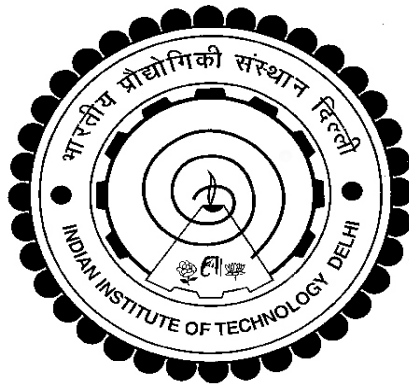


**ESSAYS ON AGRICULTURAL MARKETS IN
UTTARAKHAND**

TANIYA SAH



DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

INDIAN INSTITUTE OF TECHNOLOGY DELHI

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by

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DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Submitted in fulfilment of the requirements of the degree of

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CERTIFICATE

This is to certify that the thesis titled “**Essays on Agricultural Markets in Uttarakhand**”, being submitted by **Ms. Taniya Sah** to the Indian Institute of Technology Delhi for the award of the degree of Doctor of Philosophy, is a record of original bona-fide research carried out by her under our supervision. In our opinion, the thesis has reached the standards fulfilling the requirements for submission relating to the degree. The results contained in the thesis have not been submitted, in part or full, to any other institute or university for award of any degree or diploma.

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Taniya Sah

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Abstract

Income of farmers in India has not grown much as per the data from the Situation Assessment Survey Reports of 2003 and 2013. Both demand and supply side factors are responsible for the low income of the farmers. This thesis focuses on an important supply-side factor responsible for the low income of farmers- lack of access to the markets due to poor infrastructure. The issue becomes more precarious in regions which are geographically challenged and are characterized by a difficult topography, creating impediments in the development of infrastructure. Lack of market access not only impedes vertical integration in the supply chain by generating higher margins for rent-seeking actors like intermediaries, but also acts as a barrier to spatial integration of markets.

In this thesis, we try to document the supply chain of peaches- an important stone fruit of which Uttarakhand is the highest producer in the country. The cultivation of peaches is limited to the hill districts of the state which lack market access in terms of distance from agricultural markets or *mandis*, absence of cold stores and lack of processing facilities. Given the perishable nature of the produce, the dominant marketing channel for the fruit is the traditional route in which farmers sell their harvest to the intermediaries who then sell the produce to other actors down the supply chain. We trace the supply chain by collecting the data on costs, revenue and profits from the important actors in the supply chain- the farmers, intermediaries and retailers. The first part of the thesis tries to document the marketing margin of the actors in this supply chain whereas the second part focuses on the spatial integration of agricultural markets in Uttarakhand.

The first essay focuses on the farmers in the supply chain. It studies the distribution of production costs and analyses the major heads of production in the supply chain of peaches. We collect data by interviewing 200 farmers from two blocks of Nainital district of Uttarakhand. We find that as compared to pre-harvest production costs, farmers have to incur a higher expense on the post-harvest marketing costs. Also, farmers earn profits from peach cultivation but these start becoming negative once implicit costs on land rent, labour and interest are accounted for. Farmers from our sample who lease their orchards suffer lesser loss as compared to the farmers who send their produce in the *mandis*.

In the second essay, we focus on the intermediaries who buy the produce from the farmers and sell it in the agricultural markets or *mandis*. By using purposive sampling from the data obtained from

the farmers, we interview 42 intermediaries operating in Haldwani *mandi* of Uttarakhand. We find that intermediaries earn a higher profit margin compared to the farmers and retailers. This is primarily because they charge a higher commission rate than the official rates. We also find that category A intermediaries have a higher profit margin as compared to the category B and C intermediaries. Social network plays an important role in determining the business relationship between farmers and intermediaries. Farmers mostly deal with intermediaries who hail from their village or caste. We also find that there is a severe dearth of alternate marketing channels for peaches. Some private players and agribusiness companies are operational in the area but farmers prefer not to deal with them due to issues like quality enforcement and non-bulk trading. Also, these alternate marketing channels themselves hire the services of the intermediaries for tasks like aggregation and grading, thus making disintermediation impossible in the supply chain.

The third essay focuses on the spatial integration of agricultural markets in Uttarakhand for apples, of which Uttarakhand is the third highest producer in the country. We conduct a time-series analysis using data from 2004-2021 for twelve *mandis* of six districts of Uttarakhand. We find evidence of spatial integration characterised by a slow transmission of price signals. We find that the lead *mandis* are the ones situated in the accessible regions, whereas the markets located in the hilly and relatively inaccessible areas of the state are the lag markets. Also, all *mandis* which are connected by eNAM have better spatial connection as compared to the others.

सार

2003 और 2013 की स्थिति आकलन सर्वेक्षण रिपोर्ट के आंकड़ों के अनुसार भारत में किसानों की आय में बहुत अधिक वृद्धि नहीं हुई है। किसानों की कम आय के लिए मांग और आपूर्ति दोनों पक्ष जिम्मेदार हैं। यह थीसिस किसानों की कम आय के लिए जिम्मेदार एक महत्वपूर्ण आपूर्ति-पक्ष कारक पर केंद्रित है- खराब बुनियादी ढांचे के कारण बाजारों तक पहुंच की कमी। यह मुद्दा उन क्षेत्रों में और अधिक विकट हो जाता है जो भौगोलिक रूप से चुनौतीपूर्ण हैं और जिनकी स्थलाकृति कठिन है, जिससे बुनियादी ढांचे के विकास में बाधाएं आती हैं। बाजार तक पहुंच की कमी न केवल बिचौलियों जैसे किराया चाहने वाले अभिनेताओं के लिए उच्च मार्जिन उत्पन्न करके आपूर्ति श्रृंखला में ऊर्ध्वाधर एकीकरण को बाधित करती है, बल्कि बाजारों के स्थानिक एकीकरण में भी बाधा उत्पन्न करती है।

इस शोध प्रबंध में, हम आड़ु की आपूर्ति श्रृंखला का दस्तावेजीकरण करने का प्रयास करते हैं- एक महत्वपूर्ण गुठलीदार फल जिसका उत्तराखंड देश में सबसे अधिक उत्पादक है। आड़ु की खेती राज्य के पहाड़ी जिलों तक सीमित है, जिनमें कृषि बाजारों या मंडियों से दूरी, कोल्ड स्टोर की अनुपस्थिति और प्रसंस्करण सुविधाओं की कमी के मामले में बाजार तक पहुंच की कमी है। उपज की शीघ्र खराब होने वाली प्रकृति को देखते हुए, फल के लिए प्रमुख विपणन चैनल पारंपरिक मार्ग है जिसमें किसान अपनी फसल बिचौलियों को बेचते हैं जो फिर उपज को आपूर्ति श्रृंखला में अन्य अभिनेताओं को बेचते हैं। हम आपूर्ति श्रृंखला में महत्वपूर्ण अभिनेताओं- किसानों, बिचौलियों और खुदरा विक्रेताओं से लागत, राजस्व और मुनाफे पर डेटा एकत्र करके आपूर्ति श्रृंखला का पता लगाते हैं।

थीसिस का पहला भाग इस आपूर्ति श्रृंखला में अभिनेताओं के विपणन मार्जिन का दस्तावेजीकरण करने का प्रयास करता है हमने उत्तराखंड के नैनीताल जिले के दो ब्लॉकों के 200 किसानों से साक्षात्कार करके डेटा एकत्र किया। हमने पाया कि फसल-पूर्व उत्पादन लागत की तुलना में, किसानों को फसल-उपरांत विपणन लागत पर अधिक खर्च करना पड़ता है। हमने पाया कि किसान आड़ु की खेती से लाभ कमाते हैं, लेकिन भूमि किराया, श्रम और ब्याज पर निहित लागतों को शामिल करने के बाद ये नकारात्मक होने लगते हैं। हमने पाया कि मध्यम भूमि वाले किसान जिन्हें उच्च परिवहन लागत वहन करनी पड़ती है, वे अपने छोटे और बड़े समकक्षों की तुलना में सबसे अधिक नकारात्मक लाभ कमाते हैं। हमने यह भी पाया कि हमारे नमूने के वे किसान जो फसल-उपज के मौसम में अपने बागों को अन्य (अधिकांशतः बड़े) किसानों को पट्टे पर देते हैं, उन्हें उन किसानों की तुलना में कम नुकसान होता है जो अपनी उपज मंडियों में भेजते हैं।

दूसरे निबंध में, हम उन बिचौलियों पर ध्यान केंद्रित करते हैं जो किसानों से उपज खरीदते हैं और इसे कृषि बाजारों या मंडियों में बेचते हैं। किसानों से प्राप्त आंकड़ों से उद्देश्यपूर्ण नमूनाकरण का उपयोग करके, हमने

उत्तराखंड की हल्द्वानी मंडी में काम करने वाले 42 बिचौलियों का साक्षात्कार किया। हम पाते हैं कि बिचौलिए किसानों और खुदरा विक्रेताओं की तुलना में अधिक लाभ मार्जिन कमाते हैं। इसका मुख्य कारण यह है कि वे आधिकारिक दरों से अधिक कमीशन दर लेते हैं। हम यह भी पाते हैं कि किसानों और बिचौलियों के बीच व्यावसायिक संबंधों को निर्धारित करने में सामाजिक नेटवर्क एक महत्वपूर्ण भूमिका निभाता है। किसान ज्यादातर उन बिचौलियों से निपटते हैं जो उनके गाँव या जाति से आते हैं। हम यह भी पाते हैं कि आडू के लिए वैकल्पिक विपणन चैनलों की भारी कमी है। कुछ निजी खिलाड़ी और कृषि व्यवसाय कंपनियाँ इस क्षेत्र में सक्रिय हैं, लेकिन किसान गुणवत्ता प्रवर्तन, गैर-थोक व्यापार और छोटे व्यापारियों के साथ सौदा करने की अनिच्छा जैसे मुद्दों के कारण उनके साथ सौदा नहीं करना पसंद करते हैं।

तीसरा निबंध उत्तराखंड में पहाड़ों में उगाए जाने वाले सेब के लिए कृषि बाजारों के स्थानिक एकीकरण पर केंद्रित है, जिसका उत्तराखंड देश में तीसरा सबसे बड़ा उत्पादक है। हम उत्तराखंड के छह जिलों की बारह मंडियों के लिए 2004-2021 के आंकड़ों का उपयोग करके एक समय-श्रृंखला विश्लेषण करते हैं। हम पाते हैं कि प्रमुख मंडियां सुलभ क्षेत्रों में स्थित हैं, जबकि राज्य के पहाड़ी और अपेक्षाकृत दुर्गम क्षेत्रों में स्थित बाजार पिछड़े बाजार हैं। साथ ही, सभी मंडियां जो ई-नाम से जुड़ी हैं, उनका अन्य की तुलना में बेहतर स्थानिक कनेक्शन है।

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