

# Yobe State, Nigerian Millet Farmers' Perceptions on Climate Change and Adapted Mitigation Strategies

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## Article Info

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### ABSTRACT:

The research evaluated how millet farmers in Yobe State, Nigeria, perceived and mitigated climate change. 305 millet growers were chosen for the research using a multistage sampling technique. FGD and structured questionnaires were the main methods used to gather data. The generated data was analysed using frequency count, percentage, ranking, and Spearman rank order correlation. Additionally, millet farmers' perceptions of climate change and mitigation techniques were assessed using a Likert-type scale. According to the results, 29.5% of respondents cited the NIMET report, radio (20%), extension agent (18%), and friends (10.5%) as their primary sources of knowledge on climate change. Based on respondents' perceptions of climate change, important indicators were determined to include drought ( $\bar{x} = 3.3$ ), desertification ( $\bar{x} = 3.3$ ), rainfall ( $\bar{x} = 3.2$ ), temperature ( $\bar{x} = 3.2$ ), and drying of rivers and streams ( $\bar{x} = 3.2$ ). The mitigation measures used by millet farmers to address the impact of climate change in the research region included planting trees ( $\bar{x} = 3.5$ ), timely planting ( $\bar{x} = 3.3$ ), planting early and drought-resistant type ( $\bar{x} = 3.2$ ), and using organic manure ( $\bar{x} = 3.1$ ). A very strong positive correlation between the variables is shown by the hypothesis test result ( $r_s = 0.982$ ). The table value of 2.306 at  $P < 0.05$  is less than the computed t-value of 14.699. The result demonstrates a strong correlation between the factors. The study suggested that government organisations and other stakeholders should give agricultural research and institutions more funding and support in order to develop climate-resilient technologies, improved varieties, and sustainable farming practices. It also suggested that extension agents and millet farmers participate in training and workshops on climate smart agricultural practices.

**Keywords:** Climate Change, Perception, Millet, Mitigation

## INTRODUCTION

One of the world's oldest cereal crops, millet is a member of the Poaceae family. As a result, the two most popular varieties of millet that are often used for food and animal feed are finger millet (*Eleusine coracana*) and pearl millet (*Pennisetum glaucum*). Finger millet evolved in the sub-humid uplands of East Africa, whereas pearl millet originated in sub-Saharan Africa (Hassan et al., 2021). The majority of millet produced and traded worldwide comes from these varieties (FAO, 2020). The growth of pearl and finger millet was the focus of recent agricultural initiatives and millet production research. After maize, wheat, rice, barley, and sorghum, pearl millet was regarded as the sixth most productive crop (FAOSTAT, 2020). Similar to this, there are significant differences between millet and other grains, as shown by the nutritional value of finger and pearl millet (FAO, 2020). Rain-fed agriculture is severely impacted by climate change, which poses a serious threat to global agricultural production. This is especially true in developing nations like Nigeria, whose economies rely heavily on agriculture and have little ability to adapt to or prevent climate shocks (Yakubu et al., 2020). According to the National Aeronautics and Space Administration (NASA) (2023), climate change is defined as a shift in the statistical distribution of long-term weather patterns, such as temperature and precipitation. This change is often brought about by anthropogenic (human activity) or natural phenomena that raise greenhouse gas (GHG) concentrations. Due to their heavy reliance on rain-fed farming, crop farmers are vulnerable to the negative effects of climate change, including low quality and quantity yield, food shortages, and insecurity, according to many study results (Abuta et al., 2021; Asare-Nuamah et al., 2022). The northern, northeastern, southwestern, and southeast parts of Nigeria have been shown to be more affected by climate change in terms of agricultural output (Tajudeen et al., 2022; World Bank, 2022). According to reports, 20% of farmers in different states of the country had post-harvest losses in 2022, while climate-related pests and illnesses caused a large (80%) loss in certain places, which amount for 1.5–200,000 hectares (Adegwu, 2022). According to 33 states, the main crops impacted were maize, rice, sorghum, millet, soybean, groundnut, cowpea, root and tubers, fruits, vegetables, and tree crops (Adegwu, 2022; Rizzo et al., 2023). Due to the Inter-Tropical Convergence Zone (ITCZ), which significantly affects temperature, Nigeria's tropical climate is characterised by high temperatures, humidity, rainfall, and wind. The southern regions receive more rainfall, while topography and location have an impact on wind (Dia et al., 2023). According to Brouziyne et al. (2018), Nigeria's average annual temperature increased by 1.4–1.9 degrees Celsius in 2018. If adaptation or mitigation techniques, measures, or activities are not adopted to prevent the effect of change in the nation, a rise of 2.0–5.0 degrees Celsius is anticipated by the end of the century. As a result, Nigeria's agricultural production has been impacted by climate change, as shown by the increased frequency and severity of natural catastrophes and human activity. These consequences have not only made it more difficult for the agricultural sector to meet the nation's needs, but they have also reduced the industry's potential to change Nigeria's economy, leading to a notable shift from food exporters to importers (Onyeneke et al., 2021). Building farmers' resilience and guaranteeing the sustainability of millet production in the study region will need further research and the practical deployment of technologies and tactics as climate change continues to develop globally. The expanding consequences of climate change on agriculture are a major issue for rural communities, but places like Yobe State, a Sub-Saharan region in Nigeria with greater millet output, have received less attention. Farmers' incomplete understanding of how climate change affects agricultural production systems, income, livelihood, and food security is the main issue in the research region. The majority of farmers are unaware of how climate fluctuation negatively affects their farming methods. According to Akinbode and Afolabi (2022), the absence of adaptation methods to reduce climate-related hazards and the employment of poor coping strategies are caused by farmers' lack of knowledge. Changes in growth conditions and weather patterns, as well as the absence of practical coping mechanisms to deal with particular environmental issues, have presented farmers with several difficulties. For millet farmers to be resilient and productive, these issues must be resolved. In light of this, the research aims to evaluate how millet farmers in Yobe State, Nigeria perceive climate change and the mitigation techniques they have used. The study's specific goals were to: i. Determine the sources of information that millet farmers use to learn about climate change; ii. Evaluate the degree to which millet farmers perceive climate change; and iii. Determine the mitigation techniques that millet farmers in the study region have used.

## MATERIALS AND METHODS

### 2.1 The Study Area

The research was carried out in Nigeria's Yobe State. The state is situated in northeastern Nigeria and is between latitudes 120 00' N and 110 30' E of the equator and longitudes 12.0000 N and 11.5000 E of the Greenwich Meridian (Mohammed, 2024). With a population of 2,321,339 and a total land area of 45,502 km<sup>2</sup>, the State is expected to have 4,358,454 residents by 2026, based on a 3.2% population growth rate (NBS, 2026). With the exception of the

southern portion of the state, which has a temperate temperature, the Savanna belt has a dry climate with hot and dry seasons for the most of the year. The region has an annual temperature of 280–420 degrees Celsius, 82% relative humidity, and 300–9000 millimetres of precipitation (NIMET, 2026). Although it varies by location, the state's rainy season typically lasts 120 days (June to September) in the north and more than 140 days (May to October) in the south (NIMET, 2026). Farmers make up the majority of the state's population, followed by public servants and other residents who work in crafts, tailoring, trade, fishing, and other industries. Millet, sorghum, rice, cowpea, groundnuts, and sesame are the main crops grown in the region. Sheep, goats, and cattle are raised for household uses, such as fishing and poultry (Mohammed, 2024).

## 2.2 Sampling Technique and Sample Size

The study's respondents were chosen using a multi-stage sampling process. The selection of each of the state's three senatorial zones was the initial step. In the second stage, three local government areas (LGAs) with high millet output were purposefully chosen from each senatorial zone, for a total of nine (9) LGAs. Due to their predominance in millet production, two communities were purposefully chosen from each of the chosen LGAs in the third stage, resulting in a total of eighteen villages. In the fourth step, Taro Yamane's (1967) proportional method was used to choose 24% of millet farmers from the sample frame of each of the chosen villages. As a result, 305 millet farmers were chosen at random to participate in the research. The Yamane formula for calculating sample size is as follows:

$$n = \frac{N}{1 + N(e)^2} \dots\dots (i)$$

Where,  
n = Sample size  
N = Population size  
e = Error term (0.05)

## 2.3 Data Collection

Primary data was utilised in the research. Structured questionnaires were the main method used to gather the data. The surveys were authenticated, trustworthy, and pre-tested. With the assistance of qualified enumerators, focus group discussions (FGD), a qualitative approach, were also used as the survey instrument.

### 2.3.1 Likert Type Scale

To accomplish goal (ii), a four-point Likert-type scale with alternatives and score values—High (4), Medium (3), Low (2), and No Change (1)—was used. Objective (iii) was accomplished by the usage of Strongly Agreed (4), Agreed (3), Strongly Disagreed (SD), and Disagreed (1). The decision rule is 2.5, which was obtained by adding the numbers and dividing the result by 4. The following is the expression for the Likert (1932) formula (Xs).

$$X_s = \frac{\sum fn}{Nr} \dots\dots(ii)$$

Where,  
X<sub>s</sub> = Mean score  
Σ = Summation  
F = Frequency of each response category  
n = Likert nominal values  
Nr = Number of respondents to each response category.

## 2.4 Data Analysis

*Descriptive and inferential statistics were used to analyse the data. The objective (i) was analysed using descriptive statistics including frequency, percentages, ranking, and mean, and the study's hypothesis was tested using Spearman rank order correlation and t-test statistics.*

### 2.4.1 Coefficient of Spearman Rank Order Correlation

*The association between millet farmers' perceptions of climate change and the mitigation techniques applied in the research region was examined using the Spearman rank order correlation coefficient (i.e. hypothesis 1). The Spearman rank order correlation formula is written as*

$$r_s = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)} \dots\dots(iii)$$

Where,  
r<sub>s</sub> = Spearman correlation coefficient  
Σd<sup>2</sup> = Sum of the squared differences between paired ranks  
d<sub>i</sub> = Difference between ranked pairs  
n = Number of paired ranks

## 3. RESULTS AND DISCUSSION

### 3.1 Sources of Information on Climate Change

Table 1 lists the sources of climate change information used by Yobe State millet growers. According to the results, 29.5% of millet farmers cited the NIMET report as their primary source of information, ranking first. This was followed by radio (20%), extension agents (18%), friends (10.5%), social media (9.8%), family members (5.2%), television (3.3%), the internet (2%), and prints (1.6%), which ranked second, third, fourth, fifth, sixth, seventh, eighth, and ninth, respectively. The results suggest that farmers rely on a variety of information sources, and when these sources are integrated, they will be vital in providing

farmers with pertinent information on methods for adapting to climate change. On the other hand, a sizable majority of respondents (76.0%) cited in-person conversations with their neighbours as the most popular way to learn about climate change in the research region, according to Okoronkwo et al. (2024). Radio (54.7%) and other farmers (66.7%) came next. According to these results, farmers obtained their knowledge on climate change mostly from community members and radio, which was proven to be a very efficient means of disseminating information in the research area. Therefore, it is impossible to overstate the importance of radio in agricultural knowledge transfer among farmers, particularly in the majority of Africa's rural regions where access to advanced and digital technologies is still restricted. According to Antwi-Agyei et al. (2021), radio is a potent information communication tool that is utilised in the majority of farming communities to disseminate information about climate change. This greatly aids in filling in farmers' knowledge gaps by raising awareness and improving comprehension of the effects of climate change on the agricultural industry. Radio is an efficient information and communication tool for farmers to provide climate information because of its benefits for reporting weather trends and raising awareness (Global Center on Adaptation, 2023). Videos (29.3%), climate change newsletters (22.7%), the internet (21.3%), and television (20.0%) are other information sources. According to the research, millet farmers' usage of various climate change information sources highlights the need for an efficient method of disseminating up-to-date and pertinent climate information in the study region so that farmers may attempt to reduce losses caused by climate-related risk. It is clear that, in contrast to earlier times, farmers increasingly depend on a variety of sources for climate change knowledge. These sources are crucial to farmers' level of risk management and mitigation measures, especially when they are aware of climate projections and early warnings. In a similar vein, it has been reported that a number of researches have recognised the use of diverse information sources, suggesting varying advantages of climate change information on farmers' and stakeholders' agricultural decision-making (Chiputwa et al., 2020; Kumar et al., 2021; and Baffour-Ata et al., 2022).

**Table 1: Distribution of the Respondents According to Sources of Information on Climate Change (N = 305)**

| Variables        | Frequency (f) | Percentages (%) | Ranking |
|------------------|---------------|-----------------|---------|
| Extension agents | 55            | 18              | 3       |
| Friends          | 6             | 10.5            | 4       |
| Radio            | 30            | 20              | 2       |
| Television       | 10            | 3.3             | 7       |
| Family members   | 5             | 5.2             | 6       |
| NIMET reports    | 90            | 29.5            | 1       |
| Prints           | 16            | 1.6             | 9       |
| Internets        | 32            | 2               | 8       |
| Social Media     | 61            | 9.8             | 5       |
| <b>Total:</b>    | <b>305</b>    | <b>100</b>      |         |

Source: Field survey, 2026

### 3.2 Level of Perception of the Respondents on Climate Change

Table 2 displays the findings of the investigation of millet farmers' perceptions of climate change in the research region. Drought ( $\bar{x} = 3.3$ ) and desertification ( $\bar{x} = 3.3$ ) were placed first, followed by temperature ( $\bar{x} = 3.2$ ), rainfall ( $\bar{x} = 3.2$ ), and drying up of streams and rivers ( $\bar{x} = 3.2$ ), which were ranked second, respectively. Excessive wind ( $\bar{x} = 2.9$ ) and floods ( $\bar{x} = 2.6$ ) were placed fourth and fifth, respectively, after hurricane ( $\bar{x} = 3.1$ ). These results imply that most respondents see climate change as a threat to their ability to produce, ensure food security, and support themselves. This suggests that millet farmers have a high sense of climate change since it negatively affects their farming operations, which may lead to low yields in terms of both quality and quantity as well as farmers' profitability. This is consistent with the results of Ogunnaike et al. (2021), who found that a higher percentage of respondents (65%) saw a rise in the average daytime temperature and 47.6% saw an increase in the duration of the dry season (droughts) in the research region. Additionally, 33.8% reported a little decrease in the duration of the rainy season, while 26.1% reported a decrease in the average amount of rainfall. The findings also reveal that a greater proportion of respondents (32.7%) do not see any changes related to the frequency of floods, followed by storm intensity (36.8%) and harmattan intensity (26.1%). Additionally, 37.8% reported a significant rise in drought, while 28.4% reported a significant decrease in rainfall forecasts. In the research region, farmers' perceptions of relatively heavy rainfall and thunderstorms were 33.8%. In a similar vein, Onyeneke et al. (2022) noted that a sizable majority of respondents (88.78%) reported both a longer dry season and increasing rainfall intensity. 70.41% of respondents reported experiencing floods, temperature increases, strong windstorms, irregular rainfall patterns, and late commencement of rainfall, while 64.29% reported early rain cessation. Additionally, according to Mekonnen et al. (2021), 83.8% of farmers reported that annual rainfall had decreased, 50.8% thought that rainfall began late in the season and ended early at the end, and 84.3% of respondents confirmed that the temperature had significantly increased. The greater percentage of respondents' views suggests that the research region is experiencing climate change.

**Table 2: Distribution of the Respondents According to their Level of Perception on Climate Change (N = 305)**

| Variables                             | PERCEPTION |            |            |           | Total | Mean | Rank |
|---------------------------------------|------------|------------|------------|-----------|-------|------|------|
|                                       | High       | Medium     | Low        | No Change |       |      |      |
| Precipitation                         | 25 (8.2)   | 101 (33.1) | 149 (48.9) | 30 (9.8)  | 731   | 2.4  | 6    |
| Hurricanes                            | 100 (32.8) | 154 (50.5) | 35 (11.5)  | 16 (5.2)  | 948   | 3.1  | 3    |
| Drought                               | 147 (48.2) | 115 (37.7) | 18 (5.9)   | 25 (8.2)  | 1012  | 3.3  | 1    |
| Temperature                           | 125 (40.9) | 122 (40)   | 37 (12.1)  | 21 (6.9)  | 961   | 3.2  | 2    |
| Flooding                              | 30 (9.8)   | 134 (43.9) | 123 (40.3) | 18 (5.9)  | 786   | 2.6  | 5    |
| Rainfall                              | 138 (45.2) | 111 (36.4) | 25 (8.4)   | 31 (10.2) | 966   | 3.2  | 2    |
| Excessive wind                        | 121 (39.7) | 88 (28.9)  | 52 (17.0)  | 44 (14.4) | 896   | 2.9  | 4    |
| Desertification                       | 145 (47.5) | 127 (41.6) | 20 (6.6)   | 13 (4.3)  | 1014  | 3.3  | 1    |
| Drying up of water streams and rivers | 125 (41)   | 130 (42.6) | 33 (10.8)  | 17 (5.6)  | 973   | 3.2  | 2    |
| Increase in pests and diseases        | 41 (13.4)  | 98 (32.1)  | 106 (34.8) | 60 (19.7) | 730   | 2.4  | 6    |

Source: Field survey, 2026

„High“ scored 4 point „Medium“ scored 3 point.

„Low“ scored 2 point „No Change“ scored 1 point

\* **Decision Rule:** Any score  $\geq 2.5$  is regarded as high level of perception on climate change while any scores  $< 2.5$  is regarded as low. Figures in parentheses are percentage (%).

### 3.3 Mitigation Strategies to Climate Change

The mitigation techniques used by millet farmers in the research region to either avoid or mitigate climate change challenges were shown in Table 3. Planting trees ( $\bar{x} = 3.5$ ), timely planting ( $\bar{x} = 3.3$ ), planting early and drought-resistant type ( $\bar{x} = 3.2$ ), and using organic manure ( $\bar{x} = 3.1$ ) were rated first, second, third, and fourth, respectively. The usage of botanical pesticides and irrigation systems ( $\bar{x} = 2.8$ ) came next, both of which were rated fifth. Mulching ( $\bar{x} = 2.7$ ) and using vegetative cover ( $\bar{x} = 2.6$ ), which were placed sixth and seventh, respectively, are two other significant tactics used by the respondents. This suggests that the respondents used a variety of mitigation techniques to lessen the effects of climate change in the research region. The results indicate that in order to mitigate the sensitivity to climate-related risk, the respondents should attempt to adopt climate resilient or climate smart farming methods. To address the issues of deforestation and land degradation, a number of afforestation programs were created and put into action in sub-Saharan Africa (Chomba et al., 2020). It is believed that this effort would greatly lessen the effects of climate change on agriculture by increasing soil cover and sequestering carbon. It has been discovered that farmers in the majority of rural agricultural areas are using more organic manure, which increases soil moisture content, improves soil fertility, and is an effective sustainable technique. As a result, farmers have recognised that maintaining soil moisture content for optimal crop utilisation, increasing the use of organic manure, planting cover crops, practicing bush fallowing, and mulching are all sustainable ways to combat climate change, given the current rise in temperature and increased evapotranspiration brought on by climate change (Crace, 2019). This is consistent with the results of Okoronkwo et al. (2024), who found that farmers used organic manure ( $\bar{x} = 3.87$ ), resistant crop varieties ( $\bar{x} = 3.85$ ), drought-resistant varieties ( $\bar{x} = 3.68$ ), and flood-tolerant varieties ( $\bar{x} = 3.73$ ) as mitigation strategies. Afforestation ( $\bar{x} = 3.67$ ), the use of cover crops ( $\bar{x} = 3.47$ ), climate-smart agricultural practices ( $\bar{x} = 3.93$ ), the incorporation of residues into the soil ( $\bar{x} = 3.23$ ), the appropriate conservation of seeds ( $\bar{x} = 3.75$ ), and the availability of sufficient mulching materials ( $\bar{x} = 3.40$ ) are additional factors. It becomes essential to put these climate-resilient strategies into practice in order to improve farmers' capacity for adaptation and reduce the likelihood that rural farming households will be vulnerable to climate change. This will significantly help to prevent and lessen the effects of climate change. According to Quarshie et al. (2023), the majority of farmers in sub-Saharan Africa used conventional agricultural techniques on their farms, such as soil conservation and water management, to prevent climate-related problems. This might reduce the hazards associated with unexpected rainfall patterns by helping farmers make well-informed choices and improve their agricultural operations in response to changing climatic circumstances.

**Table 3:** Distribution of the Respondents According to Mitigation Strategies to Climate Change (N = 305)

| Variables                                       | SA         | A          | SD         | D          | Total | Mean | Rank |
|-------------------------------------------------|------------|------------|------------|------------|-------|------|------|
| Use of organic manure                           | 139 (45.6) | 88 (28.9)  | 43 (14.1)  | 35 (11.5)  | 941   | 3.1  | 4    |
| Vegetative cover                                | 85 (27.9)  | 75 (24.6)  | 78 (25.6)  | 67 (22)    | 788   | 2.6  | 7    |
| Use of botanical pesticides                     | 92 (30.2)  | 110 (36.1) | 63 (20.7)  | 40 (13)    | 864   | 2.8  | 5    |
| Timely planting                                 | 144 (47.2) | 122 (40)   | 32 (10.5)  | 7 (2.3)    | 1013  | 3.3  | 2    |
| Mulching                                        | 87 (28.5)  | 93 (30.5)  | 82 (27)    | 43 (14.1)  | 834   | 2.7  | 6    |
| Planting of trees                               | 158 (51.8) | 132 (43.3) | 13 (4.3)   | 2 (0.7)    | 1056  | 3.5  | 1    |
| Planting of early and drought resistant variety | 143 (46.9) | 115 (37.7) | 27 (8.9)   | 20 (6.6)   | 991   | 3.2  | 3    |
| Use of irrigation system                        | 106 (34.8) | 90 (29.5)  | 41 (13.4)  | 68 (22.)   | 844   | 2.8  | 5    |
| Reduced rural-urban migration                   | 55 (18)    | 38 (12.5)  | 72 (23.6)  | 140 (45.9) | 618   | 2.0  | 9    |
| Crop rotation                                   | 32 (10.5)  | 45 (14.8)  | 134 (43.9) | 94 (30.8)  | 624   | 2.1  | 8    |

Source: Field survey, 2026

„Strongly Agreed“ scored 4 point „Agreed“ scored 3 point.

„Strongly Disagreed“ scored 2 point „Disagreed“ scored 1 point

\* **Decision Rule:** A plan to mitigate climate change is considered very acceptable if the score is more than 2.5, and an average approach if the score is less than 2.5. Parenthetical figures represent percentages (%).

#### Hypothesis Testing

Table 4 presents the results of a hypothesis test using Spearman rank order correlation coefficient and t-test statistics that indicates there is no significant association between millet farmers' perceptions of climate change and the mitigation techniques used in the research region. The outcome demonstrates a strong positive correlation ( $r_s = 0.982$ ) between the variables. The computed t-value of 14.699, which is higher than the table value of 2.306 at the 0.05 level of probability, was used to assess the strength of this positive link. As a result, the alternative hypothesis is accepted and the null hypothesis is rejected. The outcome suggests that the factors have a substantial association.

**Table 4:** Relationship between Level of Perception of Millet Farmers to Climate Change and Mitigation Strategies Practiced

| X   | Y   | di   | di <sup>2</sup>   |
|-----|-----|------|-------------------|
| 3.1 | 2.4 | 0.7  | 0.49              |
| 2.6 | 3.1 | -0.5 | 0.25              |
| 2.8 | 3.3 | -0.5 | 0.25              |
| 3.3 | 3.2 | 0.1  | 0.01              |
| 2.7 | 2.6 | 0.1  | 0.01              |
| 3.5 | 3.2 | 0.3  | 0.09              |
| 3.2 | 2.9 | 0.3  | 0.09              |
| 2.8 | 3.3 | -0.5 | 0.25              |
| 2.0 | 3.2 | -1.2 | 1.44              |
| 2.1 | 2.4 | -0.3 | 0.09              |
|     |     |      | $\sum d^2 = 2.97$ |

Source: Field survey, 2026

$$r_s = 1 - \frac{6(2.97)}{10(10^2 - 1)}$$

$$r_s = 1 - \frac{17.82}{990}$$

$$r_s = 0.982$$

This indicates that the variables have a very strong positive association. The value of "r" must be converted to the "t" score using the t-test conversion formula, which is written as follows, in order to assess the strength of this positive link or the significance of a correlation coefficient.

$$t = r \sqrt{\frac{n-2}{1-r^2}}$$

$$t = 0.982 \sqrt{\frac{10-2}{1-0.982^2}}$$

$$t = 14.699$$

At  $\alpha = 0.05$  and  $df = 8$ , the crucial table value is 2.306. The null hypothesis is rejected since the computed value (14.699) is higher than the table value (2.306). This suggests that millet farmers' perceptions of climate change and the mitigation techniques used in the research region are directly related.

#### 4. CONCLUSION AND RECOMMENDATION

Based on the study's results, it was determined that the bulk of the millet farmers in the region rely on rain-fed agriculture, which is endangered by climate change. These prompted farmers to look for knowledge on climate change from a variety of sources. The most common mitigation strategies employed by millet farmers in the study area to prevent the impact of climate change on their production were planting trees on time, using organic manure, planting early and drought-resistant varieties, drought, desertification, rainfall, temperature, and drying up of streams and rivers. Nonetheless, a few of these tactics have a big impact on millet farmers' output. Ultimately, the hypothesis test reveals a strong and very positive correlation between the variables. Based on the study's results, the following suggestions were made:

- Regular training sessions and seminars on climate-smart agriculture techniques should be held for millet farmers and extension workers.
- To create climate-resilient technologies, better cultivars, and sustainable farming methods, government agencies and other stakeholders should provide agricultural research and institutions additional funding and support.
- To encourage millet production, extension organisations and pertinent stakeholders should establish effective measures to reduce the danger of climate change.
- In order for farmers to properly plan their agricultural activities, extension organisations must connect them to sources of climate change knowledge.

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