

Organic Knowledge Update

Organic arable farming and field vegetable cultivation

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Organic open field cultivation in the Netherlands

The arable farming and field vegetable cultivation sector is a significant part of the organic agricultural sector in the Netherlands. The sector produces not only vegetables for human consumption, but also organic animal feed such as maize and cereals. To facilitate organic farmers, Wageningen UR and Louis Bolk Institute carry out a variety of research aimed specifically at organic arable farming and field vegetable production.



Dutch organic arable farming and field vegetable cultivation

Early 2010 the total acreage for organic vegetables and potatoes was around 6,200 hectares. Organic cereal production occupies around 5,460 hectares.

The market share of organic potatoes and vegetables has grown to 4.0% in 2009. The growth of supermarket sales was much higher than the growth of sales in specialty stores. The gross sales of potatoes went down slightly, but the volumes stayed the same.

The sales of field vegetables went up by 8.8% and market share for organic vegetables rose to 5.2%. The most important crops in terms of acreage are: carrot, onion, cabbage and pea.

→ Aspirations

The Dutch organic arable farming and field vegetable sector aims to produce healthy and sustainable food of high quality for both human and animal consumption. The products are distinct because of their taste, quality and healthfulness.

The sector focuses on:

- Caring for people and landscape;
- Improving the economic sustainability of farms;
- Closing natural cycles.

Research carried out specifically for the Dutch arable and field vegetable sector concentrates on improving the economic sustainability of farms by working towards more secure cultivation processes. Soil fertility is another important research theme.



Current affairs

Yields in Dutch organic vegetable and arable production are on average 30% lower than in conventional production. This is mainly due to losses caused by pests and diseases. Weed control measures determine most of the labour costs in Dutch organic production. Many research projects are therefore focussed on improving the management of pests, diseases and weeds.

The following research themes and issues are currently important to the arable sector:

- Ensuring a stable product quality of organic potatoes remains a challenge for both researchers and farmers. Late blight in potato remains an important problem in the years to come.
- Creating continuity in food and shelter for functional biodiversity and discontinuity (diversity) for the survival of pests and diseases, offer alternative ways of combating pests and diseases in open field cultivation. Combinations of management options such as crop rotation, mixed cropping systems and strip cultivation are tested.
- Management options to reduce greenhouse gas emissions of organic agriculture is another issue that will be looked into more closely over the coming years.
- Precision agriculture: techniques such as GPS, ICT and sensors are considered important tools to improve sustainability as well as reduce labour costs and improve yields and quality. The application of these techniques is mainly focussed on weed control and managing diversity.
- Soil management is considered the basis of a sustainable organic production. Research focus lies with optimising soil resilience and the application of techniques to minimise soil compaction and soil disturbance. Non-inversion techniques, strip tillage, and controlled traffic systems are important research issues. Please refer to the Organic Knowledge Update Soil for more information.



Research projects

- **Increased biodiversity and natural suppression of pests** A more diversified cultivation system (no monoculture) could be beneficial to organic agriculture. Project aims to design biodiversity systems which suppress pests in organic agriculture and increase knowledge about the relationship between biodiversity and resilience to pests and diseases.

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- **Control of carrot fly using strong aromatic onion oil** The carrot fly is a serious pest. In the Netherlands the insecticide Spruzit is allowed but most growers don't like to use it. The carrot fly finds the carrot by smell. This project looks at the possibilities to mask the carrot odour by using a strong aromatic onion oil.

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- **Reduction of root-spreading weeds** This project builds on previous research into the best methods to get rid of root-spreading weeds in organic farming systems. Promising techniques and systems are developed further.

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- **New intra-row weeders for practical weed control** Optimisation and innovation of new intra-row crop/weed recognition systems that are linked to physical control methods in several important organic crops.

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- **Control of seedcorn maggots** Research is carried out on farms in the South of the Netherlands to evaluate control strategies for seedcorn maggots.

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- **Clustered sowing** Clustered sowing of onions has proven to be useful in field experiments. It makes weed control easier. On-farm use is still difficult as intra-row weeders are not adapted to clustered sowing yet. This project aims to optimise clustered sowing before new mechanical weeders become available.

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- **Innovation network system approach to weed control** This network looks for ways to reduce the input of labour in weed control on organic arable farms.

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- **Innovation network control of pests and diseases** This project aims to increase quality production in organic agriculture through optimisation of existing and development of new strategies and techniques for disease and pest control. Currently mainly aimed at carrot fly, common asparagus beetle and downy mildew.

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Literature

- Haan, J.J. de, K.B. Zwart, A.B. Smit & W.C.A. van Geel. 2009. Can intensive arable farming systems on sandy soils in the Netherlands meet the targets in the nitrate directive? Proceedings 16th Nitrogen Workshop, Connecting different scales of nitrogen use in agriculture, Turin, Italy, 28 June – 1 July 2009. pp. 471-472.
- De Haan, Janjo, Wijnand Sukkel and Eveline Stilma (2008). Design of New Vegetable Production Systems in the Netherlands. Acta Horticulturae (ISHS).
- Haan, Janjo de, Olga Clevering, Jan Rinze van der Schoot, Harry Verstegen (2009). Removal of nitrogen leaching from vegetable crops in constructed wetlands. Angeleverd voor Acta Horticulturae (ISHS).
- Sukkel, W., Geel, W. van & Haan, J.J. de (2008). Carbon sequestration in organic and conventional managed soils in the Netherlands. 16th IFOAM Organic World Congress, Modena, Italy, June 16-20, 2008.
- Vermeulen, G.D., Mosquera, J., 2009. Soil, crop and emission responses to seasonal-controlled traffic in organic vegetable farming on loam soil. Soil Tillage Res. 102: 126-134.

Bioconnect aims to further develop and strengthen the Dutch organic sector by initiating and implementing research projects. Within Bioconnect organic entrepreneurs (from farmers to shop-keepers) work together with research institutes, colleges and universities and consultancy organisations. This leads to demand-driven research that is unique to the Netherlands.



The Ministry of Economic Affairs, Agriculture and Innovation sponsors these research projects.



Ministry of Economic Affairs,
Agriculture and Innovation

Wageningen University and Research Centre and the Louis Bolk Institute together carry out these research projects. About 140 projects dedicated to organic agriculture are currently under way.



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