

OPTIMA EU project: main goal and first results of inventory of current spray practices in vineyards and orchards

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INTRODUCTION

The Horizon 2020 EU Project “Optimised Pest Integrated Management to precisely detect and control plant diseases in perennial crops and open-field vegetables” (OPTIMA), a 40 month long project started in September 2018, is aimed at developing an environmentally friendly IPM framework for vineyards, apple orchards and carrots by providing a holistic integrated approach which includes all critical aspects related to integrated disease management, such as i) use of novel bio-PPPs, ii) disease prediction models, iii) spectral early disease detection systems and iv) precision spraying techniques. Three pilot areas have been chosen to assess the applicability and the efficacy of the OPTIMA IPM strategy: 1) Nouvelle Aquitaine in France (focusing on *Alternaria* in carrots), 2) Aragon in Spain (focusing on apple scab) and 3) Piemonte in Italy (focusing on vine downy mildew). In order to actively involve farmers and advisers of the pilot areas in the development of the project activities, a questionnaire was prepared and submitted to them so to have a preliminary feedback about their current practices for crop protection management and about their expectations and remarks on the OPTIMA proposed activities.

In the present work the results obtained in Spain (apple orchards growers) and in Italy (vineyards growers) are reported and commented.

MATERIALS AND METHODS

In each pilot area farmers and advisers were informed about the objectives and planned activities within OPTIMA Project through a brochure translated into local languages. A questionnaire containing 20 questions in total, divided in three sections: a) general information about the interviewed person; b) information about current practices adopted for crop protection (open field carrots in France, apple orchards in Spain and vineyards in Italy); c) needs and expectations from OPTIMA project, was submitted to farmers, contractors and advisers in the three pilot areas via face to face or phone interviews. For most of the questions, guided answers to select were provided.

Among the questions addressed about current crop protection practices, some concerned the crop disease detection method commonly adopted, the plant protection strategy followed, the sprayer type used for PPP application, the average volume rate applied along the season, the operating pressure adopted, the number of treatments made per year and the technologies available on the sprayers (e.g. anti-drift nozzles, sprayer control units, GPS, etc.). One question was specifically addressed to rate which of the OPTIMA activities was considered more promising to provide concrete results applicable in the farms on a large scale. In each pilot area the answers collected were examined within a focus group composed by representatives of the Project Consortium and representatives of the interviewed persons in order to issue a final report on the indications obtained.

RESULTS AND DISCUSSION

In Spain 54 farmers and 16 field technicians were interviewed. The majority of them declared to rely on extension service bulletins to detect crop diseases while few of them declared to trust on their own personal expertise or to directly use disease prediction models. The majority of farmers (69%) applied IPM voluntary protocols, generally using basic conventional axial fan sprayers (72%, see Fig. 1). Volume application rates ranged from 500 up to 1200 L/ha, resulting on average around 900 L/ha. Operating pressure ranged from 8 to 30 bar (14 bar on average). 56% of interviewed farmers declared to mount anti-drift nozzles on their sprayers and 6% declared to have a DPA control unit installed on the sprayer. The majority of the interviewed farmers (64%) and field technicians (75%) considered the development of disease early detection instruments and refined disease prediction models as the most promising activity within OPTIMA project. In Italy 82 farmers, 11 field technicians and 9 contractors were interviewed. The majority of farmers (62%) declared to rely on extension service bulletins to detect crop diseases but a not negligible 37% relied on his own expertise. Nearly 80% of farmers followed IPM voluntary crop protection protocols, using conventional axial fan sprayers (58% of cases) or pneumatic sprayers (27% of cases, see Fig. 1). Average volume application rate resulted 360 L/ha operating at 15 bar pressure when using conventional axial fan sprayers and about 250 L/ha operating at 2 bar pressure with pneumatic sprayers. Nearly all farmers (98%) declared to have not anti-drift nozzles or computers for spray control installed on their machines. Concerning the most promising OPTIMA activity, farmers indicated the assessment of the impacts of the proposed IPM system on human health, the environment, the society and the economy (30% of interviewees). In conclusion, the feedback received in the pilot areas from the submission of the questionnaires and the discussions made in the focus groups, pointed out that the general architecture of OPTIMA project is suitable to match expectations of farmers and technicians in order to improve the IPM of their crops but some refinements can be considered to achieve a better success and applicability of whole OPTIMA IPM strategy on a wide scale.

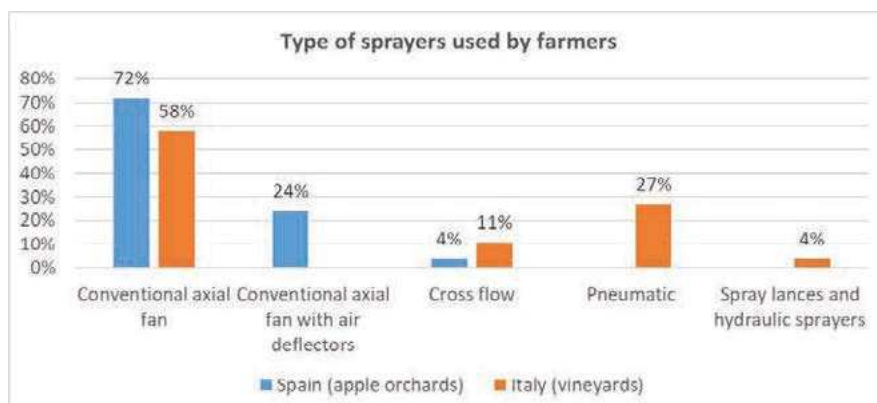


Fig. 1. Type of sprayers used by the farmers in the pilot areas selected in OPTIMA Project.