Chapter 8
Agricultural Warehousing: Functional Insights, Challenges, and Best Practices

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ABSTRACT

The chapter reviews the current state of agriculture warehousing worldwide; this is particularly important in reducing postharvest losses and increasing food safety. It points to the economic and social consequences of faulty storage solutions in developing countries. It stresses the necessity for upgrading agricultural storage, sharing technologies, incorporating online storage, and applying modern storage facilities, especially among smallholder farmers. The issue of agri-warehousing, however, runs into numerous challenges in infrastructure, technologies, and regulatory frameworks in both developed economies as well as in emerging economies. Given the emphasis on theory, policy, and best practices, it is hoped that this chapter will provide a necessary foundation for better understanding of the agricultural

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warehouse system from a more practical perspective.

1. INTRODUCTION

Globally, one-third of the edible part of food meant for human consumption, which amounts to 1.3 billion tonnes, is lost throughout the supply chain (FAO, 2017). A significant portion of this loss is due to improper storage, which can account for 10-20% of overall wastage (Jha et al., 2015). This type of loss directly reduces farmers' income and standard of living. Additionally, it squanders a substantial portion of the nation's food supply, creating unnecessary waste (Olorunfemi and Kayode, 2021). Recognizing this, the agriculture sector has placed increasing importance on warehouses as critical to upholding food quality and ensuring food security (Lydia et al., 2022). High-quality agricultural warehousing directly combats post-harvest losses, leading to the consistent availability of seasonal crops (Naik et al., 2022). This, in turn, stabilizes prices and strengthens food security across the globe (Mobolade et al., 2019).

Due to inferior agricultural infrastructure, post-harvest losses in developing countries are significantly higher than in developed countries. The loss of post-harvest loss in Sub-Saharan Africa varies from 30% to 50% (Makule et al., 2022). This includes inefficient farming practices, poor transportation networks, outdated storage, lack of processing technology, and under-managed market systems (Abass et al., 2014). Table 1 shows that the developing world experiencing substantial food losses in comparison to developed world in post-harvest operations of the supply chain (FAO 2017). These losses have far-reaching consequences, including direct weight loss from spoilage, degraded product quality, reduced nutritional value, compromised seed viability, and ultimately, setbacks to the commercial viability of farming (Kumar and Kalita, 2017). Insufficient access to modern warehousing particularly impacts small and marginal farmers within the supply chain (Naik et al., 2022).