

CAP funds help organic farmers in Belgium build and adapt their own equipment ('Boer Bricoleur')

Farmer network members design and build their own equipment to boost profitability and sustainability.

EAFRD-funded projects

Location: Flanders, Belgium

Programming period: 2014-2020

Priority: P1 - Knowledge transfer and innovation

Focus Area: Innovation and cooperation

Measures: M16 - Cooperation

Funding:	Total budget	71 969 (EUR)
	EAFRD	32 386 (EUR)
	National/Regional	32 386 (EUR)
	Private	7 197 (EUR)

Timeframe: 01/01/2021 - 31/12/2022

Project promoter: CCBT - Coordination centre for practice-oriented research and information on organic cultivation*

*The project promoter/beneficiary is an [EIP-AGRI Operational Group](#)

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Summary

For small-scale, organic and agroecological farms, self-building and adapting machines offer an affordable and more autonomous alternative to buying commercial machinery.

Over two years (2021-2022), the EIP Operational Group called 'Boer bricoleur' developed a network in Flanders (Belgium) to support a do-it-yourself (DIY) approach for designing, developing and training for self-built agricultural tools and machines. The partners of the EIP Operational Group mainly consisted of organic farmers and knowledge institutions including Inagro, VIVES, ILVO and CCBT, which collaborated closely with each other. The project embraced a fully participatory, bottom-up approach.

The design and development of the network focused on three DIY concepts including an electric weed bed, an on-and-off roller for irrigation drip tapes, and a home-built GPS with RTK (real time kinematics) technology. For each of the self-built concepts, training courses were organised for and by farmers who built the machines. The building plans of the machines are publicly available as open-source documents.

Project results

- The development of fossil-fuel-free agriculture tools contributed to a reduction of CO₂ emissions.
- A reduction of waste and minimisation in the use of new resources was achieved through the recycling approach and the reuse of materials.
- A total of 50 farmers were trained, including men, women and young people.
- The project provided the participants with affordable machinery, which created economic benefits for them.
- Four construction plans were published and will remain available as open-source documents after the end of the project.





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Key lessons and recommendations

- Much of the development work was done by farmers themselves. This type of DIY work could become more widespread when the savings and/or profits from such development costs are acknowledged appropriately in a farm's business approach.
- The training sessions and the designed machines were very enthusiastically received by the farmers and inspired ideas for further designs and training sessions in the future.
- The project fully embraced the participatory bottom-up approach. This worked well.
- The role of the facilitator was crucial.

Context

Organic and agroecological farming is a growing sector in Flanders as elsewhere in Europe. Many small and medium-sized farms are interested in a business approach that combines organic agro-ecological production with the concept of short supply chains, thereby achieving sustainability at the economic, ecological and social level.

Like other farms, organic farms can use mechanisation to help support economic viability. Unfortunately, the scale, price or type of commercial agricultural machinery is not always suitable for the latter and DIY construction often represents the only viable and affordable solution to obtaining a suitable tool or machine that fits the specific requirements of a farm.

However, building or customising a tool or machinery by oneself is not always an obvious choice due to limited experience, time, know-how or lack of appropriate tools and/or workspace. As such, individual project ideas often remain non-prioritised and/or get stuck in the concept phase. Joining up with other farmers to build bespoke tools and machines together could solve this problem, provided the right mix of people can be gathered regarding experience, time, knowledge, tools and workspace availability.

In December 2020 (and inspired by the French initiative l'Atelier Paysan) the coordination centre for practice-oriented research and information on organic cultivation in Flanders (CCBT) organised a training week for 15 interested farmers to develop an e-weeder from a second-hand electric wheelchair. The idea for the network 'Boer Bricoleur' was born when it was felt that a broader initiative was needed to collect relevant feedback and support in developing more designs and training.

Objectives

The overall aim of the 'Boer Bricoleur' network was to support farmers in becoming more autonomous in relevant technical fields and learn how to jointly develop and build farming tools and equipment. The main objectives of the project were to:

- Improve the economic profitability of small and medium-sized farms.
- Promote the AKIS approach by collaborating with various stakeholders (such as farmers, knowledge institutes, students etc.) and sharing experiences and ideas for developing the innovations and know-how of farmers.
- Strengthen the autonomy of farms in terms of mechanisation so that farmers are less dependent on commercially built machinery thereby saving time and money, and being more relevant to farm-specific requirements.
- Reuse and/or recycle materials.
- Support farmers in building their own machines and provide relevant training.
- Create a sustainable network supporting self-build mechanisation in Flanders.
- Identify an international network about open-source machinery and training for farmers.



Activities

Building on the experience of the initial training in 2020, the first project activity involved a second collaborative development between farmers and VIVES University College to develop the e-weeder version 2.0. This was followed by a training event for 15 farmers to build six of the new e-weeder machines in November 2021.

A further idea resulted in the next collaborative development now focusing on the design of a DIY GPS for tractors. The same approach was applied, whereby the farmers developed the idea jointly with the participating knowledge institutes, which was followed by the organisation of training for 20 farmers jointly building the DIY GPS in February 2022.

Parallel to these two activities a survey captured the existing skills and needs of farmers in Flanders in relation to required tools and machinery. Based on the survey findings, a third design activity was launched. This time it concerned a drip tape roller mechanism for re-using irrigation tapes. This machine is a convenient system for neatly rolling up T-tapes and then being able to unroll them back into the next crop. The prototype was developed by a graduate student of VIVES and further refined in collaboration with a network member. The subsequent training took place in December 2022 and involved a group of 11 male and female farmers who built their drip tape roller machines.

The project also included a feasibility study to explore the opportunities for sustaining the network in the long-term. The economic feasibility of such a network was a particular focus of the study.

At the completion stage of the project, the construction plans of the three developed designs were published as open-source documents.

The Operational Group of the project consisted of seven farmers, one voluntary engineer, CCBT, and three research organisations (Inagro, university college VIVES and ILVO). The group hopes to continue the initiative with a follow-up project in 2023-2024, to further develop the feasibility analysis and to develop further designs and training with a focus on automation.

Main results

- A total of 50 farmers were directly trained, including men, women, and young people in 2021 and 2022. A Facebook group was set up and engaged 290 interested farmers. It is planned that the group will stay operational after the project.
- The project provided the participants with affordable machinery, which created economic benefits for them. For example, the e-weeder costs EUR 1 800 to build, which is significantly less than the price of a comparable tool sold commercially.
- Reduction of waste and minimisation in the use of new resources through the re-cycling approach and re-use of materials e.g. T-tapes with the drip tape roller and electric wheelchairs for the e-weeder version 2.0.
- The development of fossil-fuel-free agriculture tools contributes to a reduction of CO₂ emissions. For example, the e-weeder operates with a solar panel and the drip tape roller is a manual tool.
- Four construction plans were published and will remain available as open-source documents after the end of the project.
- One close learning network of about ten people was created. It is planned that the network will be continued after the project.
- The EIP Operational Group networked with Fabriek Paysanne, an organisation in Brussels with similar complementary goals and decided to work together permanently. Furthermore, the project also created new links with organisations across Europe and is setting up an international network to continue collaborating with them in future.



Key lessons and recommendations

- The training sessions and the designed machines were very enthusiastically received by the farmers and triggered ideas for further designs and training in the future.
- Much of the development work was done by farmers themselves. However, in the future, ways need to be found to recompense farmers for their time contributing to the design and development of new tools. If these costs are recovered through the fees for training, it may become too expensive for small-scale farmers to participate. There is also a time issue as most farmers don't have time for voluntary work on top of their own business.
- The project fully embraced the participatory, bottom-up approach. This worked well. From the outset, farmers were the main drivers across all stages (idea generation, design, training, etc.). The role of the knowledge institutions had a supportive nature (project application, administration, communication, access to knowledge, organising events, etc.). The role of the facilitator was crucial.

“Many organic farms need innovative material to improve and accelerate cultivation of the land. But organic farming is also tailor made. As a result, standard machines are often not suitable and the price tag of adapted tools is quite high. During this five-day course, we set to work with a group of enthusiastic growers and researchers. In doing so, we refine growers' machine designs, including an electric weeding bed and a DIY GPS system. We process these into concrete building plans and make them available to anyone who wants to get started.”

Coordinator Carmen Landuyt

Additional information:

<https://www.ccbt.be/nl/boerbricoleur>

www.facebook.com/groups/boerbricoleur/

www.biojournaal.nl/article/9078291/

boer-bricoleur-leert-bio-boeren-hun-eigen-machines-te-bouwen/

www.youtube.com/watch?v=XwUQlh2D3oY

