



Cloud-based harvest management information system



Title	Cloud-based harvest management information system
Title (native language)	
Category	<ul style="list-style-type: none"> Recording or mapping technology Farm Management Information System
Short summary for practitioners (Practice abstract) in English	<p>The harvest process for specialty crops is generally one of intensive activity because many people are required for harvest and packing, and the harvest window is brief due to the high perishability of the produce. Herein we present a cloud-based Harvest Management Information System (HMS) that combines a novel real-time Portable Labor Monitoring System (PLMS) with a cloud-based harvest management software. The PLMS comprised of three key elements (1) a self-leveling scale, (2) electronic control box, and (3) a frame that supports all hardware. The electronic control box includes: (i) a RFID reader, (ii) a LCD display, (iii) a thermal printer, (iv) a GPS module, and (v) a communication system. RFID tags, containing unique ID numbers, embedded within rubber wrist bands, are worn by pickers. This system can read a picker's ID (RFID bracelet), measure the weight of fruit, and record the time and location (optional) of every fruit 'transaction' (i.e., everytime a picker brings a bucket of fruit to the collection bin). The collected data can be transmitted wirelessly to the server in real-time. The cloud-based software receives and processes the PLMS data on labor activities, visualizes the collected data, and can extract the data necessary for management information and automated filling of documents (e.g. payroll, yield maps). The HMS is unique in its ability to: (1) accurately credit pickers for the fruit they have harvested in the field without impeding or altering the harvest process, (2) streamline data entry to payroll, (3) provide real-time tracking of harvest, yield mapping, and traceability, and, (4) generate precise and reliable harvest efficiency data. This integrated system was evaluated in sweet cherry, blueberry and apple orchards in Washington, USA. The weight of harvested</p>

	fruit, time and location of every fruit drop were calculated accurately; all the data were transmitted wirelessly to the server and no errors were recorded.
Short summary for practitioners	
Website	
Audiovisual material	
Links to other websites	
Additional comments	
Keywords	Farming equipment and machinery
Additional keywords	Labor management; Cloud-based software; RFID; Embedded systems; Arduino
Geographical location (NUTS)	EU
Other geographical location	Global
Cropping systems	Tree crops
Field operations	Harvesting
SFT users	Farmer Contractor
Education level of users	All
Farm size (ha)	0-2 2-10 10-50 50-100 100-200 200-500 >500

Scientific article

Title	Cloud-based harvest management information system for hand-harvested specialty crops
Full citation	Ampatzidis, Y.; Tan, L.; Haley, R.; Whiting, MD. (2016). Computers and Electronics in Agriculture, DOI:10.1016/j.compag.2016.01.032

Effects of this SFT

Productivity (crop yield per ha)	No effect
Quality of product	No effect
Revenue profit farm income	Some increase
Soil biodiversity	No effect
Biodiversity (other than soil)	No effect
Input costs	No effect
Variable costs	No effect
Post-harvest crop wastage	No effect
Energy use	No effect
CH4 (methane) emission	No effect
CO2 (carbon dioxide) emission	No effect
N2O (nitrous oxide) emission	No effect
NH3 (ammonia) emission	No effect
NO3 (nitrate) leaching	No effect
Fertilizer use	No effect
Pesticide use	No effect
Irrigation water use	No effect
Labor time	Some decrease
Stress or fatigue for farmer	Some decrease
Amount of heavy physical labour	No effect
Number and/or severity of personal injury accidents	No effect
Number and/or severity of accidents resulting in spills property damage incorrect application of fertiliser/pesticides etc.	No effect
Pesticide residue on product	No effect
Weed pressure	No effect
Pest pressure (insects etc.)	No effect
Disease pressure (bacterial fungal viral etc.)	No effect

Information related to how easy it is to start using the SFT

This SFT replaces a tool or technology that is currently used. The SFT is better than the	
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current tool	no opinion
The SFT can be used without making major changes to the existing system	no opinion
The SFT does not require significant learning before the farmer can use it	agree
The SFT can be used in other useful ways than intended by the inventor	agree
The SFT has effects that can be directly observed by the farmer	agree
Using the SFT requires a large time investment by farmer	disagree
The SFT produces information that can be interpreted directly	agree

[View this technology on the Smart-AKIS platform.](#)

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