

## Post-Harvest losses - A hidden barrier to nutrition security in Pakistan

Rida Fatima

*Dear Madam,* Despite being an agrarian economy, Pakistan faces a serious nutrition crisis, marked by the triple burden of malnutrition: undernutrition, micronutrient deficiencies and rising overweight/obesity. According to the National Nutrition Survey 2018, 40.2% of children under five are stunted, 17.7% are wasted and 28.9% are underweight. At the same time, nearly 10% are overweight and more than half are anaemic. This alarming situation is closely linked to food insecurity.<sup>1</sup>

One hidden cause of nutrition insecurity is post-harvest food loss, which reduces the availability and affordability of healthy food options, thereby worsening malnutrition. The Asian Development Bank estimates that nearly 30–40% of fruits and vegetables and about 15% of grains are lost before consumption, with losses worth around US\$4 billion.<sup>2</sup> These losses result from poor harvesting methods, lack of infrastructure such as cold storage, inadequate packaging and poor handling and transportation.<sup>3</sup>

Addressing post-harvest losses requires improvements in the way food is stored and transported. One solution is the use of off-grid, solar-powered cold storage units to increase the shelf life of perishable produce without relying on electricity. Such innovations have shown success in Kenya, where farmers can sell fresher produce at better prices.<sup>4</sup> In India, innovative startups have developed portable cold storage units that use thermal batteries instead of electricity.<sup>5</sup> In Pakistan, where power shortages are common, adapting similar low-cost technologies could significantly reduce losses. Public–private partnerships and farmer associations could play a vital role in making these units available at the village level.

Improved packaging is another effective intervention. Replacing traditional jute bags with durable plastic crates provides better aeration and reduces damage during transport. Evidence from India shows that plastic crates

reduced vegetable losses from 22% to 5%,<sup>5</sup> while evidence from Ghana found that plastic crates with liners outperformed wooden crates.<sup>6</sup> For Pakistan, where fruits and vegetables are often transported in sacks, promoting plastic crates through subsidies could cut losses substantially.

Together, these interventions show that scalable, cost-effective solutions exist to address food insecurity caused by post-harvest losses. By investing in such innovations, Pakistan can strengthen food security, make nutritious food more accessible and help bridge the gap between agricultural production and nutritional outcomes, ensuring that the country's harvest truly benefits its people.

**Acknowledgement:** I thank the faculty of the Public Health Nutrition course at Aga Khan University for their support and constructive input in preparing this letter.

**Disclaimer:** None.

**Conflict of interest:** None.

**Funding source:** None.

**DOI:** <https://doi.org/10.47391/JPMA.33277>

### References

1. United Nations Children's Fund, Government of Pakistan. National Nutrition Survey 2018: key findings report. Islamabad, Pakistan: Ministry of National Health Services, Regulations and Coordination; 2019.
2. World Bank Group. Pakistan: Country Climate and Development Report. Washington, DC: World Bank; 2022.
3. Ahmad K, Afridi M, Khan N, Sarwar A. Quality deterioration of postharvest fruits and vegetables in developing country Pakistan: a mini overview. *Asian J Agric Food Sci* 2021;9:103-8.
4. Mohan A. How off-grid cold storage systems can help farmers reduce post-harvest losses. Washington, DC: Brookings Institution; 2019. [Online] 2019 [Cited 2025 October 10]. Available from: <https://www.brookings.edu/articles/how-off-grid-cold-storage-systems-can-help-farmers-reduce-post-harvest-losses/>
5. Kitinoja L. PEF returnable plastic crate systems 2013 white paper. [Online] 2013 [Cited 2025 October 10]. Available from URL: [https://www.researchgate.net/publication/261759626\\_PEF\\_Returnable\\_Plastic\\_Crate\\_Systems\\_2013\\_White\\_paper](https://www.researchgate.net/publication/261759626_PEF_Returnable_Plastic_Crate_Systems_2013_White_paper)
6. Dari L, Nenguwo N, Afari-Sefa V. Evaluation of packaging liners in wooden and plastic crates for handling tomatoes. *J Post Harvest Technol* 2018;6:36-40.

Aga Khan University, Karachi, Pakistan.

**Correspondence:** Rida Fatima. e-mail: [ridafatema005@gmail.com](mailto:ridafatema005@gmail.com)

ORCID ID: 0009-0000-3857-1739

**Submission completed:** 13-10-2025 **1st Revision received:** 29-12-2025

**Acceptance:** 12-02-2026

**Last Revision received:** 11-02-2026

### Author Contribution:

RF: Concept, design, drafting, revision, finalising the content and agreement to be accountable for all aspects of the work.