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DEVELOPING UTTARAKHAND'S LOCAL FOOD MARKET: THE PARTICIPATION OF WOMEN FARMERS

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Abstract

Rural production systems and sociocultural structures are changing in Uttarakhand due to excessive male migration. These women who are left behind have seen observable changes in their lives, such as job loads, household responsibilities, and the methods of earning a living. The scaling of agricultural sector in the state is now totally dependent on the efforts put in by the women farmers. The current study is an attempt to bridge the gap between the current status of women farmers in the state and the challenges needed to be addressed for efficient local crop cultivation. Two villages from the Uttarkashi district were studied using a case-control design. The data collection method used was a quantitative approach, involving 80 women who responded to household surveys. Secondary data was also used to assess the current situation of local food farming in the state of Uttarakhand. The findings of the study reflected through the investigation of socio demographic standing of women farmers in the state, illustrated the lack of resources and unfair trade practices by traders in agro markets during the monsoon season. Whereas secondary data revealed uneven distribution of cold storage units among various districts of Uttarakhand.

Keywords: Local food, Women farmers, Marketing systems, Migration, Organic food

Introduction

Most of the agrarian nations have recently begun shifting away from traditional agricultural methods. In countries such as China and India, the proportion of the people involved in agriculture has decreased from more than 60% in 2014 to less than 45% in 2019 (World Bank, 2019). This transformation has reflected in transformations in the socioeconomic existing power dynamics of landowners, sharecroppers, local farmers, and peasant farmers (Phondani *et al.*, 2020). Amongst the most prominent manifestations of this phenomena in India may be found in the rural livelihoods of Uttarakhand. Agricultural production has plummeted in the region that was formerly capable of producing for both sustenance and surpluses (Naudiyal, Arunachalam and Kumar, 2019). The contribution of the primary sector, which comprises agriculture and associated services in the province, has decreased from 16 percent in 2011-2012 to around 10 percent in 2018-19 (*Agriculture Department, Government Of Uttarakhand, India*, 22).

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Out-migration of households and families in Uttarakhand has been primarily driven by declining agricultural productivity and the lack of interest on the part of educated youth to engage in agriculture. The population drop in the hill areas is mirrored by a substantial growth in the plain regions.

In this fragile situation, the women of the homes play a critical role. In the absence of men at the source sites and limited livelihood options, it is these women who work at the fields to meet basic daily needs. Their skill and capability to deal with the vagaries and fragility of hill areas are determined by the resources they have along with the supporting conditions that allow them to utilise those resources. It can be understood by the fact that women account for 30.33 percent of all cultivators and 40.67 percent of agricultural labour in the country (Department of Agriculture, 2021).

Parallelly the local food of the state holds its own importance, The local ingredients are not only organic and rich in fibre content (Maikhuri, 2016) but have a therapeutic value as well. The primary meteorological seasons include extreme cold in the winter, feasible climatic conditions in the summertime, and torrential rain in the monsoon season. Because water vapour persists in the air all year, there is no requirement for irrigation in hill areas. Among many crops primary growns of the state are millets including mandua (ragi), jwar, bajra, maize, ramdana, wheat, barley, ray, sarson (mustered), pea, gram, and masur. etc. The possibilities of culinary tourism in Uttarakhand are vast, but it's yet to mark out a specific niche on the world culinary map due to many reasons

The current study thus aims to look into the role of women farmers in development of local food market in the state of Uttarakhand. The study included 120 women across the district of Uttarkashi (largest district of the state), which mostly consisted of women farmers who lived in families with migrant individuals. Through a structured questionnaire the study not only investigates the key variables that impact the lifestyle of the women farmers but also addresses operational and managerial constraints faced by them during the process.

Literature review

Rural areas of Uttarakhand are primarily agricultural communities, and agriculture has always been an important element of the native's subsistence. While the phenomenon of women farmers is not new to India as still Seventy -five percent of farm workers in India are female, and they contribute 60 to 80 percent of the total agricultural yield of the country.(*Women Empowerment - Female Farmers are Revolutionizing Agriculture in India| Oxfam India*, 2018). According to estimates, 80 percent of all financially involved female in India work in agricultural sector; they constitute 33 percent of the agrarian labour force and 48 percent of them are farmers on their own land (Gender Vulnerability Index, 2017). There has been a "feminization" of the agriculture sector as a result of men migrating from rural to urban areas, with women taking on multiple roles as farmers, entrepreneurs, and farm labourers (Economic Survey, 2018). Despite having a GVI score of 0.576, which is higher than the country average rating of 0.53, Uttarakhand has been surpassed by larger states such as Punjab, Karnataka, Kerala, Andhra Pradesh, and Tamil Nadu.

While 70 percent of the women involved in farming come from migrant households in the country. As per the 2011 Uttarakhand census, 64 percent of women worked as farmers, while 8.84 percent worked as agrarian labourers. However, only 28.82 percent of males classed as farmers, with 11.23 percent as farm labour. Uttarakhand, located amongst Asia's most

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disaster-prone areas, is vulnerable to tremors, floods, and landslides, which frequently grab news. Water erosion and collapses significantly impact towards soil loss, leading in a decrease in arable land viability. Furthermore, climate change also has a substantial impact on hill-residing populations. Farming has historically been the domain of women in Uttarakhand. In reality, it was women who led the famed Chipko movement in the 1970s to oppose widespread deforestation which imperilled the state's natural balance(Shiva and Bandyopadhyay, 1986). Women have traditionally been effective farm hands in Uttarakhand, but in the last decade or two, most of them have overtaken crop cultivation across the nation, a trend known as the feminization of farming.

The current study is an attempt to understand the factors that affect the production scale of local crops of Uttarakhand which as per the literature review is mostly dependent upon the cultivation skills of women farmers. With the help of a comprehensive survey, the study not only aims to understand the socio –demography of the women farmers, but also analyses their performance on the basis of technological implementation and political awareness, which is much needed for any industry to scale as a cooperative.

Figure 1: Uttarkashi district on Uttarakhand Map

The research site

Uttarkashi, in the upper Himalayas, has a diverse range of geographical ecosystems, from snow-free ravines to high mountain peaks with permanent glaciers and snow. Ridges and valleys dominate the landscape (Fig 1). Due to the large volume of boulders and gravels

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outcropping in these areas, the land in these areas is now fertile. The valley is a stream bed formed of alluvial soil. Numerous constraints impede agriculture in these areas. The availability of cultivable land itself is the greatest restricting factor on the development of agriculture. Eighty-eight percent of the area is left in its natural state, either covered with forests or unable to grow crops. Terraces are built on the slopes of hillsides in these areas to cultivate crops. Red paddy, ragi, and potatoes are the primary Kharif crops while barley and wheat are the main crops from the Rabi season. While around 80 percent of total cultivated land is dedicated to these crops (*Uttarkashi | District Administration of Uttarkashi | India,* 26 Feb,22).

Local food market

An efficient agricultural market system is supposed to benefit both producers and consumers. Because of this, marketing is vital to the agricultural market. The nation's agricultural promotional strategy is currently characterised by a complex distribution chain controlled by several market actors, resulting in large wastages and significantly impacting efficient promotion of local products (Priyadarshini and Abhilash, 2020). It should be noted that the overall preventive (postharvest) wastage of food crops in India equate to 16 million tons every year, a quantity which as per World Bank estimates might feed three-quarters of India's underfed (Bhanot, Kathuria and Das, 2021). Regulatory constraints have limited investments in upgrading storage and distribution systems that has impeded the formation of competent market institutions, and reduced agricultural businesses' ability to compete on a global scale (Sanga *et al.*, 2021). The unique geographic features of Uttarakhand are meandering terrain, distant and inaccessible settlements, sparse demographics, limited land ownership, farming, and inadequate infrastructure. Resources in the inner parts of this fragile region cannot be properly utilized due to topographical, infrastructure, and environmental constraints(Mishra *et al.*, 2022).

The growth of the mountains is essentially tied to the development of agriculture and associated activities, since the nation's hilly territory has huge potential for growing various significant and rare goods(Chandra and Kumar, 2021). Due to the lack of proper infrastructure, such as grading and packing mechanization, efficient transportation/connection, markets, and cool chains, large marketable surplus generated by farmers is consumed outside the state, further contributing to losses(George K, Kumar and Hole, 2021). 27 weekly agricultural produce markets besides 26 main market yards and 31 submarket yards are located in the state. However , only 11 of the 13 districts in the province have a marketing regulation in place, not only does the province lack a substantial number of authorized marketplaces, but also fails in adequate amenities in these markets (Joshi *et al.*, 2016). Despite the fact that the state is listed as a hill state, the markets are not practically operating in the hills

The Purpose of the Study

Previous literature mainly concentrated on "feminisation of agriculture" and ignored the various roles that women play, as well as the challenges and opportunities that out -migration brings into their life. Farming in today's world comes with many upgradation and challenges, which is much needed for an efficient production cycle. The comparison between the current status of women farmers in the province and the existing demand for local crops in the

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Table - 1 Primary Markets, Sub-Markets and Weekly Markets

SNo	Districts	Primary Markets	Submarkets	Weekly Markets
1	**Nainital**	1-Haldwani	Mukhani, LamaChod, Lalkuwaon, Bhowali, Kaladungi	Kaladungi
2	**Udham Singh Nagar**	2-Ramnagar	Shankarpur, Peerumadara	Halduwa,Peerumadara,Shankarpur
		3-Rudrapur	Bhurarani,Bhamraula,Bagwala,Bhainsiya	
		4-Kashipur		Pratappur
		5-Jaspur		Kunda,KundeshwariMahuwakheda
		6-Sitarganj	Bhudiya	Shaktifarm
		7-Nanakmatta		
		8-Khatima	-	Satarahmil
		9-Kichha	-	2-MelaGhat
		10-Gadarpur	Chandayan	Dineshpur,Gularbhoj,Gadarpur
		11-Bazpur	Sultanpur Patti,Kilakheda	Kilakheda,Sultanpur Patti
3	**Champawat**	12-Tanakpur	Banbasa,Champawat, Lohaghat	
		13-Dehradun	Doiwala,Mussorrie	Selkuyi
4	**Dehradun**	14-Vikashnagar		Raiwala,Chhidarwala,I.D.P.L.
		15-Chakrata	1-Sahiya	Rani Pokhari,Baniyawala,Shyampur
		16-Rishikesh	-	1-Ganganagar
		17-Manglore	Jhabreda ,Narsan	
		18-Lakshar	Landora, Rayasi ,Govardhanpur ,Bheekampur	-
5	**Haridwar**	19-Haridwar Union	1-Bahadarabad	Bahadarabad ,Shahpur
		20-Roorkee	1-Bhagwanpur	
		21-Bhagwanpur		
6	**Paudi**	22-Kotdwar	1-Dugadda	
7	**Chamoli**	23-Karanprayag		
8	**Uttarkashi**	24-Uttarkashi	Not Functional	Not Functional
9	**Tehri Garhwal**	25 -Tehri Garhwal	Not Functional	Not Functional
10	**Almora**	26-Almora	Not Functional	Not Functional
11	**Pithoragarh**	27-Pithoragarh	Not Functional	Not Functional

Source: Uttarakhand Agricultural Marketing Board

market, gives rise to the research problem for this study.

The study thus aims to bridge the gap between the social dynamics of women farmers in the region and the modern-day farming requirements. Therefore, to assess the real problem the current study aims to fulfil the following objectives:

- To examine the socio-economic status of the women farmers in the Uttarkashi district of Uttarakhand.
- To examine the local awareness and the modern technology of the women farmers

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- To identify the asset holding of women in terms of Infrastructure and Tools and equipment for land development.
- To identify the current marketing constraints faced by women farmers

Methodology

Since out-migration is a widespread phenomenon in most of the places in hills, the villages as research site were chosen to meet the aforementioned research objectives and to gain a holistic perspective of the research problem. The study took the aid of both primary and secondary data to comprehend the findings. Primary data was basically used to understand women farmers' perspective while secondary data actually helped in knowing the current local food market situation in the state.

For the primary survey, data collection took place over a period of three months using a purposive sample technique. 120 women between 20 and 50 years of age were the key respondents for the study. Several male household members were also interviewed (when available), as well as "Village Pradhans" and technical support staff (helping women), implementing livelihood programs in these areas.

Collection of Data

Secondary Data: A thorough examination of census statistics, economic reports, AGMARKNET, the Uttarakhand Agricultural Marketing Board (UKAPMB), state-wide level reports, and published literature from Uttarakhand village and hill regions was conducted.

Primary Data: To obtain accurate data from the respondents, a mixed approach was adopted. A variety of tools, including a comprehensive survey questionnaire and concentrated discussions, were applied.

Data analysis

The tools and strategies specified for data gathering were used to gain a better and more detailed picture of the focused objectives. To verify the accuracy of the data gathered, the comments were revised and reviewed on a regular basis. Based on the collected data and statistics, the following analyses were conducted:

Imperial Analysis: Questionnaires were assessed by Stata 17 software to extract pertinent information.

Information on the visual: All sensory data, comprising maps, timelines, field observations, comments, and was evaluated. Pie charts and graphs were used to show the obtained data in a more understandable manner.

Results and Discussion

Research was conducted in the Uttarkashi district of Uttarakhand. The district's population density is 189 people per square kilometre. This section presents the results of the primary data conducted on 120 women farmers. The survey instrument as discussed earlier focused primarily on challenges that women face regarding local food production.

As per the results Fig 2, the most potential age group of women farmers working in the cultivation of local crops range between 35 -40 years. The main reason behind that might be

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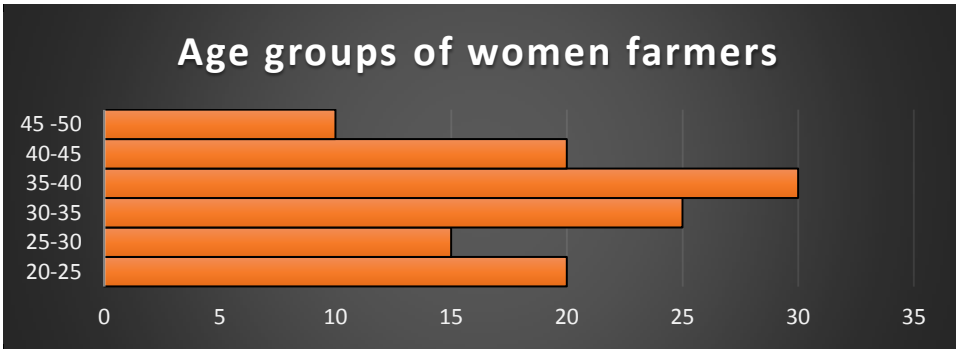
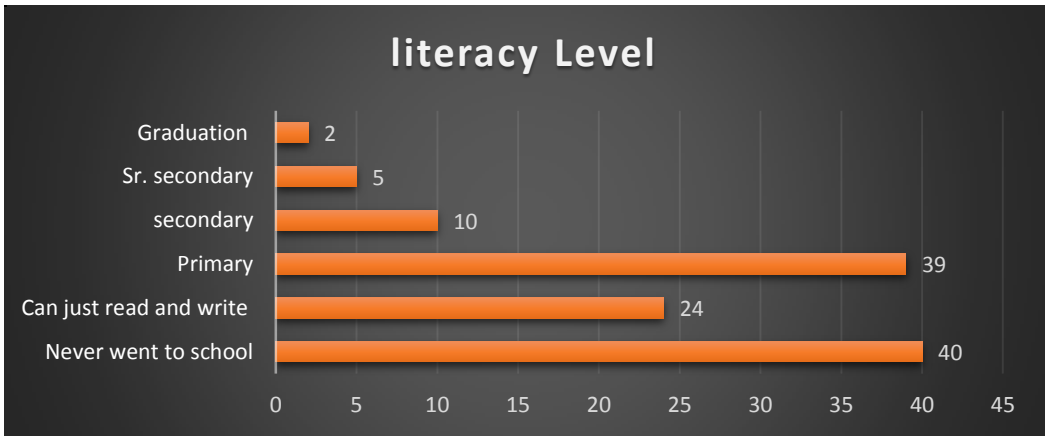
Figure 2 Age groups of women



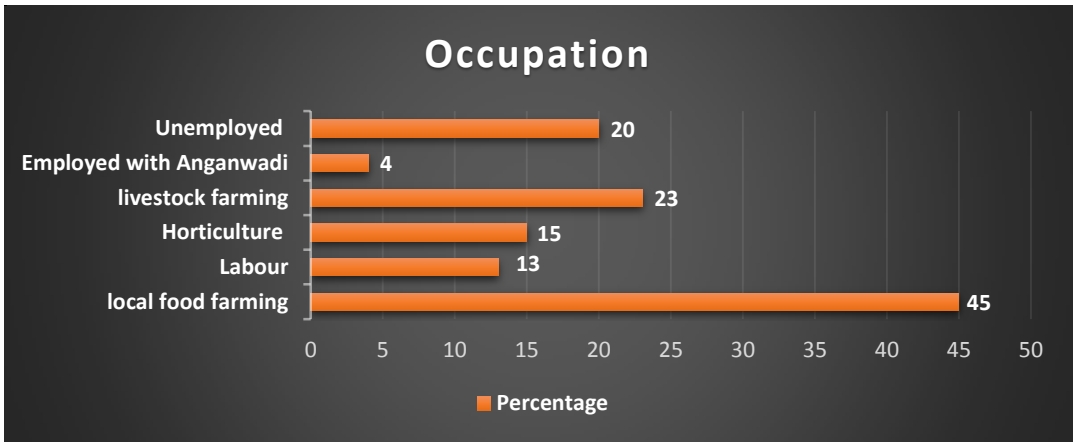
the age group where most of the females have kids that can take care of themselves now and relieve their mother to earn some revenue from the fields. The level of literacy in the province came out as per the expectations with more 50 percent of the women farmers who had no exposure to formal studies ,followed by 30 percent women with primary education (Fig 3).

Figure 3 Literacy level of women farmers



The primary occupation of the women farmers in the region is still local food farming, followed by livestock farming. The primary reason is the experience and comfortability in farmers that has been travelled from generations among people in terms of local food cultivation (Fig.4).

Figure 4 : Occupation distribution of women farmers



Results of socio demographic factors concludes with assessment of primary source of income, which actually sheds light on the seriousness of local food cultivation in the state ,as

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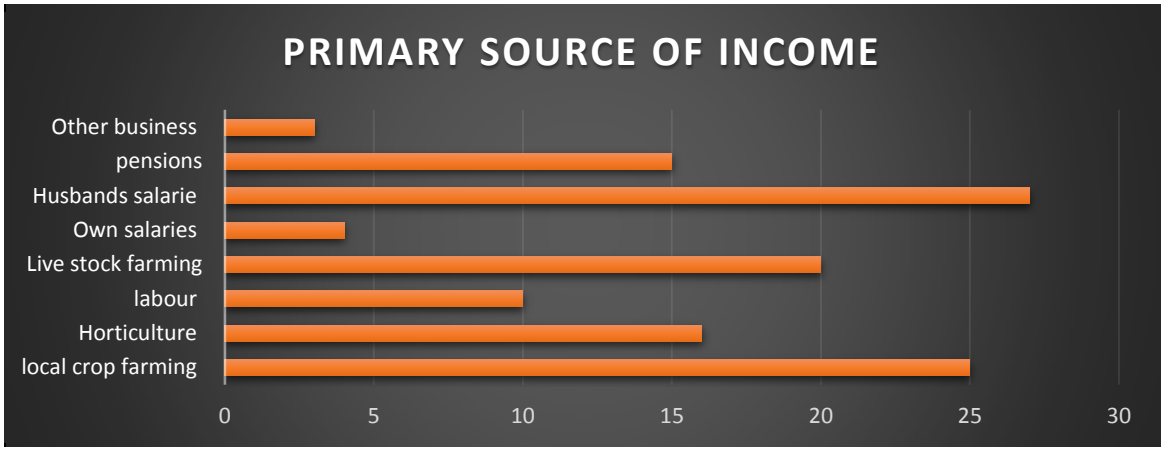
still majority of women in hills are dependent on their husbands income for daily livelihood . Local food cultivation emerges as second source of income for women farmers in the hills followed by livestock farming (Fig 5).

Figure 5: Primary Source of Income



Moreover, any investigation on socio demographics cannot be completed without the assessment of asset holdings and social awareness. Although women farmers are way ahead in numbers as compared to men farmers in the state, unfortunately the asset holdings on their name is below 25% when it comes to land and other Properties (Fig 6). In other words, we can say that women till today is only sharing labour on the fields without any equity share.

Figure 6: Asset holdings

Similarly, any sector which is related to production cannot scale until and unless it is in sync with the latest technology and relevant information, especially in the hill areas where many government policies are focused to uplift the local industries. Hence when asked about the awareness of prevailing govt. policies in the state around 60 % of the women had no idea. In addition the bulk of respondents even struggled to identify the ruling party in the state (Fig 7).

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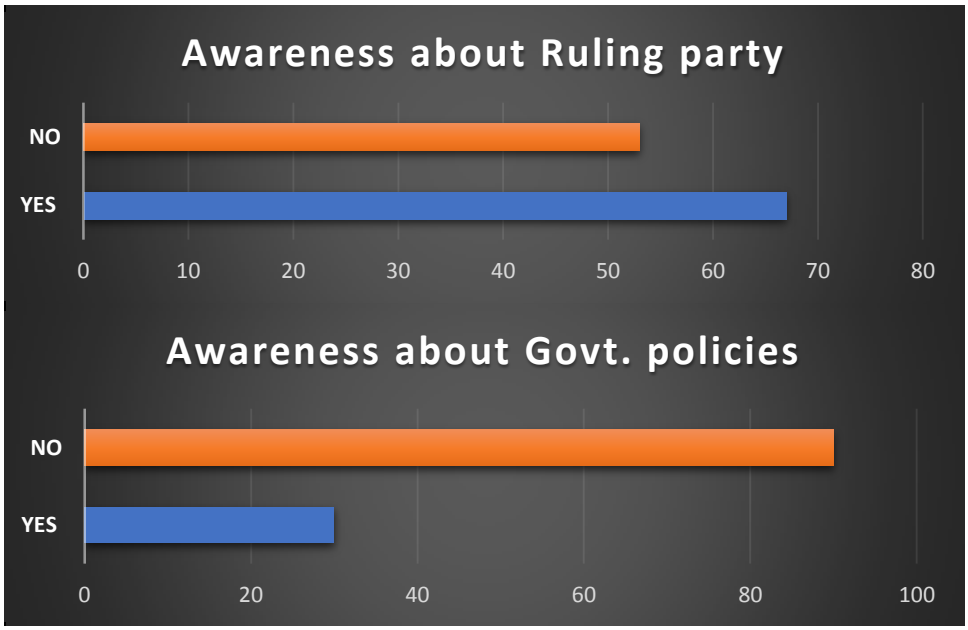
Figure 7 : Awareness about Government Policies and Ruling party



After a detailed profile assessment of women farmers, the study also looks into the constraints and challenges that are needed to be addressed. As the purpose of the study is not only to highlight the short comings of farmers but also to expose the problems faced by farmers related to proper supply and production process. Table 2 portrays the current status of required infrastructure for local food marketing. While there has been a considerable improvement in terms of metalled road and transportation facilities, the state still lacks in terms of cold storage. There are total of 17 cold storages in the state out of which very few are located in hills and mostly in plain regions.

Table 2: Status of infrastructure

Basic Infrastructure for local food Marketing	**Availability (%)**	**Average Distance (km)**
Road accessibility		
Unmetalled road	5	2
Metalled road	70	1.7
Transportation Services		
Public Transportation	71	19
Private Vehicle	29	
Accreditation and storing		
Cold Storage Facility	1	3
Quality Certification	3	3.5

Further in the study, key constraints are investigated (Table 3); through a comprehensive survey farmers expressed their issues, regarding scaling local food products. As discussed previously the results found that there is still lack of modern storage units in the state. Another important finding of the survey was concerned with updated market rates and availability of space for selling and auction purposes.

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Table 3: Primary constraints and challenges

key restrictions	Farmer's response (%)
Inadequate knowledge concerning market rates and marketing expenses	44
Science-based storage is lacking at the farm level	88
Produce cannot be auctioned or sold because there is no space	32
Insufficient transportation facilities	26
Market traders engage in exploitative practices	27
Traders fail to pay on time	14
Trader's weighing malpractices	18
Traders charging exorbitant fees	14

Conclusion & Recommendation

To address issues of gender inequality and promoting women's empowerment, ICAR calls women the backbone of the Indian economy. While highlighting women's contributions to agribusiness, the members of the government mentioned numerous policies and mechanisms to support women in the agricultural community. The current study is an attempt to address similar issues. The investigation is actually an eye opener and addresses several issues. In this regard, women's education is vital. Despite putting in more efforts in farming, they ultimately rely on their spouses, fathers, brothers, or sons to acquire legal privileges on holdings and avoid the needed paperwork. Due to the absence of legal titles; Uttarakhand women are unable to access facilities like crop insurance despite shouldering the bulk of the farm work. Farmers are almost exclusively male, even though the word is gender neutral. We want to acknowledge that women are farmers as well. Likewise, property rights must be better utilized by more and more women in the state. At the grassroots level, where agricultural livelihoods dominate, there's an urgent need to create opportunities for women.

For this, policies which empower women to improve their agricultural skills and knowledge would be beneficial. Young farmers in Uttarakhand are experimenting with agro - based technology, but they are impeded by a complete absence of appreciation and monetary support for female farmers are also needed to be motivated

Moreover. Agricultural markets and their efficient operation are crucial to the agricultural sector, which are intended to benefit both and consumers and producers. According to the current study in 11 districts of Uttarakhand, there are 26 primary market yards, 31 submarkets, with 27 weekly markets which are efficaciously governed. Nevertheless, most of the districts in Uttarakhand are situated in high hill regions, whereas the primary markets are mostly in plain areas. Farmers' perceptions indicate that they are pleased with the boarding, weighing, grading and hygiene. However, Farmers in the state have expressed their disappointment with the limited storage facilities.

Thus Because of the state's difficult terrain and the growers' limited bargaining and handling capacity due to smaller holding sizes and a lack of resources, it is obvious that the hilly

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regions of the state require special attention in terms of marketing interventions and infrastructure.

Implications and Limitations of the study

The study has various managerial Implications

- The study gives an inside to marketers and policy makers to frame policies centric to women farmers.
- The study also highlights the issues of illiteracy, lack of awareness and other vital issues related to women empowerment in the state
- The study gives an opportunity to the decision makers to encourage women farmers and increase the productivity of local food.
- Issues related to infrastructure, storage and modern technology can be planned and executed in the state, to bridge the gap of demand and supply.

Limitations for the study are as follows

- Initially, communicating with some of the villagers was challenging since they were afraid of losing their land and other financial benefits
- Since the study was conducted between February - March. Cold weather impacted data collection frequently.
- The study was limited to one district and a small sample size of 120 respondents. The study has a scope to collect data from all the 13 districts of the state for more viable results.

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