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Complete Nutrition with Robotic Hydroponics

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Samenvatting

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Contact & Site

Extra beschrijving

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Beschrijving onderneming:

Robotic Hydroponics

Problem

It is believed that by 2050 the cultivatable land around the world will perish to nothing. Hydroponics is the answer for using less resource, being sustainable and high yielding farming, in a greenhouse environment. But the existing Hydroponics systems have a lot of flaws in terms of **Nutritional Value** and how it is **Monitored** throughout the **Fertigation process.**

A sensor placed at a fixed point in a field or a greenhouse does not necessarily record the critical conditions of temporal and spatial variability necessary to make informed decisions. Also, greenhouse installations lack the benefits of stress maps and prescription maps that can be produced through UAV (Unmanned Aerial Vehicles) inspection, as is the case with open fields.

Furthermore, the quality of a hydroponic solution is maintained through the automatic supply of nutrient solutions into the hydroponic reservoir in proportion to the declining EC (electrical conductivity) of the solution resulting from the nutrient uptake of plants. However, one of the weakest aspects of the EC-based nutrient management system is the lack of information for

managing individual nutrients in the solution. Thus, EC measurements alone do not provide sufficient information to manage optimal plant production from a solution fertility perspective.

Solution

1. **Monitoring**: A sliding solar-powered robotic sensor that can successfully observe individual levels of NO3, K, C, Ca and Phosphate (PO_4^{3-}) concentration using Artificial Intelligence. The robot can be attached to a slider overhanging from the greenhouse roof. **This solution is first of its kind globally**.

2. **Fertigation**: A flow control valve through which the AI powered system will autonomously control the greenhouse irrigation network.

3. **Nutritional Value**: A four-legged ground robot, a ground-based sensor carrier that can roam the Greenhouse, collect data, feed the Control Valve with the AI outputs and, in the 2nd phase, do all the activities that can reduce human intervention.

Note: Other **Smart Farming** features will be encompassed.

Operational Methodology

The Robotic sensor will collect data and send it to the coordinator/flow valve system. The control valve will process the collected data and, using AI/ML, instruct accordingly the solenoid valve attached to the zonal irrigation system of a given greenhouse installation. Data will also be automatically uploaded to the Cloud as a backup. The ground robot will act as a support device that inspects up-close any stress areas identified by the Robotic sensor and can execute other goal driven functions that can replace human intervention in a greenhouse

The project of this startup is selected by the Dutch Government (SNN-EFRO) for innovation in the field of Agritech

Business Model:

The startup is putting forward the solution as an AI based sliding Robotic sensor with spectroscopic capability and a 4-legged ground robot.

1. The implementation of the whole Robotised Hydroponics unit which consists of (1) sliding robot with the sensor, AI operated (2) control value and (3) the ground robot. Besides this, other hydroponics components will be part of the total unit like Hydroponic Air Pumps, Air Stones, and Air Diffusers etc. which will be provided on need base (area of land for the implementation etc.). They will also use private Cloud for backing up/managing the data and webapp/mobapp which will cost.

2. They are not individually selling the robotics sensor; this will be part of our full unit of hydroponics system.

3. The full unit of Hydroponics has to be implemented “physically” in the client polyhouses/greenhouses. This implementation will have a price/fee (onetime - bigger part of the price). In addition, the control system and Ground Robot data will be processed in the respective systems and a back-up will be send to the private Cloud which will also have a subscription fee (monthly/annual - smaller part of the price).

Type klant:

B2B

Gewenst type investeerder:

Angel investor

USP’s:

- Balanced Nutrition
- Increased Crop Production – 80%
- Sustainability – net zero
- Reduced Operational Costs By 80%
- Increased Revenue: 50%
- CSAT 80%

Benodigd Kapitaal:

€300.000,-

Investeringsbehoefte:

€150.000 for robotics

€150.000 for software technology

Sector:

Deep Tech; Food/Agri

Bedrijfsfase:

Pre-seed

Aantal founders:

2

Aantal huidige werknemers:

1-5

Ervaring:

Founder

He has nearly 30 years experience in the software consulting industry as a Senior Programme/Product Manager in the Banking/Finance (14 years) - Santander Bank UK, CSFB UK, City Bank S etc., Telecom (8 years) - AT&T US, BT UK, Telefonica O2 etc and retail/agritech (6 years) - Morrisons PLC UK.

He got 2 full time degrees, one in Computer Science in Artificial Intelligence (2014-2017) and another one in Economics. Also he is certified as a PMP (from 2005 - 6th cycle) and Six Sigma.

And he is also instrumental in acquiring 2 grants from the Dutch government (EFRO).

Notable Projects:

- TheVeganHut SmartFarming/Traceability AI/Blockchain/Online B2C/B2B online platform
- Morrisons PLC UK Logistics TMS – AI/ Travel Management System (DHL) – Edge computing /Cloud
- Telefonica O2 - E-Business Product Suite/cloud ownership , A/B testing
- BT and AT&T Online Digital Products
- Budget Handled: €15 million

Head of Hi-tech Hydroponics

She got a B.Tech in Civil Engineering degree, MSc in Agricultural Engineering in Soil & Water Conservation Engineering, PhD in Agricultural Engineering.

And she got more than 50 awards for her contribution towards agriculture and has written more than 20 books including hi-tech Aquaponics. Currently she is the technical advisor and member of technical evaluation committee of the ongoing Dutch-Indo project "Establishment of Centre of Excellence for Vegetables and Flowers" with a budget of €1.2 million.

Maandelijkse omzet (huidig):

The startup is still in the development of their pilot product

Omzet (Prognose) komende 12 maanden:

The startup is still in the development of their pilot product, but in 18 months the first prototype will be ready for commercial launch and the startup will be ready to take orders.

Omzet (Prognose) maand 13 - 24:

€2.500.000,- (3 clients)

Huidige maandelijkse kosten:

€10.000,-

Reeds toegezegde financiering in deze ronde:

€60.000,- (own means)

Overige relevante informatie:

Smart Farming - €60.000,- (already spend amount)

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