

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Up until 1957, when three successive five-year development plans were launched, there has been no definite development strategy aimed at improving the socio economic condition of the rural population of the country (Abebe 2000:63).

Agriculture is recognized as an important sector of the economy but only received the attention of the central government during the third five-year development plan, which outmoded from 1968 to 1974. It was during this time that the various extension projects such as the Chilalo Agricultural Development Unit, The Wolaitta Agricultural Development Unit, the Minimum Package Projects, and etc. were designed and implemented.

Although some extension activities are reported to have existed prior to this period, formal and organized extension programs with the objective of addressing the problem of the agricultural sector were only launched during this period.

Following the comprehensive and minimum package projects approach, a World Bank funded, Training and Visit approach projects referred to as Peasant Agriculture Development Project (PADEPs) were launched in seven of the eight agro ecologically delimited zones of the country.

However, owing to the limited success gained by these extension programs in improving the livelihood condition of the farming community (Elias, 1993:3), the government of Ethiopia was obliged to draft and implement a new extension strategy named the Participatory Demonstration and Training Extension System (PADETES). This was

implemented in 1995 and was developed mainly by drawing some positive elements from the previously tested extension approaches, the participatory, cost sharing and the Sasakawa Global 2000 Extension Approach (Habtemariam, 1995:42).

The objectives of PADETES are focused on improving the income and the standard of living of the rural people mainly by raising their participation in the development process along with attaining national food self-sufficiency by increasing the productivity per animal or per hectare of land (ANRS/Sida 1996: 32).

With regard to its technology promotion strategy, PADETES is characterized by the introduction of recommended agricultural technologies commonly presented in a form of a package, a strategy borrowed from the Sasakawa Global 2000 Approach. A cereal package, for instance, comprises the use of the best available commercial cultivars or hybrids, improved agronomic practices that insure proper spacing and method of planting and proper application/method and use of recommended level of plant nutrients in the soil (Elias, 1999:7).

With the introduction of these packages, the productivity of program participant farmers has been doubled, tripled and in some cases quadrupled in some major crops. For example maize, wheat, teff, and sorghum averaged 5.2, 2.8, 1.5 and 4.5 tons per hectare respectively in the 1994 season (SG 2000:1994). These yields are about 2-3 times higher than the national averages.

Encouraged by the promising results, the Government of Ethiopia ambitiously increased the number of participating farmers to about 4 million in 1999 from its very modest beginning of 166 farmers of the 1993 when the project began its first operation in Ethiopia. However, some groups claim that the results were rather negative and do not share this positive impression. They argue that when the technology adoption and yield improvement attained by farmers is not significant, the higher input price and unavailability of credit, the bureaucratic input and credit administration system, low prices for agricultural produce and poor marketing services, land fragmentation caused by

government land ownership policy, inefficient research and extension services, etc. become barrier for technology adoption and offsets the minimum improvements attained. This empirical study is, therefore, aimed at determining the level of adoption and efficiency attained by the introduction of agricultural technologies promoted through PADETES. More specifically the study aims at disproving the claim that “there is no significant difference in behavior change and production efficiency among participant farmers or that all participant farmers are equally poor in technology adoption and yield”. The assessment is also believed to refute the claim that significant proportion of participant farmers have rejected or withdrawn using the technologies promoted through PADETES. In connection to this, factors, which facilitate or hinder technology adoption, will be assessed to shed some light on possible improvement potentials.

For the purpose of providing a better perspective of the background problem, a brief overview of Ethiopian agriculture is presented here.

1.2 BACKGROUND INFORMATION ON THE ETHIOPIAN AGRICULTURE

Ethiopia is a large country with a total land area of 111,811, 000 hectare. However, only 30 percent of this can be used for rain-fed cultivation. The total arable land could only be increased to a merely 38 percent even when vertisols that have drainage problem and steeper land (over 30 percent slope) are included (Tesfaye 2003: in press).

Despite the higher rate of population growth from 23 million in 1960 to 37 million in 1980 and to 65.5 in 2001(CSA, 2000/01), the rate of growth in the agricultural GDP has according to Abebe (2000:68), declined at an alarming rate. It declined from 2.63 percent in 1961-65 to 1.85 in 1966-70 and to 1.39 percent in 1971-74. The annual growth rate of the agricultural GDP continued to decline and even plunges below zero in seven of (1975, 1978, 1981, 1982, 1984, 1985, & 1988) the sixteen successive years (ibid: 79).

Despite the deteriorating situations, agriculture continues to play an important role in the economy employing 85 percent of the labor force and accounting for 50 percent of the GDP and 90 percent of the national export earning (Zegeye *et al*, 2001:4). According to a report by ELU, quoted by Brons (1992:1) two thirds of export earnings come from coffee exports. Other export commodities include hides and skins, oilseeds, pulses, live animal, fruit and vegetables. For the last three to four decades, domestic food production has not been sufficient. From 1980/1981 to 1986/1987 food imports have increased by 260 percent (UNDP, 1991).

About 95 percent of the cultivated (7 million hectare) land is under smallholder farming where crop and animal production is undertaken mainly for subsistence. Cereals, pulses, oil and some tree crops constitute the major portion of crop production while the contribution of livestock and small ruminants as source of food, draught and income cannot be underestimated.

Maize is grown in many parts of Ethiopia and is the second most important crop next to teff (*eragrostis teff*) in area coverage. It covers 1.3 million hectare (CSA, 1996/97) and is the staple food crop for millions of people.

According to Abay *et al*, quoted by Moges and Baars (1998:170), the country is endowed with large cattle population but like in the case of crop production; the benefit derived from this sector does not satisfy the demand of the ever-growing population.

Livestock are used for a multitude of purposes such as draught, meat, milk and financial income. Although milk is mainly produced under smallholder production systems in rural Ethiopia, the recent change in government policies featured by liberalization and encouragement of the private sector, has led to the emergence of commercial dairy farms in urban and peri-urban areas. The Ada Liben Woreda Dairy and Dairy products Marketing Association (ALWDDPMA) is one among the many associations established during this period (ALWDDPMA, 2001).

1.3 PROBLEM STATEMENT

Although numerous packages have been developed and promoted in the areas of crop and livestock production and environmental conservation with the implementation of PADETES, formal and scientific studies conducted to determine the level of adoption and production efficiency attained are scanty.

Available studies (Howard *et al*, 1999; Elias, 1999; Alene *et al*, 2001; Zegeye *et al*, 2001; Zegye and Tesfaye, 2001) have focused mainly on the investigation of the effects of some personal, socioeconomic, communication and environmental factors on behavior but have failed to explain much of the variation in behavior (practice adoption) and the resulting production efficiency. This study endeavors to shed more light on the critical behaviour determinants, which are, according to Lewin, (1951) and Düvel, (1991), associated to the cognitive field.

1.4 OBJECTIVES

The overall objective of this study is to identify and compare the different categories of variables in regard to their influence on the adoption behavior and production efficiency as it pertains to maize growers in the Shashemene District and members of ALWDADPMA. The specific objectives of the research were:

- To review past development theories and behavior change models with a view to assess their potential use as conceptual models appropriate for behavior analysis and intervention,
- To assess the difference in technology use among program participant farmers compared against the different efficiency classes,
- To provide a description of the maize and dairy farmers in the study area regarding their profile or characteristics,

- To identify the most important factors responsible for the adoption of the technology packages promoted through PADETES and the production efficiency thereof, and finally,
- To highlight the implication of the findings for future policy, research and extension interventions.

1.5 SIGNIFICANCE OF THE STUDY

As it is explained in section 1.2 above, maize is one of the most important crops in Ethiopia. Dairy farming is also gaining importance and starts to flourish around urban and peri-urban areas of the country along with the scattered and traditional rural dairy farming. Both commodities are, therefore, the priority and focal points of research, extension and the overall agricultural development programs. It is believed that the findings of this study will contribute towards narrowing the knowledge gap regarding adoption behavior and in terms of contribution towards a more efficient overall policy and research and extension systems and the creation of a more enabling environment for the generation and promotion of agricultural technologies and enhancement of food production, which are the primary goal and focus of the government.

The study aims to attain its objectives through evaluating various models and approaches to behavior change with special emphasis to the model developed by Düvel (1991) and testing it's relevance in cross-cultural settings, different conditions and different innovations and where possible, contribute to its refinement.

1.6 SCOPE OF THE STUDY

As indicated in section 1.2 above, maize is adapted to a wider agro-ecology and many parts of the country covering more than 1.3 million hectare of land. Due to financial and time constraints, this study was conducted only in one district. However, the results are expected to be reasonably representative of the wider maize growing areas as most parts

of the maize growing regions of the country are found under similar geographical (Low and medium agro ecological zones) and socio-economic (similar input and output marketing system, similar technology and technology promotion services, similar land ownership policy etc.) conditions. Similar assumptions apply in the case of dairy farming. However, also when considering the fact that this study is the first of its kind conducted under Ethiopian condition, replication may well be necessary to further verify its findings.

1.7 THESIS OVERVIEW

After having introduced the study by relating to the background problem and the general objectives, a literature overview and theoretical exposition is presented leading to the research hypotheses. In chapter three the research methodology is discussed with special reference to the research design.

Findings of the research are presented in three chapters; chapter four provides the current production efficiency and adoption status of farmers under investigation. Chapters five and six summarize the factors responsible for affecting production efficiency and the adoption behavior and compares between the two sets of variables (the independent and the intervening variables) with the aim of identifying the most important variables contributing to the variance in production efficiency and the adoption behavior of farmers in the Shashemene and ALWDADPMA.

Finally a summary of the findings and their implication for policy, research and future extension intervention is given in chapter seven.