
EDITORIAL FOREWORD

Strengthening Climate-Change Resilience Research in Agriculture — A Call for Greater Contribution from Developing Countries

Climate change has become one of the most significant threats to global agricultural productivity and food security (Saleem *et al.* 2024, Ampitiyawatta *et al.* 2025, Mirzabaev *et al.* 2023). Rising temperatures, erratic rainfall patterns, and more frequent extreme events lead to change crop production systems worldwide. Over the past two decades, the global research community has increasingly focused on climate-change resilience in agriculture, producing a rapidly expanding research work evidence by published research works covering agronomy, plant breeding, remote sensing, modelling, and socio-economic adaptation studies. A recent bibliometric study analysing 25,872 papers published from 1985–2023 demonstrates the dramatic growth of this field (Li *et al.* 2024).

However, this research expansion is not evenly distributed across the globe. Li *et al.* (2024) report that the United States leads with 6,819 publications, followed by China (3,722) and England, Germany, India, Australia, Italy, Canada, Spain, and France. Of the ten most influential countries with the highest research output and citation strength, eight are developed Western nations, while only China and India represent the developing world.

These gaps highlighted that strong financial support leads to increased research output and provides a solid foundation for scientific direction and policy influence in setting research priorities. Nevertheless, the lack of adequate financial resources can prevent researchers in developing countries from publishing their scientific work in high-impact journals, ultimately resulting in their contributions being underrepresented or not counted. Further, lack of advanced infrastructure such as laboratory facilities, insufficient long-term monitoring systems, and limited opportunities for high-visibility publication leads to low output from developing countries. A recent perspective on African agriculture and climate mitigation emphasizes that sustained institutional investment and international collaboration are essential for improving research quality and output in developing countries (Akpensuen & Rivero 2025). Reviews of crop-specific research, such as rice farming under climate change, further show that tropical and subtropical regions—where impacts are most severe—remain comparatively underrepresented in high-impact literature (Ali *et al.* 2022).

This imbalance is especially concerning because many of the world’s most climate-vulnerable farming communities are located in developing countries, particularly in South Asia, Sub-Saharan Africa, and Southeast Asia. Yet numerous systematic reviews highlight persistent evidence gaps in these regions. For instance, a systematic review on climate variability and agriculture in Sub-Saharan Africa notes a shortage of long-term field studies, context-specific adaptation trials, and integrated crop–livestock analyses, despite the region’s high vulnerability (Sithole & Olorunfemi 2024).

Given this global imbalance, several strategic actions are required to strengthen climate-resilience research in developing countries:

1. *Encourage Long term research in Fields:* More field-based studies on heat tolerance, drought resilience, soil–water–crop interactions, and farmer-led innovations are needed in developing-country settings. Long-term research limited in Africa and South Asia (Kotir 2011, Mensah *et al.* 2025) which is essential for generating robust policy recommendations. Attention for relevant fund allocation is become essential in this context.

2. *Strengthen research capacity:* Developing sustainable research capacity requires substantial investment in well-equipped laboratories, computational and modelling facilities, and structured training for early-career scientists (TDR/WHO 2023, Akpensuen & Rivero 2025). Evidence shows that improvements in individual skills alone are insufficient; research output remains low when researchers operate in environments with inadequate infrastructure and institutional support (Chu *et al.* 2014, Franzen *et al.* 2017). Strengthening institutions—through administrative support, research management systems, stable funding mechanisms, and supportive organizational structures—is therefore essential for long-term productivity and knowledge generation (Bates *et al.* 2011, Vicente-Crespo *et al.* 2021). Without such institutional capacity, even highly motivated researchers, face barriers that limit their ability to conduct quality research and publish in high-impact outlets (Kilmarx *et al.* 2024).

3. *Encourage international collaboration:* Bibliometric studies show that influential research networks are dominated by Western institutions; integrating developing-country universities more fully into these networks will increase both research quality and visibility (Li *et al.*, 2024).

4. *Expand recognition of research outputs:* Many valuable studies from developing regions appear in local journals not indexed in major global databases. This creates visibility gaps. Global journals, including the *Journal of Agricultural Sciences*, can help by recognizing regionally relevant research.

5. *Priorities interdisciplinary and actionable research:* Effective climate-resilience strategies require blending genetics, agronomy, socio-economics, policy analyses, and remote sensing. Interdisciplinary studies remain limited in many developing-country contexts (Ali *et al.*, 2022, Omotoso *et al.* 2023). Journals should priorities manuscripts that demonstrate clear pathways from scientific findings to farm-level recommendations ahead of just only prediction.

CONCLUSION

The global scientific community has made significant progress in understanding climate change impacts on agriculture. However, significant blind spots remain, especially in regions where vulnerability is highest and adaptive capacity lowest. The disparity in global research output threatens to limit the development of effective, locally appropriate adaptation strategies.

As an influential platform for agricultural research findings, the *Journal of Agricultural Sciences –Sri Lanka* has a certain role to play. By prioritizing quality research from developing and developed countries, encouraging equitable collaborations, and promoting interdisciplinary studies, the journal can help shape a more inclusive global research agenda.

Climate change is accelerating. Agricultural resilience research must accelerate with it — and it must do so in a way that ensures no region is left behind.

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