

Integration of Farm Management Information Systems to support real-time management decisions and compliance of management standards (FUTUREFARM)

Resumen:

FutureFarm is a European project funded by the EU as part of the [Seventh Research Framework Programme](#). The official project start date was 1st January 2008, and the project duration is 3 years.

The full project title is "Meeting the challenges of the farm of tomorrow by integrating Farm Management Information Systems to support real-time management decisions and compliance to standards", and the funding is under the [Cooperation programme](#) of the FP7 in the [Food, Agriculture, Fisheries and Biotechnologies \(Knowledge Based Bio-Economy\)](#) theme.

Work in FutureFarm is divided into 8 Work Packages (WPs), each of which is managed by a work package leader:

1. [Vision of the farm of tomorrow](#) lead by Karel Charvát of WirelessInfo
2. [Analysis of management strategies and required compliance to standards](#) lead by Spyros Fountas of CERETETH
3. [Analysis and specification of knowledge based farm management](#) lead by Claus Sørensen of Aarhus University
4. [Knowledge management in the FMIS of tomorrow](#) lead by Edward Nash of Rostock University
5. [Socio-economic, environmental impact and technology assessment](#) lead by Søren Pedersen of Copenhagen University
6. [Influences of robotics and biofuels on economic and energetic efficiencies of farm production](#) lead by Eldert van Henten of Wageningen UR
7. [Generalisation, integration, application and dissemination](#) lead by Armin Werner of ZALF
8. [Project coordination and exploitation](#) lead by Simon Blackmore of CERETETH

Objetivos:

In the future European farmers will have to effectively manage information on and off their farms to improve economic viability and to reduce environmental impact. All three levels, in which agricultural activities need to be harmonized with economical and environmental constraints, require integrated ICT adoption: (i) improvement of farm efficiency; (ii) integration of public goods provided by farming into management strategies; (iii) relating to the environmental and cultural diversity of Europe's agriculture by addressing the region-farm interaction. In addition, the communication between agriculture and other sectors needs improvement. Crop products for the value added chains must show their provenance through a transparent and certified management strategy and farmers receiving subsidies are requested to respect the environment through compliance of standards. To this end, an integration of information systems is needed to advise managers of formal instructions, recommended guidelines and implications resulting from different scenarios at the point of decision making during the crop cycle. This will help directly with making better decisions as the manager will be helped to be compliant at the point and time of decision making. In FUTUREFARM the appropriate tools and technologies will be conceptually designed, prototypes developed and evaluated under practical conditions. Precision Farming as well as robotics are very data intensive and provide a wealth of information that helps to improve crop management and documentation. Based on these technologies a new Farm Information Management Systems (FMIS) will be developed. As most relevant farm data will be readily available in the proposed information system, or may be automatically integrated using standardised services and documentation in the form of instructions to operators, the certification of crop production process and cross compliance of standards can be generated more easily than with present systems

Objetivos contribución:

La aportación del grupo de investigación de la Universidad de Almería al proyecto ha sido fundamentalmente en el paquete de trabajo número 6 dedicado al estudio de la influencia de la robótica y el uso de biofuel en la economía y gestión energética de la producción en procesos agrícolas. Se han realizado diversos estudios sobre el uso de flotas de robots y planificación de rutas que ayudan a realizar tareas agrícolas tratando de optimizar el uso de energía y reducción de costes. En este mismo sentido, se han aportado modelos de robot móviles y estrategias de control específicas para el uso de robots móviles en entornos exteriores y especialmente orientados a sistemas de producción agrícola.

Entregables:

The intensive collaboration between the project partners, the stakeholders and the industry during this year is demonstrated by the numerous meetings held (more than 40). More than seventy five (75) presentations have been given about FutureFarm activities and deliverables, of which twenty six (26) were during the GeoFarmatics Conference in Cologne, November 2010. The conference was organized by FutureFarm in collaboration with the CAPIGI network and the EU research project AgriXchange. The consortium, towards the end of the project, identified the need for further dissemination activities. Therefore, a project prolongation was requested from the Commission and accepted. The FutureFarm project now finishes in May 2011. Detailed information about the project results is available on the web site www.futurefarm.eu.

Impacto:

The general impact of a successful project FUTUREFARM was fourfold: 1) Increasing the competitiveness of European farms by increasing profitability of cash crops due to better information and higher precision in management of cropping activities. 2) Increasing the viability due to (i) farms that are more profitable, thus farms could survive also under less favorable production conditions of a region. (ii) The existence of farms will ensure some relevant characteristics of rural areas: open space, aesthetic scenery of landscapes, diversity of biotopes and groundwater recharge under less favorable climatic conditions. With an integrated farm management information system the farms can provide easier the requested public services. As future FMIS can easily communicate with future regional information systems (iii) the farms can much more specifically provide required environmental goods and services with local conditions and knowledge on feasible

management strategies. An important impact of the new quality in information technologies and management strategies is linked (iv) with the demand on well educated and trained personnel to handle the growing complexity in information management when to comply with private (value added chain, consumer ...) or public (environment/nature, food safety ...) standards in production processes. This will make farming as a profession attractive also for highly skilled and motivated young people, pursuing a challenging, future oriented and modern professional career. With the FMIS-approach soon they find such positions also in the rural area. Either with services and consultation or on farms. 3) The European industry for farm equipment and support (hard-, software, services) within the information driven crop production belongs internationally to the top group. In no other region of the world the precision farming technologies are so elaborated and widely used as in Europe. Due to intensive and long lasting R+D-support in many nations of the EU, knowhow and practical application of high-level precision farming is very strong. The expected results of FUTUREFARM would support this development. Especially with the concepts for managing information and knowledge as well as with planned standardizations to comply with private or public standards and to access and handle the relevant information in an elaborated way would support the development of not only this sector in the European farm industry heavily. 4) In order to substantiate the perspectives for farming in providing public goods and services it is necessary to have farms in the future, that have enough information and support in the management decision, so that they can offer specific goods and services or can easily comply with requested ones. After finishing the project, we are seeing the continued difficulty of formalizing vague rules and implied understanding inherent in many guidelines which makes the ability to rationalize cross compliance very difficult. The ICT systems required to implement our recommendations are developing well and are already in the prototype stage. If these recommendations are to be utilized, further work must be carried out to formalize the definition of EU regulations, directives and guidelines. The use of Precision Farming (PF) technologies under specific conditions can result in savings of fuel and herbicides, making them an important tool in mitigating the environmental impact of farming. The architecture (service oriented) proposed to make agricultural standards available to farm software via the internet could be utilized successfully both for farmer's assistance and for farmer's evaluation. Nevertheless, the architecture proposed requires changes in the way these standards and regulations are published; both in their form and in the organizations that publish them. The work done during this project on FMIS specification can be utilized both by the policy makers and the software companies so that FMIS development is based on common standards and interoperability is enhanced. The assessment of the precision farming potential throughout Europe can guide policy makers in producing policies■regulations■incentives for precision farming adoption in specific European areas/countries.

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