

### **A SCALE TO MEASURE THE ATTITUDE OF COTTON GROWERS TOWARDS WEATHER BASED AGRO-ADVISORY SERVICES IN TELANGANA AND ANDHRA PRADESH STATES.**

#### **ABSTRACT**

In this modern era, climate change is the most severe challenge experienced in the field of agriculture. To become climate smart, farmers should be equipped well with weather forecast information in prior to do farm operations. Hence, this study represents the construction of an attitude scale to understand the attitude of farmers towards weather based agro-advisory services. Keeping this in view, an attempt has been made to develop a scale for measuring the attitude of farmers towards weather based agro-advisory services in cotton cultivation. Likert's method of summated rating technique was adopted to construct the scale. Based on the available literatures and expert's opinion, 40 statements were developed. After editing as per informal criteria, 33 statements were subjected to item analysis among the farmers of non-sample area. Out of which, 30 statements were retained in the developed attitude scale based on the highest 't' value. The reliability and validity of the constructed scale were found appropriate to measure the attitude of farmers towards weather based agro-advisory services.

**Keywords:** *Attitude, Cotton growers, Farmers, Weather based agro-advisory services, Likert scale, Summated rating technique.*

#### **INTRODUCTION**

In developing countries, agriculture must be transformed to meet the needs and challenges in food insecurity and climatic change (FAO, 2010). Climate change acts as a major threat to human kind and resulted in severe changes geological, biological and ecological systems. Cline (2008) reported that changes in weather parameters like precipitation and temperature in marginal areas were expected to reduce production and productivity of that region in an erratic way. Thus, agriculture should undergo a transition to become climate smart to address the need for food security and utilization of effective resources in an efficient way. India has varied weather conditions which invariably affects the farming operations. Thus, farmers

during each stage of farming operations need different types of information (Mittal, 2012) such as weather forecasts, crop protection measures, input and marketing information.

Rivera (1996) quoted that, based on the land holding size of farmers or the agro-climatic region of the farmer, the information required by them will differ. For this purpose and seek advice on weather related problems, farmers mostly depend on the neighboring farmers and input dealers (Bhaskar, 2012), But Claire *et al.*, (2010) stated that most of the Indian farmers don't have such kind of information sources. To serve this purpose, weather based agro-advisory services play a vital role in providing weather forecast to farmers through various sources. Providing weather based agro-advisory services facilitates the farmers to plan well in advance regarding the various farm operations like, sowing, fertilizer and pesticide application, manuring, transplanting, harvesting, marketing, etc. Hence, there arises a need to understand the attitude of farmers towards weather based agro-advisory services; for which, this study was formulated to construct an attitude scale.

## **METHODOLOGY**

Likert's method of summated rating is adopted in the construction of attitude scale. Kothari (2004) stated that in summated rating scale / Likert scale, the respondent is requested to respond to each of the statement based on their degree of agreement or disagreement in a five point or seven-point continuum.

### **1. Collection of items**

The statements were developed based on the available literature and experts opinion, 40 statements were developed. Based on the informal criteria given by Edwards (1957), those statements were edited and finally 33 statements were retained.

### **2. Item analysis**

The statements were sent to farmers of non-sample area to get their responses. The respondents (farmers) were requested to indicate their response as 'Strongly agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly disagree' with the scores 5, 4, 3, 2 and 1 respectively,

for favorable statements and scoring pattern is reversed for negative statements. Based on the total scores obtained by the respondents, they were arranged in descending order. For each respondents, the possible highest score was 165 and the least possible score was 27.

The ‘t’ value was calculated to identify the extent of differentiation between highest and lowest group. The criterion group is selected by selecting 25 per cent of the respondents with highest scores (high group) and 25 per cent of the respondents with the lowest scores (low group). In order to calculate ‘t’ value, the following formula was used.

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum(X_H - \bar{X}_H)^2 + \sum(X_L - \bar{X}_L)^2}{n(n-1)}}$$

$$\sum(X_H - \bar{X}_H)^2 = \sum X_H^2 - \frac{\sum(X_H)^2}{n}$$

$$\sum(X_L - \bar{X}_L)^2 = \sum X_L^2 - \frac{\sum(X_L)^2}{n}$$

Where,

$\bar{X}_H$  = the mean score on a given statement for the high group

$\bar{X}_L$  = the mean score on the same statement for the low group

$X_H$  = The sum of scores of all subjects on a given statement for the high group

$X_L$  = The sum of scores of all subjects on a given statement for the low group

$X_H^2$  = Sum of squares of the individual score on a given statement for high group

$X_L^2$  = Sum of squares of the individual score on a given statement for low group

The calculated ‘t’ value is presented in table.1. The statements which possess the highest ‘t’ value are selected.

**Table.1. Calculation of ‘t value’**

| Statement number | Statement   | ‘t’ value |
|------------------|---|-----------|
| 1                | I believe weather based agro-advisories services are timely | 3.226**   |

|     |  |          |
|-----|--|----------|
|     | available  |          |
| 2*  | I felt that advisory given are not practically applicable  | 0.537    |
| 3   | I perceive weather forecast given in the agromet advisory bulletins are reliable   | 2.688**  |
| 4*  | I feel inputs and plant protection chemicals suggested in the agro advisory bulletins are difficult to purchase or not available in the market | 1.613**  |
| 5   | I perceive Agro-advisory services are effective  | 2.688**  |
| 6*  | I feel Agro Advisory messages are clear, adequate and useful   | 3.226*   |
| 7   | I am willing to pay for advisory services, if I can get more appropriate and useful information.   | 8.065**  |
| 8   | I think yield is enhanced by deploying the advisory services   | 5.914**  |
| 9*  | I felt that information provided by WBAS are not timely  | 0.538    |
| 10  | I perceive pest and disease occurrence was reduced by employing the advisory services  | 7.523**  |
| 11* | I feel agro-advisory services suggested are very costly  | 5.914**  |
| 12  | I foresee WBAS provides information on weather parameters which helps to plan farming operations in prior                                      | 2.151**  |
| 13* | I think recommended advisory services are not feasible   | 2.151**  |
| 14  | I perceive agro-advisory services increases the social contact   | 1.075**  |
| 15  | I opine traditional method of weather based farming is more credible than WBAS   | 4.301**  |
| 16  | I think Information from agro-advisory services are not need based   | 4.301**  |
| 17* | I think Utilization of agro advisory services reduces cost of production   | 6.989**  |
| 18  | I think agro-advisory services are not location specific   | 11.828** |
| 19* | I am ready to accept the Agro-advisory services as it suits to my cropping pattern and field conditions  | 6.452**  |
| 20  | I felt that agro-advisory services help to mitigate the climate change   | 5.376**  |
| 21  | I feel that agro-advisory services reduces the dependency of farmers towards extension agent for weather information                           | 6.452**  |
| 22* | I agree agro-advisory services are adaptable in field conditions   | 5.914**  |
| 23  | I feel Agro-advisory services are difficult to avail   | 5.376**  |
| 24* | I think Agro advisory services are not crop specific   | 6.452**  |
| 25* | I believe that WBAS facilitates better crop management   | 7.523**  |
| 26  | I can sense the increased level of awareness among farmers towards WBAS  | 0.000    |

|     |  |          |
|-----|--|----------|
| 27  | I can understand that farmers are preferring WBAS because of its benefits like prior crop planning                                   | 2.688**  |
| 28  | I feel that illiteracy among farmers hinder the adoption of WBAS among them  | 13.441** |
| 29* | I think that Agro-advisory services are not valid on account of climate change   | 8.065**  |
| 30* | I admit that WBAS increased my social status among the farmers   | 3.763**  |
| 31  | I can feel that WBAS encouraged farmers to do prior crop planning based on weather data  | 6.452**  |
| 32  | I think that WBAS will motivate the farmers to adopt new cropping pattern despite of their farming experience for increased benefits | 9.140**  |
| 33  | I assure that introduction of WBAS among farmers, motivated them to adopt new innovative technologies                                | 5.914**  |

\* Negative statements, \*\* Statements with significant *t* values

### 3. Selection of statements for final attitude scale

According to Jamal (2018), the norms to consider a statement for the final scale were

- i. 't' value of more than 1.75.
- ii. the statement should be expressing a new idea which does not overlap with the idea expressed by the other statement.
- iii. the statement should be simple worded and brief.

The final list of selected statements for construction of attitude scale were presented in table.2.

**Table.2. Final list of statements selected for construction of attitude scale**

| S. NO. | STATEMENTS   | RESPONSE |   |    |   |    |
|--------|--|----------|---|----|---|----|
|        |  | SA       | A | UD | D | DA |
| 1      | I believe weather based agro-advisories services are timely available            |          |   |    |   |    |
| 2      | I perceive weather forecast given in the agromet advisory bulletins are reliable |          |   |    |   |    |

|    |  |  |  |  |  |  |
|----|--|--|--|--|--|--|
| 3  | I feel inputs and plant protection chemicals suggested in the agro advisory bulletins are difficult to purchase or not available in the market |  |  |  |  |  |
| 4  | I perceive Agro-advisory services are effective  |  |  |  |  |  |
| 5  | I feel Agro Advisory messages are clear, adequate and useful   |  |  |  |  |  |
| 6  | I am willing to pay for advisory services, if I can get more appropriate and useful information.   |  |  |  |  |  |
| 7  | I think yield is enhanced by deploying the advisory services   |  |  |  |  |  |
| 8  | I perceive pest and disease occurrence was reduced by employing the advisory services  |  |  |  |  |  |
| 9  | I feel agro-advisory services suggested are very costly  |  |  |  |  |  |
| 10 | I foresee WBAS provides information on weather parameters which helps to plan farming operations in prior                                      |  |  |  |  |  |
| 11 | I think recommended advisory services are not feasible   |  |  |  |  |  |
| 12 | I perceive agro-advisory services increases the social contact   |  |  |  |  |  |
| 13 | I opine traditional method of weather based farming is more credible than WBAS   |  |  |  |  |  |
| 14 | I think Information from agro-advisory services are not need based   |  |  |  |  |  |
| 15 | I think Utilization of agro advisory services reduces cost of production   |  |  |  |  |  |
| 16 | I think agro-advisory services are not location specific   |  |  |  |  |  |
| 17 | I am ready to accept the Agro-advisory services as it suits to my cropping pattern and field conditions  |  |  |  |  |  |
| 18 | I felt that agro-advisory services help to mitigate the climate change   |  |  |  |  |  |

|    |  |  |  |  |  |  |
|----|--|--|--|--|--|--|
| 19 | I feel that agro-advisory services reduces the dependency of farmers towards extension agent for weather information                 |  |  |  |  |  |
| 20 | I agree agro-advisory services are adaptable in field conditions   |  |  |  |  |  |
| 21 | I feel Agro-advisory services are difficult to avail   |  |  |  |  |  |
| 22 | I think Agro advisory services are not crop specific   |  |  |  |  |  |
| 23 | I believe that WBAS facilitates better crop management   |  |  |  |  |  |
| 24 | I can understand that farmers are preferring WBAS because of its benefits like prior crop planning                                   |  |  |  |  |  |
| 25 | I feel that illiteracy among farmers hinder the adoption of WBAS among them  |  |  |  |  |  |
| 26 | I think that Agro-advisory services are not valid on account of climate change   |  |  |  |  |  |
| 27 | I admit that WBAS increased my social status among the farmers   |  |  |  |  |  |
| 28 | I can feel that WBAS encouraged farmers to do prior crop planning based on weather data  |  |  |  |  |  |
| 29 | I think that WBAS will motivate the farmers to adopt new cropping pattern despite of their farming experience for increased benefits |  |  |  |  |  |
| 30 | I assure that introduction of WBAS among farmers, motivated them to adopt new innovative technologies                                |  |  |  |  |  |

### **Reliability and validity**

#### **Reliability: Test-retest method**

The final 30 statements which indicate the attitude of the cotton growers towards the weather based agro-advisory services were administered on a five point continuum scale to 30 farmers of non-sample area-.....[Why only 30 farmers?](#) Later on, after a period of 15 days, again

the test was administered to the same 30 farmers, which resulted in two sets of scores. The 'r' (correlation coefficient) value was found to be 0.852 which represents significant at 1 per cent level. Hence, the constructed attitude scale was favorable to assess the attitude of farmers towards weather based agro-advisory services.

### **Validity: Content validity**

The content of the developed scale was assessed to determine the extent of the content to measure the attitude of the cotton growers. Thus, it was observed that, each of the statement had a high discriminating value representing that the scale acts as a valid measure to assess the attitude of farmers. Eventually, the constructed scale was found to have reliability and validity; thus, it can serve as a standard tool to measure the attitude of farmers.....[Which farmers?.....Only cotton farmers or all the farmers.....?](#).....[?](#)towards weather based agro-advisory services.

[???](#)

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