



Grower Summary

SF/TF 170

Safe Human Robot Interaction

Annual 2019

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Use of pesticides

Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of the full report, please email the AHDB Horticulture office (hort.info.@ahdb.org.uk), quoting your AHDB Horticulture number, alternatively contact AHDB Horticulture at the address below.

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Project title: Safe Human Robot Interaction

Project number: SF/TF 170

Project leader: Dr. Paul Baxter

Report: Annual report, 2019

Previous report: N/A

Key staff: Alexander Gabriel

Location of project: University of Lincoln, United Kingdom

Industry Representative: Richard Harnden, Berry Garden Growers Ltd

Date project commenced: January 2018

GROWER SUMMARY

Headline

Working towards labour cost savings of up to 20% by reducing the time between picking and processing by letting your human workforce concentrate on picking fruit while your robotic workforce transports the produce.

Background

Fruit production is labour intensive and relies heavily on seasonal migrant labour. Socio-economic changes (e.g. Brexit) which have already led to labour shortages, together with existing pressures associated with decreasing margins from multiples retailers pose challenges for profitability and sustainability in the horticultural sector making a strong case to reduce reliance on manual work. Automation can help, but automation solutions aren't yet commercially available. The agricultural environment poses a number of challenges to both Robotics as well as Human-Robot-Interaction that must be overcome before this technology can be considered mature enough to be applied productively in agricultural settings. This work contributes to this effort by developing solutions that enable comfortable, safe and efficient Human-Robot-Interaction.

Summary

This project is part of the RASBerry research programme. This project aims to develop an autonomous fleet of robots for in-field transportation. Specifically, the robots are expected to aid human fruit pickers by transporting crates from the picker's point of work to locations outside the field or polytunnel. Introduction of robots into this workspace will significantly reduce the costs of producing berries and is the first step towards fully autonomous agricultural systems.

Within the RASBerry research programme, this project is concerned with the safe interaction of humans and robots, specifically the recognition and estimation of human behaviour and its interpretation as commands given to the robot. The results of this project will enable the robot to better prioritize its tasks and allow for a comfortable interaction between human and robot co-workers.

Financial Benefits

A robotic fruit transport system could save 20% labour costs by reducing the time human workers spend with secondary tasks like transportation (From et al. 2018).

Action Points

- Support research and development in robotics and artificial intelligence by engaging with researchers in this area to help shape the applications of this new and innovative technology.