

BELGIUM

Bioeconomy

Location

Oostkamp

Programming period

2014 – 2020

Priority

P5 – Resource-efficient,
Climate-resilient Economy

Measure

M04 – Investments in
physical assets

Funding (EUR)

Total budget 500 000
EAFRD 100 000
National/Regional 100 000
Private: 300 000

Project duration

2017-2018

Project promoter

VLIF

Contact

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Website

n/a

Elevated growing trays and the automation of some management tasks has enabled strawberry production to be less reliant on external inputs and to re-use irrigation water.

Summary

This project saw the development of a cultivation system which allows strawberry plants to be grown in trays above the ground on a farm in Flanders. This enables the collection of all excess irrigation water, which can then be fully re-used following disinfection making it an entirely closed system. Water use has decreased, as have other external inputs such as crop protection products, while automation of some tasks has made it easier to recruit and retain farm staff.



Thanks to the project's investment, strawberry plants are elevated from the ground on mobile trays. Under the trays, a collector has been built to collect the excess water. Placement of the plants in the trays is automated, as is the lifting of the plants from the trays and into the fridges. The following season, the small strawberry plants are taken out of the fridge and re-planted.

Results

The elevated trays allow the plants to be grown above the ground, which makes it possible to collect all the excess irrigation water, which can then be re-used. Overall, water use has been reduced by 80% following the installation of the new system. The use of crop protection products has also decreased, and plant density has increased from 35 to 72 plants per m².

Lessons and recommendations:

- ❑ The farmer was in close and constant consultation with the constructor and supplier to establish which tray type to choose and the exact configuration required
- ❑ The farmer considered several other concepts and companies both in Belgium and in other countries before deciding on the chosen system. The farmer is also an active member of a group of strawberry growers who consult each other and regularly share experiences.

Context

The farmer grows strawberry plants on his farm in Oostkamp, near Bruges. Strawberries have been grown on the farm since 1995, and the farm is now specialised in strawberry production, with about 250 tonnes of strawberries produced each year.

Half of the strawberry plants grown are subsequently planted out on the farm, while the other half are sold. Demand is currently higher than supply. Strawberries are sold at the 'REO veiling' (fruit auction). Farm income is derived from the production of strawberries (60%) and the growing and selling of strawberry plants (40%). The new system sought to increase the volumes of both of these sales outlets.

In the classical production system where the tray is at ground level, it is more difficult to stop excess irrigation water being wasted and the risk of infestation by soil pathogens is substantially increased. Plant density is also much lower as work paths are needed to treat the plants. This is not necessary when trays are elevated. The number of fertilisers and plant protection products needed in the traditional system is also much higher, compared to the elevated system.

Objectives

- Develop an entirely closed system to recycle the water and fertilisers used when growing strawberry plants in trays.
- Make the plants less sensitive to disease and the system more sustainable with regards to the use of external inputs, such as plant protection products and fertilisers.
- Use space more efficiently, with a higher plant density.
- Make farm work easier through automation, increasing the farm's competitiveness and improving employee recruitment.

Activities

Prior to the installation of elevated strawberry beds, a shallow pit is dug, to serve as a collector for the tray system. The system is placed on top, which consists of beds of plants 12 metres apart. IPN profiles are installed longitudinally, on which transversal profiles are attached to support the rails. The trays in which the cuttings are planted slide over the rails. Between the IPN profiles,

spray pipes for water and fertilisers are installed. A mobile platform moves above the plants and conducts several tasks by automation, such as moving the trays on the rails, cutting the plants, and removing branches.

All excess irrigation water is collected in the collector pit under the rails, and flows via an inclined plane to a pre-collector, after which it is transferred to a drain basin. From there it passes to a slow sand filter for disinfection.



Main results

The elevated trays allow plants to be grown above the ground, which makes it possible to collect 100% of excess irrigation water, which can then be re-used. Overall water use has been reduced by 80% following the installation of the new system.

Space is now used more efficiently. The tray system results in a plant density rate of approximately 72 plants per m², whereas the maximum amount of plants is about 35 plants per m² with a traditional tray field. This has enabled an increase in both the quantity of strawberries and plants sold, compared to the former system.

The use of crop protection products has also decreased.

Key lessons

The technology is relevant to strawberry growers elsewhere. In The Netherlands, for example, irrigation water is typically not collected and re-used.

The project has relevance to several policy areas related to sustainability, such as the Water Framework Directive, as due to the closed system polluted water containing Nitrogen and Phosphorous no longer ends up in surface water, and less water is used. The use of plant protection products has also decreased.

Project investment in robots to cut old leaves and branches means work is easier and workers are easier to recruit and retain.

With some tasks now automated, work is less physically demanding and workers can therefore be recruited and retained more easily.

Additional sources of information

n/a

*This project has been categorised under 'Bioeconomy' by the nominating National Rural Network