First selective asparagus harvesting robot for white asparagus in the world

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The problem - € 800M asparagus disappears from EU

- Heavy hand work,
- Labour cost rising
- Average 30% loss
- Limited quality
The solution: **Selective** asparagus harvesting robot

Value proposition:
- 50% cost price reduction
- 15% more asparagus
- Better quality (no violet, no curved, no open heads)
Partners

- Application research & Ergonomic aspects
- 3 years application test
- Machine versus manual
Cerescon User Group

Willy Kreienbaum
- Kreienbaum Spargel
- Sassenberg Germany

Will Teeuwen
- Teboza
- Helden

Ron Martens
- Martens Asperges
- Tienray

Andreas Löbke
- Winkelmann
- Rahden & Beelitz Germany

Stefan Vermeer
- Vermeer Asperges
- Leende

Marc & Sandra de Wit
- De Wit Asperges
- Mariaheide

Dré Hesen
- Contractor Maas BV

Christian Thiermann
- Thiermann
- Kirchdorf & Beelitz Germany

In total > 4500 ha white asparagus
Cerescon User Group

- User requirements
- Company information
- Test $\alpha$ and $\beta$ machine
- Support for Cerescon for market development & finding a private investor
- Letter of intent (7 LoI; > € 4M)
- Launching customers

First machine has been SOLD
Cerescon – team

Founders

Private investor

Mechanical team

Mechatronic team

IT team
Test- and service engineers

Project mngr development
Controller
Assistent
Procurement

HRM
Safety
Market introduction
Legal
Detection
Cerescon – Business model

- No market share
- Sales & service via partner(s) or directly by farmer
- Sales & service by Cerescon DE, NL, FR, ES, IT, PL, GR

- Design for service
- Wear parts by farmer
- Scheduled maintenance after season
- In season:
  - Monitor condition and remote service.
  - Life service in the field
Cerescon – Milestones, Scale up & “what we need”

Knowledge of / network in
- South America & Asia
- Set up a profitable service organization
- Market introduction for a robot in agro

EBITDA positive

€ 3.5 – 4 M
It’s time for selective harvesting

Asparagus is just the beginning............
The solution – details - 1

- Subsurface detection
- Contact less proximity sensors
- Retraction mechanisms per sensor-arm
- Measures asparagus coordinates

- Two cutting robots per row (Cut from top)
- Asparagus is cropped & Sand is shaken out
- Asparagus on conveyor belt
- Cutting knife moves opposite of tractor direction
The solution – details - 2

- Plastic handling
- Asparagus collection and transport
- Sand bed recovery

- PLC software: own Cerescon development
- Detection module and robot programmed via “model based design”:
  - Software code is automatically generated based on the model
  - Adaptions via model adaptation
Cerescon – Scale up & Financing

Founders

RVO

Accelerator

New investment = €4 M

Subsidy

Private investor

EBITDA positive

2014

2015

2016

2017

2018

2019

2021

Oct

Oct

Oct

Oct

Oct

Oct

€4 M