



smart AKIS
Smart Farming Thematic Network



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AGREEMENT N. 696294

Drones to monitor crops and help fight weeds



Title	Drones to monitor crops and help fight weeds
Title (native language)	
Category	<ul style="list-style-type: none"> • Reacting or variable rate technology
Short summary for practitioners (Practice abstract) in English)	An EU initiative developed intelligent drones that detect weeds on crops, enabling herbicides to be targeted to infested areas only.
Short summary for practitioners	
Website	https://toasproject.wordpress.com/
Audiovisual material	
Links to other websites	
Additional comments	
Keywords	Farming equipment and machinery Plant production and horticulture
Additional keywords	
Geographical location (NUTS)	EU
Other geographical location	
Cropping systems	Arable crops Tree crops
Field operations	Weed control Crop and soil scouting
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

Project info

Project name	TOAS: New remote sensing technologies for optimizing herbicide applications in weed-crop systems
Project coordinator	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (ES)
Project partners	
Project period	2011 - 2015
Project status	finished
Objective of the project (native language)	TOAS is an initiative for developing intelligent drones for detection of weeds in crops. Required specifications (sensor type, imagery characteristics, crop-weed phenological stage) are defined for different crops and on the development of advanced algorithms for crop assessment and weed mapping. The objective is to generate geo-referenced weed infestation maps for making in season

	site-specific herbicide treatments in early weed stages leading to a 15-35% decrease in the use of herbicide.
Objective of the project (in English)	TOAS is an initiative for developing intelligent drones for detection of weeds in crops. Required specifications (sensor type, imagery characteristics, crop-weed phenological stage) are defined for different crops and on the development of advanced algorithms for crop assessment and weed mapping. The objective is to generate geo-referenced weed infestation maps for making in season site-specific herbicide treatments in early weed stages leading to a 15-35% decrease in the use of herbicide.

Effects of this SFT

Productivity (crop yield per ha)	No effect
Quality of product	No effect
Revenue profit farm income	Large increase
Soil biodiversity	Some increase
Biodiversity (other than soil)	Some increase
Input costs	Some decrease
Variable costs	Some decrease
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.	Large decrease
Pesticide residue on product	No effect
Weed pressure	Large decrease
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 current tool	strongly agree
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	disagree
The SFT can be used in other useful ways than intended by the inventor	no opinion
The SFT has effects that can be directly observed by the farmer	agree
Using the SFT requires a large time investment by farmer	strongly disagree
The SFT produces information that can be interpreted directly	no opinion

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

SMART AKIS PARTNERS:



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