**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background of the Study**

Deforestation, defined as the large-scale removal of forest cover, has emerged as a critical environmental issue globally, with pronounced effects in developing nations such as Nigeria. In Adamawa State, particularly in the Mubi region, deforestation has significantly transformed the natural landscape, leading to soil degradation, reduced rainfall, and loss of biodiversity. These environmental changes pose serious challenges to farmers who depend on arable crop production for their livelihoods.

Several factors contribute to deforestation in Mubi North, including agricultural expansion, logging, urbanization, and the demand for fuelwood. Mayomi (2009) highlights that between 1978 and 1995, human activities such as extensive agriculture, animal grazing, intensive agriculture, and irrigation farming collectively reduced 34.10% of woodland areas in the Mubi region. The indiscriminate cutting down of trees has led to environmental and economic challenges, including soil erosion, which severely affects farming activities (HumAngle, 2021).

Arable crop production in Mubi North involves the cultivation of staple crops such as maize, sorghum, millet, and beans, which rely heavily on fertile soil, adequate rainfall, and favorable climatic conditions. However, the removal of forest cover often results in decreased soil fertility, increased soil erosion, and unpredictable weather patterns, thereby threatening agricultural productivity. Farmers have reported that deforestation leads to erosion, severely affecting their farming activities (HumAngle, 2021).

The relationship between deforestation and agricultural productivity is complex and multifaceted. On one hand, deforestation is often carried out to expand agricultural land to meet the food demands of the growing population. However, in the long term, it results in land degradation, loss of soil nutrients, and desertification, which negatively impact crop yields (Adeoye et al., 2022). The exposure of land to direct sunlight due to tree removal increases soil temperature, which can reduce the moisture content required for optimal crop growth. In addition, the destruction of forest ecosystems reduces the presence of pollinators, leading to a decline in crop productivity and biodiversity loss (Ibrahim & Musa, 2020).

The loss of forest cover also affects water availability, a critical factor in agricultural sustainability. Trees play a vital role in regulating the hydrological cycle by promoting water infiltration and preventing excessive runoff. With deforestation, rainfall no longer effectively replenishes groundwater reserves, leading to reduced water availability for irrigation and household use (Umar & Abubakar, 2021). This situation is particularly concerning for farmers in Mubi North, where water scarcity is already a challenge due to changing climate patterns and increased land degradation. Consequently, the frequency of droughts has increased, further worsening food insecurity in the region.

Despite various policies and initiatives aimed at curbing deforestation in Nigeria, the practice continues due to weak enforcement and economic pressures. Many rural farmers rely on tree felling for fuelwood and income generation, making deforestation a persistent issue. Addressing this challenge requires a multifaceted approach, including sustainable land management practices, afforestation programs, and increased awareness of the long-term consequences of deforestation. This study seeks to assess the impact of deforestation on arable crop production among farmers in Mubi North, Adamawa State, with the aim of providing recommendations for sustainable land management practices.

**1.2 Statement of the Problem**

Deforestation has become a pressing issue in Mubi North, Adamawa State, where forested lands are rapidly being cleared for agricultural expansion, fuelwood collection, and infrastructural development. This widespread tree removal has led to observable environmental changes such as declining soil fertility, reduced crop yields, and increased vulnerability to climate change. As trees play a crucial role in maintaining soil structure, regulating water cycles, and providing shade, their removal exposes the land to excessive sunlight, reduces soil moisture retention, and accelerates erosion (Ibrahim & Musa, 2020). These changes negatively affect arable crop farmers who rely on the land for their livelihood, leading to decreased farm productivity and economic instability.

Farmers in the region have reported difficulties in maintaining soil productivity due to continuous land degradation, loss of organic matter, and increased incidences of pests and diseases that were previously controlled by forest ecosystems. The removal of tree cover leads to a reduction in beneficial microorganisms and pollinators essential for crop production, further exacerbating the challenges faced by farmers. In addition, deforestation disrupts local rainfall patterns, contributing to erratic weather conditions that make farming increasingly unpredictable. These challenges have resulted in lower yields of staple crops such as maize, sorghum, millet, and beans, which are crucial for food security in the region.

Despite these alarming trends, there is limited empirical research assessing the direct impact of deforestation on arable crop production in Mubi North. While several studies have explored the broader effects of deforestation on the environment, few have specifically examined how it affects soil quality, water availability, and agricultural productivity in this region. Without a comprehensive understanding of these dynamics, it is difficult to develop effective policies and interventions to mitigate the adverse effects of deforestation on farmers. This study seeks to fill this research gap by assessing the impact of deforestation on arable crop production among farmers in Mubi North, Adamawa State, with the aim of providing recommendations for sustainable land management practices.

**1.3 Aim and Objectives of the Study**

**1.3.1 Aim**

The aim of this study is to assess the impact of deforestation on arable crop production among farmers in Mubi North, Adamawa State.

**1.3.2 Objectives**

Specifically, the study seeks to:

1. Examine the causes and extent of deforestation in Mubi North.
2. Analyze the effects of deforestation on soil fertility and crop yields.
3. Investigate farmers' perceptions of deforestation and its impact on their farming activities.
4. Identify strategies that farmers and policymakers can adopt to mitigate the negative effects of deforestation on arable crop production.

**1.4 Research Questions**

To achieve the objectives of this study, the following research questions will be addressed:

1. What are the major causes of deforestation in Mubi North?
2. How has deforestation affected soil fertility and crop yields in the area?
3. What are the perceptions of farmers regarding the impact of deforestation on their agricultural activities?
4. What strategies can be implemented to reduce the negative effects of deforestation on arable crop farming?

**1.5 Significance of the Study**

This study is significant in several ways. Firstly, it will provide valuable insights into the relationship between deforestation and agricultural productivity, helping farmers understand the long-term consequences of forest depletion. By identifying the specific ways in which deforestation affects soil fertility, water availability, and crop yields, farmers will be better equipped to adopt sustainable land management practices such as agroforestry, crop rotation, and soil conservation techniques. The findings of this study will empower local farmers with knowledge on how to mitigate the negative effects of deforestation on their farms, thereby improving agricultural resilience and productivity.

Secondly, this research will be beneficial to policymakers, environmental agencies, and government institutions involved in land use planning and agricultural development. By providing empirical data on how deforestation is impacting arable crop production in Mubi North, the study can serve as a guide for the formulation of policies aimed at promoting afforestation, reforestation, and sustainable farming practices. It can also inform the development of environmental conservation programs that balance the need for agricultural expansion with the preservation of forest ecosystems. Additionally, the study’s findings can contribute to climate adaptation strategies by identifying measures to enhance soil conservation and water management in deforested areas.

Lastly, this study will contribute to the existing body of knowledge on deforestation and its effects on agriculture, serving as a reference for future research in similar areas. Given the increasing threats posed by deforestation in Nigeria and other parts of Africa, this research will provide a case study that can be used for comparative analysis in other regions experiencing similar environmental challenges. It will also help bridge the knowledge gap regarding the socio-economic implications of deforestation on smallholder farmers, offering recommendations that can be adapted to various agricultural and environmental contexts. By shedding light on the intricate link between deforestation and food security, this study aims to support efforts geared toward sustainable environmental management and agricultural productivity in Nigeria.

**1.6 Scope of the Study**

The study focuses on the assessment of deforestation and its impact on arable crop production among farmers in Mubi North, Adamawa State. It will cover the major causes of deforestation, its effects on soil fertility and crop yields, and the perceptions of local farmers regarding these changes. The study will be limited to selected farming communities within the study area and will rely on data collected through surveys, interviews, and secondary sources.

**1.7 Definition of Key Terms**

To enhance clarity, the following key terms are defined:

**Arable Crop Production:** The cultivation of crops such as maize, millet, sorghum, and beans that require plowing and soil preparation.

**Deforestation:** The process of clearing or removing forests for agricultural, industrial, or urban development purposes.

**Erosion:** The gradual removal of the topsoil due to water, wind, or human activities, leading to reduced soil productivity.

**Soil Fertility:** The ability of soil to provide essential nutrients to crops for optimal growth and yield.