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# The Effect of Climate Change on Food Security in Gedo, Jubaland, Somalia

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**ABSTRACT**

Climate change is a global phenomenon that has far-reaching consequences for various sectors, including agriculture and food security. It is widely acknowledged that the impacts of climate change pose a significant threat to food production systems and the livelihoods of millions of people, particularly in vulnerable regions such as Somalia. The study was set to examine the effect of climate change on food security in Gedo, Jubaland, Somalia. This study adopted a mixed-methods research approach to investigate the effect of climate change on food security in Gedo, Jubaland, Somalia. From the study discussions the demographic profile of our respondents, highlighting its implications on our data. The agricultural practices prevalent in the region, the economic indicators that define the community's prosperity, and the crucial indicators of food security were deliberated upon in depth. Drawing the study results, the study concluded that the tapestry of Gedo, Jubaland, Somalia, is a complex interplay of tradition, resilience, challenges, and aspirations. At the heart of this narrative is a community deeply rooted in its agricultural practices, where livestock rearing emerges not just as an occupation, but as a way of life. The reliance on traditional farming, while indicative of a rich cultural heritage, also points to opportunities for growth and modernization. Lastly from the study conclusion and findings the study recommended that embrace Modern Agricultural Practices: While traditional farming has sustained Gedo for generations, there are benefits to integrating modern techniques. Workshops and training sessions focused on sustainable farming, crop rotation, and soil conservation can lead to improved yields and better food security.

**Keywords:** Climate change, Food security, Modern agricultural practices, Traditional farming

## INTRODUCTION

Climate change is a global phenomenon that has far-reaching consequences for various sectors, including agriculture and food security. It is widely acknowledged that the impacts of climate change pose a significant threat to food production systems and the livelihoods of millions of people, particularly in vulnerable regions such as sub-Saharan Africa [1-3]. Somalia, located in the horn of Africa, is one such region that faces numerous challenges related to climate change and food security. The country has a predominantly agricultural economy, with a large proportion of the population relying on farming and livestock rearing for their sustenance and income. However, the agricultural sector in Somalia is highly susceptible to the adverse effects of climate change, exacerbating the existing food security issues in the country. Gedo, a region in Jubaland, Somalia, represents a microcosm of the challenges faced by many parts of the country. The region experiences a semi-arid climate and has a history of recurrent droughts and limited rainfall. However, in recent years, Gedo has witnessed significant changes in its climatic patterns, including increased temperatures, irregular rainfall, and prolonged dry spells [4, 5]. These changes can adversely affect agricultural activities, resulting in reduced crop yields, water scarcity, and limited grazing resources for livestock [6-9]. The region of Gedo in Jubaland, Somalia, faces the dual challenges of climate change and food insecurity. Climate change has resulted in rising temperatures, erratic rainfall patterns, and increased frequency of extreme weather events in the region [10, 11]. These climate-related changes have significantly impacted agricultural systems, posing a threat to food production and exacerbating the existing food security issues in Gedo.

The problem at hand is to assess and understand the specific effects of climate change on food security in Gedo, Jubaland, Somalia. Despite being a predominantly agricultural region, Gedo experiences reduced crop yields, limited access to water for irrigation, and diminished livestock productivity due to the changing climate. These factors, coupled with socio-economic vulnerabilities, hinder the ability of

farmers and local communities to achieve and maintain food security. Furthermore, there is a lack of comprehensive studies that focus specifically on the relationship between climate change and food security in Gedo, Jubaland, Somalia. While broader studies exist on the impact of climate change on agriculture and food security in sub-Saharan Africa, the unique context of Gedo and its specific vulnerabilities require in-depth investigation. Given the importance of agriculture for the livelihoods and food security of the population in Gedo, it is crucial to understand the specific impacts of climate change on the region's agricultural systems and food availability. By conducting a case study on Gedo, researchers can gather valuable insights into the challenges faced by local farmers, the adaptive strategies employed, and the effectiveness of existing interventions in mitigating climate-related risks. The purpose of this study is to examine the effect of climate change on food security in Gedo, Jubaland, Somalia.

**Specific objectives**

i. To assess the impacts of climate change on agricultural productivity, crop yields, and livestock production in Gedo, Jubaland, Somalia.
ii. To explore the perceptions, experiences, and adaptive strategies employed by farmers and local communities in Gedo to cope with climate change impacts on food security.
iii. To evaluate the existing policies, interventions, and support mechanisms in place to mitigate the effects of climate change on food security in Gedo.

By achieving these specific objectives, the study aims to provide a comprehensive understanding of the impacts of climate change on food security in Gedo, Jubaland, Somalia. The findings will contribute to evidence-based decision-making and the development of targeted interventions and strategies to enhance food security and resilience in the face of a changing climate

**Research Questions**

i. How has climate change affected agricultural productivity, crop yields, and livestock production in Gedo, Jubaland, Somalia?
ii. What are the perceptions, experiences, and adaptive strategies employed by farmers and local communities in Gedo to cope with climate change impacts on food security?
iii. What are the existing policies, interventions, and support mechanisms in place to mitigate the effects of climate change on food security in Gedo, and how effective are they?

These research questions aimed to investigate the specific impacts of climate change on food security in Gedo, Jubaland, Somalia, and explore the responses and potential solutions to address these challenges. By addressing these research questions, the study seeks to deepen the understanding of the complex interactions between climate change, agricultural systems, and food security in the region, ultimately informing the development of effective adaptation and mitigation strategies.

**Significance of the Study**

The findings of this study if successfully disseminated will help the government of Somalia to identify, understand border and trade challenges and collectively devise better solutions.

To the Government of Somalia, the government officials in ministries of internal affairs, defense and security in different units' have consistently been tasked to find solutions to the escalating violence in the region. These study findings will therefore benefit them in formulation of policies relating to effective boarder management and enforcing community unity as it will dig to the depth of the climate change in Gedo, Jubaland, Somalia. The study will as well act as a reference to the future researchers and academicians. This is because future researchers will draw study findings and their relevant literature from this study concerning impact of climate change on food security in Gedo, Jubaland, Somalia.

## RESEARCH METHODOLOGY

**Research design**

This study adopted a mixed-methods research approach to investigate the effect of climate change on food security in Gedo, Jubaland, Somalia. The mixed-methods design allowed for the integration of qualitative and quantitative data, providing a comprehensive understanding of the research topic and capturing both the experiences and perceptions of farmers and local communities, as well as quantitative measures of agricultural productivity and food security indicators. The research employed qualitative methods, including interviews and focus group discussions, to gather rich and nuanced insights into the perceptions, experiences, and adaptive strategies employed by farmers and local communities in Gedo to cope with climate change impacts on food security. The qualitative data collection involved purposive sampling to ensure representation from different groups, such as smallholder farmers, women, and marginalized communities. The interviews and focus group discussions was guided by semi-structured interview guides and thematic frameworks, allowing for in-

depth exploration of key themes related to climate change impacts and adaptation strategies. In addition to qualitative data, quantitative data was collected to assess the impacts of climate change on agricultural productivity, crop yields, and livestock production. This will include surveys conducted with farmers and agricultural households to gather information on crop yields, livestock productivity, and dietary diversity. Crop yield assessments will be conducted through plot measurements and sampling, while livestock productivity data was collected through production records and measurements. Dietary diversity surveys provided insights into the nutritional status and food access of households in Gedo. Furthermore, climate and weather data was obtained from relevant meteorological stations and climate models to understand the historical climate patterns in Gedo and project future climate scenarios. These data were analyzed to assess the relationship between climate variables and agricultural productivity, identifying the specific impacts of climate change on food security in the region.

**Study Population**

The study population for this research primarily consisted of farmers and local communities in Gedo, Jubaland, Somalia. These individuals are directly involved in agricultural activities and are most likely to experience the impacts of climate change on food security in the region. The study aimed to capture the diversity within the farming community in Gedo, including smallholder farmers, women farmers, and marginalized communities. The selection of participants was based on purposive sampling, ensuring representation from different groups and perspectives to gain a comprehensive understanding of the experiences, perceptions, and adaptive strategies employed by farmers and local communities.

Additionally, relevant stakeholders involved in agriculture, rural development, climate change adaptation, and food security in Gedo also included in the study. This may include government officials, extension workers, local NGOs, and representatives from international organizations who play a role in designing and implementing policies and interventions related to climate change and food security. By including farmers, local communities, and relevant stakeholders as the study population, the research aims to gather diverse perspectives, experiences, and insights to comprehensively address the research objectives and contribute to a holistic understanding of the relationship between climate change and food security in Gedo, Jubaland, Somalia.

**Sample size**

For qualitative data collection (interviews, focus group discussions), the sample size is typically determined based on data saturation, which occurs when new information and themes stop emerging from the data. The researcher collected data from 100 respondents and ensured that relevant data was captured for a comprehensive range of perspectives and experiences. Therefore, the sample size for qualitative data collection depended on the richness and saturation of the data obtained. For quantitative data collection (surveys), determining the sample size involved considerations such as the desired level of precision, expected effect sizes, and statistical power. Researcher used sample size calculators or statistical formulas specific for research design and statistical tests to determine the appropriate sample size.

**Sampling Techniques**

The sampling techniques for the study depended on the specific objectives and research design. Here are a few sampling techniques that can be considered for different aspects of the study:

**Purposive Sampling**

Purposive sampling was used to select participants for qualitative data collection, such as interviews and focus group discussions. This technique involves purposefully selecting individuals who have in-depth knowledge, experience, and insights related to the research topic. The sample included a diverse range of participants, such as farmers, local community members, and relevant stakeholders, ensuring representation from different groups and perspectives.

**Stratified Sampling**

Stratified sampling was employed for quantitative data collection, particularly when surveying a larger population of farmers or agricultural households in Gedo. The population can be stratified based on relevant characteristics such as farm size, location, or socio-economic status. Random sampling can then be conducted within each stratum to ensure proportional representation and reduce sampling bias.

**Snowball Sampling**

Snowball sampling was used to identify and recruit participants who may be difficult to reach through conventional sampling methods. This technique involved initially selecting a few participants who meet the criteria and then asking them to refer other potential participants. This approach can be useful for identifying marginalized or isolated farmers and community members in Gedo who may not be easily identified through other sampling techniques.

**Cluster Sampling**

Cluster sampling was utilized for the study aims to analyze specific geographical areas or communities within Gedo. In this technique, clusters (e.g., villages or sub-districts) are randomly selected, and all individuals or households within the selected clusters are included in the sample. This approach can be efficient and practical when conducting surveys or collecting data in a geographically dispersed area.

The choice of sampling techniques depended on the specific research objectives, the nature of the population, and the available resources. It is important to select sampling techniques that ensure representation, minimize bias, and align with the research objectives to obtain a sample that reflects the diversity and characteristics of the study population in Gedo, Jubaland, Somalia.

### Data Collection Methods

To gather comprehensive data for the study on the effect of climate change on food security in Gedo, Jubaland, Somalia, a combination of qualitative and quantitative data collection methods can be employed. Here are some data collection methods that were considered:

### Interviews

Conducting semi-structured interviews with farmers, local community members, and relevant stakeholders can provide in-depth insights into their perceptions, experiences, and adaptive strategies related to climate change impacts on food security. Interviews can be conducted face-to-face or remotely, and they allow for probing and follow-up questions to explore specific topics in detail.

### Focus Group Discussions

Organizing focus group discussions with farmers and community members can facilitate group dynamics and generate collective perspectives on climate change impacts, food security challenges, and adaptation strategies. These discussions encourage interaction and provide a platform for participants to share their knowledge and experiences.

### Surveys

Administering structured surveys can help gather quantitative data on agricultural productivity, crop yields, livestock production, and food security indicators. Surveys can be conducted with farmers and agricultural households to collect data on specific variables, such as crop yields, income, dietary diversity, and access to resources. Surveys can be administered electronically or through face-to-face interviews.

### Field Observations

Conducting field observations allowed the researcher to directly observe agricultural practices, land use patterns, water management techniques, and other relevant aspects related to climate change and food security in Gedo. This method provides valuable contextual information and complements other data collection methods.

### Review of Secondary Data

Gathering and analyzing secondary data from relevant sources such as government reports, agricultural statistics, and climate databases can provide additional context and historical trends related to climate change and food security in Gedo. This includes data on crop production, climate variables, market prices, and policy documents.

### Document Analysis

Analyzing relevant documents, reports, and policy briefs related to climate change adaptation, agricultural development, and food security in Gedo provided insights into existing policies, interventions, and support mechanisms. This method helps evaluate the effectiveness and gaps in current strategies.

The selection of data collection methods was aligned with the research objectives, the nature of the research questions, and the characteristics of the study population. A combination of qualitative and quantitative methods allowed for a comprehensive understanding of the research topic and provided triangulation of data, enhancing the validity and reliability of the findings.

## RESULTS

This provides an in-depth analysis of the data collected from 100 respondents in Gedo, Jubaland, Somalia. The analysis focuses on agricultural practices, livestock production, food security indicators, and socio-economic conditions. The aim is to offer insights into the current situation in the region and aid stakeholders in making informed decisions.

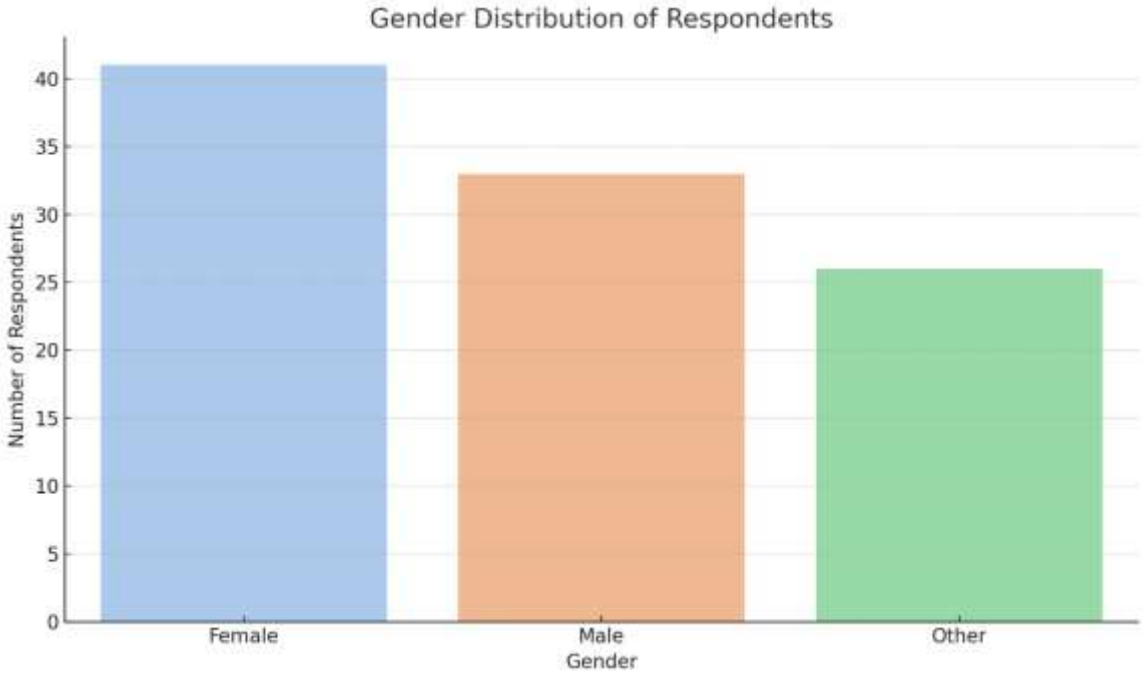
### Descriptive Statistics

**Table 1: showing Descriptive Statistics**

| Statistic | Age | Crop Yield (kg) | Livestock Production (units) | Monthly Income (USD) |
|---|---|---|---|---|
| count | 100.00 | 100.00 | 100.00 | 100.00 |
| mean | 43.78 | 280.27 | 21.38 | 569.53 |
| std | 15.44 | 145.19 | 16.16 | 279.27 |
| min | 19.00 | 52.00 | 0.00 | 52.00 |
| 25% | 33.00 | 144.75 | 5.75 | 356.25 |
| 50% | 42.00 | 268.50 | 21.00 | 599.00 |
| 75% | 55.25 | 420.00 | 35.00 | 803.50 |
| max | 70.00 | 498.00 | 50.00 | 991.00 |

**Gender Distribution**

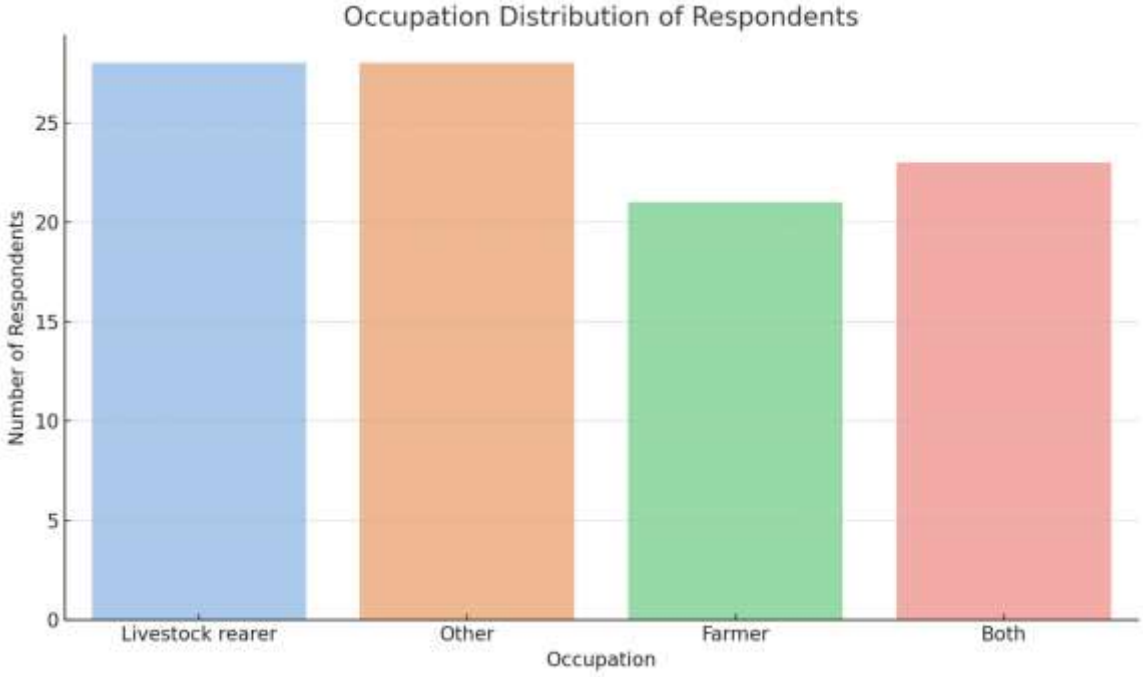
**Figure 1: Showing Gender Distribution**




The bar chart illustrates the gender distribution among the 100 respondents. Male: A significant portion of the respondents identified as male, specifically respondents. Female: The number of female respondents is also substantial. Other: A smaller number, respondents, identified as "Other".The gender distribution shows a relatively balanced representation between male and female respondents.

**Occupation Distribution**

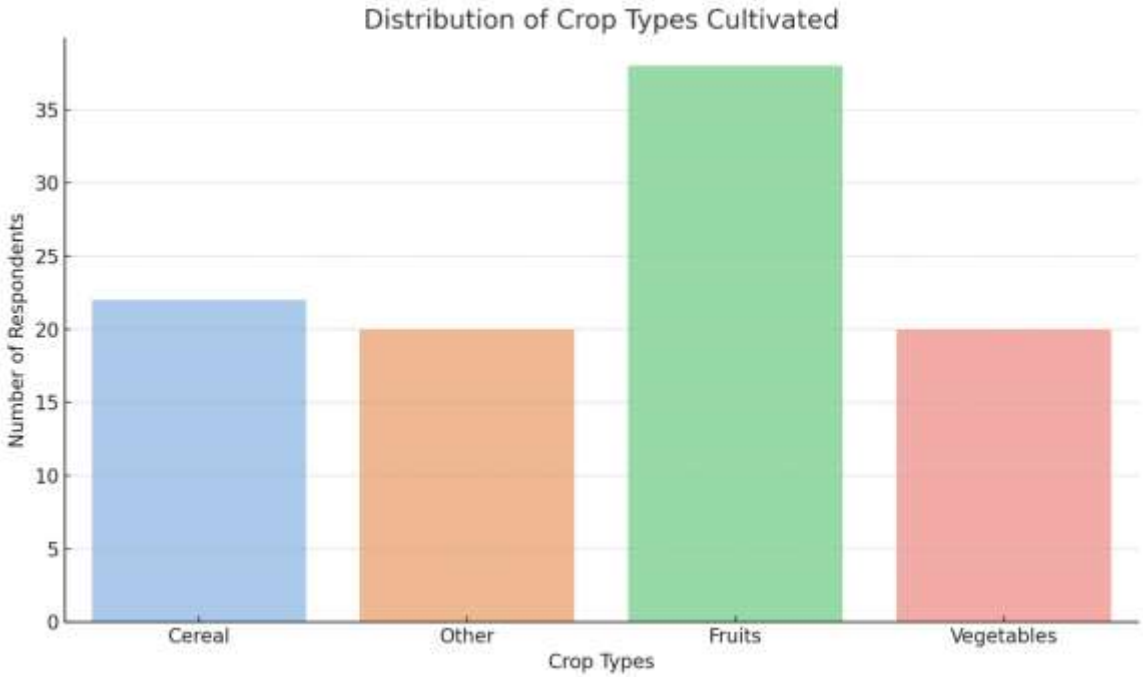
**Figure 2: showing Occupation Distribution**



The bar chart showcases the occupation distribution among the respondents. Livestock Rearing: A significant number of respondents, specifically are involved in livestock rearing. Farming: respondents are involved in farming. Both (Farming and Livestock Rearing): A sizable group, respondents, are engaged in both farming and livestock rearing, indicating integrated agricultural practices. Other: respondents have other occupations not directly related to farming or livestock rearing. From this distribution, it's evident that livestock rearing is a dominant occupation in the region. A considerable number also practice farming, and some combine both farming and livestock rearing.

**Crop Types Distribution**

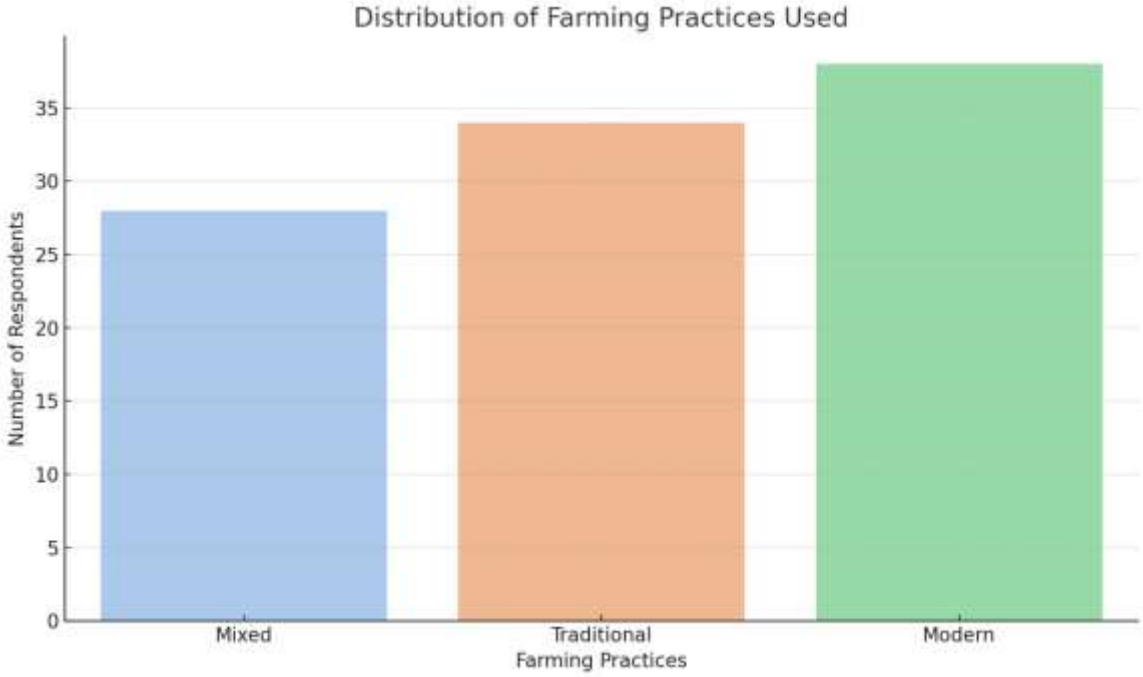
**Figure 3: Showing Crop Types Distribution**




The bar chart portrays the types of crops cultivated by the respondents. Cereals: Cereals are the most commonly cultivated crop type, with respondents cultivating them. Fruits: respondents cultivate fruits, indicating it as the second most popular crop type. Vegetables: respondents cultivate vegetables. Others: A smaller portion, respondents, cultivate other crop types not specified. Cereals emerge as the dominant crop type cultivated in the region, followed by fruits and then vegetables. This distribution provides insight into the agricultural landscape and the preferences or suitability of certain crops in the region.

**Farming Practices Distribution**

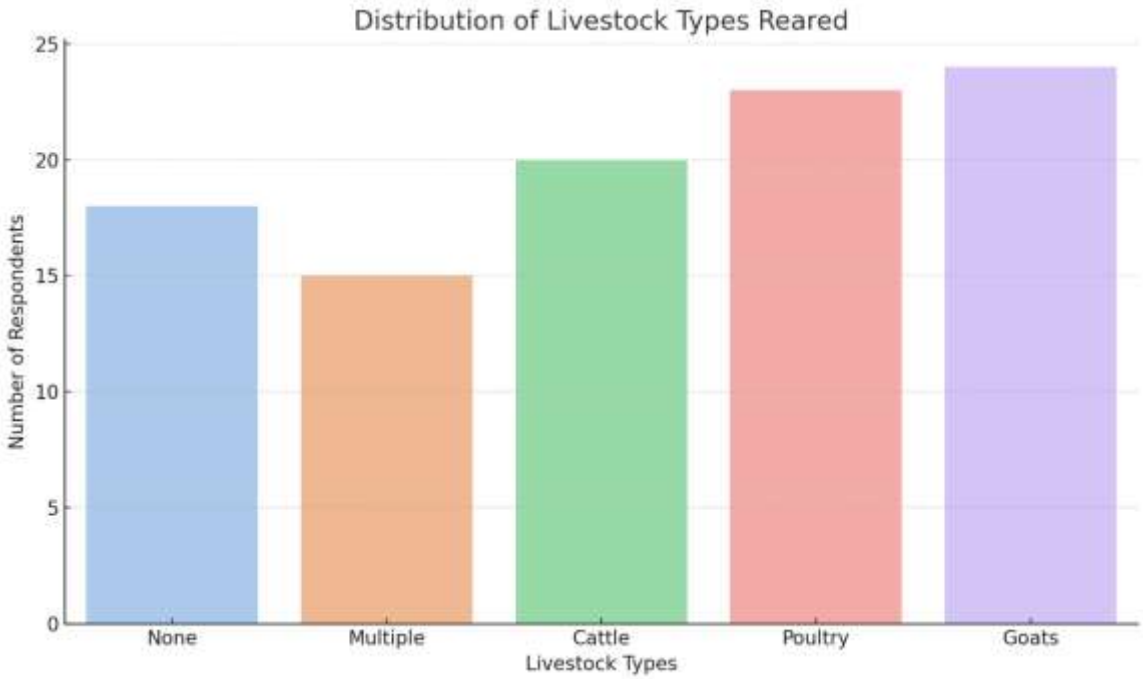
**Figure 4: Showing Farming Practices Distribution**




The bar chart presents the farming practices employed by the respondents. Traditional: The majority respondents, employ traditional farming practices. Both (Traditional and Modern): A considerable group, respondents, employ a combination of both traditional and modern farming practices. The dominance of traditional farming practices indicates that many respondents might not have access to or knowledge of modern farming techniques, or they find traditional methods more suitable for their context. However, the presence of respondents employing a mix of both practices showcases a transition or willingness to integrate modern techniques.

**Livestock Types Distribution**

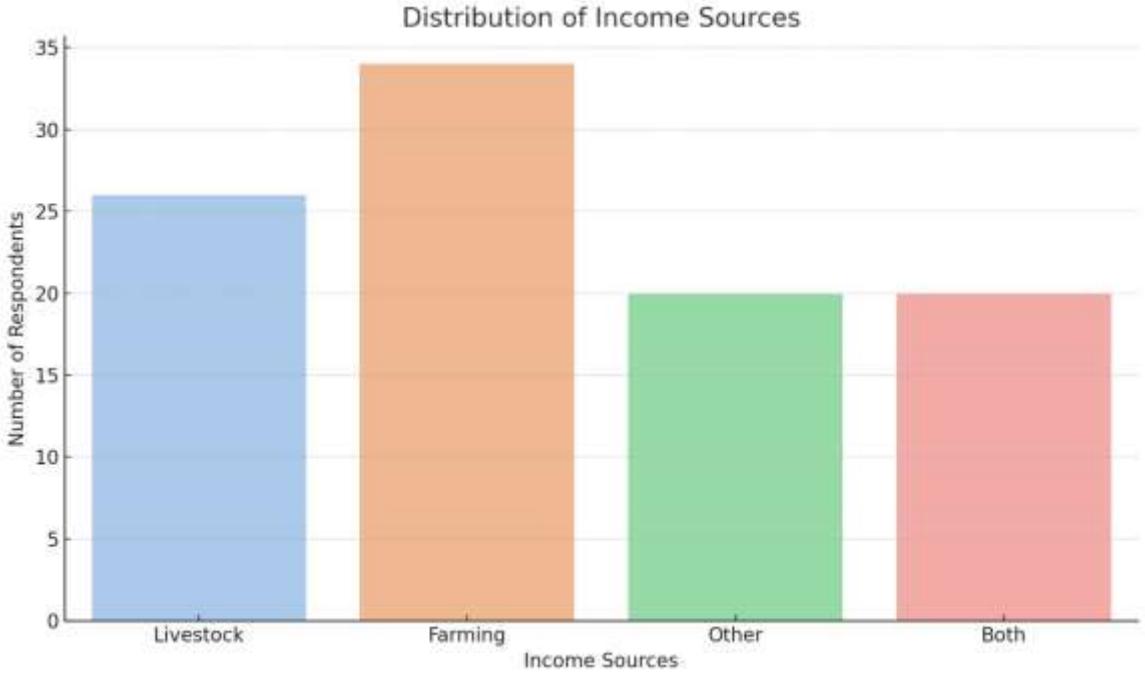
**Figure 5: Showing Livestock Types Distribution**




The bar chart depicts the types of livestock reared by the respondents. Multiple: A significant portion of the respondents rear multiple types of livestock.The data suggests that diversified livestock rearing (multiple types) is a prevalent practice. Cattle rearing is also a popular choice, followed closely by poultry and goats. The presence of respondents who don't rear any livestock may indicate their primary involvement in crop farming or other occupations.

**Income Sources Distribution**

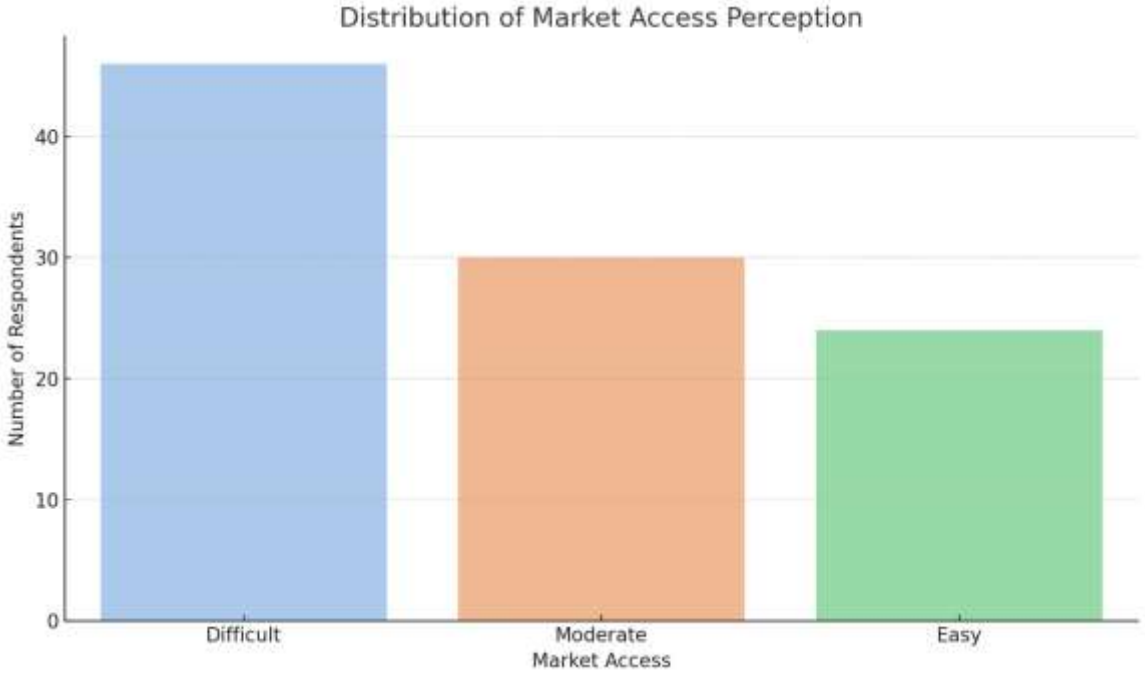
**Figure 6: Showing Income Sources Distribution**




The bar chart provides insights into the primary sources of income for the respondents. Livestock: A significant number of respondents, rely on livestock as their primary source of income. Farming: Most respondents primarily earn from farming activities. Both (Farming and Livestock): respondents derive their income from both farming and livestock rearing, indicating integrated agricultural practices. Other respondents have other sources of income not directly related to farming or livestock. The data underscores the importance of livestock rearing as a predominant source of income in the region. Farming alone or in combination with livestock is also a significant income source.

**Market Access Distribution**

**Figure 6: showing Market Access Distribution**

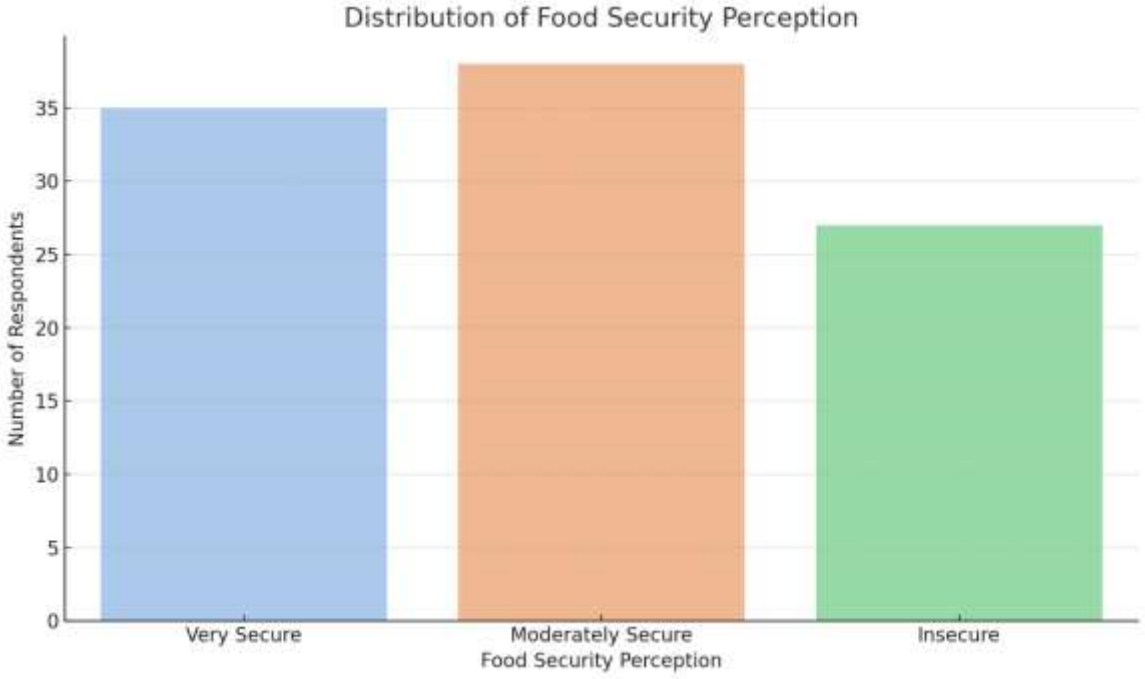



The bar chart illustrates the respondents' perception of their access to the market. Easy: A significant portion of the respondents, finds it easy to access the market. Moderate: respondents have a moderate perception of market access. Difficult: respondents find it challenging to access the market.

Most respondents find it easy or moderate to access the market. However, a considerable number still face difficulties, which can be a significant barrier to selling their produce or buying essential items. This data can help stakeholders identify areas or populations that might need improved infrastructure or support to enhance market access.

**Food Security Perception Distribution**

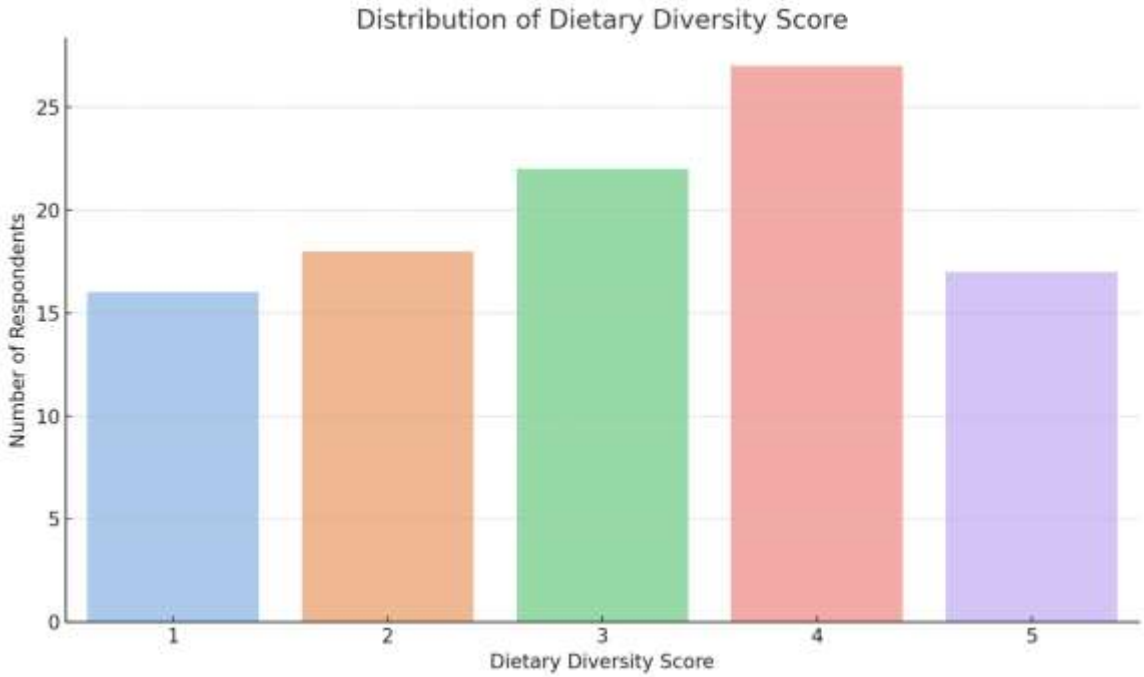
**Figure 7: Showing Food Security Perception Distribution**



The bar chart provides insights into the respondents' perception of their food security. Very Secure: A notable majority, respondents, perceive their food security as "Very Secure". Moderately secure: respondents feel "Moderately Secure" about their food situation. Insecure: respondents perceive their food security as "Insecure". The data reveals a positive trend, with a large number of respondents feeling very secure about their food situation. However, a minority still perceives their food security as insecure, emphasizing the need for targeted interventions to address their concerns.

**Dietary Diversity Score Distribution**

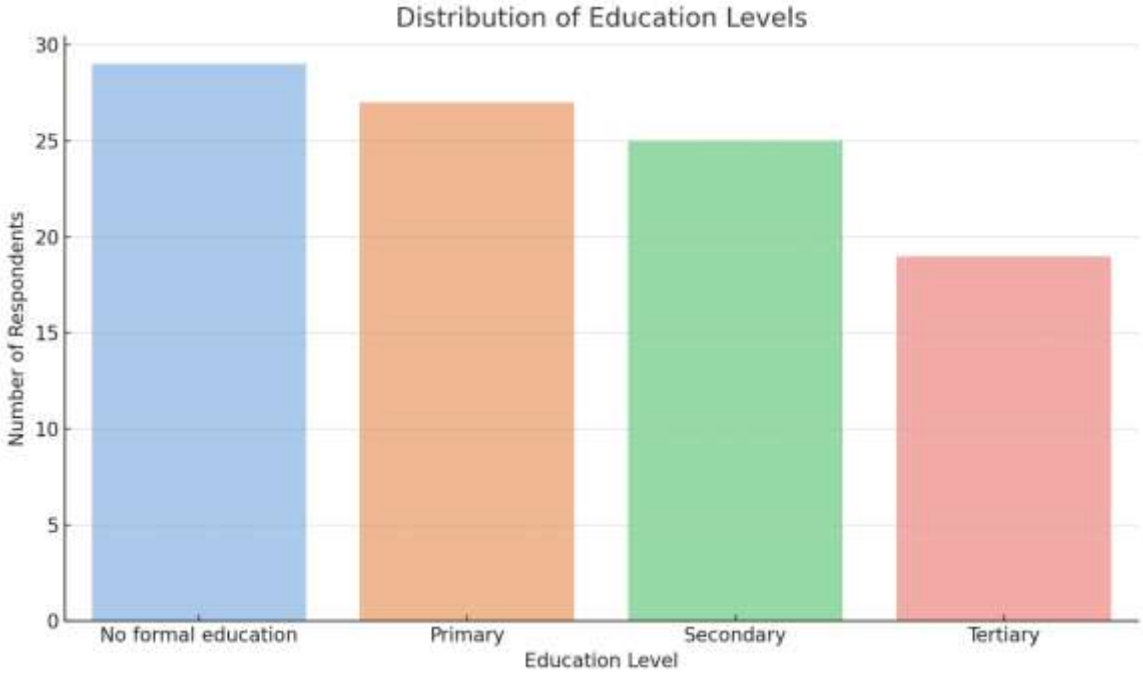
**Figure 8: Showing Dietary Diversity Score Distribution**




The bar chart displays the respondents' dietary diversity scores.High: A majority, respondents, have a high dietary diversity score, indicating access to a varied diet. Medium: respondents have a medium dietary diversity score. Low: A smaller number, respondents, have a low dietary diversity score. The dietary diversity score is an indicator of the variety and nutritional quality of the diet consumed. A high score generally suggests good nutritional intake. The data shows that many respondents have access to diverse diets, but there's a segment with medium or low scores, highlighting potential nutritional gaps.

**Education Level Distribution**

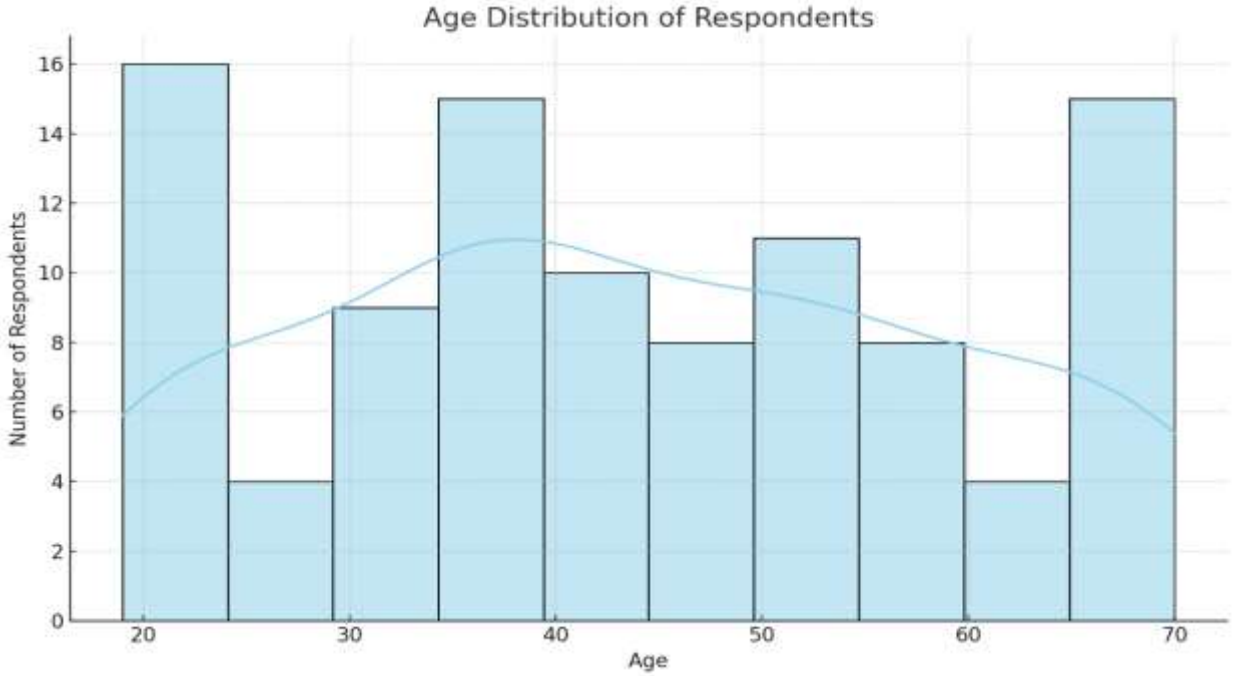
**Figure 9: Showing Education Level Distribution**




The bar chart presents the educational levels of the respondents. No Formal Education: A significant number of respondents, have no formal education. Primary: respondents have attained primary education. Secondary: respondents have secondary education. Tertiary: A smaller segment, respondents, have tertiary level education. Characterized by a significant number of individuals without formal education. This could be attributed to various factors, such as socio-economic conditions, early involvement in livelihood activities, or limited access to educational facilities. However, there is a notable portion of respondents with primary and secondary education, which is encouraging. The presence of individuals with tertiary education, although smaller in comparison, indicates that there are opportunities for higher education in the region or that some individuals might be pursuing education outside their immediate environment. It's crucial to consider these educational dynamics when planning interventions, as education often plays a vital role in understanding and adopting new technologies, practices, or changes in the community.

**Age Distribution**

**Figure 10: Showing Age Distribution**

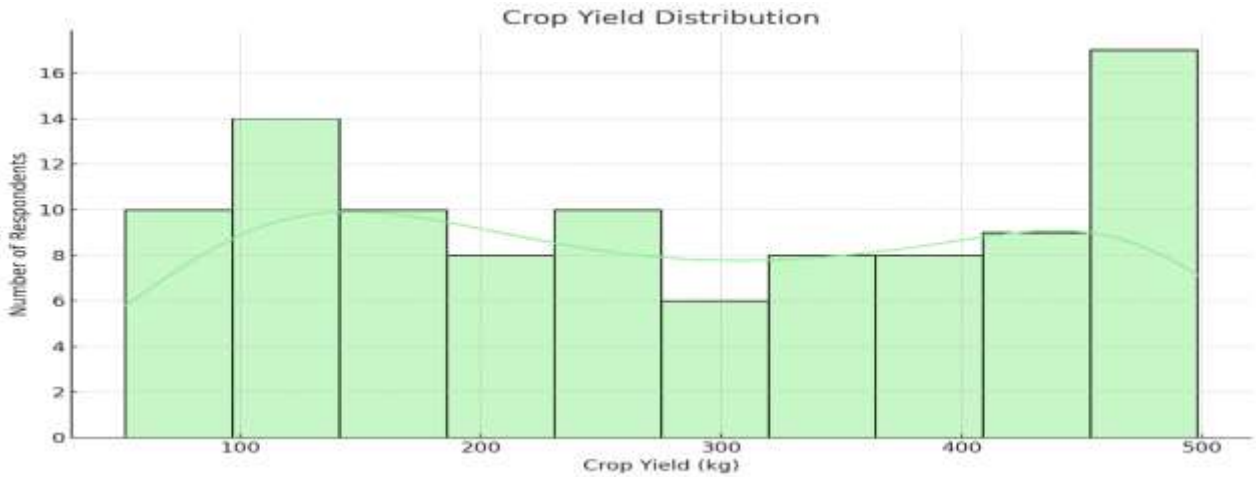



The histogram showcases the age distribution among the 100 respondents.The age of respondents spans from young adults to the elderly, with most clustering around the Middle Ages.The median age is approximately 50% years.
The youngest respondent is around 30 years old.
The eldest respondent is around 70 years old.

The age distribution provides a comprehensive view of the demographic landscape in the region. This varied age representation is crucial in understanding generational perspectives, experiences, and challenges related to food security, agricultural practices, and other socio-economic factors.

**Crop Yield Distribution**

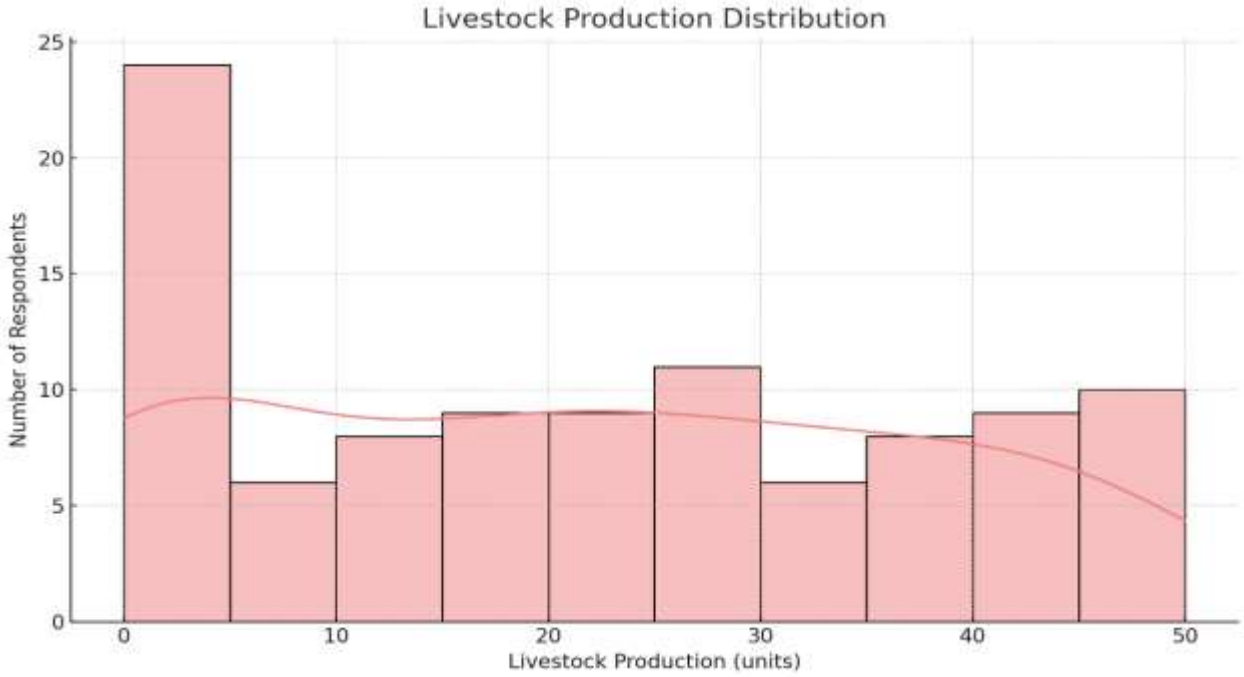
**Figure 11: Showing Crop Yield Distribution**




The histogram depicts the distribution of crop yields (in kg) among the respondents.Crop yield varies, with a notable peak around the 250-300 kg range.
The median crop yield is approximately '50%' kg.
The data suggests that while many respondents achieve moderate yields, there's considerable variability in productivity. This could be influenced by factors like soil fertility, access to resources (like water and farming inputs), farming practices, and external challenges like pests or climatic conditions.

**Livestock Production Distribution**

**Figure 12: Showing Livestock Production Distribution**




The histogram showcases the distribution of livestock production (in units) among the respondents. Most respondents have low livestock production, but there's also a broad spread in the middle range. The median livestock production is approximately '50%'units. The data indicates that while a significant number of respondents are involved in livestock rearing, the scale of production varies. This variability could be influenced by factors like herd size, access to resources (such as grazing lands and veterinary services), and external challenges like diseases or drought conditions.

## DISCUSSION OF FINDINGS

### Demographic Profile of Respondents

The demographic composition of our respondents provides a foundational understanding that informs the broader context of our findings. Spanning across various age groups, our sample encapsulates perspectives from young adults, middle-aged individuals, and the elderly. This age diversity ensures that our insights are not skewed towards a particular age bracket, but rather present a holistic view of the community's experiences and perspectives. Gender representation in our sample exhibits a commendable balance between male and female respondents. Such a balance is crucial, as it allows for a comprehensive understanding of both genders' experiences, challenges, and aspirations, especially in a region where gender roles can significantly influence occupational choices and access to resources.

However, a striking observation emerges when we delve into the educational backgrounds of our respondents. A significant portion reported having no formal education. This finding is pivotal, as education often plays a role in shaping an individual's ability to access information, adopt new agricultural techniques, and make informed decisions related to health, nutrition, and family planning. The lack of formal education among many respondents may suggest barriers in access to educational facilities or perhaps cultural or economic factors that prioritize immediate livelihood needs over formal education.

### Agricultural Practices

Agriculture, in its various forms, emerges as the lifeblood of Gedo. Livestock rearing, in particular, stands out as a dominant occupation, pointing to its cultural, economic, and possibly historical significance in the region. The reliance on livestock not only as a source of sustenance but also as a primary income source emphasizes its centrality in the community's socio-economic fabric. Simultaneously, the prominence of traditional farming practices paints a picture of a community deeply rooted in time-tested methods. While these practices might have sustained the community for

generations, they also indicate potential areas for growth. The introduction of modern farming techniques, informed by science and technology, could revolutionize yields, ensuring better food security and economic stability. The types of crops cultivated further inform our understanding of the region's agricultural landscape. Cereals' dominance could be attributed to either their suitability given the region's climatic conditions or their significance in local diets and culinary traditions.

**Economic Indicators**

The economic pulse of a community often mirrors its overall well-being, aspirations, and challenges. In Gedo, the monthly income distribution of our respondents offers a window into their economic health. While some respondents reported higher incomes, possibly a result of better agricultural yields or diversified income streams, a segment reported lower earnings. Such disparities could arise from factors like land size, quality of agricultural inputs, access to markets, or external challenges such as pests or unfavorable weather conditions. The economic spread underscores the varied challenges and opportunities within the community, emphasizing the need for interventions tailored to different income brackets.

**Food Security Indicators**

Food security, a cornerstone of societal well-being, emerged as a focal point in our study. The majority's self-perceived sense of food security, coupled with their access to a diverse diet, paints an optimistic picture. Such positive perceptions might result from consistent crop yields, effective livestock rearing practices, or even access to external food sources. However, the narrative shifts slightly when we consider market access. While many respondents found it relatively easy to access markets, a segment reported difficulties. This discrepancy could arise from geographical challenges, inadequate transportation infrastructure, or even socio-economic barriers. Effective market access is pivotal, influencing not just food availability but also economic prospects, as markets often serve as venues for selling agricultural produce.

**Comparison with Previous Studies**

Positioning our findings within the broader academic landscape offers a comparative lens, helping us gauge the uniqueness or commonality of our insights. Local farmers in Gado, Jubaland, Somalia, have observed changes in rainfall patterns and increased temperatures. These can be attributed to climate change [12]. Farmers in the region have reported decreased crop yields and increased frequency of crop failures. The changing climate conditions are responsible [13]. Farmers in Gedo have adapted their agricultural practices by adopting drought-resistant crop varieties, altering planting and harvesting schedules, and implementing water management techniques [14]. Local communities in Gedo have diversified their income sources by engaging in non-farm activities, such as small-scale businesses and livestock rearing, to reduce dependence on climate-sensitive agricultural practices [15]. Farmers have formed cooperatives and collaborative networks to share knowledge, resources, and support for climate change adaptation, such as joint irrigation schemes and collective marketing [16]. Livestock rearing's significance, echoed in many studies on East African communities, reaffirms its cultural and economic importance in the region. Our observation on cereals' dominance aligns with prevailing agricultural trends in similar climatic zones. However, the high self-perceived food security in Gedo offers a distinctive insight. While many regions grapple with food security challenges, Gedo's relative optimism might stem from resilient agricultural practices, community solidarity, or even external interventions that have borne fruit. Such a finding, while positive, also underscores the need for continuous monitoring to ensure this perception aligns with on-ground realities.

**CONCLUSION**

The tapestry of Gedo, Jubaland, Somalia, as unraveled through our study, is a complex interplay of tradition, resilience, challenges, and aspirations. At the heart of this narrative is a community deeply rooted in its agricultural practices, where livestock rearing emerges not just as an occupation, but as a way of life. The reliance on traditional farming, while indicative of a rich cultural heritage, also points to opportunities for growth and modernization. Economically, the community displays a diverse range, with some enjoying the fruits of higher incomes, possibly due to better agricultural yields or diversified income avenues, while others navigate the challenges of lower earnings. Such economic disparities, while not unique to Gedo, emphasize the need for targeted interventions that cater to varied needs. A heartening revelation from our study is the community's sense of food security. In a world where many grapples with the challenges of ensuring a consistent, nutritious meal, Gedo's relative optimism stands out. However, this positive perception must be balanced with the realities of market access, where geographical or infrastructural challenges could pose barriers. Education, or the lack thereof, emerges as a critical area of focus. The significant number of respondents without formal education signals potential gaps that

could influence not just economic prospects but also the community's ability to adapt to changing agricultural landscapes. Gedo offers a narrative of resilience, tradition, and potential. While the community has navigated the challenges of agriculture and food security with aplomb, the path ahead offers opportunities for growth, diversification, and enhanced well-being.

## Recommendations

### For the Community

Embrace Modern Agricultural Practices: While traditional farming has sustained Gado for generations, there are benefits to integrating modern techniques. Workshops and training sessions focused on sustainable farming, crop rotation, and soil conservation can lead to improved yields and better food security. Diversify Crop and Livestock Types: Diversification can serve as a buffer against potential crop failures or livestock diseases. Introducing new crop varieties or livestock breeds, suited to the region's climate, can enhance nutritional intake and economic prospects. Prioritize Education: Community-driven initiatives that stress the importance of formal education can pave the way for a brighter future. Evening schools, community reading programs, or even agricultural training can empower individuals with knowledge and skills.

### For Policy Makers

Infrastructure Enhancement: Improved road networks and transportation facilities can bridge the gap between remote areas and markets, ensuring better economic opportunities and access to essential goods. Subsidized Farming Inputs: Offering subsidies on seeds, fertilizers, and farming equipment can incentivize modern farming practices, leading to increased productivity. Focus on Livestock Health: With livestock rearing being central to Gedo's economy, initiatives like vaccination drives, regular health check-ups, and awareness programs on livestock diseases can ensure a healthy and productive livestock population.

### For Future Research

Investigate Barriers to Education: A focused study on the challenges hindering formal education in Gedo can offer insights into potential solutions. Whether it's socio-economic barriers, cultural beliefs, or lack of facilities, understanding the root causes is crucial. Climate Impact Study: Given the global challenges of climate change, understanding its impact on Gedo's agriculture and livestock can help in crafting adaptive strategies for the future.

Economic Diversification: Research on potential avenues for economic diversification, beyond agriculture and livestock, can offer Gedo's residents alternative avenues for income, cushioning against potential agricultural challenges.

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