July, 2020

SPARTER: ROBOTIC SELECTIVE HARVESTING OF WHITE ASPARAGUS

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SPARTER is a selective harvesting tool for white asparagus. Selective harvesting means picking that part of the crop which is sufficiently large or ripe without harvesting (or damaging) those plants which are not ripe enough or too small, so that these can be picked at a later time.

Finding sufficient workers to harvest the asparagus is still the biggest challenge facing asparagus growers. The goal of this tool is to reduce the need for manual labour and increase the quality of harvested white asparagus.

The tool uses an underground detection method to determine when a crop is ready and to harvest accordingly. This method of underground detection can reduce harvesting costs by 50%. It also improves crop yields, making them both more predictable over time and more profitable, by targeting fertilisation and irrigation.

Application scenario

Selective detection and harvesting of white asparagus.

Digital technologies

Sensors to gather data. Robotics to harvest. A platform for storing and analysing data.

Socio-economic impact

- Economic: predictable yields, improved crop quality and quantity.
- Environmental: lower use of water and fertiliser.
- Social: field labourers no longer needed for selective harvesting.

More info:

https://www.cerescon.com/EN/sparter

DESIRA receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 818194. The content of this document does not reflect the official opinion of the European Union. Responsibility for the information and views expressed therein lies entirely with the author(s).

Purpose of the tool

SPARTER is designed to perform selective harvesting of white asparagus. Through its underground detection method, the tool also provides information that can improve crop quality by avoiding discolouration and open heads. Harvesting capacity triples when compared to methods that use above-ground detection. This is due to a decreased chance of underground damage as compared to hand-picking and restoration of the sand bed after harvesting. Labour costs are reduced significantly, because the tool can work both day and night.

Description of the tool

The SPARTER tool uses earth skis to skim along rows of asparagus and uses sensors to detect asparagus in the ground. The sensors can move through the soil at various depths, allowing the tool to determine the size of the spear without damage. The harvesting robot receives the coordinates from the detection module and moves to pick the spear from the top of the bed down. The spears are transferred to a receptacle and the sand bed is covered again to prevent future damage to spears. The tool does not require light to "see" the spears, so it is able to work both day and night.

Areas of socio-economic impacts

Social	No need for hand-picking by labourers.
Economic	Improved crop predictability and increased yields over time. More A class products.
Environmental	Water and fertiliser can be micro-targeted, thereby reducing consumption and application overall.