SIXTH FRAMEWORK PROGRAMME
FP6-2005-Global-4, Priority II.3.5
Water in Agriculture: New systems and technologies for irrigation and drainage

Farm Level Optimal Water management: Assistant for Irrigation under Deficit

Contract no.: 036958

Deliverables no: 83
Proceeding Final Workshop
Workpackage: WP 0, Coordination

Due date of deliverable: month 36; Actual submission date: month 39
Start date of project: Oct, 1st 2006  Duration: 39 months

Organisation name of lead contractor for this deliverable: PPO, UCLM;
with contributions from: RRES, LARI, JUST, EUFA, UNIPI, SPAGNOL, DLTAT,
GEOMATIONS

Authors: Jos Balendonck (PPO), Anna Osann (UCLM)

Revision final
Nature: Report

Project co-funded by the European Commission within the Sixth Framework Programme
(2002-2006)

<table>
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<tr>
<th>Dissemination Level</th>
<th>PU</th>
<th>PP</th>
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<tbody>
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<td>PU</td>
<td>Public</td>
<td>Restricted to other programme participants (including the Commission Services)</td>
<td>Restricted to a group specified by the consortium (including the Commission Services)</td>
<td>Confidential, only for members of the consortium (including the Commission Services)</td>
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</table>

Final Workshop Proceedings
DELIVERABLE STATUS REPORT

DESCRIPTION (taken from Technical Annex):
Workpackage 0: Co-ordination and project management
Participant id: PRI/PPO

Objectives
2. Organise meetings (including minutes) for the management and technical board and forming of task forces, as well as (final) workshops.

Description of work

Stakeholder Involvement
The FLOW-AID systems will be developed and tested under full responsibility of the project partners, with advice from a stakeholder board. Members of the stakeholder board may be farmers and managers of the water services involved in the test sites, representatives of the local water authorities, leading local farmers and extension services from each region. Stakeholders and occasionally third parties can be invited to special sessions at the annual and progress meetings.

Scientific Dissemination (scientific partners and test-sites)
The role of the test-sites will be the organisation of all kinds of dissemination actions such as conferences, workshops and seminars for farmers (by each site partner together with the SME involved), as well as dissemination material (brochures, posters), contacts with farmers’ advisors and project name spreading through media. Special schools that attract and reach farmers well will be organised to increase awareness of water as a precious resource and the potential to solve societal problems through water saving in agriculture while increasing farm’s productivity and preserving the environment.

Raising public participation and awareness
The SME’s will take care of building and assembling products that can be sold to the end-user irrigation markets, based upon their developed soft- and hardware (market-ready concepts). They will promote these products in the way they are used to do, and they can make use of the test-sites and the promotional activities the test-site will undertake towards local farmers and other bodies involved in irrigation management. The SME’s can also refer to the disseminated results (a.o. papers, web-site) from the scientific partners. The SME’s involved have already a market, especially in the EU targeted countries, or either have stated a mission to head for this market in the near future.

During the project, stakeholders will be consulted and asked for advice on regional application constraints. Stakeholders are the local farmers and managers of the water services involved in the test sites, representatives of the local water authorities, leading local farmers and extension services from each region. The function of the stakeholders is to ensure that the tools to be developed respond to the needs of the local community. By doing this we raise public awareness on a local basis.

Deliverables
3. Proceeding Final Workshop, PRI (P1), Month 36
Milestones (General meetings) and expected result
10. FINAL WORKSHOP FLOW-AID (9: Annual): Month 35

CHANGES (and actions undertaken to correct/or change):
The final workshop was planned for month 35. The project however was extended with 3 months. The final workshop was held in month 38.

REMARKS:
As suggested by the EU project officer, the final workshop was organized in collaboration with another European project: Pleiades, which was ran in parallel as FLOW-AID in the same FP7 theme and call. Both projects have the same targets for optimal water management, but have a total different approach. Flow-Aid focusses on sensor activated control at farm-level, while Pleiades focusses on large-scale management based upon remote sensing.

CONCLUSIONS:
The Final workshop was held in Albacete (Spain) on 10-11 November 2009. The workshop was visited by local stakeholders from Spain, a few foreign stakeholders mainly from Turkey. Further, there were 20 representatives from the FLOW-AID project, and a few representatives from the Pleiades project. A press release was made, which resulted in regional and global publicity in Spain. A local TV organisation recorded and did an interview which was broadcasted as well on the internet.

DOCUMENTS
(a list of files or documents that conclude the deliverable, f.i. data or photos, reports etc)

DEL83-FLOWAID-Final Workshop handout.pdf
DEL83-PLEIADES-Final workshop handhout.pdf
Workshop program

AFTERNOON JOINT MEETING BOTH PROJECTS

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Details</th>
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<tbody>
<tr>
<td>14:00</td>
<td>LUNCH</td>
</tr>
<tr>
<td>16:00</td>
<td>Welcome &amp; logistics</td>
</tr>
<tr>
<td></td>
<td>Purpose of meeting;</td>
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<tr>
<td></td>
<td>Outlook Info-Day agenda &amp; purpose</td>
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<tr>
<td>16:10-17:10</td>
<td>FLOW-AID presentations (technical &amp; user-related)</td>
</tr>
<tr>
<td></td>
<td>FLOW-AID team</td>
</tr>
<tr>
<td>17:10-18:10</td>
<td>PLEIADeS presentations (technical &amp; user-related)</td>
</tr>
<tr>
<td></td>
<td>PLEIADeS team</td>
</tr>
<tr>
<td>18:10</td>
<td>COFFEE/TEA BREAK</td>
</tr>
<tr>
<td>18:30-19:30</td>
<td>Preparations Info-Day:</td>
</tr>
<tr>
<td></td>
<td>* panels</td>
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<td></td>
<td>* involvement of stakeholders</td>
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<tr>
<td></td>
<td>* fine-tuning of activities</td>
</tr>
<tr>
<td>20:00</td>
<td>EARLY DINNER (TAPAS)</td>
</tr>
</tbody>
</table>

Meeting purpose:
Concise status review PLEIADeS & FLOW-AID and mutual information of project teams

Additional details:
- Purpose of meeting: Outlook Info-Day agenda & purpose
- Preparations Info-Day: * panels * involvement of stakeholders * fine-tuning of activities

Facilitated by coordinators.
Final info-day agenda

Agenda Info-Day 11 November 2009
Technology and science for efficient irrigation:
The European projects PLEIADeS and FLOW-AID and accompanying meetings

PLEIADeS and FLOW-AID have developed and piloted a range of tools for optimizing irrigation water management and use in a sustainable agriculture, both at farm and irrigation scheme scale. These tools integrate information from satellites and in-field sensors and make it available to users through information technology for easy sharing and interactive participation.

Los principales logros de los proyectos FLOW-AID y PLEIADeS son herramientas para optimizar la gestión y el uso del agua en un regadío sostenible, tanto a escala de parcela como de zona regable. Esas herramientas integran información procedente de satélite y de sensores en tierra y la distribuyen de forma interactiva mediante tecnologías de comunicación, lo cual abre el uso compartido y transparente por parte de todos los usuarios.

Meeting venue:
Universidad de Castilla-La Mancha, Albacete (Spain),
* Paraninfo (Auditorium) for Info-Day;
* Salón de actos, IDR, for rest of joint meetings.
* Salón de actos, Agricultural Engineering School for FLOW-AID meetings.

Language: Spanish and English with simultaneous translation (Info-Day); English (rest of meetings)

Opening session (from left-right: Jose Maria Targuelo, Jos Balendonck (FLOW-AID), Anna Osann (PLEIADeS), Miguel Chollarón JCCM, Alfonso Calera).
## PROGRAMA

<table>
<thead>
<tr>
<th>Tiempo</th>
<th>Actividad</th>
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<tbody>
<tr>
<td>8:30</td>
<td>Bienvenida e Inscripción</td>
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<tr>
<td>9:00</td>
<td>Inauguración Miguel Chillarón JCCM; Director UCLM-IDR; coordinadores</td>
</tr>
<tr>
<td>9:15</td>
<td>Resultados FLOW-AID Coordinador: Jos Balendonck, Wageningen University</td>
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<tr>
<td></td>
<td>* Panel 1: Presentación de herramientas (sensores, herramientas de ayuda a la toma de decisiones, MOPECO)</td>
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<td></td>
<td>* Panel 2: Experiencias en zonas piloto</td>
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<tr>
<td>10:45</td>
<td>Breve presentación proyectos europeos relacionados:</td>
</tr>
<tr>
<td></td>
<td>Oussama Mounzer, IRRIQUAL/SIRRIMED; Manuel Erena, TELERIEG</td>
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<tr>
<td>11:05</td>
<td>Pausa-Café y Visita a los expositores con equipamientos</td>
</tr>
<tr>
<td>11:35</td>
<td>Resultados PLEIADeS Coordinadores: Anna Osann y Alfonso Calera. UCLM</td>
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<tr>
<td></td>
<td>* Panel 1: Presentación de herramientas (SPIDER…)</td>
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<td></td>
<td>* Panel 2: Experiencias en zonas piloto y evaluación de usuarios</td>
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<td></td>
<td>* Video (10’)</td>
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<tr>
<td>13:05</td>
<td>Mesa redonda con usuarios Moderador: José María Tarjuelo UCLM. Francisco Belmonte JCRMO, ABHT Marruecos; Miguel Ángel Mena DGA,MARM; Eng. A. Casciolo, Ministero del Ambiente, Italia</td>
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<tr>
<td>14:05</td>
<td>Resumen y conclusiones Coordinadores de los proyectos y representante de la UE</td>
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<td>14:20</td>
<td>COMIDA</td>
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### Objetivo

Presentar los resultados de los proyectos europeos FLOW-AID y PLEIADeS a un amplio grupo de usuarios potenciales para discutir su interés y aplicabilidad. Los principales logros de los proyectos FLOW-AID y PLEIADeS son herramientas para optimizar la gestión y el uso del agua en un regadío sostenible, tanto a escala de parcela como de zona regable. Esas herramientas integran información procedente de satélite y de sensores en tierra, distribuyéndola de forma interactiva mediante tecnologías de comunicación, lo cual abre el uso compartido y transparente por parte de todos los usuarios.
**MORNING: INFO – DAY**

**Purpose:**
To present the outcome from two key European projects FLOW-AID & PLEIADeS to a wide range of stakeholders and discuss their interest.

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30</td>
<td>Welcome coffee and Registration</td>
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<tr>
<td>9:00</td>
<td>Opening</td>
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<td></td>
<td>UCLM-IDR (Director) / CREA (Director)</td>
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<td>Project coordinators</td>
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<td>Authorities (Regional Government)</td>
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<tr>
<td>9:20</td>
<td>FLOW-AID</td>
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<td>(see next page for details)</td>
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<td></td>
<td>Coordinator: Jos Balendonck, Wageningen</td>
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<td></td>
<td>University</td>
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<td></td>
<td>* Panel 1: Overview, tools &amp; frameworks</td>
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<td>(sensors, DSS, MOPECO)</td>
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<td></td>
<td>* Panel 2: Pilot area experiences</td>
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<td>10:50</td>
<td>Brief presentation of related EC projects</td>
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<td></td>
<td>Oussama Mounzer, IRRIQUAL/SIRRIMED; Manuel</td>
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<td>Erena, TELEIG</td>
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<tr>
<td>11:15</td>
<td>COFFEE / TEA BREAK &amp; exhibition private companies</td>
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<td>11:45</td>
<td>PLEIADeS</td>
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<td>(see next page for details)</td>
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<td></td>
<td>Coordinators: Anna Osann, Alfonso Calera,</td>
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<td>UCLM</td>
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<td>* Panel 1: Overview, tools &amp; frameworks</td>
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<td>* Panel 2: Pilot area experiences &amp; user</td>
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<td>* Video (10’)</td>
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<td>13:15</td>
<td>Stakeholder forum</td>
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<td>Moderator: José María Tarjuelo, UCLM</td>
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<td>* Panel of 5-6 stakeholders (farmers,</td>
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<td>irrigation user associations, advisory</td>
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<td>service, river-basin water managers,</td>
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<td></td>
<td>regional/national planners): brief</td>
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<td>statement of each &amp; question</td>
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<td></td>
<td>round</td>
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<td></td>
<td>* Open discussion (floor &amp; panel)</td>
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<td>14:15</td>
<td>Synthesis &amp; conclusions</td>
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<td>Project coordinators</td>
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<td>14:30</td>
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### AFTERNOON: OPTIONAL PARALLEL SESSIONS

**Wed 11th Nov**

** sessions contain presentations, demonstrations and discussions.**

<table>
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<tr>
<th><strong>Session</strong></th>
<th><strong>Description</strong></th>
<th><strong>Facilitators</strong></th>
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<tbody>
<tr>
<td><strong>Session 1</strong></td>
<td>In-line, wireless or remote sensing: when to apply what for irrigation management?</td>
<td>In-depth interaction FLOW-AID / PLEIADeS on specific topics. Focus to be defined during preparation. Facilitated by Alfonso Calera &amp; Jos Balendonck</td>
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<tr>
<td><strong>Session 2a</strong></td>
<td>SPIDER practice session (using global SPIDER for all pilot areas) [for all interested users]</td>
<td>Including group work Facilitated by Juanma Moreno &amp; Isidro Campos</td>
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<tr>
<td><strong>Session 2b</strong></td>
<td>FLOW-AID practice session. The use of a DSS and sensor activated control in all pilot cases.</td>
<td>Facilitated by Cecilia Stanghellini &amp; Nick Sigrimis, supported by Delta-T Devices, Geomations and Spagnol Automation.</td>
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<tr>
<td><strong>Session 3</strong></td>
<td>Trends in irrigation water management: future challenges for research, end-users and policy makers.</td>
<td>Facilitated by Anna Osann and Jos Balendonck.</td>
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<td>20:30</td>
<td><strong>JOIN T DINNER</strong></td>
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Flow-Aid team
Se presentarán los logros alcanzados en los proyectos europeos de la UCLM ‘FLOW-AID’ y ‘PLEIADES’, herramientas para optimizar la gestión y el uso del agua en un regadío sostenible. La UCLM celebrará una jornada internacional titulada ‘Tecnología y Ciencia para el Regadío Eficiente’. El Paraninfo Universitario de Albacete acogerá el próximo miércoles, 11 de noviembre, la jornada ‘Tecnología y Ciencia para el Regadío Eficiente’, en la que se presentarán los resultados de dos proyectos europeos, que cuentan con la participación de más de 20 países. Uno de ellos lleva por título FLOW-AID, y trabajan investigadores del Centro Regional de Estudios del Agua (CREA), el segundo es el denominado PLEIADES, y está coordinado por el grupo de investigación de Teledetección y Sistemas de Información Geográfica, del Instituto de Desarrollo Regional (IDR), ambos de la Universidad de Castilla-La Mancha (UCLM). El objetivo de la Jornada es presentar las herramientas y modelos generados en ambos proyectos para optimizar la gestión y el uso del agua en un regadío sostenible, tanto a nivel de parcela, como en zonas regables. El encuentro, organizado por la UCLM a sugerencia de la Comisión Europea, Dirección General de Investigación, tiene prevista la asistencia de la directora general del Agua del Ministerio de Medio Ambiente y Medio Rural y Marino, Marta Morén, del director general de Mejora de Explotaciones Agrarias, de la Consejería de Agricultura y Desarrollo Rural, Miguel Chillarón y de Panagiotis Balabanis, de la Dirección General de Investigación de la Comisión Europea.

La Jornada, que comenzará la las 9.00 horas, se desarrollará en español y en inglés, con traducción simultánea y documentación en ambos idiomas, estructurándose en tres mesas redondas. En la primera de ellas se presentará FLOW-AID, que será moderada por su coordinador Jos Balendonck, (Holanda). La segunda mesa se dedicará a PLEIADES, y será moderada por sus coordinadores Anna Osann y Alfonso Calera (España). Usuarios de varios países participarán en la tercera mesa redonda, cuyo moderador será el director del CREA, José María Tarjuelo.

Con respecto al Proyecto Europeo Flow-Aid, cuyo presupuesto es cercano a los dos millones de euros, tiene como principal objetivo, según los investigadores, desarrollar un conjunto de técnicas y herramientas para ayudar a los agricultores en la gestión del agua de riego cuando ésta es escasa, en cantidad y/o en calidad, "lo que obliga a la utilización del riego deficitario controlado, aplicando las nuevas tecnologías en el manejo del riego en parcela".-afirman. Dentro de este proyecto, el CREA ha desarrollado un modelo de ayuda a la toma de decisiones aplicable a cualquier zona regable, "que ya puede ser utilizado por los agricultores de la Mancha Oriental y que determina la distribución de cultivos que maximiza la rentabilidad de las explotaciones con agua limitada".-indicán. Además, dentro de este trabajo se ha desarrollado la integración de nuevos sensores de humedad del suelo de bajo coste, dentro de un sistema de ayuda a la toma de decisiones, teniendo en cuenta los condicionantes de los sistemas productivos de cada agricultor. "El fin es programar el riego en parcela de forma eficiente, utilizando redes inalámbricas de trasmisión de datos de bajo consumo y reducido coste".-afirman. Herramientas que ya se han validado en distintas zonas regables situadas en España, Italia, Turquía, Jordania, Holanda y Líbano.

Por su parte PLEIADES, www.pleiaides.es, que cuenta con un presupuesto cercano a los tres millones de euros, aborda el uso eficiente y sostenible del agua en la agricultura de regadío...
utilizando para ello imágenes de satélite, distribuyendo la información mediante Internet y telefonía móvil. En la información se integran elementos técnicos, sociales, económicos, ambientales y políticos necesarios en un nuevo concepto integral de eficiencia en el regadío. "El avance científico y la tecnología que se pueda producir en el marco de este proyecto tendrá impacto global, dada la amplia cobertura internacional de los 23 grupos de 12 países y cuatro continentes que lo integran", indican sus coordinadores. Colaboran en esta tarea grupos investigadores y usuarios de España, Portugal, Italia, Grecia, Francia, Turquía, Malta, Marruecos, México, Brasil, Perú, y Estados Unidos, junto con observadores de instituciones como el Ministerio de Medio Ambiente, Medio Rural y Marino de España, MARM, el Instituto Internacional de Gestión del Agua (IWM), la Unión Internacional para la Conservación de la Naturaleza (IUCN) y la FAO.

**Gabinete de Comunicación UCLM.**

**Website info:**

An international Info Day was held in Albacete (Spain) on 11 November 2009. It was jointly organized by the Instituto de Desarrollo Regional (IDR) and the Centro Regional del Agua (CREA), both of the Universidad de Castilla-La Mancha (UCLM). It brought together stakeholders from several countries with the teams of European projects FLOW-AID (coordinated by Wageningen University) and PLEIADeS (coordinated by UCLM-IDR).
Farm Level Optimal Water Management: Assistant for Irrigation under Deficit

More Crop per Drop: Technology supports growers to cope with water shortage challenges

Water shortage forces growers to adopt deficit irrigation practices. They tend to irrigate with less water at a lower quality. To avoid crop damages and income losses, they need to manage their water and nutrients more precisely. New technology-based tools might help them by making the most optimal operational decisions. The extra income, due to slightly higher yields and use of less fertilizers, might help to invest in these new technologies.

The Problem

Agriculture is the largest user of water, making it a big competitor for domestic and industrial users. To secure our food production for future generations, the irrigation water use efficiency must be increased drastically, in other words: we need “more crop per drop”. Generally the way to go is to avoid spilling of water, and to ensure that all the irrigation water is being used by the crop. Over-irrigation invokes leaching of water and fertilizers affecting the environment. This can be ensured by optimizing irrigation equipment and irrigation management.

However, in many cases this step is not enough, and currently growers need to adopt a deficit irrigation strategy in which they supply water under the advised FAO amount or even use non-fresh water resources. Crop yield is closely related to water and fertilizer use. Limiting water supply or using marginal water resources might result in yield and quality losses. Working under deficit conditions means that the grower needs to operate his water management more precisely to prevent income losses. He cannot longer rely on his common sense, but needs help from technology.

Container grown ornamental plants grown under high saline conditions show crop damages: brown leaves (Italian case study)

Objectives

FLOW-AID contributes to sustainable irrigated agriculture by developing a deficit irrigation management system for farm-level crop production in cases with limited water supply and marginal water quality. It integrates innovative sensor technologies into a decision support system, taking into consideration boundary conditions and constraints for a number of practical growing systems in the Mediterranean. It focuses on innovative, simple and affordable, hard- and software concepts; particularly a maintenance free tensiometer, a wireless and low-power sensor network; an expert system for farm zoning and crop planning.
in view of expected water availability and quality; and an irrigation scheduler for allocation of multiple water sources. The system is being evaluated at five sites located in Italy, Turkey, Lebanon, Jordan and the Netherlands, which differ in the type of local constraints, irrigation structures, crop types, local water supplies, availability of water and water sources in amount and quality, the local goals, and their complexity.

**Methodology**

The FLOW-AID system consists of irrigation controllers, distributed over the irrigated farm zones. They are connected via a wireless link to a local computer that regularly reads out sensor data and updates the scheduling programs running autonomously in the controllers. A Decision Support System containing an expert system with “best practice irrigation rules”, running either on the local or remote (connected via internet) computer helps growers to optimise their scheduler programs in view of the expected water availability and climatic conditions on a long-term as well as short-term basis. During three growing seasons, the system components are mainly being evaluated at Mediterranean test-sites. Over the years, the system is enhanced and the final system was shown to farmers during the 3rd year at the test-sites. The FLOW-AID system is being developed through a close partnership between research institutes, universities and SME’s.

**Intensified use of technology in the field (Lebanese case study)**

**Results**

Industry and SME’s may take up the following research results to build new hardware and software for deficit irrigation systems:

- Low-cost sensor and controller technology: a solid-state tensiometer; a wireless, low-power sensor network for soil moisture and EC sensors; an irrigation controller for optimal irrigation scheduling.
- A Decision Support (Expert) System to assist in farm zoning and crop planning, in view of expected water availability (amount and quality); a crop response model for deficit irrigation; and a deficit irrigation scheduling module that allocates available water(s) among several plots.

The SME partners involvement already ensures that the results will be implemented in a short time into adequate and appropriate products for the end-user irrigation market. The participation of the Mediterranean test-sites ensures that the final products will also be fine-tuned to the [economic and physical] conditions of non-European markets, where the largest growth for irrigation equipment is expected.
Case studies have shown that compared to current practices, by using innovative technologies, the water use efficiency can be raised up to 10% while maintaining the existing crop yields. Application of new technologies cost money. Some case studies have shown that by using technology and adapting strategies one could even raise the productivity up to 10%, while the amounts of water and nutrients being used were less than current practices. By using treated waste water resources farmers could benefit from the already available nutrients in these water sources. Farmers might use this extra income for investing in new technologies.

Result of the Jordan case study (left) in which conventional and innovative irrigation practices are compared under standard and deficit regimes. It was shown that when using fresh water sources the water use efficiency can easily be raised with 10%. When using marginal water resources (treated waste water), irrigation management is more complex, but one can make use of the extra nutrients in the water source. Result of the Turkey case study (right) show that innovative irrigation practices, whether with full irrigation or under deficit, give a better (10-40%) water use efficiency compared to farmer practice.
Presentations
All presentations are found in the Annexes.

European Research (Panagiotis Balabanis, EU-Brussels)
FLOW-AID (Jos Balendonck, Wageningen-UR, NL)

Panel 1: Overview, tools & frameworks (Sensors, DSS, MOPECO)
Overview (objectives, essential outcome) – Jos Balendonck
MOPECO (online) – Alfonso Dominquez (Jose Targuelo)
FLOW-AID DSS – Cecilia Stanghellini/Nick Sigrimis
Wireless Sensor Networks – Jochen Hemming
Dielectric Tensiometer – Richard Whalley

Panel 2: Pilot area experiences
Pistoia, Tuscany, Italy – Alberto Pardossi
Menderes, Izmir, Turkey – Hakki Tuzel
Irbid, Jordan – Munir Rusan
Litany River, Bekaa Valley, Lebanon – Fadi Karam
Vredepeel, the Netherlands – Jos Balendonck

Material for distribution from FLOW-AID
* Factsheets (4 pages each) of 5 pilot areas (Best Practices)
* Factsheets of 6 Work Packages (Technology briefs for: Overall, MOPECO, DSS, Stress Model, Wireless, Tensiometer)
* 1 Policy brief

This material was made available in English and Spanish and supplied in a separate pdf-files
**Pleiades (Anna Osann, Alfonso Calera, UCLM, ES)**

**Panel 1: Overview, tools & frameworks (30’)**
Overview (objectives, Multi-efficiency frameworks, essential outcome) – Anna
SPIDER (online) – Alfonso

**Panel 2: Pilot area experiences & user evaluation (40’)**

Vegas del Guadiana, Spain – Ana Meneses (Junta Extremadura)
Nurra, Sardinia/Italy – Pasquale Nino (INEA)
Gediz, Turkey – Dilek Kahraman (UTAEM)
Tensift, Morocco – Anna for Mounia Benrhanem (ABHT)

Video (10’)

**Material for distribution from PLEIADES**

* Factsheets (2 pages each) of 10 pilot areas
* Factsheets of 5 Work packages
* 8 pilot videos (on YouTube)

**IRRIQUAL/SIRRIMED (Oussama Mounzer, CEBAS, Murcia, ES)**

**Presentation of TELERIEG (Manuel Erena, )**
Round Table Discussion (José Mª Tarjuelo)
Moderador: José Mª Tarjuelo UCLM.
Francisco Belmonte JCRMO, ABHT Marruecos; Miguel Angel Mena DGA.MARM; Eng. A.
Casciolo, Ministero del Ambiente. Italia

Conclusion (Jos Balendonck/Anna Osann)
At the end of the morning, as well as the afternoon session, both coordinators assembled a list of conclusions, which was presented in front of the audience and discussed. Conclusions were categorized under the following chapters:

General
- There are new interesting technologies to cope with (current and future) water management challenges when conventional good practices don’t work anymore.
- Prospects in water and fertilizer saving are large!
- They are useful for a broad range of end-users.
- There is much interest from several types of stakeholders, however people hesitate using it unless legislation and boundary conditions forces them to do so, unless they see a very clear economic incentive.
- Why ? Are we waiting for a major breakdown in water supply?

Comparison (FLOW-AID - Pleiades)
- Temporal Resolution (minutes - days/days-weeks)
- Spatial Resolution (several points - 2D maps)
- Technology focus (farm equipment – central facility)
- Advice (Deficit – high EC / Fresh optimal dose ET0****)
- Scale focus (Farm inside - Farm outside)
- Planning (on Farm annual - water basin distribution)
- General Approach (Technology +DSS/Management - monitoring)
- Philosophy (to buy - public domain)
- Applicability (also protected - only non-protected)
- Crops (Horticulture/bulk soil based grown crops)

- We are very complementary ! There are opportunities to combine and benefit from both strength !

Prospects
- Flow-aid: large water/fertilizer saving under deficit regimes (constraints); lower water quality; waste water reuse; environmental efficiency; monitoring leaching
- Pleiades: Large coverage, small investment for end-users, good crop water requirement estimate, good yield under non-deficit regimes; monitoring of environmental efficiency. Social Economic Efficiency; participatory approach.

Bottlenecks
- Availability on market (partly?, public domain)
- Introduction of new comprehensive technologies at end-users (tuning and training) - policy, water boards, technicians, farmers.
• Costs/investment of technologies and energy.
• Less money from EU for advice/research.
• Capacity.
• Infrastructure question.
• Weak on plant physiology (squeeze more out of the drop).

End-user comments
• Crop monitoring in plots is needed.
• Monitoring of exploitation of water sources.
• Integrated Water Resources Management: rules, tools, co-operation/communication, capacity building.
• Progressive water prices (small fines).
• Simple, accurate, real-time and affordable tools.
• Improved a lot in past 10 years, but need to continue.
• Farmers hesitate to invest in technologies (we do not need internet advice, we want to control our operations).
• How to take up these technologies and which role everyone have?
• Why save water, we could produce more crop with it! Let the administration pay for the technology.
• Price of water is too low to let farmers starting to save water. Energy now is a better incentive.
• Worry about the continuity of production and yield.
• Water conflicts versus willingness.
• Concept of self-control.
• Irrigation modernization needs to go beyond infrastructure refurbishment.
• Reduction of operational costs on any level of water management.

Future research focus
• Integration of all possible tools and expertise into one simple and robust and modular DSS for several end-users (toolset, building blocks).
• Up-scaling take-up of new technologies.
• Cope with ever lasting down trend of water availability (energy).
• Widen the narrow scope of technology towards plant physiology, and other expertise.
References

J. Balendonck, C. Stanghellini, J. Hemming. FARM LEVEL OPTIMAL WATER MANAGEMENT: ASSISTANT FOR IRRIGATION UNDER DEFICIT. Int. Conf. on Water Saving in Mediterranean Agriculture & Future Research Needs, 14-17 Febr. 2007, Bari (Italy).


ALBACETE: Expertos albacetenses muestran al mundo cómo ahorrar agua en los riegos Albacete acogió ayer un foro de encuentro internacional sobre la influencia de la tecnología y de la ciencia en la eficiencia de los riegos LA VERDAD | ALBACETE

Tribuna de Albacete Digital: Lunes, 16 de Noviembre de 2009. La UE presenta en Albacete dos de sus proyectos de I+D para regadío
Annexes