



smart AKIS
Smart Farming Thematic Network



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A data acquisition system to assess the quality of spraying in fruit orchards



Title	A data acquisition system to assess the quality of spraying in fruit orchards
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>A system for managing and monitoring agricultural operations at farm level, was developed and tested in an agrochemical application. The system is an integration of an electronics box mounted on the tractor, and a software that acquires and analyzes data from the application task. The electronics box holds a microcontroller, a Global Positioning System (GPS), complementary sensors, a keyboard, a memory SD (Secure Disk) storage, and a Liquid Cristal Display (LCD). The device is able to store in the SD memory, the data of the position, the instantaneous speed of the tractor, the applied rate, the wind speed, the wind direction, the temperature, and the relative humidity. In addition, the system can alert of unfavorable weather conditions for the application of agro-chemicals. The interface to the user is a software that allows generating a job file, which identifies the operator name, the tractor, the spraying equipment, the pesticide, the rate, and the sector of application. The software also provides output data in graphical form, generating maps of speed, applied volume, and rate. The map of the route is also drawn on Google Earth, for a better spatial visualization.</p>
Short summary for practitioners	
Website	
Audiovisual material	
Links to other websites	

Additional comments	
Keywords	Farming equipment and machinery Biodiversity and nature management
Additional keywords	Spraying; Data acquisition; Orchards
Geographical location (NUTS)	EU
Other geographical location	Global
Cropping systems	Tree crops
Field operations	Pesticide application Crop protection
SFT users	Farmer Contractor Supplier
Education level of users	All
Farm size (ha)	0-2 2-10 10-50 50-100 100-200 200-500 >500

Scientific article

Title	Development and field testing of a data acquisition system to assess the quality of spraying in fruit orchards
Full citation	Reyes, J.F.; Correa, C.; Esquivel, W.; Ortega, R. (2012). Computers and Electronics in Agriculture, DOI:10.1016/j.compag.2012.02.018

Effects of this SFT

Productivity (crop yield per ha)	No effect
Quality of product	No effect
Revenue profit farm income	Some increase
Soil biodiversity	Some decrease
Biodiversity (other than soil)	No effect
Input costs	No effect
Variable costs	No effect
Post-harvest crop wastage	No effect
Energy use	Some decrease
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	No effect
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.	Large decrease
Pesticide residue on product	Some decrease
Weed pressure	No effect
Pest pressure (insects etc.)	Some decrease
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 current tool	no opinion
The SFT can be used without making major changes to the existing system	strongly agree
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

strongly agree

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

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