Precision Irrigation Tools

- The Decision Support System for Irrigation Management
- that operates at the plain of Arta, Greece

IR2MA PROJECT (UOI, GR)

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European Regional Development Fund

EUROPEAN UNION

To irrigate or not to irrigate?

- When? and How much?
- Low efficiency up to 50% more water at the field
- respective increasement of energy consumption







Empirical management

based on visual indications from leaves, shoots and soil





most common

measurement of soil moisture or/and soil water tension



Remote Sensing

most common

spectral indices for vegetation levels, soil and plant wetness



DSS - Irrigation Management at the plain of Arta Development Evaluation Hardware Irrigation system System audit Software management Installation / field People User Support setting

Data series of weather parameters

6 agrometeorological stations for the plain of Arta (45.000 ha)







Agrometeorological stations network

Data

Weather forecast (ofidia.physics.uoi.gr)



Irrigation water budget based on FAO guidelines

soil maps

weather timeseries and forecasts

soil, irrigation system and crop parameters









Account and fields synopsis

Your account

Full name: Ιωάννης Τσιρογιάννης Address: Κωστακιοί Άρτας Supervisor: Yes Frequency of email notifications: Every ten days Your account supervisor: nmalamos



34 ΜΒ ΥΠΑΑΤ

Εσπεριδοειδή - 20% κάλυψη εδάφους (Citrus - 20% Canopy), Επιφανειακή άρδευση (Surface irrigation) (Virtual) (Update field)

Irrigation recommendation

No need to irrigate

🕀 Irrigations applied 🛗 Irrigation report 🛃 Irrigation performance 🛛 Weather history 🗸

Timeseries of the virtual meteorological station

Field parameters

Basic parameters

- Field name and location
- Crop
- Type of Irrigation system

Custom parameters

- Irrigation system
- Irrigation goals
- Crop
- Soil





Irrigation Report

Crop type:Εσπεριδοειδή - 70% κάλυψη εδάφους (Citrus - 70% Canopy)

Estimated root depth (max): 0.75 mMaximum allowed depletion: 40.0%Field capacity: 39.2%Soil moisture at saturation (Θ_s): 50.0%Permanent wilting point: 10.3%

Synopsis of field parameters

Irrigation type: Μικροεκτοξευτήρες (Micro sprinklers)

Irrigation efficiency: 0.8 Irrigation optimizer: 1.0 Last recorded irrigation: Unspecified Applied water m³: Unspecified

Last irrigation event

Date	Effective precipitation (mm)	Depletion (mm)	Soil moisture (%)	Must irrigate	Water stress factor	Irrigation water amount (mm)	
Oct. 13, 2020	25	64	30.6	No	0.99	0	
Oct. 14, 2020	3	63	30.9	No	1.00	0	
Oct. 15, 2020	0	65	30.6	No	1.00	0	
Oct. 16, 2020	11	55	31.9	No	1.00	0	

Applied Irrigation events

- Specify volume of irrigation water
- Specify duration of irrigation
- Specify flowmeter readings

Date and time (YYYY-MM-DD HH:mm:ss)

Date and time (YYYY-MM-DD HH:mm:ss)

Volume of applied irrigation water (m³)

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Volume of applied irrigation water (m<sup>3</sup>)
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Update Back

Use of data from irrigation system audit of from water volume meter

Direct adding of irrigation events or via the Helpdesk



IR2MA - Large Scale Irrigation Project co-funded by the European

I I..... All. ...

Irrigation performance

Do I have to follow the recommendations? No ... but irrigation events must be registered

Irrigation Performance





Under pilot use

 WAN LoRa / IoT water volume meter for automatic registration of irrigation events

 Remote sensing data for Kc calculation and field feedback information





European Space Agency



Pilot / Demonstration fields

 Evaluation of the DSS at experimental sites (measurement of irrigation water usage, soil moisture, yield etc)

 Use of these fields for demonstration of the DSS



Evaluation results for kiwifruit



Hayward

According to 2016, 2017, 2018 and 2019 results at pilot kiwifruit fields at the plain of Arta

from -33% up to -74% less water

from 30 to 65 less irrigation events

How difficult is to use the DSS?

 For the settings of parameters, the support from a consultant agronomist is necessary



User Support

• User manual

- Training sessions
- Helpdesk (telephone, email, forum)

 Yearly event at the beginning of each irrigation period (WATERinMARCH! / UN World Water Day)



Who is interested?

Governmental and Land Reclamation Organisations



Farmers and their Consultants







ΑΡΔΕΥΣΗ

Κωδικοί Αγροτεμαχίων	Τρόπος ποτίσματος	Προέλευση νερού	Ποσότητα νερού	Συχνότητα ποτίσματός

ΕΞΑΙΡΕΤΙΚΑ ΚΑΙΡΙΚΑ ΦΑΙΝΟΜΕΝΑ

		Παγετός	Χαλάζι	Ανεμοθύελλα	Καύσωνας
Αγροτεμάχια	Ημερομηνία	Ένταση ζημιάς	Ένταση ζημιάς	Ένταση ζημιάς	Ένταση ζημιάς







GLOBALG.A.P.

Contact info

THANK YOU!!!

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