

## OK-Net Arable online knowledge platform

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### Abstract

*The complexity of organic farming requires farmers to have a very high level of knowledge and skills, but exchange on organic farming techniques remains limited. In order to increase productivity and quality in organic arable cropping in Europe, the thematic network OK-Net Arable under Horizon 2020 has the aim to improve the exchange of innovative and traditional knowledge among farmers, farm advisers and scientists. An online platform for knowledge exchange has been created, offering innovative education and end-user material as well as communication between stakeholders. A number of specific tools – providing information about how to put existing knowledge from research and practise into use – have been chosen. They are presented on the platform with the possibility to find solutions, evaluate them, comment and discuss them or ask questions about them and to suggest new tools to be shown on the platform.*

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### Introduction

The complexity of organic farming requires farmers to have a very high level of knowledge and skills, but exchange on organic farming techniques remains limited (EU SCAR, 2013). Closing the yield gap is one of the most important challenges in organic arable farming in Europe (EIP-AGRI Focus Group Organic Farming 2013). The thematic network OK-Net Arable under Horizon 2020 has the aim to improve the exchange of innovative and traditional knowledge among farmers, farm advisers and scientists to increase productivity and quality in organic arable cropping in Europe. This contributes to Organic 3.0 by helping farmers and advisors become more innovative and improving towards best practices. Overcoming the yield gap in organic arable farming will also make organic agriculture more sustainable. In order to increase productivity and quality in organic arable cropping in Europe by exchange of knowledge among the stakeholders, the online knowledge platform farmknowledge.org has been created.

### Material and methods

Based on the final report by the EIP-AGRI Focus Group on Organic Farming (2013) as well as on work in the project (Niggli et al., 2016), the most prominent factors contributing to overcoming the yield gap between organic and conventional arable farming were chosen for themes on the online

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platform created by OK-Net Arable. These are the five themes: Soil quality and fertility, Nutrient management, Pest and disease control, Weed management and Crop specific solutions.

A list of more than 200 different resources providing knowledge, decision support, education or update on relevant issues for these themes was collected by scouting websites and contacting research and advisory organisations within the field. The term "tool" was defined as "formatted information used as a mean for circulation of knowledge among farmers and advisors" (Micheloni, pers.comm.), and tools for knowledge exchange were grouped into 1) tools providing knowledge, 2) tools for decision support and 3) tools for education/updating. The tools were in many different formats: web platforms & websites, videos, educational resources such as webinars & e-learning, leaflets & guidelines/fact sheets, calculation tools & decision support systems, books & reports and audio/podcasts (see fig. 1). A subset of the 200 tools was chosen for the first version of the platform.



**Figure 1. Icons for the different types of tools.**

In a re-iterative process, the platform and its contents were designed, commented by project partners, re-designed, tested by farmers and advisers, improved etc. Farmers' needs were taken into account at every stage of development among others by involving Farmer Innovation Groups (Cullen et al., 2016) in the participating countries in order to make it easy for them to use.

## **Results - The knowledge platform**

The OK-Net Arable project under Horizon 2020 created a platform (<http://farmknowledge.org/>) aimed at filling the gap in the exchange of information about organic arable farming between farmers and advisers across Europe. The platform can be translated into the ten languages of the project partners, in addition to English: Bulgarian, Danish, Dutch, Estonian, French, German, Hungarian, Italian and Latvian). Originally, this was planned to be carried out by Google Translate (<https://translate.google.com/>), however, as translation was varying from acceptable over confusing to wrong, all texts on the platform itself have been translated by the project partners.

The platform contains a "toolbox" of tools, described with metadata. The metadata includes information about the problem, the tool addresses, the solution(s) it offers, a description of the tool, the theme(s) it addresses, the language(s) it can be found in, the year it has been release, the country of origin and information about the issuing organisation. The tools themselves as well as the metadata about the tools are translated by Google translate, and thus use of their recommendations in other than the original language is not advisable. The users can rate the tools with one to five stars, and the mean rating and number of rates a tool has received is shown, helping others to see whether previous users have found a certain tool relevant.

The metadata of the tools, and if possible, the tools themselves are stored in Organic eprints ([orgprints.org](http://orgprints.org)), the world's largest archive with publications about research and development in Organic Agriculture. In order to accommodate this, Organic Eprints had to be adapted to be ready to include this metadata. This was carried out by ICROFS, the administrator of Organic Eprints.

In order to accommodate discussion about the themes and tool, a module from DISQUS ([disqus.com](http://disqus.com)) has been integrated on each theme and tool page. Users have to login to give

comments, they can login with existing accounts for Facebook, Twitter or Google Plus or create an account in DISQUS, and users can share the theme and tool pages on their own social media streams. The discussion is monitored continuously by IFOAM EU, and it is made sure that all questions are replied by relevant experts.

Users can search for tools on a specific topic using either the themes, the specific keywords chosen to be relevant for organic arable farming or free-text search. As the specific keywords have been translated to the 10 languages, a user searching for "ukrudt" in Danish will also find tools in French with the keyword "adventices". The users can also search for specific tool types, e.g. videos, tools in certain languages, and tools from a certain country of origin.

## Discussion

Organic farmers and advisers know that a lot of knowledge exists about organic arable farming, but it can be difficult to find and in many cases it is difficult for them to use e.g. research results directly in their daily work. The online platform farmknowledge.org offers tools in the sense that the resources shown there present scientific and practical knowledge "digested" for use by practitioners. In addition, it offers the possibility for users to comment, discuss and ask questions about important themes and specific tools. In this way, the online platform contributes to Organic 3.0 by helping farmers and advisers become more innovative and improving towards best practices. Overcoming the yield gap in organic arable farming will also make organic agriculture more sustainable.

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