

ACUAS: a smart and user-friendly crop planning tool for water savings



WWF - Spain

WWF's approach to improve water use in agriculture

- Make agricultural production compatible with environmental protection, including saving water to restore overexploited aquifers.
- Policy work (CAP and WFD coherence), markets and quality standards, pilot projects to demonstrate agronomic/economic viability.

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CONSERVAR EL AGUA DE LA MANCHA



Coca-Cola Iberia

- “Tablas de Daimiel” National Park, in Central/Southern Spain.
- Over-exploited Aquifer 23-24, risk of area losing its natural features.
- Search for solutions for people, communities and nature.

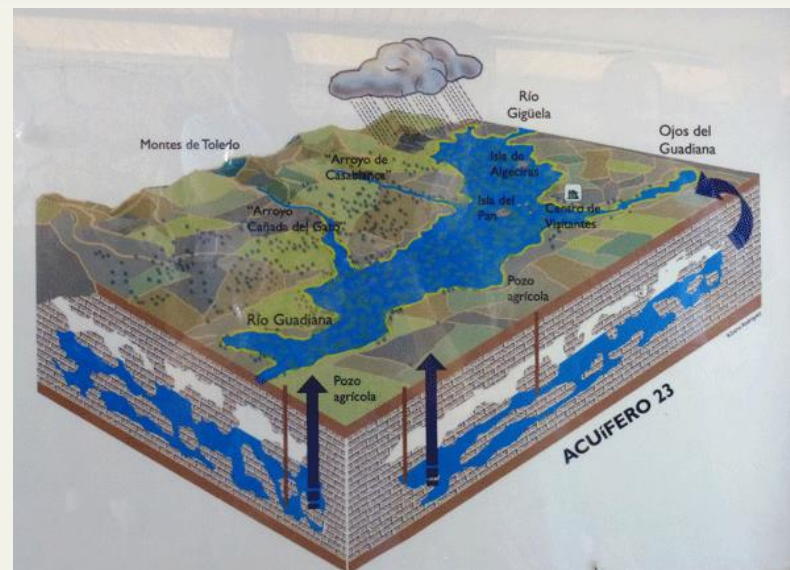
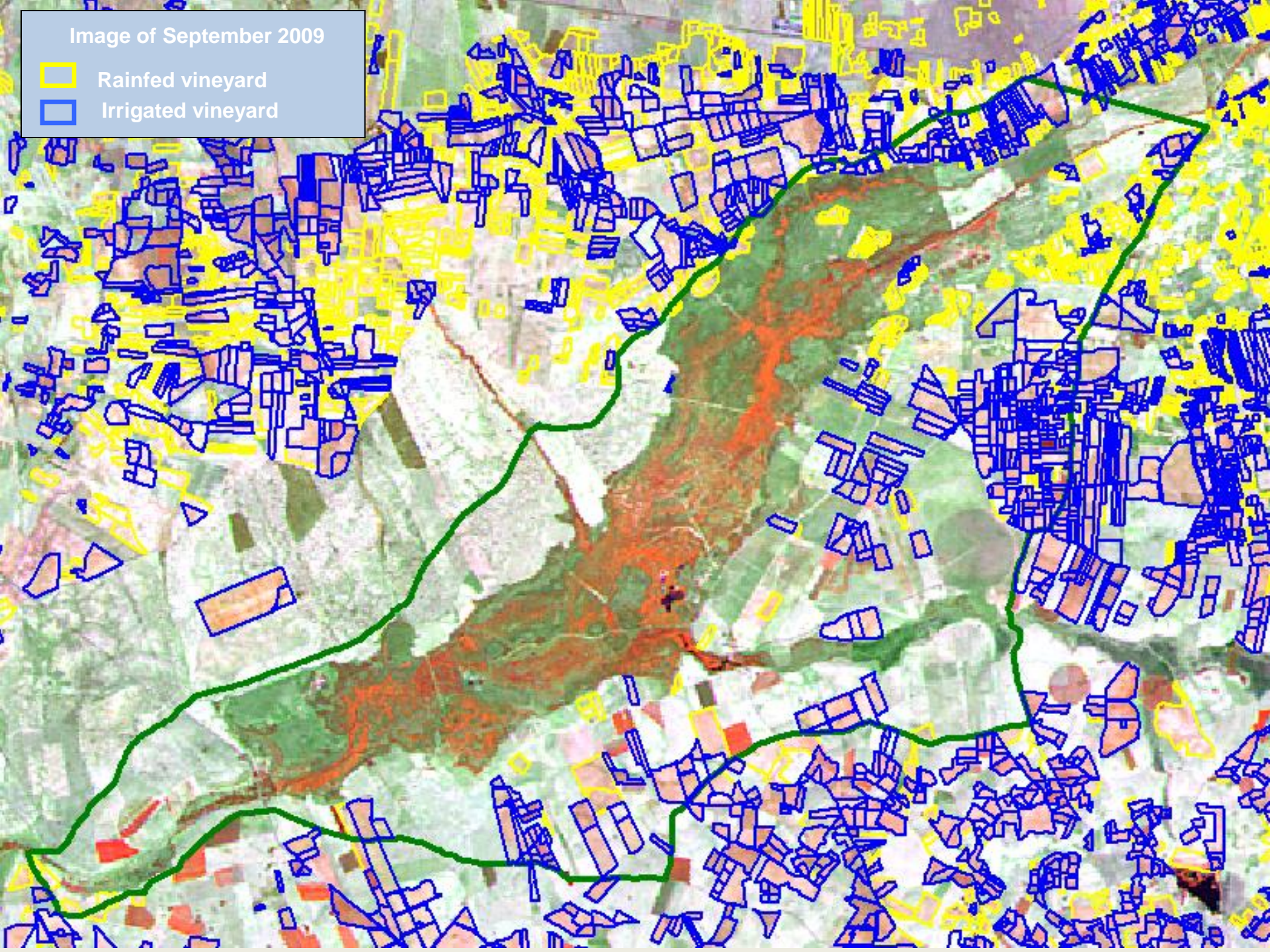


Image of September 2009

-  Rainfed vineyard
-  Irrigated vineyard





PROJECT TOOLS

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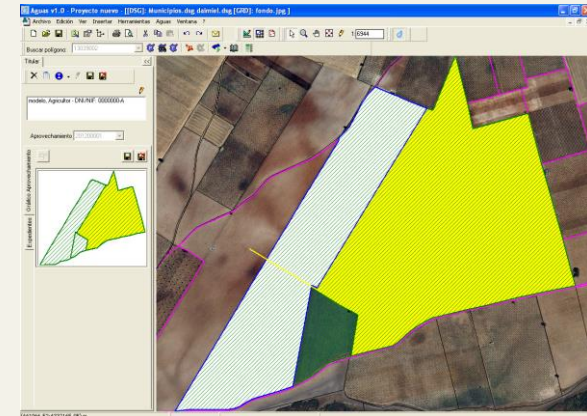


Coca-Cola Iberia

- **OBJECTIVE:** achieve water savings in agriculture compared to the “*business as usual*” practices in the area, by assessing and training local farmers on irrigation needs of the different crops.
- **TOOLS:** (developed in collaboration with irrigators)
 - **ACUAS:** planning for annual herbaceous crops, taking into account the farmers’ water allocation – legal permit.
 - **SITAR:** optimised water use according to irrigation system features, one step beyond official recommendations.
 - **OPTIWINE:** weekly water balance (sensors) and optimised water use whilst also improving the quality of wine produced.
- **ADVISORS AND CAPACITY BUILDING**



ACUAS TOOL

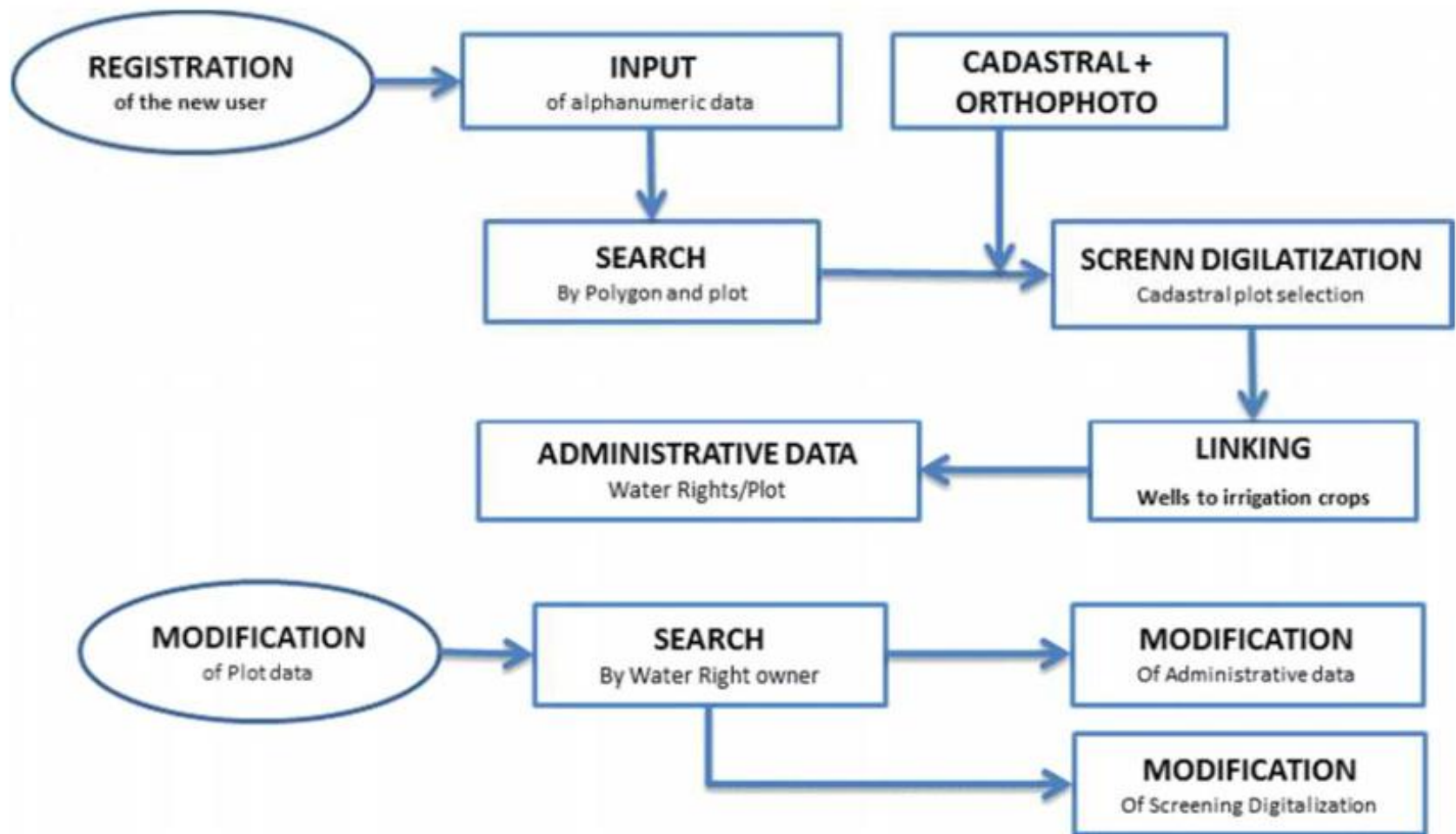


ACUAS is a freely available GIS based tool that allows:

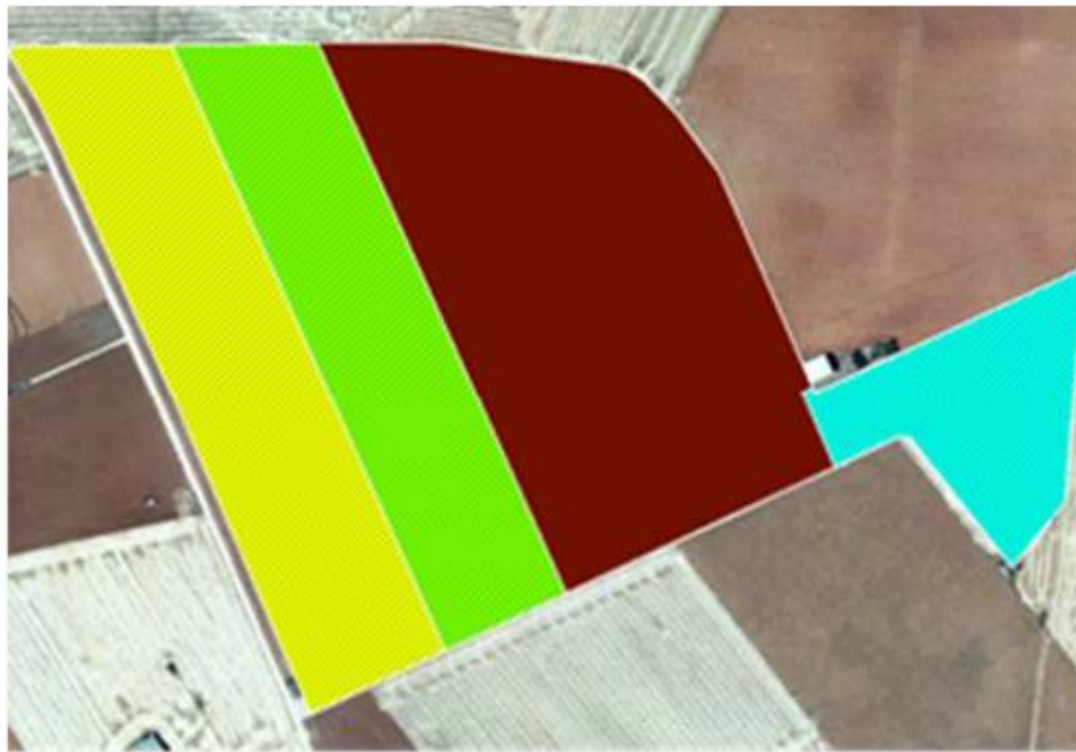
- **Customized crop planning** combining three variables: types of crops, surface areas, water resources. => Optimum crop sizes
- Input, viewing, printing, storage, and **management of geographic data** related to the distribution and localization of the crops.
- The relational database stores the data related to plant development stage, water permit and **crop planning for the next campaign**.
- The automatic generation of **irrigation declarations for farmers**, describing in tables and graphs the crop planning of each farm, fully adjusted to the water permit from the Guadiana RBA (Annual Abstraction Plan of overexploited aquifers).
- Gathering global data to evaluate **the impact of the tool in water savings** and other useful data for irrigated crops management.



ACUAS TOOL



ACUAS TOOL



Aprovechamientos:

Aprovechamiento
▶ Asesoramiento01

Cultivos:

Superficie	Riego	Cultivo
▶ 6.05	Aspersión	Trigo
2.48	Goteo	Cebolla
5.04	Goteo	Melon / Calab.





	Fallow land
	Melon
	Onion
	Wheat

Figure 1. Example of Cropping Plan generated through ACUAS tool. The farmer and the technician at the Irrigators Community agreed on the size of irrigated and non-irrigated crops and consequently on the allocation of available water. The sum of the planned water use per crop fit the authorized Water Permit of the farmer. For example, in the past 2015 campaign, the water use was restricted to 2,000 m³/ha with water rights. In case the farmers planted summer irrigated crops (e.g. melon or onion), they were obliged to reduce its irrigated surface to fit the allocation provided by this Water Permit.



ACUAS - RESULTS



Results from ACUAS II Tool assessment			TOTAL Water Consumption figures			TOTAL Water Savings
CAMPAIGN	Nº Assessments	Surface (ha)	^(a) Pre-project Consumption (m ³)	^(b) Legal Consumption (m ³)	^(c) Post-Project Consumption (m ³)	^(d) Replenishment (m ³)
2013	91	2,905	4,816,565*	5,767,265*	4,237,893*	434,722*
2014	132	2,708	5,191,271	5,103,274	4,684,155	446,376
2015	98	2,157	4,343,496	4,235,976	4,143,532	92,444
2016	63	2,820	5,980,944	5,316,985	5,031,096	285,889
2017	67	3,434	7,076,747	6,413,620	6,065,767	347,853



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[Further information on WWF-ES](#)