

LOUIS BOLK
I N S T I T U T E

Resilience *Annual report 2010*



Resilience

For the Louis Bolk Institute 2010 was a year of resilience. The concept of resilience is familiar for us: it is the underlying theme of all our projects investigating the intrinsic capacity of plants, animals and humans to stay healthy or grow stronger. Yet during the past year the concept gained a new dimension for us, when the resilience of our own organisation was put to the test. The merger between the Louis Bolk Institute and Agro Eco, late 2008, and the necessary change of directors in February 2010 constituted a turbulent period for our institute. We have shown resilience by overcoming these challenges on our own, and by learning and growing stronger from the experience.

In financial terms we have closed 2010 with a deficit (see page 11). This is mostly due to higher non-recurring operational costs and budget cuts on international development aid, which translated into a lower turnover for the Agro Eco-Louis Bolk Institute. However, owing partly to a number of changes in the organisation, the loss turned out to be significantly smaller than expected. We are proud of this result. Moreover, the prospects of the Louis Bolk Institute for 2011 are very good. For the first time in our history, by April 2011

our portfolios were already filled for the rest of the year, enabling us to start accepting projects for 2012. It also means a modest growth for the coming year, with the possibility to attract new researchers. Here we are thinking not only along the lines of new permanent staff, but also of flexible collaborations with partner institutes and long-term working relationships with freelance professionals.

The Organic Agriculture Policy Programme of the Ministry of Economic Affairs, Agriculture and Innovation will be closed by the end of 2011. This will bring an end to a period of substantial investments in research for the organic sector. As from 2012 the Ministry will focus its investments on sustainable rather than organic agriculture. In order to stand out in this larger playing field, all we have to do is to remain ourselves. The expertise we have built during the past 35 years in the sustainability sector as a whole gives us a very strong position. However, the challenge for the coming year is to increase our visibility. Clear, effective communication is essential here, as well as further expanding our networks. Also, we should develop a more entrepreneurial attitude to be able to increase our market share. The competences

Research based on a systems approach

The Louis Bolk Institute is an independent international organisation for research and advice, with offices in Driebergen, the Netherlands (main office); Accra, Ghana; and Kampala, Uganda. Our mission is to offer solutions for key issues in organic and sustainable agriculture, health care and nutrition. We have worked on sustainability for 35 years, with nature as a rich source of knowledge about life. Our research, thinking and acting is based on the knowledge that processes are interconnected. This integral approach – the systems approach – means that we

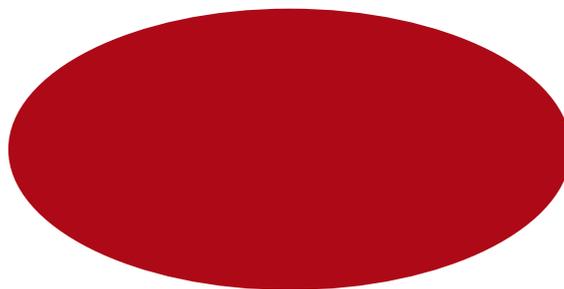
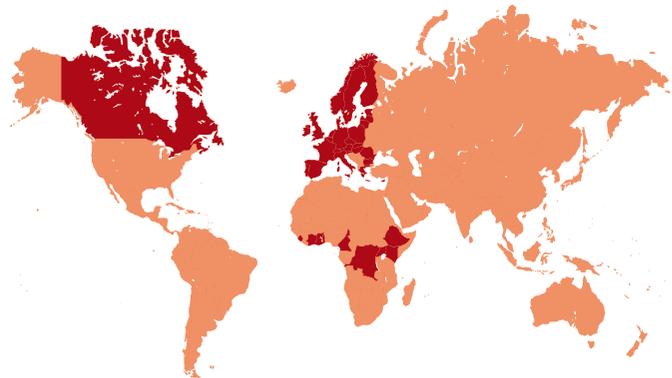
consider research questions in their entire context, rather than as isolated problems. With our work we contribute to a more sustainable world and healthy humans, animals, plants and soils. Our clients choose to work with the Louis Bolk Institute because of our broad expertise, realistic solutions and practical advice. The Louis Bolk Institute employs about 65 people. In Africa we operate under the brand name Agro Eco-Louis Bolk Institute. For more information, please visit www.louisbolk.org

that foster entrepreneurship – such as perseverance, reliability, creativity, persuasiveness, problem-solving capability, innovative thinking and focus on practical value – are in our genes. The art is to take better advantage of these qualities also in a commercial context. As for our market orientation, i.e. taking the needs of our clients as the starting point of our thinking and acting, there is still room for improvement. That is why in 2010 a significant number of our staff took training in project acquisition.

Finally let me express my heartfelt thanks to all our staff members for their loyalty to our organisation despite the difficult times of the past year. They have put resilience into practice. Furthermore I would like to thank our Supervisory Board, which in 2010 saw the departure of Mr Bram van de Klundert M.Sc. and the arrival of Professor Mrs Akke van der Zijpp, while Mr Hanno Niemeijer M.Sc. became the new chair. And last but not least, I would like to thank our funding partners and clients for their trust in our organisation and their inspiring collaboration in 2010.

Bendert Gijzel, Acting Director

International projects



In 2010 our agriculture department has worked on the research themes soil, agrobiodiversity, plant breeding, and animal welfare and health. We have closed the year 2010 sailing with the wind in our backs: increasingly more organisations, businesses and farmers consider sustainability as key to innovation and progress. Looking at the increasing number of questions we receive from conventional farmers, we conclude that the knowledge we developed on organic agriculture also generates a growing interest from mainstream agriculture practice.

Clients choose the Louis Bolk Institute for its vision and its working approach. A vision in which the system approach and respect for the integrity of life play a central role. A working approach in which we effectively integrate our knowledge with the practical expertise of people working in the field. A current example concerns the new challenges related to climate change: based on sustainable soil management and agrobiodiversity, we are developing natural solutions to make farming systems more resilient to extreme rainfall and droughts. There is also a growing interest in the breeding of more robust crops and livestock.

In addition to our close collaborations with farmers, in 2010 we have intensified our collaboration on organic agriculture research in the Netherlands with Wageningen University. With various international partners we have built a European network, which enables us to submit proposals for EU-funded research projects. With ten European universities and the Swiss FiBL Institute we have worked on European research projects in the area of low input breeds, organic plant breeding methods, and measures to prevent agricultural nitrate leaching into our drinking water.

Furthermore, in 2010 we have worked hard to improve both our internal and external communication. This has led to a more user-friendly website and a successful press policy with more than 100 items in the printed press last year. Particularly Nick van Eekeren's Ph.D. defence on 'Grassland management, soil biota and ecosystem services in sandy soils' received widespread media attention. Of the more than 100 research project we worked on in 2010, the following four give a good impression of our vision and working approach.

Breeding and selection of regional cereal varieties

In the *IJsseldalgraan* project (2009-2011) farmers are reintroducing old cereal varieties to the IJssel river valley of the Gelderland province. The objective is to increase diversity, within the agricultural landscape as well as on consumers' plates. The selection of grain varieties, such as Einkorn wheat, Emmer wheat, oat and spelt, is a complex process. First of all the varieties have to stand out in terms of better taste or protein composition. Moreover, the varieties have to perform well on soils in nature management areas, where soil fertilization is restricted. Finally, the baking quality and taste have to be approved by users such as millers, bakers and cooks. Therefore the project includes field demonstrations as well as production optimization and product development. The 'Special Grains Demonstration Day' held on 1 July 2010, was well-visited. Not only farmers and bakers came to visit the field experiments, also culinary consumer organisations such as Slow Food were very interested to see the new regional products. The *IJsseldal* project on old cereal varieties has received much media attention. This project is co-funded by the Province of Gelderland.





From chick to hen

The project *From chick to hen* (2008-2010), which focused on conventional rearing and laying farms, was successfully completed in 2010. The most important conclusion is that feather pecking can be minimized by training young birds to scavenge in floor litter and supplemental roughage. With plenty of opportunity for scratching and foraging, the chickens are more relaxed and healthier. The measures tested in this project on mainstream poultry and egg farms have been developed partly on organic farms. These measures resulted in a more animal-friendly production system, and have been adopted in full by the participating poultry farmers. In 2010 the practical guide 'Poultry Signals' has been translated from Dutch into English, German and Italian, and has also led to various training courses.

Reducing soil phosphate levels in nature areas

The project *Balanced soil nutrient removal* (2007-2010) was aimed at turning former agricultural land in the Dutch province of Noord-Brabant into natural areas with high biodiversity. High phosphate inputs for years on end had led to unbalanced, low diversity plant communities. The aim of Dutch conservation organisations such as Staatsbosbeheer and Natuurmonumenten is to increase the diversity of these communities. The Louis Bolk Institute has therefore developed a method to reduce soil phosphate levels: phosphate 'mining'. By growing grass-clover in combination with potassium fertilizer, more phosphate is removed from the soil. Moreover, the harvested forage has a higher feeding value. These results are promising, and create a new alliance between farming and nature management. Large-scale field trials were conducted on 60 hectares of the Drunense Duinen nature area. The project was funded by the Province of Noord-Brabant, the Dutch Government Service for Land and Water Management DLG, and the steering group Agricultural Innovation Brabant.



Towards resilient soils

In various projects we are working on the development of sustainable soil management and resilient soils.



In the project *Disease-Suppressive Soils and Functional Agrobiodiversity* (2008-2011), researchers of the Louis Bolk Institute and Applied Plant Research (WUR-PPO) are working together with the ZLTO farmers' network on methods to measure and manipulate factors that increase the resilience of soils to soil-borne diseases.

Why a crop gets infected in one soil but not in another, even when the same disease agent is present, is in part due to ecological processes that are still poorly understood. In this project, we have demonstrated the relation between soil-borne disease suppressiveness and soil quality. We have

also provided the statistical evidence that higher soil biodiversity results in lower disease pressure. The project is conducted together with strawberry growers in the provinces of Noord-Brabant and Limburg, whose ambition is to develop a production system in which soil fumigation with chemicals is no longer necessary. Through joint discussions of the project results, researchers and growers search for optimal soil management solutions that maximize disease suppressiveness. The first results of the project clearly indicate that a healthy cropping system starts with a healthy soil. The project is funded by the Horticultural Marketing Board, the SKB Centre for Soil Quality Management and Knowledge Transfer, and Triodos Bank.

For Agro Eco-Louis Bolk Institute, active in agriculture projects in Africa, the past year was dominated by government budget cuts for international development cooperation. The grant application of the Sustainable Agriculture Coalition, in which the Agro Eco-Louis Bolk Institute was participating, did not get funded. This necessitated a downsizing of our activities in East Africa. Furthermore it led to the decision to focus more on research and advice, and less on development cooperation during the next few years.

Our offices in Ghana and Uganda are staffed with local experts, who work closely together with our main office in Driebergen. This way our projects are firmly rooted in the local context and at the same time directly linked to international networks and trends. Our expertise areas are Technical Advice, Value Chain Development, Training, Education and Nutrition and Project Evaluation.

Education and Nutrition: Organic school gardens in Africa

In 2010 we have completed our school garden project in Ghana. The result is 24 organic school gardens offering hands-on horticultural training to schoolchildren as well as their family members. The vegetables and fruits grown by these families are purchased by the school for preparing the school meals. This way the families earn extra income while malnourished schoolchildren receive a healthy meal every day. The school gardens enable the schools to be less dependent on the government for providing lunch, and to raise a healthy and better educated new generation. Based on this success we are planning to conduct similar projects in other African countries. Currently we are discussing the possibilities with various partner organizations and funding agencies.



Training and Technical Advice: Involving farmers in cotton seed breeding

In Uganda we are involving organic cotton growers in seed breeding, enabling them to remain independent of commercial seed suppliers and to continue GMO-free production also in the future. This way tens of thousands of cotton growers can continue their organic growing practices. The growers told the researchers that one of their breeding objectives would be to produce a more compact variety, as this would make weeding and harvesting easier. Earlier, the researchers had focused exclusively on disease resistance. It is clear that our training activities and technical advice contribute to improving organic cotton production.

Value Chain Development: Recycling nutrients back to Africa

The decades-long export of crops such as coffee, cocoa and grains has contributed to a depletion of African soils in terms of phosphates and other nutrients. In contrast, the Netherlands has a phosphate surplus in its waste flows. During the past few years a technique has been developed to reclaim phosphate from waste, combine it with residual material from bio fuel production, and recycle it into fertilizer granules. The Agro Eco-Louis Bolk Institute is investigating whether this fertilizer can be used in tropical cropping systems, and how it can be delivered to the African farmers at affordable cost. 'Returning' this fertilizer to Africa can help to improve the nutrient balance of African soils.



In addition to projects on sustainable and organic agriculture, the Louis Bolk Institute also conducts research in the areas of health care and nutrition. Here, the principal objective is to establish the health effects of organic products and effectiveness of complementary and alternative medicine (CAM). Our systems approach enables us to take a broad view on nutrition and health related questions.

An important new research theme in 2010 was Integrative Medicine (IM), which focuses on integrating CAM into mainstream health care. This theme proved to be a good starting point for national and international collaborations, including a strategic collaborative agreement with the Dutch Information and Knowledge Centre for Integrative Medicine (NIKIM). This has opened up new contacts with various hospitals. So far we have launched eight collaborative research projects and published two scientific articles. In 2010 we also joined CAMbrella, a European research programme aimed at surveying the use of complementary and alternative medicine across Europe. This new collaboration has further strengthened our international network.

Like the other departments within our Institute, in 2010 we have invested in project acquisition. Our team has been joined by an acquisition support officer, and this has resulted in the funding of various research proposals through national and international health-related charities. The 'resilience' theme, which underlies many of our projects at the Institute, originates from our work on the concept of health. We are planning to link various research proposals to this theme in 2011.

In addition to Integrative Medicine we also worked on projects related to nutrition interventions, mind-body interventions and medical education. In these projects we worked closely together with Wageningen University and Research centre, Maastricht University, TNO, and other universities and research institutions. The following four projects are representative of our methodology and research approach.

Consumers experience the effect of organic nutrition

In 2010, we conducted a quantitative survey among consumers. 565 respondents (75% of total) indicated that they had experienced one or more positive health effects upon switching from conventional to organic food products. 'Better resistance' and 'quicker recovery after an illness' were mentioned most often. While these experiences are subjective, some of the reported health-promoting effects can be explained by the fact that organic food products contain more fibres, dry matter and antioxidants. Scientific research on the health effects of organic food products is extremely complex and time intensive. The experience of consumers had not been studied before.





Safety of complementary medicine

Anthroposophic and homeopathic medicine can be taken orally (as tablets or granules) or be administered through injections. However, scientific knowledge on the safety of the latter method is limited. Side effects reported by doctors and patients were collected in various databases. In one of our research projects we have evaluated the side effects reported in the databases of eight manufacturers, who together represent 94% of the German market for injectable complementary medicines. Our study shows that side effects from injections are rare. Moreover, the known side effects are usually mentioned in the instruction leaflet. Therefore the safety of injectable anthroposophic and homeopathic medicines for injection appears to be guaranteed.

Paediatricians and complementary medicine

In 2010 we have surveyed the attitudes, beliefs, experience and referral patterns of Dutch paediatricians regarding complementary and alternative medicine (CAM). A total of 343 paediatricians (24% of the membership of the Dutch Association of Paediatrics) responded to an anonymous web-based questionnaire. The results show that a significant group of Dutch paediatricians has a positive attitude towards CAM and refers patients to CAM therapists. The majority of paediatricians, however, do not ask patients about CAM use.



More than 50% of the respondents indicated that their knowledge of CAM was insufficient.



The concept of health

What is health? As the scientific answer to this question is still lacking, it was difficult to draw definite conclusions from our large-scale project 'Organic More Healthy?', on the health effects of organic nutrition. The WHO definition of health is too general to serve as a basis for scientific research. The Dutch Health Council and the Netherlands Organisation for Health Research and Development (ZonMw) recognized this problem and commissioned the Louis Bolk Institute to organize an invitational conference on the concept of health. This conference has defined health as 'the ability to adapt and to self manage'. Follow-up research aims at developing a more detailed concept of health that can be used for research and evaluation of prevention policies.

Selected publications 2010



Bestman, M.W.P., M. Ruis, J. Heijmans, K. van Middelkoop. 2010. **Poultry Signals: a practical guide for poultry-oriented management.** Roodbond, Zutphen. 112 p.



Bos, M.M. 2010. **Biology of the Ragwort Flea Beetle Longitarus jacobaeae and international experiences in the biological control of Ragwort.** (In Dutch.). Report 2010-011LBP. Louis Bolk Instituut, Driebergen. 18 p.

Burgt, G.H.M. van der. 2010. **Possibilities of cut-and-carry fertilizers.** (In Dutch.). Ekoland. 5-2010, p. 10-11. [e](#)

Deru, J.G.C., N.J.M. van Eekeren, H. de Boer. 2010. **Rooting of grassland: a literature review on nutrient uptake in relation to rooting depth and density, and on potential measures to stimulate deep and dense**

rooting of grass. (In Dutch, with English abstract.). Report 2010-018LBV. Louis Bolk Instituut, Driebergen. 63 p.



Eekeren, N.J.M. van. 2010. **Grassland management, soil biota and ecosystem services in sandy soils.** PhD Diss. Wageningen University, Wageningen. 264 p.



Lammerts van Bueren, E.T., M. Tiemens-Hulscher. 2010. **Manual Potato Breeding for farmers.** (In Dutch.).



Elzakker, B. van, F. Eyhorn. 2010. **The Organic Business Guide: developing sustainable value chains with smallholders.** IFOAM, Bonn. 172 p.

Timmermans, B.G.H., N.J.M. van Eekeren, E. Finke, F.W. Smeding, M.M. Bos. 2010. **Phosphate extraction on natural plots with grass**



clover crop and potassium fertilization: Guide for practice. (In Dutch.). Louis Bolk Instituut, Driebergen. 28 p.

Greeff, A. de, M.A.S. Huber, L.P.L. van de Vijver, W. Swinkels, H. Parmentier, J. Rebel. 2010. **Effect of organically and conventionally produced diets on jejunal gene expression in chicken.** British Journal of Nutrition. 103(5), p. 696-702. [e](#)

Huber, M.A.S., L.P.L. van de Vijver, D. Nierop, H. Parmentier, H. Savelkoul, S. Coulier, S. Wopereis, E. Verheij, J. van der Greef, L.A.P. Hoogenboom. 2010. **Effects of organically and conventionally produced feed on biomarkers of health in a chicken model.** British Journal of Nutrition. 103(5), p. 663-676. [e](#)

Kooreman, P., E.W. Baars. 2010 (in press). **Patients Whose GP Knows Complementary Medicine Have Lower Costs and Live Longer.** European Journal of Health Economics. [e](#)

Vlieger, A.M., M. van Vliet, M.C. Jong. 2010. **Attitudes toward Complementary and Alternative Medicine: A National Survey among Paediatricians in the Netherlands.** European Journal of Pediatrics. 170(5), p. 619-624. [e](#)

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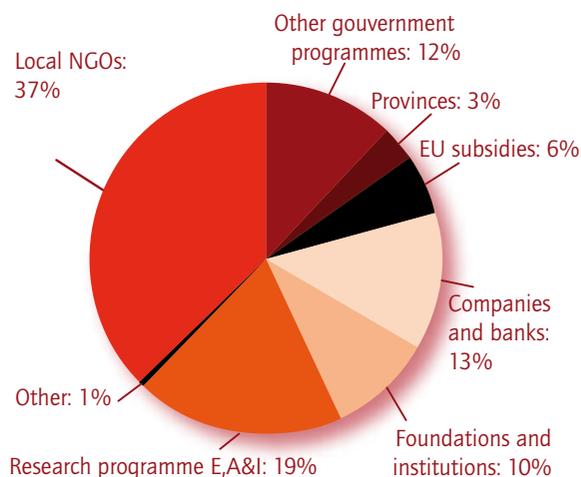
Annual accounting statement 2010

The Louis Bolk Institute has closed the financial year of 2010 with a loss of € 131,189. This loss is mostly due to lower hourly compensation rates than budgeted, and higher non-recurring costs of € 365,000 for improving our business operations and organisation structure. Additional spending cuts on our ordinary business operations resulted in a significantly lower deficit at the end of 2010 than previously expected. These annual figures refer to the consolidated annual statement of the LBI Foundation, and have been approved by the Supervisory Board on 6 June 2011. The auditor's report on these figures has been completed by Stolwijk Kelderman Accountants on 30 May 2011.

Statement of revenue and expenditure (x € 1.000,-)

	Actual 2010	Actual 2009
Revenues		
Revenues from projects and subsidies	5.252	5.313
Subcontracting costs	-2.101	-1.975
Net revenues from projects and subsidies	3.151	3.338
Donations and income from fund raising	57	162
Various revenues	6	5
Total revenues	3.214	3.505
Expenditure		
Wages and salaries	2.381	2.737
Social security contributions	304	282
Depreciation of intangible and tangible fixed assets	78	128
Other operating costs	580	593
Total expenditure	3.343	3.740
Balance from ordinary business operations	-129	-235
Financial revenue and expenditure	-2	-19
Result	-131	-254

Distribution of revenues according to funding source



The consolidated result of the LBI Foundation for 2010 is -/- € 131,189 (for 2009: -/- € 254,000). The normalised result is +/- € 233.811.

Management

As of 31 December 2010 the Supervisory Board was made up as follows: H. J. Niemeijer M.Sc., chair; T. N. Peetoom, deputy-chair; A. P. van den Burg and Prof. Mrs. A. van der Zijpp. The Management Board consisted of Dr. V. Blok until 31 January 2010. As from 1 February 2010 B. R. A. Gijzel M.Sc. serves as Acting Director.

Normalisation

Expenditure for 2010 includes the following non-recurring costs:

• Additional costs for hiring external staff	185.000	
• Severance compensation former director	70.000	
• ICT investments	60.000	
• Discontinuance of Agro-Eco Ltd	20.000	30.000
• Conversion of acquisition costs	60.000	
	395.000	30.000
Balance	365.000	
Result		- 131.189
Normalised result (positive)		€ 233.811

Netherlands:

Hoofdstraat 24
NL - 3972 LA Driebergen
T + 31 (0) 343 523 860
F + 31 (0) 343 515 611
info@louisbolk.nl
www.louisbolk.org

Eastern Africa:

P.O. Box 71982
Kampala
Uganda
T + 256 (0) 312 296 642
easternafrica@louisbolk.org
www.louisbolk.org

West Africa:

Christman House
PMB KA 84 Airport
Accra, Ghana
T + 233 (0) 302 786 097
F + 233 (0) 302 786 154
westafrica@louisbolk.org
www.louisbolk.org