Organic farming research in Estonia

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Implications

The growth of organic farming in Estonia has been rapid in recent decades. To support this development various research projects have been conducted but still a lot of new knowledge is needed to improve the performance of organic sector. Organic agriculture is based on nutrient recycling and it uses a variety of practices that are valuable also for conventional farming in the future because resources of non-renewable synthetic fertilizers are limited and food should be produced more sustainably. Holistic perspective including ecological, economic and social aspects is needed for organic farming studies and future projects should target these issues more thoroughly.

Position of organic farming research

Funding of organic farming research has been very scarce, therefore the number of studies is small, research projects mainly focus on specific topics and holistic multidisciplinary approach is often lacking. Most research so far has focused on organic plant production and soil fertility. It takes time to see the actual changes in organic cropping systems but finding the finances for long-term experiments has always been complicated. Studies addressing biodiversity issues are becoming more common in recent years. Some research topics are still severely understudied, such as feeding strategies in organic pig and broiler production, organic food processing technologies and their impact on food quality.

On-going research projects

Organic farming systems should be characterized by excellent soil fertility management to keep plant nutrients cycles short and as closed as possible. Impacts of green manures and cattle manure on soil properties and biota are currently studied in a long-term field trial (De Cima et al. 2012; Talgre et al. 2013). Different management, yields, weeds and product quality are targeted also by other studies for field crops (Sepp et al. 2009) and vegetables (Põldma et al. 2012).

Finding suitable varieties for organic production in local conditions is relevant for all crops: there are on-going studies for field crops, fruits (Kahu et al. 2009) and vegetables (Bender 2012) as well as grapes in Nordic climate (Karp 2012).

How to manage pests and diseases without synthetic pesticides is one of the key aspects in organic farming. Increased biodiversity in agricultural field may have a positive effect on biocontrol agents through diversifying the species composition of naturally occurring parasitoids and enhancing their abundance in the fields. Therefore finding suitable companion plants for white cabbage (Kaasik et al. 2012) and developing rapeseed production systems with trap-crop plant strips (Veromann et al. 2012, Kovacs et al. 2013) are relevant topics. In addition, the manipulation with amounts of nitrogen fertilizer can play a crucial role in sustainable pest management in oilseed rape (Veromann et al. 2013). Targeted precision biocontrol by using bumble bees and honeybees as carriers to spread biofungicides is found to be a promising measure to reduce grey mould and at the same time increase yields due to the of more active pollination in strawberry plantations (Muljar et al. 2012).

Finding local feeding strategies for organic sheep (Piirsalu et al. 2012) and milking cows (Leming 2012) to stable the yields and to improve the quality of production is essential.

Future research needs

There is a strong need for new and more innovative research projects in order to develop the organic sector. To develop organic pig and poultry production, a suitable feed rotations based on local feeds are needed. In addition, there is urgent need to study technologies of vegetable production, food processing etc. also to carry out long-term multidisciplinary studies. More active international cooperation is needed to share the knowledge, however most of the issues are significantly depending on local conditions and cannot be transferred directly (e.g. feed). Some other topics (e.g. processing technologies) are not so context dependent and results could be used in different countries. More efficient results could be obtained by collaborative research.

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