

Level of Adoption of Recommended Practices in Bittergourd Cultivation in Thiruvananthapuram District

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ABSTRACT

The study entitled 'Level of adoption of recommended practices in bittergourd cultivation in Thiruvananthapuram district' involved 90 bittergourd farmers, with 30 each from Kalliyoor, Manickal and Vembayam Panchayats, during the period, 2015-2016. The study was done to determine the levels of adoption of selected KAU production technologies. Sixteen recommended practices in bittergourd were selected consulting the subject matter specialists. Technology assessment revealed that 65.55 per cent of farmers belonged to medium category of adoption, followed by 17.78 per cent with low adoption level and 16.67 per cent with high adoption level. In the case of technology adoption of plant protection practices, 61.11 per cent belonged to medium adopter category, 21.11 percent were high adopters and 17.78 per cent were low adopters. While in the case of production practices, low adopter category was more than the high adopters with 11.11 per cent and 10 per cent respectively and 78.89 per cent in the medium adopter category.

Key words adoption, assessment, bittergourd, level, practices, technologies.

Agricultural technology is a complex blend of materials, processes and knowledge. It includes

those applications in the field that will enhance the productivity and add to the income of the farmers. Because of the crop specific complexity of agricultural technology, different institutional arrangements are needed to transfer different types of technology to users. Hence it becomes imperative to determine the levels of adoption of its improved production technologies introduced by the various institutions and the factors affecting the rate of adoption.

Technology assessment studies are important in the context of knowing the effectiveness of research and development wing of any system. In fact it acts as a feedback mechanism where the response of the success of any technology is obtained from the study thereby helping in the refinement of available technologies. When the rate of adoption is slow, it results in a loss of benefits of sustainable practices to the cultivators and the public. This is the main reason why so much attention has been given to try and understand what drives adoption of new technologies among farmers (Pannell *et al.*, 2006 and Rogers, 2005). Technology assessment in a whole can serve as a useful feedback to the research system for designing technologies useful to the small and marginal farmers for large-scale recommendation so as to share the benefits of development. It will aid in technology change and improvement in any sphere, increases economic returns and enhance development process of the state (Thomas *et.al.* 2013).

Rahman (2003) reported that cucurbits are excellent vegetables in nature having composition of all the essential constituents required for good health of humans and profitability of the crop. Bittergourds which is an important cucurbitaceous crop, loaded with vitamins and minerals, is widely cultivated in South India. GOK (2015) has reported 58 hectares of cucurbitaceous vegetables in the 11 blocks of Thiruvananthapuram district, of which 37 per cent of area is under bitter gourd cultivation. The yield potential of cucurbits could be increased by adopting the standardized agro-techniques and plant protection measures.

OBJECTIVES OF THE STUDY

The study on level of adoption of recommended practices in bittergourd cultivation was conducted to unearth the extent of adoption of recommended package of practices of KAU (2011) in bittergourd. Hence, the present study was taken up with the objective to assess the level of adoption of selected KAU technologies of bittergourd.

METHODOLOGY

Research Design

Survey research was used to collect the data from the farmers in the field.

Location of study

The study was conducted in Thiruvananthapuram district of Kerala. Predominant bittergourd growing tracts was purposively selected for the study. Three blocks with predominant bittergourd cultivation was selected for study, which included Nemom (11.96 ha), Vamanapuram (6.28 ha), and Nedumangad (5.15 ha). Three panchayaths from each block was then selected to obtain the list of farmers. It included Kalliyoor panchayath, Manickal panchayath, and Vembayam panchayath respectively. The panchayaths were selected on

the basis of rating by the concerned Assistant Director of Agriculture (ADA) of the concerned blocks.

Selection of respondents

The respondent group comprised of bittergourd growing farmers of Thiruvananthapuram district. A total of 90 bittergourd farmers were selected from the Kalliyoor panchayath, Manikal panchayath, and Vembayam panchayath respectively with 30 farmers each from each panchayath.

Operationalisation and measurement of variables

Extent of adoption of selected scientific production technology practices for bittergourd cultivation as perceived by farmers.

Adoption refers to making full use of the recommended practices in bittergourd cultivation by the bittergourd farmers.

The extent of adoption was calculated using adoption quotient for measuring adoption behaviour as developed by Chattopadhyay (1963) and modified by Singh and Singh (1967).

$$AQ = \frac{\sum_{i=1}^n \frac{e_i}{p_i}}{N} \times 100$$

Where,

AQ = Adoption quotient

e_i = Extent of adoption of each practice

p_i = Potentiality of adoption of each practice

N = Total number of practices selected

The respondents were distributed into high, medium and low based on the extent of adoption of recommended practices using mean and standard deviation. The farmer respondents were

Table 1. Distribution of respondents based on the extent of adoption of recommended practices by bittergourd farmers

Sl. No.	Category	Class limits	Total (N-90)		Kalliyoor (n-30)		Manikal (n-30)		Vembayam (n-30)	
			No.	%	No.	%	No.	%	No.	%
1	High (Mean + SD)	>75.78	15	16.67	6	20.00	5	16.67	4	13.33
2	Medium (Mean ± SD)	55.50-75.78	59	65.55	21	70.00	16	53.33	22	73.33
3	Low (Mean - SD)	<55.50	16	17.78	3	10.00	9	30.00	4	13.33

Mean - 65.64

S.D= 10.14

also categorised into the various adopter categories as explained by Rogers (1982).

Different scoring procedures were undertaken for measuring the adoption quotient of various practices. The original numerical data was given as extent of adoption (ei) for quantifiable data like seed rate, spacing etc. and

the recommended practice was considered as the potentiality of adoption of that practice. A few practices were measured in terms of different stages of adoption. Level of adoption of each farmer was indicated on a 15 point adoption scale. The weighted values corresponding to the response categories were non-adoption (0),

Table 2. Adopter categorisation of bittergourd farmer respondents on level of adoption of recommended practices in bittergourd

Category	No.	%	Rogers standard curve
Innovators	2	2.22	2.5
Early adopters	12	13.33	13
Early majority	23	25.56	34
Late majority	38	42.22	34
Laggards	15	16.67	16
Total	90	100	

Mean- 68.54

SD - 9.80

Table 3. Distribution of respondents based on the extent of adoption of recommended plant production practices by bittergourd farmers

Sl.No	Category	Class limits	Total(N-90)		Kalliyoor (n-30)		Manikal (n-30)		Vembayam (n-30)	
			No.	%	No.	%	No.	%	No.	%
1	High (Mean + SD)	> 78.34	9	10.00	5	16.67	2	6.67	2	6.67
2	Medium (Mean ± SD)	58.74-78.34	71	78.89	23	76.67	22	73.33	26	86.67
3	Low (Mean - SD)	< 58.74	10	11.11	2	6.67	6	20.00	2	6.67

awareness (1), interest (3), evaluation (6), trial (10) and adoption (15). Those practices which could not be quantified were scored dichotomously as 'Yes' or 'No' with the maximum score '1' for the response 'Yes' and minimum score '0' for 'No' response. After calculating the adoption quotient for various practices the adopters were categorized and compared with the standard Rogers (1982) curve.

RESULT AND DISCUSSION

Distribution of respondents based on the extent of adoption of recommended practices by bittergourd farmers

The distribution of respondents based on the extent of adoption of recommended cultivation practices by bittergourd farmers is presented in Table 1 and graphically represented in fig. 1. The

Table 4. Adopter categorisation of bittergourd farmer respondents on level of adoption of recommended plant production practices in bittergourd.

Category	No.	%	Rogers standard curve
Innovator	1	1.11	2.5
Early adopters	9	10.00	13
Early majority	33	36.67	34
Late majority	38	42.22	34
Laggards	9	10.00	16

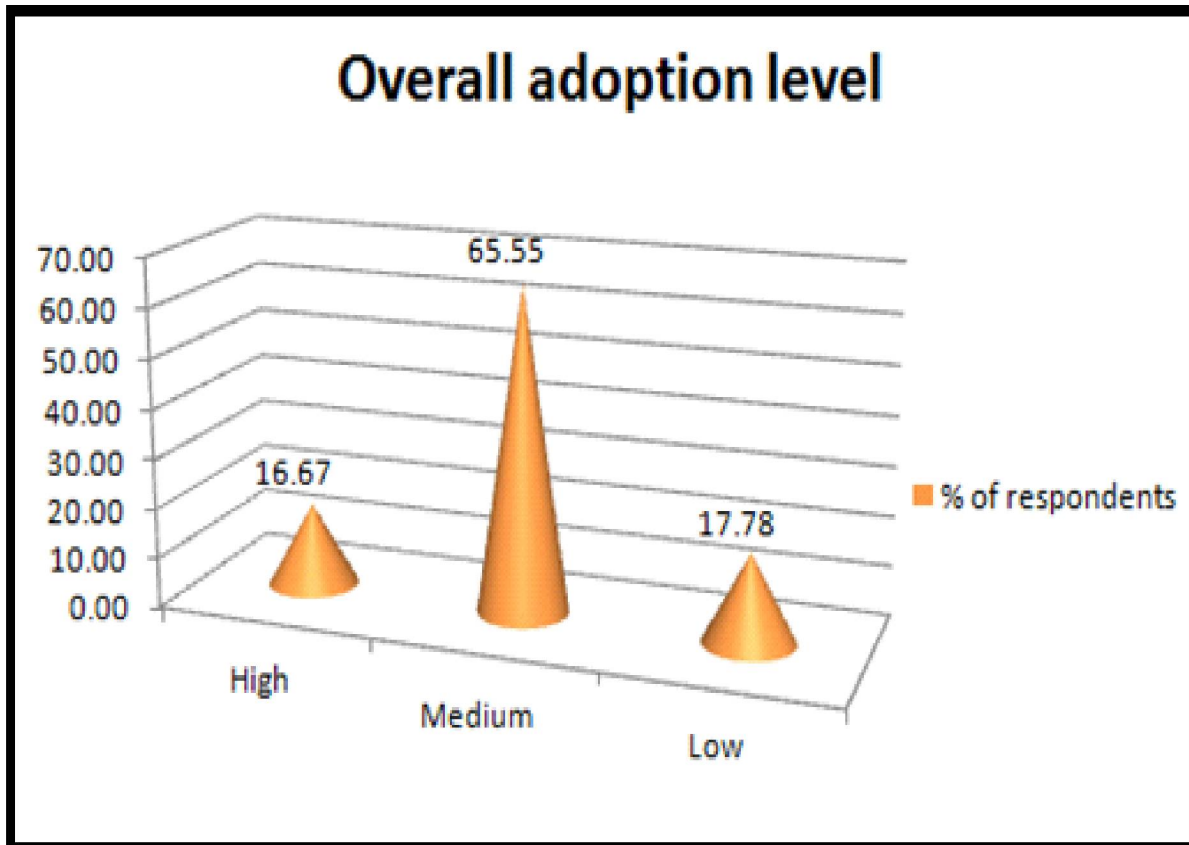


Fig 1. Distribution of respondents based on overall adoption level

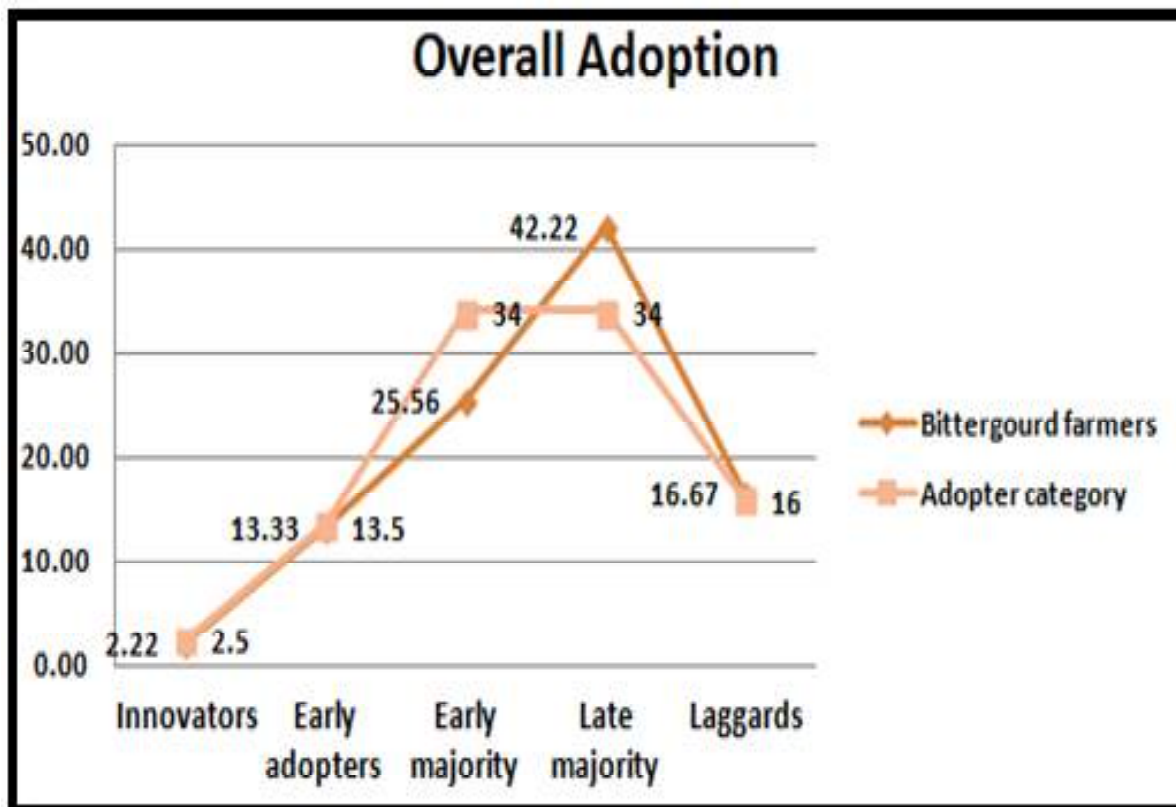


Fig. 2. Comparison of adopters of overall practices with standard Rogers curve

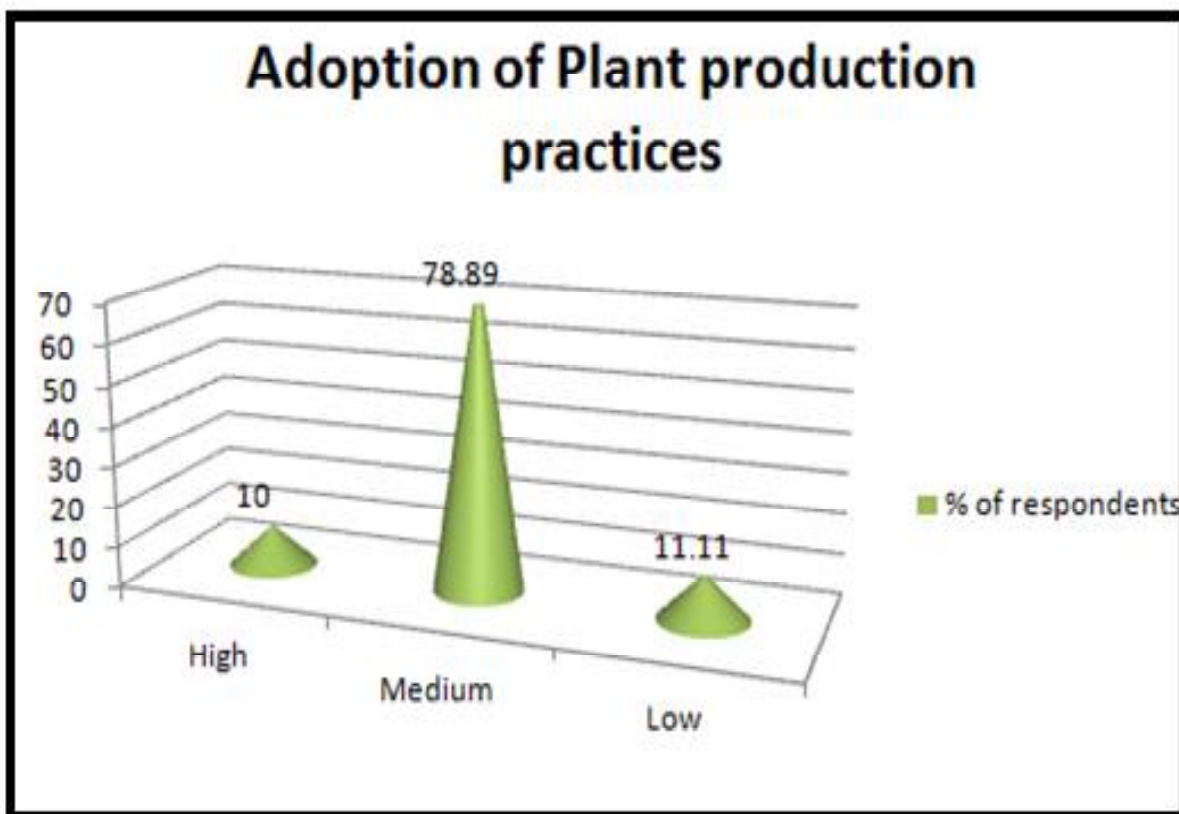


Fig. 3. Distribution of respondents based on adoption of plant production practices

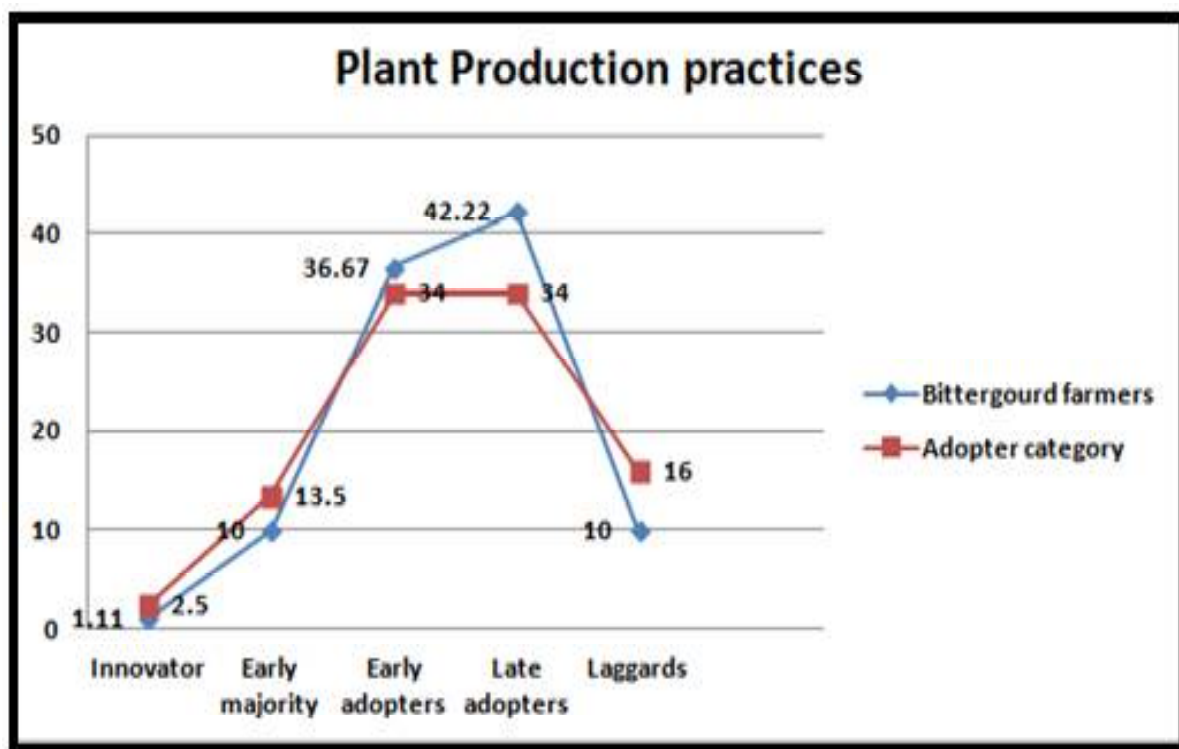


Fig. 4. Comparison of adopters of plant production practices with standard Rogers curve

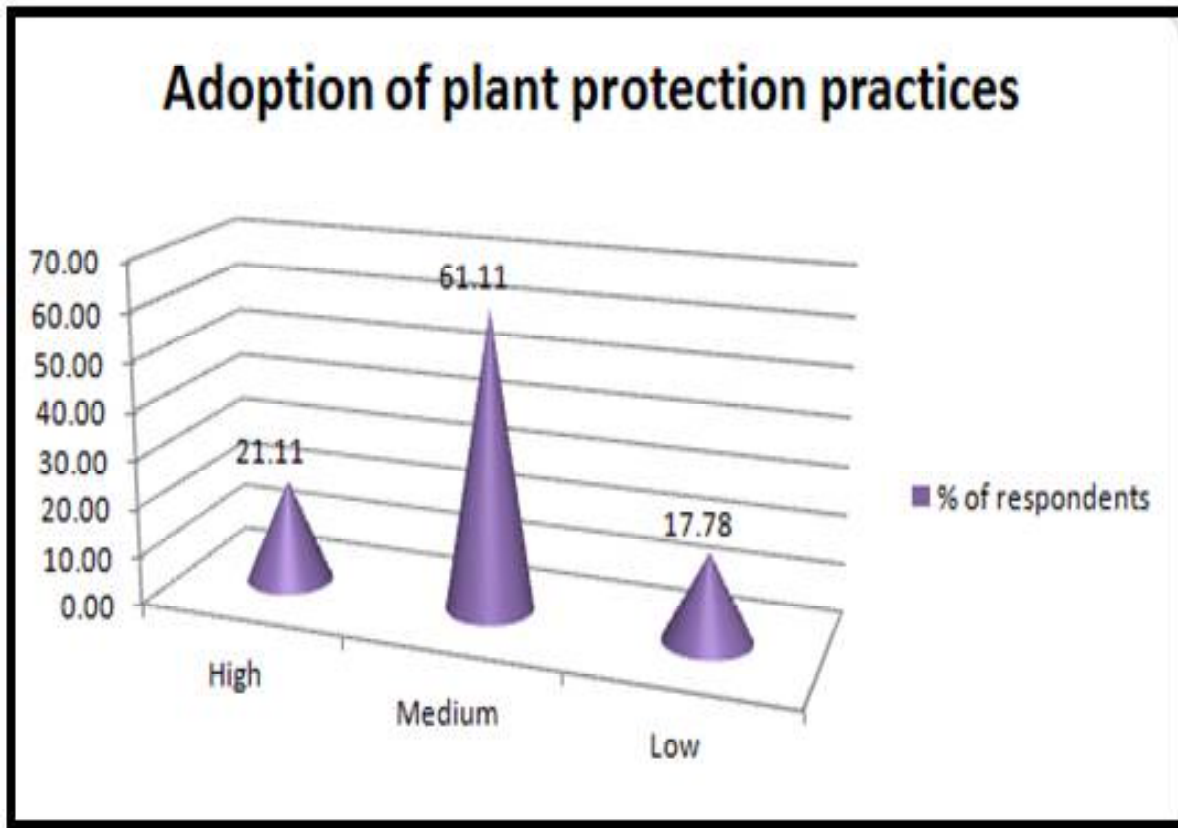


Fig 5. Distribution of respondents based on the adoption of plant protection practices

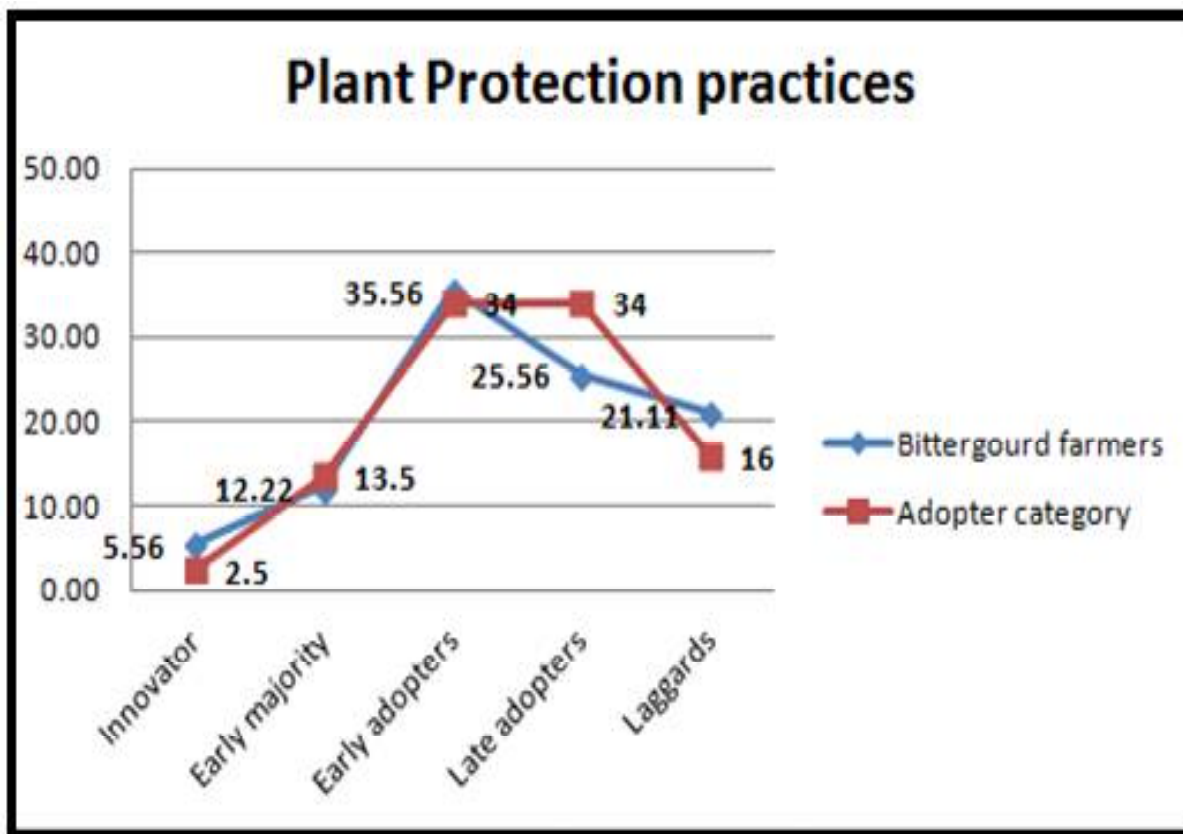


Fig. 6. Comparison of adopters of plant protection practices with standard Rogers curve

Table 5. Distribution of respondents based on the extent of adoption of recommended plant protection practices by bittergourd farmers

Sl.No	Category	Class limits	Total(N- 90)		Kalliyoor (n- 30)		Manickal (n-30)		Vembayam (n-30)	
			No.	%	No.	%	No.	%	No.	%
1	High (Mean + SD)	78.04	19	21.11	5	16.67	7	23.33	7	23.33
2	Medium (Mean \pm SD)	45.77- 78.04	55	61.11	23	76.67	16	53.33	16	53.33
3	Low (Mean - SD)	45.77	16	17.78	2	6.67	7	23.33	7	23.33

Mean- 61.90

SD- 16.14

respondents were categorised into high, medium and low adopters of recommended protection practices in bittergourd.

On perusal of table 1 and fig. 1 it was evident that majority of farmers falls under medium category with 65.55 per cent. It is followed by low and high category with 17.78 and 16.67 per cent respectively. There is only a slight difference

between the distributions of respondents in high and low category. So it was inferred that majority of bittergourd farmer respondents falls under medium adopters.

Panchayat wise distribution also reflected the total results, with more farmers falling in the medium adoption category. In Manikal Panchayat, 30 per cent of farmer respondents were low

Table 6. Adopter categorisation of bittergourd farmer respondents on level of adoption of recommended plant protection practices in bittergourd

Category	No.	%	Rogers standard curve
Innovator	5	5.56	2.5
Early adopters	11	12.22	13
Early majority	32	35.56	34
Late majority	23	25.56	34
Laggards	19	21.11	16
Total	90	100.00	

adopters which were higher than the other two panchayats. In Vembayam panchayat there was an equal share of farmer respondents in the low and high category of adopters.

The adoption score ranged between 33.52 and 89.03 with a mean score of 65.64. There was no respondent who completely adopted all the practice recommended by KAU for bittergourd cultivation.

The farmer respondents were categorised into different adopter categories as explained by Rogers (1982) namely, innovators, early adopters, early majority, late majority and laggards and presented in table 2.

Table 2 and the corresponding figure (fig. 2) revealed that percentage of innovators were 2.22 per cent which is in near conformation with standard Rogers curve. Early adopters were 13.33 per cent which is also near to the 13.5 per cent in Rogers curve. Early majority were 25.56 per cent which was less than 34 per cent in the standard curve. Late majority were 42.22 per cent which was more than 34 per cent of Rogers curve. High percentage of respondents in late majority category and low percentage in early majority is a weak indicator of adoption. Laggards constituted 16.67 which are almost in conformity with the 16 per cent laggard of standard Rogers curve.

The findings signify that there is a need for effective extension mechanism along with support and encouragement so that the percentage of late majority can be further reduced which will enhance the percentage of early majority.

Distribution of respondents based on the extent of adoption of recommended plant production practices by bittergourd farmers

The distribution of respondents based on the extent of adoption of recommended plant production practices by bittergourd farmers is

presented in Table 3 and fig. 3. The respondents were categorised into high, medium and low adopters of recommended protection practices in bittergourd.

From table 3 and fig. 3, it is clear that 78.89 per cent of respondents fall in the medium adoption category followed by 11.11 per cent low adopters of recommended plant production practices and 10 per cent of respondents in the high category.

The farmer respondents were categorised into different adopter categories as explained by Rogers (1982) namely, innovators, early adopters, early majority, late majority and laggards and presented in table 4. and fig. 4.

On observing table 4 and fig. 4, it can be analysed that percentage of innovators were 1.11 per cent as against 2.5 per cent in the standard Rogers curve. Early adopters were 10 per cent which was less than the 13.5 per cent in Rogers curve showing less adoption of production practices in bittergourd cultivation. Early majority and late majority which were 36.67 per cent and 42.22 per cent respectively was more than the 34 per cent of Rogers curve. But the higher percentage belonging to late majority indicates lower adoption. Laggards constituted 10 per cent which was again less than 16 per cent of standard Rogers curve.

Efforts should be focussed on developing and disseminating location specific and sustainable production practices according to the need of the farmers.

Distribution of respondents based on the extent of adoption of recommended plant protection practices by bittergourd farmers

The distribution of respondents based on the extent of adoption of recommended plant protection practices by bittergourd farmers is presented in Table 5 and fig. 5. The respondents were categorised into high, medium and low

adopters of recommended protection practices in bittergourd.

From table 5, it is clear that 61.11 per cent of respondents fall in the medium adoption category followed by 17.78 per cent low adopters of recommended plant production practices and 21.11 per cent of respondents in the high category.

In the panchayat wise distribution, the adoption level ranged from medium to high in Kalliyoor panchayat. While in Manikal and Vembayam panchayat there was an equal share of respondents with high and low adoption level (23.33%) and more than half of the respondents possessed medium adoption level (53.33%).

The farmer respondents were categorised into different adopter categories as explained by Rogers (1982) namely, innovators, early adopters, early majority, late majority and laggards and presented in table 6. and fig. 6.

Table 6 and fig. 6 revealed that respondents belonging to innovator category were 5.56 per cent which was higher than the normal Rogers curve. Early adopter per cent of 12.22 per cent was almost on par with the normal curve. The early majority was higher than the normal Rogers curve. Late majority which was 25.56 per cent was lesser than the standard per cent of 34 in Rogers curve. All this are indicating a fairly good level of adoption of protection practices by farmers. However table designates that laggards were 21.11 per cent which was greater compared to the normal value of 16 per cent.

The higher percentage of laggards reveals the dubious nature of few farmers when it comes to protection practices. Farmers are reluctant to try protection practices owing to multiple reasons like the effectiveness, sustainability, cost and returns of the technologies.

Therefore extension efforts should focus on effective transferring of those protection practices that the laggard category of farmers

are reluctant to adopt after identifying the reasons so that their percentage can be lowered to a great extent and hence thereby increase the adoption level.

CONCLUSION

Technology assessment revealed that 65.55 per cent of farmers belonged to medium category of adoption, followed by 17.78 per cent with low adoption level and 16.67 per cent with high adoption level.

Major portion of farmer respondents were late majority (42.22 %) followed by early majority (25.56). About 2.22 per cent of the farmers were innovators.

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