



Activity report *2004*



Research Institute of Organic Agriculture – Switzerland, Germany and Austria

Editorial		1
Directors' report	Years 29 and 30 – busy times in brief	2
Soil and plants		
Soil fertility	Mycorrhizae – inconspicuous hyphae with a big impact	5
Vegetable production	Green manures and onions	6
Cropping systems	New long-term trial on the effects of biodynamic preparations	7
Seeds	OrganicXseeds: European turntable for organic seed	8
Soft fruit	“BBC Swiss” projects bears first fruit	9
Fruit production	Tree nutrition strategies for organic fruit production	10
Plant protection	Fecund aphids keep organic researchers on the go	12
Fruit production	RIMpro: Apple scab early warning	13
Biodiversity	Interaction between organically managed and semi-natural land surprisingly close	14
Auxiliary substances	List of approved substances provides transparency	16
EU research	QLIF: New dimensions in European organic research	17
Genetic engineering	BioGene working group: Linking up	18
	GIS for GMO control	19
Livestock		
Animal health	Species-specific behaviour and animal health	21
Animal health	“Pro-Q”: Improving animal health	22
Organic cattle breeding	Organic cattle breeding: What do practitioners think?	24
Veterinary parasitology	Gastro-intestinal parasites: Could there be a herbal cure?	25
Chicken keeping	Moulting: Should organic chickens shed feathers?	26
Socio-economics		
Farm management	Farm network: Putting entrepreneurial freedom to good use	28
Agricultural policy	How does organic policy work in Europe?	29
Market research	Organic products need impact and appeal!	30
Training and extension		
Internet	The oekolandbau.de online editorial team: How ideas reach the Internet	32
	Services online: FiBL as a multi-faceted provider	33
Communicating research	Knowing who is researching what	34
On-farm research	On 200 organic farms for all organic farms	35
Organic farming in disability care	Rediscovered: A role for agricultural work in disability care	36
Advisory work	Farm walks ideal for knowledge exchange	37
Communication	FiBL publications: Highly regarded, much in demand	39
International cooperation		
	Organic management to diversify Tunisian farming	42
	A certification body for Romania	43
	Worldwide research and development	44
Staff, funding and projects – FiBL Switzerland		
	Income and expenditure in 2002 and 2003	47
	Clients and donors of FiBL Switzerland	48
	Foundation Council, FiBL Switzerland	50
	The staff at FiBL Switzerland	51
	Overview of FiBL research areas 2004–2007	56
Staff, funding and projects – FiBL Germany and FiBL Austria		
	Income and expenditure in 2002 and 2003	63
	Board, FiBL Germany and FiBL Austria	64
	Clients and donors of FiBL Germany, 2002 und 2003	64
	The staff at FiBL Germany	65
	The staff at FiBL Austria	65
	FiBL research areas Germany	66
	FiBL research areas Austria	67
	Publications by FiBL staff in 2003 and 2004	68
Imprint		72

Dear reader,

Conditions are growing tougher for agriculture, in Switzerland as in the rest of Europe. While EU enlargement creates new markets, it also gives rise to a wholly new competitive situation. Likewise, the countries of the South will become increasingly vehement in demanding market entry for their agricultural products. This is quite understandable: these are countries where 80 percent or more of the population earn their living in agriculture, as opposed to only a few percent in our own country. Therefore, it is absurd for expensively subsidized agricultural surpluses from Europe or the USA to be dumped in the South, displacing local producers from the market.



In this environment, organic agriculture has an ever more important role to play in future. The close interconnection between agriculture and settlement imposes stricter limits on industrialized agriculture in Europe than it is subject to in the USA or Canada. The traditional small structures that characterize the landscape and agricultural enterprises in Austria and Switzerland, for instance, call for a modern form of agriculture that puts the highest priority on quality, diversity and high-value production.

A study carried out for the FAO by El-Hage Scialabba and Hattam in the year 2002 (<http://www.fao.org/DOCREP/005/Y4137E/y4137e00.htm>) clearly shows how important organic agriculture is, if the UNO goals for conservation of natural resources like species diversity, soil, water and air are to be achieved. The researchers at FiBL are among those who have contributed to these findings with their long-term studies. If in future the multifunctional services of agriculture are given even more weight in the direct payments system, organic agriculture will continue to grow.

Let us review our agricultural policy – without blinkered vision. Let us open our markets so that we can develop our own strengths. Let us open our markets on our own initiative, not under pressure from the large agricultural exporters like the USA, Canada or soon perhaps China, which produce cheap mass products with no regard for the criteria of sustainability. Let us make a confident stand in the international arena for clear environmental and social standards, so that the free market supports sustainable land management worldwide. Particularly when we combine organic production with fair trade (Max Havelaar or other Fair Trade labels), we can give voice to this demand with credibility. When more consumers live according to these principles, economic conflict between farming families in South and North can be transformed into shared opportunity. FiBL is taking part in a broad range of research and pilot projects, working with south-eastern European, Indian and Latin American partners to meet this challenge.

*Dr. Otto Stich,
President of the Foundation Council, FiBL Switzerland*

The German federal government's objective is to expand organic agriculture considerably. Following a 'boom' in the aftermath of the BSE scandal, expansion has now slowed down somewhat. To complement efforts being made in



the fields of marketing and public relations, the research sphere, too, can and must play its part in promoting ongoing expansion. For instance, solutions to production problems need to be found, in order to increase yields on organic enterprises and lower the barriers for newly converted practitioners.

However, one of the greatest problems is the inadequate transfer of research findings into practice. "We know a lot, but as ever, too little of it is applied in practice." Under the German Federal Programme for Organic Agriculture (BÖL), for the first time efforts are in hand to compel researchers to transfer their findings. A budget has even been made available for this objective.

Knowledge transfer works when there is successful networking of the practitioner, advisory and research levels. Networks of this kind, as supported by the Federal Programme framework, facilitate transdisciplinary and problem-solving research approaches. FiBL possesses considerable competence in knowledge transfer, as evidenced by its data sheets, the central Internet portal, and its guidance document on public relations work. This underpins the cooperation agreement reached between FiBL and the Department of Organic Farming and Cropping at the University of Kassel in Witzenhausen: close links between consultants, researchers and practitioners shall now ensure the rapid transfer of knowledge into practice for joint research projects.

As a first joint venture, a project was recently launched on "Optimizing nature conservation aspects of advisory approaches in order to integrate conservation objectives on organic farms". Other projects are now in preparation. This cooperation will function as a nucleus for extending this type of collaboration to additional departments at the University of Kassel.

It will also set an example to others of how to enhance cooperation and tap synergies. Because major challenges lie ahead of us – combating agricultural genetic engineering by developing alternative strategies, to name but one. Joint work is the only way to tackle challenges on this scale.

*Prof. Jürgen Hess
Board Member, Germany*

Years 29 and 30 – busy times in brief

Given the relatively brief history of organic agriculture research, FiBL as an institution has gained a certain maturity: in 2003, it celebrated its thirtieth birthday. But FiBL has not by any means lost the youthful dynamism and drive of its original pioneers. In this 2004 Activity Report, we are pleased to be able to share with you the highs and lows of the last two years.

Following the launch of FiBL Germany in the year 2001, May 2004 saw the establishment of FiBL Austria as a third financially and legally independent institution. Governed by the same overarching principles, the Swiss, German and Austrian FiBL Institutes offer professional and committed research, information and advisory work, both individually and jointly.

The question of sites has kept us extremely busy. After thorough consideration of two offers in the Cantons of Bern and Aargau in November 2003, FiBL Switzerland decided to purchase the three existing office and laboratory buildings in Frick. In addition to the existing agricultural research enterprise, it took on the management of 4.5 hectares of vines and the running of the associated winery. In 2002 and 2003, FiBL Germany shifted its activities almost wholly from its Berlin office to concentrate them in its office outside Frankfurt. And before this year ends, FiBL Austria intends to move into an office at BIO AUSTRIA in Vienna, and cooperate closely with that organic association.

Without a doubt, the hallmark of FiBL is its extremely close contact with practitioners. We aim to keep our analyses and suggested improvements on a very realistic level. In relation to agricultural production, this will mean even more on-farm research projects in future. Along the downstream food production chain, it will mean field research, system and network analyses, and expert dialogues. This clear emphasis is the source of FiBL's flexibility. It significantly lowers the costs of research, and aids the rapid absorption of new findings into agricultural practice.

A centre of excellence for organic farming

Eight years ago, FiBL set itself the goal of becoming a centre of excellence for organic agriculture in the European research community. This goal has now been achieved. FiBL is currently collaborating on joint research within 12 European consortia. Negotiations concerning five more consortia are nearing completion, two under the scientific and administrative coordination of FiBL.

When the main results of the long term DOK field trial, conducted by FiBL and the Swiss Federal Research Station for Agroecology and Agriculture (FAL), were published in 'Science' (May 2002), it stimulated a broad discussion in scientific circles about the environmental and economic sustainability of farming systems. For the first time, the organic, the bio-dynamic, the integrated and the conventional systems of production could be described in terms of sound statistical evidence, obtained over the course of

many years. A real milestone in the scientific discourse! All three FiBL Institutes are unanimous in attaching great importance to producing and disseminating knowledge and information on the theme of organic agriculture. To support this, FiBL Germany provides competent experts in Internet-based advisory work and knowledge transfer. The website www.oekolandbau.de, managed jointly with the Foundation Ecology and Agriculture – Stiftung Ökologie und Landbau (SÖL) and the German Centre for Documentation and Information in Agriculture (ZADI), is the centrepiece of our electronic knowledge transfer. This project is financed by the German Federal 'Organic Agriculture' Programme (Bundesprogramm ökologischer Landbau, BÖL). In collaboration with the Danish Research Centre for Organic Farming (DARCOF), FiBL produced the Organic Eprints Internet database (<http://orgprints.org>). It already contains documentation of 1800 research papers on organic agriculture, and more are added daily.

But regardless of all the euphoria about computers, paper still has an important role in advisory work. The magazine of the Swiss organic sector, 'bioaktuell', was systematically expanded into a trilingual publication with the addition of 'bioactualités' and 'bioattualità'. Many new FiBL dossiers and data sheets have been produced in a range of languages and regional editions.

Other activities that can be seen as an investment in the future are our inputs to initial and further training. In August 2004, the 'Bioschule' organic college will launch a nationally accredited foundation course for organic and bio-dynamic farmers, providing them with a recognized occupational qualification. After so many years of preparation and the amount of resistance that had to be overcome, this is verging on the sensational! As regards further training, besides farmers and agricultural advisors, we are also increasingly addressing the needs of veterinary surgeons. They will play a part in establishing holistic management of animal health on organic farms.

Strong partners

FiBL is a trusted partner to the organic food chain and to organizations committed to sustainable development in our society. Our principal partners are the organic associations, with whom we regularly coordinate our efforts. These are the International Federation of Organic Agriculture Movements (IFOAM), and our national partners – BIO SUISSE, the German Federation of the Organic Food Industry (BÖLW) and BIO AUSTRIA.

Close links are also maintained with companies who manufacture, process and trade in organic products and medicines for complementary therapies. These companies want to drive forward innovation in the field of organic agriculture, and are committed to supporting research. Certainly the most spectacular initiative – even by international standards – is the Coop Naturaplan fund, which has been promoting sustainability in the areas of



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Beate Huber,
Director FiBL Germany

food, energy, textiles and landscape management for the past 10 years to the tune of 100 million Swiss francs. As of 2003, FiBL has participated in these efforts with three major research projects (on organic seed, quality research, and holistic animal health and milk quality). Other companies make major contributions to financing FiBL's research and implementation efforts: these include Weleda, Hiscia, and Migros.

Advisory work throughout German-speaking Europe is sustained by virtue of increasingly close cooperation, not least because of a shortage of resources. To assist with the meticulous work of compiling its data sheets and dossiers, FiBL has therefore established cooperation arrangements with the advisory service of the Bioland Bayern producers' association in Bavaria, Germany, with the centre of competence for organic farming in Lower Saxony (KÖN), Germany, and with BIO ERNTE in Linz, Austria. For the French edition, close cooperation takes place with the Service romand de vulgarisation agricole (SRVA) in Lausanne. We are endeavouring to build further partnerships in France and Italy. FiBL worked with IFOAM to produce training materials for organic agriculture in the tropics, available in printed form and on CD.

Discussions that took place between FiBL, the Institute of Organic Agriculture (IOL) of the University of Bonn, and the Vice President of IFOAM, the late Susanne Vaupe (USA) who sadly passed away in 2002, gave rise to the idea of an independent academic society within the organic movement. On June 23, 2003 after two years of preparation by the FiBL and IOL Institutes, the International Society for Organic Agriculture Research (ISO-FAR) was finally founded in Berlin (www.isofar.org).

In February 2003, FiBL came together with the Department of Organic Food Quality and Food Culture at the University of Kassel (Witzenhausen, Germany), the Louis Bolk Institute in Driebergen (The Netherlands) and the Biodynamic Research Association Denmark (BRAD) to form FQH, the International Research Association for Organic Food Quality & Health (see www.organicfqh.org). Since then, other research institutes have become members and contribute to the projects on the relationship between nutrition, food quality and health.

Further evidence of FiBL's role in international networks is seen in numerous joint research and advisory projects in south-eastern Europe, in Cuba, Mexico and Chile, in China and India and elsewhere in the world.

One aim, many methods

The quest for responsible and sustainable husbandry of resources always has been and remains the impelling mission of FiBL. Sustainability is most likely to be achieved through organic agriculture. However, it would be undesirable for organic agriculture to become set in stone on the strength of the first set of guidelines developed. FiBL therefore set up a working group which has spent the last two years focusing on the natural and philosophical principles of organic agriculture. It has debated the usefulness of different research concepts and scientific methods (including molecular biological analysis, as one example) for agro-ecological and system-oriented research. Another vital mission for FiBL is to explore the original, inher-

ent concerns of organic agriculture, understand them in the context of recent advances in the natural sciences, medicine, ethology and socio-economics, and reinterpret them accordingly. This is why, over the past three years, agricultural research in a bio-dynamic context has also been intensified.

Our shared responsibility for the future development of organic agriculture finds expression in many projects on standards issues, at national, European and international level. Four themes have dominated this work in the past two years:

- the issue of the coexistence of organic products with genetically modified organisms (GMO) in the context of production, processing and trade (projects by the Swiss Agency for the Environment, Forests and Landscapes [BUWAL], the German Federal Environmental Agency [UBA] and the EU),
- the issue of which criteria should be applied in the authorization of inputs for organic agriculture (projects by the EU, the German Federal 'Organic Agriculture' Programme [BÖL] and the Swiss Federal Office for Agriculture [BLW]),
- the development of quality-preserving processing guidelines (projects by the EU and the German BÖL) and
- the quest for improved quality assurance systems in inspection and certification (BÖL, Germany among others).

Overall, many new challenges have been taken up. The FiBL team has grown substantially. Things have not always gone entirely smoothly in the triangular relationship between Frick, Frankfurt and Vienna. But there is a very high level of motivation to keep our work constructive and service-focused.

In April 2004, the respected scientific journal 'Nature' posed the question: "Organic: Is it the future of farming?" and gave the reply: "In its pure form, maybe not. But elements of the organic philosophy are starting to be deployed in mainstream agriculture". Exactly 30 years earlier, Hartmut Vogtmann, the first Director of FiBL, had just started his first research project. So farming is certainly on the move!

*Urs Niggli, Beate Huber,
Robert Hermanowski and Elisabeth Stöger*



*Dr. Robert
Hermanowski,
Director FiBL Germany*



*Dr. Elisabeth Stöger,
Chairwoman FiBL
Austria*



Soil and plants

Mycorrhizae – inconspicuous hyphae with a big impact

There has been a long-term cooperation between the Botany Institute of Basel University and FiBL on research into mycorrhizae. What has become clear is that both the abundance and the species richness of these symbiotic soil fungi are much higher in organically managed crops. Now an increasing amount of work is directed at developing methods for the targeted application of mycorrhizae for the purposes of soil improvement.

Mycorrhizal fungi form a bond with the roots of most crop plants which is of benefit to both partners. Through the network of fungal hyphae the plants can tap into a substantially greater soil volume. This improves the plant's nutrient uptake. Furthermore, the hyphae contribute to soil aggregate formation which makes the soil more friable and thus less susceptible to erosion.

In the long-term comparative DOK trial it has been shown that the roots of crop plants in organic plots are more intensively colonized with mycorrhizal fungi than those in the integrated farming plots. The soils in organic plots were also shown to have a greater capability of leading to the colonization of test plants under standardized conditions.

A study carried out at the Botany Institute of Basel University yielded astonishing results. It was shown that organic tillage plots contained almost as many species of mycorrhizal fungi as extensively managed, species-rich meadows which are held to be very stable ecosystems. Conventionally managed tillage plots with monoculture crops in the same region had a drastically lower number of mycorrhizae species.

Inoculation improves soil fertility

We use two strategies for the promotion of mycorrhizal symbioses. One is to support the local mycorrhizae population with careful land management. The other is to inoculate the soil with particularly efficient mycorrhizae strains.

Mycorrhizal fungi were isolated from different land use systems, propagated, and tested with regard to their function of promoting plant growth. Strawberries, leeks, soybeans, and wheat grown under controlled conditions in greenhouses on previously sterilized soil showed varying degrees of growth stimulation depending on the mycor-

rhizal strain used as compared to soils that were not inoculated. It was remarkable to note that the best strains were those isolated from natural meadows or organic plots.

In a joint project between Kassel University and the Institute for Vegetable and Ornamental Plant Production

(Grossbeeren) we propagated the most efficient mycorrhizal strains and inoculated crops which in organic production are propagated in media containing composts – media that had been found to be very poor in mycorrhizal fungi. Especially in the juvenile stages leeks, strawberries, poinsettia (*Euphorbia pulcherrima*), and geraniums showed much improved growth. The combination of compost and mycorrhizal fungi was well able to suppress harmful root fungi.

As part of an “Indo-Swiss Collaboration in Biotechnology” project, FiBL in cooperation with Basel University has started to work on the utilization of mycorrhizal fungi in India, as Indian soils often lack phosphorus. In

this context, organic cropping methods with low external inputs offer good opportunities for the successful use of mycorrhizal fungi.

pm

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Andres Wiemken (Basel University, left) and Paul Maeder researching the impact of mycorrhizal fungi on plants and soils.



This testing system makes it possible to quantify nutrient intake through mycorrhizal hyphae.

Green manures and onions

Vegetable production is one of the most important enterprises in organic agriculture, in terms of turnover and, above all, image. FiBL has therefore established a new research focus in vegetable production.



Farm manager Samuel Lüscher with his son, Simon, Martin Koller and Martin Lichtenhahn assessing the onion crops.

A summer evening in Holziken in the Swiss Canton of Aargau. On the Lüscher family's farm, FiBL advisor Martin Lichtenhahn greets around 30 organic vegetable producers. The practitioners have gathered on this farm to view not one but two ongoing trials. The first shows the utilization of nitrogen under different green manures. The second compares different growing systems for onion production.

Closing nutrient cycles with green manures

Last autumn on the Lüscher's farm, the FiBL vegetable production researcher Martin Koller, together with other colleagues from FiBL and the Swiss Federal Research Stations Agroscope FAW and FAL, sowed an overwintering green manure of English rye grass and crimson clover, and another mixture of Phacelia, berseem and Egyptian

clover that would be killed by frost. Now the land is being used for late-season cabbages which will benefit from the worked-in green manure.

The project team's aim is to make it easier to plan green manures into the crop rotation, to bring vegetable farms as near as possible to the organic farming ideal of closed nutrient cycles. "I can only recommend nutrient self-sufficiency using green manures if I am sure the producer is not going to rack up further problems with mice, slugs and snails, or the workability of the soil," says Koller. As soon as all the results are available, it will also be essential to do some calculations on economic viability.



Up until planting time, onion sets and transplants may cost significantly more than seed sown directly, but after that they require fewer working hours spent on weeding: it takes 20 hours per hectare to weed onion sets, 50 hours per hectare for a transplanted crop, and 280 hours for a crop sown in situ.

Seeds, sets or transplants?

Organic onions are a very labour-intensive crop. For this reason, most organic producers use onion sets to start off their crops. "Here we are comparing the work required to control weeds in three production systems: direct sowing, growing from onion sets and growing from transplants," explains Martin Koller.

The seed method gives rise to the lowest direct costs, but requires the highest amount of time and effort spent on weeding. Koller's goal is therefore to reduce the time spent on weeding so that this method becomes more competitive in comparison with growing from sets or plants. Because, especially for onion sets, the varieties available are less suitable for storing. In this respect, the trial is also an effort to improve quality.

Vegetable producers are a very critical audience. But they are also very keen to experiment. By comparison with such specialities as fruit growing and viticulture, little research into vegetable production goes on in Switzerland. Which means that independent initiative has always featured prominently in any work done. Whenever he needs land to conduct one of his trials, and a willing farmer to manage it, Martin Koller never has to look very long: in fact, absolutely all research into vegetable production takes place on working farms, because the heavy clay soils of the FiBL site in Frick make vegetable growing impossible.

ta

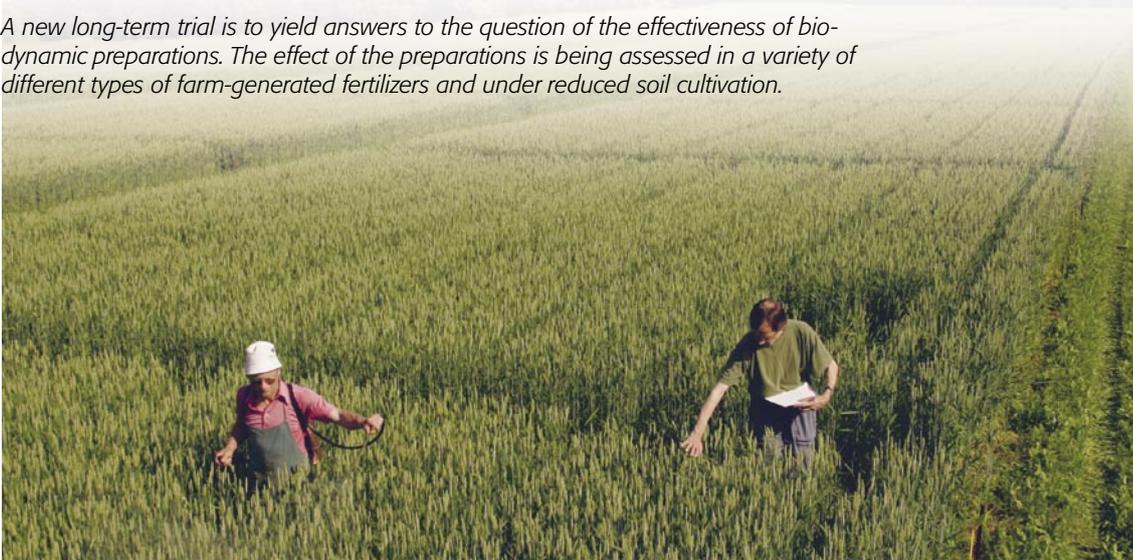
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Green manures are a way for vegetable farms with little livestock to close the nutrient cycle. Pictured: Green manure trial in Holziken, Aargau.

New long-term trial on the effects of biodynamic preparations

A new long-term trial is to yield answers to the question of the effectiveness of biodynamic preparations. The effect of the preparations is being assessed in a variety of different types of farm-generated fertilizers and under reduced soil cultivation.



Robert Frei applying the horn-silica preparation as a foliar spray, Alfred Berner evaluating winter wheat.

The biodynamic preparations are central to the biodynamic way of farming. These are specially prepared mineral and plant-derived substances which are applied in “homeopathic doses” to soils, plants, and as a conditioner for organic fertilizers.

The guidelines for biodynamic agriculture state that the spray preparations horn-manure and horn-silica are intended to achieve a harmonious balance between quantitative growth and qualitative differentiation. The compost preparations stimulate the soil through the fertilizers. Biodynamic farmers thus use the preparations in order to improve soil fertility and the quality of their products.

Do they work or not?

Practitioners have been using the preparations for 80 years and report good results. However, their use has been a controversial topic in the natural sciences. While the DOK trial has shown that the biodynamic variant clearly differs from other cropping systems, it can not be established whether the observed differences in the soils and in product quality are due to the preparations, since the DOK trial compared the entire cropping systems with their specific fertilization and plant protection measures. Therefore FiBL in Frick initiated a new long-term trial two years ago in which it is possible to single out and assess the preparations as a factor. “The primary challenge is to design the trial in such a way that even minor effects can be measured”, states project leader Alfred Berner.

Both opponents and advocates of the preparations continue to question whether it is at all useful to try and assess their effect. Biodynamic practitioners ask that it be borne in mind that in a plot trial it will never be possible to achieve the same effects as in a whole farm organism.

Three questions

We are testing the biodynamic preparations under a variety of soil management and fertilization regimes. Farmers have reported that the effect of the preparations changes with differences in soil management. In a tillage soil disturbed by ploughing they work differently than in an unploughed soil. Another question is whether the possible effects are tied into the use of composted manure or whether they can also be achieved with prepared slurry – which would simplify the conversion to biodynamic management.

Management procedures involving reduced tillage are also of interest to farmers who are not interested in biodynamic topics: They too need to find solutions for the control of slugs and thistles in no-till cropping in order to ensure long-term production.

Alfred Berner closely cooperates with a group of experienced practitioners and researchers. The first year of the trial was entirely devoted to exact initial surveys. Berner meticulously recorded the slightest differences in the soils in order to allow him to consider these differences in the statistical evaluations later on.

Possible effects of the preparations will not be visible from one day to the next. On the heavy clay soils in Frick, Berner reckons with a trial period of ten years. *ta*

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The effects of the biodynamic preparations, of reduced soil cultivation, and of different types of farm-generated fertilizers are being tested in a new long-term trial at Frick.

OrganicXseeds: European turntable for organic seed

Five countries have chosen the OrganicXseeds database for implementation of the new EU Organic Seed Regulation. Thus for the first time an Internet-based monitoring instrument has been introduced in this area. Its commencement in early 2004 was achieved under major time-pressure and not without some clamour.

Since January 2004 a new Regulation controls the use of organic seed in Switzerland and in the EU. In August 2003 five countries – Belgium, Germany, Luxemburg, Great Britain and Switzerland – have commissioned FiBL to implement this regulation with the aid of the OrganicXseeds database.

This was a nice accomplishment for the institute but the acceptance of its tender also brought about a hectic time for the OrganicXseeds team, as the database had to be localized to suit the individual countries by the end of the year.

Nothing but the species lists could be utilized from the original master database. Crop type categories such as early and late potatoes as well as the individual varieties had to be newly arranged for each country. The interpretation of the Regulation was also unique to each country. The country-specific requirements for the seed had to be compiled in cooperation with the relevant authorities and they had to be programmed accordingly. Subsequently the seed companies had to be motivated to enter the data on their stock into the OrganicX-

seeds database.

“The few months we had for preparations turned out to be very hectic indeed” Andi Thommen, project leader with responsibility for Belgium, Luxembourg and Switzerland, remembers. “But the really hot phase came in January when OrganicXseeds was uploaded and when the Regulation came into force. We did have teething problems.” In addition to the authorities and the suppliers, the

“The Internet based OrganicXseeds database, which has been the decision-making basis for the granting of derogations since January 1, 2004, allows for quick and easy searches for organically grown seed and vegetative propagating material.”

Claudia Rabus, HILD Samen GmbH, Marbach DE



During the hot phase Sara Dongus was in charge of the telephone hotline. The photograph shows her introducing the OrganicXseeds database at the FiBL stall at the BioFach organic fair in Nuremberg.

farmers and inspection bodies were now added to the mix and they had their own needs, questions, and problems. Klaus-Peter Wilbois of FiBL Germany was responsible for implementation in Germany and Robert Haward of the Soil Association was the ‘turntable’ in Britain. Meanwhile things have settled down. In the future Andi Thommen would like to offer more information on individual varieties on OrganicXseeds. *ta*

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“With the OrganicXseeds database we have taken a decisive and successful step towards improved market transparency in the organic seed market. We had to satisfy the need of the holdings to use organic seed on the one hand, and the bureaucratic requirements imposed by the authorities on the other hand.

The latter were also a challenge for the programmers as they aspired to offering a comfortable and workable tool to users. Acceptance of the OrganicXseeds database entirely depends on its manageability and on the actual, workable implementation of the Organic Seed Regulation by the authorities.”

Thomas Holz, Bioland Horticultural Advisor in North-Rhine Westphalia



Klaus-Peter Wilbois at the BioFach 2004 organic fair (Top) Andi Thommen (bottom) looks after OrganicXseeds for Belgium, Luxembourg, and Switzerland.

“BBC Swiss” projects bears first fruit

The Swiss supermarket retailer Coop would like to see a substantial increase in the quantity of domestically produced organic soft fruit sold on the Swiss market. FiBL, two providers of transplants and, thus far, a dozen producers are ready to take on the challenge.

Coop has set itself the ambitious target of increasing the market share of Swiss soft fruit from 0.3% to 0.5% in the medium term. In 2003 the supermarket retailer turned to FiBL in order to tackle this challenge. This was the start of the “BBC Swiss” project: Organic soft fruit for Coop (Biobeeren für Coop).

“This project builds on knowledge we have gained over the past few years” explains project leader Andi Schmid who is delighted to be able to put his knowledge to use as part of a clear mandate.

Cultivation challenges ...

Which hurdles need to be overcome to allow the Swiss soft fruit market to develop as desired? It is not easy to ensure a secure and continuous supply with such a demanding crop especially as not enough direct plant protection measures are available. Therefore, the provision of individual advice by FiBL to farmers has increased substantially.

A further challenge is posed by the requirement that as of recently the transplants used must be of organic quality. In order to satisfy this requirement, FiBL supports and coordinates the efforts of the two main suppliers of domestically produced organic plants. Much emphasis is placed on the plants' quality in order to avoid, as much as possible, the transfer of soil-borne diseases. Further solutions in this regard are being explored as part of another project which FiBL is carrying out in cooperation with the Centre des Fougères in Conthey (which is attached to the RAC research institute in Changins). This second project looks at the effect of composts and green manures on the health of strawberry plants. Initial results are very promising.

... and logistic dilemmas

Following their harvest the soft fruit must reach retailers as quickly as possible. To this end a marketing turntable has been established to ensure the quickest possible distribution, depending on the signals given by producers and the market.

At present about a dozen producers are under contract as part of this project. In early May 2004 Coop offered Swiss organic strawberries at a larger scale for the first time. Raspberries, currents, blackberries and blueberries are soon to follow.

CS

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“With its important support in terms of cultivation techniques and with the establishment of a single marketing turntable for all suppliers, FiBL is creating the necessary security for both Coop and the producers.”

Olivier Cordey, producer, Conthey, Valais

Andi Schmid advises and supports organic soft fruit producers.

Tree nutrition strategies for organic fruit production

How are apple orchards to be fertilized? In a long-term trial, compost, proprietary organic fertilizers, and liquid leaf fertilizers are being compared. A provisional appraisal after three years of the trial considers yields, the quality of the apples and soil quality.

Organic fruit production is changing. Up until the 1990s there were few specialized fruit producers in Switzerland. Over the past few years some of the IP holdings have converted to organic production. “These holdings tend to use a lot of fertilizers as they are used to relatively high ferti-

lizer recommendations from the IP regimes and are now facing yield reductions of up to 30 percent”, says Franco Weibel, a fruit production specialist at FiBL.

Organic fruit is a capital-intensive crop with a high gross margin and thus fertilizer costs, relatively speaking, do not make such a big difference. According to Dr. Weibel producers are tempted to use “rather too much than too little”. Some organic fruit producers like to apply the nitrogen in liquid form via the leaves, just as they were used to under conventional conditions. This would be possible using vinasse (a by-product of sugar production) but is not in agreement with the basic tenets of organic agriculture according to which the plants should be nourished via the soil biota. Franco Weibel, however, states that “I can not stand up in front of them and tell them not to use it just because of the organic philosophy”.

Raising the subject of plant nutrition

For this reason, three years ago the FiBL organic fruit production team initiated a trial on Christian Vogt’s holding in Remigen (Aargau) to compare three fertilization strategies. In the first variant which uses compost the provision of nutrients via the soil biota is the focus of attention. Apart from the normal compost, Franco Weibel is also testing a bio-dynamically prepared compost, and has plots with and without applications of horn-manure and horn-silica. In another trial variant the trees receive proprietary organic fertilizers and in the third variant they are supplied with nitrogen via the leaves. The trial is laid out in such a manner that it satisfies scientific requirements and at the same time is of high demonstration value for practitioners. Dr. Weibel comments that the more intensive organic fertilization might bring higher yields. “But we also want to know what happens to the internal quality of the fruit and to the soil”, he emphasizes.

No drastic differences

Therefore the group has not only studied the development of the trees and their yields but also the nutrient dynamics and soil-biological processes. The internal and external quality of the apples are a further part of the standard research programme.

After the first three years only minor differences between the fertilization strategies have become evident. Only the available nitrogen content was higher in the proprietary organic fertilizer variants compared to the compost variants in the first half of each year. Dr. Weibel noticed a slight nitrogen blockage in the compost variants and especially in those where bio-dynamic compost was used which had not been turned during the composting process.

The practitioner Christian Vogt had been hoping for somewhat more remarkable differences. Franco Weibel,



Comparing the impacts of different fertilization strategies on yield, quality, and soils: Organic fruit producer Christian Vogt and FiBL researcher Franco Weibel.



Do the different ways of supplying nutrients bring about differences in pest attacks and diseases?

however, appears to be happy with the results so far: If the results continue to be borne out, for him they would provide good arguments to convince organic fruit producers that it is not necessary to intensify fertilization in organic fruit production – he would no longer have to use the “organic philosophy” argument.

On average, orchards are used for approximately 15 years. Therefore it is very important to see how trees and soils develop in the long term. The trial must be continued for at least another three years. *ta*

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▣ Apart from the fertilizer trial we always have other FiBL trials going on here. Thanks to this long-standing cooperation I am always informed of the latest developments in research. Franco and I are never short of ideas as to how organic fruit production could be improved. Together we find out what is useful and what is not. ▣



Christian Vogt

The more intensive fertilization strategies with proprietary fertilizers and N-fertilizers applied to the leaves have produced neither higher leaf nutrient content values (chlorophyll identification in the photo) nor higher yields compared to traditional compost applications.



Fecund aphids keep organic researchers on the go

Preventive measures are often not sufficient in controlling the Rosy apple aphid. For this reason practitioners often resort to the organic plant protection product neem. FiBL is applying novel methods to achieve organic fruit production free of insecticides. This is a provisional appraisal of the institute's work.

The Rosy apple aphid (*Dysaphis plantaginea*) is the most significant apple pest of the northern hemisphere. The aphids suck sap from leaves and shoots. The long-term damage suffered by the trees is even worse than the small aphid-damaged apples which can not be sold.

The biologist Dr. Eric Wyss has been dealing with these fecund insects for years. "At FiBL we have been able to develop many indirect measures for the control of aphids over the past years and have achieved some partial successes. However, despite the use of aphid-tolerant apple cultivars, dwarfing rootstocks, restrained use of N fertilizers and the targeted promotion of beneficials preying on aphids by way of providing strips sown in wildflowers and herbs, organic fruit producers still have to resort to neem all too often" states Dr. Wyss in his sober verdict. The natural insecticide neem, which is approved for organic production, selectively targets aphids, explains Dr. Wyss, but it is very difficult to make a correct judgement for or against treatment in the spring. Hence neem is being applied too frequently. Therefore, Dr. Wyss is looking for alternatives.

The 'coffee break idea': Attack in the autumn

At first he tested the targeted release of ladybird larvae in the spring which is the usual time for controlling the aphids. While the ladybird larvae consumed many of the stem mothers (fundatrices) which hatch from the winter eggs in the spring, the few surviving stem mothers were sufficient to cause a population explosion as they can give birth to between five and twenty live young aphids daily, depending on weather conditions. Soon after these are born, they, in turn, will start reproducing.

During a coffee break Dr. Wyss had the idea of releasing the ladybird larvae in the autumn: he was thus no longer targeting the parthenogenetic, viviparous stem mothers

but the wingless female aphids which lay the winter eggs on the apple trees following their mating with the males.

While the ladybird larvae again consumed many of the female aphids, some nevertheless succeeded in laying the winter eggs. From these the fecund stem mothers once again hatched in the spring.

Clean-up instead of copulation

Despite the apparent failure Dr. Wyss continued to pursue the idea of disturbing the aphids in their mating and egg-laying. His means of interference was kaolinite. This extremely finely ground clay mineral is used in the USA to prevent sunburn on apples. The substance is harmless and is also added to toothpaste and chewing gum. On the treated trees the aphids were so busy cleaning themselves from the kaolinite that they ran out of time for mating and egg-laying. This resulted in a drastic reduction in stem mothers in the spring of 2002. A treatment with neem was no longer required.

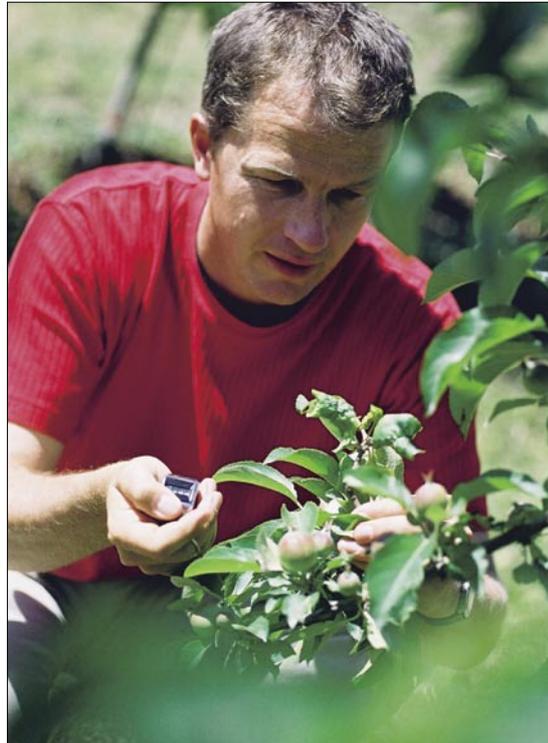
But then came the extremely dry and hot summer of 2003. The aphids

returned from the various plantain species which served as their summer hosts to the apple trees much later than expected. Dr. Wyss had treated the trees too early, the kaolinite was less effective and the next spring the stem mothers were back.

"We will repeat the trials this year. This will show whether kaolinite can replace the neem." He has had a first success using the substance: dusting pear trees with the clay mineral has proved very effective against the European pear sucker. And Dr. Wyss has not yet given up on the idea of using ladybirds. Current trials involve releases of adult ladybird beetles. While they eat less aphids than the larvae they are more adaptable.

ta

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Eric Wyss: "Counting aphids is busy work indeed."



Trees treated with kaolinite are unattractive to aphids.

RIMpro: Apple scab early warning

A computer programme developed in the Netherlands can calculate the current risk of infestation with apple scab. This allows for a targeted approach to plant protection. In cooperation with four fruit producers, FiBL is now adapting the system to conditions in Switzerland.

Scab infestation can cause significant damage in apple production. Christophe Suter, an organic fruit producer in Aubonne, Vaud knows a thing or two about this: "In 2001 I had losses of up to 80% in some varieties!" He therefore has a high motivation to participate in the further development of the RIMpro scab warning system. RIMpro is a computer programme which estimates the risk of scab infection. It was developed by Dutch scientists in the early 1990s. FiBL is working on adapting it to Swiss conditions as part of a project in which researchers, advisors, and producers participate. Weather stations have been installed on four organic holdings engaged in fruit production, i.e. in Conthey (canton of Valais), Aubonne (Vaud), Frick (Aargau) and Pfyn (Thurgau). Temperature, atmospheric humidity, precipitation and leaf wetness are being recorded. Based on these meteorological data as well as on the infection potential (number of immature ascospores present) the



Jean-Luc Tschabold, FiBL advisor, and Christophe Suter, organic fruit producer in Aubonne, Vaud, interpret the images depicting scab infection risk.

programme calculates the infection risk. And then what? "The graphical depictions must be converted into practical recommendations" explains Jean-Luc Tschabold, fruit production advisor with FiBL in western Switzerland. He regularly writes up a bulletin which the producers participating in the project can consult on the Internet.

More targeted interventions

Thanks to RIMpro and ever more precise weather forecasts Christophe Suter can control scab in a much more targeted manner. A further factor which can help reduce copper and sulphur applications is the selection of resistant cultivars. Now he only needs to intervene if the infection risk is very high.

"Cooperation with FiBL is excellent" acknowledges Christophe Suter, "and the institute has a pioneering role in this field". Conversely, cooperation with an inquisitive and meticulous producer is very valuable to FiBL and helps to align research and extension with 'real-life' challenges in an optimum manner.

CS

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With the RIMpro scab warning programme I have learnt more about scab. I don't necessarily treat the trees less than before but



I now do it in a more targeted manner. RIMpro is not just ideal for recognizing risk periods but the programme also shows when the risk eases off, which gives me reassurance.

Christophe Suter



The weather station requires careful maintenance in order to deliver reliable data. The photograph shows Christophe Suter exchanging a piece of blotting paper which simulates leaf wetness.

Interaction between organically managed and semi-natural land surprisingly close

It has been known for some time that ground beetles, spiders and earthworms are more frequent and exhibit greater species diversity on organically managed land. Lukas Pfiffner has now succeeded in providing for the first time a differentiated clarification of the causes, and has identified synergisms between organically farmed land and semi-natural areas. Organic farms and nature conservation profit equally.



A range of catching methods are used to survey small animal life.

Ground beetles, spiders and earthworms are more frequent in organically managed soils. Your studies conducted within the context of the DOK trial in the early 1990s verified this. Why did you extend your comparative studies to farm level?

Lukas Pfiffner: We showed in the DOK trial that these beneficial small animals occur significantly more frequently, and with greater species richness, in organic plots than in the plots managed to integrated production (IP) standards. However, in that trial only fertilization and plant protection are characteristic of the system; rotations and tillage are the same for all systems. The purpose of our farm-level comparative study is now to verify the DOK findings, and ascertain the causes more clearly, on a broader data basis. Organic management has a great potential – but farm managers need to be placed in a position to harness that potential through targeted decisions.

Can there be problems on organic holdings?

Pfiffner: For instance, a single ploughing too late in autumn was found to reduce the earthworm population to the level of the IP-extensive plots or even below. To optimize systems, it is essential to gain a more precise understanding of the effects that individual cultivation measures have.

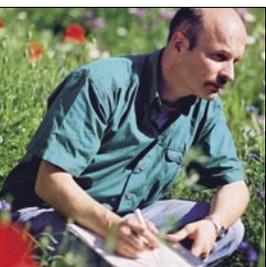
You carried out paired comparisons of 24 arable plots on six organic and IP farms in north-western Switzerland. What were the key findings?

Pfiffner: Key agro-ecological species such as true predators (e.g. *Poecilus cupreus*; *Pardosa agrestis*) and vertically burrowing earthworm species (e.g. *Lumbricus terrestris*) as well as species of special nature conservation interest (e.g. *Carabus granulatus*; *Diachromus germanus*) were found to be significantly more numerous in the organically managed soil. This was the case both in the DOK plot-level trial, and in the farm-level comparisons.

Two cultivation measures were found to impact decisively upon ground beetles and spiders. First, lower levels of fertilization led to less dense stands of organic cereals. This in turn resulted in a microclimate which promoted ground beetle and wolf spider species that prefer dryness and warmth. Such species tend to be rare and endangered, or agro-ecologically important. Second, the fact that no herbicides are used meant that the weed flora was more diverse and dense. This promoted phyto-zoophagous articulate animal species, i.e. those that feed on both small animals and plants (*Amara* sp. and *Harpalus* sp.).

Weren't these positive effects already known?

Pfiffner: Our findings gathered through the DOK trial did indeed lead us to assume these interrelations. The important thing is that the farm-level comparisons have now succeeded for the first time in providing statistically underpinned proof on a broad data basis. We have undertaken comprehensive statistical analyses, using multivariate methods (canonical correspondence analysis and redundancy analysis) to analyse the interplay





Large ground beetle species (here: *Carabus cancellatus*) are in decline. They are promoted by semi-natural areas, but also by organic arable farming.

between animal communities and environmental factors. The effort proved worthwhile: We have found significant determinants for many different species.

Assumptions are not enough to convince the expert world of the organic system's performance. We do need to produce causal links that have been verified on a robust quantitative basis.

What other findings are remarkable?

Pfiffner: We had found in a forerunner study that most beneficial arthropods overwinter in semi-natural areas, and that these areas are consequently vital to those species. It was thus clear to us that the 18 surrounding semi-natural areas (fallow, hedges and species-rich meadows) would have to be included in the comparative farm-level study. Such an approach is a novelty in comparative system trials. Although the IP-extenso system can be considered a low-input system, species distribution pat-



The farm-level system comparison has proven for ground beetles and spiders that interactions between semi-natural land and organically managed arable land are closer than in other farming systems.

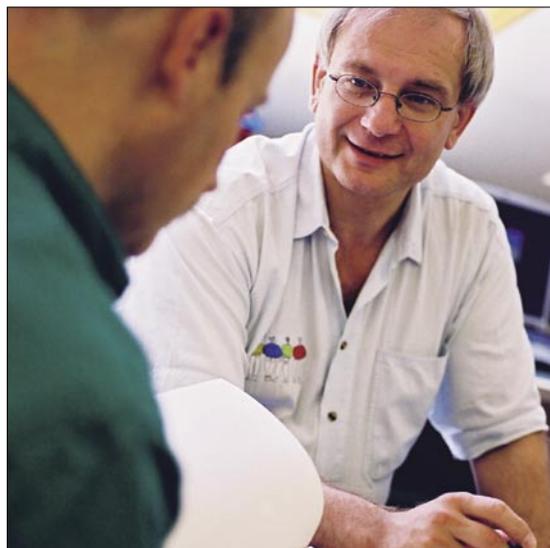
terns were found to differ. Some species living mainly in semi-natural areas were found to occur significantly more numerous on the organically managed arable land. This proved that interactions at species level between farmed land and semi-natural areas are far closer on organic farms than they are on IP farms – a finding that surprised many, not only the conservation experts.

Where are you going from here?

Pfiffner: Having established a better understanding of the effects that different cropping systems have upon important beneficial organisms, we are now turning to functional biodiversity – the question of how to further enhance pest control and other key functions or services on organic farms by undertaking targeted ecological upgrading and cultivation measures.

Interview: ta

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Using statistical methods to analyse the interplay between animal communities and environmental factors.

List of approved substances provides transparency

Every year for over 10 years the FiBL team for auxiliary substances has been publishing a list of substances approved for organic farming. The Swiss experience is now being utilized in other countries.

“Transparency with regard to the auxiliary substances used is of enormous importance for the credibility of organic farming” says Bernhard Speiser, who has been coordinating an expert working group at FiBL for a number of years. The group is charged with the annual publication of the list of approved auxiliary substances such as fertilizers, plant protection products, and cleaning products. FiBL has been commissioned with this task by the label organizations.

– A superfluous occupation for organic functionaries? “Many of today’s auxiliary substances are of such complexity that neither the producers nor the inspectors can appraise their suitability for organic farming in a timely and definite manner”, Speiser explains. The organic standards merely list the components and active ingredients but not the individual proprietary products.

New products are assessed as to their composition and it is also being examined whether they are GM-free and whether they are actually required in the production proc-

ess, how they impact on the environment and on product quality and whether there is an acceptance on the part of the consumers of organic products. “Our assessment grid and process, which involves the label organizations and the authorities, has proved very useful” Speiser concludes. In Swiss organic circles the list of approved substances has become a required instrument.

Now the Swiss experience is also being utilized in Germany. Between 2002 and 2003, as part of the German Federal Programme for Organic Agriculture (Bundesprogramm ökologischer Landbau), FiBL Germany developed an assessment procedure for agricultural inputs (Betriebsmittel), as the auxiliary substances (Hilfsstoffe) are termed in Germany. An evaluation system including a catalogue of agricultural inputs, similar to the Swiss model, will now be developed.

“We are happy to be able to tap into the Swiss experience”, says project leader Klaus-Peter Wilbois. “The ten years of experience gained by FiBL Switzerland in assessing auxiliary substances will help us together with the German organic farming organizations to rapidly establish a high-quality procedure for the assessment of agricultural inputs. In terms of the technical procedures and the application of evaluation criteria we can build on the Swiss groundwork. However, the assessment of the inputs themselves must obviously be carried out pursuant to German laws and regulations and in the area of plant protection products and plant tonics for example, it will be carried out in cooperation with the responsible authorities.”

It is planned that the first catalogue of agricultural inputs will be available in time for the BioFach 2006 organic fair.

The year 2003 saw the commencement of the EU project on “Organic Inputs Evaluation”. “We are working on proposals for the modernization of the EU Organic Farming Regulation”, says Bernhard Speiser who was instrumental in initiating this project. “In its current form the Regulation basically freezes the “state of the art” of the year 1991 and it thus hampers progress.”

Clear procedures and criteria for the evaluation of new auxiliary substances are required as “organic research only makes sense if its results may also be implemented”, says Speiser.

What also became obvious in the EU project was the fact that despite the existence of a single Regulation on Organic Farming, there continue to be substantial discrepancies between EU Member States. These differences are largely due to differences in the way plant protection products are licensed – and the organic farming movement has no influence on this.

ta



In assessing auxiliary substances Bernhard Speiser considers commercial needs, environmental impacts, legal provisions, consumer wishes, and the basic tenets of organic agriculture.

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QLIF: New dimensions in European organic research

March 1, 2004 marked the launch of the largest ever EU-financed project focusing on organic agriculture, given the title "Quality Low Input Food" (QLIF). Lucius Tamm played a substantial role in the planning, along with Urs Niggli, and is now coordinating the crop production aspects.

What is the "Quality Low Input Food" (QLIF) project about?

Lucius Tamm: Organic agriculture is faced with competing pressures: the aspiration to produce high quality foods with the utmost care for natural resources; and the necessity to keep costs at a competitive level while doing so. In this project we intend to analyse the four problem areas where the most significant gaps in knowledge remain: Firstly, we want to gather evidence of the effects of food quality on human nutrition. Next, cost-efficiency must be improved along the entire production chain, whilst maintaining or improving product quality. The third aim is to minimize food safety risks and, last but not least, the fourth is to reduce negative environmental impacts and the consumption of non-renewable resources.

But there are any number of conflicts between those objectives. How will they be resolved?

Tamm: The project is set up so that we are always working along the entire production chain – from the field to the plate. In plant production we will be taking this approach with demonstration crops of tomatoes, farm vegetables, fruit and cereals. In livestock research, the production processes for pork, milk and poultry will come under scrutiny. All interventions, such as changes in fertilizer use, will be evaluated by the relevant project partners for economy, quality and environmental impacts. For example, at FiBL we will be monitoring the crop production trials with regard to disease-suppressing effects in the soil and induced resistance.

Which other parts of the project is FiBL involved in?

Tamm: FiBL staff from the Socio-Economics, Animal Husbandry, Food Processing and Veterinary Parasitology Divisions are taking part. Moreover, Urs Niggli is part of the overall project management team. Other organizations from Switzerland taking part are the University of Basel Botanical Institute and Agroscope Posieux-Liebefeld.

What can Swiss organic farmers expect from this project?

Tamm: We expect to gather a unique wealth of information on the quality and health value of organic products: clear evidence of the impacts of production methods on food quality, such as the effects on vitamin content or the occurrence of harmful microorganisms. We will also gain a better understanding of consumers' expectations – including unrealistic ones – and how they can be addressed. Across the board, farmers also should end up with information on methods of cultivating organic products more safely and cost-efficiently. Organic farmers in every country will be able to benefit from the experience of the other countries. However, consumers, the food trade and food processors are also target groups of the project.

Sceptics complain that in large EU projects, scientific quality often suffers. With 31 project partners, does the sheer amount of coordination not detract from the research work?

Tamm: For this very reason we have designed our project to be very results-oriented. Bear in mind that our foremost ambition is to analyse and optimize the entire production system. To achieve that, a consortium of this size is needed, to bring in all the specialists and generalists required for the various fields of expertise.

The first project meetings already impressed upon me that we will create synergies, not just on paper but in reality. I also find it reassuring that numerous project partners, particularly the overall coordinator, Carlo Leifert from Newcastle University, have very strong track records in the management of EU projects.

But I admit that in the field of agricultural research, a project on this scale has never been carried out before. Even so, if other EU consortia have succeeded, for instance in getting the Airbus off the ground, then we should succeed in improving the organic production system.

Interview: ta

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FiBL staff contributing to QLIF (from left): Bettina Landau, Lucius Tamm, Urs Niggli (Project Coordinator); Thomas Amsler, Jacques Fuchs (Phytopathology); Zivile Amsler-Kepalaite, Veronika Maurer (Veterinary Parasitology); Michael Walkenhorst, Peter Klocke (Animal Health); Toralf Richter and Mathias Stolze (Socio-Economics). Not pictured: Nicole Specht, Andreas Fliessbach and Otto Schmid.



BioGene working group: Linking up

As pollen drift respects no national boundaries, efforts to prevent genetically modified organisms (GMOs) out-crossing must also be transboundary. A talk with the BioGene working group at FiBL.

Looking back at cooperation until now, what is your verdict?

Robert Hermanowski: Highly positive! Just as GMO out-crossing does not stop at national boundaries, this must equally be the case in our work to protect organic farming. For instance, we are currently experiencing strong synergisms with the transgen.ch website, which provides background information on genetic engineering. FiBL Germany had previously provided content for other related websites, much of which can now be used in or adapted to Switzerland. Similarly, the FiBL dossier on "Organic Farming and Genetic Engineering", a joint product of FiBL Germany and FiBL Switzerland, proved extremely useful when setting up the website.

Germany is an EU member, Switzerland is not. Is this more a benefit or an impediment to the working group?

Hermanowski: When dealing with the question of how to prevent contamination, nationality is irrelevant. In legal questions, for instance the definition of what is GMO-free and what is not, nationality becomes more important. But then again there can be differences in this respect within the EU – or in Germany, for instance, with its federal system, there can even be differences between the individual regional states that make up the country.

Bernadette Oehen: The fact that we have contacts not only within Switzerland but also, via Germany, to the EU, enhances our value as a partner for many projects.

All developments in EU member states impact upon Switzerland. For instance, a food producer aiming to export to the EU must comply with new EU regulations on traceability and labelling, whatever Swiss law may say about this. Our colleagues in Frankfurt are able to keep us abreast with the latest developments in this regard.

Can the EU learn something from Switzerland?

Oehen: Produce segregation is widely established today in the EU and in Switzerland, but a need for practical guidance remains. Karin Nowack, a member of our working group, developed the produce segregation guidelines for Switzerland. Through our German colleagues, the German Federation of the Organic Food Industry (BÖLW) learned of this and was able to feed it into the deliberations on the recently adopted German Genetic Engineering Act.

What themes will the working group focus on in the future?

Oehen: Clearly the full traceability demanded in the EU will become important for Switzerland, too. This has not yet been regulated in law. Our experience gathered in organic farming will allow us to provide a great deal of input to this debate. There are exciting times ahead!

Interview: mm

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Swiss-German joint venture

The BioGene working group has four members: Bernadette Oehen and Karin Nowack of FiBL Switzerland, Robert Hermanowski and Rolf Mäder of FiBL Germany. The group's activities tackle every point at which GMOs could enter organic systems: The group informs, provides advice, clarifies, analyses, develops quality assurance concepts, forges international networks and brokers contacts.



GIS for GMO control

It is to be expected that genetically modified organisms (GMOs) will encroach upon Swiss farming, too. Coexistence is now the catchword. Can GMO farming and GMO-free farming really coexist in Switzerland, with its mosaic of small-scale land uses?

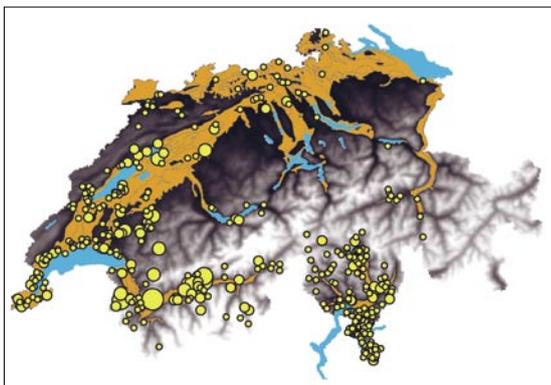
Bernadette Oehen is FiBL's expert for genetic engineering in farming. She took part last year in several congresses on coexistence in Switzerland and abroad. "The debate was always at a very abstract level – far removed from agricultural practice" regrets Oehen. "What mainly interests us, however, is what concrete impacts coexistence of GMO farming with GMO-free farming would have for the individual farms."

Map of GMO-endangered zones

Bernadette Oehen wanted to know in which regions of Switzerland GMO cultivation is most likely, and which areas of the country would be the most critical ones in terms of coexistence.

Geographic information systems (GIS) are excellently suited to answer such questions. Biologist Christian Schlatter is FiBL's man for this. "GIS can be used to represent statistical data sets as maps. We can superimpose different thematic layers, thus making visible the areas in which a certain attribute is similar or differs" explains Schlatter.

Using data provided by the Swiss Federal Statistical Office (BFS) and by IP Suisse – for instance the numbers of organic and IP-Suisse farms per municipality, and area figures for rape, maize and potato crops in each Swiss district – Schlatter produced a map showing potential GMO cultivation areas. Both organic farming standards and IP Suisse guidelines prohibit GMO cultivation. Consequently, the proportions of farms producing under one of these labels was a key element of the data model. Combination of the two maps, using data provided by territorial statistics, shows areas in which GMO cultivation is probable.



Particularly GMO-endangered zones are located in municipalities where there are neither organic nor IP-Suisse holdings (yellow) and, as a further indicator, in areas favourable for arable farming (orange).



Bernadette Oehen and Christian Schlatter have defined "critical GMO areas" for Switzerland.

Hotspots: Romandie, Ticino, Schaffhausen

Because the proportion of organic and IP-Suisse producers is substantially lower in Romandie and in Ticino, the GMO risk is particularly high in those regions. The border regions around Schaffhausen and Geneva proved to be further hotspots.

What surprised Oehen most, however, was the findings at farm level. A range of farms was visited, arable areas and rotations mapped and information on neighbouring farms collected. These data were linked by the computer with isolation distance values for genetically modified rape, maize, soya, wheat and sunflowers. It emerged for one organic farm studied in western Switzerland that in order for the farm to continue to produce organically, it would need to be ensured that no GMOs are cultivated closer than 1.5 kilometres.

To ensure the necessary isolation distances, farmers would need to establish detailed agreements with their neighbours. Oehen illustrates what this would mean in practice for the example of our western Swiss organic farmer: The fields of that farmer, distributed among a great number of separate plots, adjoin the land of no less than 22 neighbours, these including one organic producer and nine IP-Suisse farmers. Under such circumstances, fears GIS specialist Schlatter, "Organic farming would become simply impossible in western Switzerland".

Of course not all non-label farmers will want to cultivate genetically modified crops. Nonetheless, Bernadette Oehen's studies have made her all the more convinced of the vital need for the Swiss GMO-free initiative with a five-year moratorium on cultivation: "I really cannot see how coexistence is supposed to function in the mosaic of small-scale land use that characterizes Swiss agriculture."

ta

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Topographic data: GG25 © swisstopo and agricultural climate suitability map © BFS GEOSTAT/ARE/BLW. Agricultural data: IP Suisse and BFS.



Species-specific behaviour and animal health

Livestock husbandry systems which fulfil the welfare requirements of animals have made great strides in the past ten years. Improvements were primarily ethically motivated. However, developments in animal health vary and the how and why of this is less obvious. Three PhD students at FiBL are exploring this issue. They have demonstrated that species-specific behaviour yields health benefits.

Husbandry systems which fulfil the welfare requirements of animals are gaining ground in modern dairy farming. Nevertheless, performance characteristics such as milk yield, nutrient content, and fertility are still being given a higher emphasis in the breeding and keeping of cows than the intrinsic characteristics of these beings. The expression of species-specific behaviour can influence the constitution and thus the health of the animals.

This is the hypothesis Anet Spengler Neff has put forward for her dissertation, which she is preparing together with Claudia Schneider and Silvia Ivemeyer (both of whom are also working on their own dissertations, partly within the context of the “Pro-Q” project; see p. 22/23). Claudia Schneider is looking at appropriate criteria for the design of loose houses and dimensions which allow for the keeping of horned dairy cows. Silvia Ivemeyer is looking at the social structures within dairy herds and the relationships between the animals and their keepers.

Anet Spengler has tried to establish a link between behaviour and the susceptibility to illness in a herd of 60 dairy cows on the Gut Rheinau holding. To this end she and her team observed the cows’ ruminating behaviour, i.e. the total ruminating time per day as well as the frequency and duration of the individual ruminating periods. The number of jaw movements per bolus and the chewing time per bolus were also repeatedly recorded for all cows. Anet Spengler sought further indicators of digestive activity in the composition of the faeces of individual animals.

Calmer cows, lower cell counts

An important part of the work involved assessing the cows’ temperament. Each cow was assessed on the basis of a scale ranging from 1 (= very nervous) to 5 (= very calm) while the animals were brushed with curry-comb and brush. This assessment was carried out three times by the same person during summer feeding and four times together with another person during winter feeding. For almost all animals the various assessments were quite consistent.

The “Body Condition Score” method was used 18 times in 9 months to assess body condition. Additionally, vet bills, herdbook notes, udder health surveys, milk cell counts and fertility data were available for the assessment of the animals’ health.

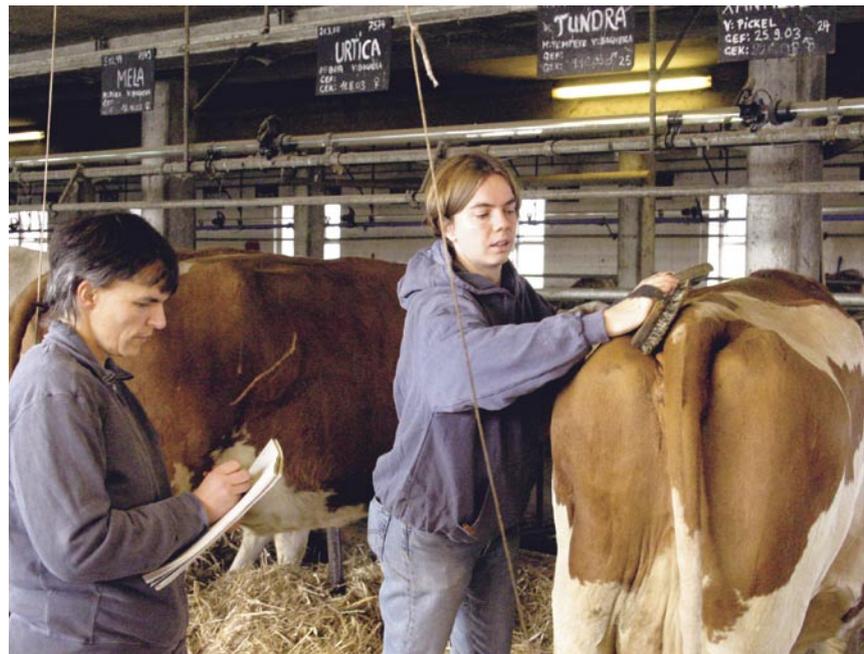
The evaluation of the large amount of data gathered so far shows that there is a link between the cows’ temperament and their udder health. Calmer cows have a lower milk cell count which means that their udders are healthier. This finding supports the research thesis. In a dairy cow which spends two thirds of the day eating and chewing

the cud, has an immense metabolism and thus focuses its energies mostly in an inward direction, a calm temperament can be regarded as typical for the species. A further finding is that cows whose body conditions fluctuate strongly, i.e. which lose a lot of weight during lactation and then gain a lot of weight again, suffer from a higher incidence of metabolic and fertility disorders.

Other observations during the study do not yet permit firm conclusions, but interesting assumptions are being made. *als*

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Anet Spengler and Silvia Ivemeyer assessing the temperament of individual cows during brushing.



“Pro-Q”: Improving animal health

With the “Pro-Q” project FiBL strives for broad-scale improvements in animal health. On an organic farm the maintenance of animals’ health should be the first priority. If the intervention of a veterinarian is required then it should be carried out using complementary medicine. In organic husbandry conventional treatments are only to be considered as exceptions.

Pursuant to the Swiss Organic Farming Ordinance and organic label standards, preventative health care in organic husbandry relies on adapted breeding, good husbandry, and appropriate feeding in order to improve the animals’ resistance. Should an animal nevertheless become ill, the Organic Farming Ordinance states that complementary veterinary treatments are to be used preferentially. Conventional treatments are only to be considered as exceptions, for example, for animal welfare reasons. This is in keeping with ethologically sound organic husbandry. However, the application of this guiding principle on the farms is as yet unsatisfactory. For this reason FiBL started the “Pro-Q” project in 2003 with the aim of improving animal health, thus minimizing unnecessary treatments and especially antibiotic treatments.

The Q in the project title refers phonetically – in German – to the animal at the heart of the project, i.e. the cow (in German ‘Kuh’, pronounced ‘coo’) and, in particular, the dairy cow. The Q further stands for ‘quality’, as the project also aims to improve the quality of milk production. Project objectives include an increase in the proportion of deliverable organic milk and a longer productive life

of dairy cows. In line with organic standards, the project concentrates on husbandry systems and herd management.

The first step is data collection

FiBL plans to include an additional 100 organic holdings per year in the Pro-Q project and to provide management support for them. The FiBL veterinarians visit each participating farm a number of times. At first they gather data and record observations on housing, feeding management, and milking. Milk samples are taken from each teat of every cow in the herd. These are submitted for bacteriological analysis and cell counts. The advisor from the cantonal Dairy Inspection and Advisory Service (MIBD) also visits the farm and takes a close look at milking techniques on the holding.

As a next step the Pro-Q team discusses the housing situation with the farmers and the veterinarian. Together they draw up measures to be implemented over the following twelve months in order to improve animal health and minimize the use of antibiotics. Fritz Heil, FiBL veterinarian and project leader, emphasizes that “the point is not to

lecture the farmers but to draw their attention to the things they really already know.”

The veterinarians don’t want to turn all the usual routines upside down. Fritz Heil considers two to three important changes as realistic. “Routine is very important in general husbandry and in milking. If one tries to change too many things at one time new mistakes can easily creep in.” The veterinarian has noted that in a number of cases even just continuous dialogue about the cows and their management has been surprisingly successful. Cows which display udder problems are observed more closely prior to being dried off, after parturition, and in cases of acute illness. If neces-

Data recording at the milking stand using a pocket computer.





FiBL veterinarian Fritz Heil assesses the husbandry system in the open yard, while being scrutinized himself.

sary they are examined and treated. Where required the attendant veterinarians are introduced to complementary medicine and to homeopathic medicine in particular. The company Weleda provides them with a basic kit of homeopathic drugs. They thus have the tools to treat sick animals in a complementary manner following consultation with the Pro-Q team.

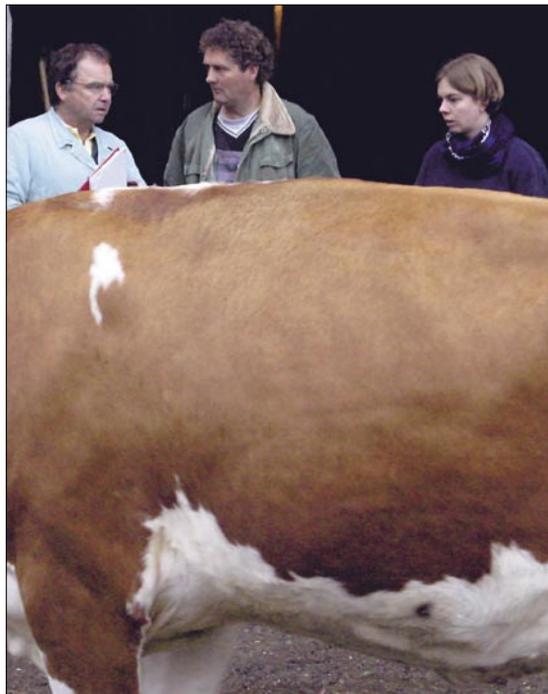
After twelve months the FiBL veterinarians precisely survey and observe the herd again in order to record any changes. At this point it will become clear whether the measures implemented during the previous year have yielded results. From the third year of the project onwards (2005) FiBL will also survey the holdings in terms of their economic performance in order to identify any economic effect of the measures taken. *als*

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Through its Naturaplan fund, Coop supports projects that centre on sustainability. One of the fund's focuses is the promotion of organic farming in Switzerland. By financing three major FiBL research projects, we aim to contribute

to further developing a strong and innovative organic farming sector – for the future should belong to high-quality, organically produced food. **■ Kathrin Rapp Schürmann, Coop Switzerland**



The Pro-Q team in discussion with organic farmer Andreas Ineichen (centre), Bruderholzfarm in Oberwil, Basel District.



Organic cattle breeding: What do practitioners think?

An organic dairy cow should be healthy, fertile and long-lived. And give a good milk yield from feedstuffs grown on the farm. Now the findings of a survey show how far these breeding goals can be put into practice on Swiss organic dairy farms.



Working with dedication and determination for organic cattle breeding: Beat Bapst (left).

“There has been plenty of discussion among organic breeders in the past of the traits the ideal organic dairy cow should possess,” says Beat Bapst. He is responsible for the Organic Cattle Breeding Division of FiBL. The breeding goals are well known – now ways must be found of achieving them. “But before people set off in pursuit of a goal, they should be clear where they are starting from,” Bapst reminds us. He feels that so far, there has been scant knowledge about the current breeding situation, and about associated problems on organic farms.

That is why, in summer 2003, Beat Bapst and Edda Haas carried out a survey among organic dairy farmers. They wrote to 1,000 farms, a good quarter of all Swiss organic dairy producers. Over 60 percent of farms filled out the seven-page questionnaire. Bapst finds the high response rate particularly gratifying, because it demonstrates that organic farmers really are interested in the subject of dairy cattle breeding.

Perceived state of play in breeding

On a quarter of organic dairy farms, milk production is problem-free. These tend to be farms which make prolonged use of the cows, and seldom resort to food concentrate.

In the mountains, 34 percent of those questioned mention fertility problems, compared with 26 percent in val-

ley locations. Other problematic points are feeding and inadequate yields. Two-thirds of participants are satisfied with the available sperm, whilst those who are dissatisfied would prefer a more varied selection of bulls to choose from.

Bapst is particularly interested in how useful farm managers find the Swiss organic cattle breeding index (Ökozuchtwert, ÖZW). Over 80 percent of the farms questioned expressed fundamentally positive views, even if they would often prefer to weight the individual traits differently. “Today’s cows do not quite meet the requirements of organic agriculture. More still needs to be done by breeders,” Bapst sums up the way organic farmers feel in general about the breeding situation. Many farms are working towards a breeding strategy adapted to organic agriculture; but specific requests and demands are also being voiced. The importance of health traits is something organic farmers are aware of, but further efforts are needed to put the criteria into practice.

Difficulty of breeding for health traits

From his earlier work, Bapst knows that worldwide there are very few tried and tested methods by which breeders can improve health directly. The main difficulty lies in the fact that heredity has a far greater influence on production traits like milk yield than on functional traits like fertility and longevity. Moreover, these two performance complexes inhibit one another, and no suitable methods have been found for measuring the health aspects.

The way forward, in Bapst’s view, should be combination of the farm-specific approach along with even closer co-operation with breeding organizations. Thus for example, female animals which are suitable for organic agriculture could be labelled. Bapst hopes, with good reason, that such demands will be considered. Because, for some breeding organizations, organic farmers already account for up to 15 percent of the clientele. And the results of this survey now equip the proponents of organic farming with a sound basis for developing strategies and cooperating with the organizations.

ta

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Gastro-intestinal parasites: Could there be a herbal cure?

*Does phytotherapy offer an alternative to conventional vermicides for the treatment of gastro-intestinal parasites in small ruminants? FiBL tested five medicinal plants on a herd of sheep. One of these, the fine-leaved fumitory (*Fumaria parviflora*), has produced some very encouraging results.*

Gastro-intestinal parasites are extremely prevalent in sheep and goats, and can be the cause of severe economic losses. In organic agriculture, the use of conventional vermicides is only permitted if analysis of a faecal sample proves that the infestation is troublesome. But even when the use of these remedies is carefully targeted, resistance will often develop. Hence the interest in finding a plant-based method of treatment.

As part of a project co-financed by the Swiss Federal Veterinary Office (Bundesamt für Veterinärwesen) and the Swiss animal welfare association Schweizer Tierschutz, FiBL collaborated with the Institute of Parasitology, University of Zurich and the Institute of Pharmaceutical Sciences at the Swiss Federal Institute of Technology (ETH) Zurich to test the efficacy of five plants in the control of worms. The plants concerned were from Pakistan, where they are commonly used in traditional veterinary medicine. A review of the literature was undertaken in order to select the plants and identify methods of drug manufacture.

Light on the horizon

The trial was carried out on forty lambs which had been artificially infected with larvae. The efficacy of the treatment was evaluated by means of faecal analyses, and a post mortem after slaughter. One of the plants used, the fine-leaved fumitory (*Fumaria parviflora*), exhibited the same efficacy as the conventional drug administered to the control group.

Further tests are planned to confirm the results and to ensure that the extract of fumitory at the necessary dosage is not toxic to the animals. Furthermore, there are plans to analyse the constituent substances of this plant in order to gain a better understanding of its mode of action. “A tricky undertaking”, explains Veronika Maurer from the Veterinary Parasitology Division of FiBL, “because not only must we study each constituent substance separately, we also have to take into account how the substances interact.” An additional difficulty of phytotherapy: the constituents of a plant can change as plants grow, sometimes even in the course of a single day. cs

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There are plants which definitely have the potential to replace conventional gastro-intestinal worm treatments. Such alternatives could be of particular interest to developing countries, where small ruminants are often of vital economic importance.



Veronika Maurer



An extract of the fine-leaved fumitory, native to Pakistan, produced excellent results. FiBL is also investigating the potential for using the European native species, the common fumitory.



Four days after treatment with an extract of *Fumaria parviflora*, the sheep's faecal samples are free of gastro-intestinal worm eggs.

Moulting: Should organic chickens shed feathers?

Layers in large herds usually lay eggs for twelve months and are slaughtered at 68 weeks. If the moult was induced artificially they could live for another six months. This would be more in keeping with the ethical principles of organic agriculture. Esther Zeltner has studied how the moult can be undertaken in an ethologically sound manner.

In organic egg production, as in conventional production, layer hens are usually kept in annual rotations. They are housed in the layer houses at 18 weeks, then lay for 50 weeks after which the birds are slaughtered. After twelve to fifteen months of laying the first birds would moult naturally for the first time.

During the moult the hens pause in their egg-laying. They regenerate their reproductive organs and renew their

plumage. In large herds it is not possible to let the natural moult run its course as not all birds pass through this phase at the same time. Moulting hens with their patchy plumage often attract those not yet moulting and are attacked by them, which leads to suffering for the attacked birds and creates unrest in the flock.

Producers can avoid these problems by restricting feed and reducing lighting and thus causing stress, which artificially induces the moult in the entire flock at the same time. However, forced moulting is not permitted on Swiss organic holdings pursuant to the standards of BIO SUISSE, Demeter and KAG as well as the Swiss Organic Farming Ordinance.

Not a major burden for the hens

From an ethical point of view induced moulting would not be unwelcome if it could be undertaken in an ethologically sound manner. The hens could live for another six months and could continue to lay eggs. Less chicks would need to be raised which also means that a third less of male chicks would need to be killed. For this reason the FiBL ethologist Esther Zeltner embarked on a study on induced moulting, as proposed by the Hosberg AG company and supported by Migros-Genossenschafts-Bund, a major Swiss food retailer. The objective of the study was to find an organically acceptable method of induced moulting.

In a first step Zeltner compared three different moulting programmes in four groups of hens for each programme: One restrictive “conventional programme” where food and light are severely withdrawn and without the provision of range, one less restrictive programme including the feeding of plenty of bran and access to the winter garden, and one lenient system with bran and oats and daily access to the winter garden and to pasture.

The medium strict moulting programme with ad-lib bran feeding yielded the best results. As a second step Esther Zeltner tested the workability of this programme on eight organic holdings with layer hen units. The results were encouraging. She was quite surprised herself to see that the incidences of feather-pecking even declined during the moult.

The behavioural scientist concludes that “from the results there is no evidence for a major burden on the hens resulting from induced moulting.” With this conclusion the discussion on the ban of artificial induction of moulting in the organic standards has been repositioned. *als*

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FiBL ethologist Esther Zeltner assessing the plumage of a layer hen after moult.



Socio-economics

Farm network: Putting entrepreneurial freedom to good use

There are few baseline data available for economic research in organic farming. With the new farm network, FiBL, in cooperation with farmers, aims at improving this basis for research and extension.

Fifty-five holdings are involved in the Betriebsnetz Bio forschung farm network. They are divided into eleven holding types in the major regions of Romandie, Central Switzerland/Bern und Eastern Switzerland. Christine Rudmann pulls all the strings.



What type of entrepreneurial abilities does a farmer need on a dairy farm? Which abilities are required on a holding engaging in vegetable production?

These are the types of questions which are of central importance to the agro-economist Christine Rudmann, especially in times of radical change in agriculture. "At the operative level, i.e. in production techniques, the holdings are very well provided for by the advisory services", says Rudmann. At the normative level, i.e. in terms of the framework conditions as determined by agricultural policies, the farm managers have relatively little room for manoeuvre. Between these two there is the strategic level. And even though it is at this level that there is the greatest degree of entrepreneurship, research provides relatively few baseline data to the advisors on this front, Rudmann states.

Socio-economic field research

As part of the Betriebsnetz Bioforschung project ('farm network for organic research') she would like to address socio-economic topics in cooperation with advisors and practitioners. Obviously very different issues arise on a suckler cow enterprise in a mountainous region than on a vegetable production unit in a valley situation. Therefore she has defined eleven holding types. Each group comprises five farms. The entire farm network thus comprises

55 organic holdings. However, Rudmann does not have to reinvent the wheel. In Romandie, for example, she can draw on holdings which are part of the existing network of the western Swiss agricultural extension service SRVA (Service romand de vulgarisation agricole). Also for each group at least three farms currently forming part of the central evaluation scheme of the FAT (Swiss Federal Research Station for Agricultural Economics and Engineering) are to be encouraged to participate in the network.

What are the most important objectives of the farm network? According to Rudmann the aim is to "provide economic reference data for organic farming and to carry out participatory economic research." To this end she will evaluate the farm accounts of the participating holdings and discuss possible improvements with the managers. Apart from the income data the farm network is to provide reference data on production costs. The first results are expected to be available in 2005.

Current topics addressed by the farmers will also be dealt with. The research projects resulting from these will be carried out in cooperation with the advisors and the farmers.

ta

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How does organic policy work in Europe?

Organic agriculture, which began as a movement opposed to the agricultural policy mainstream, is now increasingly influenced by official agricultural policy. A network analysis shows how the organic movement is involved in agricultural policy processes.

“The state has taken control of successive spheres of responsibility which were originally the role of organic farming organizations. You only have to think of the regulations on organic production,” says Matthias Stolze of the Socio-Economics Division. Together with Nic Lampkin of the University of Wales, he is leading an EU project on agricultural policy for organic farming in 11 European countries.

“As a result of its stance against the agricultural policy mainstream, organic agriculture has developed largely independently from the official institutions,” explains Stolze. As a consequence, organic institutions have decentral structures; so only in scattered instances are the collective interests of organic farming represented collectively. Stolze calls upon the organic sector to establish its own political structures and forge links with the policy actors in public institutions, and with mainstream agriculture.

“In our EU project we are studying organic farming policy on three levels,” Stolze explains. “Firstly, existing policy on organic agriculture in 11 countries is being analysed and evaluated. Secondly, we will look at the impacts of policy on farmers’ incomes in these countries. And thirdly, we would like to know if, and how, the policy networks are functioning. From our findings, we will derive policy recommendations for all parties involved.”

Making interrelationships visible

How intensively are particular institutions integrated into political processes? Where do their paths converge? Heidrun Moschitz, responsible for this third part of the project, had to come up with a method which allowed such questions to be answered in a standardized form. “We are particularly interested in cross-comparisons between European countries,” she says. She found a suitable approach from the political and social sciences: with network analysis, developed in these fields, it is possible to characterize the attributes of actors, organizations and events as well as types of relationships and network structures.

In every country, Moschitz and her research colleagues questioned 20 representatives of agricultural and political organizations. The project team wanted to know how intensively particular organizations were engaged in interaction with other organizations on organic farming policy issues.

A computer program calculates comparable parameters for the networks and presents each country’s results in diagrammatic form as a network of relationships. To interpret these “biopolitical maps” Moschitz concentrates on how many connections run from each actor to the others, where the centres are located and which organizations are operating at the margins of the system. Because the

diagram also shows the direction of the interaction, she is also able to distinguish between more active and more passive institutions.

Moschitz cites the networks in Switzerland and Austria as examples: “Both countries have a comparable percentage of organic production. Nevertheless, they turn out to have completely different network diagrams.” In Austria, state bodies assume a far more central position than in Switzerland, where BIO SUISSE is the main organization dominating the policy scene. “Our analyses provide a basis for making specific recommendations to associations on what action they should take,” Moschitz asserts with conviction. “We can also simulate potential changes. For example, if the three Austrian farmers’ organizations were to merge, the result would be a situation closer to that in Switzerland.”

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Policy for organic agriculture: Heidrun Moschitz and Matthias Stolze compare the results of network analyses from different European countries



Organic products need impact and appeal!

In Germany, organic products are sold in a fiercely competitive pricing environment. To achieve consistent sales in the long-term, it is vital to present products for maximum customer appeal. FiBL has developed recommendations for the food trade.



Top left: Examples of attractive presentation, doing justice to customer wishes such as labelling and quality information.

Gabriele Hempfling (left) and Katharina Meyer take a close look at how organic products are presented in German supermarkets.

Poor presentation of organic products is “simply throwing away potential sales,” says Gabriele Hempfling from FiBL’s Socio-Economics Division. The quality of organic product presentation is often far inferior to the quality of the products themselves.

The Federal German Ministry of Consumer Protection, Food and Agriculture (BMVEL) made the same finding. Under the German Federal ‘Organic Agriculture’ Programme, FiBL was therefore commissioned to work with two business consultancy firms, Synergie and Ecozept, to develop a guide for evaluating and improving the presentation of organic products. FiBL focused on wholesale distributors, while Ecozept developed recommendations for bakers and butchers and Synergie looked at specialist organic food stores.

“This cooperation was very worthwhile for all participants, because every partner could benefit from the experience and knowledge of the others,” reports Gabriele Hempfling with satisfaction. In workshops with senior representatives from wholesalers, and in interviews with marketing experts, she and her colleague Toralf Richter brought together all the experience on presentation concepts that practitioners were able to contribute.

Treating organic products like branded products

The team adapted the results of the project work and the wealth of experience assembled by the three institutions to produce three brochures. Each was targeted towards the needs of a particular target group: retailers, wholefood stores, and bakers and butchers.

“How can I tell if products are organic?” “Why do organic products cost more?” These are the questions that consumers commonly ask. The brochure contains all the

key facts and figures on organic agriculture that should be known to competent sales staff.

Different forms of placement are also discussed: When should organic products be integrated with the conventional range? Does it make sense to place all organic products in a product group together, milk with dairy products for example? Or what are the advantages and disadvantages of a separate organic section?

Moreover the 40-page brochures give tips on product range composition and product presentation techniques. Issues such as advertising and information, sales promotion campaigns and the in-store atmosphere are discussed with particular reference to organic products. Using a checklist, managers themselves can check the quality of organic product presentation in their stores, and improve it where necessary.

“However, there are no ready-made solutions,” says Gabriele Hempfling. Every business needs to find its own individual concept. The same basic placement and presentation rules apply to organic products as to branded products. In other words, they should be placed at eye level, and in other prime selling zones.

The response from bakeries, butchers and wholefood stores to the guide was very positive. “The wholesalers are familiar with the marketing concepts. They just tend not to put them into action,” Hempfling concludes. *gh/ta*

The brochures can be ordered and downloaded at www.oekolandbau.de

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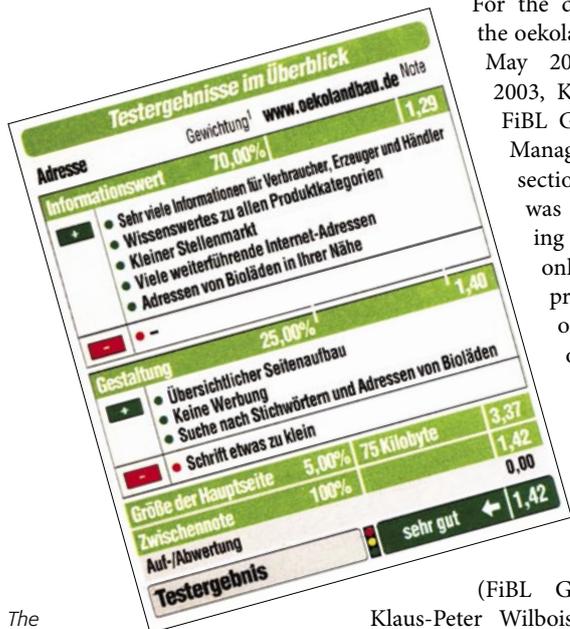




Training and extension

The oekolandbau.de online editorial team: How ideas reach the Internet

The rich content that users browse through, click by click, on the Internet is actually a whole series of individual files. A look behind the scenes of the 'Producers' section of oekolandbau.de shows the passage of a text, from the idea to the Internet page.



The "Computerbild" computer magazine (circulation: 800,000) tested websites in its issue 18/2003. Oekolandbau.de received an "excellent" grade.

For the development phase of the oekolandbau.de portal from May 2002 until November 2003, Klaus-Peter Wilbois of FiBL Germany was Content Manager for the 'Producers' section. In other words, he was responsible for selecting topics and authors for online articles aimed at producers. He could rely on support from various sources including Marion Morgner of FiBL Frick, who had editorial control of all the FiBL articles from Switzerland.

In March 2003, Cordula Binder (FiBL Germany) took over Klaus-Peter Wilbois' responsibilities, although he remains available in an advisory capacity.

Managing electronic texts and images

As editor for the 'Producers' section, it is Cordula Binder who processes the specialist authors' texts. Once the development phase was over, she also took overall charge of the editorial team and now works at FiBL in Frankfurt. First she checks the articles are internally consistent and make good sense. If necessary, she polishes the wording and style. The architecture of the portal is also important:

how many levels a reader has to click through, and how these should be linked up, is something that needs to be thought through. Without a coherent architecture, Internet users would have difficulty in finding their way through the volume of information.

To make the right impact online, other vital aspects are image selection and cropping, and the layout of tables and artwork. At an online editorial desk, these are all jobs for the editor. Using special software known as a Content Management System, the texts and images are made 'Internet ready'. Finally, a click on the 'Publish' button uploads the articles to the website.

When the website first went live at the beginning of September 2002, the 'Producers' information section contained about 150 different articles. Today this section has grown to around 1000 articles, along with eight interactive planning and reference tools. In future, the portal team's main priorities will be keeping the existing content updated, and reporting on the results of projects under the Federal 'Organic Agriculture' Programme (Bundesprogramm ökologischer Landbau, BÖL). In addition, there will be news from all areas of organic agriculture. Because, as Cordula Binder says: "People surfing to our site should find out about the very latest developments in the organic world." m

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oekolandbau.de – the information portal

In a little under two years FiBL, working with the German Centre for Documentation and Information in Agriculture (Zentralstelle für Agrardokumentation und –information, ZADI) and the Foundation Ecology and Agriculture (Stiftung Ökologie und Landbau, SÖL), has built an Internet portal on organic agriculture which is virtually unrivalled. The portal has seven self-contained information sections: for producers, consumers, processors, traders, large consumers, children and young people.

FiBL's role was overall coordination of the project, scientific leadership, and content design for the 'Producers' and 'Children' sections. In spring 2004 the project group consisting of FiBL, ZADI and SÖL had its contract renewed, for ongoing maintenance of the portal. The project leader for FiBL is Robert Hermanowski.

Besides daily news, the portal now has a content base ranging across some 3000 articles, over 11,000 addresses and more than 700 downloadable documents. An undiscovered gem is its picture archive containing around 3000 professional photos, which may be used free of charge provided that the source is acknowledged.

The planning, construction and technical implementation of the Internet portal oekolandbau.de depended upon the efforts of a large team. 10 permanent and around 100 freelance staff were involved in content production, editorial and technical work, and project organization during the first two years.

The 'German Central Internet Portal on Organic Agriculture' (www.oekolandbau.de) is a major initiative under the Federal 'Organic Agriculture' Programme, set up by the German Federal Ministry of Consumer Protection, Food and Agriculture (BMVEL). mm

Services online: FiBL as a multi-faceted provider

Accessibility, content management, usability – the Internet has a language of its own; a language that ordinary Internet users do not necessarily speak. The challenge of identifying their needs, creating appropriate content, implementing technical functions and formatting it attractively for the Web falls to the FiBL Internet team.

In the last few years, the Internet has changed the face of the media, and is now as matter-of-fact as TV, press or radio.

FiBL quickly adapted to this change in the information landscape. For a number of years, it has been publishing information on organic agriculture on the Internet, adapted for the online medium and tailored to the needs of different target groups. In the FiBL Internet team, colleagues from several divisions combine to provide a complete package of customized services including concept generation, design, technical implementation, content management and editorial support.

50 websites built to date

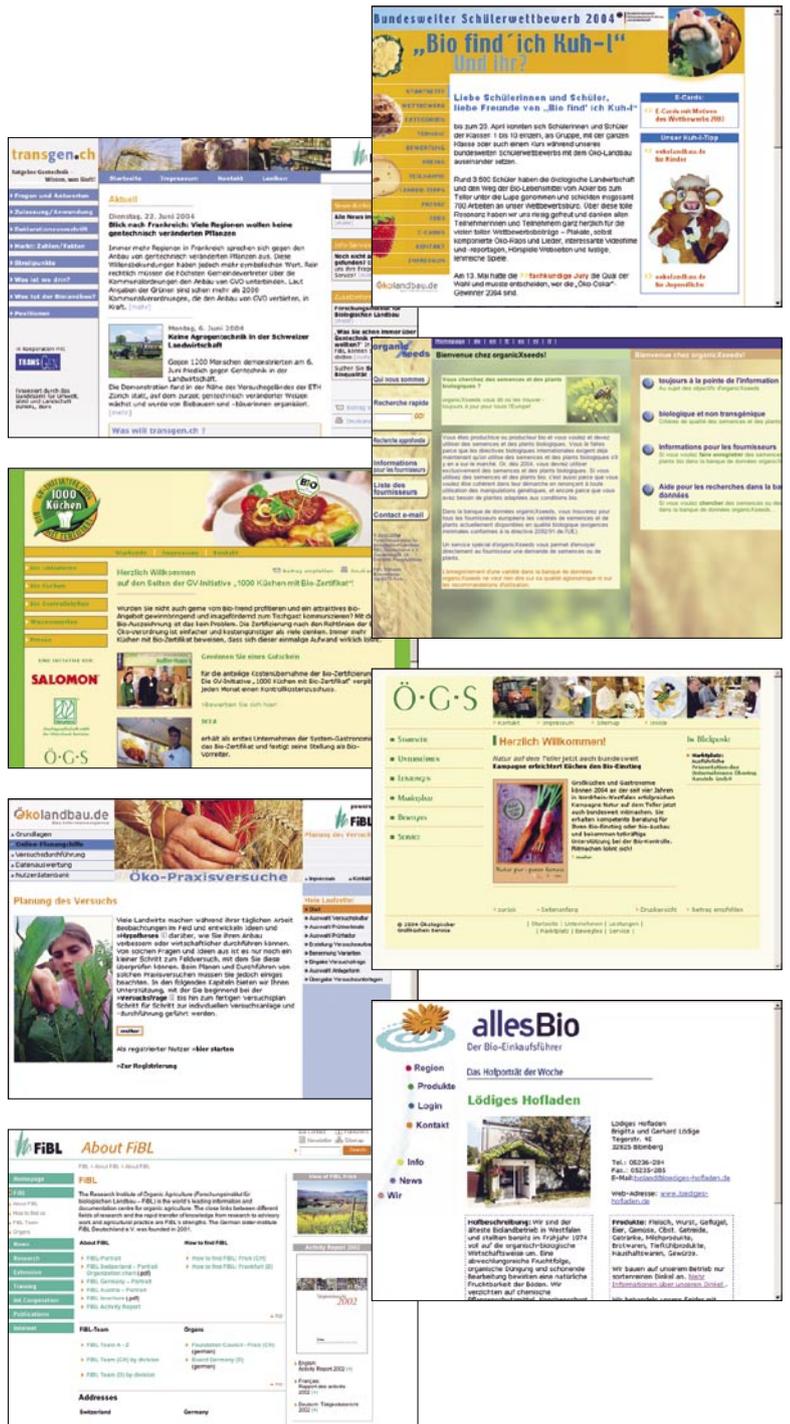
Using a standardized 'site builder package' system, for example, a FiBL research group can build a site appropriate to the needs of their project. The standard package includes a basic site layout with all essential functions. Research groups often find it important to have password-protected areas where experts can deposit documents and share information.

Database-driven areas are technically more demanding. These include address, project or listings databases, which have to be extremely user-friendly. This is another area where FiBL already has considerable experience. Examples of successful development work include the organic seed suppliers' database, organicXseeds.com, and www.praxisversuche.de, a guide for practitioners conducting field trials on their farms.

FiBL also implements services like the 'Product Presentation Checklist' on the Central Internet Portal oekolandbau.de, which traders can use to assess the strengths and weaknesses of their organic offerings. For those wishing to benefit from an 'all-in' service, FiBL can also provide site content management and editorial support.

To date, FiBL has seen around 50 of its websites 'go live'. Another FiBL calling card is the Institute's own Internet service, with the online FiBL Shop for data sheets, CDs and other publications. After an overhaul and redesign in the year 2003, the website is now an established presence, attracting around 3000 visitors per week. Thanks to FiBL's Internet experience, www is guaranteed not to stand for 'world wide waiting'! Users have fast and direct access to the information they want.

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Knowing who is researching what

The German research platform is an Internet-based effort to increase the transparency of research into organic farming, and to support the flow of scientific information.

“When exactly does the 8th Scientific Congress on Organic Agriculture take place?” - “The Federal Programme final report on poultry management was published yesterday, have you heard?” - “The professor appointed to the new Chair in Organic Agriculture in Dresden, what is his name?”

As of the end of 2003, help with these and similar questions on organic farming research has been on hand, on the research platform (see box) of the central Internet portal on organic agriculture. Its address: <http://forschung.oekolandbau.de>. The Internet service provides up-to-date information on all aspects of research in organic agriculture: besides news, event announcements, links and the addresses of research establishments and contacts, users will find an extensive database of scientific publications and project information. Once a month, a newsletter is sent out with information on organic farming research.

Database on organic research

The international Organic Eprints database linked to the research platform was developed by the Danish Research Centre for Organic Farming (DARCOF). It was then extended as part of a project under the German Federal ‘Organic Agriculture’ Programme, in cooperation with FiBL and other German research institutions.

The database gives free access to the full texts of numerous publications on organic agriculture. It already comprises a total of almost 2000 entries, of which more than 1000 originate from Germany and Switzerland. Organic Eprints offers all scientists the opportunity to add their

own publications on organic agriculture to the database, as a means of bringing their work into wider circulation within the research community. Furthermore they can pick up new information themselves from newly added articles.



Publicizing research findings

The research platform is the central instrument for communicating the results of research under the German Federal ‘Organic Agriculture’ Programme: all final reports are archived in the Organic

Eprints database, and announced with a message on the home page of the research platform. Selected research findings with relevance for practice are edited for their target readership and made available to professionals and practitioners via the central Internet portal. *jm*

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■ DARCOF, the Danish Research Centre for Organic Farming, initiated the Organic Eprints database with the aim of documenting research work, as a contribution to advancing research in organic agriculture. Publicly funded research should be



freely accessible.

Hence DARCOF archives all the results of its research activities in the database. The cooperation links with partners from other countries and the growing international use of the database are making the archive increasingly valuable. ■

Erik Steen Kristensen and Hugo Fjelsted Alrae, DARCOF



■ All FiBL publications since 2003 are documented in the Organic Eprints database. This makes FiBL research findings known around the world, and optimizes communication with research colleagues. ■

Helga Willer, FiBL Switzerland



■ We know a great deal, but not everyone necessarily shares in that knowledge. The research platform helps to make organic farming knowledge accessible to everyone. ■ *Gerold Rahmann, Institute of Organic Farming, Trenthorst*

The research platform is provided under the German Federal ‘Organic Agriculture’ Programme by the Research Institute of Organic Agriculture (FiBL) in collaboration with the Department of Organic Farming and Cropping at the University of Kassel (Witzenhausen), the German Federal Agricultural Research Centre’s Institute of Organic Farming, the Institute for Applied Ecology (Öko-Institut) and the Foundation Ecology and Agriculture (Stiftung Ökologie & Landbau, SÖL). Internet addresses: <http://forschung.oekolandbau.de> <http://orgprints.org>, <http://www.oekolandbau.de>

On 200 organic farms for all organic farms

On-farm research is an ideal complement to FiBL's research at its Frick location. It is flexible, practice-oriented, and solution-oriented. Different soil and climatic conditions can be considered.

At present, on-farm research, i.e. research carried out under 'real-life conditions' on farmers' holdings under the auspices of FiBL researchers and advisors, is being carried out on 200 farms. The trials are conducted on issues in organic farming which acutely require research work.

For example, in the Engadin region, strategies for avoiding the use of antibiotics in dairy cows are being developed in cooperation with organic farmers.

Another example is the disease Monilia which is a key problem in organic cherry production: New cherry varieties are quite susceptible to rain just before ripening. On participating commercial farms FiBL researchers found that a cover during the ripening period can significantly reduce Monilia infection.

In addition, FiBL frequently publishes variety recommendations for vegetables, cereals, and fruit with the varieties having been trialed on farms participating in the on-farm research programme in various locations throughout Switzerland.

It is planned that in future the organic farms contributing to FiBL research will receive more support in terms of acknowledging signage to be posted on livestock houses and field margins. Holdings involved in on-farm research are to be given an opportunity to present themselves on the Internet. The "bioaktuell" journal published jointly by FiBL and BIO SUISSE regularly carries articles on holdings participating in on-farm research. hw

New: A guide on field trials.

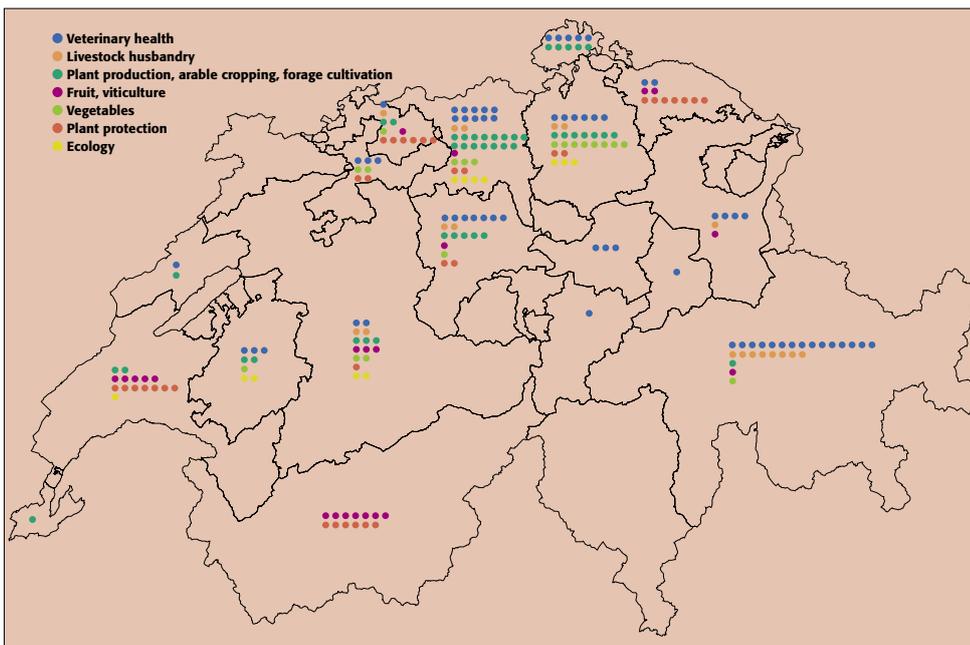
For a little while now FiBL on-farm research has been aided by an innovative instrument – the guide on field trials put together by FiBL Germany. At www.praxisversuche.de this guide has been made available to the public. It helps farmers and growers as well as advisors to carry out field trials. This aid has been developed in the context of the German Federal Programme for Organic Agriculture (Bundesprogramm ökologischer Landbau) in cooperation with the Leibniz-Centre for Agricultural Landscape and Land Use Research (ZALF) and the Gut Wilmersdorf organic holding in northern Germany.

Using the menu-led guide practitioners and advisors can establish, execute, and evaluate field trials. In a step-by-step process they are guided through and supported in the process of developing the research question, the selection of the trial site right through to the evaluation of the results. The data thus gained are of great interest as especially in organic farming site-specific factors play a major role. hw

Contact: FiBL Switzerland: res.schmutz@fibl.org;
FiBL Germany: klaus.wilbois@fibl.org

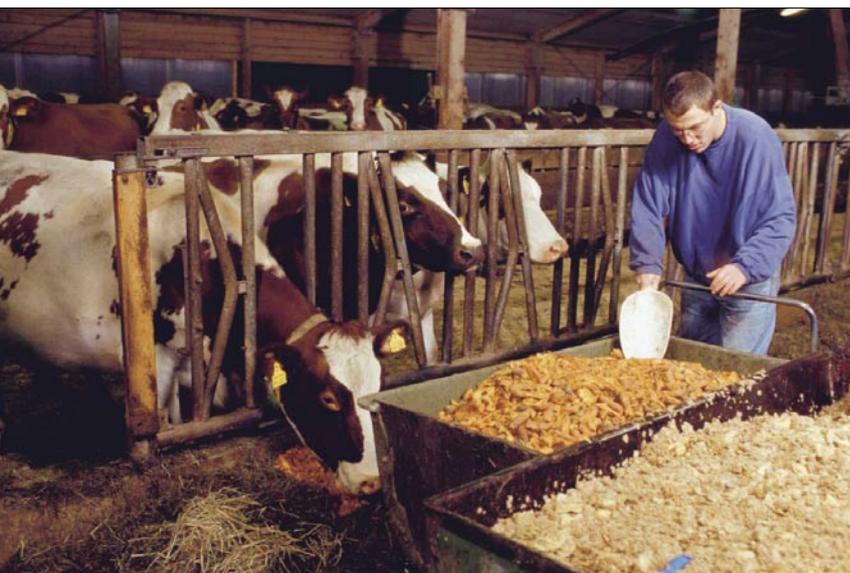
Left: On-farm research on Swiss organic farms.

Right: Research on the control of cherry fruit fly on the organic holding of the Büeler family in Aesch/BL.



Rediscovered: A role for agricultural work in disability care

One small segment has already achieved the German policy target of "more than 20 percent organic agriculture": the majority of agricultural units in workshops for people with disabilities adopt organic practices.



Crucial benefits: 60 percent of agricultural holdings for people with disabilities are already managed organically.

There is nothing particularly new about people with disabilities in Germany working in agriculture and horticulture. When institutions for the disabled were founded in the 19th century, normally in rural areas, they were equipped with a market garden to produce crops for their own use at the very least.

As food prices fell, however, producing their own food became more and more uneconomic. Moreover, the increasing mechanization of agriculture left few tasks to be done manually.

Since the 1980s, however, there has been a noticeable 'rediscovery' of agricultural work as a form of occupational therapy for people with disabilities. The therapeutic value of the varied outdoor work, not least the care of livestock, is highly rated. In view of these favourable conditions, the number of workshops for people with disabilities which include a horticultural or agricultural unit has risen to around 150 throughout Germany.

Organic agriculture as standard

The number of such enterprises farming organically is remarkable: a representative survey by the German Association of Organic Farming (AGÖL) in spring 1999 found that around 60 percent of agricultural and horticultural units for people with disabilities were managed organically. Certain benefits of organic agriculture help to explain this fantastic quota:

- Increased safety at work by avoiding chemicals.
- Worthwhile jobs which have been rationalized out of existence by chemicals use on conventional farms.
- Since little use is made of external inputs, the sequence of fertilizing, sowing, growing and harvesting on organic farms is much easier to understand.
- By charging appropriate prices, organically-run farms are better able to compete in the market.
- Direct marketing, e.g. farm shops, is a distinctive feature of organic farms, preventing the isolation of people with disabilities.
- Organic agriculture has a high degree of acceptance among the population.
- Opportunities for state assistance with land subsidies and investment promotion.

These clear advantages make the organic method of farming the standard choice in workshops for people with disabilities. Conventional farms are the exception – and most are already considering conversion to organic farming.

Advice and network support from FiBL

FiBL Germany is supporting the ongoing development of agricultural work for people with disabilities in Germany in a variety of ways.

- In 1994, the Evangelische Protestant rural youth academy (Landjugendakademie) started a course on "Working with people with disabilities in agriculture", and FiBL became the joint organizer in 2001. Since then, an annual national seminar has focused on the issues surrounding this thematic area.
- Information is disseminated via the Internet site www.gruene-werkstatt.de.
- Publications and lectures clarify how this work puts the concept of 'multifunctional agriculture' into practice.
- Farm-specific strategies for developing agricultural units for people with disabilities: conversion planning and advice, selecting and switching or expanding branches of production, securing and creating jobs.

rh

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Farm walks ideal for knowledge exchange

FiBL has not extended its research into organic tillage production any further. For the past two years this area has also been covered by Agroscope FAL (Swiss Federal Research Station for Agroecology and Agriculture) in Reckenholz. The FiBL advisory service in cooperation with the cantons carries out demonstration trials including farm walks on current topics relating to tillage production. FiBL continues to be the competent contact for farmers and BIO SUISSE committees.

Where do farmers go for know-how and new ideas? Training courses, advisory platforms on the Internet, scientific journals, information leaflets ... the information on offer to farmers is continuously on the increase.

“But communication amongst the farmers is mostly verbal” explains the head of the advisory services at the FiBL, Hansueli Dierauer. For him the farm walks offer the best opportunities for information exchanges on tillage production. In small groups the farmers can assess and discuss topics directly in the field such as how a new variety is presenting, what its growth characteristics are, and its pros and cons in terms of stability or resistance. In cooperation with the cantonal advisors, Dierauer establishes approximately 20 new demonstration trials

on organic farms every year throughout Switzerland. He looks after about one third of these trials with his FiBL colleague Daniel Böhler. The other trials are managed by the cantonal advisory services. Dierauer has taken over the countrywide coordination and evaluates the survey data and results supplied by the cantonal advisors.

The farm walks enjoy a good audience: During the summer between 20 and 60 farmers visit the trial sites each time. However, farmers concentrate strongly upon crop types. For this reason it has not yet been possible to establish a countrywide tillage production division.

Something new every year

Every year Dierauer strives to pick up on current topics of



Each year, FiBL's advisors set up about 30 demonstration trials, which they present to organic farmers through farm walks.

concern to practitioners in the demonstration trials. Over the past few years he and Daniel Böhler have carried out trials with regard to rotary band seeding in maize and have tested the “wide row” system in cereals. Strip trials help gain experience with “new” organic tillage crops such as soya, rapeseed, sugarbeet, and linseed. The farmers are particularly fond of variety trials in cereals, maize, grain legumes, and potatoes.

Just like the research questions, the participating farms also change. Usually the latter are long-standing experienced organic producers. The farmers are compensated for additional work and yield losses. Sometimes the farmers approach Dierauer with specific topics and at other times he himself proposes issues and invites farmers to participate.

Complementing, not competing with precision trials

“We design the strip trials to be as realistic as possible” Dierauer states. His colleagues in research sometimes find fault with the fact there are no repeats in these trials. Dierauer counters: “The seven sites, nicely spread out throughout Switzerland, are, in a sense, our repeats.” Time and again he notices that one of the reasons why the strip trials are so well accepted by the farmers is the fact

that they are carried out using the normal machines and implements they would use themselves.

In the selection of topics and in establishing the variety trials Dierauer works in cooperation with the persons responsible in the Reckenholz and Changins research institutes. He views the strip and field trials as a complement, not as a competition to the precision trials carried out by the research institutes. “We can quickly pick up on new ideas coming from the practitioners. We regard the trials as a preliminary stage of the research process”, he explains.

As a member of the special commission for cereals/tillage production and a representative of BIO SUISSE on the technical committee of swiss granum he can introduce the results and observations from the demonstration trials directly into these committees. *ta*

Contact: hansueli.dierauer@fibl.org



Farm walk in Holziken, in the canton of Aargau, on the holdings of Samuel Lüscher and Ruedi Lehmann. Here FiBL's Hansueli Dierauer has set up strip trials for new rye varieties.

FiBL publications: Highly regarded, much in demand

Research and consultancy are one side of the coin – the other is making the results and experience accessible to others, compiled into appealing CDs, brochures and books.

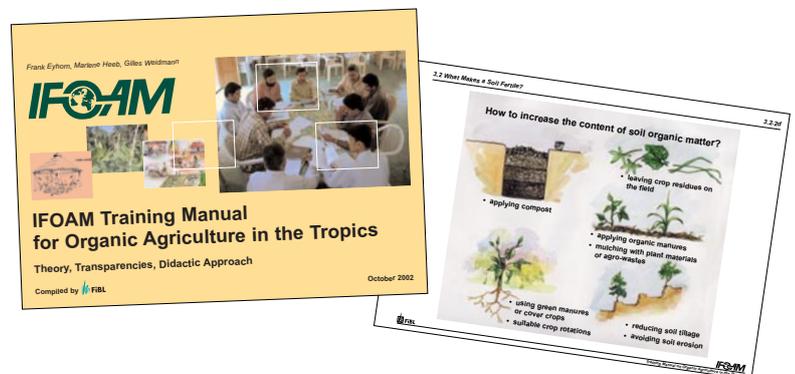


For many years, FiBL has been actively involved in the development of organic agriculture on the international level.



In the very successful 'IFOAM Training Manual for Organic Agriculture in the Tropics' its experience is already bearing fruit. IFOAM is delighted, especially when it comes to producing further training materials, to be able to benefit from the strength of FiBL and its competence in knowledge transfer.

Anne Boor, International Projects Manager, IFOAM



FiBL does this adeptly, and the results are highly regarded: A total of 187 publications are now available from the FiBL shop on the Institute's website, from a 200-page manual entitled "A Guide to Successful Organic Marketing Initiatives" to an information sheet on onion production. 67 of the publications are in French, English or Italian, with a few also available in additional languages. In the first half of 2004 alone, over 30 publications were brought out for the first time or completely updated.

Publishing readable literature on organic agriculture is no mean feat for authors and editors. They must always strike a balance between agricultural practice and academic theory, both in content and in style. First of all, themes must be chosen which are relevant to practitioners. Next, the material must be conveyed using clear language and presented in an attractive layout. FiBL seems to pull this off with great success. Why else would we receive so many enquiries about cooperating in this area?

But enough of this self-promotion! Read for yourself what our partners say about us.

mm

A good partnership is kept alive by people who are first of all willing to invest in it. Then the 'win-win' principle comes into play. The people at FiBL, who work with the Bioland advisory service on various projects, live out this principle of partnership.



Jan Plagge, Director of Bioland Advisory Service





“ The men and women on the staff at FiBL – from researchers to graphic designers – are open, professionally competent, and committed. These are ideal qualifications for putting scientific findings into a form that practitioners will be able to understand. ”



Susanna Küffer Heer, Demeter (Association for bio-dynamic agriculture)

“ FiBL understands how to combine research and advisory work on organic agriculture in a competence centre, whilst also integrating the work of organic farming practitioners. By virtue of these contacts, it is well rooted in practice. FiBL assembles knowledge from all these sources and skilfully reworks it for different target groups. Because of its professional expertise and the quality of its information transfer, FiBL is seen as a key partner by BIO SUISSE – the association of Swiss organic farming organizations. ”



Christian Voegeli, Association Coordinator, BIO SUISSE



Getting both content and form just right: Claudia Kirchgraber (graphic design), Marion Morgner (text editor) and Daniel Gorba (graphic design) producing a data sheet.



“ Since 1995, SRVA and FiBL have cooperated on the publication of French data sheets for organic agriculture. An example of longstanding and successful cooperation based on synergy and complementary skills. ”



Gerhard Hasinger, Organic Agriculture Coordinator, SRVA (Service romand de vulgarisation agricole)

International cooperation



Organic management to diversify Tunisian farming

Until now, Tunisia has largely sold its agricultural production as mass-produced goods at low prices on world markets. The government would like to free itself from this dependency, and diversify the agricultural sector. It is placing its hope in quality production by promoting organic agriculture.



Developing partnerships and networks is central to building a strong organic movement. On Mohamed Turki's farm, farmers from the region share their experience of organic agriculture and have access to expert input.

Ever since the 1980s, individual organic farms in Tunisia have produced dates and olive oil for export. For the most part, these isolated initiatives were left to fend for themselves until, at the end of the 1990s, government agricultural policy began to promote organic agriculture as part of a diversification strategy. In 1999, a statutory basis for organic farming was put in place.

The "Centre technique pour l'agriculture biologique CTAB" founded in the same year is now responsible for advisory work, training, documentation and research. Farms wishing to convert to organic production receive a contribution towards inspection and certification costs, and towards any new investment necessary to accomplish the conversion. State support has been the catalyst for dynamic development: Between 1999 and 2003, the number of organic farms has risen from 140 to over 500.

The United Nations Food and Agriculture Organization (FAO) is supporting Tunisia in organizing its embryonic organic movement, and has commissioned FiBL to provide advisory support to accompany this process. "Our main task is to work with Tunisian actors to develop a strategy for organic agriculture, and to support pilot projects," says Lukas Kilcher from FiBL's International Cooperation Division.

Jointly setting and pursuing goals

Organic farmers and processors, representatives from trade companies, research, consultancy and administration get together in participatory workshops to develop

common goals and priorities for future action. They discuss possible products, and the necessary logistics for processing and export.

Lukas Kilcher primarily attends such sessions to contribute his experience in production techniques. But his expertise in export and marketing techniques for international trade is also in demand. In Tunisia presentations were given on successful initiatives from neighbouring countries, such as the Sekkem project in Egypt.

"At the end of the one-week workshop, we had come up with several concrete marketing initiatives for the local and international market," reports Kilcher. For instance, producers joined forces to develop an organic harissa (a hot sauce) for Carrefour in Tunis. Another group intends to bottle organic olive oil in Tunisia and export it to Europe as a speciality product.

Developing partnerships and networks

"The progression from isolated initiatives to a strong organic movement is currently one of the greatest challenges," according to Lukas Kilcher. This is why the project calls for new partnerships to be formed at national and international level.

In practice, this means strengthening existing organic producer groups, forming a national organic organization and developing a local certification system. He mentions initial and further training opportunities as another important prerequisite for a successful organic movement.

'Ecole Paysanne' model

At the end of 2003, as part of this FAO project the Ministry of Agriculture established a 'farm school' (*Ecole Paysanne*) on organic pioneer Mohamed Turki's farm in northwest Tunisia. It was necessary to invest in some basic facilities such as a teaching room and a better composting plant. Participants in the courses and field walks are producers from the region who are interested in organic conversion; it is they who determine the course topics and how they are taught. The local advisory service is on hand to organize and moderate sessions.

The response to the 'Ecole Paysanne' model is enthusiastic, and it will now be put into practice in other regions of the country. *ta*

Contact: lukas.kilcher@fibl.org



Away from cheap, anonymous olive oil: organic agriculture helps to reduce dependency on world market prices and safeguard farmers' incomes.

A certification body for Romania

For years now, FiBL has been supporting Romania's growing organic movement by providing training and advice. Building upon a Romanian initiative, and in concert with internationally operating organizations, FiBL is now working since 2003 to establish a national organic certification body.

Romanian agriculture is in transition: As a result of the agricultural policy turnaround after the Ceaucescu dictatorship collapsed in 1989, 4.7 million Romanians gained ownership of agriculturally utilizable land.

Many small units are managed for a second income, and for self-provisioning. There are also large-scale farms covering thousands of hectares each, and family-owned farms with 10 to 150 hectares. 5000 to 7000 farms of all

sizes are now managed organically. Their output goes to the emerging domestic market – the Carrefour and Metro supermarket chains are starting to stock organic items; in addition, there is much direct marketing – and to export (cereals, dairy produce).

The Romanian government has established a statutory framework for organic farming. Direct payments for converting farms are even in the pipeline for 2004/05; these shall be financed by the EU.



Monika Schneider: "Putting a competent team together is one of the greatest challenges when establishing an organic certification body."

Ecoinspect – A Romanian inspection and certification company

The Romanian organic farmers' association Bioterra – set up with strong support from Swiss organic farmers and from Ostmission, the Christian eastern mission – approached FiBL with its idea of establishing a Romanian certification body.

Ecoinspect offered its services as partner. Ecoinspect is an inspection and certification company founded with support from Hungary (Biokontroll Hungaria). It provides its services to Romanian organic farmers at affordable prices, while conforming to strict international quality requirements. Financed by the Swiss State Secretariat for Economic Affairs (seco), this project closes a major gap in the range of services available to organic farmers in Romania. Ecoinspect's business plan envisages financial independence within four to five years.

FiBL supports Ecoinspect in developing its internal quality management system in order to be eligible for national and international accreditation. FiBL's Monika Schneider and Beate Huber advise Ecoinspect in all development phases and help to build local expertise in the fields of inspection, certification and accreditation. bio.inspecta, the Swiss certification company with close links to FiBL, participates in the training of inspectors and certifiers, and monitors their work during the start-up phase.

Ecoinspect makes an important contribution to networking the organic movement in Romania, fostering the domestic market and promoting East-East cooperation. The aim is for Ecoinspect to be operationally fully autonomous and internationally accredited by 2009.

ms/ta

Contact: monika.schneider@fibl.org

Worldwide research and development

Since its establishment, FiBL has been contributing to the development of the international organic agriculture movement. Through its intensive participation in IFOAM and in numerous other international institutions, and building upon its experience in research, education and training, extension and certification both at home and abroad, FiBL can cater as a partner to a broad audience:

- Producers, traders and processing companies
- State and private research institutions
- Education, training, and advisory facilities
- Development agencies and NGOs
- Authorities and other public institutions.

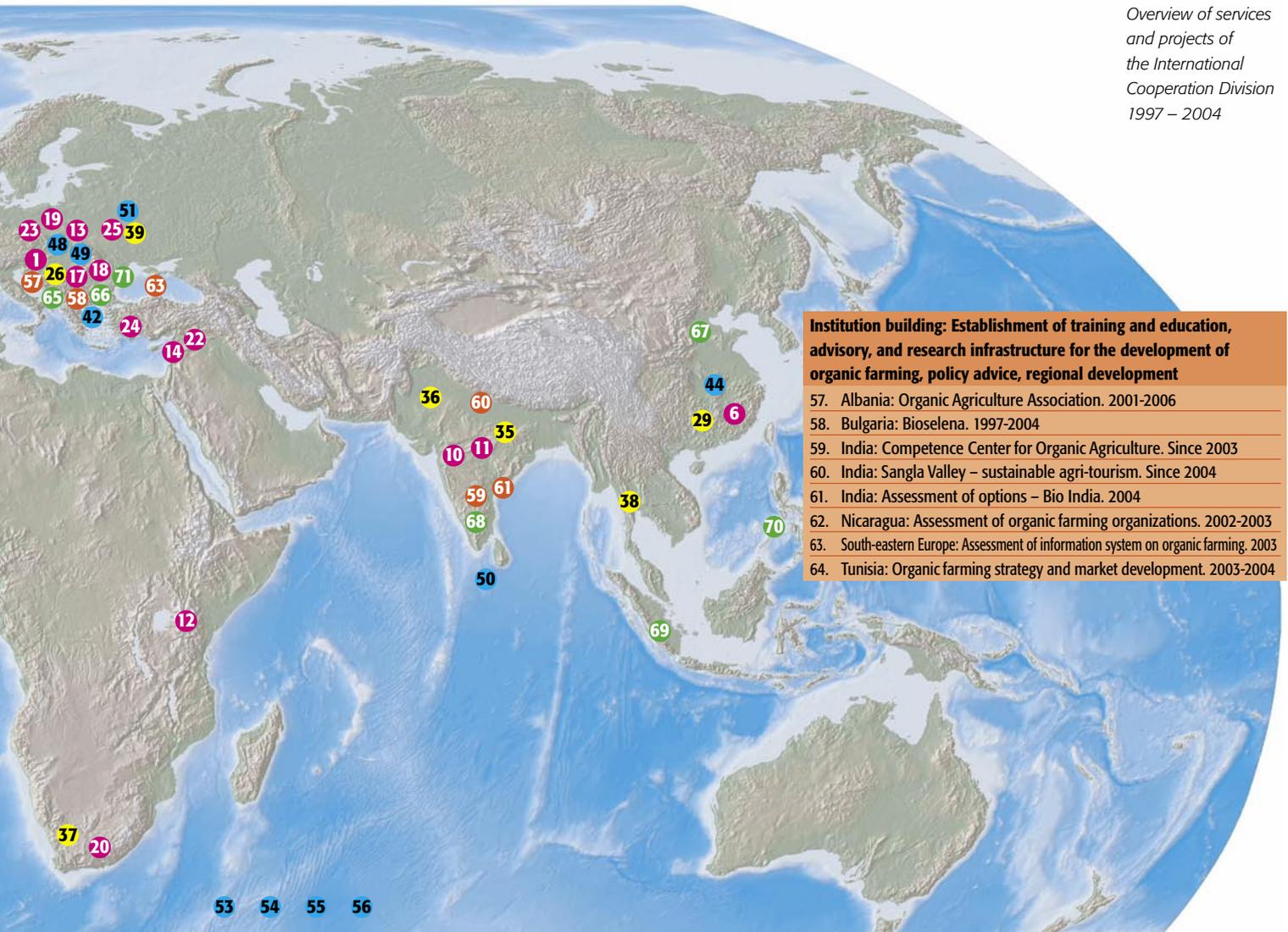
Development of organic farming in South and East: regionally adapted cultivation systems, system comparisons, conversion studies and conversion planning

1. Albania: Conversion advice – herbs. 1998-2000
2. Argentina: Biodiversity criteria for citrus production. 2000-2001
3. Brazil: Conversion advice – tropical fruit. 2000-2001
4. Chile: Conversion advice – Calera de Tango prison. 2002
5. Chile: Organic management of volcanic soils. 2001-2002
6. China: Organic advice – various crops. 2001-2004
7. Costa Rica: Organic research conference Mesoamerica. 2003
8. Cuba: Development – tropical fruit, coffee. Since 1997
9. Ghana: Advice on herb production. 1999
10. India: Maikaal research project – organic cotton. 2002-2005
11. India: Research collaboration. Since 2003
12. Kenya: Research collaboration. Since 2004
13. Croatia: Advice on livestock husbandry. 2003-2004
14. Lebanon: Project evaluation. 2003
15. Morocco: Advice on herb production. 1999
16. Mexico: Organic management of volcanic soils. 2001-2002
17. Romania: Advice on arable production, vegetables, herbs. Since 1998
18. Romania: Establishment of sheep flocks and feta cheese production. Since 2000
19. Serbia: Advice on stone fruit. Since 2004
20. South Africa: Advice on herb production. 1999
21. Southern Europe: Advice on vegetables, fruit, olives. Since 1998
22. Syria: Feasibility study – olives and citrus. 2000-2001
23. Czech Republic: Conversion advice – herbs. 2000-2001
24. Turkey: Advice on composting and plant protection. Since 2002
25. Ukraine: Conversion advice – cereals. 2001

From production to market: Market research, coaching of marketing initiatives (local and international markets), match-making and sourcing of goods, preparations for label certification and international trade

26. Albania: Development of local and export markets (olive oil, fruit, vegetables). 2001-2006
27. Argentina: Production and marketing advice, Ojo de Agua. Since 2002
28. Chile: International market studies. 1999-2002
29. China: Label advice. Since 2002
30. Coop: Sourcing of tropical fruit. 2003-2005
31. Cuba: Development of organic citrus fruit production and marketing. Since 1997
32. Cuba: Label certification and marketing – org. sugar. Since 2000
33. Ecuador: Audits – organic banana production. 2001-2004
34. Peru: Audits – organic banana production. 2004
35. India: Development of local and export markets. 2004-2007
36. India: Sourcing Basmati rice. 2002
37. South Africa: Export promotion for organic products. 2000
38. Thailand: Sourcing Jasmine rice. 2002
39. Ukraine: Market study on organic products. 2004
40. Central America: Development of local and export markets. 2004-2007

Overview of services
and projects of
the International
Cooperation Division
1997 – 2004



Institution building: Establishment of training and education, advisory, and research infrastructure for the development of organic farming, policy advice, regional development

- 57. Albania: Organic Agriculture Association. 2001-2006
- 58. Bulgaria: Bioselena. 1997-2004
- 59. India: Competence Center for Organic Agriculture. Since 2003
- 60. India: Sangla Valley – sustainable agri-tourism. Since 2004
- 61. India: Assessment of options – Bio India. 2004
- 62. Nicaragua: Assessment of organic farming organizations. 2002-2003
- 63. South-eastern Europe: Assessment of information system on organic farming. 2003
- 64. Tunisia: Organic farming strategy and market development. 2003-2004

Aids for training, education and advice: Training for teachers and advisors, training manuals, information leaflets, curricula development, Internet platforms

- 41. Algeria: Organic courses and advice. 2001-2002
- 42. Bulgaria: Curricula development and teaching materials. 2000-2003
- 43. Chile: Information leaflets on organic farming. Since 2001
- 44. China: Scientific exchange. 2001
- 45. Costa Rica: Information leaflets on organic farming. Since 2003
- 46. Germany: Organic farming regulations. 2002-2004
- 47. Colombia: Courses in chicken keeping. 2001
- 48. Croatia: Training of organic advisors. 2001
- 49. Romania: Curricula development and teaching materials. 2000-2003
- 50. Sri Lanka: Evaluation of training options in organic farming. 2002
- 51. Ukraine: Curricula development and teaching materials. 1998-2000
- 52. Uruguay: Training of organic farmers and advisors. 2003
- 53. Global: IFOAM training manuals for the tropics. 2001-2004
- 54. Global: FiBL/SIPPO Handbook Organic Market. 2000-2004
- 55. Global: UNCTAD Handbook Organics in the Tropics. 2002-2003
- 56. Global: FiBL/SIPPO Handbook Organic Cocoa, Coffee & Tea. 2002

Establishment of inspection and certification systems

- 65. Albania: Label development for OAA. 2003-2006
- 66. Bulgaria: Balkan Biocert. 2002-2007
- 67. China: OFDC. 2002
- 68. India: INDOCERT. 2002-2006
- 69. Indonesia: Development of certification and accreditation system. Since 2003
- 70. Philippines: OCCP. 2000-2002
- 71. Romania: Ecoinspect Rumania. 2003-2008

Staff, funding and projects FiBL Switzerland



Income and expenditure in 2002 and 2003

(in Swiss francs)	2003	2002
Income		
Research projects	4'462'242.07	2'892'702.24
Service mandate for Swiss federal agencies (BLW, BVET)	5'000'000.00	4'500'000.00
Advisory service and training	817'542.91	769'513.33
Communication (periodicals, data sheets, Internet)	801'425.80	670'998.89
International cooperation	1'938'556.71	1'734'965.79
Pilot farm	56'490.62	57'040.90
Catering, housekeeping	429'562.96	418'756.69
Donations, misc. income	349'334.90	290'212.52
Total income	13'855'155.97	11'334'190.36
Expenditure		
Personnel expenses	-8'350'565.05	-6'977'817.60
Material expenses		
Experimental/trial material, laboratory, analytics, projects	-3'103'910.10	-2'818'968.18
Premises, office supplies, other administrative, information technology, advertising	-1'346'914.08	-1'031'983.81
Financial result	-40'081.92	-63'298.66
Depreciation	-902'357.45	-557'884.90
Total expenditure	-13'743'828.60	-11'449'953.15
Extraordinary result	9'261.90	121'625.00
Net profit for the year	120'589.27	5'862.21

Development in FiBL Switzerland finances from 2002 to 2003

FiBL Switzerland is a charitable foundation which receives financing from numerous public and private donors, for projects involving research, training and consultancy on organic agriculture and species-appropriate livestock management. A list of all clients and sponsors can be found on page 48/49.

In the year 2002, FiBL Switzerland could call on total funding of around 11.3 million francs for projects and activities. In the year 2003, the total was around 13.9 million. Once again, this has enabled FiBL to extend its research and advisory work on organic agriculture and species-appropriate livestock management very substantially in the last two years. The Swiss Confederation is the most important source of finance, through the service contract for the Swiss Federal Office for Agriculture (BLW) and the Swiss Federal Office for Veterinary Medicine (BVET). This service contract accounted for 39 percent of the budget in 2002, and 36 percent in 2003. The object of the service contract is practice-based research and dissemination of knowledge to advisors and veterinarians. In consultation with FiBL, the two Federal Offices set the priorities of activity for a four-year period. The service contract explicitly stipulates that FiBL will attract other third-party funding for specific projects in order to meet all its objectives.

In the years 2002 and especially 2003, funding for research projects from these additional sources rose very markedly, from 2.9 million francs in the year 2002 to 4.5

million in 2003. To mark the tenth anniversary of its commitment to organic agriculture, in 2003 the wholesaler Coop established the Coop Naturaplan Fund. Research work at FiBL will benefit to the tune of one million francs, which will finance three projects.

FiBL has also been a successful participant in EU research, which is being funded directly by the Swiss Federal Office for Education and Science (BBW) until 2004, and through the EU thereafter. Projects in the International Cooperation Division (promoting organic agriculture in Eastern Europe and in the developing world) grew to almost 2 million francs in the year 2003. Significant donors in this area are the Swiss State Secretariat for Economic Affairs (seco) and the Swiss Agency for Development and Cooperation (SCD/DEZA), along with many non-profit and commercial partner organizations in the private sector. It has also been possible to extend other areas of activity such as consultancy, initial and further training, and information for Swiss farming families, advisory staff and vets.

We would like to say a big "Thank you!" to all our partners, clients and sponsors. You are the people who make the work of FiBL possible.

We would also like to express our heartfelt thanks to all the supporters and patrons who have given us their backing in the form of donations for innovative projects. These have focused on species-appropriate livestock management (horned dairy cattle), the protection of GM-free organic production, and the development of special methodologies in holistic food quality. *Urs Niggli*

Research and development projects

Bundesamt für Landwirtschaft (BLW)
 Coop Schweiz
 Bundesamt für Bildung und Wissenschaft (BBW)
 Bundesamt für Veterinärwesen (BVET)
 BIO SUISSE, Basel
 Migros-Genossenschaftsbund
 Gerling Stiftung
 Bundesamt für Umwelt, Wald und Landschaft (BUWAL)
 Bundesanstalt für Landwirtschaft und Ernährung (BLE),
 Bonn
 Weleda AG, Arlesheim
 Verein für Krebsforschung (Hiscia), Arlesheim

Agrofutura
 Agroscope FAL Reckenholz
 Agroscope FAW Wädenswil
 Agroscope RAC Changins
 Alb. Lehmann Bioprodukte AG
 Alfa Laval, Kloten/Zuoz
 Amt für Umwelt und Landwirtschaft,
 Naturschutzinspektorat, Bern
 Arbeitsgemeinschaft Schweizerischer Rinderzüchter
 (ASR)
 Arbeitskreis Landwirtschaft und Tourismus,
 D-Schopfheim-Gersbach
 Aurora, Gümligen
 Baudirektion Kanton Fribourg, Abt. Natur- &
 Landschaftsschutz
 Bayer
 Beratungs- und Gesundheitsdienst für Kleinwiederkäuer
 (BGK), Herzogenbuchsee
 Bio Test Agro (BTA)
 Bio Vin
 Bioland Regionalstellen: Oberbayern, Nordrhein-
 Westfalen
 Blieninger GmbH, D-Vilsbiburg
 Bundesamt für Berufsbildung und Technologie (BBT)
 Bundesamt für Energie
 Bundesamt für Statistik (BfS)

Delinat AG
 Demeter Verband
 Direktion Land- und Forstwirtschaft Kanton Fribourg
 Dutch BD Vereniging, NL-Driebergen

Eden Bioscience, F
 Evidenz-Stiftung, Arlesheim

Fischer Wasserenergetik, D-Hohenschäftlarn
 Fonds Landschaft Schweiz (FLS)
 Freie Universität Berlin

Greenpeace
 Glovital AG, Mörschwil

Hauert & Co., HBG-Düngerbetrieb, Grossaffoltern
 Hosberg AG, Rüti
 IFUL, D-Müllheim

Institut für Natur-, Landschafts- und Umweltschutz
 (NLU) der Universität Basel

JOWA AG

Kantonale Fachstelle für landwirtschaftlichen
 Bodenschutz und Düngung, LBBZ, Frick
 Kantonale Fachstelle Natur- & Landschaftsschutz,
 Fribourg

Kanton Aargau
 Kanton Baselland
 Kanton Basel-Stadt
 Kanton Bern
 Kanton Jura

Kanton Luzern
 Kanton St. Gallen
 Kanton Zürich

Kantonales Amt für Landwirtschaft Graubünden
 Kantonales Veterinäramt Graubünden
 Klinik für Geburtshilfe und Jungtier- und
 Eutererkrankungen, Universität Zürich
 Koordinationsstelle Biotopverbund Grosses Moos

Landwirtschaftsämter: Donaueschingen, Waldshut,
 Offenburg
 Louis Bolk Instituut, NL

Mahle Stiftung, Stuttgart
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Larbi Mohamed
Morgner Marion
Moschitz Heidrun
Moser Samuel B.
Nietispach Bruno
Oehen Bernadette
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Rudmann Christine
Sanders Jörn
Specht Nicole
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Schiess Christophe
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Schneider Claudia
Schnyder Isabella
Thommen Andreas
Thommen-Sutter Sandra
Tschabold Jean-Luc
Tuchschmid Andreas
Vieweger Anja
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Heller Stefan
Hempfling Gabriele
Horlacher Verena
Hördegen Philipp
Knüsel Alfons
Merz Anne
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von Reding-Carre Bénédicte
Zimmermann Horst(t)

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Sager Rudolf
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Siegrist Micha

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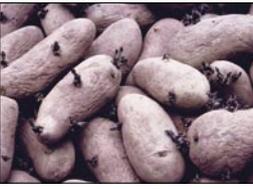
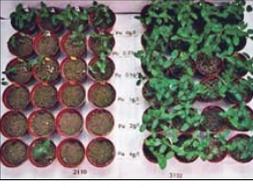
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Overview of FiBL research areas 2004–2007

FiBL Switzerland

1. Soil and plant	
 <p>Production of vegetables and ornamental plants</p>	<p>Organic production of vegetables and ornamental plants is usually highly specialized and therefore prone to problems. Nutrient and energy cycles as well the self-regulation of agricultural systems must be improved.</p> <ul style="list-style-type: none"> • Vegetable producers should achieve more self-sufficiency in nutrients through the improved utilization of green manures in the production process. • Variety recommendations for organically propagated vegetable seeds and a well functioning implementation of regulations on organic seed. • Further rationalization of production techniques. • Recommendations for the use of mycorrhizae in organic horticulture. • Development of the organic production of ornamental plants.
 <p>Bio-dynamic farming</p>	<p>Biodynamic preparations, amongst other things, are being used to improve soil fertility and produce quality. There are questions with regard to their efficacy.</p> <ul style="list-style-type: none"> • Scientific information on the biological and agronomic performance capability of biodynamic production systems. • Scientific evidence for the effectiveness of individual measures taken in biodynamic farming. • Improved fertilization and soil management strategies with special consideration given to biodynamic techniques.
 <p>Cropping systems and soil fertility</p>	<p>The maintenance and improvement of soil fertility is a central objective in organic farming.</p> <ul style="list-style-type: none"> • Evaluation of soil quality in organic and conventional agricultural systems. • Functionality of the soil micro-flora in agricultural soils. • Impacts of the use of conventional pesticides on soil quality. • Validation of terrestrial risk indicators. • Impacts of measures aiming at improved soil fertility.
 <p>Organic seeds and vegetative propagating material</p>	<p>Organically grown seeds and vegetative propagating material are still not being used consistently. The reasons for this situation include difficulties in the production of seeds and vegetative propagating material, gaps in the regulations and in enforcement, lack of knowledge with regard to availability, and insufficient availability of suitable varieties.</p> <ul style="list-style-type: none"> • Ensure the availability of organic seeds and vegetative propagating material: Online database, lists, research to accompany breeding efforts, analysis of problems and demand, production and quality assurance, regulatory systems and market controls, knowledge transfer and implementation.
 <p>Cultivation techniques in pome fruit, stone fruit, and soft fruit</p>	<p>The key problems concerning cultivation techniques in the organic production of pome fruit, stone fruit, and soft fruit are as follows: Choice of varieties and rootstocks, fertilization and soil fertility, weed control, thinning, and quality optimization.</p> <ul style="list-style-type: none"> • Increased yield security, improved product quality and greater ecological services in organic top fruit and soft fruit production. • Development of economic organic production of cherries, plums, pears, and table grapes as well as transplants. • New strategies for the cultivation of standard fruit trees and for agroforestry. • Close integration of FiBL advisory services and active contact with practitioners and marketing circles in order to assure the swift implementation of research results. • Long-term trials on the efficacy of biodynamic preparations.
 <p>Cultivation techniques in viticulture</p>	<p>The key problems concerning cultivation techniques in the organic production of grapes and in viticulture are the choice of cultivars, green cover management, fertilization and soil fertility, canopy management, and wine production</p> <ul style="list-style-type: none"> • Increased yield security and quality in organic viticulture, for both European grape cultivars and interspecific cultivars. • Lowering of production costs. • Improved vinification of fungus-resistant grapes. • Development of organic grape nursery production. • Improved marketing in viticulture.

 <p>Cultivation techniques in potato production</p>	<p>Potato blight (pathogen: <i>Phytophthora infestans</i>) is one of the most significant limiting factors in organic potato production. Copper is as yet the only effective controlling agent for this disease. Alternatives must quickly be found in order to avoid the need for the continued application of copper.</p> <ul style="list-style-type: none"> • Improved yield security and quality in potato production. • Replacement of copper through the use of alternative cropping strategies.
 <p>Interaction of soils, plants, and diseases</p>	<p>Soil characteristics can influence the susceptibility of crop plants for soil-borne and air-borne diseases.</p> <ul style="list-style-type: none"> • Determination of the suppressive and resistance-inducing potential of soils. • Use of biotests to determine the disease-suppressive characteristics of composts in relation to the initial material used and the composting techniques applied. • Investigation of the interdependencies between soil-biological and soil-chemical characteristics and disease suppression. • Development of workable methods for the targeted improvement of disease-suppressant characteristics in soils and substrates for arable, fruit, wine, and vegetable production..
 <p>Resistance induction using natural substances</p>	<p>Crop plants have a number of defence mechanisms against disease-causing agents which can be activated using "elicitors".</p> <ul style="list-style-type: none"> • Fundamental principles of resistance induction through potential resistance inductors. • Clarification of the spectrum of activity of resistance inductors and of the causes of desirable and undesirable side effects. • Illustration of the potential and limitations of resistance induction with regard to key diseases in viticulture, pome fruit and vegetable production.
 <p>New plant protection products</p>	<p>A number of plant protection products and plant tonics are approved for use in organic plant production. The requirements in terms of effectiveness as well as ecotoxicology and human toxicology are increasing. The currently still approved copper products have a special status, as they will be banned in the foreseeable future. Therefore the finding of alternatives to copper-based fungicides is of the highest priority.</p> <ul style="list-style-type: none"> • Evaluation of fungicides and resistance inductors compatible with organic production. • Making plant protectants available which are in conformity with the organic regulations and which provide clear advantages in terms of their environmental behaviour, the protection of users, low residue levels and yield security.
 <p>Plant protection: Strategies, epidemiology</p>	<p>In organic farming, plant protection problems are tackled wherever possible by preventative measures, such as healthy seed, hygiene, resistant varieties, cultivar mixes, agronomic measures and optimum soil fertility. Plant protection products need to be used with optimum application techniques and timing. Warning systems are being evaluated under organic conditions.</p> <ul style="list-style-type: none"> • Development of workable plant protection strategies for fruit, vegetable, and potato production as well as for viticulture.
 <p>Evaluation of approved auxiliary substances</p>	<p>The use of approved auxiliary substances in organic farming is regulated by the standards. These are more like principles in character and do not advise on individual proprietary products or on the use of new active agents or beneficial organisms. For this reason a detailed positive list has been developed for users and inspection personnel.</p> <ul style="list-style-type: none"> • Annual publication of the list of approved auxiliary substances in conformity with the organic regulations. • Further development of criteria for the evaluation of approved auxiliary substances in close cooperation with label organizations and authorities inside and outside of the country.
 <p>Biocontrol</p>	<p>One strategy for pest control is to release predators and parasites: nematodes for soil-borne pests, micro-organisms for soil-borne plant diseases and weeds.</p> <ul style="list-style-type: none"> • Development of workable organic control methods for pests and diseases in fruit and vegetable production. • Supplementation of the currently prevalent physical weed control methods with workable biocontrol methods in various crop types.

 <p>Entomology in fruit production (Substance tests)</p>	<p>Amongst the unsolved problems in fruit production are cherry fruit fly, European pear sucker, various fruit moth species, and aphids.</p> <ul style="list-style-type: none"> • New insecticides and repellent substances compatible with organic production for the control of the most significant pests in fruit production are being tested. • Organic fruit production shall be improved in agronomic, ecological and economic terms with the aid of optimum recommendations for the use of these substances.
 <p>Entomology in vegetable production</p>	<p>Because of the great variety of vegetable crops, the number of pest species is very high. For many pests encountered in organic vegetable production there are no or not sufficiently effective methods for their direct control.</p> <ul style="list-style-type: none"> • Making new insecticides and repellent substances available to producers to control the most significant pests in organic vegetable production. • The use of physical barriers (vertical crop protection nets) for the control of vegetable pests is to be made easier and more economic.
 <p>Pest regulation by way of functional biodiversity</p>	<p>The opportunities for direct plant protection in organic production are limited. Therefore the provision of near-natural habitat elements for beneficial organisms is of great importance.</p> <ul style="list-style-type: none"> • Development and testing of ecological measures for landscape design as a basis for pest regulation in organic farming. • Encouragement of beneficials through habitat management in order to increase parasitation and predation of key pest species. • Analysis of pest-regulating effects at plot level and landscape level in tillage production.
 <p>Herbology</p>	<p>Deep-rooted weeds are a major problem in organic production. Indirect measures such as adapted crop rotations, multi-annual meadowing and mechanical control are well known but are not always and not in all locations successful or feasible.</p> <ul style="list-style-type: none"> • Development of new economic indirect or direct control mechanisms for a variety of perennial weeds. • Provision of scientific knowledge to aid decisions on whether antagonists or natural herbicides are suitable to organic farming.
 <p>Quality of organic products</p>	<p>Safety and health benefits are important motives for consumers of organic foods. Scientifically validated methods are needed which allow for the assessment of food quality. "Holistic" methods have priority in this regard.</p> <ul style="list-style-type: none"> • Examination of the type and amount of micro-organisms and their functionality on a variety of fruit and vegetables and explanation of differences. • Interpretation of the differences also in terms of nutritional physiology. Routine establishment of one or more holistic quality assessment methods at the FiBL. • Clarification as to whether the health dimension of organic products can be assessed using scientific methods.
 <p>Quality assurance in organic production</p>	<p>Organic products can only be as "pure" as the environment in which they were produced. It is therefore possible that pesticide residues or genetically modified organisms may also be traceable in organic products.</p> <ul style="list-style-type: none"> • Quality assurance for organic products. • Establishment, expansion and management of residue database (pesticides, GMO, mycotoxins). • Preparation of expert reports on cases in which residues were found (misuse – yes or no; follow-up measures). • Projects on the safeguarding of traceability. • Studies and clarifications with regard to quality assurance for organic products in accordance with HACCP. • Information platform for producers, processors, label organizations, authorities, trade, consumers.
 <p>GMO-free organic production</p>	<p>Organic farming consciously abstains from the use of GMOs as genetic engineering is not consistent with its principles. However, GMOs can inadvertently contaminate organic foods through seeds, pollen dispersal, bought-in feeds, or cooperatively used machinery for transport, during storage or during processing.</p> <ul style="list-style-type: none"> • Evaluation and establishment of measures to guarantee the production and processing of foods without genetic engineering. • Clarify the conditions for the coexistence of the production of GM-crops and organic crops in Switzerland. • Develop and implement a concept for GMO monitoring through pollen sampling.

2. Agricultural policy and markets	
	<p>Organic farming differs from other production systems with regard to cost-price structures and direct payments. Detailed baseline data are required for conversion planning and farm management on the one hand and for price calculations on the other.</p> <ul style="list-style-type: none"> • Updating the catalogue of gross margins for organic farming. • Provision of economic efficiency calculations for individual farm enterprises considering changing market and agricultural policy conditions. • Analysis of production structures (holding type, soil index, ecological compensation etc.)
	<p>Apart from market developments, it is the agri-policy environment which is an essential economic factor for the further development of organic farming.</p> <ul style="list-style-type: none"> • Analysis of the impact of different agri-policy environments on organic farming in Switzerland: Impacts on income, farm business organization, supply, and the relative advantage of organic farming. • Development of future business strategies for organic holdings. • Assessment of the acceptance of policy instruments for organic farming. • Analysis of the institutional network for organic farming policy. • Establishment of a policy information system for organic farming in Switzerland.
	<p>Structural change, falling prices and the widening of the income gap between the agricultural and the non-agricultural sectors are likely to continue in the future. At the foreign policy front the pressure for trade liberalization under the WTO and under bilateral agreements is growing. The holding network is to help evaluate agri-policy measures and illustrate development perspectives by holding type.</p> <ul style="list-style-type: none"> • Establishment and maintenance of a representative network of holdings • Improvement of the economic data situation. • Observation of the socio-economic development of organic holdings. • Price monitoring in the organic sector.
	<p>A lack of information on the growing organic markets hampers political decision-making and leads to planning uncertainties in the marketplace.</p> <ul style="list-style-type: none"> • Provision of production and market data for the organic sector. • Investigation of the supply potential for individual product groups. • Assessment of supply and demand for selected market segments. • Improvement of market transparency for organic products. • Improvement of the survey methodology for market and production data. • Harmonization of existing European data survey methods. • Analysis of successful marketing initiatives
	<p>Since the mid 1990s organic products have increasingly been sold through wholesalers. The retail chains vary in terms of their commitment to and their success in the sale of organic products. Differences in their strategic objectives as well as in marketing would appear to be factors limiting success.</p> <ul style="list-style-type: none"> • Analysis of consumer behaviour. • Optimization of the presentation of organic products in the shops. • International supermarket trend studies. • Development of marketing strategies for organic products. • Analysis of the added value chain for organic products.
	<p>The organic standards are under continuous development. With increasing international trade, the importance of harmonizing standards is also growing.</p> <ul style="list-style-type: none"> • Further development of the Swiss Organic Farming Ordinance. • Further development of the international IFOAM Basic Standards for organic farming. • Further development of the international standards for organically produced products under the Codex Alimentarius and the EU Regulation 2092/91. • Development of assessment and evaluation systems for organic standards.

 <p>Multifunctionality: The role of organic farming</p>	<p>Agriculture provides services going beyond the production of food. Its contribution to maintaining the integrity of life-support systems, its maintenance of the cultural landscape and its contribution to decentralized settlement as well as its provision of social services are subsumed under the term 'multifunctionality'.</p> <ul style="list-style-type: none"> • Analysis of the multifunctional services provided by organic farming. • Analysis of the international agri-policy environment for the development of a multifunctional farming sector. • Development of policy recommendations with regard to multifunctionality.
3. Animal health and livestock husbandry	
 <p>Effects of homoeopathic substances</p>	<p>Are homoeopathic remedies effective? Using simple and safe testing systems the potential effects of potentized substances are to be shown in a replicable manner. To this end the growth of yeasts (<i>Saccharomyces cerevisiae</i> and <i>Schizosaccharomyces pombe</i>) and duckweed (<i>Lemna minor</i>) in relation to a variety of potencies of an original homoeopathic substance is measured.</p> <ul style="list-style-type: none"> • Scientific proof of possible effects of potentized substances on the growth and morphology of lower organisms.
 <p>Integrated animal health strategies</p>	<p>ursuant to the Swiss Organic Farming Ordinance animal health is to be stabilized primarily by way of prevention at the herd/flock level, by optimizing the general environment (feeding, hygiene, man-animal relationship etc.) and with the use of complementary medicine. In the context of the Pro-Q project this strategy is being introduced by practitioners throughout Switzerland. The strategy is supplemented by scientific evaluation of many of the procedures as well as by training and support measures for veterinarians and farmers.</p> <ul style="list-style-type: none"> • Improved animal health including a clear reduction in the use of therapeutics, especially those leaving problematic residues.
 <p>Clinical trials</p>	<p>There is still a lack of meaningful evidence of the effectiveness of complementary pharmaceuticals in livestock. Therefore studies are to be instigated which will assess in how far these therapeutics are able to successfully control illnesses such as mastitis, infertility or gastro-intestinal problems. To this end clinical trials under Randomized Control Trial (RCT) conditions or application observations as Single Case Studies are being carried out.</p> <ul style="list-style-type: none"> • Evaluation of the effectiveness of complementary pharmaceuticals, especially homoeopathic remedies and phytotherapeutics.
 <p>General conditions for animal health</p>	<p>Animal health is fundamentally related to the constitution of the animals, i.e. their susceptibility to illnesses, and to the environmental conditions in which they live.</p> <ul style="list-style-type: none"> • Research into the behaviour and temperament of dairy cows of strong constitution and differences between the former and cows of weak constitution under similar conditions. • Establish an optimum size for loose houses to be stocked with horned cows and assess the impact of the relationship between man and animal on udder health. • Improvements in the condition of the animals and the conditions under which the dairy cows are kept.
 <p>Mistletoe therapy in livestock</p>	<p>Mistletoe has been used in the treatment of cancer in humans since the 1920s. For a number of years now veterinarians have also reported its success in the treatment of tumours in small animals and horses. Is Iscador effective in the same way for all animals? Is it effective in treating all types of tumours? Should the same therapy system that is used for humans also be used for livestock? Which mistletoe species are to be preferred? These are the type of questions which are to be answered through an empirical network.</p> <ul style="list-style-type: none"> • Research on the effects and effectiveness of Iscador in animals, particularly dogs, cats, and horses.

 <p>Poultry production</p>	<p>Problems and unresolved questions in organic poultry and egg production concern the way the animals are kept, feeding, hygiene, animal health and suitable lines.</p> <ul style="list-style-type: none"> • Develop well-founded recommendations for practitioners and advisors on the keeping of laying hens, incl. flock sizes, the design of outdoor ranges, pasture management, hygiene measures and the control of parasites. • Provide more suitable lines of layers and broilers for organic producers (suitability for free-ranging, prolonged lifetime of layers, sensible utilization of male chicks). • Breeding objectives for exclusive lines for the organic production of meat birds are under development.
 <p>Organic cattle breeding</p>	<p>In cattle breeding today, milk yields and nutrient content (especially protein) are very important. From the point of view of organic farming, health and constitution parameters are not being given enough attention.</p> <ul style="list-style-type: none"> • Breeding options for cattle are to be developed and tested which allow for more attention being given to health parameters. Objectives such as a high lifetime yield based on basic feedstuffs and good adaptation to varying site conditions are likely to be priorities. • Additionally, possible interactions between genotypes and the environment are to be identified and, where applicable, strategies are to be developed which help utilize these interactions in practical breeding.
 <p>Status analysis: Parasites in organic livestock</p>	<p>Organic farms are likely to have to deal with a higher degree of parasitisation for two reasons: Firstly the animals have more contact with parasites due to the required pasturing and access to ranges and secondly the use of prophylactic medication is prohibited.</p> <ul style="list-style-type: none"> • Documentation and evaluation of parasitisation of different livestock categories on organic holdings. • Holding-specific surveys on the parasite problem as a basis for targeted measures to control parasites.
 <p>Endoparasites in ruminants</p>	<p>At present anthelmintics (wormers) containing synthetic active ingredients are commonly used in ruminants on both organic and conventional holdings. Alternatives to these treatments are being tested and include preventative pasture management, organic control using nematophagous fungi (<i>Duddingtonia flagrans</i>) as well as the use of plants containing elevated amounts of condensed tannins or other anthelmintic active ingredients.</p> <ul style="list-style-type: none"> • Development of improved preventative measures to control gastro-intestinal worms. • Development of alternative treatments to control gastro-intestinal worms. • Establishment of validated methods in organic farming practice.
 <p>Endoparasites in poultry and pigs</p>	<p>The problem of endoparasites is one of the most significant health problems in poultry production. The control of gastro-intestinal worms is virtually exclusively being achieved with a conventional anthelmintic drug. A variety of approaches to the management of ranges and litter are being tested in a multi-annual trial with laying hens and their impact on parasitisation is being studied.</p> <ul style="list-style-type: none"> • Development of improved preventative measures and alternative treatments to control gastro-intestinal worms in laying hens. • Investigation of the transferability of such measures and treatments from chickens to pigs.
 <p>Control of ectoparasites</p>	<p>Ectoparasites such as flies (common houseflies, stable flies), horseflies and red poultry mites are a significant problem on organic holdings. While there are certain well-known preventative measures against ectoparasites, these are often not sufficient to lower infestation to tolerable levels.</p> <ul style="list-style-type: none"> • Development of improved preventative measures to control ectoparasites. • Development of alternative measures to control ectoparasites. • Establishment of validated methods in organic farming practice.

As of April 2004. FiBL projects in the areas of education and training, extension, communication and international cooperation are not listed.

Staff, funding and projects – FiBL Germany



Staff, funding and projects – FiBL Austria



Income and expenditure in 2002 and 2003

	(in Euros)	2003	2002
Income			
Research and development		1'397'302	1'075'295
Other		15'295	48'234
Total income		1'412'597	1'123'529
Expenditure			
Personnel expenses		651'557	576'426
Material expenses			
Project costs		323'588	288'244
Premises, office supplies, other administrative, information technology, and advertising expenditure		317'902	242'042
Depreciation		22'327	12'396
Total expenditure		1'315'374	1'119'108
Operating result*)		97'223	4'422
Reserves		96'000	
Operating result after reserves*)		1'223	4'422

*) Subject to ongoing consultations with the tax office

Developments in FiBL Germany finances from 2002 to 2003

FiBL Germany (FiBL Deutschland e.V.) is a charitable association which finances itself by providing scientific services to organic agriculture, particularly at the interface between research and practice. Its clients and donors are public institutions, predominantly from the German federal government, as well as associations and companies. A detailed list can be found on page 64.

FiBL Germany commenced its activities in the year 2001. The year 2002 was its first full financial year, and income amounted to EUR 1.1 million. In the year 2003, income increased to around EUR 1.4 million. The salient aspect of the years 2002 and 2003 was a high level of success in bidding for projects under the Federal Programme for Organic Agriculture (BÖL) run by the German Ministry of Consumer Protection, Food and Agriculture (BMVEL). The BÖL programme supports research and development projects, PR and information activities, professional training programmes and measures to promote technology and knowledge transfer for the ongoing development of organic agriculture.

The Internet portal www.oekolandbau.de was one of the central measures of the BÖL programme, and the most significant project for FiBL Germany, accounting for around 25 percent of income in the years 2002 and 2003. FiBL Germany coordinated work on a total of 14 BÖL projects in 2002 and 16 projects in 2003, predominantly in the areas of research and development (plant breeding, crop protection, feedstuffs, ornamental plants, animal health, on-farm research, socio-economics, etc.), involving FiBL staff both from Germany and from Switzerland. The German Federal Environmental Agency financed projects on the themes of plant breeding and the protection of organic agriculture from genetic engineering. The German Federal Ministry of Education and Research

supported a project on agrobiodiversity. Particularly in the thematic areas of genetic engineering, plant breeding and quality assurance, there were various contracts from organic agriculture and environmental associations, such as BÖLW (the German Federation of the Organic Food Industry) and BUND (German Friends of the Earth).

Although FiBL Germany had no start-up funding and finances itself exclusively through projects and services, in the second and third years of its existence it has already managed to build up reserves of around EUR 4,000 in the year 2000 and EUR 100,000 in the year 2003. This has laid an important foundation for the continued development of FiBL Germany on a sustainable basis. For the immediate future, staff have set their sights on attracting income from additional sources, in order to put financing on a broader basis so as to guarantee long-term stability.

We sincerely thank our clients and donors from public bodies and associations, our Swiss colleagues and our association members for the support and confidence they have shown us during the start-up phase. In doing so, they have contributed quite substantially to the success of the FiBL Germany venture!

Beate Huber

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	Dr. Uli Zerger Bad Dürkheim Executive Manager of the Foundation Ecology and Agriculture (SÖL)

Clients and donors of FiBL Germany, 2002 und 2003:

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Brot für die Welt, Diakonisches Werk der Evangelischen
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Schweisfurth Stiftung, München
Synergie, Frankfurt/BLE
The Organic Standard, Sweden
Umweltbundesamt, Berlin
Zeitbildverlag Berlin/BLE

FiBL Germany

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	Binder Cordula Dipl.-Ing. Agr. Internet
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	Freelancers
	Beck Alex, Dr. Agr.; Processing Billmann Bettina, Dipl.-Ing. Agr., Ornamental plants Snigula Jasmin, Dipl.-Ing. Agr.; Internet Hermanowski, Susanne, Dipl. Päd.; Text editor

FiBL Austria

	Kranzler Andreas Mag. rer. nat. Management, public relations, editor of data sheets
	Dr. Stöger Elisabeth Veterinarian Animal health

FiBL Germany

Communication	
 <p>Internet</p>	<p>The Internet has developed into an important communication instrument. This also holds true for organic agriculture. The working areas comprise anything from conceptual, technical and editorial maintenance to design and technical implementation.</p> <ul style="list-style-type: none"> • Technical and conceptual maintenance of the central Internet portal www.oekolandbau.de. • Technical implementation of www.bnn-schaedlingsmanagement.de, www.organicXseeds.com, www.transgen.ch, www.1000biokuechen.de, www.aoel.org, www.innovationspreis-bio-verarbeitung.de, www.isofar.org, www.naturaufdemteller.de, www.oegs.de, www.organicinputs.org, www.organicfqh.org. • Content management and technical support for www.allesbio.de, www.gruene-werkstatt.de, www.oeko-regelungen.de and the science module as part of the central Internet portal.
 <p>Agricultural holdings with a social function</p>	<p>The majority of agricultural holdings working with disabled people are also organic. These holdings need specific advice and support for networking.</p> <ul style="list-style-type: none"> • Organization of an annual conference. • Individual advice. • Maintenance of the information provided at www.gruene-werkstatt.de.
Agriculture	
 <p>Seeds</p>	<ul style="list-style-type: none"> • Seed health <p>Development of guidelines for practitioners on maintaining seed health for tillage crops, vegetables, herbs and medicinal plants.</p> <ul style="list-style-type: none"> • OrganicXseeds <p>In Germany the 16 regional states (Länder) are in charge of enforcing the provisions of the EU Organic Seed Regulation. Through negotiations with the regional states, the FiBL OrganicXseeds database has been established successfully as an official instrument for the purposes of enforcing the legislation.</p> <ul style="list-style-type: none"> • Studies on assessing market coverage with organically produced seeds and vegetative propagating material. • Study on the removal of impediments to the licensing of varieties which are particularly well suited to organic farming conditions.
 <p>Plant protection</p>	<p>Coordination of the forum on plant protection in organic agriculture, an expert roundtable on important topics in organic plant protection.</p>
 <p>Agricultural inputs</p>	<ul style="list-style-type: none"> • Development of assessment procedures for agricultural inputs and auxiliary substances with a view to their consistency with organic farming principles. • Development and establishment of an assessment system for agricultural inputs and auxiliary substances in organic farming.
 <p>On-farm research</p>	<p>The design of trials on commercial holdings calls for special guidance. To this end an online guide to field trials has been developed which guides farmers through the entire process from designing the trial right through to the evaluation of the results and which outlines the necessary measures to be taken.</p> <p>www.praxisversuche.de</p>
Certification and accreditation	
 <p>International projects</p>	<p>The development of local inspection bodies in Eastern Europe and in many countries of Asia, Latin America, and Africa makes it easier for small and medium enterprises to gain access to certification. This is of benefit to local organic markets as well as to exporters. FiBL offers advice to local inspection bodies from establishment to accreditation in accordance with international standards (ISO 65, NOP, IFOAM). FiBL offers training for inspection bodies and licensing authorities.</p> <ul style="list-style-type: none"> • INDOCERT, local inspection body in India. • Balkan Biozert, local inspection body in Bulgaria. • RENAR, accreditation organization in Romania. • OAA, Albanian inspection and certification body. • Advice to Indonesian Ministry of Agriculture.

<p>Quality assurance</p>  <p>Traceability</p>	<p>A number of different traceability systems are under development. Often companies are not willing to open up these systems to other market participants or to invest in systems which would also be of use to competitors. However, the necessity of having comprehensive traceability systems is generally accepted. This is the only way individual companies can guarantee traceability throughout the entire added value chain. The establishment and financing of a central system is too difficult for the companies.</p> <ul style="list-style-type: none"> • Outline user requirements in relation to a central traceability system. • Evaluate existing systems. • Formulate framework conditions for the development and establishment of a central traceability system for the organic industry. • Network the stakeholders.
 <p>Genetic engineering</p>	<p>Following the abolishment of the de-facto memorandum, the cultivation of genetically modified plants can reasonably be expected. This development as well as the trade in imported GMOs has the potential to threaten the very existence of organic agriculture. The conditions for coexistence and liability rules have been established with the EU Regulations on the release, traceability and labelling of GMOs and with the German Genetic Engineering Act. Now the organic farms have to safeguard GMO-free production and processing within this legal framework.</p> <ul style="list-style-type: none"> • Informing market participants on the legal situation. • Development and establishment of measures and aids to safeguard GMO-free production and processing of foods. • Supporting company communications.

 <p>Animal health</p>	<p>With 10% of holdings under organic management Austria has a very high share in organic production. In order to expand on this high level it will be necessary to quickly address issues arising in commercial production and to provide competent answers. FiBL Austria is in the process of establishing a contact point for organic certifying organizations, advisors, and veterinarians. In terms of animal health, focal issues will be local, practical herd/flock health management, further training for the attendant veterinarians, and the establishment of a service point in cooperation with existing organizations.</p> <ul style="list-style-type: none"> • Implementation of EU Regulation 1804/99 on organic livestock production. • Active support on animal health issues in commercial farming. • Promotion of good communication between all stakeholders in organic farming.
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FiBL Austria

 <p>Communication</p>	<p>The successful production of organic products also requires that up-to-date technical information is made available in an appealing manner. The objective is to establish and maintain the swift transfer of knowledge between researchers and advisors and down to the farms. Knowledge and experience gained in both Austria and abroad is being edited and made available to practitioners using a variety of information media.</p> <ul style="list-style-type: none"> • Preparation of information leaflets and CDs in cooperation with organic certifying organizations, research institutions and authorities. • Training the trainers: Further education and training for advisors. • Education measures for farmers, focusing on animal health, plant production, and specialty crops. • Establishment of databases.
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 <p>On-farm research</p>	<p>In cooperation with the farmers the latest agricultural research results are assessed as to their workability. It is also an objective to scientifically assess the effectiveness of farmer knowledge and new approaches to herd/flock management with reference to specific locations. Knowledge gained in such trials will be made available to organic farmers through regional events and written documentation.</p> <ul style="list-style-type: none"> • Test the suitability of individual cultivars for organic farming under commercial conditions. • Test new plant protection products and tonics as to their effectiveness. • Tackle current questions arising in farming practice, especially with regard to herd/flock management and mixed cropping.
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 <p>Specialty crops</p>	<p>On the production front, specialty crops in Austria have a great growth potential. However, there are still many unsolved questions. In tandem with the focal areas addressed by FiBL Switzerland, it is especially the area of fruit and vegetable production in which work is being carried out to find solutions to core problems. In cooperation with various organic stakeholders existing know-how is being compiled and made available to the farmers and growers.</p> <ul style="list-style-type: none"> • Promoting the establishment of Austrian soft-fruit production. • Addressing current issues in relation to pome fruit and stone fruit production by way of trials and knowledge transfer from Switzerland. • Supporting the regional production of wildflower seeds.
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Publications by FiBL staff in 2003 and 2004

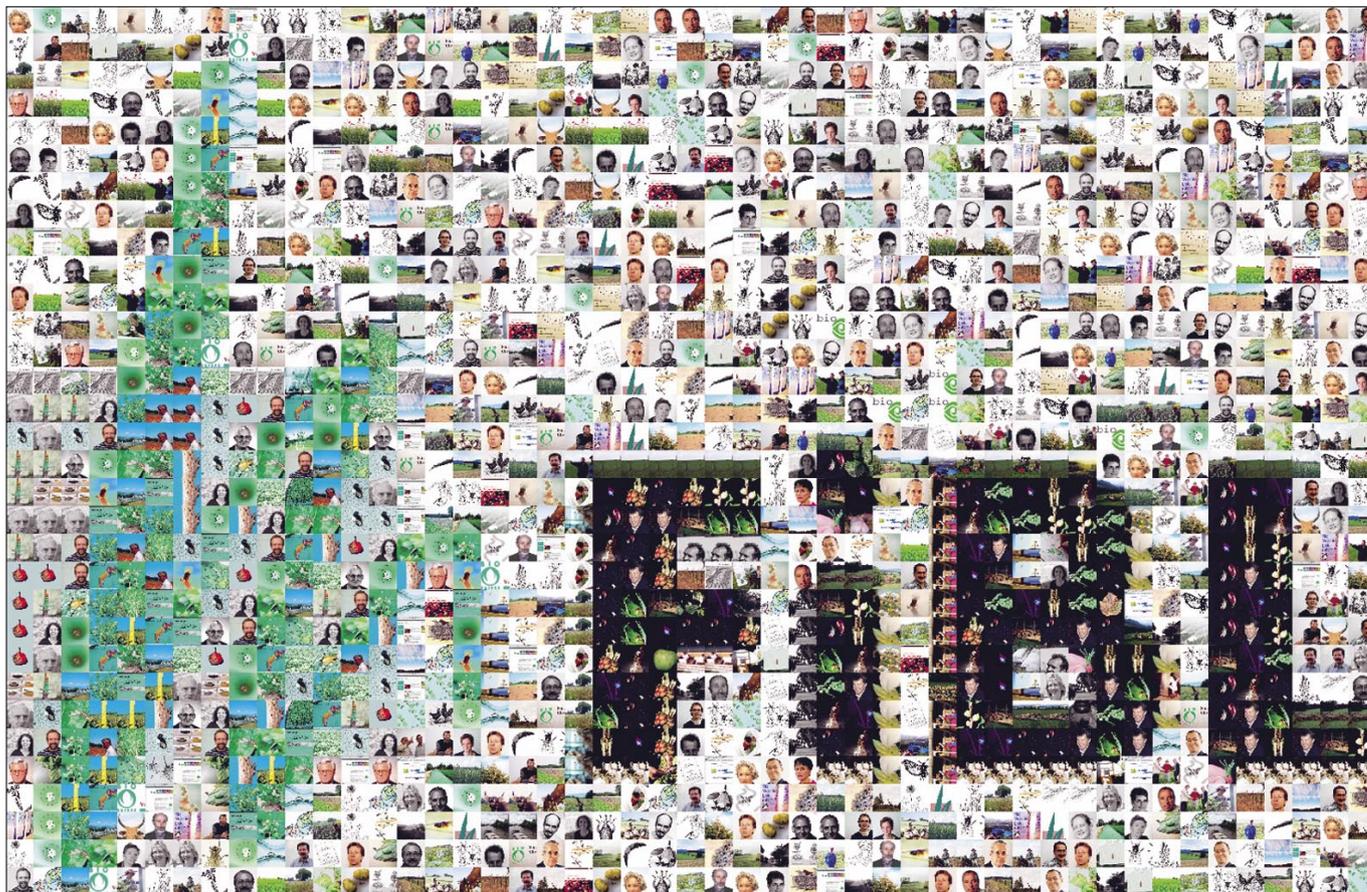
Please note that the following list is merely a selection of FiBL's publications. All the data sheets, dossiers and further publications put out by FiBL are available through the FiBL Shop at <http://www.fibl.org/shop>. Scientific publications are archived in the Organic Eprints database (<http://orgprints.org/>).

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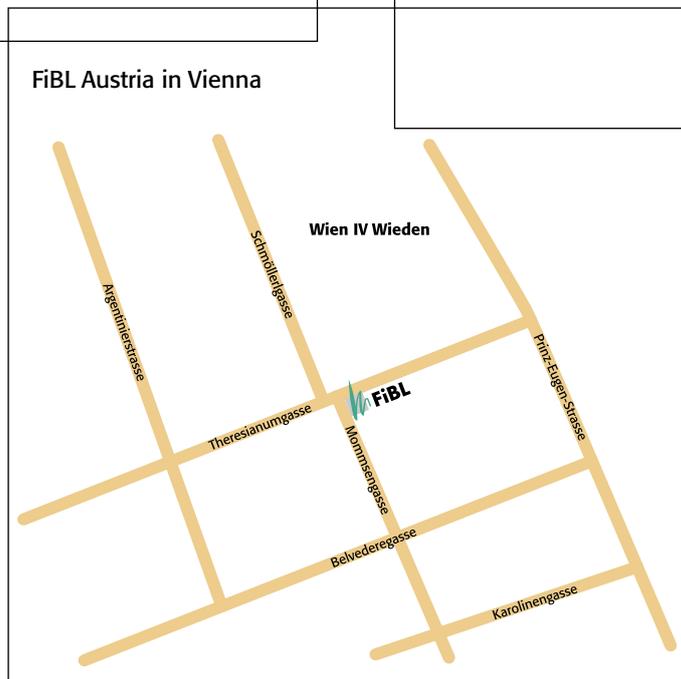
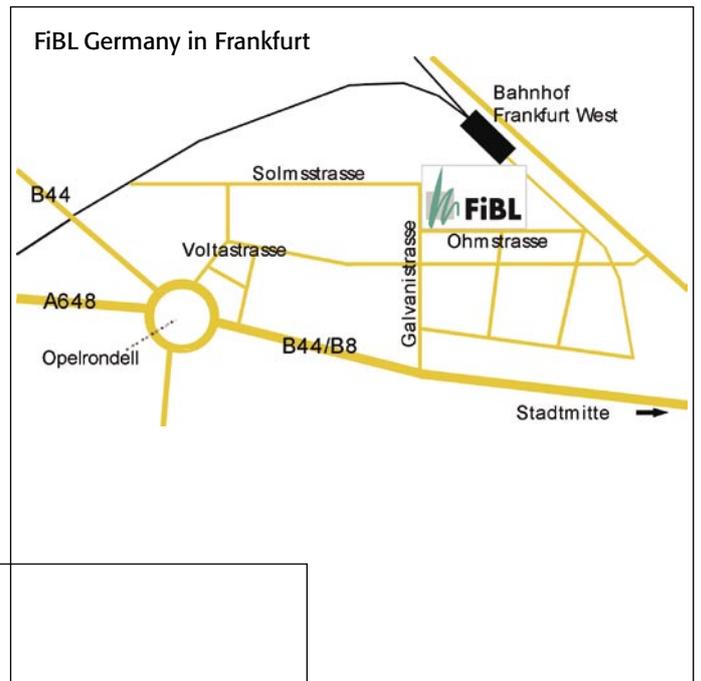
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This activity report is also available in German and in French.

For a list of publications, an overview of current FiBL projects and a listing of the memberships of FiBL staff in official commissions see www.fibl.org.

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