



EUROPEAN COMMISSION  
RESEARCH DG

CP/CSA/NoE Periodic Report

**Project No:** 212337

**Project Acronym:** SWUP-MED

**Project Full Name:** Sustainable water use securing food production  
in dry areas of the Mediterranean region

## CP/CSA/NoE Periodic Report

**Period covered:** from 01/07/2009 to 30/06/2010

**Date of preparation:** 06/10/2010

**Start date of project:** 01/07/2008

**Date of submission (SESAM):**  
06/10/2010 20:26:24 CET

**Project coordinator name:**

Dr. Sven-Erik Jacobsen

**Project coordinator organisation name:**

Københavns Universitet

**Version:** 1

## CP/CSA/NoE Periodic Report

### PROJECT PERIODIC REPORT

<b>Grant Agreement number:</b>	212337
<b>Project acronym:</b>	SWUP-MED
<b>Project title:</b>	Sustainable water use securing food production in dry areas of the Mediterranean region
<b>Funding Scheme:</b>	FP7-CP-SICA
<b>Date of latest version of Annex I against which the assessment will be made:</b>	15/10/2008
<b>Period number:</b>	2nd
<b>Period covered - start date:</b>	01/07/2009
<b>Period covered - end date:</b>	30/06/2010
<b>Name of the scientific representative of the project's coordinator and organisation:</b>	Dr. Sven-Erik Jacobsen, Københavns Universitet
<b>Tel:</b>	0045 3533 3388
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<b>Project website address:</b>	<a href="http://www.swup-med.dk">http://www.swup-med.dk</a>

## Declaration by the scientific representative of the project coordinator (1)

I, Dr. Sven-Erik Jacobsen, Københavns Universitet, as scientific representative of the coordinator of the project SWUP-MED and in line with the obligations as stated in Article II.2.3 of the Grant Agreement declare that:

The project has fully achieved its objectives and technical goals for the period.

The attached periodic report represents an accurate description of the work carried out in this project for this reporting period.

The public website is up to date, if applicable.

To my best knowledge, the financial statements which are being submitted as part of this report are in line with the actual work carried out and are consistent with the report on the resources used for the project (section 6) and if applicable with the certificate on financial statement.

All beneficiaries, in particular non-profit public bodies, secondary and higher education establishments, research organisations and SMEs, have declared to have verified their legal status. Any changes have been reported under section 5 (Project Management) in accordance with Article II.3.f of the Grant Agreement.

<b>Name</b>	Dr. Sven-Erik Jacobsen, Københavns Universitet
<b>Date</b>	06/10/2010

This declaration was visaed electronically by Sven-Erik JACOBSEN (ECAS user name njacobsv) on 06/10/2010 at 06/10/2010 20:26:24 CET

## 1. Publishable summary

### Publishable summary

The objective of the project is to improve food production by introducing climate-proof varieties in crop rotations of wheat, grain legumes and new crops, in a rainfed system with supplemental deficit irrigation using marginal-quality water and harvested rainwater.

New crop rotations and new crops were tested. There were great variations in cropping techniques in the farmers' communities, where research work took place. This indicates potential for increasing yield by optimizing cropping systems with respect to land and water management. Quinoa was of special interest, as it was just recently introduced. Yields were promising both of quinoa (up to 2.1 t/ha) and amaranth (up to 4.4 t/ha). These yields were similar to yields obtained for chickpea, whereas wheat yielded c. 7 t/ha.

Adaptation trials of chickpea indicated a high variability in yield response among genotypes and regions, with the genotypes of a short growth cycle showed higher grain yield. Quinoa demonstrated higher economic value and better water use efficiency in newly reclaimed sandy soils compared to wheat in Egypt. Salinity increased root resistance and decreased plant water potential. Different quinoa cultivars had similar chemical composition, but differed in saponin content.

Application of small amounts of freshwater at critical crop growth stages under rainfed conditions showed a potential to significantly increase crop productivity. Quinoa showed promising results for deficit irrigation, with a 50% water saving resulting in only 15% yield reduction.

The use of saline water as a source of irrigation in conjunction with appropriate cultural practices and cropping systems has the potential to increase water availability for agricultural production systems. Quinoa showed a sensitive stomatal response and early recognition of stress conditions with a prompt reduction of leaf water potential and ABA accumulation in leaves, to preserve plants from dehydration damages. The results suggest a high plasticity of quinoa to stress. Amaranth yield was reduced considerably under salinity.

Initial results on environment impact assessment when using wastewater irrigation revealed chromium concentration exceeding the permissible level according to WHO. The study on health implications of wastewater irrigation on children (8-12 years) revealed an increased incidence of waterborne diseases leishmania, gastroenteritis and typhoid (13, 30 and 4 incidents) compared to freshwater-irrigated areas (1, 5 and 1 incidents). On the average, the children living in a wastewater-irrigated environment had 8 times more risk to be affected by waterborne diseases than those living in freshwater-irrigated area.

The introduction of new crops may have implications on water use and balance, soil characteristics such as nutrient availability status, structure, and organic matter. Quinoa responded well to nitrogen application. By applying deficit irrigation during grain filling stage, 20% of the water supply can be saved. In the case of irrigation with treated wastewater, 100% freshwater can be saved.

The SALTMED model is under development, upgrading data on crop rotation; impact of stress factors on crop growth (temperature, drought, salinity and N deficiency); drainage; modelling several fields and treatments at once; and water and salt balance. Model testing was done with data sets from Turkey and Italy. The model is able to produce comparable results to the measured yields.

Number of publications until now is 11 peer-reviewed and 2 popular. Number of meetings disseminating project ideas and output 10.

## 2. Core of the report

### Project objectives, Work progress and achievements, and project management during the period

The Project Summary Pdf document contains the core of the report.

### 3. Deliverables and milestones tables

Deliverables (excluding the periodic and final reports)									
WP no.	Del. no.	Deliverable name	Lead beneficiary	Nature	Dissemination level	Delivery date from Annex I (proj month)	Delivered Yes/No	Actual / Forecast delivery date	Comments
		FP7_Periodic-report_SWUP-MED.pdf				0	Yes	19/01/2010	
2	3	Characterization of local and ICARDA germplasm tolerant to multiple stresses by using molecular, physiological and morphological tools.	INSTITUTO DE TECNOLOGIA QUIMICA E BIOLOGICA - UNIVERSIDADE NOVA DE LISBOA	Report	PU	18	Yes	01/01/2010	The deliverable is part of the annual report uploaded
3	4	Agronomic interventions have been identified. Yearly reports	UNIVERSITY OF CUKUROVA	Report	PU	24	Yes	01/07/2010	The deliverable is part of the annual report uploaded
6	2	Report on models structure, development, calibration and validation using data from the project field experiment sites	NATURAL ENVIRONMENT RESEARCH COUNCIL	Other	PU	24	Yes	01/07/2010	See link

Milestones							
Milestone no.	Milestone name	Work package no	Lead beneficiary	Delivery date from Annex I	Achieved Yes/No	Actual / Forecast achievement date	Comments
311	The potential and availability of marginal-quality water resources in the beneficiary countries	3	8	01/07/2010	Yes	01/07/2010	Report. Name: M3a.1

	have been determined. Appropriate water harvesting techniques for each condition are selected						
51	Country specific analyses on farming systems in the Mediterranean countries conducted	5	6	01/10/2009	Yes	01/10/2009	Report. Name: M5.1
212	Genotypes with improved tolerance to the most important abiotic stresses identified	2	3	01/01/2010	Yes	01/01/2010	Under rainfed conditions accessions of chickpea, faba bean and lentils with high yield have been identified across environments. Their high yield potential will be further tested in the remaining two years of the project, potentially covering different cli
321	Agronomic and salinity conditions in the experimental sites are characterized	3	8	01/01/2010	Yes	01/01/2010	See Annual report year 2
61	The new codes are written up and implemented into the existing model	6	5	01/07/2010	Yes	01/07/2010	SALTMED 2010 Beta version has been distributed to all partners for testing. However, there is more development work to take place to account for crop growing by degree days (heat units) and possible inclusion of a factor to account for future CO2 increase
06	Year 2 annual project meeting, and discussion of future work	0	1	01/07/2010	Yes	01/07/2010	Completed, see Minutes year 2
222	Physiological performance and critical phenological stages under abiotic stress	2	3	01/07/2010	Yes	01/07/2010	See Annual report year 2

conditions described.							
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#### 4. Explanation of the use of the resources

<b>Københavns Universitet</b>			
Work Package	Item description	Amount	Explanations
0,1,2,3,4,5,7	Personel costs RTD	109512.74	Associate Professor Sven-Erik Jacobsen, Professor Christian Richardt Jensen, PhD student Verena Isabel Adolf
0,1,2,3,4,5,7	Other direct costs RTD	8747.45	Travel, consumables - please see attachment
0	Personel costs management	23855.71	Research Coordinators Christine Kastrop and Sophie Rosendal, Accounts Officer Birgitte Nielsen
	<b>Total:</b>	<b>142115.9</b>	

<b>INTERNATIONAL CENTRE FOR AGRICULTURAL RESEARCH IN THE DRY AREAS</b>			
Work Package	Item description	Amount	Explanations
1, 2, 3, 4	Personnel costs	38521.00	Marginal Water Management Specialist Manzoor Qadir, Soil scientist Awadis Arslan, Lentil Breeder Shiv Kumar Agrawal, Faba bean breeder Fouad Maalouf, Engineers Ryad Alashaheer and Ghalia Majeed, Laboratory worker Manhal Alzouabi, Field labor
1, 2, 3, 4	Other direct costs	29938.00	Travel, consumables, equipment - please see attachment
	<b>Total:</b>	<b>68459</b>	

<b>INSTITUTO DE TECNOLOGIA QUIMICA E BIOLOGICA - UNIVERSIDADE NOVA DE LISBOA</b>			
Work Package	Item description	Amount	Explanations
2, 3	Personnel costs	9946.80	Research student NUNO SIMÕES, PhD student CARLA PINHEIRO
2, 3	Other direct costs	28262.95	Travel, consumables, equipment - please see attachment
	<b>Total:</b>	<b>38209.75</b>	

<b>CONSIGLIO NAZIONALE DELLE RICERCHE</b>			
Work Package	Item description	Amount	Explanations
2, 3, 6	Personnel costs	51050.78	Director f.f d'Andria Riccardo and Researchers Albrizio Rossella, Basile Angelo, De Mascellis Roberto, Lavini Antonella, Leone Pasquale Antonio, Mele Giacomo,



			Pagliuca Silvana
2, 3, 6	Other direct costs	8596.01	Travel, consumables - please see attachment
	Total:	59646.79	

#### NATURAL ENVIRONMENT RESEARCH COUNCIL

Work Package	Item description	Amount	Explanations
6	Personnel costs	15925.91	Principal hydrologists Mr. Ken Blyth and Dr. Ragab Ragab
6	Other direct costs	1965.34	Travel, consumables - please see attachment
	Total:	17891.25	

#### CENTRE FOR ENVIRONMENT AND DEVELOPMENT FOR THE ARAB REGION AND EUROPE

Work Package	Item description	Amount	Explanations
5	Personnel costs	8750.00	Project manager Dr. Omar Elbadawy, administrator Ms. Nermin Qudah
5	Travel costs	1117.00	Costs for Annual Meeting II paid in Report Period 2
	Total:	9867	

#### INSTITUT AGRONOMIQUE ET VETERINAIRE HASSAN II

Work Package	Item description	Amount	Explanations
1, 2, 3	Personnel costs	59022.88	Professor Benhabib Ouafae, Choukrallah Redouane, Wahbi Said, technician Chouijra Driss
1, 2, 3	Other direct costs	19218.23	Travel, consumables, equipment, other cists. Please see attachment.
	Total:	78241.11	

#### UNIVERSITY OF CUKUROVA

Work Package	Item description	Amount	Explanations
1,2,3,5	Personnel costs	16932.00	Research engineers Filiz GOKCEL and Ibrahim Can YIMAZ
1,3,5	Other direct costs	44000.05	Travel, consumables, equipment, other costs - please see attachment
	Total:	60932.05	

#### THE UNIVERSITY OF WESTERN AUSTRALIA

Work Package	Item description	Amount	Explanations
00	0	0.00	Beneficiary has not worked on the project during this period
	Total:	0	

<b>Attachments</b>	FP7periodic20102_7.pdf, M3a.1.Water resources and use.doc, 6.CEDARE_adjustment.pdf, M5.1 Country Specific Social and Economic Conditions for Farming .doc, 4.ISAFOM_costs.pdf, 1.UCPH_costs.pdf, 1.UCPH_adjustment.pdf, 2.ICARDA_costs.pdf, 3.ITQB_costs.pdf, 5.NERC_costs.pdf, 5.NERC_adjustment.pdf, 6.CEDARE_costs.pdf, 7.IAV_costs.pdf, 7.IAV_adjustment.pdf, 8.CU_costs.pdf
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