

Extended Abstract

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Paper/Poster Title	Value-chain of Stone Fruits in Uttarakhand and the Resilient Network of Intermediaries
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Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	200 words max
<p>This paper investigates the intricate dynamics of the supply chain in India's agricultural sector, focusing on the exploitation faced by small-scale farmers. The study emphasizes two critical supply-side factors contributing to farmer exploitation: their dependence on intermediaries and restricted market access due to inadequate infrastructure. The research centers on the stone fruit supply chain in Uttarakhand, analyzing profit distribution while considering the region's hilly topography and its impact on farmers' incomes and intermediary reliance.</p> <p>Drawing on original survey data from Nainital district, the study employs a multi-stage stratified random sampling approach to gather insights from 200 farmers and 40 traders. Findings reveal that high post-harvest costs, poor infrastructure, and information asymmetry empower traders, disproportionately affecting smaller landholding farmers. The study unveils an interlinked system where farmers, especially the economically disadvantaged, rely on traders for credit, binding them in informal contracts and reinforcing loyalty through commission-based transactions.</p> <p>Despite evidence of exploitation, farmers prefer dealing with a limited number of intermediaries, often linked by social ties. The research underscores the indispensability of intermediaries when farmers lack market access, warehousing, and credit facilities. Policy recommendations include urgent investments in storage and food-processing infrastructure, highlighting the need for holistic interventions beyond the mere introduction of ICT tools. This study enriches the literature on horticultural supply chains, offering valuable insights for policymakers seeking to address the systemic challenges faced by India's small-scale farmers.</p>	
Keywords	Agricultural Markets and Marketing; Cooperatives; Agribusiness, Agricultural Finance, Agricultural Policy; Food Policy; Intermediaries, Market Access
JEL Code	Agricultural Markets and Marketing ; Cooperatives; Agribusiness (Q13), Agricultural Finance (Q14), Agricultural Policy; Food Policy (Q18)
Introduction	100 – 250 words
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The Indian farmer earns very less and is trapped in poverty for various demand-side as well as supply-side reasons. An important reason for the same is that a large number of agricultural commodities in India reach the consumer via traditional value chains where small-scale producers interact with various actors when they link with markets, including traders, logistics firms, processors and retailers. In developing countries, small farmers often cannot access organized markets directly. Instead, they sell to middlemen who resell their output to distant buyers. These middlemen appear to earn large margins, and they appropriate most of the gains from rising consumer prices. The large size of the market, poor transport, marketing and infrastructural facilities ensure that many isolated regional markets exist for farm produce. The Sustainable Development Goal 2 as propounded by the United Nations aims to end hunger, achieve food and nutrition security and promote sustainable agriculture by 2030. This requires that small-scale producers be included in, and benefit from, the rapid growth and transformation under way in food systems. Also, the Government of India in 2016 set a target of “Doubling Farmers’ Income” by 2022 in order to increase the income of farmers by various interventions in the farm and non-farm sectors. For these goals and reforms to be realized, it is essential to understand the problems faced by farmers and analysing whether the heart of the problem lies in the value-chain itself. Conventional theories focus mainly on sources of production costs, ignoring the role of marketing costs and margins that accrue to trade intermediaries. Thus, it becomes important to study about middlemen to assess whether they are facilitators or exploiters in the supply chain.

In this paper, I focus on two important supply-side factors responsible for farmers' exploitation- dependence on intermediaries, and lack of market accessibility due to poor infrastructure. I analyse the supply chain of stone-fruits in Uttarakhand, a hill state in northern India. Uttarakhand is the leading producer of stone-fruits (peach, plum, apricot and pear among others) in India. My main objective is to trace the supply chain of peaches and analyse the distribution of profits along this chain, while accounting for the topography of the hills and how it affects farmers' incomes and dependence on intermediaries. In this paper, I focus on the two most important actors of the supply chain- the farmers and the intermediaries-cum-wholesalers, or *Arhatiyas*.

Methodology

100 – 250 words

I use original survey data constructed by doing a primary survey in Nainital district of Uttarakhand, done using multi-stage stratified random sampling. In the first stage, villages are selected based on distance from the nearest agricultural market, or *Mandi* as well as the caste of the farmers. In the second stage, farmers from these villages are chosen on the basis of the size of their landholdings. The data has been collected by interviewing 200 farmers spanning across 20 villages of two different blocks. 40 traders in the traditional spot market have also been interviewed using purposive sampling, in addition to other actors in the supply chain such as transporters and processors. Both quantitative and qualitative data has been assimilated based on key-informant interviews as well as focus-group discussions with the various actors.

Results	100 – 250 words
<p>The descriptive statistics and standard OLS regressions find that high post-harvest (marketing) cost coupled with poor infrastructure and information asymmetry helps traders in wielding power over the farmers. Rich farmers fare relatively well as compared to their poor counterparts, characterised by smaller landholdings. This is primarily due to their dependence on the traders for credit- both for agricultural and non-agricultural purposes. There is an interlinkage of input-output and credit market. Small farmers enter into informal contracts with the traders who assist them in cash (for agricultural and non-agricultural activities) and in-kind (in the form of agricultural inputs like fertilizers or in the form of ration to feed their family during slack season). In lieu of this, farmers are bound to sell their harvest to the traders. Thus, <i>Arhatiyas</i> tie the output of farmers with themselves to establish farmer loyalty and ensure future supplies as commission rent is dependent on the value of the produce in each transaction. However, calculations show that after accounting for opportunity cost of family labour, even the farmers with large landholdings incur losses. The study also finds that farmers have limited options to market their produce outside the traditional spot markets, <i>mandis</i>. Also, because the traders deal in bulk and help the farmers dispense-off their produce quickly in the absence of storage amenities, farmers prefer to deal with them over other actors that specialise in agro-processing, even if this implies additional cost in the form of commissions of traders and transporters. The study finds that despite a large number of intermediaries options within the <i>mandi</i>, farmers prefer to deal with two or three intermediaries on an average. Social ties with intermediaries hailing from their own village or caste is an important factor in this regard. Also, results show that farmers get higher price when they engage directly in business with processors, retailers etc. But due to the various services provided by intermediaries, such as purchase of the entire produce despite grade and quality, provision of input and credit etc., farmers continue to trade with the intermediaries.</p>	
Discussion and Conclusion	100 – 250 words
<p>Click here to enter text.</p> <p>This study can be seen as an addition to the existing literature on the supply-chains of horticultural commodities and perishables. It also contributes to the literature on intermediaries in agricultural markets and finds that in the absence of sound infrastructure, intermediaries become indispensable to the farmers. Although there is clear evidence of intermediaries exploiting the farmers by charging higher than prescribed commission rates and paying them less for their produce, they are indispensable to farmers when the farmers do not have easy access to markets, warehousing and processing infrastructure and institutional credit. Policy implications of the paper include an urgent need to develop storage and food-processing infrastructure that will be as helpful to the farmers as the roads that help in improving market accessibility. Also, the paper suggests that mere ICT tools such as cell phones can do little to increase farmers' profits, if not done in conjunction with an improvement in credit-lending and agricultural marketing institutions.</p>	

