

# WATER SENSING DECISION SYSTEM **AN ANSWER TO DROUGHT**



## *Summary*

*European agriculture is dependent on very large reserves of freshwater. However, production is increasingly limited by summer droughts. The incidence of this water shortage problem will increase in the future with climate change (hotter, drier summers) and an increasing competition for water use (food, energy, ecology).*

*The answer to this is to increase water use efficiency by farmers. Water sensing decision systems use real time data from (soilmoisture) sensors combined with weather forecasts. Based on this better decisions on irrigation can be taken.*

## *Main Benefits*

### **General Aspects**

- » The introduction of water sensing at farm level targets irrigation in space and time, guided by the crop requirements.
- » Efficient irrigation results in less pressure on the freshwater supply (15-20% on water savings).

### **Economic/job creation**

- » Working with sensors creates possibilities for exporting techniques to a wide range of countries worldwide.
- » Efficient water use is important for achieving optimal yields.

### **Innovative aspects**

- » Water sensing decision systems can form a sustainable solution possible for future problems of water management in intensively used agricultural areas.
- » Farmers become more aware of the challenges associated with climate change.

## *Boosters for Implementation*

- » This decision support system empowers the farmer to judge efficient water use with limited investment and training.
- » It makes agronomic sense and business sense for farmers.
- » In joint study groups, farmers can discuss and improve the use of the system.

## *Barriers for Further Implementation*

Climate variability makes the need for irrigation to maintain and/or increase yields in the future difficult to prove in the Dutch situation. The price of the sensors is still relatively high.

Maximum efficiency is affected by landscape soil heterogeneity (different soil moisture to plant water availability relationships).

## *How to Get Over Barriers*

Screening and mapping should take place to identify those regions where the technique achieves maximum cost-effectiveness due to high water stress. Trials should take place in dry areas, where costs of water abstraction are high and/or there is strong competition with other water users.

The measurement of soil moisture is the beginning of a wide range of options to optimise agriculture under-water quantity and water quality restrictions.

## *Policy Recommendations*

Water sensing decision systems are the future tool for developing a model of sustainable farming.

In order to spread this innovative method and bring it to work in the dry regions there is a need for action:

- » Provide financial support for the implementation of this innovative method.
- » Implement legal or financial measures to motivate farmers to implement the measure.
- » Support and develop a multi-case field study approach in a trans-boundary settings, which will promote the development of a business case.
- » Support the execution of a thorough cost-benefit analysis.
- » Support the development of network sharing systems to enhance communication and foster application in areas facing drought.

## *More Information*

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Farmers as water managers