



Why *Crop Quality*? Inaugural editorial

Rodomiro Ortiz 

Citation: Ortiz, R. Why *Crop Quality*? Inaugural editorial. *Crop Qual.* 2026, 1, 1.
<https://dx.doi.org/10.20517/cq.2026.01>

Received: 13 Aug 2026

Accepted: 13 Aug 2026

Published: 17 Aug 2026

Copy Editor:

Tong Wang

Production Editor:

Tong Wang

Agriculture today faces a chaotic mix of unpredictable weather, shifting climate patterns, and stricter supply chain demands. In this high-stakes environment, guessing is not a viable strategy. This newly launched journal, *Crop Quality*, is therefore not just a notebook for records; it is an essential tool for survival and profitability. The articles in this journal will assist in making data-driven decisions, sharing knowledge on how the changing climate affects the nutritional value of crop harvests, assisting in developing quality standards for compliance, and how to sustain produce delivery in the long term.

Modern farming relies on tracking variables such as soil moisture, pest cycles, and fertilizer inputs. This journal aims to transform scattered observations into a historical roadmap, allowing us to advise on how to replicate high-yield seasons and avoid repeating costly mistakes. Likewise, with weather patterns becoming increasingly volatile, having a precise record of how specific cultivars respond to unexpected droughts or late frosts facilitates adapting practices in real-time. Furthermore, today's buyers and consumers demand transparency. A crop quality journal serves as verifiable proof of sustainable practices, organic compliance, and quality standards. This documentation is often the key to securing certifications and fetching premium market prices. By tracking inputs against eventual crop quality, it will also be feasible to pinpoint exactly where there is overspending on chemical fertilizers or water, drastically reducing waste and boosting profit margins. Ultimately, *Crop Quality* will bridge the gap between traditional intuition and precision agriculture, turning raw data into an asset for harvesting highly nutritious crops sustainably.

Crop Quality's goal is to become a premier, international, peer-reviewed, open-access journal dedicated to advancing the scientific understanding of produce quality as a primary agricultural outcome. In an era shaped by volatile climate change and a surging global demand for nutrient-dense food, the journal will address a critical contemporary challenge: enhancing the nutritional and functional quality of crops without compromising productivity, profitability, or environmental sustainability. The scope of *Crop Quality* is therefore organized around six interconnected research frontiers:



Department of Plant Breeding, Swedish University of Agricultural Sciences, Alnarp 23053, Sweden.

Correspondence to: Prof. Rodomiro Ortiz, Department of Plant Breeding, Swedish University of Agricultural Sciences, Alnarp 23053, Sweden. E-mail: rodomiro.ortiz@slu.se

1. Nutritional enhancement and functional components

Focusing on the genetic, molecular, and physiological pathways utilized to elevate essential nutrients, including proteins, lipids, vitamins, and micronutrients (biofortification), this section emphasizes research on optimizing bioactive compounds (e.g., antioxidants, polyphenols) to eradicate hidden hunger and support the global shift toward functional, health-promoting diets.

2. Synergistic mechanisms of yield and quality

This section of the journal aims to bridge the historical trade-off between high productivity and superior crop quality. This frontier prioritizes breakthroughs in gene regulatory networks, metabolic signaling, molecular markers, and precision gene-editing techniques designed to decouple the negative correlation between biomass yield and nutritional density.

3. Climate resilience and adaptive quality responses

Investigating how anthropogenic climate change - specifically elevated CO₂, rising temperatures and prolonged water scarcity - alters crop biochemistry, the journal will seek to publish research on the physiological mechanisms driving quality degradation, alongside the development of climate-resilient germplasm that maintains nutritional integrity under environmental stress.

4. Digital phenotyping and precision quality management

This section explores the integration of Industry 4.0 technology into modern agronomy. Key areas include the application of hyperspectral imaging, remote sensing, and artificial intelligence-driven predictive models for non-destructive quality assessment, real-time nutrient monitoring, and precision-optimized harvest scheduling.

5. Advanced breeding and genomic selection

Harnessing genomics, transcriptomics, proteomics, and metabolomics to accelerate the breeding of next-generation cultivars, this section of the journal will publish articles on *de novo* domestication, genomic estimated breeding values for selection for complex quality traits, and the development of crops with extended shelf-life and enhanced sensory profiles.

6. Post-harvest physiology and processing quality

Addressing the preservation of crop quality throughout the “farm-to-fork” supply chain, this section highlights metabolic alterations during storage, the molecular basis of fruit ripening and senescence, and the suitability of novel cultivars for industrial food processing and “clean label” ingredient manufacturing.

The publication of *Crop Quality* arrives at a critical juncture in human history, thus serving as a vital scientific catalyst to bridge the gap between agricultural productivity and holistic global sustainability. For decades, the primary directive of agricultural science was centered almost exclusively on maximizing caloric yield to feed a rapidly expanding population. However, the contemporary global landscape demands a profound paradigm shift - one where nutritional density, ecological resilience, and environmental stewardship are elevated alongside sheer volume. By positioning crop quality as a primary, non-negotiable outcome rather than a secondary byproduct of yield, this journal provides the definitive intellectual framework required to meet the United Nations Sustainable Development Goals (SDGs). Specifically, the breakthroughs published within these pages will directly advance SDG 2 (Zero Hunger) by shifting the focus from caloric security to nutritional security, effectively combating the global crisis of hidden hunger through targeted biofortification and functional component optimization. Furthermore, by exploring

climate-adaptive biochemistry and the mechanisms of quality preservation under environmental stress, the journal directly fuels SDG 13 (Climate Action) and SDG 12 (Responsible Consumption and Production). The knowledge curated here ensures that as the global community works to feed billions, it does so without depleting the planet's finite resources or compromising human health.

Beyond its immediate socioeconomic impacts, *Crop Quality* is poised to fundamentally redefine the frontiers of agricultural and life sciences by dismantling the historical, counterproductive dichotomy between biomass yield and nutritional integrity. For generations, an antagonistic relationship has existed between high-yield agronomy and superior crop quality, often treated as an immutable biological trade-off. *Crop Quality* will therefore act as the primary vehicle for scientific advancement by publishing cutting-edge research that leverages gene regulatory networks, metabolic signaling, and precision gene-editing technologies to decouple this negative correlation. By integrating multi-omics disciplines - genomics, transcriptomics, proteomics, and metabolomics - with advanced structural and functional biochemistry, the journal fosters a deeper, more sophisticated understanding of plant physiology. This consolidated scientific repository enables researchers worldwide to transition from observational agronomy to predictive, mechanism-based crop design. Consequently, the journal does not merely document scientific progress; it actively accelerates the pace of innovation, transforming how plant scientists interrogate, manipulate, and optimize the complex biological pathways that govern crop development.

Ultimately, the true legacy of *Crop Quality* lies in its capacity to translate foundational scientific discoveries into actionable, real-world solutions across the entire “farm-to-fork” supply chain. By embracing the digital revolution of Industry 4.0 - including artificial intelligence-driven predictive modeling, remote sensing, and hyperspectral digital phenotyping - the journal provides the agricultural community with the tools necessary for precision quality management and optimized, waste-reducing harvest strategies. This technological synthesis extends seamlessly into post-harvest physiology, where the molecular understanding of ripening, senescence, and industrial processing quality safeguards nutritional value long after the crop has left the field. As an open-access, peer-reviewed global platform, *Crop Quality* democratizes this vital data, ensuring that smallholder farmers, industrial producers, biotechnologists, and policymakers alike have unhindered access to the highest caliber of scientific knowledge. In doing so, the journal creates an unprecedented, virtuous cycle of innovation, where theoretical science directly informs sustainable agricultural practices, ultimately securing a resilient, climate-adapted, and profoundly nourished future for generations to come.

To finalize this vision, the Editorial Board of the journal and OAE Publishing Inc. warmly invite scientists, breeders, agronomists, and technologists from around the globe to contribute their pioneering work to *Crop Quality*. We welcome a diverse range of manuscript types tailored to advance our collective understanding, including original research articles detailing major empirical breakthroughs, comprehensive reviews that synthesize current literature, and methodological innovations outlining novel experimental techniques. Additionally, we actively encourage the submission of data-driven research utilizing advanced computational approaches, brief highlights of exceptionally high-impact discoveries, and forward-looking perspectives that challenge existing paradigms or outline future research directions. By sharing your insights through our open-access platform, you will help shape the future of sustainable agriculture and drive the scientific innovations necessary to nourish a changing world. We look forward to receiving your submissions.

DECLARATIONS

Authors' contributions

The author contributed solely to the article.

Availability of data and materials

Not applicable.

AI and AI-assisted tools statement

Not applicable.

Financial support and sponsorship

None.

Conflicts of interest

Ortiz, R. serves as the Editor-in-Chief of *Crop Quality*. This article is an Editorial introducing the journal and was not subject to external peer review.

Ethical approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Copyright

© The Author(s) 2026.

Disclaimer/Publisher's Note: All statements, opinions, and data contained in this publication are solely those of the individual author(s) and contributor(s) and do not necessarily reflect those of OAE and/or the editor(s). OAE and/or the editor(s) disclaim any responsibility for harm to persons or property resulting from the use of any ideas, methods, instructions, or products mentioned in the content.



© The Author(s) 2026. Open Access This article is licensed under a Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, sharing, adaptation, distribution and reproduction in any medium or format, for any purpose, even commercially, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.