

## KNOWLEDGE LEVEL OF FARMERS ON RECOMMENDED COFFEE CULTIVATION PRACTICES

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### ABSTRACT

Coffee is an aromatic beverage that is enjoyed and savoured by many across the globe. The government of Nagaland in its “Nagaland vision 2030” stresses on the need to revive coffee plantations as well as expand coffee cultivation, thus, a research was conducted in 2022 with an objective to study the knowledge level of coffee production. The study was conducted in 6 different blocks as per the availability of requisite respondents (Kohima RD block, Mangkolemba RD block, Ongpangkong (South) RD block, Sanis RD block, Wokha RD block and Niuland RD Block) located in 4 selected districts, namely Kohima, Mokokchung, Wokha and Niuland. A structured interview schedule was prepared to collect primary data from a total of 120 coffee cultivators from 8 villages (Touphema, Nerhema, Khar, Khensa, Lakhuti, Wokha, Hovishe, Ghotovi). It is revealed from the data that majority (75.5%) of the respondents had medium level knowledge about the recommended coffee cultivation practices, while 15.5 per cent of the respondents had high level knowledge and 9.0 per cent of the respondents had low level knowledge on recommended coffee cultivation practices. The knowledge index was found to be 95.87. The study recommended that, the concern departments should take up more number of trainings in the grass root level and preventive measures of pest and diseases should be taught.

(Key words: Coffee, knowledge, recommended, practices, farmers, Nagaland)

### INTRODUCTION

Coffee is grown and sourced from all around the world, and there is also a vast array of its kinds available to us all. One such variety is the coffee that originates from the African seeds. The species of *Coffea arabic* and *C. Canephora* carry major economic importance in the production of coffee. Rahman *et al.* (2018) indicated in their study that the knowledge level of Robusta coffee farmers about farm card program were good. The common and traditional method of the plantation of coffee plants is cultivation under the shade of trees where the soil remains cool, which provides a proper habitat for indigenous insects and animals, and it also prevents the top soil from eroding, which has plenty of benefits such as the prevention of the use of artificial fertilizers.

Nagaland, located in the North Eastern region of India has a total area of 16,579 sq km. In Nagaland, coffee is mainly grown in five districts namely; Zunheboto, Mokokchung, Wokha, Mon and Kohima which offers especially high-altitude coffee, grown in the natural shade of the forest. Coffee cultivation in Nagaland began in the 1970s with the encouragement of the Coffee Board of India. The project was carried out in partnership with the Nagaland

Plantation Crops Development Corporation (NPCDC). The introduction of coffee plantation and cultivation in Nagaland was not only for the production of coffee, but also to rid of the practice of jhum cultivation in rural areas of the state, to prevent land and soil erosion in hilly areas and to improve the socio economic conditions of the various tribes in the state. Al-Zaidi *et al.* (2016) found in their study that approximately 51% of respondents had low and 6.5% had high levels of knowledge on coffee cultivation practices. Kabita *et al.* (2021) revealed in their study that most 107 (56.9%) of the farmers reported that they had some knowledge on coffee farming while 81(43.1%) of them either had little or no knowledge on coffee farming. Fithriyyah *et al.* (2020) revealed an unsuitability and gap between the important and knowledge level of farmers about coffee attributes and seedlings accessibility.

Many farmers and inhabitants of the hills in the study area have taken up coffee plantation to prevent the common and frequent disaster of soil erosion. On interaction during the survey, ‘Zoang’ a local farmer in Nagaland believed that farmers like him would be able to possibly change the whole aspect of farming in the state by starting coffee plantation and cultivation. Sema (2021) reported that, the ‘Land Resource Department, Nagaland, has exported 27.5 metric tonnes of coffee to a South African company,

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which earlier signed an agreement to buy Nagaland coffee for 30 years. Challagalla (2021) in her study indicated that considerable demand for Nagaland coffee exists in India and abroad. Achumi (2022) also concluded that majority (62.5%) of the coffee farmers in Nagaland had adopted shade management practices partially while 25 per cent of the respondents had fully adopted the practice. Therefore, with evidences of awareness on coffee cultivation practices, the farmers have a huge prospect on livelihood sustainability through coffee cultivation.

## MATERIALS AND METHODS

The research was conducted in the state of Nagaland in the year 2022. Nagaland is located in the north-eastern region of India with a total geographical area of 16,579 square kilometres. There are 16 districts in Nagaland out of which, 4 districts i.e., Kohima, Mokokchung, Niuland and Wokha were selected respectively. A total of 6 RD blocks namely Kohima, Niuland, Sanis, Wokha, Mangkolemba and Ongpangkong (South) were selected purposively from the 4 selected districts as per the availability of maximum number of farmers actively engaged in coffee cultivation. A total of 8 villages were selected from the selected blocks. From the 8 villages total 110 coffee farmers were purposively selected based on the availability and 10 stakeholders were selected using snowball sampling method making the sample size a total of 120 respondents. The data were collected with the help of structured interview schedule and analysed using proper statistical tools and mathematical methods.

A set of questions based on knowledge was devised to assess the respondent level of knowledge. The knowledge component had a total of 11 questions and each question was divided into a variety of questions based on the recommended practices for coffee cultivation given by LRD, Nagaland and Coffee Board of India. A score of 1 was given to every correct answer, 2 for answers which were partially correct and 3 was given for every incorrect answer respectively. The total score obtained from the respondents were categorized into three categories using mean ( $\mu$ ) and standard deviation (SD) to calculate the knowledge index. Therefore, the respondents were categorized as low level, medium level and high level based on the knowledge index obtained.

The knowledge index, which was used to assess the respondent knowledge, was calculated using the formula given below:

$$\text{Knowledge index (KI)} = \frac{\text{Total score obtained}}{\text{Maximum obtainable score}} \times 100$$

## RESULTS AND DISCUSSION

### Knowledge level

Knowledge level refers to the quantity or level of knowledge that a particular person has acquired. The knowledge could be information about anything gained

through experience or education. Table 1 reveals the knowledge level of the respondents on recommended coffee cultivation practices.

### Land preparation method

From Table 1 it is revealed that, majority (65.45%) of the respondents had complete knowledge about land preparation method, while, 34.53 per cent of the respondents had limited knowledge. 70.90 per cent of the respondents had complete knowledge and 29.09 per cent of the respondents had limited knowledge about the pit size (45cm x 45cm x 45cm) used for land preparation. A study conducted by Achumi (2022) also reported that majority (60%) of the farmers had knowledge on land preparation and pit preparation method.

### Nursery

Table 1 shows that 57.27 per cent of the respondents had complete knowledge and 22.72 per cent of the respondents had limited knowledge about raising beds to 15 cm for nursery preparation.

### Bag nursery

From the above Table it is clear that 69.09 per cent of the respondents had complete knowledge and 19.09 had limited knowledge about bag nursery for which polythene bags with adequate hole containing mixture of black soil, FYM and sand in proportion is used.

### Manure and fertilizer application

Table 1 specifies that 22.72 per cent of the respondents had complete knowledge and 28.18 per cent had limited knowledge about application of FYM/compost @ 5t ha<sup>-1</sup>. Less than one third of the farmers had no knowledge on the importance of manure and fertilizers which is a major source of nutrient for improving the soil health which truly reflects the study done by Ezung *et al.* (2020), where it was found that, “vermin-compost in green gram not only increased the yield but enhanced the productivity of the system and maintained the sustainability of the soil”

### Disease control

Table 1 indicates that 100 per cent of the respondents did not have any information about disease control. A study done by Nongbri *et al.* (2022) reported that farmers had lack of knowledge in disease control and lack in the usage of pesticides in the cultivation of tomato crop.

### Weed management

From the Table 1 presented, it reveals that 63.63 per cent of the respondents had complete knowledge and 34.34 per cent of the respondents had limited knowledge about hand hoeing and hand weeding while 97.27 per cent of the respondents had no knowledge about chemical weed control.

### Irrigation

Table 1 indicates that 36.36 per cent of the respondents had completed knowledge and 47.27 per cent had limited knowledge about drip irrigation used for coffee cultivation.

**Table 1. Distribution of respondents based on their knowledge level on recommended coffee cultivation practices** **N=110**

Sl.No.	Dimensions	Recommended practices	Yes		Partial		No	
			F	%	F	%	F	%
1.	Land preparation method	i) spacing (1.5m x 1.5m)	72	65.45	38	34.54	0	0.00
		ii) pit size (45cm x 45cm x 45cm)	78	70.90	32	29.09	0	0.00
2.	Nursery	Raised beds 15 cm	63	57.27	25	22.72	12	10.90
3.	Bag nursery	Polythene bags with adequate hole containing mixture of black soil, FYM and sand in proportion	76	69.09	21	19.09	0	0.00
4.	Manure and fertilizer application	FYM/compost @ 5 t ha <sup>-1</sup>	25	22.72	31	28.18	50	45.45
5.	Disease control	i) Coffee leaf rust- spray 0.5 per cent Bordeaux mixture during pre-monsoon (may-june)	0	0.00	0	0.00	110	100
		ii) Bayleton 25 WPN @ 0.02 a.i (160g barrel <sup>-1</sup> ) during post monsoon	0	0.00	0	0.00	115	95.45
6.	Weed management	i) Hand hoeing and hand weeding	70	63.63	38	34.34	0	0.00
		ii) Chemical weed control- Gramaxone Glycel	0	0.00	0	0.00	107	97.27
7.	Irrigation	Drip irrigation	40	36.36	52	47.27	0	0.00
8.	Shade management		42	38.18	68	61.81	0	0.00
9.	Bush management	i) Light pruning after harvesting	62	56.36	30	37.27	0	0.00
		ii) Handling, centering and de-suckering	70	63.63	24	21.81	0	0.00
10	Harvesting	i) Time (Nov-March)	61	55.45	26	23.63	0	0.00
		ii) Techniques-Selective picking	67	60.90	43	39.09	0	0.00
11.	Recommended storage practices		48	44.54	43	39.09	0	0.00

F- Frequency, %- Percentage

**Table 2. Distribution of respondents based on their overall knowledge level on recommended coffee cultivation practices** **N=110**

Sl. No.	Range	Category	F	%	Mean	SD	Knowledge index
1	<57	Low	10	9.0	61.48	3.58	95.87
2	57-65	Medium	83	75.5			
3	>65	High	17	15.5			
		Total	110	100			

F- Frequency, %- Percentage

### Shade management

Table 1 reveals that 38.18 per cent of the respondents had complete knowledge and 61.81 per cent had limited knowledge about management of shade for coffee cultivation. Similar results were recorded by Valencia *et al.* (2015) whereby it was concluded that farmers had rich local knowledge on shade management.

### Bush management

Table 1 demonstrates that 56.36 per cent of the respondents had complete knowledge and 37.27 per cent had limited knowledge on light pruning after harvesting. 63.63 per cent of the respondents had complete knowledge and 21.81 per cent had limited knowledge on handling, centering and de-suckering.

### Harvesting

From Table 1, it is revealed that 55.45 per cent of the respondents had complete knowledge and 23.63 per cent had limited knowledge on harvesting time from November to March. 60.90 per cent of the respondents had complete knowledge and 39.09 per cent had limited knowledge about the techniques used for harvesting coffee was selective picking.

### Recommended storage practices

Table 1 reveals that 44.54 per cent of the respondents had complete knowledge and 39.09 per cent had limited knowledge on recommended storage practices of coffee.

### Overall knowledge level on recommended coffee cultivation practices

Table 2 reveals that majority (75.5%) of the respondents had medium level knowledge about the recommended coffee cultivation practices, while 15.5 per cent of the respondents had high level knowledge and 9.0 per cent of the respondents had low level knowledge on recommended coffee cultivation practices. The knowledge index was found to be 95.87%. The production trend of coffee cultivation in Nagaland showed a significant linear trend as reported by Khezhi and Odyuo (2024) which can positively influence the future production.

The study inferred that majority of the coffee farmers have complete knowledge about land preparation and pit size preparation, raised nursery beds, bag nursery, weed management, shade management, bush management and harvesting. It is to be noted that none of the respondents

knew about disease management. Less than half of the respondents had knowledge on recommended storage practices. Manure and fertilizer application are one of the most important factor for increase in yield however only few farmers had knowledge on it.

The study recommended that, the concern departments should take up more number of trainings in the grass root level and preventive measures of pest and diseases should be taught.

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