LIFE CCA/GR/000389
AgroClimaWater

PROMOTING WATER EFFICIENCY AND SUPPORTING THE SHIFT TOWARDS A CLIMATE RESILIENT AGRICULTURE IN MEDITERRANEAN COUNTRIES

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LIFE AgroClimaWater PROJECT

Purpose: Adaptation of water management in Agriculture in view of Climate change

Objectives:

- Development of a WMAS in FORs based on the EWS standard
- Achievement of a baseline for climate change awareness and triggering public consultation for the development of regional adaptation strategies
- Incorporation of project's results into national and European policy and legislation

Project Location: Crete – Greece & Metapontino/Matera - Italy

Budget: 2.415.223€ **EC Co-funding:** 57,79%

Duration: 01/09/2015 - 31/08/2020

Project Partners:

1. HYETOS S.A. **(CB)**
2. Hellenic Agricultural Organization "DEMETER"
   - *Institute for Olive Tree, Subtropical Plants and Viticulture*
   - *Soil and Water Resources Institute*
3. University of Basilicata, Dipartimento delle Culture Europee e del Mediterraneo
4. Rodaxagro Ltd Environment & Quality
5. Union of Agricultural Cooperatives of Mirabello
6. Assofruit Italia Società Cooperativa Agricola
7. Platanias Municipality Development Enterprise

Brussels, October 4th 2017

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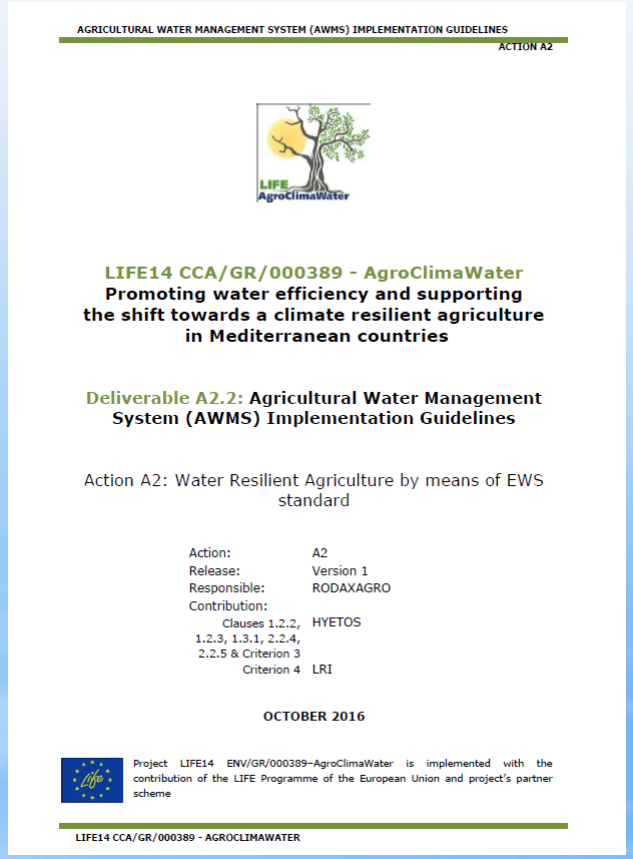
WATER STEWARDSHIP IN AgroClimaWater

1. Design and establishment of an AWMS for the Agricultural Sector based on EWS standard
2. Initial water management status analysis and assessment on FORs and farms level
3. Development of the Water Management Adaptation Strategy (WMAS)
4. Implementation and monitoring of the WMAS
5. Evaluation of results and Continuous Improvement

1. DESIGN AND ESTABLISHMENT OF AWMS (1/2)

- Identification and adjustment of EWS requirements to Agricultural sector (AWMS requirements)
- Analysis of the readiness of the Agricultural Sector to conform to AWMS requirements
- Defining the specific tools and mechanisms required
- Development of the implementation guidelines

1. DESIGN AND ESTABLISHMENT OF AWMS (2/2)



AGRICULTURAL WATER MANAGEMENT SYSTEM (AWMS) IMPLEMENTATION GUIDELINES
ACTION A2

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Promoting water efficiency and supporting the shift towards a climate resilient agriculture in Mediterranean countries

Deliverable A2.2: Agricultural Water Management System (AWMS) Implementation Guidelines

Action A2: Water Resilient Agriculture by means of EWS standard

Action:	A2
Release:	Version 1
Responsible:	RODAXAGRO
Contribution:	
Clauses 1.2.2, 1.2.3, 1.3.1, 2.2.4, 2.2.5 & Criterion 3	HYETOS
Criterion 4	LRI

OCTOBER 2016

Project LIFE14 ENV/GR/000389-AgroClimaWater is implemented with the contribution of the LIFE Programme of the European Union and project's partner scheme

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2. Initial water management status analysis and assessment

- Data collection from 100 farms per target area
  - EWS Principles 1-3: Current agricultural practices
    - Description, water, fertilizer and PPPs use
    - Water sources (surface water / groundwater bodies)
    - Water receptors (surface water / groundwater / HCVAs)
- Data collection in the 3 participating FORs
  - EWS Principle 4: Current governance actions (e.g.):
    - Conforming to legal requirements
    - Internal and External Communication (information, reach and awareness raising)
      Integrated resource management (water vs energy vs other resources)
    - Continuous improvement
- Initial situation assessment
  - Description of the target areas and agricultural sector
  - Impact assessment of current agricultural practices (Principles 1-3)
  - Assessment of FORs Governance Actions (Principle 4)

3. DEVELOPMENT OF THE WMAS

1. Organization and Management for Water Use in Agriculture
   - 1.1: Compliance with water legislation
   - 1.2: Recording and monitoring of the use of water and other resources
   - 1.3: Sustainable water management
   - 1.4: Transparence of cost issues in the water management
   - 1.5: Dissemination of information and public awareness raising on water management in agriculture
   - 1.6: Certified water use in agriculture
2. Implementation of Good Agricultural Practices:
   - 2.1: Good agricultural practice for the use of agrochemicals
   - 2.2: Efficient planning and implementation of irrigation
   - 2.3: Other good agricultural practices for water management
3. Contribution to the Implementation of the RBMPs
   - 3.1: Implementation of the river management plan
   - 3.2: Addressing extreme climatic conditions

4. WMAS IMPLEMENTATION AND MONITORING

A. Good Agricultural Practices on the farm level :

- FORs agriculturalists training
- GAPs implementation
- Monitoring:
  - Farmers calendars
  - FORs Agriculturalists records
  - Sampling and analysis (FORs agriculturalists and scientific partners)

4. WMAS IMPLEMENTATION AND MONITORING

B. Water Governance Actions on the FORs level :

- WMAS public consultation
- FORs training on WMAS
- WMAS implementation with support from the scientific responsible partners
- Compliance assessment and corrective action





5. EVALUATION OF RESULTS – CONTINUOUS IMPROVEMENT

- GAPs performance indicators
  - water use efficiency (on a fruit yield basis),
  - nutrient use efficiency,
  - water losses (evapotranspiration and surface runoff)
  - crop Water Foot Print (blue, green and gray)
- Environmental impact
  - on the farm level
  - on the sub-basin level
- Socio-economic impact
  - on the farm level
  - on the F.ORs level
  - on the sub-basin level
- Revision of the WMAS

WORKING WITH FARMERS

LESSONS LEARNT & FUTURE THOUGHTS

LESSONS LEARNT

- Water stewardship in agriculture is a demanding task
  - Agricultural land fragmentation and small land parcels make implementation on the individual level difficult, if possible at all, and collective action imperative
  - Water supply
    - Various organizations providing irrigation water (Municipalities, Municipal water supply and sewerage enterprises, local agricultural cooperative organizations – TOEBS), managing water boreholes, open irrigation channels, pressurized irrigation networks covering different areas
    - Privately owned water boreholes, wells, pumping stations
  - Water status
    - Detailed data required for the assessment of impacts from agriculture
    - Data on renewable water availability and water quality data
    - Impacts from water consumption, water losses, agrochemicals use are not identifiable on the farm level
  - HCVAs status
    - Information not readily accessible or conceivable
    - Single farms can only be assumed to have impacts on the HCVAs, when status is identified as lower than good
  - Actions taken to mitigate identified or potential impacts will not have easily identifiable results on water quantity or quality
- FORs can act as coordinators in such efforts, however:
  - May not be «adequately» staffed, external experts will be required
  - May not have the power to influence water stewardship in a river basin level

FUTURE THOUGHTS

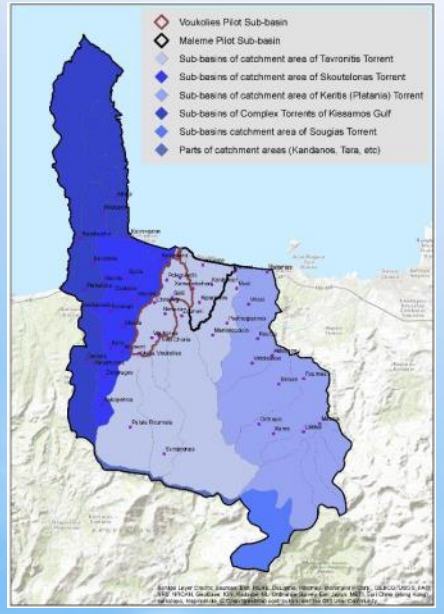
Farmers are skeptical but also curious towards changes in their current agricultural practices. They will readily adopt them if proven efficient and effective:

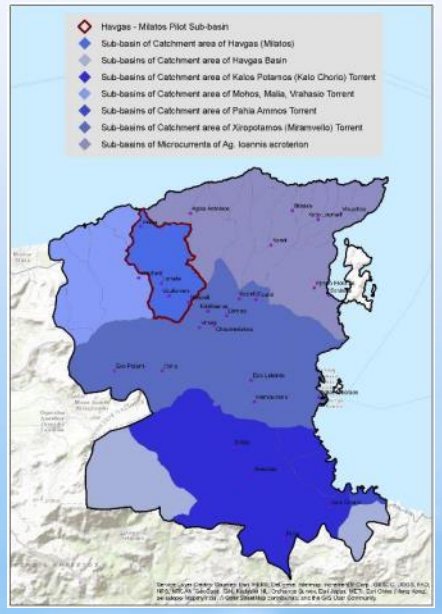
- engage them right from the beginning
- gain and maintain their trust and speak their language
- demonstrate effectiveness to convince them
  - Productivity
  - Marketability
  - Bottom-line
- Provide incentives for implementation
- Introduce appropriate water pricing
- Introduce sanctions for non conformance

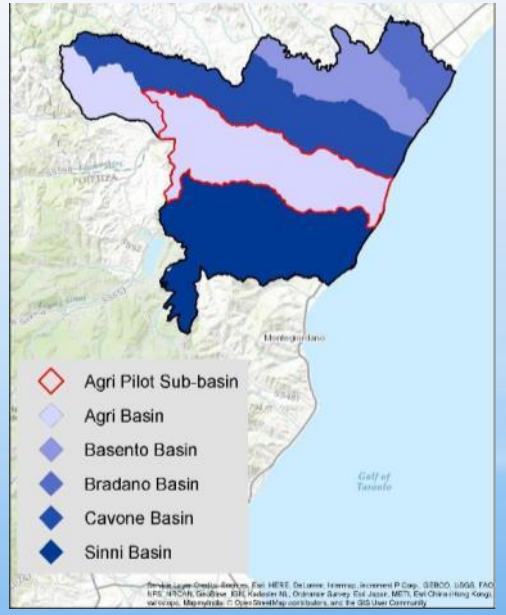
THANK YOU

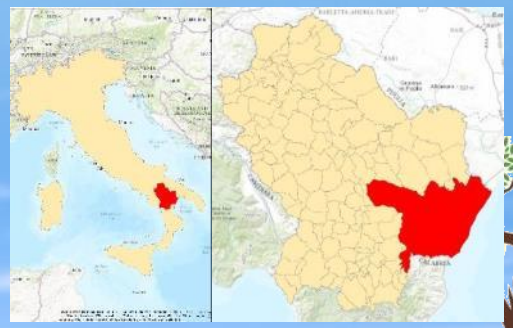
QUESTIONS?

PILOT SUB-BASINS (1/2)









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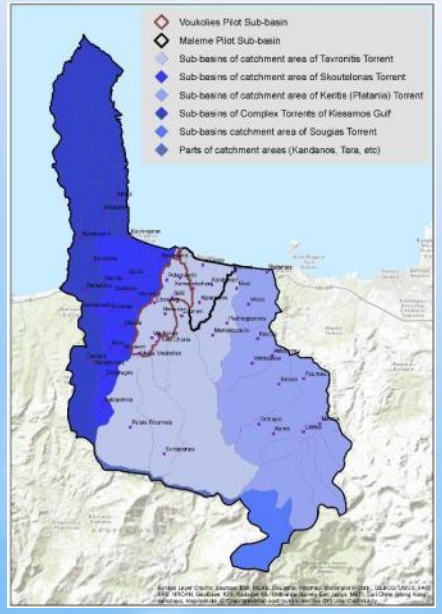
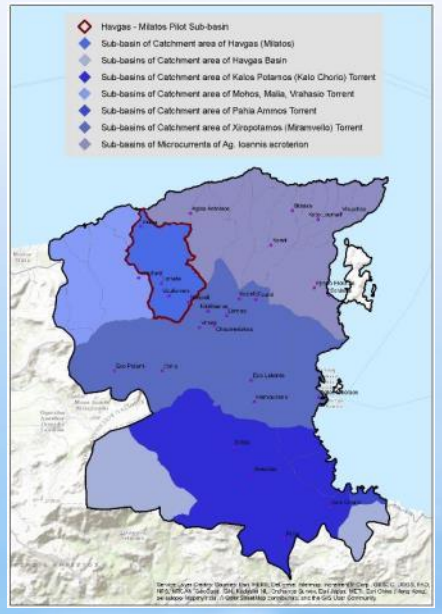
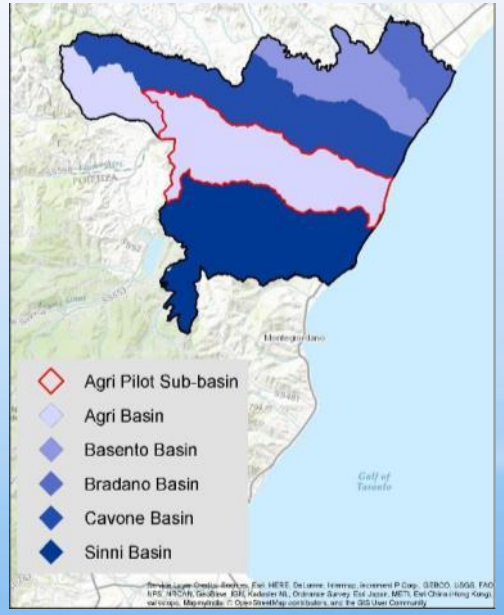
PILOT SUB-BASINS (2/2)

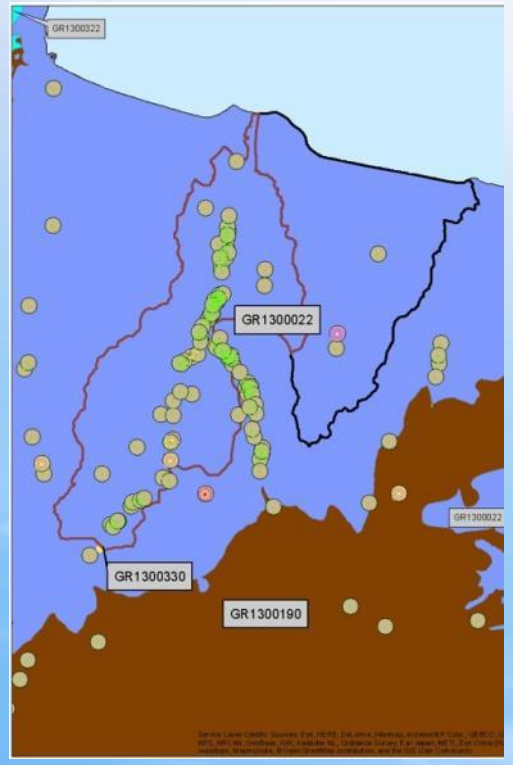






	Maleme	Voukolies	Havgas - Milatos	Agri
Total area (sq.km)	14,85	19,55	30,09	305,71
Agricultural areas	85%	95%	47%	74,30%
Fruit trees	15,50%	9,00%	-	13,50%
Olive Groves	58,90%	78,30%	37%	1%

IRRIGATION



Code	Name	Aquifer Type	Anthropogenic Pressures / Impacts	Natural Pressures / impacts	Quantitative Status	Comments	Increasing trend of pollutant
GR1300022	Porous aquifer of Campos Chanion	porous	No	-	Good	-	No

IRRIGATION WATER	Networks	Wells/Boreholes	Sub-total
Quantity (m^3/year)	166.194	291.698	457.892
Percentage (%)	36,30	63,70	100,00
TOTAL WATER CONSUMPTION	Potable Water	Irrigation Water	Total
Quantity (m^3/year)	498.584	457.892	956.476
Percentage (%)	52,13	47,87	100,00

Voukolies Pilot Sub-basin
Maleme Pilot Sub-basin

Abstraction Points
- Well
- Water Borehole
- Other water abstraction sources

Ownership
- OAK
- Private

Groundwater Bodies
- Coastal Karst of Spatha (Rodopos)
- Fractured System of Chania
- Gypsum Karst of Crete
- Porous of Campos Chanion

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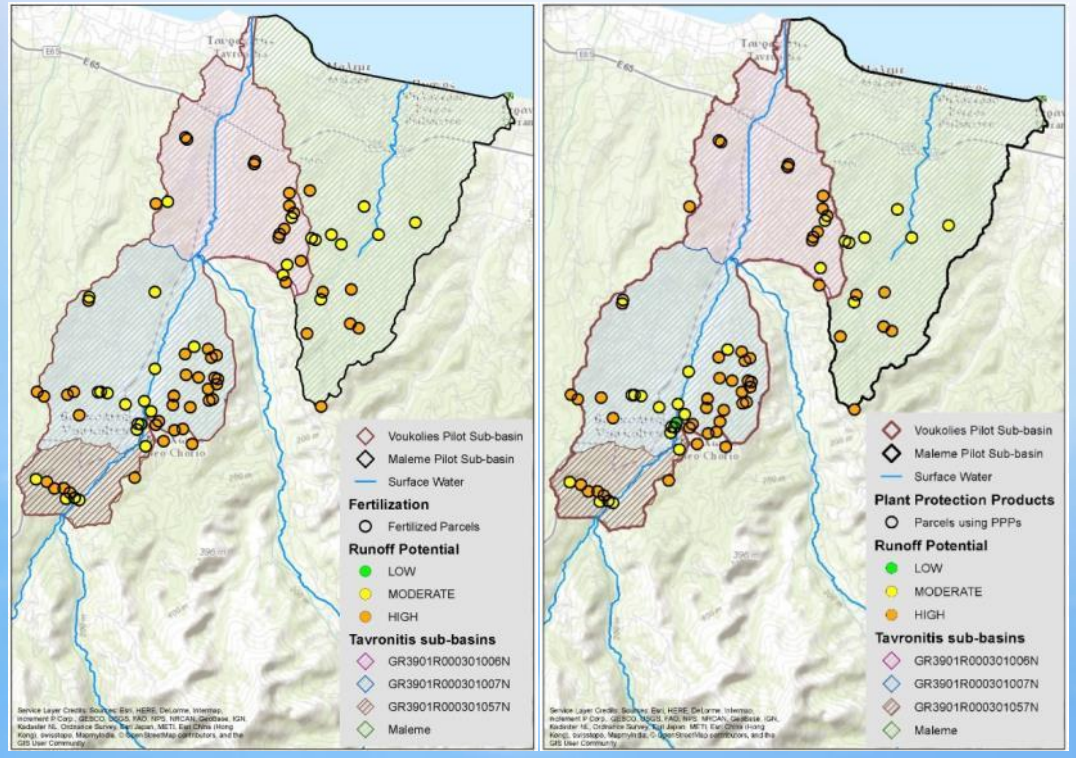
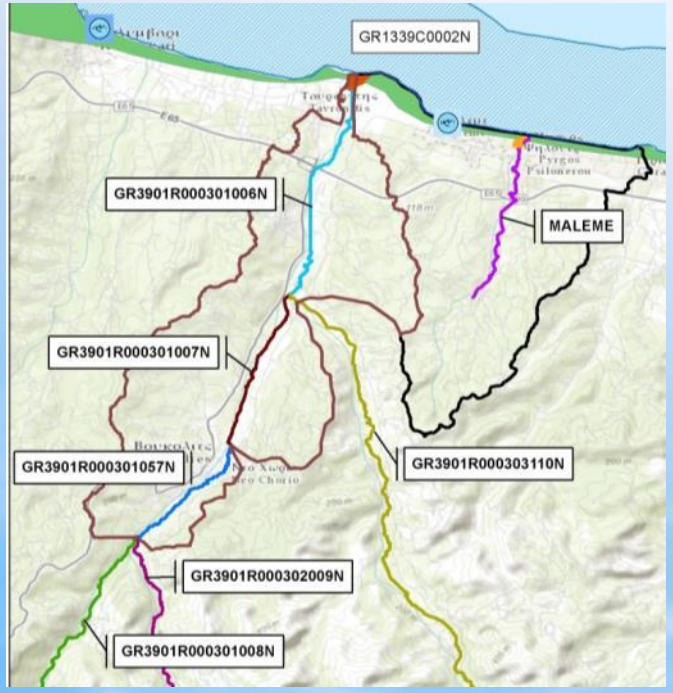
RUNOFF POTENTIAL IMPACTS



- Moderate to high risk of surface run-off
- Fertilizers and PPPs are used in most orchards.
- In 60% of the farms PPPs toxic to aquatic life (H400 – H410) are used
- In 62% of the farms PPPs containing specific pollutants are utilized

Deviation from GAP can impact on surface waters and HCVAs, 53% of the orchards are also irrigated.

IMPACTS ON SURFACE WATERS AND HCVAs



Voukolies Pilot Sub-basin
Maleme Pilot Sub-basin
Coastal Water - Chania Gulf Coasts

Surface Water
GR3901R000301006N
GR3901R000301007N
GR3901R000301008N
GR3901R000301057N
GR3901R000302009N
GR3901R000303110N
Maleme

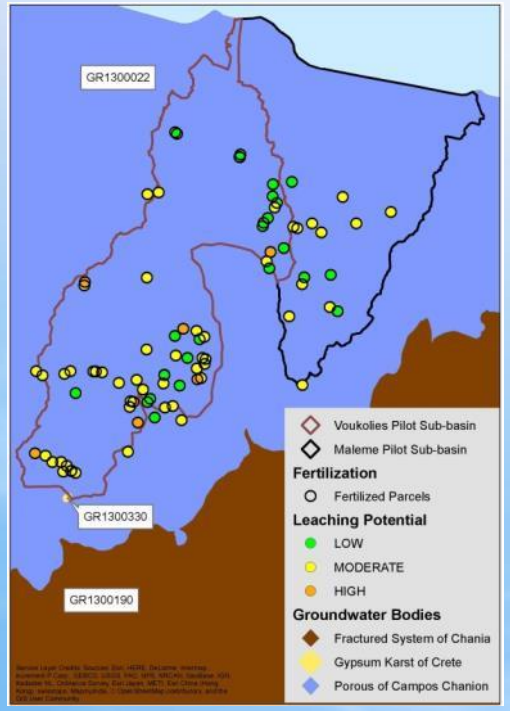
Bathing Waters
GRBW139323084 - Kolimparia-Rapaniana
GRBW139323085 - Maleme

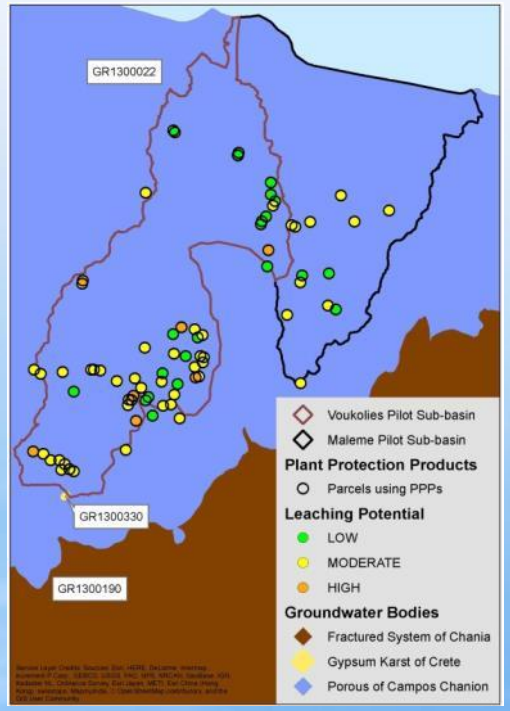
Wetlands
Sfakoryako estuary
Tavronits estuary and marsh

Sites of Community Importance (SCI) / Special Areas of Conservation (SAC)
CHERSONISOS RODOPOU PARALIA MALEME
LIMNI AGIAS / PLATANIAS / REMA KAI EKVOLI KERITI / KOILADA FASA

Code	Name	Type	Status
Y434KRI203	Tavronitis estuary and marsh	Small Island Wetland	-
Y434KRI202	Sfakoryako estuary	Small Island Wetland	-
GRBW139323085	Bathing waters of Maleme beach	Bathing waters	Excellent
GR1339C0002N	Coast of Chania Gulf	Shallow with sedimentary substratum	Good Ecological & Chemical
GR4340003	Chersonisos Rodopou – Paralia Maleme	Site of community importance	-

LEACHING POTENTIAL IMPACTS





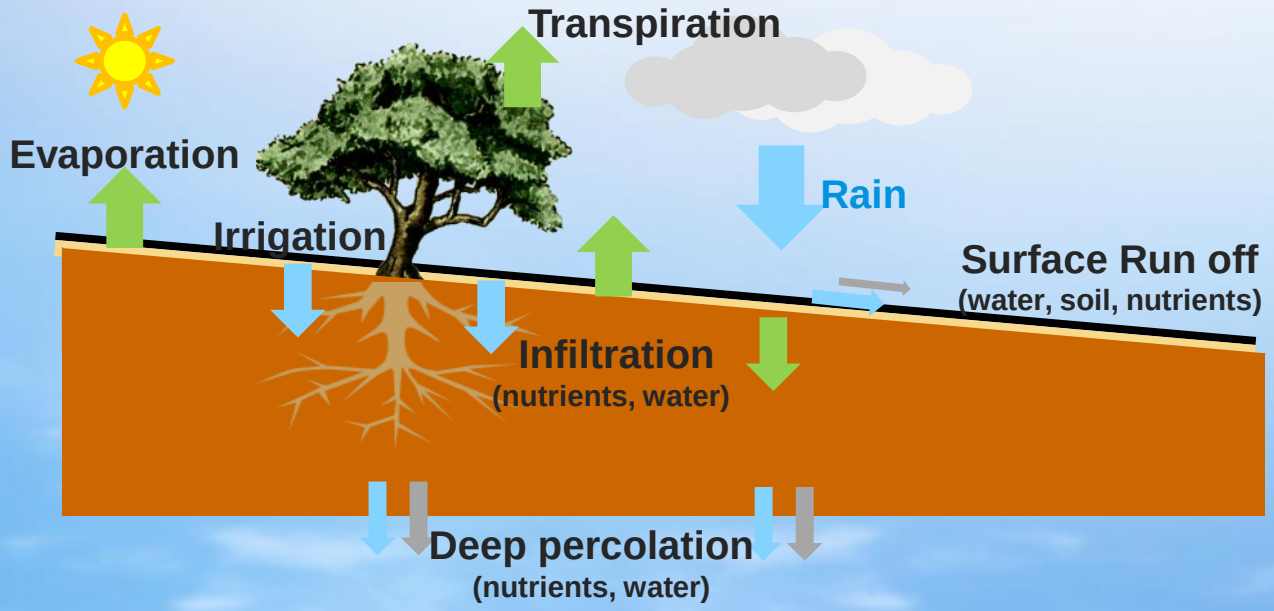
- Moderate leaching potential
- Agrochemicals are used in most orchards

Code	Name	Quantitative Status	Qualitative Status
GR1300022	Porous aquifer of Campos Chanion	Good	Good
GR1300330	Gypsum karst aquifer of Crete	Good	Good

ASSESSMENT OF FORs GOVERNANCE ACTIONS

	KEDHP	Mirabello	Assofruit Italia
Ensuring compliance with all legal requirements linked to water use (Criterion 4.1)	List of applicable water legislation	-	
Linking water management to the management of other resources (Criterion 4.3)	-	Recording procedures in the frame of EMS	
Raising efficiency of water consumption (Criterion 4.4)	-	Some GAPs in the frame of EMS	GAPs are implemented only by the farmers certified against GLOBALGAP
Ensuring transparency and awareness on water management (Criterion 4.5)	-	-	-
Ensuring continuous improvement (Criterion 4.6)	-	-	-
Ensuring transparency on economic aspects of water management (Criterion 4.7)	-	-	-

GAPs ON THE FARM LEVEL



Evaporation:
- Weed mowing,
- Shredding of prunned wood
- No soil tillage
- No weed control

Transpiration:
- Winter prunning
- Summer prunning

Deep percolation & nutrient losses:
- Increase of organic matter
- Fertigation

Irrigation efficiency:
- Weekly irrigation bulletins
- Deficit irrigation
- Irrigation network improvements

Surface run-off:
- Traps
- Bio-rolls