Journal of Chemistry

Hindawi

Special Issue on

Innovative Pest Control Tools and Natural Active Ingredients for Sustainable Precision Agriculture

CALL FOR PAPERS

Agricultural diseases and pests are responsible for approximately 40% reduction in potential global crop yields. At the present time, most farmers and growers rely on chemical compounds, namely, pesticides, to effectively contend with these pests. However, the negative effects of broad-spectrum pesticides have led to the resurgence of pests with continuously developing pesticide resistance and the appearance of secondary pests. Furthermore, the intensification of pesticide applications raises concerns over the potential pesticide residues that remain on agricultural products and enter the agri-food chain.

New strategies for agrosustainable management and studies concerning pesticide residues and the prevention of such substances in the agri-food chain need to be researched. The above can lead to the development of novel application technologies and are imperative in the augmentation of food security and improved nutrition. This added value can be monetized in the creation of novel agrochemicals or the generation of new perspectives for their application. In addition, the use of natural products or those extracted from plants has been researched over the past decade as a potential sustainable alternative. To successfully accomplish the reduction of chemical pesticides and improve the synthesis of novel natural active ingredients, research needs to address a broad range of subject areas, such as the impact on health and environment and sustainable processes to produce biopesticides, through new innovative strategies and tools for site-specific application.

This special issue aims to collate a selection of original research addressing promising developments in environmental and sustainable agriculture and forestry. Researchers are invited to submit both original research and review articles on exploring new tools within agricultural chemistry.

Potential topics include but are not limited to the following:

- Agroecological strategies aiming at sustainable crop production, whilst reducing the need of agrochemicals
- Exploitation of natural extracts for pest management, including chemical identification of the molecules with allelopathic and pesticidal potential as a viable alternative for pest control and identification and clarification of the physiological processes, which may be affected from such substances
- Impacts of natural substances on human and animal health and on the environment
- Determination of pesticide residues in agricultural products and by-products
- Use/determination of nanopesticides
- Preventive or protective management against pesticide residues
- Advanced systems and algorithms for the assessment of plant symptoms caused by pests, with the aim of chemical pest control
- Innovative algorithms for decision-making modules (i.e., perception and actuation)
- Novel actuators and agricultural equipment for precise, real-time plant protection product application

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/jchem/agricultural.chemistry/ipctn/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline
Friday, 24 May 2019

Publication Date
October 2019