Technology in Agronomy

EDITORIAL

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https://doi.org/10.48130/TIA-2021-0001

Technology in Agronomy **2021**, 1:1

Advanced technology in agronomy to secure food, fiber, feed, and fuel supply and maintain environmental sustainability

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Corn, wheat, rice, soybean, cotton, rape seeds, alfalfa, and sugar beets are among the top agronomic crops grown around the world for food, fiber, feed, and fuel (4Fs). Huge progress has been made in increasing production of 4Fs over the last few decades. In 2018–2019, approximately 1.09 billion tons of corn, 735 million tons of wheat, and 497 million tons of rice were produced worldwide. Increased food production has greatly helped to reduce global starvation and undernourished populations from 15% during 2000–2004 to 8.9% in 2019. There are however still as many as 161 million starving and undernourished people globally in 2019–2020. With the current world population of 7.9 billion being projected to reach 9.7 billion by 2050, the global situation of hunger and mal- and under-nutrition will likely worsen. Therefore increasing agronomic crop production remains the international top priority, particularly in developing and under-developed countries.

Meanwhile, increased crop production for 4Fs is not without adverse impacts on the environment. Agriculture causes a number of severe environmental and ecological damages, including climate change, biodiversity losses, dead zones, water shortage, air and water pollution, and soil degradation. The Intergovernmental Panel on Climate Change's Special Report on Climate Change and Land in 2019 estimates that agriculture is directly responsible for 8.5% of total greenhouse gas emissions, which has increased by 12% since 1990. Overuse and inappropriate application of pesticides, fertilizers, and other toxic agricultural chemicals can contaminate soil, water, and air; some of which can remain in the environment for decades, consequently threating food safety, ecosystems, plant, animal, and human health. The most precious non-renewable natural resource is fertile soil; yet, 24 billion tons of fertile soil are lost each year due to soil erosion. Approximately 33% of the earth's soils are already degraded and more than 90% could become degraded by 2050. Another major challenge for sustainable agriculture is the intensified competition for fresh water for urban and industrial use.

Because agriculture is both a driver and an industry under threat from environmental degradation and fresh water shortage, according to the United Nations Environment Program's 2021 'Making Peace with Nature' report, advancing applied sciences and developing technologies in agronomy has been and will continue to be key for meeting the global challenges in maintaining supplies of 4Fs, at the same time minimizing adverse environmental impacts and preserving soil and water resources for future generations. Knowledge generated in research must also be disseminated effectively and efficiently to the agronomic industry and individual farmers. In this regard, academic journals devoted to reporting novel discoveries in technologies and applied sciences in agronomy, particularly in an open-assess format, would facilitate the information dissemination, despite numerous journals publishing research findings on basic agriculture sciences. The open-access model will allow people in all countries to read, download articles, and access the technology and scientific information, without any charge or delay. This will particularly benefit the agronomic researchers and industries in under-developed and developing countries where the need is greater. It is with this mission, Maximum Academic Press (www.maxapress.com) has launched *Technology in Agronomy* (TiA), a new international online, open-access research journal, to join the global efforts to meet the above challenge and promote the sharing of worldwide research in breakthrough technologies and applied sciences in agronomy. We hope that TiA will help to meet the publication needs of scientists from academia and related industries, stimulate academic exchanges, and disseminate original discoveries across the global agronomic community.

TiA publishes original research and review articles, editorial communications, and opinions and perspectives in all aspects of applied sciences and technology related to production agriculture. The crops to be covered include (but are not limited to): grain crops (e.g., rice, wheat, maize, sorghum, barley, oat, millets, quinoa), oil crops (e.g., soybeans, rape seeds, sunflower, peanut), fiber crops (e.g., cotton, ramie, jute, industrial hemp, flax), forage crops (e.g., alfalfa, forage corn, fescues, fodder rape), and sugar crops (e.g., sugar canes, sugar beet). The disciplinary research may include: physiology, responses and adaptation to the environment; agroecosystems and sustainable traditional and organic farming systems related to rotations, cover crops, and tillage; management of weeds, pests, and diseases, water quality and quantity, soil fertility and health; crop quality, post-harvest physiology, storage and crop utilization; artificial intelligence application to agriculture, and automation and mechanization.

The benefits for publishing with TiA are numerous and appealing. All papers will be rigorously reviewed and the decision, with constructive reviews, will be conveyed to authors within 2–6 weeks of manuscript submission. All accepted manuscripts will be professionally language-edited and appropriately formatted for publication. Each article will be published online immediately following acceptance with open access for free view and download under the terms of the Creative Commons Attribution (CC BY) 4.0 License. All published articles will have

high exposure to both professionals and popular press through hosting on www.maxapress.com and shared via a variety of social media platforms. Data storage and sharing is available for each article to stimulate additional research.

We are honored and delighted to serve as the founding Editors-in-Chief of this journal. We would like to thank the associate editors and reviewers for their time and expertise, and the authors for submitting their articles to the journal. TiA will strictly follow the guidelines of Committee on Publication Ethics (COPE) (https://publicationethics.org/).

We sincerely invite scientists worldwide, who are engaged in agronomic technology and applied science research, to contribute all types of papers to TiA, and share your valuable thoughts with us to help better serve our agronomic community and forge the growth of TiA. With the strong collective support from the publisher, editorial team, reviewers, authors, and readers, we can develop this community journal into an international flagship journal for all engaged in applied agronomic research and agronomic crop production.

Conflict of interest

The authors declare that they have no conflict of interest.

Dates

Received 14 December 2021; Accepted 14 December 2021; Published online 17 December 2021