



Editorial

Agrochemicals—Shifting from the Past to the Future with a New Journal

Christos G. Athanassiou

Laboratory of Entomology and Agricultural Zoology, Department of Agriculture, Crop Production and Rural Environment, University of Thessaly, Nea Ionia, 38446 Magnesia, Greece; athanassiou@uth.gr

Agrochemicals in Contemporary Agriculture

With great pleasure we announce the initiation of a new journal, *Agrochemicals*. According to the Organisation for Economic Cooperation and Development (OECD), agrochemicals are defined as: “commercially produced, usually synthetic, chemical compounds used in farming, such as a fertilizer, a pesticide or a soil conditioner”. However, agrochemicals may include additional categories that are currently in use in the agro-food chain [1]. For instance, certain bacterial metabolites have multiple modes of action, and can be pesticides and soil improvement agents at the same time. One additional paradigm is the plant growth regulators or hormones, that affect plant growth in terms of both development and production. Furthermore, the term pesticides includes many different agents that are used in clearly separated target applications, such as the insecticides, that are used against insects, the fungicides, that are used against fungi, and the herbicides that are used against weeds. Moreover, even these groups are divided in different sub-groups of active ingredients; for instance, often under the general term “insecticides”, there are other groups of active ingredients that are included, such as the acaricides, the nematocides etc. The same holds in the case of “fungicides”, that include active ingredients that can be used for the control of bacteria etc.

Under the scope of this journal, agrochemicals can be grouped in three major ways, which are mostly based on their utilization, rather than their origin. The first is the target use, i.e., purpose of their use, based on the target organism or the expected result (e.g., agrochemicals that are used as fertilizers, agrochemicals that are used against insects etc.). The second is the production stage of the treatment, throughout the entire agro-food chain. Therefore, there are agrochemicals that are applied in crops, orchards etc. at the pre-harvest stages of the different agricultural commodities, while others are used at the post-harvest stages, e.g., in storage and processing facilities [2]. A final category is the way that the agrochemicals are applied, i.e., and the type of the formulation (dusts, liquids etc.), the relative equipment calibration requirements, but also the regulatory and legislative issues that define their use [1,3].

Agrochemicals Cover the Entire Agro-Food Chain

One of the most important aspects of agrochemicals is that they are used throughout the entire “farm to fork” procedure. Therefore, there are agrochemicals that are used during seeding, at the initial stages of crop production, while the same agrochemicals can be used during storage, right before the final stage of the formation of the different food items. It is not uncommon that some of these agrochemicals are essentially the same in terms of the active ingredient (for instance certain pyrethroids), but they vastly vary in terms of the formulations that are used and the regulatory aspects. The journal *Agrochemicals* covers all these stages, and it is expected to cover an important gap of knowledge towards this direction, given that can also address issues that are related with their presence in the final product, such as Maximum Residue Levels (MRLs), as well as persistence and sustainability aspects [1,3,4].



Citation: Athanassiou, C.G. *Agrochemicals—Shifting from the Past to the Future with a New Journal*. *Agrochemicals* **2022**, *1*, 1–2. <https://doi.org/10.3390/agrochemicals1010001>

Received: 1 August 2022

Accepted: 1 August 2022

Published: 8 August 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the author. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Agrochemicals in Integrated Crop Management and Environmental Compatibility

One additional dimension of the use of agrochemicals, especially in modern agricultural production, is their compatibility with integrated management of crop production. Even though there are different definitions of integrated crop management, most studies concur that this term underlines the compatibility of agricultural production with environmental sustainability and sustainable agricultural development [5]. Consequently, agrochemicals can be seen not only as a series of substances that have a certain target use in agriculture, but also as chemical compounds that do not disturb the main environmental indicators, as these are seen through the “anthropogenic” point of view [1,5,6]. At the same time, the use of agrochemicals should not endanger human health, and through this, should not cause negative effects to water, air and soil. Finally, it has been long established that the use of agrochemicals is essential for international trade of goods, and also to ensure global food security [6].

Types of Articles and Aims and Scope

The new open access journal, *Agrochemicals* (ISSN 2813-3145) [7], is an international, peer-reviewed, open access journal (free for readers), which publishes articles that cover all areas that are illustrated above, in all disciplines of agrochemical use throughout the agro-food chain. In this regard, *Agrochemicals* is a broad-scope journal, that covers research in both laboratory and field level, as well as industrial dimensions and socio-economic aspects. *Agrochemicals* publishes regular research articles, reviews and short notes, with no length limitations, including data repository and supplementary material options. We expect that this journal will be an important scientific forum in the area of agrochemicals, and we encourage colleagues from around the globe to submit their articles.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Prasad, M.N.V. *Agrochemicals Detection, Treatment and Remediation: Pesticides and Chemical Fertilizers*; Elsevier: Amsterdam, The Netherlands, 2020; p. 665.
2. Hertlein, M.B.; Thompson, G.D.; Subramanyam, B.; Athanassiou, C.G. Spinosad: A new natural product for stored grain protection. *J. Stored Prod. Res.* **2011**, *47*, 131–146. [[CrossRef](#)]
3. Matthews, G.A. Application techniques for agrochemicals. In *Chemistry and Technology of Agrochemical Formulations*; Knowles, D.A., Ed.; Springer: Dordrecht, The Netherlands, 1998.
4. Lykogianni, M.; Bempelou, E.; Karamaouna, F.; Aliferis, K.A. Do pesticides promote or hinder sustainability in agriculture? The challenge of sustainable use of pesticides in modern agriculture. *Sci. Total Environ.* **2021**, *795*, 148625. [[CrossRef](#)] [[PubMed](#)]
5. Meerman, F.; Van De Ven, G.W.J.; Van Keulen, H.; Breman, H. Integrated crop management: An approach to sustainable agricultural development. *Int. J. Pest Manag.* **1996**, *42*, 13–24. [[CrossRef](#)]
6. Carvalho, C.P. Agriculture, pesticides, food security and food safety. *Environ. Sci. Policy* **2006**, *9*, 685–692. [[CrossRef](#)]
7. *Agrochemicals* Home Page. Available online: <https://www.mdpi.com/journal/agrochemicals> (accessed on 1 August 2022).