

## Chapter 72

# Assessing the Readiness of Farmers Towards Cold Chain Management: Evidences From India

**Rohit Joshi**  
*IIM Shillong, India*

**Sudhanshu Joshi**  
*Doon University, India*

### ABSTRACT

*The purpose of the paper is to gain an insight into the current status of farmers' awareness and practices towards maintaining the postharvest cold chain. The related hypotheses are developed and tested. The major findings include- marginalized and small farms, literacy and poor awareness level are the main causes for the backwardness of Indian farmers. Also, lack of funds forces farmers to ignore the use of cold storage. Further, multi-intermediaries and fluctuating consumer prices result farmers in not getting fair share of the consumer rupee. One of the major challenges in front of fresh food industry in India is to reduce postharvest losses across the chain through increasing awareness level of famers towards cold chain, building market information systems to assist farmers in decision-making and improving food safety and quality of farm produce available in the market.*

### INTRODUCTION

Given that most food, pharmaceutical, and chemical products get degraded by inappropriate exposure to temperature, humidity, light and certain contaminants (Smith, 2005), a consistent management of controlled environment all along the supply chain is a key in maintaining the quality of perishable products till the final delivery point. A 'Cold Chain' is a physical process that dominates the supply chain of perishable products. The cold chain includes a series of equipment and processes used to protect the perishables, by keeping them chilled and frozen, starting from the source of origin to the destination

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of consumption (Salin & Nayga, 2003). The perishable products can be categorized into two types viz, living products and non-living products. The living Products include fruits, vegetables, live seafood, flowers etc., where respiration is an on-going process, which uses up stored energy or food reserves by emitting heat and water vapors (Dahlenburg, 2001). Here, temperature is an imperative constraint, and the impact of non-optimal temperatures result into the loss of quality in form of earlier ageing and natural senescence. Too high temperature results in loss of quality, rapid deterioration and microbial spoilage whereas, in contrast, too low temperature shows early death, chilling injury, freezing destructions and death (Shewfelt et al., 2014; Ames, 2006).

Perishable products begin to loose quality as soon as they are harvested. Proper postharvest handling of fresh produce before and during their storage period is essential for maintaining the quality and increasing the shelf life of these produce. These fresh produce can become contaminated with human pathogens or spoilage bacteria at any point in the supply chain, i.e. from cultivation to consumption (James et al., 2008). As the consumption of fresh produce has increased significantly in the last decade (Rediers et al., 2009), with occurrence of series of food poisoning and related diseases, global consumers nowadays are more concerned about the safety of their food (Griffith, 2006). Cost reduction and quality improvement at the upstream side of the distribution center became the strategic attention points (Lemeilleur and Codron, 2011, Buurma & Saranark, 2006). The main sources of postharvest contamination are temperature abuse at farm level (Brackett, 1992), harvesting equipment, transport containers, processing equipment, and human handling (Beuchat & Ryu, 1997). Strict temperature control throughout the supply chain can minimize the risk of food-borne illnesses because cold storage drastically reduces the growth rate of most human pathogens (Ukuku & Sapers, 2007).

The sourcing of perishable products play an important role for food related business. It is a key factor for the production costs as well as for the quality of the food products, the social, sensorial or food safety aspects (Aidoo, 1993). Thus, it is important for any organization to have reliable sources. A farmer can be a reliable source if equipped with proper knowledge and skills. In a developing country like India, there is a need to strengthen the farmer link, which is a critical link of the cold chain.

A farmer plays an important role in cold chain. The farmer can be a reliable source if equipped with proper knowledge and skills. There is a need to strengthen the farmer link, which is a critical link of the cold chain. In this research, we intend to find the readiness of Indian farmers towards the cold chain practices. The main objective of the research is to gain an insight into the current status of farmers' awareness and practices towards maintaining the postharvest cold chain. For this, one sector from each living and non-living category of perishables is chosen. The sectors, Fruits and Vegetables (FV) and Milk and Milk Products (MMP) are chosen from the living products' and non-living products' categories respectively. The FV and MMP sectors include product handling at temperatures of -20°C to +10°C and that range covers handling temperatures of most of the perishable items.

## **LITERATURE REVIEW**

Researchers (Tanksale & Jha, 2015; Narula, 2011; Allais & Letang, 2009; Ferna Andez-Trujillo et al., 2000; Srivastava, 2006; Jain, 2007; Singh, 2007) enumerated number of problems faced at farmers' end like, no transparency in pricing at farmer end, lack of awareness about the use of IT for being better informed, improper handling, loading and unloading of perishables, fragmented production, leading to fragmented chains, etc. One of the underlying reasons for such paradoxes is the lack of knowledge,

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