European Network for Rural Development

CATEGORY
RESILIENT FUTURES

NOMINEE RURAL INSPIRATION AWARDS 2022

EAFRD-funded projects

Sylva nurseries

Grading machine for forest and hedging plants

CAP funds help develop an innovative forest and hedging plant grading machine.

Sylva nurseries grows and grades about 25 million forest and hedging plants annually in Belgium. The company's productivity received a boost with help from CAP funds for investment in a new state of the art grading machine. This digitised and automated equipment addressed efficiency bottlenecks in the company's production process and provides increased flexibility for staff.


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Location
Lievegem (Belgium)

Programming period
2014 - 2020

Priority
P2 - Farm Viability and Competitiveness

P5 - Resource-efficient, Climate-resilient Economy

P1 - Knowledge Transfer and Innovation

Measure
M04 - Investments in physical assets

Funding (EUR)
Total budget 508 000
EAFRD 200 000
Private 308 000

Project duration
2016 - 2018

Project promoter
SYLVA BV

Contact
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Website
www.sylva.be

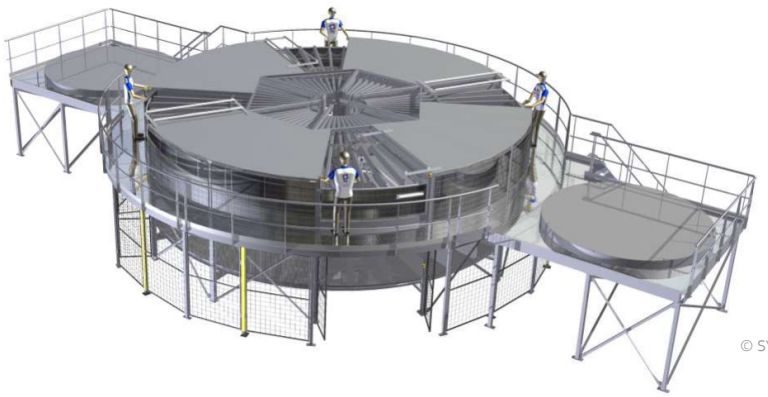
Results

More than 25 million plants were graded during 2019, 2020 and 2021. This helped the company's performance through increased professional efficiency.

Lessons & Recommendations

The machine had to be made very durable. The products are very difficult to automatise as there is a lot of ground, leaves and humidity so all machinery parts had to protected from the products.

As a lot of unexperienced young people work in the company, the vision and detection of quality had to be developed to grade a wide variety of plants.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Funded by the European Commission

Context

Sylva nurseries is specialised in the production of forest and hedging plants, growing about 25 million forest and hedging plants per year which are sold worldwide. The sales period of bare root plants is from October to April. In this short time window, all plants must be lifted, graded, and shipped.

Consumer demand had increased for larger batches of plants and so the company needed a solution to increase its output. This affected the efficiency of the grading of forest plants which had become a bottleneck in the further growth of the company. In addition, the company's manual grading approach relied heavily on the work of skilled staff. Grading forest plants was a very time-consuming action e.g. preparing an order of 100 000 seedlings needed 12 to 15 people for two days to do the grading.

A new grading machine opportunity was identified, this machine could grade plants based on a digital image that is analysed in less than 0.15 of a second. The computer program analyses the plant (curve and root quality), thickness of the collar diameter and length of the plant. In this way, the people that are operating the grading machine do not have to be as highly skilled, quality could be assured, and the time required was reduced.

Objectives

The CAP-funded project aimed to increase both the quality and efficiency of the grading using the new machinery. The ergonomic way of working would be improved, and noise would be reduced.

Another objective involved enhancing the company's productivity by using less experienced staff to grade uniform quality plants in an efficient way.

Skilled and more experienced staff can be redeployed to undertake higher value work.

Activities

The main activity involved setting up a functional automated machinery process to grade forest saplings.

In 2015 the company started discussing their grading needs with a machine manufacturer SMO (Sander Mollet Onderneming). A final functional version of machine design was configured in 2018. It has been fully operational since 2019 and a second machine has been produced.

The dedicated design uses a carrousel to protect vital parts of the machine from dirt and leaves. The carrousel also allows workers to face each other which helps increase communication and team building. The machine is structured in four layers featuring an input and scan layer followed by a grading and separating level. A buffer layer is also integral to keep the machine operational if one of the bunkers of the graded plants becomes full. The last and fourth layer is where finished plants are taken out of the machine. The graded and counted plants are then quality checked and bundled for transfer to pallets and distribution.

Main results

More than 25 million plants were graded during 2019, 2020, and 2021. This helped improve the company's performance through increased business efficiency and it also contributed to improving the quality of the product as well as the reliability of its delivery. Business planning is improved and bottlenecks can be substantially reduced.

The grading machine remains state of the art. It creates added value for the business and the wider forestry sector's efficiency. It increases the efficiency of the company and enhances the ergonomic way of working for staff. In this way young, inexperienced staff can help grade plants in a very efficient way. Experienced staff can now be used in other key parts of the company (such as storage, packaging, and dispatch). The machine has also improved staff motivation and customer satisfaction.

The machine is unique in the world. Its design can be implemented all over the world for companies with a special need for similar plant grading operations. Networking with other manufacturers and researchers contributed to its machine's development phase. In 2022, a copy of the machine was sold to the UK's national forestry authority. There is also interest in purchasing this grading machine from companies in UK, The Netherlands, and Germany.

Key lessons

The machine had to be constructed in a way that made it very durable. The grading process for these products can be difficult to automate due to the amount of soil, leaves and humidity involved in the process, so all machinery parts had to protected from the products.

Many unexperienced young people work in the company and this machine has helped improve their employability. The vision and detection of quality had to be developed to grade a wide variety of plants.

«This machine gives the company security and increases the efficiency».

Additional sources of information

www.smo.be/portfolio-item/boomsorteermachine

This project has been categorised under 'Resilient futures' by the nominating National Rural Network