

Research Note

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DOI: <https://doi.org/10.26725/JEE.2019.1.31.6249-6254>**Developing a Scale to Measure the Trend in Millet Farming and Attitude of Farmers towards Millet Cultivation****P. Jaisridhar¹ and P. Parasuraman²****ABSTRACT**

In the recent years concern for millets has been on the rise. Sources had shown that there is an existence of valid linkage between millets and poverty reduction. A study was designed to develop a scale to measure the current trend in millet farming and changing attitude of farmers towards millet cultivation. The study was conducted in Tiruvannamalai and Vellore Districts of Tamil Nadu. Twenty statements reflecting the changing trends towards millet farming were generated. Likert's method was employed in the scale construction and the final scale comprising 10 statements was standardized.

Keywords: Millet farming; Scale construction; Likert's method; Item analysis; Reliability; Validity; Tamil Nadu.

One of the historically under emphasized areas within agriculture is rainfed agriculture. Despite India's significant investments in irrigation, around 60 percent of total area remains rainfed, responsible for about 40 percent of national food supply (Season and Crop Report, 2012). Given the physical and institutional limits to the indefinite spread of irrigated systems, rainfed farming will remain a central and conspicuous feature of the national agricultural landscape. Despite its importance, some of the areas requiring attention in rainfed farming are lack of reach of improved methods of production and technologies like improved varieties to small millet farmers, lack of organized seed distribution mechanism to supply good quality seeds for small millet crops in accordance with

farmers preferences, lack of appropriate post-harvest processing technologies for small millets except finger millets, competition from other market friendly remunerative crops, lack of public procurement and marketing support and lack of available information primarily about small millets, which reduces the ability to introduce policy measures (DHAN Foundation, 2012).

To promote millet research, the Tamil Nadu Agricultural University had established the Centre of Excellence in Millets at Tiruvannamalai District of Tamil Nadu. The institute has been functioning since 2014 and it was felt that it would be the right time to focus on the attitude of millet growing farmers of Tiruvannamalai and the adjacent Vellore Districts towards current trends in

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farming and changing attitude towards millet cultivation. Moreover, millet cultivation is declining due to several reasons few of which are processing hardship, low economic gains and lack of awareness about nutritional significance. Hence in view of these facts, a study was undertaken to develop a scale to measure the current trend in farming and changing attitude of farmers towards millet cultivation.

METHODOLOGY

The research was undertaken in the state of Tamil Nadu and Tiruvannamalai & Vellore Districts were selected purposively for the study due to the growing awareness on millets among farmers of these district and willingness shown by farmers in acquiring tips on new cultivation practices in millets. To have representative sample of millet growing areas of Tiruvannamalai and Vellore districts, three blocks from each district viz., Chengam, Thandrampattu and Jamunamuthur blocks of Tiruvannamalai district & Jolarpet, Gudiyatham & K.V. Kuppam blocks of Vellore district were purposively selected, having the highest millet cultivation area.

A total of 30 respondents for item analysis and 30 for testing reliability were selected based on the production of millets in various blocks. It was ensured that the thirty farmers selected for item analysis were removed from their respective lists before the selection of thirty farmers for testing reliability.

Thus the total number of farmers respondents selected for the scale construction was 60.

Likert's method was employed in the construction of the attitude scale. The relevant items covering the universe of content in the measurement of changing trend towards millet farming were collected by extensive review of literature and discussion made with experts in the concerned field. A total of 50 statements reflecting the attitude of the respondents towards changing trend towards millet farming were generated. The statements were then edited using the criteria suggested by Edwards (1969) and finally 20 statements were retained after deleting ambiguous, irrelevant and non-conforming statements as per the above said criteria.

The relevancy of the items generated was established by sending these statements to 58 judges with appropriate instructions. The judges comprised experts in the field from agricultural universities across South India. The experts were to rate the degree of relevancy of each items in measuring the indigenous wisdom orientation of the stakeholders on a five point continuum as 'Most Relevant', 'Relevant', 'Undecided', 'Less Relevant' and 'Not Relevant' with scores of 5, 4, 3, 2 and 1 respectively. Out of 58 judges, 29 responded within a time span of one month. The scores for each items were summated over all the respondents and a relevancy index was worked out using the formula :

$$\text{Relevancy index} = \frac{\text{Actual score obtained for each statement}}{\text{Maximum possible score obtained by each statement}} \times 100$$

Those items, which secured a relevancy index of 49 and above were finally selected, thereby retaining 15 items to be included in the scale. Item analysis was performed for the statements selected and was standardized by testing its validity and reliability. Item analysis is a set of procedures that are applied to know the indices for truthfulness (or validity) of the items in a scale (Singh, 2006). The 15 items selected based on the relevancy rating by the judges were administered to 30 farmers and the responses were obtained on a five-point continuum ('Most Relevant', 'Relevant', 'Undecided', 'Less Relevant' and 'Not Relevant'). For carrying out item analysis, two types of scores were used. These were the item score, referring to the score of an individual on a particular item and the total score referring to the summation of the item scores of an individual. These scores were used to arrive at the discrimination index and the item score total correlation. The index of discrimination indicates the power of an item to discriminate the low effectiveness category of the respondents. Following the suggestion of Edwards (1957), 25% of subjects with high total score and 25% of subjects with lowest total score were selected. The critical ratio (t-value) of each item was calculated using the formula

$$t = \frac{X_H - X_L}{\sqrt{\frac{S_H^2}{n_H} + \frac{S_L^2}{n_L}}}$$

Where,

X_H - Mean score on a given statement with high group

X_L - Mean score on same statement with low group

S_H^2 - Variance of distribution of response of high group

S_L^2 - Variance of distribution of response of low group

n_H - Number of subject in high group

n_L - Number of subject in low group

In item score-total score correlation, the correlation between the individual item score and total score is computed as a measure of the discriminatory power of the items.

The scale developed was standardized by testing its reliability and validity. The reliability of the scale refers to consistency of test scores obtained by the same individual on different occasions or with different sets of equivalent forms. Split-half reliability was used in the present study using odd-even method. The scale developed was administered to 30 respondents and their responses were collected. The scores obtained for all the odd items and all even items were pooled. The two sets of scores thus obtained were correlated using Pearson's product moment correlation. The reliability of the full test was obtained using the formula:

$$\text{Reliability of the full test} = \frac{2 \times \text{Reliability of the } \frac{1}{2} \text{ test}}{1 + \text{Reliability of the } \frac{1}{2} \text{ test}}$$

FINDINGS AND DISCUSSION

The results of the study have been presented in this section on t-value and r-value of the statements, standardization of the scale and administration of the scale. The discrimination index and the item score total score correlation of the 15 items performed are presented in Table 1. It could be observed that the calculated 't' value were found to be distributed between 1.98 and 4.34. After computing the 't' value for all the items, statements equal to or greater than 1.96 at 1% level of significance were chosen for the final scale.

Standardization of Scale

A scale should measure what it intends to measure and it should be consistent in its measurement. A scale thus has to be standardized before it is administered. The

present scale developed was also standardized by verifying its reliability and validity.

Reliability of the Scale

The correlation co-efficient ($r = 0.437$) for the half test was obtained. The reliability of the full test was found to be 0.493, which indicates appreciable reliability of the scale.

Validity of the scale

Determination of content validity essentially involves the systematic examination of the test content to determine whether it covers a representative sample of the behavior domain being measured. Care was taken to include the important items covering the universe of content with respect to current trend in farming and changing attitude of farmers towards millet cultivation thereby satisfying the content validity criterion.

Table 1.
Item Analysis

Sl. No.	Statements	'r' value	't' value
1	Millets play a supportive role in marginal agriculture*	0.362	3.00
2	Millet based food and beverages are not preferred by many across the country*	0.523	4.34
3	Millets are cheaper in market making easy access of purchase by everyone*	0.393	4.13
4	Since millets are locally cultivated, the grains are readily available for the farmers	0.100	1.40
5	Over the last few years, there is an increasing recognition of millets in their favorable nutrient consumption and benefits as health foods*	0.306	1.98
6	Public Distribution System does not procure or distribute millets and due to this below poverty line people do not have awareness on millets.	0.277	3.90

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Sl. No.	Statements	'r' value	't' value
7	Millets being drought tolerant when promoted, the utility of land will be boosted to many folds*	0.396	2.93
8	Millets' value addition is the main focus of urban market	0.123	1.35
9	Involving millet farmers in state planning will help bring better change in state's agriculture.*	0.131	2.97
10	Lack of modern technology for effective millet processing and utilization is an important reason in decline of millets*	0.356	2.00
11	Considering the views of millet famers in the planning process will help bring a change in state agriculture policies	0.103	1.65
12	Value added product in millets mostly focus on urban market than rural market due to the margin they fix for millet value added products*	0.148	3.18
13	Improved seed production technologies in millets through block demonstration may help create awareness on the importance of millets among farmers	0.070	1.10
14	Government should ensure access to appropriate millet seeds for farmers with financial support and subsidy for nutritious underutilized crops	0.081	1.74
15	Lack of awareness among farmers on environmental sustainability and nutritional health benefits of millets reduces its demand in present scenario*	0.284	2.80

**Statements selected to construct the final scale*

Administration of the Scale

The final scale consisting of 10 statements in random order can be presented to respondents to indicate their response on a three point scale consisting of Agree, Neutral and Disagree with scores 3, 2, and 1 respectively for positive statements and reverse score for negative statements. The total score for all the statement of each respondent can be worked out and categorized into 'high', 'medium' and 'low' attitude to changing trends towards

millet farming on the obtained scores.

The scale developed to measure the attitude of millet farmers would serve to quantify the orientation level of farmers towards changing trend in farming and the data so obtained could be replicated elsewhere to understand the current trend and changing attitude of farmers towards millet cultivation which in turn will help in formulating strategies for encouraging conservation / sustainable farming.

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