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Training Needs of Hortipreneurs in Value Addition and fruit crop production in Kumaon Hills of Uttarakhand

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ABSTRACT: Media driven mass awareness about health and healthy lifestyles has generated peoples' concern for balanced diet and nutritional aspects of daily intake. Consequently, the demand and consumption of fruits has gone up significantly across the entire social spectrum in India, thereby opening up new avenues for entrepreneurship in Horticulture sector. The state of Uttarakhand, nestled in the lap of the Himalayas, boasts a rich agricultural heritage and diverse agro-climatic conditions conducive to the cultivation of a wide array of fruits. With its unique topography and favourable climatic conditions, Uttarakhand holds immense potential for horticultural enterprises, particularly in fruit crop production. However, while the region offers abundant opportunities, hortipreneurs in Uttarakhand face numerous challenges. In this context, understanding the training needs of hortipreneurs in value addition and fruit crop production is paramount to unlocking the full potential of the horticultural sector in Uttarakhand. The present study was carried out with the objective of determining Training Needs of Hortipreneurs in Uttarakhand. Two districts (Nainital and Almora) were purposively selected in Kumaon division of Uttarakhand. The study sample comprised of 70 farmers, 35 each from one district, selected by snowball sampling method. Data was collected using a structured interview schedule. Borisch method of training needs assessment was utilised to identify the training needs of respondents. Results showed that respondents expressed training needs in the areas of value addition and processing. Besides, training need was observed in preservation and extended shelf life, essential oil extraction. Additionally, in fruit crop based enterprises, maximum training need was reported in the Micro Irrigation Techniques in orchards followed by Orchard Establishment and Management, Quality Planting Material, Plant Propagation techniques and Pre-harvest & Post-harvest Management. These findings could provide useful insights for policy formulation as well as promotion of Hortipreneurship in Uttarakhand

Key words: Fruits and vegetables, Hortipreneurs, hills, horticultural products, processing and value addition, training needs

India witnesses 4.58 to 15.88 per cent wastage in fruits and vegetables thus, opportunity lies in investing in initiatives that help reducing wastage levels including infrastructure (Pandey, 2021). The sector is promising to build resources and mobilize the local resources for development of the community or the region. (Pant *et. al.*, 2023) Value addition and processing of fruits and vegetables has the potential to leverage both the capital as well as the labour of the country. It creates better remuneration to the grower, reduces the price-spread and provides quality food products to the consumers (Hassan *et. al.*, 2021).

Horticulture in hilly regions is of great importance, not only for economic development but also environmental restoration. Horticulture has been there for centuries in the entire Himalayan Mountain chain, from Jammu & Kashmir to Uttarakhand. (Pant

and Kandpal, 2023). The horticulture sector contributes to nutrition security and serves as a reliable source of income generation. Horticulture crops are cultivated on marginal fragmented lands that are unsuitable for other demanding crops. The state has a unique advantage of producing off-season vegetables and fruits in hilly areas, which command good prices in the market (State Horticulture Mission, 2022). As a result, the region has a wide range of fruits (Papola, 1996). The sector plays a unique role in the Kumaon region's economy by improving rural people's income, land productivity, besides generating employment. The income of farmers and aspiring entrepreneurs is significantly boosted by earnings from different horticulture products and their value addition. Potato, ginger, and out-of-season fruits and vegetables are also significant economic crops in the state. (Kandpal and Pant, 2023). Although growing off-season,

exotic, and organic vegetables with their value addition and processing have a lot of promise, the state is hindered by the current circumstances. Therefore, the majority of producers are classified as having a medium to low socioeconomic position.

Technological interventions, necessary skills and knowledge often fail to reach the general population, limiting their ability to fully exploit the sector's opportunities. Within the horticulture sector, enterprises suffer from oversupply; and direct marketing channels are yet to be well established. Despite the vast potential and opportunities in the field, established industries remain limited. Inadequate support infrastructure and a lack of skilled training for aspiring entrepreneurs result in underperformance and sometimes outright failures. These factors raise concerns about the sustainability of hortipreneurs and their ventures, despite the high demand for horticultural products. There is an emerging need to identify and understand the training requirements of hortipreneurs in order to enhance their skills and productivity in the region, which would further promote employment generation and sectoral development especially in the field of value addition and processing of horticulture products.

According to Ansari and Sunetha (2014), access to accurate, timely and reliable information plays a crucial role in the adoption of appropriate agriculture technology. However, several marketing and production constraints negatively impact on successful entrepreneurial ventures in Uttarakhand (Shah and Ansari, 2020). Further, as regards major areas for training, as reported by fruits and vegetable growers in Uttarakhand, included lack of value addition and processing facilities (Rawal and Ansari, 2019). Besides, lack of access to extension advisory services is also mentioned as another deterrent.

Farmers' attitude towards extension services is a crucial factor in technology adoption (Jantwal and Ansari, 2019). A positive attitude towards extension services reflects farmers' propensity to acquire new and latest knowledge about agriculture technology. This may be reflected in farmers expressing their training needs.

In this context, the present study was carried out to determine the training needs of hortipreneurs in value addition and processing and fruit crop production enterprise situated in Kumaon hills of Uttarakhand. This study helps to identify the training needs in knowledge and performance dimension of these hortipreneurs. The identified needs can further help the concerning authorities in implementing fruitful training programmes and policies for their future development.

MATERIALS AND METHODS

Descriptive research design was used for the study of objectives. The study was purposively carried out in Nainital and Almora district in Kumaon division of Uttarakhand in the year 2022-23. A total of 70 respondents were selected by using snowball sampling method. The interview schedule was divided accordingly to the selected objectives. The questions asked were both open- and close- ended. Modifications were done afterwards accordingly to the requirements of the study and respondents. The data was arranged, classified and tabulated for further analysis in accordance with study objectives. A semi-structured interview schedule was used and Borich method of training needs assessment was utilised to identify the training needs of respondents. The training needs of hortipreneurs were measured under knowledge and performance dimensions. "Knowledge discrepancy" scores and "Performance discrepancy" scores were determined and multiplying the result by the average perceived importance score of all respondents provided the Weighted Discrepancy Scores (WDS) which was then utilized for calculating the Mean Weighted Discrepancy Score (MWDS).

RESULTS AND DISCUSSION

Training needs of Hortipreneurs in Value Addition and Processing as enterprise

Borich (1980) model of training need assessment was used for finding out the training needs of hortipreneurs in various selected horticulture enterprises. The off-season vegetable and fruit cultivation has great importance among the farmers

of hills in Uttarakhand state followed by the interest in cultivation of exotic varieties of vegetables and fruits. The training needs of hortipreneurs were measured in different horticultural enterprises including value addition and processing. Table 1 presents the results obtained related to training needs of hortipreneurs in value addition and processing as enterprise. The sector of value addition holds much importance not only for fruit growers but also for the vegetable producers. The criteria of preservation and drying can add to the income of hortipreneurs with their value addition, leading to an upper hand against the most common faced problem of distress sale. It holds the potential of diversifying the market and selling opportunities among the consumers.

In major area of value addition and processing, maximum training need in knowledge dimension was observed in preservation and extended shelf life, essential oil extraction followed by TSS analysis and quality measurement, new methods and innovations in processing (MWDS=2.87), types of preservation and dehydration techniques, selection of Quality Raw Material, unit operation and methods of processing, packaging and labelling, principles of horticultural crop preservation.

In terms of performance dimension, it was found that maximum training need was found in new methods and innovations in processing followed by essential oil extraction, TSS analysis and quality

measurement, preservation and extended shelf life, unit operation and methods of processing, types of preservation and dehydration techniques, selection of quality raw material, packaging and labelling, along with the principles of horticultural crop preservation.

Training needs of Hortipreneurs in Fruit Crop Production as enterprise

Table 2 depicts about the training needs of hortipreneurs in fruit production enterprise. As regarding major area of fruit production, maximum training need in knowledge dimension was observed in Micro Irrigation Techniques in orchards (MWDS=4.88) followed by Value Addition & Processing (MWDS=3.90), IPDM (MWDS=3.80), Pre-harvest & Post Harvest Management (MWDS=3.60), Quality Planting Material (MWDS=1.59), Orchard Establishment and Management (MWDS=1.49) and Plant Propagation techniques (MWDS=1.02).

In terms of performance dimension, it was found that maximum training need was required in Micro Irrigation Techniques in orchards (MWDS=4.88) followed by Value Addition & Processing (MWDS=4.11), IPDM (MWDS=3.80), Orchard Establishment and Management (MWDS=3.14), Quality Planting Material (MWDS=2.82), Plant Propagation techniques (MWDS=2.16) and Pre-

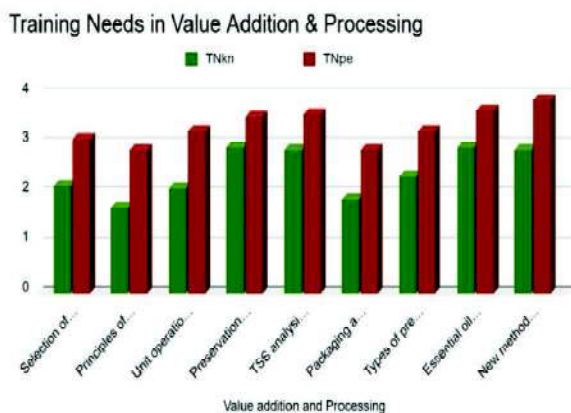


Fig. 1: Distribution of respondents on the basis of Value addition and processing as an enterprise

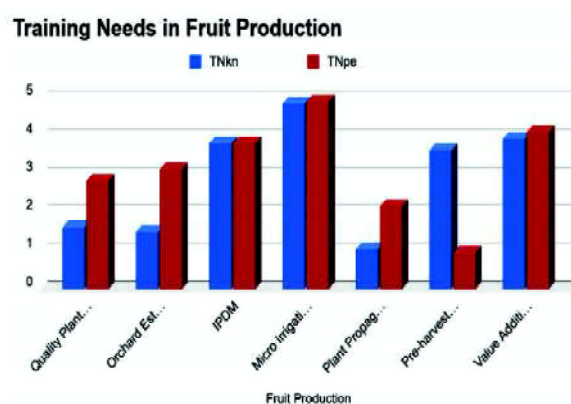


Fig. 2: Distribution of respondents on the basis of training needs in fruit production

Table 1: Distribution of respondents on the basis of training needs in value addition & processing

S. No.	Value addition and Processing	Perceived Importance (IN)					Extent of Knowledge (KN)					Ability to Perform (PE)					TNkn (WDS)	TNpe (WDS)	TNkn (MWDS)	TNpe Rank MWDS		
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5						
1.	Selection of Quality Raw Material	21	9	4	8	28	21	12	21	15	1	30	13	14	12	1	149.8	215.71	2.14	IV	3.08	VI
2.	Principles of horticultural crop preservation	22	9	9	10	20	25	12	16	15	2	33	16	11	8	2	119.84	200.53	1.71	VII	2.864	VIII
3.	Unit operation and methods of processing	22	9	9	9	21	25	17	13	14	1	35	15	14	5	1	146.8	227.7	2.097	V	3.25	V
4.	Preservation and extended shelf life	23	8	4	9	26	25	13	18	13	1	28	25	13	3	1	203.72	248.69	2.91	I	3.55	IV
5.	TSS analysis and quality measurement	24	8	10	13	15	30	25	11	3	1	43	16	7	3	1	200.73	251.65	2.87	II	3.59	III
6.	Packaging and labelling	23	8	8	12	19	25	13	19	11	2	31	16	17	5	1	131.82	200.73	1.88	VI	2.867	VII
7.	Types of preservation and dehydration techniques	23	8	6	10	23	25	16	17	11	1	34	13	17	5	1	164.78	227.67	2.35	III	3.25	V
8.	Essential oil extraction.	23	10	7	11	19	32	18	14	5	1	41	18	5	5	1	203.72	257.66	2.91	I	3.68	II
9.	New methods and innovations in processing	23	8	6	7	26	27	14	24	4	1	33	26	6	4	1	200.73	272.63	2.87	II	3.89	I

Table 2: Distribution of respondents on the basis of training needs in fruit production

S. No.	Fruit Production	Perceived Importance (IN)					Extent of Knowledge (KN)					Ability to Perform (PE)					TNkn (WDS)	TNpe (WDS)	TNkn Rank (MWDS)	TNpe Rank MWDS		
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5						
1.	Quality Planting Material	4	18	7	9	32	16	8	9	18	19	20	6	16	18	10	111.6	198	1.594	V	2.82	V
2.	Orchard Establishment and Management	5	16	6	11	32	16	8	8	16	22	20	7	16	19	8	104.4	219.6	1.491	VI	3.137	IV
3.	IPDM	6	16	5	6	37	17	9	25	17	2	24	19	17	6	4	266.4	266.4	3.8	III	3.8	III
4.	Micro Irrigation Techniques in orchards	4	6	17	6	37	16	12	29	10	3	17	25	6	14	8	338.4	342	4.834	I	4.88	I
5.	Plant Propagation techniques	4	15	11	3	37	17	4	6	14	29	17	8	11	14	20	72	151.2	1.02	VII	2.16	VI
6.	Pre-harvest & Post Harvest Management	10	21	11	16	12	28	4	8	17	13	17	14	13	23	3	252	64.8	3.6	IV	0.92	VII
7.	Value Addition & Processing	7	10	19	15	19	27	16	11	9	7	19	22	22	5	2	273.6	288	3.9	II	4.11	II

harvest & Post Harvest Management (MWDS=0.92).

CONCLUSION

Uttarakhand, by every means, holds great potential and capability to satisfy the rising demands and needs in the horticulture sector. Horticulture crops make use of marginal, fragmented areas that might otherwise be unsuitable for more demanding crops. The scope of production of off-season horticultural crops holds a great potential to boost the rural income. In addition, the growing concern of farmers' migration with climate mediated risks could be solved through the promotion of protected cultivation of vegetables and flowers and promoting their value addition and processing. As a result, it has a high potential for creating jobs through a variety of successful ventures as well as through linked horticultural processing facilities. Earnings of various horticultural products, with their added value, will significantly contribute to farmers' and aspiring entrepreneurs' revenue. The present study was to identify training needs of hortipreneurs in the study area which indicated a gap in hortipreneurs know-how and actual information that needs to be addressed at the earliest. Based on the outcomes of the study, several effective trainings having scientific utility could be organised for people for empowering the rural mass with adequate information and skills. The study findings would also help the extension agencies and policy makers to plan and design various educational activities and training programmes at a larger scale for different segments of the region.

Moreover, hortipreneurs must navigate the complexities of market trends, consumer preferences, and regulatory frameworks to effectively position their value-added products and capitalize on emerging opportunities. This necessitates competencies in market research, branding, distribution channels, and compliance with food safety standards to ensure market competitiveness and consumer trust. Furthermore, the integration of technology emerges as a transformative enabler for hortipreneurs, offering

tools and innovations for precision agriculture, automation, data analytics, and product development. Training initiatives should thus incorporate digital literacy and technology adoption strategies to empower hortipreneurs with the requisite digital skills and technological fluency to leverage these advancements for enhanced productivity and competitiveness. Beyond technical competencies, hortipreneurs must cultivate entrepreneurial skills encompassing strategic planning, financial management, risk assessment, and networking to foster resilience, innovation, and long-term sustainability in the face of market uncertainties and environmental challenges.

Addressing these training needs necessitates a holistic approach encompassing formal education, vocational training, experiential learning, mentorship programs, and access to resources and infrastructure. Collaborative efforts involving government agencies, educational institutions, research organizations, industry associations, and development agencies are essential for designing and delivering comprehensive training interventions tailored to the diverse needs and contexts of hortipreneurs.

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