Poster Session

INNOSETA – Innovative training and influence on the quality of inspections. An overview of training organization in EU

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Abstract

Training and dissemination are key factors for the success in crop protection. The specific aspects related with the phase-use of Plant Protection Products (PPP) mainly linked to the spray technology, have been widely investigated and improved in the last years. A large list of research, extension and training projects supported by public funds have derived in a large list of developments, materials, tools, decision support systems and other interesting tools addressed to stakeholders (farmers, advisors, authorities...). Additionally, new developments and applied research carried out by sprayer's manufactures have been really impressive in the last years, being able to put into the market interesting developments and technologies for a safe and efficiency use of pesticides. However, in most cases, most of those developments never arrive to the final user, due to problems linked with lack of information, limited knowledge and practical difficulties as language. INNOSETA project, a European Project financed by H2020 program has been launched with the aim to create a universal platform were stakeholders can find, on an easy and practice way, all the materials already developed, considering practical aspects as crop, regional characteristics, language, level of complexity and other important aspects.

Introduction

Global agriculture relies on synthetic Plant Protection Products (PPP) for pest management including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematicides, plant growth regulators and others to support sustainable yield productivity. Farmers and crop advisors/extension service personnel follow conventional crop protection strategies that were established after the Green Revolution during 1950-1960 maintaining, in general, significant use of PPPs with potential significant impact on the environment and human health. In the meantime, PPP industry and research entities have been developing more sustainable novel PPPs either biological or chemical that show high efficacy in lab environment, but their efficacy rate is reduced significantly, when applied in field conditions with the current spraying practices. Even more, spraying technologies have experimented in the last years an important improvement in terms of efficiency and safety, including in their development the latest advances in electronics, data management and safety aspects. New sprayers have experienced a revolutionary improvement allowing a better and safer use of PPPs.

New PPP developments and the latest advancements in intelligent sprayers have been complemented with a large list of Best Management Practices (BMP), alternative methods for dose/volume selection adapted to canopy structure, safe recommendations to reduce drift, resident exposure and point sources' contamination, development of electronic and web-based Decision Support Systems (DSS) to improve the phase-use of PPPs. But unfortunately, there is still an important gap between research developments and the actual use of the available tools and practices by the farmers, especially for this large number of small and medium producers with limited access to the information. If this gap closes, then European agriculture could become more sustainable with minimum environmental, socioeconomic and human health impact. Since new legislation has applied efforts to the use-phase of PPPs, it is now time to integrate all the disposable tools and practices that previous research has demonstrated to be interesting. However, there is still another key element that is absolutely needed to achieve success in the whole process: an adequate training of all the professionals involved in the

process, which represents the key factor for the whole integration. Therefore, only when agricultural stakeholders gain knowledge of existing and future technological advancements in spraying technology and adequate training is achieved in all of the European territory will the system be able to implement the policies in the legal framework and to produce food in a better and more sustainable way.

Figure 1. INNOSETA is a H2020 European Project

Objective of INNOSETA project

INNOSETA - Accelerating I**NNO**vative practices for **S**praying **E**quipment, **T**raining and **A**dvising in European agriculture through the mobilization of Agricultural Knowledge and Innovation Systems

SETA - **S**praying **E**quipment, **T**raining and **A**dvising

The main objective of INNOSETA (Fig. 1) is to set up an Innovative self-sustainable Thematic Network on Spraying Equipment, Training and Advising to contribute in closing the gap between the available novel high-end crop protection solutions either commercial or from applicable research results with the everyday European agricultural practices by promoting effective exchange of novel ideas and information between research, industry, extension and the farming community so that existing research and commercial solutions can be widely communicated, while capturing grassroots level needs and innovative ideas from the farming community.

Detailed distribution of the objectives can be established as follows:

- Objective 1: Create an inventory of directly applicable spraying equipment and technologies, training materials and advisory tools available from the large stock of research results and commercial applications.
- Objective 2: Assess end-user needs and interests, and identify factors influencing adoption considering regional specificities.
- Objective 3: Generate interactive multi-actor, innovation-based collaborations among different stakeholders.
- Objective 4: Set up of an ICT tool for the on-line assessment of the Spraying Equipment, Training and Advising and the crowdsourcing of grassroots-level ideas and needs.
- Objective 5: Liaise with EIP-AGRI and its structures.

Representative consortium

INNOSETA consortium has been established trying to cover all the sectors involved in the process. From academia to the final user, going through sprayer's manufacturers, pesticide companies, advisors and farmer's associations, the main objective during the consortium creation was to cover all the strategic sectors. Fifteen partners from 7 countries have been organized in different strategic hubs (Fig. 2).

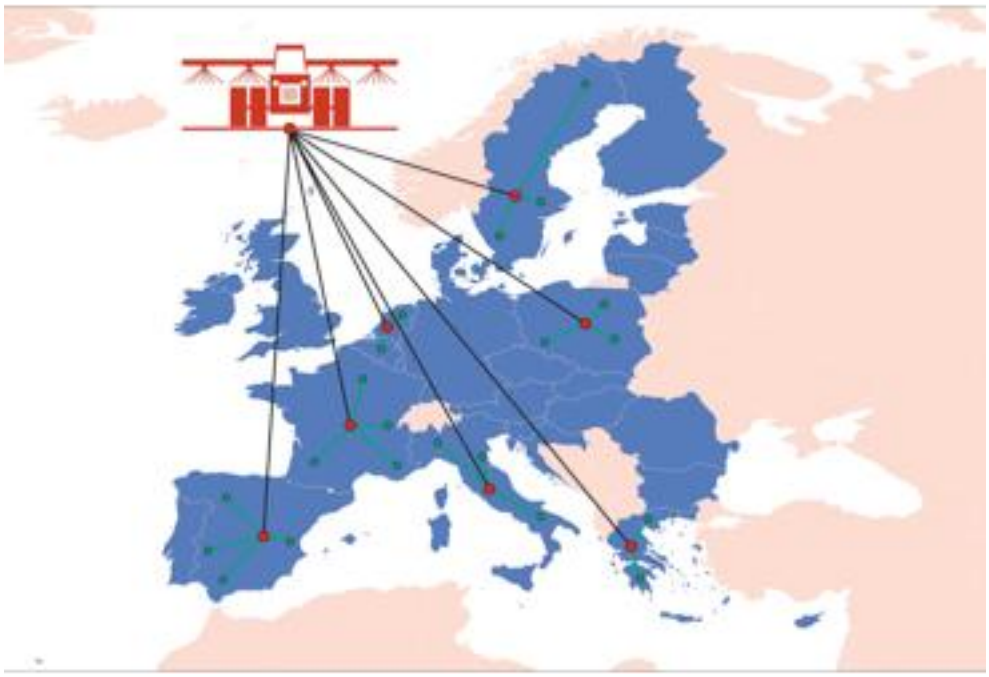

Figure 2. Seven hubs have been identified as main focus areas for the INNOSETA project.

Main reasons for creation of INNOSETA CONSORTIUM:

- INNOSETA gathers experts in both the technical part (spraying technology, extension and training), and social science and innovation to allow a holistic approach to the uptake of novel SETA and the capture of innovations.
- INNOSETA is based on a "Multi Actor Approach", including farmers/extension organizations from 7 countries, which ensures that the end-users of SETA innovations are well represented.
- Six SETA partners are core partners of several flagship EU projects related to this Thematic Network in the fields of Spraying technology (H3O and FITOVID: UPC) Spraying training (TOPPS and BTSF-PAE: UPC, UNITO and IFV), IPM strategies (EUCLID and SU.SA.FRUIT: UNITO), knowledge and innovation systems (PRO-AKIS: AUA), ICT in agriculture (Smart-AKIS: AUA and IoF2020: AUA and ILVO) and innovation brokering (AGRISPIN: AUA and ZLTO), which will allow the project to build on relevant results, leading to more targeted and effective exchanges among stakeholders, while optimizing EU funds use.
- Industry relating to SETA will participate in INNOSETA providing the contact of this thematic network with staff from the R&D and commercial departments of multinationals and SMEs from the countries involved in the project and other EU countries. More specifically, the farm machinery industry is represented through its umbrella organization (CEMA: European Association of Agricultural Machinery), while the Plant Protection Product industry will also join

forces (ECPA: European Crop Protection Association). Last but not least, COPA-COGECA will signify the farmers' industry that is the final applicator of agrochemical in the field.

- A working group will be composed by staff from the R&D and commercial departments of multinationals and SMEs (both sprayers manufactures and pesticide producers) and farmers' representatives from the countries involved in the project and other EU countries. The working group will exchange information and application experiences on the latest spraying technologies on the market and assess their adoption by farmers. It will also identify the most significant stakeholders at regional level and involve them in the project activities, including the participation in at least one of the three regional workshops.

INNOSETA is coordinated by Universitat Politècnica de Catalunya (https://uma.deab.upc.edu).

Why SETA solutions?

Novel SETA has a real potential to deliver a more productive and sustainable agricultural production, based on a more precise and PPP-efficient approach, especially in a scenario of farming labour shortage and climate change. However, novel SETA (Fig. 3) are not widely implemented throughout Europe, except in some advanced European countries (i.e. Germany, Netherlands, Sweden and Denmark), where there are still a large number of innovations in spraying technology to be adapted. Improvement of training activities have been widely underlined as the most efficient tools to improve the application-phase of PPP in EU members with lower technological level and higher number of small and traditional farmers (i.e. Mediterranean countries), while in large agriculture productions from the North of Europe, new technological improvements and developments are largely appreciated.

Figure 3. Examples of SETA (inner to outer circle: Spraying Machinery and their components, Software and hardware in sprayers and spraying application techniques, Best Management Practices adapted to particular requirements)

The underlying reasons for this implementation gap can be deduced from empirical adoption studies that have shown that individual adoption and the wider diffusion of technological innovations and new application techniques depend on characteristics of the innovation (e.g. cost, complexity), the innovator and his/her socio-economic background (e.g. preferences and educational level of farmer),

the perceived usefulness and ease of use, the informational, social and institutional environment, and, in particular the knowledge support system in place

Expected outcome of INNOSETA project

The strategic impact of INNOSETA is based on:

Its relevance to current needs to improve crop protection process and plant protection management.

- Its timeliness, as SETA poses a crucial part of crop production to improve the efficiency of pesticide application process, generating technical, economic and environmental benefits.
- Its multi-actor consortium, combining interdisciplinary spraying experts and rural sociology researchers, extension services, farmers' organizations in 8 EU countries, three umbrella European Associations having an extended network to farmers, sprayers manufacturers and pesticides companies, which will allow for broad and intense dissemination of the project outcomes
- Its systemic and interactive approach to innovation, including the social dimension, that will allow addressing all aspects related to the generation, introduction and diffusion of agricultural innovations to achieve the necessary shift to innovation-driven research in the area of SETA and a greater user acceptance.

INNOSETA will adopt strategies that will ensure long lasting impact on the spraying application of PPPs in agriculture beyond the project's lifespan. This will be achieved through:

i) the commitment by the core project partners to allocate own resources for maintaining the Thematic Network as a stable collaborative platform (following i.e. the ENDURE model)

ii) ii) the maintenance of dedicated working groups within the three participating European associations (ECPA, CEMA, COPA-COGECA) which will allow mainstreaming the multi-actor and interactive innovation approaches in the implementation and innovations of SETA both by industry and research;

iii) iii) the cross-fertilization and in-depth collaborations achieved among actors in the SETA domain, which will lead to the sustainability of the knowledge flow and the mutual learning processes elicited; and iv) the link of SETA Platform with EIP-AGRI SP that will make all SETA solutions available at EU level.

INNOSETA in the media

INNOSETA project was officially launched May 1st 2018. Since this date, the project is already present in the most widely disseminated social networks, as Facebook, twitter and Instagram (Fig. 4).

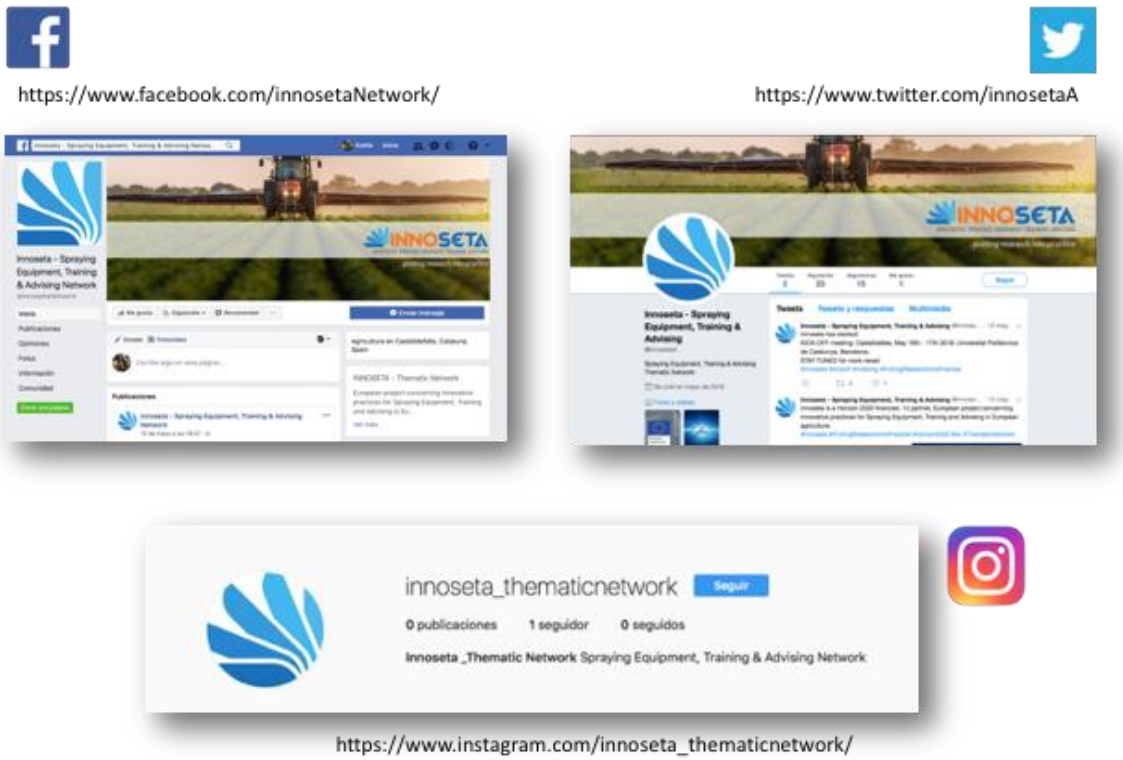

Figure 4. Social media networks of INNOSETA project

INNOSETA website (www.innoseta.eu) is also available.

Public funding

INNOSETA is an EU project located on H2020-RUR-2016-2017 (Rural Renaissance - Fostering innovation and business opportunities. Topic: RUR-10-2016-2017. Type of action: CSA (Coordination and support action)

This project has received funding from the (European Union's Horizon 2020 research and innovation programme) Euratom research and training programme 2014-2018] under grant agreement Nº 773864.