in animal protection and hygiene will also increase. Certain preventative measures against ectoparasites are known, but they are frequently insufficient to reduce infestations in farm animals to tolerable levels. The chemical-synthetic products still in widespread use therefore need to be replaced as quickly as possible with improved preventative measures and more effective natural products.



Animal breeding, livestock husbandry

Animal welfare and environmental performance

Today's society vehemently demands species-appropriate and environmentally-appropriate milk, meat and egg production. Organic production is playing an exemplary role in this area. Workable and ethically acceptable livestock management strategies are undergoing continuous development and new, environmentally sound livestock management systems are being researched and tested. Corresponding research and assessment methods are being developed and applied.

Special priorities for research in this area include the transport and slaughter of farm animals, as well as reduction of stress and losses in meat quality. Additionally, we are conducting new research on rabbits, as they are a very interesting niche. Feeding, feed supplements, species-appropriate management programmes, prevention and treatment of coccidiosis, and meat quality are priorities.

The results have important implications in terms of practical applications as well as development of new methods and

insights in the areas of animal behaviour, species-appropriate livestock management, and human-animal relationships.

Sustainable animal breeding

In terms of breeding goals, the priorities of organic agriculture are different than those of traditional agriculture: the health and fertility of the animals as well as product quality are at the top of the list. It is therefore necessary to develop breeding strategies that give priority to the pursuit of these goals. Furthermore, research is needed to determine which breeding animals fulfil these goals. Traditional breeding strategies do not always employ techniques that are compatible with the concepts and goals of ecological agriculture. As a consequence, there is a need for ongoing discussion of ethical aspects in connection with breeding strategies and reproduction techniques in organic production, as well as for the elaboration and communication of appropriate recommendations.



Food quality and safety

Food quality and health

The quality of organic products, particularly in terms of their nutritional and physiological benefits and their positive or negative effects on health, is a constantly recurring theme in the media and in public debate. Organic foods do indeed differ in many quality-related respects from those produced by other systems. FiBL is interested in particular in the verifiable connections between the chosen method of cultivation and the resulting quality of the food produced, and in the impact of cultivation method on the well-being and health of consumers. Organic quality research explores this multi-disciplinary area by means of feeding and intervention studies on both animals and people. As part of this work, FiBL devises and scientifically validates integrated quality assessment methods. The impact of microflora on product quality is also studied by appropriate methods.

Food safety

The market for organic products is growing extraordinarily fast, trade flows are becoming more and more international and in many places there are bottlenecks in the procurement of raw materials produced to organic standards. In consequence the demands on the quality assurance of organic products are increasing. There is also a growing incentive for farmers who do not take the stringency of organic standards too seriously to seek a foothold in this lucrative market. Even with one of the best quality assurance systems of the entire food industry, the organic sector is not immune to malpractice; there is room for improvement throughout the production, processing and transport chain. By means of targeted courses, projects, advisory work and publications we function as an information platform and support those involved in organic agriculture (producers, processors, monitoring and certification bodies and food inspection) in their efforts to safeguard organic production along the entire supply chain. FiBL has now acquired

a large amount of data in the form of information, analysis and case studies.

Processing

Of course it is not only fresh products but also processed organic products – in economically significant quantities – that consumers put on their plates. The organic concept therefore needs to be developed and established in the longer term in the processing sector as well as at the level of raw materials. Strategies are needed for environmentally friendly and sustainable processing methods, recipes and packaging. As well as resource-saving processing methods, aspects such as sensory quality, the minimal use of additives, freshness and authenticity are important quality criteria. FiBL is addressing these issues in relation to processing and working with partners from research, monitoring and industry to develop solutions and improvements. Building on experience gained in research projects and a broad skills network, FiBL is able to offer problem-oriented advice in the areas of processing and marketing and to organize conferences on matters of special interest.

Evaluating new technologies

New technologies can open up large-scale opportunities, but they may also entail great risks. We are engaged in the evaluation and pre-emptive avoidance of the risks of new technologies in organic food production. At the core of our activities is the assessment of genetic engineering and its application in the context of sustainable food production. We support the actors of the organic food sector with information and advice. We also carry out research into relevant issues affecting the production of food without genetically modified organisms (GMOs); these include the costs of coexistence, seed purity, and the monitoring of GMOs in the environment. Recently, nanotechnology has also joined the agenda; for organic products it could have potential in the areas of resource-saving processing and quality-conserving packaging. Against these prospects must be set concerns about the impact of nanoparticles on health and the environment.



Socio-economics

Policy impact assessment

Using the CH-FARMIS sector model it is possible to analyse the impacts of different parameters of agricultural policy on organic farming in Switzerland (income, farm organization, product range, relative excellence of organic agriculture). Because ecological indicators are integrated into CH-FARMIS, the system can be used to evaluate the cost-effectiveness of sustainable farming systems in providing environmental services.

The future of farming

The farmers of the future need core competencies in business skills and sustainable management. In this cluster we create the necessary scientific foundation. Relevant subject areas are: the role and importance of cooperation, secondary sources of income, non-food diversification and new technologies.

Consumer behaviour

Quantitative methods of consumer research are used to study the behaviour and confidence of consumers who only occasionally buy organic products. One area of this work involves the arguments – other than the organic argument – used by producers to portray their corporate social responsibility; the communicative impact of these arguments on consumers is investigated and improved.

Agriculture and society

In order to draw up principles which will guide political actors in ensuring the sustainable use and development of rural areas, it is first necessary to analyse the present and future social environment. FiBL therefore studies what society requires of the various functions of sustainable agriculture in Switzerland.

Efficient certification systems

Organic certification is a relevant cost factor for actors involved in organic value chains. FiBL identifies approaches to efficient certification systems.



Extension

Advisory work

Advisory services for organic agriculture in Switzerland are now well developed. FiBL has operated an extension service since 1977, and since 1985 services operated by the cantonal authorities have offered advice on organic matters. Cooperation and division of tasks between cantonal advisory services and FiBL's extension service is very well organized. 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.

Agricultural policy and the market require farming families to display initiative and be confident in decision-making. Advisory work may therefore address issues ranging from purely technical production questions to whole-farm optimization and new business ventures. The high volume of regulation in organic agriculture increases and complicates the need for advisory services. The principal methods used are telephone information, visits to individual farms and group advice sessions for farmers, processors and traders on technical aspects of production and socio-economic issues.

Training

In collaboration with FiBL's research arm, the advisory service offers an attractive course programme. Some courses shed light on the latest research results; others cover new trends in agricultural policy, the markets, quality assurance or niche products. Working with Bio Suisse and Demeter, FiBL also

addresses the training needs of the young generation and has set up a training course leading to the qualification of "farmer with federal certificate of competence specializing in organic agriculture". FiBL is involved in teaching at various agricultural colleges, the universities of agriculture and the Zurich Swiss Federal Institute of Technology (ETH).

Projects

FiBL's extension workers speed up the transfer of knowledge from research to practice (and vice versa) through the institute's own demonstration trials and highly practice-oriented surveys and experiments. These on-farm trials are methodologically very simple, but they help to accelerate innovation. Priority areas are animal feeding, herd/flock management, arable farming, specialty crops and marketing. We work very closely with organic advisors in the cantons and there is an intensive exchange of experience.



Communication

Periodicals

FiBL produces a number of periodicals through which it helps organic farmers, processors, advisors, interested consumers, stakeholders and policymakers to remain abreast of developments in organic agriculture. Together with Bio Suisse, FiBL publishes the monthly magazine "bioaktuell" in three languages. There is a long-standing partnership with the journal "Ökologie & Landbau", which appears in Germany, Austria and Switzerland. We produce the journal "Beiträge" for Demeter farmers in Switzerland as well as a newsletter for organic farmers in Zurich and Schaffhausen.

Publications

The FiBL Verlag publishing arm publishes a wide range of materials designed to facilitate the transfer of knowledge from research to advisory work and practice: data sheets, technical reviews, folders, CDs, manuals, conference papers etc. The amount of work put into the educational and graphic quality varies according to the product. As a publisher FiBL attaches high priority to continuity and up-to-date information.

Internet

In addition to its own website, FiBL develops and maintains a number of websites (around 30 in total, see <http://www.fibl.org/internet/angebot.php>) dealing with FiBL-related activities. These websites are developed jointly with FiBL Germany.

Research communication

As an internationally recognized and experienced institution in organic agricultural research, we make the contents and methods of our accumulated experience available in various networks; we also collate and analyse the experiences of others. The special features of organic agriculture, its systemic approach, its trans-disciplinary research cooperation and its

energetic involvement of actors from the entire “organic chain” make this exchange of experience very fruitful. FiBL is actively involved in websites and literature databases relating to organic research; it takes part in national and international conferences and works on research strategies for the future.

Public awareness

The constantly increasing importance of organic agriculture is accompanied by a growing need for information on the subject and on FiBL. FiBL’s awareness-raising work reaches a broad audience. Activities include stands at fairs, an open day, the activity report and wide-ranging media work.

Information hub and statistics on organic agriculture

There is also growth in the need for information on the current state of organic farming in individual countries and worldwide and on current trends and prospects. This information is required in particular by policymakers, associations and market players as a basis for their decisions. For people involved in the media such information is indispensable. FiBL Switzerland processes statistical data on agriculture and on the markets in Switzerland, Europe and internationally. Every year FiBL publishes the book “The World of Organic Agriculture”.



Development and cooperation

Sustainable production systems

Crucial to organic farming methods are the promotion of soil fertility and biodiversity and sustainable land use based on locally adapted cultivation techniques. The development of such techniques presents a major challenge for many producers in developing countries. In the tropics and sub-tropics there has as yet been very little research into practical solutions for organic agriculture and the integrated application of its principles.

The priority areas of our projects are the evaluation and development of locally adapted technologies, and exploration of the contribution of organic farming to food security, environmental conservation and sustainable development. The projects focus on practice-oriented on-farm research.

Climate and resources

The tropics and sub-tropics are greatly affected by global warming, in particular because of their greater dependence on irrigation, the soil’s lower buffer capacity and frequent lack of access to resource-saving technologies. On the international market, climate-neutral products are playing a more and more important role. People look to agriculture to provide renewable energy and agricultural fuels – which are often labelled, completely inappropriately, as “biofuels”. Most of these energy products produce fuel from agricultural crops and compete with food for people. FiBL develops methods, evaluates value chains and researches genuine “biofuels” from the farm.

Market development

The demand for organic products is growing unabated all over the world. Local markets are emerging even in poorer developing countries. The market potential of organic agriculture offers attractive development opportunities for producers and exporters from developing and transition countries. The organic market requires a great deal of attention and specialist knowledge. Anyone who aims to market organic products successfully must develop strategies for quality, regionality and fair trade and have knowledge of the potential of the organic market and of access conditions.

Priorities of the projects in developing countries are the development of value chains and market initiatives, market research, development of regional and international marketing strategies, linking of demand and supply, quality management, and preparation for label recognition and certification.

Certification, standards and agricultural policy

Organic certification is the key to market access, but for small farmers in developing countries it presents a major challenge. International certification procedures are unaffordable for small farmers. Two alternatives are being implemented in various FiBL projects, primarily in eastern Europe and Asia; these involve the setting up of internal monitoring systems and the development of local certification programmes.

Training and extension

Organic agriculture is knowledge-intensive at every stage. Suitably prepared and efficiently distributed information is essential for producers, processors, trading companies, teachers, advisors, researchers and official bodies. FiBL supports training and advisory organizations, research institutions, NGOs and other service providers in developing countries. Activities include collating, editing, distributing and networking specialist knowledge, experience and research results, developing education and advisory tools, materials and documentation such as manuals, data sheets and Internet platforms, developing teaching plans and training teachers, setting up competence centres and advisory services, the direct provision of services such as conversion planning, and the provision of advice on specialist areas of organic farming.

FiBL Germany in brief

FiBL Germany was founded in 2001. It now employs 15 staff at its two sites in Frankfurt and in Witzenhausen, with the majority of the team being based at the headquarters in Frankfurt. The three members of staff who work at the satellite site in Witzenhausen deal mainly with nature conservation and landscape development. Most of FiBL's work is funded through projects and the provision of services.

Networking with actors and organizations involved in organic agriculture is an important activity. FiBL Germany is a member of the Federation of the Organic Food Sector, BÖLW (Bund Ökologische Lebensmittelwirtschaft). It cooperates regularly with the Büro Lebensmittelkunde & Qualität (Office of Food Studies and Quality) in Bad Brückenau and the department of organic agriculture and horticulture at the University of Kassel. There are of course also close working relationships with the sister institutes in Switzerland and Austria.

FiBL Germany provides scientific services to organic agriculture, especially at the interface between research and agricultural practice. From this mandate it derives the four pillars of its work for organic agriculture and the organic food industry:

1. Making information accessible for users. 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, farmers and business people as well as the general public.

2. Devising strategies to strengthen organic agriculture. The aim of this work is to develop strategies for removing the barriers which currently impede the development of organic agriculture. Approaches include the development of appropriate methods of plant protection and improving the availability of organic seed. Interdisciplinary cooperation and the involvement of all actors is vital in order to develop solutions which work in practice.

3. Providing scientific support for actors in the field. FiBL Germany offers scientific expertise to those working in organic agriculture and the organic food sector for their projects and activities.

4. Promoting networking. The expansion of organic agriculture and the major increase in research, consultancy and public relations work that this entails call for coordinated and effective cooperation among all participants. FiBL Germany initiates and supports networking processes in organic agriculture.

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Clients and donors of FiBL Germany in 2006 and 2007

A'verdis, Münster
 Anja Erhart, Frankfurt
 AoeL, Oberleichtersbach
 Behr's Verlag GmbH & Co. KG, Hamburg
 Bio mit Gesicht GmbH, Frankfurt
 BOELW, Berlin
 CMA, Bonn
 Demeter Felderzeugnisse, Alsbach
 Deutsche Bundesstiftung Umwelt, Osnabrück
 Deutscher Stifterverband: Helene/Rudolf Glaser Stiftung
 Ecovin, Oppenheim
 EU, Brussels
 European Consortium for Organic Plant Breeding (ECO-PB), Frankfurt
 FiBL Frick
 Foundation Ecology & Agriculture (Stiftung Ökologie & Landbau SÖL), Bad Dürkheim
 Georg-August University, Göttingen
 German Federal Agency for Nature Conservation (BfN), Bonn/University of Kassel
 German Federal Agency for Agriculture and Food (BLE), Bonn

German federal state (Länder) governments
 German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV), Bonn
 Integrationsamt Rheinland, Cologne
 Kompetenzzentrum Ökolandbau Niedersachsen GmbH, Visselhövede
 Lower Franconia district authority, Würzburg
 M&P GmbH, Bonn
 Mühlhäuser Werkstätten, Mühlhausen
 Naturland Markt, Hohenkammer
 Naturland, Munich
 Ökologischer Grossküchenservice, Frankfurt
 Pleon, Bonn
 Pro Natur GmbH, Frankfurt
 Rentenbank, Frankfurt
 Software AG-Stiftung, Darmstadt
 Sozialer Ökohof St. Josef, Papenburg
 Verein Inselmühle, Obrigheim
 Zentralstelle für Agrardokumentation und -information (ZADI), Bonn

Income and expenditure of FiBL Germany in 2007 and 2006		
(in euros)	2007 provisional	2006
Income		
Research and development	882 000	1 237 972
Other	19 000	11 756
Total income	901 000	1 249 728
Expenditure		
Personnel expenses	521 000	541 921
Material expenses		
Project costs	254 000	487 698
Premises, office supplies, other admin. expenses, IT and advertising	106 000	179 532
Depreciation	20 000	18 675
Total expenditure	901 000	1 227 826
Operating result	0	21 902

Developments in FiBL Germany’s finances from 2006 to 2007

FiBL Germany (FiBL Deutschland e.V.) is a non-profit-making organization that finances itself by providing scientific services to organic agriculture, particularly at the interface between research and practice. Its clients and donors are public institutions at federal and state level and the EU, as well as associations and companies.

Income in 2006 totalled around 1.25 million euros, while in 2007 it was around 0.9 million euros. However, this fall in income has had only a minimal effect on the operating result, since project costs have also fallen.

From a business point of view, two aspects of the period covered by this report are worth commenting on:

- › Work on the “Organic Face-to-Face” project was transferred to a limited liability company; this represented an important step in retaining the non-profit nature of FiBL Germany.

- › The client group has been enlarged, thus reducing FiBL Germany’s reliance on individual donors.

The bottom line is that FiBL Germany has now been in the black for six successive years, despite the fact that competition in the organic sector is intensifying. Increasing interest in this field is being shown by players who in the past would have been uninterested without financial backing. Our ability to hold our own in the market is due to a team of people who bring not only their experience and skills but also their passion and commitment to the cause of organic agriculture. We should like to take this opportunity to express our very grateful thanks to this team.

Our warmest thanks go also to our clients and donors from the public and private sectors and organic farming organizations, as well as to our Swiss colleagues and our association members, for the support and trust they have shown us over the past few years. In doing so they have contributed quite substantially to the success of the FiBL Germany venture!

Robert Hermanowski, Director FiBL Germany

Board of FiBL Germany	
	Jörg Große-Lochtmann Hohenkammer and Berlin Executive Director of the marketing branch of the Naturland organic producers' association
	Wolfgang Gutberlet Fulda Chair of Management Board of the 'Tegut, gute Lebensmittel' food retail company
	Dr. Robert Hermanowski Frankfurt Director, FiBL Deutschland
	Prof. Dr. Jürgen Hess, Kassel/Witzenhausen, Head of Department of Organic Farming and Cropping, University of Kassel (Faculty of Organic Agricultural Sciences)
	Beate Huber Frick FiBL Switzerland, Development and cooperation

	Dr. Felix Prinz zu Löwenstein Otzberg, Chair of the German Federation of the Organic Food Industry (BÖLW) and of the Naturland organic producers' association, farmer
	Dr. Urs Niggli Frick Director, FiBL Frick
	Jan Plagge Augsburg Executive Director of the Bioland Erzeugerring Bayern organic producers' association
	PD Dr. Gerold Rahmann Trenthorst Head of the Institute of Organic Farming, Johann Heinrich von Thünen Institute
	Dr. Uli Zerger Bad Dürkheim Executive Manager of the Foundation Ecology and Agriculture (SÖL)

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 Mäder Rolf Dipl.-Ing. agr., Inspection and certification, traceability, farm inputs, genetic engineering, Organic Face-to-Face (Bio mit Gesicht GmbH)	 Gärtner Anne-Christine Dipl. Biol., Arable wildflower conservation, nature education, Witzenhausen branch		

Knowledge transfer

Research findings are of course only useful if they reach the people they are intended for – who in our case are those engaged in the organic food industry and the world of science. FiBL sees one of its core tasks as being the transfer of knowledge between science and practice and between different areas of research. Making knowledge accessible for the target group – in terms of the selection of information, text style and presentation – is our aim. Here are two examples from our work:

- The knowledge platform <http://forschung.oekolandbau.de> is the national information hub for research in organic agriculture; it contains news, details of events, links and addresses. In addition a core task is the processing and communication of research results from the German Federal Organic Farming Scheme (BÖL, Bundesprogramm ökologischer Landbau).
- www.oekolandbau.de is the main Internet portal of the German Federal Organic Farming Scheme, with information on organic agriculture for various target groups. It is FiBL's task to maintain the sub-portals for agricultural producers, processors, dealers, wholesalers, consumers and children.



Inputs and additives

Now in its third edition, FiBL's list of approved inputs for organic agriculture has become an established publication in Germany. The standardized assessment system creates transparency and aids farmers, inspection bodies and producers in evaluating, selecting and developing agricultural inputs. For organic agriculture associations the publication provides a basis for the creation of specific lists of their own.

The increasingly widespread use of genetically modified organisms is accompanied by a growing need for a list of additives and processing aids suitable for use in organic foods. Subject to the awarding of a grant by the German Federal Organic Farming Scheme (BÖL), we shall in 2008 be embarking on a list of additives for organic processors (see www.betriebsmittel.org).

Quality assurance through traceability

Traceability is the foundation of all quality assurance measures. The efficient organization of traceability across every stage of the production and marketing process is currently one of the key challenges facing the food sector. As part of a BÖL project, FiBL – working with other actors in the organic sector – has developed the data standard organicXML, providing a basis for linking both existing technical systems and those still in development. The standard makes it possible to trace a product all the way from the farmer's field to the shop counter. During the project the idea arose of using traceability data for consumer communication. The "Organic Face-to-Face" project is an implementation of this idea (see www.organicXML.com, www.bio-mit-gesicht.de).



Genetic engineering

Genetic engineering continues to represent one of the biggest risks for organic farming. Recent months have seen revision of the EU Regulation on organic production, and of the German Genetic Engineering Act and GM Crop Production Ordinance and the regulations governing use of "GM-free" labelling. There have thus been significant changes in the legal framework.

From October 2004 to February 2006 FiBL worked with the German Federation of the Organic Food Sector (Bund Ökologische Lebensmittelwirtschaft BÖLW) and the Institute for Applied Ecology (Öko-Institut) on production of the manual "Bioprodukte ohne Gentechnik" ("Organic products without genetic engineering"). It can be downloaded free of charge at www.bioXgen.de. As part of a BÖL project the manual is due to be revised to take account of the changed legal situation by the beginning of next year (see www.bioXgen.de).

FiBL as Internet service provider

The Internet has become an important means of communication for organic farming. FiBL develops and maintains web services as complete one-stop solutions, handling everything from concept and content planning to web design and technical implementation. For example:

- The website www.naturland.de was set up in 2007 when the web presence of Naturland International was completely redesigned. Working with Naturland's specialists, FiBL created the concept and structure. Later, Naturland's senior staff were trained in the use of the content management system, so that they could manage the content of their subject areas themselves. The website benefits from these multiple sources of input; the content is varied and can be updated without external assistance.
- The website www.bioaktuell.ch, the platform for Swiss organic farmers, was launched in 2007 in conjunction with FiBL Switzerland and Bio Suisse. FiBL Germany was responsible for realization and programming, FiBL Switzerland undertook the web design, and the editorial work was carried out by FiBL Switzerland and Bio Suisse.



Social farming

The majority of farms that work with people with disabilities are organic ones. These farms require specific advice and networking support. Our activities include:

- Organizing an annual conference and training programme at the Evangelische Landjugendakademie Altenkirchen (see www.gruene-werkstatt.de/fortbildung/index.html),
- Advisory services to individual businesses on green areas in workshops for people with disabilities,
- Content support for information offered at www.gruene-werkstatt.de,
- Setting up a coordination office to support the creation of jobs for people with disabilities on farms,
- Supporting the spread and development of social farms in Europe (see www.sofar-d.de, www.umb.no/greencare).

Organic seed and organic plant breeding

Activities in the area of organic seed and organic plant breeding are:

- Database: since 2004 FiBL's Internet database OrganicX-seeds has been the official database for organically grown seed and vegetative propagating material in Switzerland, Germany, Belgium, Great Britain and Luxembourg. Now new EU member states such as Bulgaria are also using the Internet database, and other eastern European countries have expressed interest.
- Coordination of ECO-PB: The European Consortium for Organic Plant Breeding (ECO-PB) was set up in April 2001 by European organic research institutes to provide an international platform for the exchange of knowledge and experience relating to organic plant breeding and seed production (see www.eco-pb.org).
- Network: A network coordinated jointly by FiBL Germany and the Zukunftsstiftung Landwirtschaft foundation aims to encourage growers, breeders, researchers and administrators to share their vision of the organic plant breeding of the future, to exchange experiences and to discuss plans, incentives and decisions that affect organic plant breeding. A further aim is to carry out trials.



Plant protection

In 2001 a forum for plant protection in organic agriculture (Forum Pflanzenschutz im ökologischen Landbau) was set up on the initiative of the German organic farming associations and the German Federal Ministry of Food, Agriculture and Consumer Protection. This network, which is supported by the German Federal Organic Farming Scheme BÖL, serves as a forum for coordinated advice on questions of general interest relating to plant protection in organic farming. Regular workshops are held, enabling all concerned to meet and discuss important issues.

Working with Organic Face-to-Face

FiBL Germany is a co-partner in Bio mit Gesicht GmbH, the "Organic Face-to-Face" project. Via its website, Organic Face-to-Face seeks to create transparency with regard to where organic products come from and how they are produced and processed. The aim is to demonstrate to consumers that the organic farms and products associated with the Organic Face-to-Face label are not anonymous and interchangeable. The project has achieved source validation covering products' entire chain of custody, creating additional transparency and safety for organic products that goes beyond that required by the statutory regulations (see www.bio-mit-gesicht.de).



Water conservation through organic farming

At the start of 2008 the government of the Lower Franconia (Unterfranken) region of Germany launched the initiative "Groundwater conservation through organic farming" with the aim of making an active contribution to the protection of the groundwater and promoting sustainable regional development in Lower Franconia. In the long term, a significant expansion of organic farming in Lower Franconia is planned. Coordinated measures are required if this is to succeed, involving for example the provision of advice to farmers, acreage subsidies, public relations work and product marketing support in the region. FiBL Germany was contracted to develop the strategy for this campaign and to support the actors in implementation (see www.aktiongrundwasserschutz.de).

Organic farming and cultural landscapes – landscape development and nature conservation

Landscape development and the promotion of species diversity at farm level are increasingly being discussed as future tasks of a multi-functional approach to farming. Various projects at the Witzhausen site are working at the interface between organic farming and cultural landscapes:

- Supporting the establishment of farm-level conservation advice for organic agriculture which links in to farmers' interest in nature conservation (see www.naturschutzberatung.info),
- Participation, PR and in-process phytosociological research as part of the project "The integration of nature conservation goals into organic farming, based on the example of the Hessische Staatsdomäne Frankenhäuser Holding" (see www.uni-kassel.de/frankenhausen),
- Potentials for landscape development and nature conservation in social farming (EU social farming project: see www.sofar-d.de),
- Drawing up a sustainable conservation strategy for threatened arable wildflowers (see www.schutzaecker.de).

FiBL Austria in brief

FiBL Austria was founded in May 2004 as a non-profit-making organization based in Vienna. The FiBL team in Austria currently consists of eleven staff members. In its work FiBL Austria addresses a wide range of issues, including questions of animal health and husbandry, market management and development, matters relating to food quality and genetic engineering, nature conservation and on-farm research in

organic agriculture. Important elements in all these areas are closeness to practice and the attempt to make knowledge accessible to users in a customer-focused way.

FiBL Austria sees itself as a hub and service centre operating at the interface between research and practice; it combines this with an active role in networking all the actors involved at every stage of the organic food production chain. It cooperates extensively both with Austrian research partners (the Raumberg-Gruppenstein Research and Education Centre for Agriculture; the University for Crop and Soil Science, Vienna; the Veterinary University, Vienna) and with partners in the fields of education and advisory services (Rural Institutes of Further Education, chambers of agriculture, BIO AUSTRIA, the Demeter association); it also works closely with FiBL Switzerland, FiBL Germany and the Bioinstitut in the Czech Republic.

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Income and expenditure of FiBL Austria in 2007 and 2006		
(in euros)	2007	2006
Income		
Research and development	152 566	133 963
Education	83 898	57 811
Other	48 146	55 449
Total income	284 610	247 223
Expenditure		
Personnel expenses	206 175	170 933
Material expenses		
Project costs	54 803	45 887
Office-related costs	9 596	7 278
Miscellaneous	9 431	20 957
Total expenditure	280 005	245 055
Surplus	4 605	2 168

As a non-profit-making organization, FiBL Austria finances itself entirely through projects and services. In 2006 a surplus of around 2,000 euros was recorded: a total income of around 247,000 euros was offset by expenditure of 245,000 euros. In the 2007 financial year total income amounted to around 284,500 euros, while expenditure totalled 280,000 euros; this enabled 4,500 euros to be added to reserves.

Since 2005, the Austrian Ministry for Agriculture, Forestry, Environment and Water Management has funded a variety of projects in the areas of innovation, research and education. In the field of research into risks associated with genetic engineering, FiBL Austria receives support from the Austrian Ministry for Health and Women. The government of the state of Lower Austria, together with the Lower Austrian Rural Institute of Further Education (LFI) and the Chamber of Agriculture, provide support in the areas of education and on-farm research for the implementation and development of crop cultivation methods. Swiss foundations and the office of the government of the state of Lower Austria provide financial support for research into issues relating to biodiversity and organic farming.

We are grateful to our public-sector clients and donors at federal and state level, to the Chambers of Agriculture, companies and organic associations. We also warmly thank our Swiss and German colleagues for the energetic support they have given FiBL Austria.

Andreas Kranzler

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	Tanja Hofer Mag. Med. vet. Animal health		Lindenthal Thomas Dr., Communication (Crop production, climate)			

Food quality and safety

To identify cultivation-related aspects of quality, FiBL Austria uses various methods – notably feeding experiments, feed preference tests, tasting, degradation tests – to examine the properties of organic products. We develop quality testing tools that can be used both in comparative studies of organic and conventionally produced food and in studies aiming to optimize organic production techniques.

Genetic engineering

Our risk research in the field of genetic engineering explores the potential impacts of genetically modified feedstuffs on health and fertility. This involves long-term, multi-generation feeding experiments with laboratory rats in order to examine chronic toxicological effects.

Animal health

For some years FiBL Austria has operated a nation-wide animal health project based on the Swiss pro-Q project. Key elements are practical herd monitoring, training of vets who carry out the monitoring and the setting up of a service centre in collaboration with other organizations. In these ways FiBL provides support for implementation of the EU Regulation on organic production 1804/99, functions as a reference point for practical animal health issues and promotes effective communication between all the stakeholders involved in organic agriculture.

Animal husbandry

Even in organic farming the castration of male piglets immediately after birth is carried out routinely and without anaesthesia. The aims of the project “Market research and product development in the area of boar meat products” are to establish boar finishing as a practicable method of producing organic pork, to convince market players and consumers of the advantages of meat from uncastrated pigs, and to introduce the necessary marketing measures among direct marketers, butchers and wholesalers.

Market development and market management

The aim of our work in the field of market development and market management is to help the public understand the complex issues relating to organically farmed foods. In an initial phase, attractively produced leaflets – available both in print and online – will describe the advantages of organic food products of animal origin. The issues covered are animal breeding, feeding, husbandry, transport and slaughter, as well as processing and packaging.

The marketing of organic food products in Europe is hampered by the absence of appropriate structures and conditions for professional training. As part of a Leonardo project of the EU, FiBL is working with ORA (the Organic Retailers Association, an IFOAM internal body) to improve the situ-

ation. Building on existing qualification standards, a quality assurance and certification system for professional training in organic marketing is being developed and will apply throughout Europe.

We also provide support in the form of advisory services to international projects on local organic market development.

We support the specialist organic trade in Austria on behalf of the BIO AUSTRIA association. Alongside work to preserve more traditionally produced farm products, a special group of owner-managed specialist shops is being set up and managed.

Biodiversity and nature conservation

Maintaining and increasing biodiversity on farms and improving the contribution of farms to nature conservation (the whole-farm approach) are important goals in organic agriculture. A network of model farms aims to raise awareness of nature conservation issues among the rural population, improve communication between the representatives of farming and of nature conservation, and emphasize the importance of functional biodiversity for organic farms.

Communication

The successful production of organic products also requires that up-to-date technical information is made available in appealing form to farmers. From the point of view of product marketing it is equally important to provide consumers with information about quality and production in organic farming. This area is addressed in a number of FiBL projects by means of data sheets, technical brochures, training documents, databases and websites. Training is also provided for organic farmers, consumers and vets (focusing on issues of animal health, animal husbandry, food quality, genetic engineering, crop farming and nature conservation).

On-farm research

Working with its cooperation partners (various research and advisory institutions, organic farmers), FiBL Austria coordinates and manages cropping trials in a country-wide network of experimental farms.

Issues addressed include both matters of crop management (seeding rates, weed and pest control, mixed cropping, undersowing etc.) and the regional suitability of crop species and varieties.

Another priority area is the assessment of the regional applicability of farmers' knowledge and of the results of research on organic crop farming. The results of trials are quickly made available to farmers (see www.bio-net.at).

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.fibl.org/shop>. Scientific publications are archived in the Organic Eprints database (<http://orgprints.org/>).

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- › Financing state-of-the-art research infrastructure and trial systems without taking recourse to banks.

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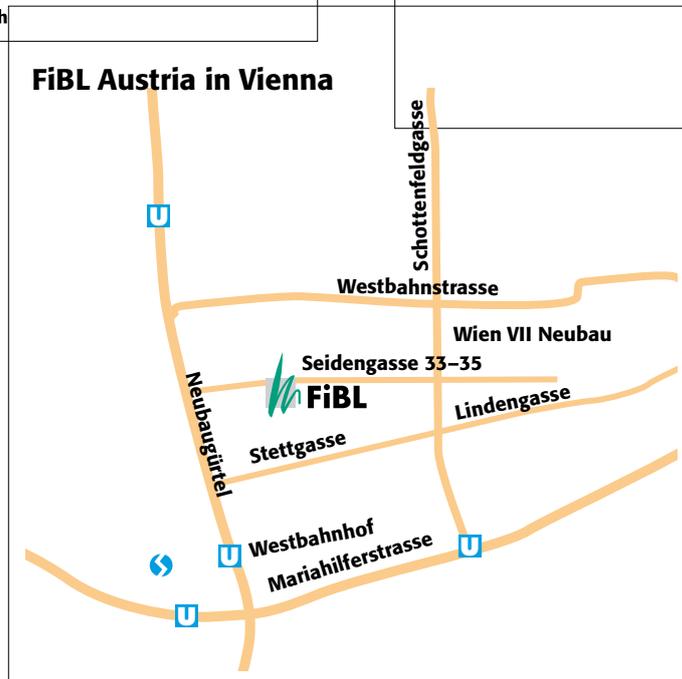
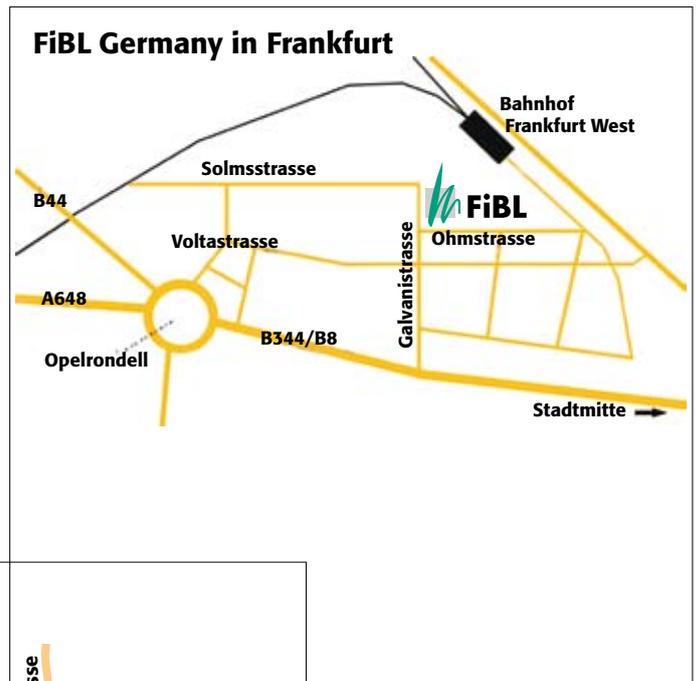
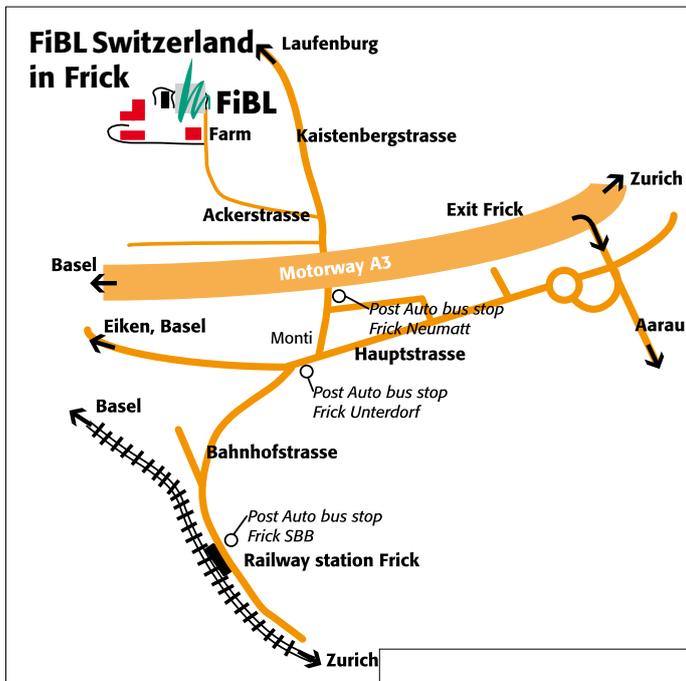
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