

Develop IPM guidelines for winter cereals and fruit crop for mitigating pesticide impacts while ensuring sustainable agriculture

The fellowship is funded by the LIFE Project AGROWISE and the successful candidates will be integrated in the research group of Prof. Dinelli and Spinelli.

INTRODUCTION

Crop protection is critical to ensure the availability and quality of food, feed and bioenergy to society. Cropping systems and supply chains co-evolved with the availability of cheap and efficient chemical pesticides, making them a cornerstone of the plant production systems, in Europe and globally. This has led to real socio-technic lock-in, with well-documented negative impacts on the environment, including biodiversity, soil, air and water quality, as well as human health. These negative impacts are either direct or indirect through associated intensification of agricultural practices, simplified rotations, modified landscape structure and land use changes

Alternative to pesticide, including novel type of farming strategies, exist and they could lead to a reduction in the use and impacts of chemical pesticides, without negative impacts on production (in quantity and quality) as demonstrated in various countries and in different supply chains.

Also, the rapid rhythm of technological development, including the continuous digitization process in agriculture, has addressed several challenges (for example, precise agriculture, mechanization, and smart equipment for pest and disease monitoring).

However, scaling up such innovative practices and systems is slow, and their adoption by farmers is difficult.

A large set of public policies exist at both European and Member State level. The Green Deal and specifically, the Farm to Fork strategy assigned clear and ambitious objectives in the reduction of pesticide use, especially focusing on the most hazardous compounds. The Sustainable Use Regulation (SUR) is proposed to define the transposition of these ambitious goals into national policies and foster change in the practices and cropping systems of the farmers, through the definition at the national level of binding and optional rules for farmers. Historically, success in reducing pesticide usage has been disappointing due to the lack of clear ambition that existed before the Green Deal but also in recent times the main reason for the failure is the difficulty for the farmers and the supply chains to change practices (i.e. at a crop level) and systems (i.e. at the farm level) that are locked into a background of permanent pesticide availability and efficiency. The problem has been made worse by the lack of a coherent information system with specific practices (e.g. what to do, how to do it and why to do it) is also a major cause.

Since environmental and health impacts are still growing, and due to the concerns about the the increasing occurrence of pesticide resistance in major pests/pathogens, changes are necessary and urgent.

AIMS:

Define the recommendations for setting, at the level of every Member State, the rules to be adopted by farmers in the context of implementation of the SUR (Sustainable Use Regulation).

Applicants should have a background in crop production and management, and/or molecular biology and/or plant physiology and/or plant protection

The specific objectives are:

1. Quantify the actual deployment of practices and systems and the potential acreage of Implementation of the different IPM tools in winter cereals and fruit trees
2. Provide information on the achievable reduction potential with the full implementation of the best IPM practices.
3. Identify the means for control of the implementation of the IPM practices and systems. The possible instruments that could be deployed, in relationship the different IIPM tools, to evaluate their real application and use will be defined

DESCRIPTION OF THE POSITION

Research involves data analysis, laboratory and field trials. The selected candidate will assist the program leader with all aspects of the planning, implementation and management of the research program and data analysis. The main duties will be collecting and analyzing data, preparing presentations and scientific publications, and, if needed, supervision of students.

Position Duties:

60% – Laboratory analysis (in Bologna). Design and management of survey and data analysis from existing databases on the use and spread of different IPM tools in winter cereals and fruit trees. Interaction with policy makers, Agrowise partners and growers for the harmonization of the data collection protocols and analysis. Collection of metadata and expert opinions. Design and management of pilot trials for testing IMP tools efficacy.

30% – Green house and field work. Survey and interview with growers, extension services Collect data and sampling form different growing conditions and geographical areas. Assess physiological and productivity performances of winter cereals and tree under different cultivation strategies. Communicate with growers and technicians for the correct management of the experimental plots.

10% – Train and supervise bachelor and master students and trainees. Supervision includes planning, assigning, and approving work. Assist other faculty and technicians in carrying out cooperative experiments.