

AQUATEK™: precision farming arrives in Italy.

**Probes and satellites to dose the amount of water needed in fields and make corn production sustainable.**

Rho (Milan), 1 July, 2015 – The excellence of the product does not always translate into an excellent process. Food made in Italy is one of the undisputed jewels of our nation, but on the field there is ample room for improvement.

"Italian agriculture, and in particular the corn production, is not making full use of the innovations made available by technology. Monsanto's commitment is to make the production of maize in Italy fully sustainable from an economic, environmental and social perspective," said Federico Bertoli, commercial director of Monsanto Italy, who presented the AQUATEK project at the Expo workshop on "The hunger for water and its sustainable use for cropping systems", organized by the National Research Council on July 1 at the Italy Pavilion™.

"Aquatek™ represents the practical realization in Italy of the importance of principles of precision in the production of corn," Bertoli said. The project began in 2013 as a public-private partnership between Monsanto Italy, Netafim and the University of Milan. It has the objective of increasing the productivity of maize per unit of area and per volume of water used (over 200 kg / ha); to raise the quality of the conventional product, cut energy consumption and efficiently manage water use.

The three pillars of AQUATEK™ are: training farmers; developing and making available the decision support tools (sensors and satellite data); and distribution of more efficient irrigation systems, allowing efficient irrigation.

First step, educate. From 2013 over 70 technicians have been trained and 7,000 farmers have been informed to encourage the adoption of efficient irrigation systems throughout the distribution network. Together with the University of Milan several irrigation systems were also tested to evaluate and compare their performance.

Second step, decide. "The essential element of precision agriculture is the adoption of technologies that support the decision-making process, allowing farmers to understand if, when and how much water to use to optimize production and costs." In this context, we have been using special probes that measure the soil's water content and, through the elaboration of data, providing useful information to optimize irrigation operations. "To make the technology accessible to a greater number of farmers, we are developing a new system that uses satellite detection in nine Italian companies. By cross-referencing the satellite data with weather information we are able to provide the irrigation advice with a resolution 20x20 meters. Starting next year, we will make the technology available on a commercial scale. "

Last step, irrigation efficiency. "Based on our experience, the most efficient system for the production of maize is drip irrigation."

In the first two years of experimentation, AQUATEK™ has allowed us to reduce the consumption of water by 17%, increase yields by 27% and improve energy efficiency by 20.2%, cutting the loss of

nitrogen in groundwater by 78%. Thanks to targeted hydration of the plant, it was possible to prevent many of the diseases that in recent years have infested and damaged maize production in Italy.

### **Monsanto's vision of the world**

Working together for sustainable agriculture. This is the mission of Monsanto, a company that annually allocates 11% of its turnover (15.9 billion dollars) to research and development.

Sustainability in the primary sector means making a wide range of solutions available to help feed our planet. A planet which, by 2050, will host nearly 10 billion inhabitants, with a rapidly growing middle class, who wants and demands diets richer in animal protein. A planet that only has limited availability of agricultural land and that has to deal with climate change, which makes water sourcing more complex, in a context where the demand for water is growing by 2% a year.

We believe that these challenges require a multidisciplinary approach, based on:

1. **Genetic improvement.** In the context of water, it aims to provide plants that are more tolerant to water stress and use of water more efficiently.
2. **Biotechnologies**, both in terms of transgenesis, and in terms of tools that make traditional genetic improvement more efficient, effective and fast. Genes that determine tolerance to water stress have already been identified and are a reality in the U.S. with the line DroughtGuard.
3. **Crop protection**, with synthetic products but also with emerging microbiological products and RNAi techniques which limit the damage from insects, pathogens and weeds that make the plant more susceptible to water stress.
4. **Precision Agriculture**, which means the use of technology and data to minimize variability inherent to agriculture and supporting farmers in their daily decisions.

Our commitment is reflected in the medium to long-term objectives:

1. Helping farmers to double the productivity of major crops (corn, soybeans, cotton, canola) by 2030, compared to 2000 levels.
2. Enabling farmers to only use one-third of resources per unit of production compared to 2000, thanks to the development of new seeds and dissemination of efficient farming practices.
  - a) Reducing the use of water in crop producing fields by 25% by 2020.
  - b) Cut, emissions of greenhouse gases by 22% by 2020, in the crop protection department compared to 2002 levels.
3. Improving the lives of 5 million small farmers by 2020 and promoting access to higher scientific education among women and gender equality (in farming).

We know that we cannot face these important challenges alone. Hence why we try to find and support partnerships with the private sector and public bodies. Learn more about: [discover.monsanto.com](http://discover.monsanto.com)

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