

Food and Nutritional Security through Minimization of Postharvest Losses and Value Addition in Agricultural Commodities

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At present, one of the main global challenges is how to ensure food security for a world growing population whilst ensuring long-term sustainable development. Current world population is projected to reach 10.5 billion by 2050 (UN March, 2013), further adding to overall food security concerns. This raise translates into 33% more human mouths to feed, with the greatest claim growth in the poor communities of the globe. According to Alexandratos and Bruinsma [1] food supplies would need to boost by 60% in order to meet the food demand in 2050. Food production has been steadily increased in almost all developing countries due to advancement in production technology, but improper post harvest management (PHM), processing, value addition and storage results in high losses in agricultural produces. Unfortunately, having such a huge production a considerable postharvest loss to the tune of 10-25%, occur annually mainly due to inefficient postharvest management practices [2].

Therefore, minimization of post-harvest food losses is an urgent need and critical component of ensuring future global food security. Food and Agriculture Organization of U.N. predicts that about 1.3 billion tons of food are globally wasted or lost per year [3]. Post-harvest loss minimization would help in more availability of food for utilization and increase universal food security, a growing concern with intensifying food prices due to rising end user demand, require for bio energy and other business uses, and bigger climate changeability [4]. Again, agricultural practices adds major amount of distinctive returns in certain parts of the globe (70 percent in Sub-Saharan Africa) and declining food loss can directly raises the real earnings of the growers [5].

Over the past decades, significant focus and resources have been allocated to increase food production. For instance, 95% of the scientific research funds during the last 30 years were invested on rising production and only 5% focussed to sinking losses [6]. Increasing agricultural productivity is critical for ensuring global food security, but this may not be sufficient. Moreover, food production is presently facing lot of challenges viz., limited land, water and increased weather unevenness due to climate change. To sustainably achieve the goals of food security, food availability needs to be also increased through reductions in the post-harvest process at farm, retail and consumer levels. Food losses not only decreases food accessibility for individual utilization but also generates different destructive causes to public through expenses of waste management, greenhouse gas production, and loss of limited wealth used in the production.

According to Kader [7], there are two general causes of fruit and vegetable losses-namely, biological and environmental causes, and socioeconomic causes. Biological and environmental causes relate to storage temperature, humidity, gas concentration, and microbial

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load, among other factors. These factors can be easily manipulated and controlled, in the presence of available technologies; however, these technologies do entail very large initial investments. Post-harvest losses, variously estimated at 10–40 percent and as high as 50–70 percent, occur: (i) at harvest; (ii) during preliminary processing; (iii) at handling; (iv) during transportation and distribution; (v) at storage due to pests, spillage, spoilage, and contaminations; (vi) during processing due to inefficient technologies; and finally (vii) during commercialization [8]. As a result, farmers receive low net prices and revenues for their produce. Lessening post-harvest losses can result in increased food availability thereby enhancing food security and reducing poverty leading to improved livelihoods [8,9].

To minimize the post-harvest losses of different agricultural produces for improving food availability and nutritional security may be obtained with few initiatives viz., 1. Upgrade the knowledge of farmers on recent innovations on pre and postharvest practices for enhancing shelf life of different agricultural produces [10,11], 2. Familiarize different low cost machinery, tools and techniques for value addition of agricultural produces for loss minimization during glut [12], 3. Encourage private sector for appropriate financial products and services tailored for boosting investments in PHM, 4. Enhance coherence and coordination between companies, organizations and donor-assisted PHM projects and 5. Formulate suitable Government policies about the scope of the challenge, and to establish and institutionalize multi-stakeholder partnerships to implement PHM strategies.

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