



ITFARM

IT for interconnection of social, economic and environmental aspects in agribusiness

Final survey report on the ITC technologies
supplied in precision agriculture

Result 1 – Work Package 2

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1. Introduction

With an idea that the Fourth Industrial Revolution has the power to change things across a broad spectrum of the society and schools and other executives need to be ready, the Project “Future IT for farms” (ITFARM) funded by ERASMUS+ was launched in early 2022 with its primary objective of making science available to farmers so that they can understand it and be able to respond to the innovative demands of digital society. Through project activities, courses and studies materials on the newest technologies and the concepts of Agriculture 4.0 will be prepared in different modules to provide to related audiences.

With the aim of getting information for building a methodology and syllabus for courses, the survey on supplier side was conducted from March to July 2022. The objectives of the survey are to: 1) Investigate the current situation of ICT agro-techno input suppliers in precision agriculture and factors affecting their business activities; 2) Identify and understand the current and future suitable technologies products for EU precision agricultural farms; 3) Evaluate and define the demand of professional training programmes offered by suppliers for current precision agriculture employees; 4) Identify financial support programmes for ICT development at suppliers’ level; 5) Identify national and international legal/regulations/policy on ICT technology applied in the agro sector. Secondary data were gathered from desk research and primary data were collected from a semi-opened questionnaire survey.

A total of 25 suppliers in the input techno-agro value chain, including input dealers, service providers/consulting firms, and digital machine/robotics manufacturer, were chosen for investigations, of which there were six from Belgium, four from Bulgaria, three from Czech, three from Greece, three from Hungary and nine from Italy. Due to the difficulty of approaching and considering the size of the country, Ireland was an exceptional case to collect only two samples.

2. Results and discussion

The agricultural machinery suppliers in project partner countries include three actors namely producers (manufacturers), wholesalers, and dealers. It exists equivalent both small and larger suppliers who sell their products/services to local, national and international famers, SMEs, and big enterprises. While large manufacturers sell their products via dealers, small manufacturers use both direct sale to farmers/machine utilisation enterprises and dealers as an intermediate channel. Though many suppliers confirmed that the revolution of ICT in agriculture has positive impacts on their business, some others reported that digital machines do not bring a better profit compared to traditional ones due to the small size of their clients.

The survey results show that latest ICT applied in agriculture and comprehensive solutions are currently offered in the market according to clients requirements such as weather connected station, soil management, seeding management, water management, smart fertilisation management, grass yield monitoring, animal health

and welfare, feed management, weight management. However, almost all of the equipments provided in the market cannot combine accessories from one to other manufacturers which leads to a disadvantage for farmers that they are forced to focus on one manufacturer. Manufacturers generally have their own IT team to build and develop programmes for their manufactured machines instead of buying from external IT providers. Return on investment is the most important factor when making a purchasing decision. Besides that, return on investment ranks in second place due to new technologies being generally more expensive.

Technology training is currently offered for clients by manufacturers or sometimes their dealers or subcontractors in a form of case-by-case, installing and after-sale product. While most of the training is offered on demand with a duration from a couple of hours, half of a day up to one day at clients' places, manufacturers also organise themselves periodic training as demonstration form in order to introduce their new techniques in specific places. Training on basic IT tool use, farm management system, data management, high-tech products and tools - software, navigation, autonomous machines, sensors, cloud technologies, practical skills in digitization, and economic and environmental benefits of introducing agriculture 4.0 in the farming industry are farmers' needs. Besides that, all suppliers agreed that long term, the training programmes are profitable for their companies.

All project member countries stated that there is no direct financial support from suppliers to their clients apart from free training/consultants. Furthermore, there is no support programme directly assigned for development of new technologies, except Ireland where financial support is available for ICT development at suppliers. Czech Republic provided subsidies to companies at the time of COVID but these small subsidies only supported the business during the critical period. At regional level, the regional government of Wallonia, Belgium defined the new strategy called "Digital Wallonia" for the five-year period 2019-2024 which describes the framework and the ways to explore the socio-economic opportunities brought by the digitalisation process are identified (Digital Wallonia). As part of Digital Wallonia and the Wallonia Recovery Plan, the Walloon government approved a budget to accelerate the adoption and deployment of digital technology within the agricultural sector.

3. Conclusions and recommendations

New ICT technologies in precision agriculture have been rapidly growing over the last decade thanks to a favourable global framework, including the fast global evolution and European Green Deal Programme. This development has a strong contribution from all actors in the ICT technologies value chain including new ICT suppliers as manufacturers and dealers who currently offer many kinds of advanced ICT technologies in precision agriculture .

It is evident that introduction of ICT technologies in agriculture is continuously progressing and the role of ICT technologies suppliers is very important to transfer this

progress to ICT technologies users. The competition among small-large and large-large ICT technologies suppliers could be rising due to the low volume and short life of technologies sold. Consequently, although there are many different technologies available on the market, these do not meet correctly farmers' and agricultural machine use enterprises' demands. Furthermore, a tendency of reduction of the agricultural sector occurring all over the European countries could give a pressure to suppliers to find their clients in the future. By contrast, the decrease of the agriculture workforce could give an opportunity to ICT technologies suppliers to develop their activity especially in robotic development by giving a positive idea of production cost reduction, profitable business to farmers.

The survey results also show that ICT technologies suppliers provide different kinds of training to their clients. While large manufacturers usually give training through new ICT technologies demonstration events to their dealers, small manufacturers provide training directly to their clients as dealers and ICT technologies users. It is evident that machine suppliers are only offering training related to their products, while ICT users' knowledge and skills required to assess new technologies are not really concerned, though there is a purpose to simplify as much as possible ICT technologies to users.

Regarding financial support policies, though Europe and some countries members have several programmes to encourage the development of ICT technologies within its territory, it is still hard to find any direct support to ICT suppliers or ICT users. If the states support farmers with subsidies for the development of precision agriculture, these will be reflected in an increased interest in the services of technology suppliers.

From above findings and conclusions, it is recommended: 1) To establish relationships with selected ICT suppliers to prepare training material for related users. Afterwards, directly facility training as a consultancy; 2) Create a source of current existing ICT technologies and new tendency so that both suppliers and farmers can access and update easily for their information; and 3) To raise awareness about the potential funding resources available to purchase such applications and equipment.

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