



CASE STUDY

CLAWS



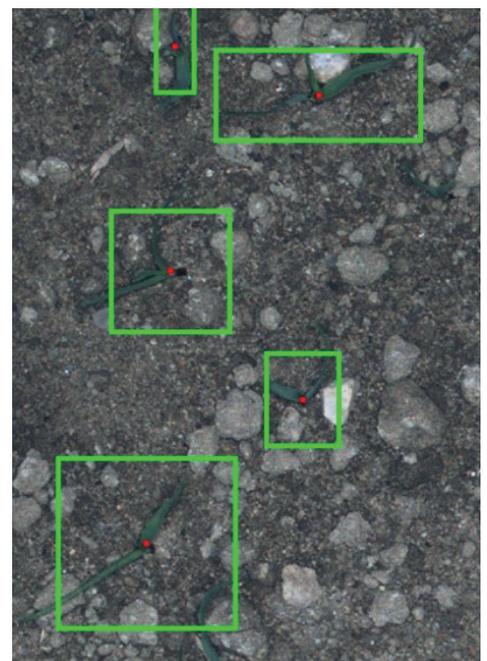
Revolutionising agriculture with concentrated light weeding

Background

With increasing types of chemical-resistant weeds, a significant downturn in availability of hand labour plus a shift in society towards more organic options, now more than ever there is a need to change the way we farm. A recent report by Rothamsted Research shows weeds “pose an unprecedented threat to our food security” and highlights the need to diversify weed control as an urgent priority.

Earth Rover has developed the CLAWS rover (an acronym for Concentrated Light Autonomous Weeding and Scouting), with funding from Innovate UK as part of the Farming Innovation Pathways industrial research, and in collaboration with project partners Pollybell Farms and Agri-EPI Centre. The rover uses AI and robotics to accelerate crop growth by removing weeds, including herbicide-resistant weeds, without disrupting the soil, generating a more sustainable and effective alternative to other weeding techniques in the agriculture industry.

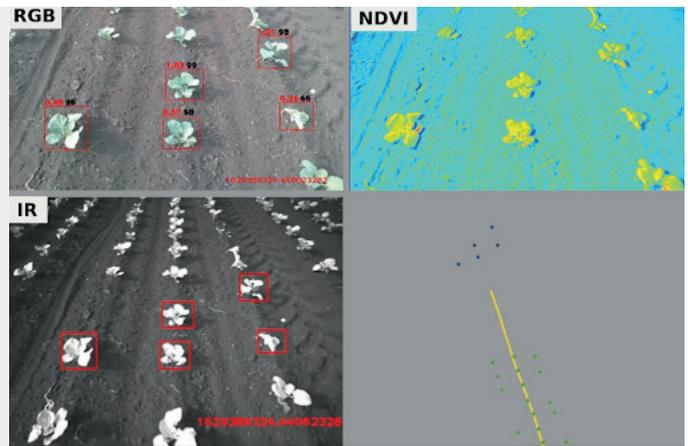
The rover is ultra-lightweight (less than 300kg), meaning it requires low amounts of energy to run, enabling CLAWS to be fully solar-powered and omit the use of fossil fuels, helping farmers meet their net zero targets. Moreover, Earth Rover’s solution is considerably more cost effective and more environmentally-friendly than its competitors’.



Meristem detection

About Earth Rover

- > Earth Rover started its operations in 2017 with just an optimistic idea to change the way organic produce is made and a lot of passion.
- > To this day, Earth Rover has an international growing team and it is still committed to their original core values, challenging themselves daily to take their principles to the next level.
- > The company is currently collaborating with the Agri-EPI Centre, to provide the best possible agriculture solution for farmers. The company is concentrating on improving the rover's scouting and weeding performance to its maximum efficiency to produce a reliable, high quality, low energy, autonomous farming robot.
- > In 2021 the team of Earth Rover presented their first prototype of their rover CLAWS at WORLD FIRA 2021 with a demo of the weeding.
- > The Earth Rover CLAWS will be ready for pilot in 2023 and commercialisation in 2024.



How Earth Rover is making a difference

ECLAWS is the first 100% solar-powered, autonomous, intelligent agricultural robot in the industry to use concentrated beams (semiconductor LEDs) to perform weeding, solving key technical, safety, environmental and commercialisation challenges faced by other weeding systems.

The weeding system within Earth Rover's AgTech robot is able to remove chemically-resistant weeds without posing any safety hazard for humans, animals or the environment. Their weeding technique does not require tilling, therefore avoiding the soil release of greenhouse gases.

Through the application of deep-learning technologies, the CLAWS' scouting system improves field and cost predictability and reliability, by gathering precise crop data which is stored in Earth Rover's Cloud-Based Farm Intelligence System. From mapping plots to calculating crop health and growth rates, this system allows farmers to get early targeted recommendations and specific predictions in the palm of their hands, giving farmers the power to make conscious real-time decisions anytime, anywhere.

For more information you can visit Earth Rover's website at www.earthrover.farm

How Agri-EPI has made a difference

Agri-EPI Centre is the centre for Engineering, Precision and Innovation in farming, aiming to revolutionise farming and food systems through precision technology. They are a partner of choice for agri-tech developers, from start-ups through to established companies, and have delivered over 100 commercial and 45 collaborative R&D agri-tech projects.

Agri-EPI Centre helps to develop profitable and productive solutions to empower more sustainable farms, and offers a host of benefits to businesses including access to cutting edge facilities, support for funding bids, and exclusive industry events.

Earth Rover's COO James Miller said being a member of the Agri-EPI had been a huge factor in the growth of the company. He said: "Collaborating with Agri-EPI Centre has enabled the team at Earth Rover to make significant progress under the Innovate UK funded project for the CLAWS Scouting and Light weeding system".

"The wider network within the centres enable us to tap into more information specific to the farming challenges and enables us to come up with targeted approaches to solving the challenges experienced by farmers".

"One of the biggest challenges for organic farmers is to understand what is the true yield for every single seed planted. The CLAWS rover not only enables us to have an autonomous, non-chemical, weeding solution, but have real-time field scouting data from the field at the crucial growth stages. This provides vital information to understand where the yield loss comes from and enable timely decision making to optimise the yield".



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