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An analysis of livelihood security dimensions of pomegranate growers under National Horticulture Mission (NHM) in Karnataka

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Abstract

The present study was conducted to analyze the various dimensions contributing on better Livelihood Security of pomegranate growers under National Horticulture Mission (NHM). In case of statement wise food security level of pomegranate growers towards NHM programmes the statements like 'Quantity of the food items out of NHM benefits consumed by the household members was insufficient for physiological needs' stands Rank 1. In case of statement wise economic security level of overall pomegranate growers towards NHM programmes the statements like 'My NHM based orchard condition assures higher income generation through marketing of pomegranate produces in different seasons' stands Rank 1. In case of statement wise health security level of overall pomegranate growers towards NHM programmes the statements like 'NHM helps me to avail clean drinking water to my family and reduce the incidence of water borne diseases' stands Rank 1. In case of statement wise social security level of overall pomegranate growers towards NHM programmes the statements like 'The level of my diversified farming condition ensures employment to my family members round the year' stands Rank 1. In case of statement wise ecological and environmental security level of overall pomegranate growers towards NHM programmes the statements like 'NHM has recognized the importance of organic farming, organic manures and natural plant protection materials to improve the soil fertility and texture' stands Rank 1. In case of statement wise psychological security level of overall pomegranate growers towards NHM programmes the statements like 'NHM schemes and facilities have increased confidence in availing and repaying loans to the financial institutions' given Rank 1. In case of statement wise physical security level of overall pomegranate growers towards NHM programmes the statements like 'The land and farm-resources owned by me after NHM provides the greatest prestige in the society' stands Rank 1. In case of statement wise educational security level of overall pomegranate growers towards NHM programmes the statements like 'It provides better instructional materials and extending tuition facility' stands Rank 1. The findings highlighted the importance of improving livelihood security dimensions and outreach efforts for to increase their participation and get benefit from NHM and improve their economic performance for better scheme implementation and spread of positive impact of the NHM.

Keywords: Livelihood Security, dimensions statements, pomegranate growers, National Horticulture Mission (NHM), implementation

1. Introduction

Agriculture plays a crucial role in the Indian economy, serving as one of the largest and most significant sectors and remaining the primary source of income for a majority of the population. Even today it continues to be the backbone of employment and livelihood for millions of Indians. According to the 2011 Census, approximately 54.6 percent of the country's population was engaged in agriculture and allied activities. Recognizing agriculture as a major income-generating sector, the Government of India has implemented numerous programmes and initiatives to support and strengthen the sector. These initiatives aim not only to enhance agricultural productivity but also to increase farmer's incomes. Over the years, the contribution of agriculture to the Indian economy has shown a progressive rise. Within agriculture, horticulture has emerged as an important sub-sector. States such as Karnataka, Maharashtra, Andhra Pradesh, Kerala and West Bengal hold prominent positions in terms of area and production of horticultural crops.

Karnataka accounts for 8.40 percent of the total area under horticultural crops, but contributes only 6.80 percent to total production, ranking 18th in terms of productivity at the national level.

The National Horticulture Mission (NHM) was launched during 2005-06 by the Department of Agriculture and Cooperation under the Ministry of Agriculture, Government of India. The mission aims at the holistic development of the horticulture sector by establishing strong forward and backward linkages among stakeholders, including farmers and private entrepreneurs. NHM covers all states and three Union Territories Andaman and Nicobar Islands, Lakshadweep, and Puducherry except the eight North-Eastern states, including Sikkim and the Himalayan States of Jammu & Kashmir, Himachal Pradesh, and Uttarakhand, which are covered under a separate programme known as the Horticulture Mission for North East and Himalayan States (HMNEH). Out of 483 districts across 18 states and three Union Territories, NHM is currently operational in 384 districts. From 2014-15 onwards, NHM has been implemented as a sub-scheme under the Mission for Integrated Development of Horticulture (MIDH), which seeks to harness the full potential of horticulture by enhancing the production of fruits, vegetables, flowers, spices, medicinal plants and other horticultural crops.

In Karnataka, the NHM was implemented on June 30 2005 in two phases. During the first phase (2004-05), 15 districts were included: Bengaluru (Urban), Bengaluru (Rural), Tumkur, Kolar, Chitradurga, Hassan, Mysore, Kodagu, Udupi, Dakshina Kannada, Belgaum, Bijapur, Bagalkot, Gulbarga, and Koppal. In the second phase, during 2015-16, the scheme was extended to the remaining 15 districts like Chikkaballapur, Ramanagara, Mandya, Chamarajnagar, Chikkamagaluru, Shivamogga, Davangere, Haveri, Uttara Kannada, Dharwad, Gadag, Bellary, Bidar, Raichur, and Yadgir thereby covering all 30 districts of Karnataka. Under NHM, emphasis has been placed on 16 major horticultural crops, including mango, grapes, pomegranate, banana, pineapple, cashew, cocoa, pepper, ginger, aromatic plants, and flowers. The mission also supports farmers in post-harvest management, processing, and marketing activities.

Among fruit crops, pomegranate has shown remarkable progress in Karnataka. During 2017-18, pomegranate cultivation covered an area of 25,967 hectares with a production of 268,228 metric tonnes. By 2021-22, the cultivated area increased to 27,693 hectares, and production rose to 302,451 metric tonnes, contributing 3.60 percent to the state's total fruit crop output. This consistent growth has established pomegranate as an important perennial fruit crop in Karnataka. At present, pomegranate cultivation in Karnataka spans about 28.09 thousand hectares, with a production of 328.92 thousand metric tonnes and an average yield of 11.71 metric tonnes per hectare, which is marginally higher than the national average of 11.70 metric tonnes per hectare. The major pomegranate-producing districts include Chitradurga, Tumkur, Koppal, Bagalkot, Bijapur, Raichur, Belgaum, Bellary, and Dharwad. Despite increases in area and production, studies indicate significant potential for further improvement in yield. Challenges such as gaps in farmers' knowledge, limited adoption of improved technologies and inadequate access to markets continue to constrain optimal production. In this context, evaluating the implementation of the National Horticulture Mission in Karnataka is crucial for understanding its impact

on the livelihood security of pomegranate growers. Therefore, the present study aims to analyze the livelihood security dimensions of pomegranate growers in Karnataka in relation to the implementation of the NHM scheme.

2. Methodology

The present study was conducted during the agricultural year 2023-24 to analyze the livelihood security dimension wise of beneficiaries and non-beneficiaries under the National Horticulture Mission (NHM) scheme in Chikkaballapura and Chitradurga districts of Karnataka. These districts were purposively selected for the study. Chitradurga district was chosen as NHM was first implemented in this region, while Chikkaballapura district was selected due to the widespread implementation of NHM activities during the second phase of the programme. Both districts were selected because of the relatively higher number of pomegranate growers benefiting from the NHM scheme. An ex-post facto research design was adopted for the study. Respondents were selected using a simple random sampling technique. From each district, 60 beneficiary and 30 non-beneficiary pomegranate growers were selected, resulting in a total sample size of 180 respondents. Primary data were collected through personal interviews using a pre-tested and well-structured interview schedule.

3. Results

3.1 Statement wise distribution of Pomegranate growers with respect to food security dimension of livelihood security

The Table 1 presented evaluates the impact of the National Horticulture Mission (NHM) on beneficiaries and non-beneficiaries in Chikkaballapura and Chitradurga districts, across several aspects related to food security and the adoption of diversified farming practices.

For the statement "Food is available throughout the year to me and my family because of NHM," Chikkaballapura district beneficiaries had a mean score of 3.05 and ranked fourth, while non-beneficiaries in the district scored a lower mean of 2.10, also ranked fourth. Chitradurga district beneficiaries scored 2.92 (ranked fifth), and non-beneficiaries mean scored 2.23 (ranked fifth). The overall mean score for beneficiaries across both districts was 2.98, ranked fifth, while non-beneficiaries had a mean of 2.16 and ranked fifth. This suggests that although food availability is generally reported as consistent due to NHM, there remains a significant gap between beneficiaries and non-beneficiaries, with the latter perceiving lower food availability.

For the statement "Diversified farming, including pomegranate growing, encouraged by NHM helped in a balanced diet for my family," Chikkaballapura district beneficiaries again reported a mean score of 3.00 (ranked 6th), while non-beneficiaries scored lower at 1.77 (ranked sixth). Similarly, in Chitradurga, beneficiaries had a mean score of 2.80 (ranked sixth), while non-beneficiaries had a mean of 2.06 (ranked sixth). The overall results indicated a mean of 2.90 for beneficiaries (ranked sixth) and 1.91 for non-beneficiaries (ranked sixth). These results highlighted the positive impact of NHM on diversified farming, which is perceived as beneficial for ensuring a balanced diet among beneficiaries, though non-beneficiaries appear to experience more challenges in this regard.

When asked the statement 'whether NHM encouraged them to take up pomegranate cultivation and other crops for better nutrition', Chikkaballapura beneficiaries scored the highest with a mean of 3.38 (ranked first), while non-beneficiaries scored 2.03 (ranked fifth). In Chitradurga district, beneficiaries had a mean score of 3.33 (ranked second), and non-beneficiaries scored 2.46 (ranked fourth). The overall mean score for beneficiaries was 3.35 (ranked first), and for non-beneficiaries, it was 2.25 (ranked fourth). This clearly demonstrates that NHM has had a significant influence on encouraging the adoption of pomegranate cultivation for better nutrition, with beneficiaries in both districts recognizing the programme's impact on improving their dietary intake.

In relation to the statement "NHM promotes an opportunity to prepare value-added products and food availability throughout the year in various forms," Chikkaballapura district beneficiaries had a lower mean of 2.17 (ranked seventh), and non-beneficiaries scored 1.17 (ranked seventh). Similarly, Chitradurga district beneficiaries had a mean score of 1.37 (ranked seventh), and non-beneficiaries scored 1.16 (ranked seventh). The overall mean scores were 1.76 (ranked seventh) for beneficiaries and 1.16 (ranked seventh) for non-beneficiaries. These results indicated a relatively low perception of the NHM's effectiveness in promoting value-added products, suggesting that there might be barriers in fully capitalizing on these opportunities, particularly among non-beneficiaries.

The statement "Providing balanced food due to NHM to my family members is affordable for me" revealed a higher score for Chikkaballapura district beneficiaries (mean of 3.10, ranked second) compared to non-beneficiaries (mean of 2.40, ranked third). In Chitradurga district, beneficiaries scored 2.93 (ranked third), while non-beneficiaries had a mean score of 2.90 (ranked second). The overall scores were 3.01 (ranked fourth) for beneficiaries and 2.65 (ranked third) for non-beneficiaries, suggesting that beneficiaries perceive NHM as helping them make food more affordable, whereas non-beneficiaries were less likely to view it as such.

Regarding the statement "Quantity of the food items out of NHM benefits consumed by the household members is insufficient for physiological needs," Chikkaballapura beneficiaries had a mean of 3.12 (ranked third), and non-beneficiaries scored 2.60 (ranked first). In Chitradurga, beneficiaries reported a higher mean of 3.50 (ranked first), and non-beneficiaries scored 3.10 (ranked first). Overall, the mean score for beneficiaries was 3.07 (ranked second), and for non-beneficiaries, it was 2.85 (ranked first). This result indicates that, while the majority of beneficiaries feel their food consumption was sufficient, there remains a concern about the adequacy of food, especially among non-beneficiaries.

Finally, for the statement "The farming system advocated by NHM adopted by me along with pomegranate cultivation provides a broad range of food items needed for my family," Chikkaballapura district beneficiaries scored a mean of 3.05 (ranked fifth), while non-beneficiaries scored 2.53 (ranked second). Chitradurga district beneficiaries had a mean score of 3.00 (ranked fourth), and non-beneficiaries scored 2.80 (ranked third). The overall mean for beneficiaries was 3.02 (ranked third), and for non-beneficiaries, it was 2.66 (ranked second). These findings showed that, the farming systems advocated by NHM, including pomegranate cultivation were perceived to provide a diverse range of food for

beneficiaries, although non-beneficiaries reported less access to such diverse food sources.

The results demonstrated that NHM has a positive impact on food security, particularly for beneficiaries in both the districts. While beneficiaries reported better access to food, a balanced diet, and improved affordability, non-beneficiaries lag behind in all aspects. However, the low scores on value-added products and the perceived insufficiency of food for physiological needs suggest areas for improvement in fully capitalizing on the potential benefits of NHM.

3.2 Statement wise distribution of pomegranate growers with respect to economic security dimension of livelihood security

The Table 2 assesses the impact of the National Horticulture Mission (NHM) on beneficiaries and non-beneficiaries in Chikkaballapura and Chitradurga districts, focusing on various aspects related to income generation, savings, access to credit, and farm productivity. These results provide insights into how NHM has influenced the economic well-being and livelihood opportunities of farmers engaged in its programmes versus those who are not benefitted.

For the statement "My annual income has increased from agriculture and its allied activities due to NHM interventions," Chikkaballapura district beneficiaries reported a high mean score of 3.97 (ranked fourth), while non-beneficiaries had a score of 3.60 (ranked sixth). In Chitradurga district, beneficiaries scored 3.93 (ranked third), and non-beneficiaries scored 3.60 (ranked seventh). Overall, beneficiaries across both the districts had a mean score of 3.95 (ranked 4th), while non-beneficiaries scored 3.60 (ranked seventh). This suggests that NHM has contributed significantly to increasing the income of beneficiaries through agricultural activities, the non-beneficiaries also being benefiting, but to a lesser extent.

When considering savings, the statement "My savings has been increased due to benefiting from NHM" revealed lower mean scores, indicating mixed results. Chikkaballapura beneficiaries scored 3.13 (ranked twelfth), and non-beneficiaries scored 2.97 (ranked tenth). In Chitradurga district, beneficiaries scored 2.88 (ranked thirteenth), and non-beneficiaries scored 2.96 (ranked tenth). The overall mean for beneficiaries was 3.01 (ranked thirteenth), and for non-beneficiaries, it was 2.97 (ranked tenth). These results suggest that while NHM beneficiaries saw some increase in savings, the effect was relatively modest, with both groups reported lower scores in this area.

The statement "Being a member of joint liability credit/commodity groups, it has increased the certainty of my farm income due to NHM benefits" demonstrated a more positive impact. Chikkaballapura district beneficiaries had a mean score of 3.90 (ranked fifth), while non-beneficiaries scored 3.97 (ranked 2nd).

Chitradurga district beneficiaries scored 3.80 (ranked sixth), and non-beneficiaries had a mean score of 4.03 (ranked fourth). The Overall, the mean score for beneficiaries was 3.85 (ranked sixth), while for non-beneficiaries, it was 4.00 (ranked third). This suggests that NHM's support in facilitating joint liability groups has helped beneficiaries feel more secure in their farm income, though non-beneficiaries reported slightly higher scores.

Regarding mechanized cultivation practices, the statement "NHM promotes mechanized cultivation practices which

lead to better livelihood" had lower scores across the board, indicating less perceived benefit. Chikkaballapura district beneficiaries scored 2.62 (ranked fifteenth), and non-

beneficiaries scored 2.27 (ranked sixteenth). In Chitradurga district beneficiaries scored 2.75 (ranked fourteenth), while non-beneficiaries scored 2.20 (ranked sixteenth).

Table 1: Statement wise distribution of Pomegranate growers with respect to food security dimension of livelihood security

Sl. No	Statements	(n = 180)											
		Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 60)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Food is available throughout the year to me and my family because of NHM	3.05	4	2.10	4	2.92	5	2.23	5	2.98	5	2.16	5
2.	Diversified farming including pomegranate growing encouraged by NHM helped in a balanced diet for my family	3.00	6	1.77	6	2.80	6	2.06	6	2.90	6	1.91	6
3.	NHM has encouraged me to take up the pomegranate cultivation and other crops for better nutrition	3.38	1	2.03	5	3.33	2	2.46	4	3.35	1	2.25	4
4.	NHM promotes an opportunity to prepare the value-added products and food availability throughout the year in various forms	2.17	7	1.17	7	1.37	7	1.16	7	1.76	7	1.16	7
5.	Providing a balanced food due to NHM to my family members is affordable for me	3.10	2	2.40	3	2.93	3	2.90	2	3.01	4	2.65	3
6.	Quantity of the food items out of NHM benefits consumed by the household members is insufficient for physiological needs	3.12	3	2.60	1	3.50	1	3.10	1	3.07	2	2.85	1
7.	The farming system advocated by NHM adopted by me along with Pomegranate cultivation provides broad range of food items needed for my family	3.05	5	2.53	2	3.00	4	2.80	3	3.02	3	2.66	2

The overall mean scores were 2.68 (ranked fourteenth) for beneficiaries and 2.23 (ranked sixteenth) for non-beneficiaries. These findings suggest that the promotion of mechanized farming practices through NHM has had a limited impact on improving livelihoods, as participants in both the districts reported low benefits from mechanization. In response to the statement "The paid services at custom hiring and information centers are affordable to me as an NHM beneficiary," Chikkaballapura district beneficiaries scored 3.27 (ranked tenth), while non-beneficiaries scored 3.10 (ranked ninth). In Chitradurga district beneficiaries had a mean score of 3.28 (ranked ninth), and non-beneficiaries scored 3.20 (ranked eighth).

The overall mean scores were 3.28 (ranked ninth) for beneficiaries and 3.15 (ranked ninth) for non-beneficiaries. These results indicate that NHM's custom hiring and information services are considered affordable by both beneficiaries and non-beneficiaries, with only a slight difference in perception.

For the statement "I started small scale entrepreneurial activity after the NHM interventions," the mean scores were relatively low across both the districts. Chikkaballapura district beneficiaries scored 2.17 (ranked sixteenth), and non-beneficiaries scored 2.67 (ranked thirteenth). In Chitradurga district beneficiaries scored 1.95 (ranked sixteenth), while non-beneficiaries scored 2.66 (ranked thirteenth). The overall mean scores were 2.06 (ranked sixteenth) for beneficiaries and 2.67 (ranked fourteenth) for non-beneficiaries, indicating that NHM has had a limited impact on encouraging small-scale entrepreneurship, with

both groups showing low scores in this area.

In terms of credit access, the statement "I started availing timely credit from various financial institutions" showed more positive results. Chikkaballapura district beneficiaries scored 3.72 (ranked 7th), and non-beneficiaries scored 3.53 (ranked 7th). Chitradurga district beneficiaries scored 3.70 (ranked 7th), while non-beneficiaries scored 3.90 (ranked 5th). Overall, beneficiaries had a mean score of 3.71 (ranked 7th), and non-beneficiaries scored 3.72 (ranked 6th), indicating that NHM has facilitated improved access to credit, with similar scores for both the groups.

The statement "I am able to repay the loans regularly due to NHM interventions" had high scores for both the beneficiaries and non-beneficiaries. Chikkaballapura district beneficiaries had a mean of 3.98 (ranked third), and non-beneficiaries scored 4.03 (ranked first). In Chitradurga district beneficiaries scored 3.97 (ranked second), and non-beneficiaries scored 4.20 (ranked second). Overall, beneficiaries had a mean score of 3.98 (ranked third), while non-beneficiaries scored 4.12 (ranked second). These findings show that both groups felt relatively confident in their ability to repay loans, though non-beneficiaries showed slightly higher confidence.

The statement "My NHM-adopted farm provides a variety of income from products of agriculture and allied enterprises" had lower scores, indicating limited diversification of income sources. Chikkaballapura district beneficiaries scored 2.67 (ranked fourteenth), while non-beneficiaries scored 2.37 (ranked fifteenth). In Chitradurga district beneficiaries scored 2.32 (ranked fifteenth), and non-

beneficiaries scored 2.30 (ranked fifteenth). The overall mean for beneficiaries was 2.49 (ranked fifteenth), while for non-beneficiaries, it was 2.33 (ranked fifteenth). These results suggest that NHM has had limited impact on diversifying income sources from agriculture and allied enterprises.

Lastly, the statement "My NHM-based orchard enables me to get a higher benefit-cost ratio" showed positive results, with Chikkaballapura beneficiaries scoring 3.72 (ranked 8th), and non-beneficiaries scoring 3.80 (ranked 4th). In Chitradurga district beneficiaries scored 3.63 (ranked 8th), and non-beneficiaries scored 3.80 (ranked 6th). The overall mean scores were 3.68 (ranked 8th) for beneficiaries and 3.80 (ranked 5th) for non-beneficiaries, indicated that, both

groups perceive the NHM-based orchard as a beneficial investment.

The NHM has had a positive impact on the economic security of beneficiaries, particularly through increased income, better access to credit, improved loan repayment ability. However, there was scope for improvement in encouraging diversification into entrepreneurial ventures and fostering a broader range of income-generating activities. Among, Non-beneficiaries, generally experiencing more stable income sources, reported higher satisfaction in areas like loan repayment. The overall, NHM has made significant contributions to the livelihoods of beneficiaries, there remains potential for further expansion and diversification of its benefits.

Table 2: Statement wise distribution of Pomegranate growers with respect to economic security dimension of livelihood security

Sl. No	Statements	(n = 180)											
		Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 60)	
Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	My Annual income has increased from agriculture and its allied activities due to NHM interventions	3.97	4	3.60	6	3.93	3	3.60	7	3.95	4	3.60	7
2.	My savings has been increased due to benefitted from NHM	3.13	12	2.97	10	2.88	13	2.96	10	3.01	13	2.97	10
3.	Being a member of joint liability credit/commodity groups, it has increased the certainty of my farm income due to NHM benefits	3.90	5	3.97	2	3.80	6	4.03	4	3.85	6	4.00	3
4.	NHM promotes mechanized cultivation practices which leads to better livelihood	2.62	15	2.27	16	2.75	14	2.20	16	2.68	14	2.23	16
5.	The paid services at custom hiring and information centers are affordable to me as NHM beneficiary	3.27	10	3.10	9	3.28	9	3.20	8	3.28	9	3.15	9
6.	I started small scale entrepreneurial activity after the NHM interventions	2.17	16	2.67	13	1.95	16	2.66	13	2.06	16	2.67	14
7.	I started availing timely credit from various financial institutions	3.72	7	3.53	7	3.70	7	3.90	5	3.71	7	3.72	6
8.	I am able to repay the loans regularly due to NHM interventions	3.98	3	4.03	1	3.97	2	4.20	2	3.98	3	4.12	2
9.	My NHM adopted farm provides variety of income from products of agriculture and allied enterprises	2.67	14	2.37	15	2.32	15	2.30	15	2.49	15	2.33	15
10.	My NHM based orchard enables me to get higher benefit-cost ratio	3.72	8	3.80	4	3.63	8	3.80	6	3.68	8	3.80	5
11.	My NHM based farm conditions adequately protect me against risk and uncertainties of farm production	3.28	9	2.93	11	3.18	10	2.93	11	3.23	10	2.93	11
12.	My NHM based orchard condition assures higher income generation through marketing of Pomegranate produces in different seasons	4.27	1	3.97	3	4.15	1	4.43	1	4.21	1	4.20	1
13.	The investment of the farmers in the Pomegranate production pays a better return	4.12	2	3.67	5	3.88	4	4.20	3	4.00	2	3.93	4
14.	NHM based pomegranate production helps in creating employment opportunity to jobless youths and generate income	3.90	6	2.67	14	3.82	5	2.66	14	3.86	5	2.67	13
15.	NHM based Pomegranate farming result in increases the land value of the farmers	3.17	11	2.90	12	3.07	11	2.90	12	3.12	11	2.90	12
16.	Diversification of income generating activities are possible through NHM based pomegranate cultivation	3.05	13	3.17	8	2.97	12	3.16	9	3.01	12	3.17	8

3.3 Statement wise distribution of pomegranate growers with respect to health security dimension of livelihood security

This table 3 examines the perceived impact of the National Horticulture Mission (NHM) on health and well-being, specifically focusing on the rural community's health problems, access to clean water, health conditions, and the satisfaction of farmers from being involved in nature through pomegranate farming. Responses are given for both the beneficiaries and non-beneficiaries in Chikkaballapura and Chitradurga districts, as well as overall for both the groups.

For the statement "Incidence of health problems have been reduced due to NHM interventions for rural community," the mean scores were similar across both districts and groups. The Chikkaballapura district, beneficiaries had a mean score of 2.22 (ranked 5th), and non-beneficiaries scored 2.07 (ranked 5th). In Chitradurga district, beneficiaries scored 2.05 (ranked 5th), and non-beneficiaries scored 2.13 (ranked 5th). Overall, beneficiaries had a mean score of 2.13 (ranked 5th), and non-beneficiaries scored 2.10 (ranked 5th). These results suggested that NHM interventions have had a modest impact on reducing the incidence of health problems.

When considering the statement "NHM helps me to avail clean drinking water to my family and reduce the incidence of waterborne diseases," both districts showed a relatively positive impact. The Chikkaballapura district, beneficiaries scored 2.97 (ranked 3rd), and non-beneficiaries scored 2.97 (ranked 1st). In Chitradurga district, beneficiaries had a score of 3.12 (ranked 2nd), while non-beneficiaries scored 3.16 (ranked 1st). The overall mean scores for beneficiaries was 3.04 (ranked 2nd), and for non-beneficiaries, it was 3.07 (ranked 1st). This indicated that, NHM has positively contributed to providing access to clean drinking water and reducing waterborne diseases, with non-beneficiaries reported slightly better access to drinking water sources.

In response to the statement "NHM promotes better health conditions," Chikkaballapura district beneficiaries scored 2.98 (ranked 2nd), and non-beneficiaries scored 2.63 (ranked 3rd). In Chitradurga district, beneficiaries scored 2.92 (ranked 3rd), while non-beneficiaries scored 2.63 (ranked 3rd). Overall, beneficiaries had a mean score of 2.95 (ranked 3rd), and non-beneficiaries scored 2.63 (ranked 3rd). These results suggested that, NHM has a positive impact on promoting better health conditions, particularly among beneficiaries, though the impact was moderate. Both the groups ranked this statement similarly, suggesting that the health improvements promoted by NHM were not perceived as highly transformative.

For the statement "NHM adopted human well-being can be enhanced through sustainable human interaction with ecosystems," the responses were generally moderate. Chikkaballapura district beneficiaries scored 2.65 (ranked 4th), and non-beneficiaries scored 2.47 (ranked 4th). In Chitradurga district, the beneficiaries scored 2.63 (ranked 4th), while non-beneficiaries scored 2.53 (ranked 4th). Overall, beneficiaries had a mean score of 2.64 (ranked 4th), and non-beneficiaries scored 2.50 (ranked 4th). These scores reflect a moderate belief in the ability of NHM to improve human well-being through sustainable interactions with ecosystems, but the differences between groups were minimal, suggesting that both beneficiaries and non-beneficiaries viewed this aspect of NHM similarly.

Finally, for the statement "Being with nature has resulted in greater satisfaction by growing pomegranate," the responses indicated that NHM's impact on well-being and satisfaction from farming was more pronounced. Chikkaballapura beneficiaries scored 3.15 (ranked 1st), while non-beneficiaries scored 2.90 (ranked 2nd). In Chitradurga district, the beneficiaries scored 3.33 (ranked 1st), and non-beneficiaries scored 3.00 (ranked 2nd). Overall, beneficiaries had a mean score of 3.24 (ranked 1st), and non-beneficiaries scored 2.95 (ranked 2nd). These findings suggested that NHM interventions have had a positive impact on satisfaction derived from working with nature, particularly among beneficiaries. Beneficiaries reported higher levels of satisfaction from growing pomegranates compared to non-beneficiaries, indicating that NHM has contributed to their overall well-being and satisfaction with farming activities.

The results highlighted that, NHM has had a positive but moderate impact on health security dimensions of livelihood security, with particular improvements in access to clean drinking water and satisfaction from nature-related activities. While both the beneficiaries and non-beneficiaries reported some improvements, the benefits were more pronounced for beneficiaries, particularly in terms of satisfaction derived from farming and health-related conditions.

3.4 Statement wise distribution of pomegranate growers with respect to social security dimension of livelihood security

This table 4 presents the responses of beneficiaries and non-beneficiaries from Chikkaballapura and Chitradurga districts regarding various social and economic impacts of the National Horticulture Mission (NHM) interventions. The statements reflect perceptions about social recognition, utilization of Government schemes, access to knowledge, relationships within the community, employment opportunities and rural youth migration. The following is a detailed analysis of the results,

For the statement "I got good recognition in the society after involving in NHM schemes," the beneficiaries of Chikkaballapura scored 3.27 (ranked 3rd), while non-beneficiaries scored 3.10 (ranked 3rd). In Chitradurga, beneficiaries scored 3.23 (ranked 3rd), and non-beneficiaries scored 2.76 (ranked 4th). The overall mean score for beneficiaries was 3.25 (ranked 3rd), and for non-beneficiaries, it was 2.93 (ranked 3rd). These results suggested that NHM has positively impacted the recognition that farmers received in their communities. Beneficiaries reported better recognition than non-beneficiaries, indicating that NHM involvement likely enhanced their social status and visibility within their communities.

Regarding the statement "After the implementation of NHM, I am utilizing maximum Government schemes," Chikkaballapura district beneficiaries had a score of 3.08 (ranked 6th), and non-beneficiaries scored 2.70 (ranked 5th). In Chitradurga district, beneficiaries scored 2.97 (ranked 6th), and non-beneficiaries scored 2.50 (ranked 5th). The overall mean score for beneficiaries was 3.03 (ranked 6th), and for non-beneficiaries, it was 2.60 (ranked 5th). These findings suggested that NHM beneficiaries, on average, were more inclined to utilize Government schemes, but the level of engagement with these schemes was not drastically high. Non-beneficiaries reported a slightly lower level of

engagement, infer that NHM participation might have encouraged greater participation in Government schemes among beneficiaries.

In response to the statement "I started to visit the Developmental Departments and Panchayath Raj Institutions regularly to gain new knowledge on schemes and technologies," beneficiaries in Chikkaballapura district scored 3.17 (ranked 4th), while non-beneficiaries scored 2.57 (ranked 6th). In Chitradurga, the beneficiaries scored 3.05 (ranked 4th) and non-beneficiaries scored 2.43 (ranked

6th). The overall beneficiaries had a mean score of 3.11 (ranked 4th), and non-beneficiaries had a mean score of 2.50 (ranked 6th). These results suggested that NHM beneficiaries were more proactive in seeking knowledge about schemes and technologies, as evidenced by their higher mean scores and rankings compared to non-beneficiaries. This indicated that NHM has contributed to increased awareness and engagement with developmental departments, institutions and schemes.

Table 3: Statement wise distribution of Pomegranate growers with respect to health security dimension of livelihood security

Sl. No	Statements	(n = 180)									
		Chikkaballapura				Chitradurga				Overall Total	
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Incidence of health problems have been reduced due to NHM interventions for rural community	2.22	5	2.07	5	2.05	5	2.13	5	2.13	5
2.	NHM helps me to avail clean drinking water to my family and reduce the incidence of water borne diseases	2.97	3	2.97	1	3.12	2	3.16	1	3.04	2
3.	NHM Promotes better health conditions.	2.98	2	2.63	3	2.92	3	2.63	3	2.95	3
4.	NHM adopted human well-being can be enhanced through sustainable human interaction with ecosystems	2.65	4	2.47	4	2.63	4	2.53	4	2.64	4
5.	Being with nature has resulted in greater satisfaction by growing Pomegranate	3.15	1	2.90	2	3.33	1	3.00	2	3.24	1

When considering the statement "Villagers are maintaining harmonious relationships with me and my family after the implementation of NHM schemes," Chikkaballapura district beneficiaries scored 3.19 (ranked 5th), and non-beneficiaries scored 3.73 (ranked 1st). In Chitradurga, the beneficiaries scored 3.05 (ranked 5th), while non-beneficiaries scored 3.63 (ranked 1st). The overall mean score for beneficiaries was 3.11 (ranked 5th), and for non-beneficiaries, it was 3.68 (ranked 1st). These findings suggested that, overall, non-beneficiaries perceived a stronger sense of harmonious relationships within their communities than beneficiaries. However, the difference between the groups may indicate that while NHM had some positive impact, it did not result in significantly improved social relationships for the beneficiaries compared to non-beneficiaries.

For the statement "The level of my diversified farming condition ensures employment to my family members round the year," Chikkaballapura beneficiaries scored 3.78 (ranked 1st), and non-beneficiaries scored 3.27 (ranked 2nd). In Chitradurga, beneficiaries scored 3.73 (ranked 1st), while non-beneficiaries scored 3.03 (ranked 2nd). Overall, beneficiaries had a mean score of 3.76 (ranked 1st), and non-beneficiaries scored 3.15 (ranked 2nd). This clearly highlights that NHM's focus on diversified farming has provided beneficiaries with stable, year-round employment

opportunities for their families, which they ranked highly. Non-beneficiaries, while still benefiting from farming, were not able to achieve the same level of diversified employment benefits, as reflected in their lower scores.

Finally, in response to the statement "The pomegranate farming reduces the migration of rural youth to the city," Chikkaballapura district beneficiaries scored 3.53 (ranked 2nd), and non-beneficiaries scored 2.80 (ranked 4th). In Chitradurga, beneficiaries scored 3.53 (ranked 2nd), while non-beneficiaries scored 2.80 (ranked 4th). The overall mean score for beneficiaries was 3.53 (ranked 2nd), and for non-beneficiaries, it was 2.80 (ranked 4th). These results suggested that, NHM's emphasis on pomegranate farming has helped reduce the migration of rural youth to urban areas, as beneficiaries reported greater satisfaction and better livelihood opportunities, potentially leading to reduced urban migration.

The results showed that NHM interventions have had a positive impact on several aspects of the social security dimension of livelihood security, especially in areas related to recognition, knowledge, and employment opportunities. Beneficiaries consistently ranked higher than non-beneficiaries, particularly in terms of community recognition, utilization of Government schemes, and employment creation through diversified farming.

Table 4: Statement wise distribution of pomegranate growers with respect to Social security dimension of livelihood security

(n = 180)

Sl. No	Statements	Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 60)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	I got good recognition in the society after involving in NHM schemes	3.27	3	3.10	3	3.23	3	2.76	4	3.25	3	2.93	3
2.	After the implementation of NHM, I am utilizing maximum Government schemes	3.08	6	2.70	5	2.97	6	2.50	5	3.03	6	2.60	5
3.	I started to visit the Developmental Departments and Panchayath Raj Institutions regularly to gain new knowledge on schemes and technologies	3.17	4	2.57	6	3.05	4	2.43	6	3.11	4	2.50	6
4.	Villagers are maintaining harmonious relationship with me and my family after the implementation of NHM schemes	3.19	5	3.73	1	3.05	5	3.63	1	3.11	5	3.68	1
5.	The level of my diversified farming condition ensures employment to my family members round the year	3.78	1	3.27	2	3.73	1	3.03	2	3.76	1	3.15	2
6.	The Pomegranate farming reduces the migration of rural youth to city	3.53	2	2.80	4	3.53	2	2.80	3	3.53	2	2.80	4

However, while there were improvements in social relationships and reduced migration, non-beneficiaries reported a higher sense of harmony with the community. The overall, NHM's influence on social security was evident, particularly in creating stable employment and enhancing participation in developmental schemes.

3.5 Statement wise distribution pomegranate growers with respect to ecological and environmental security dimension of livelihood security

The table 5 indicated the statement-wise distribution of pomegranate growers with respect to the ecological and environmental security dimension of livelihood security highlight the perceived impact of National Horticulture Mission (NHM) interventions on various environmental factors. The responses from both Chikkaballapura and Chitradurga districts reveal insights into how NHM has influenced ecological practices, natural resource management, and environmental awareness among farmers. For the statement "NHM has recognized the importance of organic farming, organic manures, and natural plant protection materials to improve the soil fertility and texture," beneficiaries of Chikkaballapura district scored 3.43 (ranked 1st), while non-beneficiaries scored 3.20 (ranked 1st). In Chitradurga, the beneficiaries scored 3.33 (ranked 2nd), and non-beneficiaries scored 3.20 (ranked 1st). The overall mean score for beneficiaries was 3.38 (ranked 2nd), and for non-beneficiaries, it was 3.20 (ranked 1st). This indicates that NHM has significantly raised awareness about the benefits of organic farming, with beneficiaries recognizing its importance in improving soil fertility and texture. The results suggested that NHM has successfully promoted eco-friendly farming practices among the beneficiaries, who ranked it higher than non-beneficiaries.

In response to the statement "Planting pomegranate plants in the main field increased the aesthetic value in my area," Chikkaballapura district beneficiaries scored 3.40 (ranked 2nd), and non-beneficiaries scored 3.03 (ranked 2nd). In

Chitradurga, the beneficiaries scored 3.43 (ranked 1st), and non-beneficiaries scored 3.00 (ranked 2nd). Overall, beneficiaries had a mean score of 3.42 (ranked 1st), while non-beneficiaries scored 3.02 (ranked 2nd). These results suggested that pomegranate cultivation, as part of NHM, has improved the aesthetic appeal of the agricultural landscape, with beneficiaries perceiving a stronger positive impact. This highlights how NHM has contributed not only to economic and ecological benefits but also to the visual enhancement of rural areas.

Regarding the statement "By adopting the Integrated Pest Management (IPM), Integrated Nutrient Management (INM) through training programmes has increased ecological balance in my orchard," Chikkaballapura district beneficiaries scored 3.38 (ranked 3rd), while non-beneficiaries scored 2.63 (ranked 4th). In Chitradurga, the beneficiaries scored 3.02 (ranked 3rd), and non-beneficiaries scored 2.26 (ranked 4th). The overall mean score for beneficiaries was 3.20 (ranked 3rd), and for non-beneficiaries, it was 2.45 (ranked 3rd). These findings indicate that NHM has been effective in promoting sustainable farming practices such as IPM and INM, which have contributed to ecological balance. Beneficiaries reported a stronger positive impact on ecological practices than non-beneficiaries highlighting the role of training and awareness programmes in enhancing ecological security.

In response to the statement "Awareness programs on wildlife protection are also considered by NHM," Chikkaballapura district beneficiaries scored 2.42 (ranked 6th), and non-beneficiaries scored 2.60 (ranked 5th). In Chitradurga, the beneficiaries scored 2.05 (ranked 6th), while non-beneficiaries scored 2.20 (ranked 5th). The overall mean score for beneficiaries was 2.23 (ranked 6th), and for non-beneficiaries, it was 2.40 (ranked 5th). These results suggest that while NHM has addressed environmental concerns related to wildlife protection, the level of awareness among farmers, both beneficiaries and non-beneficiaries, remains relatively low. This could indicate a need for more focused and impactful awareness

programmes related to wildlife conservation under NHM. When examining the statement "Schemes of NHM encouraged me to utilize natural resources efficiently and judiciously," Chikkaballapura district beneficiaries scored 2.92 (ranked 4th), and non-beneficiaries scored 2.67 (ranked 3rd). In Chitradurga, the beneficiaries scored 2.80 (ranked 4th), while non-beneficiaries scored 2.10 (ranked 6th). The overall mean score for beneficiaries was 2.86 (ranked 4th),

and for non-beneficiaries, it was 2.38 (ranked 6th). These results showed that NHM has had a positive impact on encouraging the efficient and judicious use of natural resources, particularly among beneficiaries who reported higher engagement with resource management practices. Non-beneficiaries, on the other hand, showed lower scores, indicating a reduced focus on resource efficiency in their farming practices.

Table 5: Statement wise distribution Pomegranate growers with respect to ecological and environmental security dimension of livelihood security

Sl. No	Statements	(n = 180)											
		Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 60)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	NHM has recognized the importance of organic farming, organic manures and natural plant protection materials to improve the soil fertility and texture	3.43	1	3.20	1	3.33	2	3.20	1	3.38	2	3.20	1
2.	Planting pomegranate plants in the main field increased the aesthetic value in my area	3.40	2	3.03	2	3.43	1	3.00	2	3.42	1	3.02	2
3.	By adopting the IPM, INM through training programs has increased ecological balance in my orchard	3.38	3	2.63	4	3.02	3	2.26	4	3.20	3	2.45	3
4.	Awareness programs on wildlife protection are also considered by the NHM	2.42	6	2.60	5	2.05	6	2.20	5	2.23	6	2.40	5
5.	Schemes of NHM encouraged me to utilize the natural resources efficiently and judiciously	2.92	4	2.67	3	2.80	4	2.10	6	2.86	4	2.38	6
6.	Diversification pattern of my farm ensures complete recycling of my orchard wastes and reducing pollution	2.70	5	2.47	6	2.58	5	2.36	3	2.64	5	2.42	4

Finally, in response to the statement "Diversification pattern of my farm ensures complete recycling of my orchard wastes and reducing pollution," Chikkaballapura district beneficiaries scored 2.70 (ranked 5th), and non-beneficiaries scored 2.47 (ranked 6th). In Chitradurga, the beneficiaries scored 2.58 (ranked 5th), while non-beneficiaries scored 2.36 (ranked 3rd). Overall, beneficiaries had a mean score of 2.64 (ranked 5th), and non-beneficiaries scored 2.42 (ranked 4th). These results inferred that the diversification of farming practices under NHM has contributed to waste recycling and pollution reduction. Beneficiaries reported a slightly higher level of success in recycling orchard waste and minimizing pollution, reflecting NHM's role in promoting more sustainable farming practices.

The results highlighted that NHM has significantly contributed to ecological and environmental security in various ways. Beneficiaries consistently reported more favorable outcomes than non-beneficiaries, particularly in areas related to organic farming, aesthetic value, ecological balance through IPM and INM, and natural resource management. However, there is a need for further attention to wildlife protection awareness, where both beneficiaries and non-beneficiaries reported lower engagement. The overall, NHM has made substantial progress in promoting environmentally sustainable practices, benefiting farmers through better ecological security.

3.6 Statement wise distribution of pomegranate growers with respect to psychological security dimension of livelihood security

The table 6 depicts the statement-wise distribution of pomegranate growers with respect to the psychological security dimension of livelihood security reveals how National Horticulture Mission (NHM) interventions have influenced the mental and emotional well-being of farmers. The data from Chikkaballapura and Chitradurga districts highlight key aspects of farmers' confidence, attitude towards risk-taking, comfort in their living conditions, satisfaction with their diversified farming activities.

Regarding the statement "NHM schemes and facilities have increased confidence in availing and repaying loans to the financial institutions," Chikkaballapura district beneficiaries scored 3.67 (ranked 3rd), while non-beneficiaries scored 3.50 (ranked 1st). In Chitradurga, the beneficiaries scored 3.58 (ranked 2nd), and non-beneficiaries scored 3.23 (ranked 1st). Overall, the mean score for beneficiaries was 3.63 (ranked 3rd), and for non-beneficiaries, it was 3.38 (ranked 1st). These results indicate that NHM has positively influenced farmers' confidence in accessing and repaying loans. Beneficiaries, particularly Chikkaballapura district, showed a higher level of confidence in financial dealings compared to non-beneficiaries, which reflects the support and stability NHM provides to improve financial security.

In response to the statement "A positive attitude to take risks has been formed due to NHM interventions," Chikkaballapura district beneficiaries scored 4.32 (ranked 1st), while non-beneficiaries scored 2.87 (ranked 2nd). In Chitradurga, the beneficiaries scored 3.45 (ranked 3rd), and non-beneficiaries scored 2.53 (ranked 4th). Overall, beneficiaries had a mean score of 3.88 (ranked 1st), and non-beneficiaries had a mean score of 2.70 (ranked 3rd). This data highlighted that NHM has instilled a positive attitude toward risk-taking among beneficiaries, with them reporting significantly higher confidence in taking risks related to farming. Non-beneficiaries, on the other hand, exhibited a lower inclination toward risk-taking, indicating that NHM interventions have fostered greater psychological security and willingness to experiment with new farming practices.

When asked about the statement "Facilities provided by NHM make them live comfortably," Chikkaballapura district beneficiaries scored 2.98 (ranked 5th), and non-beneficiaries scored 2.20 (ranked 6th). Chitradurga beneficiaries scored 2.65 (ranked 5th), and non-beneficiaries scored 2.10 (ranked 6th). The overall mean score for beneficiaries was 2.82 (ranked 5th), and for non-beneficiaries, it was 2.15 (ranked 6th). These findings indicated that the facilities provided by NHM have contributed to a certain level of comfort for beneficiaries, with beneficiaries reported higher comfort levels than non-beneficiaries. However, both the groups expressed relatively low satisfaction with comfort levels, suggesting that more targeted interventions might be necessary to enhance overall living conditions of the grower beneficiaries.

In response to the statement "Practicing diversified farming activities enriches my knowledge and skills in farming," Chikkaballapura district beneficiaries scored 2.90 (ranked 6th), while non-beneficiaries scored 2.83 (ranked 3rd). Chitradurga district, beneficiaries scored 2.60 (ranked 6th), and non-beneficiaries scored 2.57 (ranked 3rd). The overall mean score for beneficiaries was 2.75 (ranked 6th), and for non-beneficiaries, it was 2.70 (ranked 4th). The results showed that while diversified farming activities have helped enhance the knowledge and skills of both the beneficiary and non-beneficiary farmers, the overall impact on psychological security was moderate. Both groups ranked this factor relatively low, which could suggest that while diversification was beneficial for economic outcomes, its psychological impact was less pronounced.

Regarding the statement "Farmers feel and value worth in visiting my orchard and seeking my advice regarding new things in growing," Chikkaballapura district beneficiaries scored 3.07 (ranked 4th), and non-beneficiaries scored 2.60 (ranked 5th). In Chitradurga, the beneficiaries scored 2.97 (ranked 4th), and non-beneficiaries scored 2.50 (ranked 5th). The overall, the mean score for beneficiaries was 3.02 (ranked 4th), and for non-beneficiaries, it was 2.55 (ranked 5th). These results indicated that beneficiaries, especially in Chikkaballapura district, felt more valued by their community for their farming expertise and were more likely to be consulted by others regarding new agricultural practices. This highlighted the psychological benefits of NHM, with beneficiaries experiencing greater respect and recognition from their peers.

Finally, for the statement "The level of diversification in my farmland gives me higher satisfaction," Chikkaballapura district beneficiaries scored 3.78 (ranked 2nd), and non-beneficiaries scored 2.80 (ranked 4th). In Chitradurga, beneficiaries scored 3.68 (ranked 1st), and non-beneficiaries

scored 2.70 (ranked 2nd). Overall, beneficiaries had a mean score of 3.73 (ranked 2nd), and non-beneficiaries had a mean score of 2.75 (ranked 2nd). The results show that diversification in farming led to greater satisfaction among beneficiaries, indicating that NHM's promotion of diversified farming practices has a strong psychological benefit. Beneficiaries felt more contentment with their farming activities, likely due to the increased stability and variety of income sources they derived.

The NHM interventions have significantly impacted the psychological security dimension of pomegranate growers, with beneficiaries reported higher confidence, satisfaction, and a more positive attitude towards risk-taking compared to non-beneficiaries. NHM's support has contributed to the mental and emotional well-being of farmers, especially in fostering a sense of recognition, comfort, and satisfaction with their diversified farming practices. However, both the beneficiaries and non-beneficiaries reported moderate levels of satisfaction in certain areas, particularly in terms of facilities provided and the knowledge gained from farming diversification, suggesting opportunities for further improvement in enhancing the psychological security of farmers.

3.7 Statement wise distribution of pomegranate growers with respect to physical Security dimension of livelihood security

The table 7 presented the statement wise distribution of pomegranate growers with respect to the physical security dimension of livelihood security provides insights into how NHM interventions have impacted the farmers' material assets and overall physical well-being. This included the purchase of livestock, electronic gadgets, land for farming, and improvements in housing, as well as the prestige gained from owning land and farm resources.

Regarding the statement "I have purchased new livestock for securing the family's income," Chikkaballapura district beneficiaries scored 2.48 (ranked 4th), while non-beneficiaries scored 1.83 (ranked 4th). In Chitradurga, the beneficiaries scored 2.35 (ranked 4th), and non-beneficiaries scored 1.86 (ranked 4th). Overall, the mean score for beneficiaries was 2.42 (ranked 4th), and for non-beneficiaries, it was 1.85 (ranked 4th). These results indicated that the purchase of livestock has not been a major outcome of NHM interventions, as both the beneficiaries and non-beneficiaries scored relatively low in this aspect. The low scores suggest that while livestock ownership may contribute to physical security, it has not been a prominent focus of NHM initiatives, or the farmers might not have had sufficient resources to invest in livestock.

In response to the statement "I have purchased new mobiles and other electronic gadgets for better telecommunications," Chikkaballapura district beneficiaries scored 3.63 (ranked 1st), while non-beneficiaries scored 3.57 (ranked 2nd). In Chitradurga, the beneficiaries scored 3.32 (ranked 2nd), and non-beneficiaries scored 3.26 (ranked 2nd). The overall mean score for beneficiaries was 3.48 (ranked 2nd), and for non-beneficiaries, it was 3.42 (ranked 2nd). These results suggested that NHM interventions have had a positive impact on farmers' ability to invest in mobile phones and other electronic gadgets, likely improving their ability to communicate and access information. Beneficiaries reported a slightly higher level of purchasing new electronics, indicating that the increased financial security from NHM has enabled them to invest in these items.

Table 6: Statement wise distribution of Pomegranate growers with respect to psychological security dimension of livelihood security

Sl. No	Statements	Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 60)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	NHM schemes and facilities have increased confidence in availing and repaying loans to the financial institutions	3.67	3	3.50	1	3.58	2	3.23	1	3.63	3	3.38	1
2.	A positive attitude to take risks has been formed due to NHM interventions	4.32	1	2.87	2	3.45	3	2.53	4	3.88	1	2.70	3
3.	Facilities provided by NHM make them to live comfortably	2.98	5	2.20	6	2.65	5	2.10	6	2.82	5	2.15	6
4.	Practicing diversified farming activities enriches my knowledge and skills in farming	2.90	6	2.83	3	2.60	6	2.57	3	2.75	6	2.70	4
5.	Farmers feel and valuing worth in visiting my orchard and to seek my advice regarding new things in growing	3.07	4	2.60	5	2.97	4	2.50	5	3.02	4	2.55	5
6.	The level of diversification in my farm land gives me higher satisfaction	3.78	2	2.80	4	3.68	1	2.70	2	3.73	2	2.75	2

When considering the statement "I have purchased new land for farming due to NHM interventions," Chikkaballapura beneficiaries scored 2.28 (ranked 5th), while non-beneficiaries scored 1.63 (ranked 5th). In Chitradurga, beneficiaries scored 1.98 (ranked 5th), and non-beneficiaries scored 1.60 (ranked 5th). Overall, the mean score for beneficiaries was 2.13 (ranked 5th), and for non-beneficiaries, it was 1.62 (ranked 5th). This indicated that the purchase of new land has not been a significant outcome for either group, with relatively low scores for both beneficiaries and non-beneficiaries. It suggested that while NHM may have improved farm productivity, it has not had a strong influence on the ability of farmers to acquire new land for farming.

For the statement "NHM has helped to own a new house/renovation of house is possible," Chikkaballapura district beneficiaries scored 2.50 (ranked 3rd), and non-beneficiaries scored 2.73 (ranked 3rd). In Chitradurga, beneficiaries scored 2.40 (ranked 3rd), and non-beneficiaries scored 2.13 (ranked 3rd). The overall, the mean score for beneficiaries was 2.45 (ranked 3rd), and for non-beneficiaries, it was 2.43 (ranked 3rd). These results showed that NHM interventions have had a moderate impact on farmers' ability to improve their housing conditions, the beneficiaries scoring slightly higher than non-beneficiaries, suggesting some positive influence on housing security, although the impact is not substantial.

Finally, for the statement "The land and farm-resources owned by me after NHM provides the greatest prestige in the society," Chikkaballapura district beneficiaries scored 3.68 (ranked 2nd), while non-beneficiaries scored 3.80 (ranked 1st). Chitradurga district beneficiaries scored 3.50 (ranked 1st), and non-beneficiaries scored 3.56 (ranked 1st). The overall, the mean score for beneficiaries was 3.57

(ranked 1st), and for non-beneficiaries, it was 3.68 (ranked 1st). This indicated that both the beneficiaries and non-beneficiaries strongly feel that owning land and farm resources contributes to their social prestige. NHM interventions have enhanced the physical security of beneficiaries, as they feel their farm resources brought them respect and status within their community.

The results showed, the physical security dimension of NHM interventions have had a moderate to significant impact on various aspects of farmers' material well-being. Beneficiaries have reported improvements in their ability to purchase electronic gadgets and gain social prestige through land ownership. However, the impact on purchasing livestock, acquiring new land for farming, improving housing has been less pronounced. This suggests that while NHM has positively affected some aspects of physical security, there was still room for further strengthening interventions related to land acquisition, livestock investment, and housing improvements to further enhance the physical security of farmers.

3.8 Statement wise distribution of pomegranate growers with respect to educational security dimension of livelihood security

The table 8 presents the statement-wise distribution of pomegranate growers with respect to the educational security dimension of livelihood security highlights the impact of NHM interventions on the educational opportunities and support systems for the farmers. Educational security encompasses the availability of instructional materials, access to tuition facilities, and other support systems like counseling, transportation, and exposure to better resources.

Table 7: Statement wise distribution of Pomegranate growers with respect to physical Security dimension of livelihood security

Sl. No	Statements	Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 60)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	I have purchased new livestock for securing the family's income	2.48	4	1.83	4	2.35	4	1.86	4	2.42	4	1.85	4
2.	I have purchased new mobiles and other electronic gadgets for better telecommunications	3.63	1	3.57	2	3.32	2	3.26	2	3.48	2	3.42	2
3.	I have purchased new land for farming due to NHM interventions	2.28	5	1.63	5	1.98	5	1.60	5	2.13	5	1.62	5
4.	NHM has helped to own a new house/renovation of house is possible	2.50	3	2.73	3	2.40	3	2.13	3	2.45	3	2.43	3
5.	The land and farm-resources owned by me after NHM provides the greatest prestige in the society	3.68	2	3.80	1	3.50	1	3.56	1	3.57	1	3.68	1

For the statement "It provides better instructional materials and extending tuition facility," Chikkaballapura district beneficiaries scored 3.75 (ranked 1st), while non-beneficiaries scored 3.20 (ranked 1st). Chitradurga beneficiaries scored 3.33 (ranked 1st), and non-beneficiaries scored 2.77 (ranked 1st). Overall, the mean score for beneficiaries was 3.54 (ranked 1st), while for non-beneficiaries, it was 2.98 (ranked 1st). This indicated that NHM interventions have had a notable impact on improving access to instructional materials and tuition facilities, especially for beneficiaries. The higher scores for beneficiaries suggested that NHM has positively influenced the educational opportunities available to them, making them more likely to benefit from the resources provided, such as instructional materials and the possibility of attending tuition sessions. In contrast, non-beneficiaries reported lower scores, which implied that they might have less access to such educational support.

Regarding the statement "Providing incentives, counseling, transport facility, and better exposure are possible," Chikkaballapura district beneficiaries scored 3.52 (ranked 2nd), while non-beneficiaries scored 2.67 (ranked 2nd). Chitradurga beneficiaries scored 3.32 (ranked 2nd), and non-beneficiaries scored 2.63 (ranked 2nd). Overall, the mean score for beneficiaries was 3.42 (ranked 2nd), while

for non-beneficiaries, it was 2.65 (ranked 2nd). These results indicated that NHM interventions have facilitated the provision of incentives, counselling, and transportation for beneficiaries, which has enhanced their access to educational resources. The higher mean scores for beneficiaries compared to non-beneficiaries highlighted the positive impact of NHM in supporting educational mobility and providing opportunities for exposure to different learning environments. Non-beneficiaries, on the other hand, reported lower scores, suggesting they might not have had the same level of support.

The findings indicate that NHM interventions have made a significant contribution to enhancing the educational security of pomegranate growers, particularly for beneficiaries. The access to better instructional materials, tuition facilities, and other forms of educational support such as counseling, incentives, and transportation has notably improved the learning environment for NHM beneficiaries, positioning them to better leverage educational resources. However, the lower scores among non-beneficiaries suggested that these support systems have been less accessible to them, pointing to an area where further interventions could help improve educational security for all farmers.

Table 8: Statement wise distribution of Pomegranate growers with respect to educational security dimension of livelihood security

Sl. No	Statements	Chikkaballapura				Chitradurga				Overall Total			
		Beneficiaries (n ₁ = 60)		Non-beneficiaries (n ₂ = 30)		Beneficiaries (n ₃ = 60)		Non-beneficiaries (n ₄ = 30)		Beneficiaries (n ₅ = 120)		Non-beneficiaries (n ₆ = 30)	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	It provides better instructional materials and extending tuition facility	3.75	1	3.20	1	3.33	1	2.77	1	3.54	1	2.98	1
2.	Providing incentives, counselling, transport facility and better exposure are possible	3.52	2	2.67	2	3.32	2	2.63	2	3.42	2	2.65	2

4. Conclusion

The present study was concluded to know the livelihood security dimensions of pomegranate growers under National Horticulture Mission (NHM). The results demonstrated that NHM has a positive impact on food security, economic

security, social security, ecological and environmental security, psychological security, physical security and educational security of pomegranate growers particularly through increased income, better access to credit, improved loan repayment ability and improvements in access to clean

drinking water and satisfaction from nature-related activities. While both the beneficiaries and non-beneficiaries reported some improvements, particularly in terms of satisfaction derived from farming and health-related conditions and also in areas related to recognition, knowledge and employment opportunities. Further, there were improvements in social relationships and reduced migration and higher sense of harmony with the community. Extending the NHM schemes support to pomegranate growers could help improve their horticultural productivity and economic outcomes, benefiting them in a similar way to NHM beneficiaries.

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