

Advancing Food System Resilience by Pseudocereals Utilization

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Abstract : At the aggregate level, climate variability, the rising number of active violent conflicts, globalization and industrialization of agriculture, the loss in diversity of crop species, the increase in demand for agricultural production, and the adoption of healthy and sustainable dietary patterns are exacerbating factors of food system destabilization. The importance of pseudocereals to fuel and sustain resilient food systems is recognized by leading organizations working to end hunger, particularly for their critical capability to diversify livelihood portfolios and provide plant-sourced healthy nutrition in the face of systemic shocks and stresses. Amaranth, buckwheat, and quinoa are the most promising and used pseudocereals for ensuring food system resilience in the reality of climate change due to their high nutritional profile, good digestibility, palatability, medicinal value, abiotic stress tolerance, pest and disease resistance, rapid growth rate, adaptability to marginal and degraded lands, high genetic variability, low input requirements, and income generation capacity. The study provides the rationale and examples of advancing local and regional food systems' resilience by scaling up the utilization of amaranth, buckwheat, and quinoa along all components of food systems to architect indirect nutrition interventions and climate-smart approaches. Thus, this study aims to explore the drivers for ancient pseudocereal utilization, the potential resilience benefits that can be derived from using them, and the challenges and opportunities for pseudocereal utilization within the food system components. The PSALSAR framework regarding the method for conducting systematic review and meta-analysis for environmental science research was used to answer these research questions. Nevertheless, the utilization of pseudocereals has been slow for a number of reasons, namely the increased production of commercial and major staples such as maize, rice, wheat, soybean, and potato, the displacement due to pressure from imported crops, lack of knowledge about value-adding practices in food supply chain, limited technical knowledge and awareness about nutritional and health benefits, absence of marketing channels and limited access to extension services and information about resilient crops. The success of climate-resilient pathways based on pseudocereal utilization underlines the importance of co-designed activities that use modern technologies, high-value traditional knowledge of underutilized crops, and a strong acknowledgment of cultural norms to increase community-level economic and food system resilience.

Keywords : resilience, pseudocereals, food system, climate change

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