Preface

The rapid evolution of technological innovation, coupled with the increasing necessity for sustainable resource management, has created both profound challenges and transformative opportunities for global agricultural systems. In an era marked by climate variability and growing food security demands, agriculture must extend beyond traditional production methods by integrating precision technologies, bio-innovations, and advanced crop management strategies. Fostering research and interdisciplinary collaboration is therefore essential to support agricultural practices that are resilient, sustainable, and future-ready.

It is an honour to present this Special Issue of the *Pertanika Journal of Tropical and Agricultural Science* (PJTAS), entitled "Smart Agriculture and Sustainable Crop Production: Enhancing Resilience to Environmental Stresses", under the theme "Smart and Sustainable Agriculture". This collection brings together cutting-edge research and comprehensive studies that significantly advance sustainable agricultural practices and crop production systems.

The contributions featured in this special issue address critical dimensions of modern agricultural science. Research on smart agriculture highlights the integration of digital tools, data-driven approaches, and advanced monitoring systems to optimise input efficiency, resource management, and crop yield stability. Studies on sustainable crop production explore innovative agronomic practices, soil health management, and physiological approaches to enhance crop resilience to biotic and abiotic stressors. Furthermore, articles emphasising environmental stress adaptation and technological integration underscore the importance of mitigating climate impacts and ensuring the long-term viability of the agri-food system.

Collectively, these contributions demonstrate that achieving long-term sustainability in agriculture requires a holistic approach that combines technological precision, resilient crop management, and adaptive biological solutions. Such integrated strategies are key to building agricultural systems that are both environmentally sound and robust against global environmental challenges.

We sincerely appreciate all the authors for their valuable research contributions, the peer reviewers for their rigorous and constructive evaluations, and the Editorial Team of PJTAS for their unwavering support and dedication throughout

the preparation of this publication. We hope that this Special Issue serves as a valuable resource for researchers, practitioners, and policymakers, inspiring further innovation and collaboration toward smart and sustainable agricultural systems.

Guest Editor
Ahmed Abubakar (Dr)
Md Kamal Uddin (Dr)
SM Shamsuzzaman (Dr)