

Test and validation

2024WP3_AHS_001

Status: Completed



Technical functionality

Problem Owner:
Automated Harvesting Solutions

Involved:
Tec 4 Motion (Tec4M)
Wageningen Research

Open Field
Cultivation



Testing quality of a broccoli harvesting robot

A field test of a selective robotic broccoli harvester, compared with manual selective harvesting, to see if it can reduce labour and keep good harvest quality.



Broad knowledge question

How does the AHS selective harvest machine perform compared to manual selective harvesting, in harvest accuracy, product quality, and labour time?

Approach

A one-day field test was carried out on two broccoli fields near Zwaagdijk (the Netherlands). The machine uses cameras to detect broccoli crowns and harvests when the detected diameter is about 14 to 20 cm. In predefined plots, measurements were taken on harvested and unharvested broccoli (size classes, misses), harvest quality (damage, cut quality, stem length), and labour time per hectare, and these were compared with manual harvesting in similar plots.

Objective

harvesting equipment and compare its performance with manual selective harvesting, focusing on quality aspects and labour time.

Result and reflection

The results indicate the machine can reduce labour by more than half and can miss fewer "ready-to-harvest" broccoli heads than human workers in these tests. Harvested heads were mostly in the correct size range, but there were some quality issues (e.g., light damage and less clean cuts in some plots). Setup took a long time (about two hours), and the number of test plots was limited, so more testing is needed in more varied fields and conditions. Further work should also include full operational time (turning, transport, setup, downtime), not only net harvest time.

Link to the report will be activated after publication:

<https://doi.org/10.18174/720177>

Test and validation

2024WP3_AHS_001
Status: Completed



Technical functionality

Problem Owner:
Automated Harvesting Solutions

Involved:
Tec 4 Motion (Tec4M)
Wageningen Research



Document information

Document title	Testing quality of a broccoli harvesting robot Public Summary
Project title	NXTGEN Agrifood
Project URL	IP1: Open Field Cultivation- NXTGEN Hightech
Document URL	https://doi.org/10.18174/720175
Project coordinator	Hennie van der Veen – Rusticus (WUR)
Work package	IP1 Open Field Cultivation
Work package lead	Natalie Hotrum
Funding organisation	Stichting Wageningen Research
First author	Johan Booij, Wageningen Plant Research johan.booij@wur.nl
Keywords	broccoli harvesting robot

Colofon

© 2026 Stichting Wageningen Research. This work is licensed under the Creative Commons [CC BY-NC-ND 4.0](#) license. This publication may be reproduced or made public for non-commercial use, provided that the source is acknowledged and the work is used in its entirety (no parts or derivatives are permitted).

Stichting Wageningen is not liable for any adverse consequences resulting from the use of data from this publication.

Involved partners

