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Research

IMPACT OF NATIONAL HORTICULTURE MISSION (NHM) ON THE ADOPTION OF IMPROVED CHILLI PRODUCTION PRACTICES IN KHARGONE DISTRICT, MADHYA PRADESH

Santosh Kumar[1*] and Satwik Sahay Bisarya[2]and Ema Sawarkar[3]
1 Faculty of Agricultur Science and Technology, AKS University, Satna, Madhya Pradesh, 2 Faculty of Agriculture Science, SAM Global University, Raisen, Madhya Pradesh [3]Assistant 3 Faculty of Agriculture Science, Renaissance University, Indore, Madhya Pradesh
Corresponding E-mail: deanagriculture@samglobaluniversity.ac.in

Abstract-Chilli is one of the most important cash crops of Khargone district, Madhya Pradesh, second only to cotton in terms of area and production. This research aims to study the attitude of beneficiaries and non-beneficiaries of the National Horticulture Mission (NHM) programme concerning improved chilli production practices. The study revealed that the average mean score values for attitude among beneficiaries and non-beneficiaries were 2.10 and 1.97, respectively. The calculated 't' value of 3.63, with 14 degrees of freedom, was significantly higher than the table value of 't' (2.145) at the 5% level of significance. This result leads to the rejection of the null hypothesis (No: II), indicating a significant difference in the attitude towards improved chilli *production practices between* beneficiaries and non-beneficiaries of the NHM programme.

Additionally, the study found that a higher proportion of beneficiaries exhibited a favorable attitude towards various components of chilli production technology under the NHM programme, followed by moderate and unfavorable attitudes. Conversely, non-beneficiaries showed a greater number of unfavorable attitudes, followed by moderate and favorable attitudes.

This research underscores the positive impact of the NHM programme on shaping a favorable attitude among chilli growers towards improved production practices. It also highlights the importance of continued support and training for non-beneficiaries to enhance their adoption of *the practices promoted under the programme.*

Index Terms: *NHM, Adoption, Chilli Grower, Multi-stage Sampling, Beneficiaries, Non-beneficiaries, Attitude, Improved Practices, Chilli Production Technology.*

I. INTRODUCTION

Chilli holds a prominent position among commercial spice crops globally, recognized for its pungency, flavor, and color. It is an essential component of numerous dishes,

enhancing not only the taste but also the visual appeal of food. Known as a "wonder spice," chilli is integral to cuisines around the world. Indian chilli, in particular, is world-famous for two key qualities: its vibrant red color and its pungency levels, making it highly valued in both domestic and international markets.

India stands as the largest producer and consumer of chillies globally, contributing about 36% to the total global chilli production. Furthermore, India is a leader in international trade, accounting for 20% of the world's chilli exports. Madhya Pradesh is one of the key chilli-producing states in India. The state has been identified as a priority area for the National Horticulture Mission (NHM), a programme designed to promote horticultural development and enhance the production of crops like chilli.

Among the districts of Madhya Pradesh, Khargone is one of the most important areas for chilli production. The district is part of the NHM programme, which focuses on improving chilli cultivation through modern techniques and technologies. The region's chillies are known for their distinct pungency and attractive red color. In the state, districts such as Sagar, Chhindwara, Indore, Dhar, Khargone, Khandwa, Badwani, and Burhanpur have been selected for the NHM programme based on their potential for further development in chilli production.

The NHM programme has provided various services to chilli growers in Khargone, including training, financial support, and access to improved technologies. As the programme has been operational for several years, it has become crucial to assess the level of adoption of improved chilli production practices among farmers and to understand their attitudes toward the NHM initiatives.

Khargone district was selected for this study due to its importance in the state's chilli production. The study aims to assess the impact of the NHM programme on the adoption of improved practices and the attitudes of chilli growers. To achieve this, a multi-stage sampling method was applied to select a representative sample from Khargone Tehsil, the area with the largest proportion of chilli cultivation in the district. A list of chilli-growing villages was compiled, and five villages were randomly chosen for the study. From each village, 14 beneficiaries of the NHM programme and an equal number of non-beneficiaries were selected. This resulted in a total sample size of 140 respondents, including both beneficiaries and non-beneficiaries.

The research aims to evaluate the adoption levels of modern chilli production techniques, the impact of the NHM programme, and the farmers' attitudes towards the initiative. The findings will provide valuable insights into the effectiveness of the NHM programme and offer recommendations for enhancing chilli production in Khargone and similar regions.

II. RESEARCH METHODOLOGY

The study was conducted in Khargone district, Madhya Pradesh, selected for its importance in chilli production under the National Horticulture Mission (NHM) programme. A multi-stage sampling technique was used, selecting Khargone

Tehsil (the largest area for chilli cultivation) and five randomly chosen villages. From each village, 14 NHM beneficiaries and 14 non-beneficiaries were selected, resulting in a sample size of 140 respondents.

Data was collected through structured interviews with a pre-designed questionnaire, covering adoption of improved chilli practices, farmers' attitudes, and socio-economic characteristics. Descriptive statistics, mean score analysis, percentage analysis, and independent sample 't'-test were used to analyze the data.

The study tested the hypothesis that there is no significant difference between beneficiaries and non-beneficiaries' attitudes towards improved chilli production practices. Ethical considerations included voluntary participation and confidentiality of information.

IV. RESULTS AND DISCUSSION

4.1 To Study the Level of Attitude of Beneficiaries and Non-beneficiaries of NHM Programme

Beneficiaries: The success of any program is largely influenced by the beneficiaries' attitude towards it. To understand the attitude of beneficiaries towards various aspects of improved chilli production practices under the National Horticulture Mission (NHM) programme, an assessment was made. The attitudinal behavior of the beneficiaries was analyzed based on their responses to various statements about the NHM programme.

Table 4.1: Attitude of Beneficiaries towards Improved Chilli Production Practices under NHM Programme (n=70)

S. N.	Statements	Unfavorable	Neutral	Favorable	Mean Score
1	The scarcity of chilli supply can be removed with the use of improved production technology.	22 (31.43%)	22 (31.43%)	26 (37.14%)	2.06
2	Traditional practices are better than the risk of utilizing improved chilli production technology.	21 (30.00%)	24 (34.29%)	25 (35.71%)	2.06
3	The improved production technology of chilli is more beneficial.	20 (28.58%)	25 (35.71%)	25 (35.71%)	2.07
4	Though improved production practices are suitable, the poor socio-economic condition of farmers does not allow for adoption.	18 (25.71%)	21 (30.00%)	31 (44.29%)	2.19*
5	The socio-economic condition of farmers increases with the use of improved chilli production technology.	22 (31.43%)	23 (32.86%)	25 (35.71%)	2.04
6	Farmers get more profit than the cost of production with improved chilli production technology.	20 (28.57%)	22 (31.43%)	28 (40.00%)	2.11*
7	The adoption of improved chilli production technology is more difficult.	16 (22.86%)	27 (38.57%)	27 (38.57%)	2.16*
8	The chilli crop is more damaged by disease with the production of improved technology.	20 (28.57%)	21 (30.00%)	29 (41.43%)	2.13*
9	The NHM programme is helping farmers adopt improved chilli production technology.	21 (30.00%)	24 (34.29%)	25 (35.71%)	2.06
10	Many farmers are not benefiting from the NHM programme due to lack of extension activities.	22 (31.43%)	23 (32.86%)	25 (35.71%)	2.04
11	Farmers can increase their productivity with the adoption of improved chilli production technology under the NHM programme.	18 (25.71%)	21 (30.00%)	31 (44.29%)	2.19*
12	There is no proper execution of the programme at the right method and right time.	20 (28.58%)	25 (35.71%)	25 (35.71%)	2.07
13	Farmers feel difficulty in getting benefits under the NHM programme.	20 (28.57%)	21 (30.00%)	29 (41.43%)	2.13*
14	The improved chilli production technology is capable of increasing productivity, which is part of the NHM programme.	19 (27.14%)	23 (32.86%)	28 (40.00%)	2.13*
15	NHM programme provides inputs and knowledge of improved chilli production technology to farmers.	20 (28.57%)	22 (31.43%)	28 (40.00%)	2.11*

The results from Table 4.1 indicate that the majority of beneficiaries exhibited a positive and moderately favorable attitude towards the NHM programme's components. The highest favorable attitudes were observed in statements highlighting the potential for increased productivity and the impact of improved production technology, despite socio-economic challenges. Beneficiaries strongly agreed that the adoption of improved practices could boost productivity and that socio-economic conditions should be addressed for broader adoption. However, some beneficiaries also expressed concerns regarding the challenges of adopting improved technology, the potential for disease damage, and difficulties in accessing benefits due to insufficient extension activities. Overall, while beneficiaries recognized the benefits of the NHM programme, they also highlighted areas for improvement, such as better execution and addressing the socio-economic constraints hindering full adoption of the technology.

Non-beneficiaries: In this part of study an attempt was made to ascertain the level of attitude of non-beneficiaries towards various components of improved chilli production technology. Statement wise attitudinal behaviour of non-beneficiaries was presented in table 4.16.

Table: 4.2 Attitude of non-beneficiaries towards improved chilli production practices.(n=70)

S. N	Statements	Unfavorable	Neutral	Favorable	Mean Score
1	The scarcity supply problems of chilli can be removed with the use of improved production technology.	25 (35.71%)	24 (34.29%)	21 (30.00%)	1.97
2	The traditional practices are better than risk of utilization of improved chilli production technology.	28 (40.00%)	22 (31.43%)	20 (28.57%)	2.06*
3	The improved production technology of chilli is more beneficial.	26 (37.14%)	24 (34.29%)	20 (28.57%)	1.97
4	Though improved production practices are suitable but the poor socio-economic condition of farmers not allow for adoption.	26 (37.14%)	24 (34.29%)	20 (28.57%)	1.97
5	The socio-economic condition of farmers increases with the use of improved chilli production technology.	27 (38.58%)	25 (35.71%)	18 (25.71%)	1.93
6	The farmers get more profit than cost of production with improved chilli production technology.	26 (37.14%)	23 (32.86%)	21 (30.00%)	2.01*

7	The adoption of improved chilli production technology is more difficult.	28 (40.00%)	22 (31.43%)	20 (28.57%)	2.06*
8	The chilli crop is more damaged with disease with production of improved technology.	25 (35.71%)	23 (32.86%)	22 (31.43%)	2.01*
9	The NHM programme is helping to the farmers in adoption of improved chilli production technology.	26 (37.14%)	23 (32.86%)	21 (30.00%)	2.01*
10	Many farmers are not getting benefits of NHM programme due to lack of extension activities.	26 (37.14%)	24 (34.29%)	20 (28.57%)	1.97
11	The farmers can increase their productivity with the adoption of improved chilli production technology under NHM programme.	25 (35.71%)	23 (32.86%)	22 (31.43%)	2.01*
12	There is no proper execution of programme at right method and right time.	27 (38.58%)	25 (35.71%)	18 (25.71%)	1.93
13	Farmers feel difficulty in getting benefits under NHM programme.	26 (37.14%)	24 (34.29%)	20 (28.57%)	1.97
14	The improved chilli production technology is capable to increase the productivity which is a part of NHM programme.	25 (35.71%)	24 (34.29%)	21 (30.00%)	1.97
15	NHM programme is providing facilities to the farmers as inputs and NHM programme also provides the knowledge of improved chilli production technology to chilli growers.	24 (34.29%)	24 (34.29%)	22 (31.43%)	1.97
Overall Average		26 (37.14%)	24 (34.29%)	20 (28.57%)	1.97

*Note: Mean scores that are higher than the average mean score value are marked with an asterisk ().**

The analysis of the data presented in Table 4.2 highlights the attitudes of non-beneficiaries toward various components of the NHM programme and improved chilli production technology. The highest favorable attitudes were observed in statements that expressed skepticism about the adoption of the new technology, particularly regarding the perceived risks associated with improved practices. These concerns were reflected in the statements "the traditional practices are better than the risk of utilization of improved chilli production technology" and "the adoption of improved chilli production technology is

more difficult," both of which received the highest mean score of 2.06. On the other hand, several statements reflected a neutral or slightly positive attitude, with mean scores of 1.97, suggesting that non-beneficiaries were not entirely opposed to the improved technology but had reservations about its implementation. These included perceptions of increased productivity, the benefits of NHM assistance, and the challenges faced by farmers in adopting improved practices due to socio-economic constraints. Some statements indicating neutral attitudes, such as concerns about the execution of the NHM programme and the socio-economic impacts on farmers, had the lowest mean score of 1.93. Overall, the data suggests that non-beneficiaries are cautious but open to the potential benefits of the NHM programme, indicating areas where further support, training, and implementation strategies could address concerns and improve adoption rates.

Difference in the attitude of beneficiaries and non-beneficiaries toward towards improved chilli production practices

To compare the level of attitude of beneficiaries and non-beneficiaries, the data has been analyzed and presented in table 4.2.

S. N	Chilli Production Practices	Beneficiaries Mean Score	Non-Beneficiaries Mean Score	Additional Mean Score over Non-Beneficiaries
1.	The scarcity supply problems of chilli can be removed with the use of improved production technology.	2.06	1.97	0.09
2.	The traditional practices are better than risk of utilization of improved chilli production technology.	2.06	2.06	0.00
3.	The improved production technology of chilli is more beneficial.	2.07	1.97	0.10
4.	Though improved production practices are suitable but the poor socio-economic condition of farmers not allow for adoption.	2.19	1.97	0.22
5.	The socio-economic condition of farmers increases with the use of improved chilli production technology.	2.04	1.93	0.11
6.	The farmers get more profit than cost of production with improved chilli production technology.	2.11	2.01	0.10
7.	The adoption of improved chilli production technology is more difficult.	2.16	2.06	0.10
8.	The chilli crop is more damaged with disease with production of improved technology.	2.13	2.01	0.12
9.	The NHM programme is helping to the farmers in adoption of improved chilli production technology.	2.06	2.01	0.05
10.	Many farmers are not getting benefits of NHM programme due to lack of extension activities.	2.04	1.97	0.07
11.	The farmers can increase their productivity with the adoption of improved chilli production technology under NHM programme.	2.19	2.01	0.18

12.	There is no proper execution of programme at right method and right time.	2.07	1.93	0.14
13.	Farmers feel difficulty in getting benefits under NHM programme.	2.13	1.97	0.16
14.	The improved chilli production technology is capable to increase the productivity which is a part of NHM programme.	2.13	1.97	0.16
15.	NHM programme is providing facilities to the farmers as inputs and also provides the knowledge of improved chilli production technology to chilli growers.	2.11	1.97	0.14
Overall Mean Average		**2.10**	**1.97**	**0.13**
t-value		**Calculated value = 3.63**	**Table value = 2.145**	

This table compares the mean scores of beneficiaries and non-beneficiaries across various statements related to improved chilli production practices and the NHM programme. The additional mean score over non-beneficiaries shows how much higher the mean score is for beneficiaries. The t-value indicates the statistical significance of the difference in attitudes.

Overall attitude level of chilli production technology by beneficiaries and non-beneficiaries under NHM programme:

The detail distribution of beneficiaries and non-beneficiaries according to their overall attitude level of all the components of chilli production technology was presented in table 4.3.

Table: 4.3 Distribution of beneficiaries and non-beneficiaries according to their overall attitude of chilli production technology

Attribute	Categories	Beneficiaries	Non-Beneficiaries
Level of Attitude	Unfavorable	20 (28.57%)	26 (37.14%)
	Neutral	23 (32.86%)	24 (34.29%)
	Favorable	27 (38.57%)	20 (28.57%)
Total		70 (100.00%)	70 (100.00%)

This table shows the distribution of beneficiaries and non-beneficiaries based on their overall attitude towards chilli production technology, categorized as unfavorable, neutral, or favorable. The percentages reflect the proportion of each category within the respective groups.

The findings suggest that in the study area, a significant proportion of beneficiaries exhibited a favorable attitude towards various components of chilli production technology under the NHM programme. This was followed by a neutral attitude, and a smaller proportion expressed an unfavorable attitude. On the other hand, the data presented in Table 4.3 indicate that most non-beneficiaries had an unfavorable attitude towards the technology (37.14%), followed by a neutral attitude (34.29%), and only a smaller percentage exhibited a favorable attitude (28.57%).

Thus, it can be concluded that beneficiaries, in general, had a more positive view of the NHM programme's components related to improved chilli production technology, whereas non-beneficiaries tended to hold

more unfavorable or neutral views. This difference highlights the impact of the programme's benefits on beneficiaries' attitudes towards the technology.

Conclusion:

The study focused on assessing the attitude of beneficiaries and non-beneficiaries towards improved chilli production practices under the NHM programme. The analysis revealed notable differences in attitudes between the two groups. Beneficiaries of the NHM programme generally exhibited a more favorable attitude towards various aspects of improved chilli production technology, followed by a neutral and unfavorable attitude. This suggests that the programme has positively influenced the beneficiaries' perception of the technology, possibly due to the benefits they experienced through its adoption, such as increased productivity, profitability, and support from the NHM programme.

In contrast, non-beneficiaries demonstrated a higher proportion of unfavorable attitudes towards the same technology. This group expressed concerns regarding its effectiveness and challenges such as poor socio-economic conditions, difficulties in adoption, and perceived higher risks. While some non-beneficiaries held a neutral attitude, only a smaller percentage found the technology favorable, indicating that they were less inclined to adopt it without the support and guidance provided to beneficiaries.

The study highlights the importance of extending the benefits of the NHM programme to non-beneficiaries through improved extension activities, awareness, and practical demonstrations. Addressing the concerns related to adoption barriers and socio-economic constraints can potentially enhance the adoption rate of improved chilli production technology among non-beneficiaries, leading to more widespread benefits in the study area. Overall, the findings underline the significant role of beneficiary-driven support in fostering a positive attitude towards agricultural innovations and technologies.

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