



# Invaluable versatility

**2008** was an exciting year. The Louis Bolk Institute merged with Agro Eco, and invested heavily in staff development and new projects. These steps have already proved invaluable for the continuity and profile of our institute, and have increased our versatility and innovative strength.

Teaming up with Agro Eco was a strategic decision. We have worked hard to make this merger a success, and our efforts are paying off. Together with our thirty new colleagues, we are now able to offer a broad package of research and advisory services to the international market. At the Louis Bolk Institute, research, knowledge development and knowledge transfer have always been inextricably linked to applied research. In our view – and that of our clients – this strategy leads to solutions that are immediately applicable. Working together with the Agro Eco consultants provides new opportunities to transfer our expertise and innovative ideas to the agriculture sector, and to offer tailored advice. Furthermore, the merger opens up possibilities for research projects with local partners in Africa, the Middle East, Eastern Europe and Central Asia. Our first joint project, introducing organic agriculture in Central Asia, is now a reality!

Continuous innovation is crucial for our organisation. In our new Market & Economy research group, we are bringing together knowledge of products and product quality with marketing experience. For example, we are advising farmers on how to combine farming activities with providing nature conservation and water management services. A second example is the 'Identity, Quality and Market' project that we prepared in 2008 and started in spring 2009. This project gives farmers the opportunity to process their own agricultural products off-farm. This way, farmers can continue to produce value-added products such as cheese and meat – the origin and quality of these products remain recognizable – but they no longer have to do this individually at their homes, saving them a great deal of time and money. The Louis Bolk Institute supervises the development of this innovative production strategy and advises farmers on logistics, quality control and pricing, marketing opportunities, and consumer information.

Our Healthcare & Nutrition department also made a new start in 2008 with the arrival of Miek Jong, the new head of department. Her team's knowledge on nutrition, lifestyle and healthcare is invaluable for our impact assessment studies and

*The Supervisory Board* convened five times in 2008. Formal duties included the approval of the annual accounts for 2008 and the annual plan and budget for 2009. In addition the Board formulated criteria for self-evaluation and requirements for the composition of the Board. Important strategic decisions in 2008 included the merger with Agro Eco and investments in the institute buildings. The merger with Agro Eco allows the Louis Bolk Institute to broaden its package of research and advisory services. It will

also stimulate professional development and reduce relative overhead costs. In particular, we expect that the synergy between Agro Eco's international experience and the Louis Bolk Institute's research expertise will help to establish a significant international market position for the new institute. The Board looks forward to the future with confidence.

*Bram van de Klundert, MSc - Chair of the Supervisory Board*

research projects on obesity, diabetes and other lifestyle-related health issues. These issues are relevant to society, and that is why the Louis Bolk Institute is committed to address them.

Above all, 2008 was a year in which we continued to use our expertise to set up, implement and monitor exciting and innovative projects. For example, we initiated a classical potato breeding project, working together with farmer-breeders on the continuous search for suitable organic potato varieties. This is one of my favourite projects, because it enables our institute to help find high quality alternatives for the genetically modified varieties that many consumers and politicians object against. This project makes abundantly clear how important it is to continually look for workable alternatives – because pluriformity is the basis for innovation. However, like many research projects, this process takes time, much time. Fortunately, the financial support from the Ministry of Agriculture, Nature Management and Food Quality allows us to keep on looking for creative solutions that make our agricultural systems more sustainable.

We are proud that we can serve this role. We invite you to read our annual report for 2008 and learn about our other



projects – each of which initiated by practical questions from the organic sector, and each of which generating results that help our clients move forward. We also invite you to visit our website for a complete list of our 2008 publications.

All in all, 2008 was a year in which our institute made a great leap forward. Not only did we carry out important research projects and introduce innovations, but we also significantly broadened our profile. In the coming years we will continue to serve our clients in the best way possible by doing what we are good at: working with farmers and sector partners on ever more sustainable solutions for agriculture, nutrition and health care - in the Netherlands and beyond.

*Vincent Blok, PhD  
CEO, Louis Bolk Institute*



**A G R O E C O**  
**LOUIS BOLK**  
I N S T I T U T E

*National agricultural projects* A selection of the Institute's national projects on organic agriculture in 2008 is presented below. National projects are commissioned by the Dutch Ministry of Agriculture, Nature Management and Food Quality (LNV) and coordinated by Bioconnect, a network of organic businesses and educational and research institutes. The Louis Bolk Institute is also involved in national demonstration projects that promote sustainable agriculture. These projects are in part funded through LNV's Demo subsidy scheme.

## *Developing an organic soil fertilization standard*

As early as 2002 the organic sector expressed an ambition to increase the relative use of organically produced manure, compost and other organic fertilizers in crop production. During 2002-2007 various approaches to realize this ambition proved unsatisfactory and led to undesirable legislative effects. In 2008 the National Expert Group on Organic Agriculture of the Dutch Agriculture and Horticulture Federation LTO launched a project that aimed to produce a straightforward yet broadly supported proposal for an organic soil fertilization standard. In view of the Louis Bolk Institute's extensive experience with organic fertilizers, manure exchange and collaboration within the organic sector, the Institute was asked to supervise this project. At the beginning of 2008 the Institute convened a focus group of sector representatives to work out an ambitious yet practicable soil fertilization standard for the organic sector. This proposal was discussed with the sector, the inspection body (Skal) and the Ministry of Agriculture, Nature Management and Food Quality (LNV), and was published widely to inform all parties concerned and enable them to respond. Following a final discussion meeting with 25 representatives from various branches within the organic sector, a definitive, broadly supported proposal for the standard was formulated. This proposal has now been approved by the Consultative Committee on Organic



Regulation (OBR), and the new standard is expected to be introduced in the Netherlands at the beginning of 2010. As supervisor of this project, the Louis Bolk Institute is very pleased with these results.

## *Reducing nutrient inputs and developing alternative methods*

In 2008 the Louis Bolk Institute started a three-year research project entitled *Minder en anders bemesten* (Reducing nutrient inputs and developing alternative soil fertilization methods). Sparked by a recent change in the Dutch national legislation on manure and nutrient management, which dictates that no more nutrients should be applied than is necessary for the crop ('balanced fertilization'), the project uses field trials to seek new strategies for organic soil fertilization. Following a literature study, field trials were set up at three organic farms with different soil types and various extensive and intensive cropping systems. The trials are used to evaluate the effect of different organic fertilizers (including grass-clover mulch, grass-clover silage, alfalfa, sugar-beet vinasse and chicken manure) on crop yield, product quality and environmental performance. The trials should be completed by the end of 2010.

## *Selecting tasty vegetable varieties*

In the experience of motivated consumers organic products taste better, but is this really the case? And how can the taste be further improved? Within the research programme *Robuust uitgangsmateriaal* (Robust starting material), which is aimed at selecting disease resistant, 'low input' varieties, the Louis Bolk Institute investigated whether varietal development can also be aimed at improving the taste of organic vegetables. By linking varietal characteristics to the taste experience of consumers, the organic sector could develop new vegetable varieties that are particularly tasty and healthy. The results of this study (which include taste tests and data collection on taste, perception and vegetable breeding) were published as a digital report in 2008.



Taste test of organic carrots

## Reducing feather pecking in the conventional poultry sector

In the project *Van kuiken naar kip* (From chick to hen) the Louis Bolk Institute, in close collaboration with the Dutch poultry breeding company *Interbroed Leghennen Veghel*, demonstrates measures to prevent feather pecking in conventional poultry farms. This is the first time that measures from the organic poultry sector are being applied in mainstream poultry farming. In this project, knowledge gathered through many years of research by the Louis Bolk Institute on measures to prevent feather pecking in organic poultry farms is shared with the conventional poultry sector. This project runs to the end of 2010.



Sharing knowledge on feather pecking with the conventional poultry sector



Collecting cattle health data

## Increasing natural disease resistance in dairy cattle

Dairy farmers have a strong interest in factors that determine the natural disease resistance of their livestock. Within the *Weerstand van biologisch melkvee* project (Disease resistance in organic dairy cattle), which started in 2007, the Louis Bolk Institute has collected data on cattle health in a systematic and farmer-friendly way, on a large number of organic dairy farms. The project takes into account the diversity of breeds as well as differences in individual farmer's objectives and varying attitudes towards the use of medical therapies. The project enables dairy farmers to gain more insight into the factors that determine the health of their livestock.

## Breeding organic potato varieties

The Netherlands has a strong tradition in the conventional production of high quality potato varieties and seed potatoes for the domestic and export markets. However, there is an urgent need for high quality potato varieties that are suitable for organic production. Thanks to lobbying by the Louis Bolk Institute and partners, the Dutch Parliament agreed in 2008 to fund a classical breeding programme for potato. Initiated by the grower Niek Vos, an organic potato breeding programme has been set up by the Louis Bolk Institute and Wageningen University and Research Centre (Wageningen UR), in close collaboration with commercial breeding companies. Farmer-breeders also play an important role in this project. Encouraged by what they have learned in a potato breeding course of the Louis Bolk Institute, these farmer-breeders help to select clones for improved organic potato varieties – with the best disease resistance, taste and performance. The project is part



Learning how to select nitrogen-efficient potato varieties

of the *Bio-Impuls* programme, led by the Louis Bolk Institute, which is aimed at improving the breeding, production and marketing of organic potatoes.

## Regional agricultural projects

In addition to national projects the Louis Bolk Institute also carries out regional projects, mostly for provincial councils. Several projects focus on collaboration between farmers and nature conservation organisations; others are aimed at increasing (agro)biodiversity at various levels. Key projects of 2008 are presented below.

### Developing the Biovak concept

January 2008 saw the launch of *Biovak*, the first organic trade fair of the Netherlands. As one of the leading partners of the *Biokennis* knowledge network, the Louis Bolk Institute worked together with ICEM (International Company Exhibition Management) on the development of this new trade fair concept, which focuses on networking and the exchange of knowledge and experience. The Louis Bolk Institute coordinated the content of the programme and also presented several workshops. As the fair was considered a success, it was held again in 2009.

### Farmers' networks

Organic farmers' networks are a vital link in many projects of the Louis Bolk Institute. As a partner in the *Bioconnect* knowledge network, the Institute participates in seven (out of ten) sector networks of *Bioconnect*. As a research organisation, the Louis Bolk Institute is able to identify relevant research themes that contribute to improving the quality of the organic sector. Furthermore, the Institute plays an important role as initiator of activities that encourage knowledge exchange between farmers, researchers and commercial companies. Cross-border network activities are also taking place: for example, in 2008 the Louis Bolk Institute organised the annual "healthy soils day" together with the Kruishoutem Vegetable Research Centre in Belgium. At this meeting, which was held at the Verbeek brothers' greenhouse nursery business, seventy participants exchanged knowledge and experience, while the Louis Bolk Institute provided discussion topics and supervised the day.



Reed cuttings from nature reserves can be used as bedding straw and animal fodder

### Processing reed and grass cuttings from nature conservation areas

In the project *Nut en natuur* the Louis Bolk Institute investigates innovative techniques for, and the costs and benefits of, using reed and grass cuttings from nature conservation areas for agricultural purposes. The project is funded by the provincial council of Overijssel, a province which is characterized by large natural reed fields and small-scale agricultural landscapes. Processing the enormous amounts of reed and grass cuttings from natural areas is costly, while farmers could use these cuttings as animal fodder or bedding straw, or in compost. This way, both farmers and nature organisations save on management costs, while important nature conservation measures (regular mowing as a means to gradually impoverish nutrient-rich soils) remain affordable. The project runs from Spring 2008 to 2010.



Soil quality assessment during the 2008 Healthy Soils day

### Growing cereals naturally

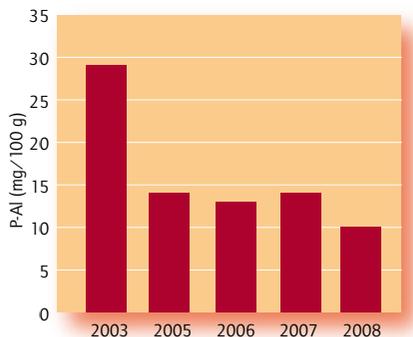
For many years, the Louis Bolk Institute has been involved in projects that promote collaboration between organic farmers and nature conservation organisations. As of 2008 the Institute is involved in various projects on organic cereal production in nature conservation areas. In several projects the Louis Bolk Institute works together with farmers and nature conservation organisations to find an optimal balance between organic cereal production and nature conservation. The Louis Bolk Institute plays an important bridging role in these projects.



Inspecting a rye crop grown on the Eerde Estate with a colleague from the Natural Monuments Preservation Society

## 'Mining' soil phosphates

Abandoned arable land that is converted to new natural areas often has high soil phosphate levels, due to past fertilization practices. In the project *Evenwichtige verschraving* (Balanced soil impoverishment) (2007-2009) the Louis Bolk Institute has developed a 'phosphate mining' method that combines grass/clover cultivation with potassium fertilization. Field trials have shown that this method removes more phosphates from the soil than a grass-only cultivation without potassium fertilization, because the yield and the phosphorous uptake of the former system is considerably higher. In addition, the cuttings of the fertilized grass/clover have a higher feeding value, which makes this method interesting for livestock farmers as well. In short: a win-win solution for agriculture and nature.



Decrease in phosphate content of the top soil layer (0-10 cm), in a 'phosphate mining' trial in the Hengstven nature reserve

## Reducing fungal diseases of wheat

In 2008, within the framework of the European project *Quality Low Input Food*, the Louis Bolk Institute investigated the effect of *Fusarium* on wheat quality. *Fusarium* is a fungus that infests wheat grains. If infested grain is used as seed, the seedlings also become affected. Moreover, the fungus produces mycotoxins, which reduces wheat quality for consumption. The Louis Bolk Institute has demonstrated in various field and pot experiments that wheat varieties differ in their sensitivity to *Fusarium*. These results are immediately relevant for wheat breeding. The experiments have also shown that the application of a nitrogen fertilizer just before the wheat grains start to develop raises the grain protein content but also increases the risk of *Fusarium* and toxin production. The Louis Bolk Institute has published two scientific articles on this research. 



## Workshop nitrogen management

For the fourth successive year the Louis Bolk Institute organised an international workshop aimed at knowledge exchange and skills training for more than 25 European students and young researchers. They discussed nitrogen use efficiency and the effect of nitrogen fertilizers on product quality. 



## Conversion to organic farming in Flanders

Together with the Flemish Institute for Agricultural and Fisheries Research (ILVO), the Louis Bolk Institute carried out a study for the Flemish government on the economic impact of conversion from conventional to organic farming. The results are used for determining the amount of subsidy for converting Flemish farmers. The study shows that, in the long term, organic farmers can achieve better returns than their conventional counterparts. However, it may take years to recoup the costs of conversion, as farm business results during the transition period are constrained by the lack of an 'organic premium' for conversion products, and by the time and money needed to acquire new skills and new market contacts. One of the recommendations of the Louis Bolk Institute, therefore, is to develop instruments that help to reduce transition costs and increase marketing opportunities. 

## Organic sector: fewer antibiotic-resistant bacteria

In October 2008 the Louis Bolk Institute, in collaboration with the Institute of Food Safety (Rikilt) and the Central Veterinary Institute (CVI), published the results of a study on contaminants and micro-organisms in organic products. The study demonstrated that organic products are at least as safe as conventional products. Clear differences were found in the risk of *Salmonella* contamination on pig farms which had been producing organically for over six years. On these farms, no *Salmonella* contamination was found compared to conventional pig farms. The risk of antibiotic-resistant bacteria was also much lower in both organically-raised pigs and chickens, than in those on conventional farms. The Louis Bolk Institute will continue this research, because antibiotic resistance poses a serious threat to human health.



Research by the Louis Bolk institute has shown that the risk of antibiotic-resistant bacteria is lower in organically raised pigs than in conventionally raised pigs

## Clinical research into the action of complementary medicine

The Louis Bolk Institute is one of the few institutes in the Netherlands that does ongoing research into the efficacy of complementary medicine such as anthroposophical, homeopathic and body-mind therapies. In 2008 our findings on the effects of the remedy *Citrus/Cydonia* comp. were published in the international journal *Mediators of Inflammation*. This medicinal product can activate a positive and enduring change in the immune system, and hay fever sufferers in particular can benefit from this remedy. The Institute also investigated the effects of Hepar magnesium on fibromyalgia, and showed positive effects after ten weeks of treatment on symptoms such as restlessness, pain and fatigue. In view of increasing demand for evidence-based medicine, the Louis Bolk Institute will continue to investigate the efficacy and safety of complementary medicine.

## Insight into the efficacy of living and working on care farms

The number of care farms in the Netherlands has increased sharply since 1998, from 75 to over 900. The Louis Bolk Institute has worked with Wageningen University and Research Centre (Wageningen UR) to develop qualitative and quantitative instruments to measure scientifically the effects of (therapeutic) living and working in an agricultural setting. In 2008, a pilot study was carried out on a care farm, *de Hoge Born*, in Wageningen. Valuable scientific information was gathered to assess changes in the state of health of patients using the new instrumentation. With some adjustments these instruments are now being used in a follow-up study on the effects of care farming among a larger group of clients.



What is the 'active principle' of care farms? This question is explored in the Louis Bolk publication *Verschuivende paradigma's binnen landbouw & zorg* (Shifting paradigms in agriculture and care)

## Projects Healthcare and nutrition

The Louis Bolk Institute has a multifaceted research programme on healthcare and nutrition. Projects are largely financed by private foundations, businesses and public funds. Key projects of 2008 are summarized here.



The Louis Bolk Institute carries out research into the efficacy of anthroposophical and homeopathic medicine



In the KOALA project the Louis Bolk Institute investigates the effects of an organic diet on the development of obesity in children

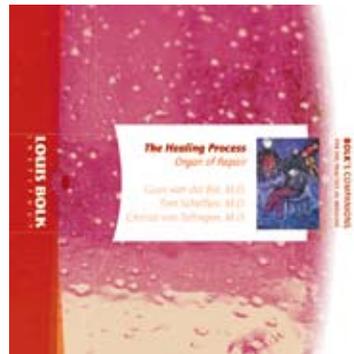
## Health effects of an organic diet

Since 2000 the Louis Bolk Institute participates in the *KOALA* project (on children, parents and health), researching the relationship between lifestyle factors and human health, particularly the health effects of an organic diet. As part of this effort, a study was started in 2008 to investigate the effects of an organic diet on the development of asthma and obesity in seven year-olds. The first results are expected in 2010. Diet, as a lifestyle factor, has been shown to play an important role in 'western type diseases' such as obesity, diabetes and ADHD. Therefore, research will continue into the effects of an organic diet on specific disorders.

## Presentation of the new Bolk's Companion at a mini-symposium

During a mini-symposium on 9 September 2008, the Louis Bolk Institute presented the first issue of the Bolk's Companions for the Practice of Medicine study series, entitled

*The healing process - organ of repair*. This Companion provides new insights into the development and progress of inflammation. The symposium, organised by the Institute, was otherwise devoted to complementary medicine as part of medical training at Dutch academic medical centres. For the first time various university lecturers congregated to discuss the courses on complementary medicine offered by the seven medical faculties of the Netherlands. This symposium is the first step towards creating a uniform teaching module for complementary medicine, which would fulfil a need, indicated by a national survey, among medical students for more information on this area of medicine.



Following the success of the Bolk's Companions for the Study of Medicine, the first issue of a new study series entitled the Bolk's Companions for the Practice of Medicine was published in 2008

## Revenue and Expenditure (x € 1, 000)

	budget 2009	account 2008	budget 2008	account 2007	budget 2007
<b>Revenues</b>					
Projects	5,065	3,848	3,334	3,829	3,742
Movement in work in progress		-145		313	
Donations	15	15	15	17	5
Miscellaneous		5		5	
<b>Total revenues</b>	<b>5,080</b>	<b>3,723</b>	<b>3,349</b>	<b>4,164</b>	<b>3,747</b>
<b>Expenditure</b>					
Bought-in project costs	1,322	1,437	907	1,398	
Wages and salaries	2,311	1,686	1,644	1,576	1,945
Social security costs	532	219	221	219	150
Depreciation of intangible and tangible fixed assets	65	33	25	26	
Other operating expenses	531	520	367	530	263
<b>Total expenditure</b>	<b>4,761</b>	<b>3,895</b>	<b>3,164</b>	<b>3,749</b>	<b>2,358</b>
<b>Balance from normal business operations</b>	<b>319</b>	<b>-172</b>	<b>185</b>	<b>415</b>	<b>1,389</b>
Result of participating interest		13			
Financial revenue and expenditure		22		15	
<b>Result (incl. exceptional result)</b>	<b>319</b>	<b>-137</b>	<b>185</b>	<b>430</b>	<b>1,389</b>

In the 2008 financial year € 205,000 from our resources was spent on financing our own projects. The institute spent € 70,000 on own contributions in various other projects. Other operating expenses include a contingency for possible future expenditure arising from the acquisition of Agro Eco Consultancy BV and its inclusion in the Louis Bolk Institute. Turnover has increased incidentally in this financial year as a result of cooperation contracts, of which the turnover and procurement must be formally recorded in the annual accounts. Agro Eco Consultancy BV is included in the budget for 2009.

## Supervisory Board of the Louis Bolk Institute Foundation

Chair: A.F. (Bram) van de Klundert

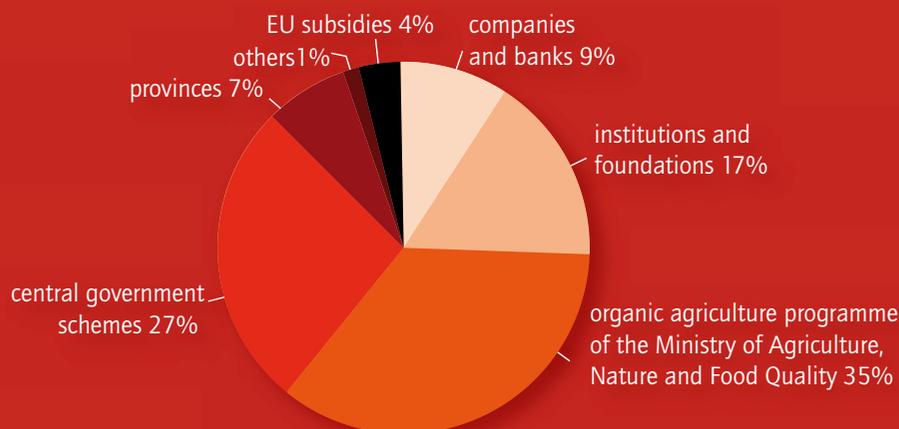
Members: A. (Antoine) van den Burg

A.C. (Kees) van der Linden

H.J. (Hanno) Niemeijer

T.N. (Tom) Peetoom

## Percentage distribution of the revenues to the project financier



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Text: Coworkx Translation: R.S. Martin

Photos: LBI, Michiel Wijnbergh, GAW, Anna de Weerd

Design: Fingerprint Imprint: Drukkerij Kerckebosch

This publication can be ordered by mail

(info@louisbolk.nl) or from the website,

citing reference number CO 05

## ***Auditor's report***

**Introduction** We have audited whether the accompanying abbreviated profit and loss accounts of Stichting Louis Bolk Institute, Driebergen, The Netherlands, for the years 2008 and 2007 have been derived consistently from the audited financial statements of Stichting Louis Bolk Institute, for the year 2008. In our auditors' report dated July 1, 2009 we expressed an unqualified opinion on these financial statements. Management is responsible for the preparation of the abbreviated financial statements in accordance with the accounting policies as applied in the 2008 financial statements of Stichting Louis Bolk Institute. Our responsibility is to express an opinion on these abbreviated financial statements.

**Scope** We conducted our audit in accordance with Dutch law. This law requires that we plan and perform the audit to obtain reasonable assurance that the abbreviated financial statements have been derived consistently from the financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

**Opinion** In our opinion, these abbreviated profit and loss accounts have been derived consistently, in all material respects, from the financial statements.

**Emphasis of matter** For a better understanding of the company's financial position and results and the scope of our audit, we emphasize that the abbreviated profit and loss accounts should be read in conjunction with the unabridged financial statements, from which the abbreviated financial statements were derived and our unqualified auditors' report thereon dated July 1, 2009. Our opinion is not qualified in respect of this matter.

Utrecht, July 2, 2009

Ernst & Young Nederland LLP

signed by H.W. Mulder

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