ICROFS
Organic RDD

Organic RDD 2, 2014-2018:

The Organic Research, Development and Demonstration programme in Denmark

Organic RDD 2

The Organic Research, Development and Demonstration Programme 2 (Organic RDD 2) is the Danish national research programme regarding organic food systems. It runs in the period 2014-2018 and has a total budget of 90 m. DKK. It is coordinated by ICROFS, International Centre for Research in Organic Food Systems and is funded by the Green Growth and Development programme (GUDP) under the Danish Ministry of Food, Agriculture and Fisheries. The themes of the programme are based on the recommendations formulated in ICROFS' Research and Development Strategy 2012, which was developed in close co-operation with a wide range of stakeholders within or associated with the organic sector.

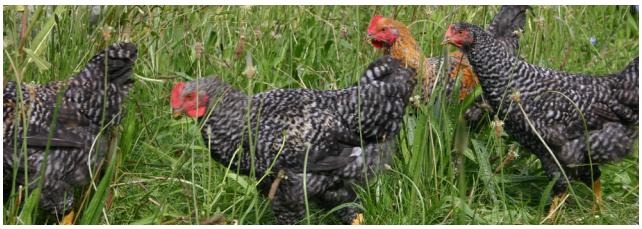
The ten projects in the Organic RDD 2 programme are:

PROTECFRUIT: Protected production of organic apples and pears

The purpose of the project is to increase the yield and area with organic apples/pears by new technologies, to create new business opportunities for technical equipment, to reduce use of resources as well as to increase easier access to organic fruit produced with respect for the principles of organic farming. Novel techniques in organic apple production are the use of roof over the trees to protect them from rain and fungi and sprinkler spraying, where sprinklers are positioned at different heights in the tree row. Sprinklers may allow successful disease control with few curative potassium bicarbonate sprays instead of several preventive sulphur sprays. Sprinklers can also be used for release of scab ascospores by strategic irrigation in dry weather. Flower strips as a source of natural enemies to control the rosy apple aphid, and biological control of gall midge larvae by new formulations of entomopathogenic fungi will be studied.

VIPiglets: Low mortality through birth of vital piglets.

The project facilitates a reduction in neonatal organic piglet mortality from 33 to 20 % of total born piglets, one extra weaned pig per litter and one extra kg in average weaning weight. The project will identify major mortality risk factors at sow and piglet level, identify new breeding goals and selection tools to target the specific conditions and challenges of the organic sow production and look at birth surveillance, assistance and provision of a suitable climate for sow and piglets at the birth site.



MultiChick: Diversity and integrity in organic poultry meat production

Multi Chick aims to contribute to the growth in organic broiler production through a re-evaluation of production systems. There is a need for systems that are more protective of the organic principles and the expectation of high animal welfare and positive effect on the environment and climate. Efforts will be directed towards new feeding strategies in the existing systems and the development of new systems where new phenotypes, will be integrated in

the production of willow/crops in order to achieve reduced N leaching, increase carbon storage and optimal welfare, which can provide a basis for launching new brands.

pECOSYSTEM: Pig production in eco-efficient organic systems

The objective of the project is to investigate, develop and demonstrate an alternative to the current practice. Today the climate and environmental impact of organic systems does not differ much from conventional systems.

Hygiene and ammonia emissions are often difficult to control satisfactorily in the present stables with a connected concrete outdoor area, and diarrhoea is a common problem when piglets are transferred from the range to the stables. Alternatively the sow production could take place in an agroforestry system expected to reduce nitrate leaching. The weaning could be postponed while maintaining the overall pig production per sow through introduction of lactation oestrus resulting in more robust piglets. Finishing could take place in new types of stables with a significant lower ammonia emission while maintaining the health and welfare of the slaughter pigs. This cross-disciplinary project will document such possible benefits and develop management procedures to allow a profitable production based on these ideas.

RobustFish: New possibilities for growth and robustness in organic aquaculture

According to the EU Regulation on Organic Aquaculture, the organic fish production is to be exclusively based on organic fry from 2016. Therefore, the robustness of the fry to diseases is crucial. This especially concerns the most serious trout fry disease in Danish aquaculture, Rainbow Trout Fry Syndrome (RTFS). The robustness of the fry seems to be related to larval developmental rate and to the dietary content of specific Ω-3 fatty acids (HUFAs). Stress and RTFS tests are going to be performed to investigate if these two factors can be included in strategies to increase the robustness of the fry. Further, the effect on health and welfare of water treatments using approved agents in organic aquaculture is tested. Connected to these efforts RobustFish also will provide needed knowledge about market conditions and consumer attitudes, including the competitive effect of increased production.

RowCrop: Row cropping in organic arable farming for increased productivity and sustainability

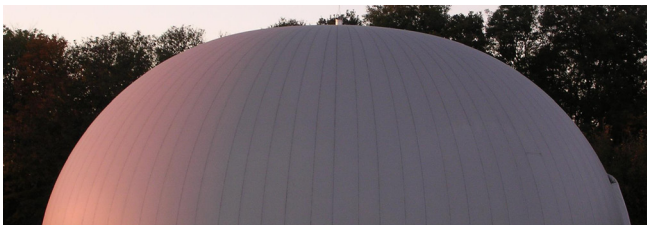
RowCrop will develop the scientific foundation for improved control of aggressive annual and perennial weeds in a row cropping system and for cultivating more productive Nitrogen (N) fixing catch crops to enhance crop N supply. It will document the effects of the row cropping system on productivity, weed infestation, N cycling, N leaching and soil carbon in a long-term crop rotation experiment representing different organic crop rotation systems and different fertility and weed infestation levels. The expected results are increase of yield in organic cereals, reduced nitrate leaching and enhanced soil carbon storage.

MultiPlant: Multifunctional perennial high-value crops in organic plant production

MultiPlant will improve productivity and economics of organic crop production by developing systems that produce large amounts of biomass per unit area for energy, protein for monogastrics and/or roughage and are robust in terms of soil fertility and perennial weeds. The goal of Multiplant is, in a value chain perspective, to develop, demonstrate and document the potential of high yielding - high biodiversity - low input perennial mixtures targeted marketable products.

SOBCows: Specialised organic breeding goals and breeding schemes for dairy cattle

The overall aim of the project is to increase the volume and profitability of organic milk production by: 1) Adjusting the breeding goal and production animals to organic production systems. The knowledge gained from genomic selection is here utilized in order to establish organic breeding lines based on the existing Danish dairy breeds. 2) Providing sustainable methods for an organic niche production based on animals with specific genetic characteristics and animals from the native Danish dairy cattle breeds.



OrganoFinery: Organic growth with biorefined organic protein feed, fertilizer and energy

Through a concept for biorefinery of green herbage to protein feed, fertilizer and energy, the project develops a new platform for organic growth. The project will deliver solutions to the following key challenges to the organic sector: Supply of organic protein feed to monogastric livestock, improved, climate-friendly, and robust crop rotations in areas with a low density of livestock, better use efficiency of the nutrients and higher yields. The project will, among other activities, identify the material best suited for biorefinery through cropping trials, extract of green leaf protein through fermentation and separation and test the organic protein feed on poultry. It will also treat the residual biomass in a biogas plant for the production of biogas and valuable organic fertilizer.

BEEFARM: Wild bees and pollination on organic farms

The overall aim of the project is to provide a tool for organic and conventional farmers that enables them to evaluate their farm for its quality for wild bees, thus offering an option to be proactive in improving on-farm bee conditions. The tool is a science based scoring system, based on an existing scientific model linking resources and wild bees on landscape level and modified to the Danish context. The tool guides farmers through a field estimation of nesting and flower resources on the farm during the season. Development of the tool is done in collaboration with organic red clover seed producers and apple growers, who test the tool and offer feedback on user friendliness to adjust the tool. In addition, a modified version of the scientific model behind will be validated based on agreement between modelled and observed abundance of wild bees.

Read more about the projects at: www.icrofs.org