EFFECTS OF FARMER SOCIO-DEMOGRAPHIC FACTORS ON AGRICULTURAL PROJECTS IN KENYA: A CASE OF NARIG PROJECT IN MAKUENI COUNTY

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Citation: Ksee, D. M. M., Mbataru, P. (2024). Effects of farmer socio-demographic factors on agricultural projects in Kenya: A case of Narig Project in Makueni County. *International Academic Journal of Arts and Humanities, 1*(4), 131-140.

ABSTRACT

Agriculture significantly influences food security and economic progress at a global scale. Many developing countries including Kenya invest in agriculture towards rural development and poverty alleviation. In this investment, most countries work through agriculture development projects which are expected to produce results. Literature on assessment of performance of agricultural development projects tend to focus on the project cycle. There is little literature on the role of the farmer in the performance of these projects, yet they are key to the success of the projects. To fill in the missing gaps, this study aims at assessing the performance of the NARIGP, a five-year project funded by the World Bank that has been carried out by the Kenyan government in 21 out of 47 counties in Kenya including Makueni County where it is implemented in 20 out of 30 wards across the six sub-counties. The project's overarching goal is to boost agricultural productivity and profitability, which will subsequently enhance livelihoods and lessen vulnerabilities in the selected counties' targeted rural populations. The study will be in Makueni County. The study utilized the Agrarian change theory by Boserup and the theory of planned behavior as theoretical frameworks of the research. The research employed a descriptive survey design. The target population was the 18,754 farmers who have been implementing the project. A stratified and purposive sampling design was used to select 392 respondents, a sample size determined using sample size determination table recommended by (Naing, 2003), a structured questionnaire was used with the data being collected by research assistants to an online tool for analysis using inferential and descriptive statistics. Descriptive statistical analysis used percentages, means and frequencies while inferential statistical analysis used Pearson correlation and linear regression. Correlation analysis showed that farmer attitude; farmer knowledge and farmer practices are strong determinants of project performance while there was very little correlation between demographic factors and the performance of the project. Further statistical analysis (ANOVA, T-test and Linear regression) showed that gender, level of education, household size, monthly income, experience in the value chain and age were found to play no significant role in the performance of the project while the ward, family headship and chosen value chain were found to play some significant role. Farmer's attitude, knowledge and practices were found to influence the performance of the project. The study recommends that project formulation should consider these factors to enhance success.

Key Words: Farmer Demographic Characteristics, Attitude and Agricultural Projects.

INTRODUCTION

Most developing countries' efforts to reduce poverty and improve food security are centered on agricultural growth and agricultural projects are key in addressing challenges in the agriculture sector including food insecurity and rural underdevelopment. Agricultural projects have been used as interventions to enhance agricultural income stability and increase revenue through various means, such

as increased investment, improved input utilization, adoption of new technology, favorable input/output prices, reduced risk, and enhanced long-term sustainability. The agricultural sector can exert a substantial influence on the food security of families through the implementation of projects and policies. These initiatives primarily focus on developing nations, aiming to improve healthcare and provide individuals with opportunities to escape poverty and hunger. (Ibrahim et al., 2014).

Medina et al., (2018), found that agricultural projects had contributed to the strengthening of the Local Agricultural Development of a Cuban municipality while in Malaysia, an agricultural development project, the Agropolitan project has changed the participants' livelihoods after membership to the project, particularly in terms of poverty reduction, enhanced social well-being and lifestyle, as well as the creation of employment opportunities and increased income for those involved. (Rahman, Latip & Samsurijan, 2020).

According to Inegbedion et al. (2019), agricultural development programmes (ADPs) were created and implemented in Nigeria in response to a decline in agricultural productivity. They were intended to increase production and productivity for a period of time that was reasonable to the farmers' well-being, which was then expected to result in an increase in the community's per capita income. The National Fadama Development Project (NFDP) is an agricultural initiative implemented in Nigeria, which seeks to improve food security and eradicate poverty among Fadama farm households in the country (Undiandeye & Vosanka, 2012). It was found that the active involvement in the development project had a positive impact on participants' well-being and living conditions, leading to higher income, suggesting that sustaining the initiative could effectively alleviate poverty in rural farming households.

In Cameroon, an agricultural project, the Agricultural Competiveness Improvement project (PACA) was found to have a favorable effect on recipients' work circumstances, agricultural production and income level of beneficiary groups (Takwa, A. C. & Kimengsi, 2016). Agriculture developmental programmes, have been shown to improve income generation, farm productivity, poverty alleviation, and job creation. In general, agricultural development programs have the capacity to enhance the livelihoods of farmers that practice small-scale farming and the communities in the areas that these programs are implemented (Chepape & S, 2020).

According to Wankuru et al. (2019), the agriculture industry in Kenya accounts for over 51% of the country's GDP and generates jobs for around nine million Kenyans, making it a significant growth driver for the economy and the country's population. Furthermore, in Kenya, the decline in rural poverty was attributed to agricultural activities in 31.4 percent of households, underscoring the enduring importance of agriculture as the primary income-generating sector for both impoverished and non-impoverished households in rural setups.

Nearly 30% of Kenya's children are considered to be undernourished, and widespread micronutrient deficiencies affect over 10 million people (MOA, 2011). At any given time, between 2 and 4 million people in Kenya need emergency food assistance. This means a big proportion of the Kenyan population is not getting adequate nutrition. The agriculture sector in Kenya and Makueni County in particular has

the potential to generate economic development and employment opportunities for a significant portion of the population.

Agriculture development projects can be used to stimulate both agricultural and economic growth. According to a study by Irungu & Moronge (2016), agricultural projects have a growing impact on employment opportunities, food security, generation of wealth, and the emergence of new economic innovations. However, the study results also indicated that agricultural projects have a limited effect on the country's economy due to the numerous challenges they encounter, resulting in many of these projects not reaching their maximum potential and performing below expectations.

In Makueni County, 78% of all household income is derived from agriculture. Many people in the population engage in subsistence farming, whereas a small number engage in commercial farming. Limited agricultural productivity, limited adoption of new technology, insufficient policies, inadequately developed inputs and output markets, and reliance on sporadic and uneven rainfall are the defining characteristics of the agricultural sector (GoMC & KNBS, 2020). According to Schedule 4 of the (The Constitution of Kenya, 2010), one of the devolved tasks is agriculture. Various projects have been executed in the county to support agricultural development. Some are designed and implemented at County level while others are implemented in partnership with the National Government and other organizations. According to the Makueni CIDP (2018), one of the key lessons from the CIDP 2013-2017 was the importance of project data and information, one of the objectives of this study.

NARIGP is a five-year project funded by world bank and implemented by the Kenyan Government. It is implemented in 21 out of 47 counties in Kenya including Makueni County where it is implemented in 20 out of 30 wards across the six sub-counties. Its goal is to make smallholder subsistence farming an innovative, commercially focused, and modern industry through improved agricultural commodity productivity, commercialization, and competitiveness as well as the development and management of key production factors like land, water, and rural finance. The project's goal is to boost the agricultural output and profitability in the designated rural areas. Increases in profitability and the implementation of the enhanced agricultural technologies, innovations, and management practices (TIMPs) that the project is promoting serve as indicators of how well the initiative is doing towards achievement of its goal. Statement of the Problem

The Kenyan government has made investment in agricultural projects in order to increase agricultural growth. Some of these projects include the World Bank funded agricultural projects such as NARIGP. One of the agricultural projects implemented in Makueni, the Kenya Agriculture Productivity Project was assessed as having shortcomings in the achievement of the project's objectives (World Bank Group, 2019). Irungu & Moronge (2016) found that there has been little research on the factors that affect how well agricultural initiatives perform in Kenya and suggested more studies in this area. Most studies in the area of agricultural project implementation have left out the role of the farmer in the performance of the projects, yet the farmer is a key player. This research therefore seeks to examine the significance of farmers' roles as a critical determinant influencing the performance of agricultural development projects while also addressing the existing gap in literature on the area of study.

Objectives of the Study

1. To determine the effects of farmer demographic characteristics on the performance of the NARIGP
2. To explore the role of farmer attitude on the performance of the NARIGP

LITERATURE REVIEW

Theoretical review

The study was anchored on Boserup's theory of agrarian change: According to Boserup's theory, population pressure related to the tendency toward population growth causes numerous technical and other developments that lead to a rise in agricultural production and the availability of food. Based on her theory, the main factors responsible for changes in land utilization, agricultural technology, land tenure systems, and settlement patterns are primarily influenced by growth in population. She argued that the growth in population is not linked to food availability. (Grigg, 1979). According to Robinson & Schutjer (1984), agriculture does respond to "pressures" by increasing output from the preexisting potential surplus. Boserup contends that population growth is one of the pressures. A new, more intensive technology, less leisure time, less domestic handicraft production, or an increased output scale can all result in higher output. As a result, after the process of change in agriculture has started, the mechanism by which the surplus is achieved and its interaction with the pace of rural population expansion—rather than population growth alone—determine the eventual result in a significant way. This establishes a foundation on which agricultural development can be discussed and over time and has been advanced further to identify more forces driving agricultural development and not just population pressure.

Empirical Review

Farmer Demographic Characteristics

The farmers' educational attainment is presumed to positively influence their willingness to embrace new farming techniques. (Adeyanju et al., 2021; Lavison, 2013), whereas age is considered a significant determinant in the implementation of agricultural projects, because compared to young farmers, older farmers are presumed to possess extensive knowledge and expertise. (Kariyasa & Dewi, 2015; Adeyanju et al., 2021). According to Mignouna et al. (2016), household size is used to gauge the availability of labor. Age, gender, years of formal education, and family size were some of the characteristics that influenced young people's decisions to participate in an agricultural development program, according to a research by Adeyanju et al. (2021) in Nigeria. Age, education, credit access and economic status are significant in promoting sustainable agriculture practices adoption (Waseem et al., 2020). In a review of past studies, Mwangi & Kariuki (2019) identified household-specific factors including education, age, gender, and household size as key in technology adoption in agriculture.

Farmer attitude

According to (Odoyo, 2013), some of the success factors of project implementation include minimal negative influence by the community, welcoming of the project by the farmers, clear understanding of the aims and objectives of the project and perception of the project as beneficial to them. Personality traits
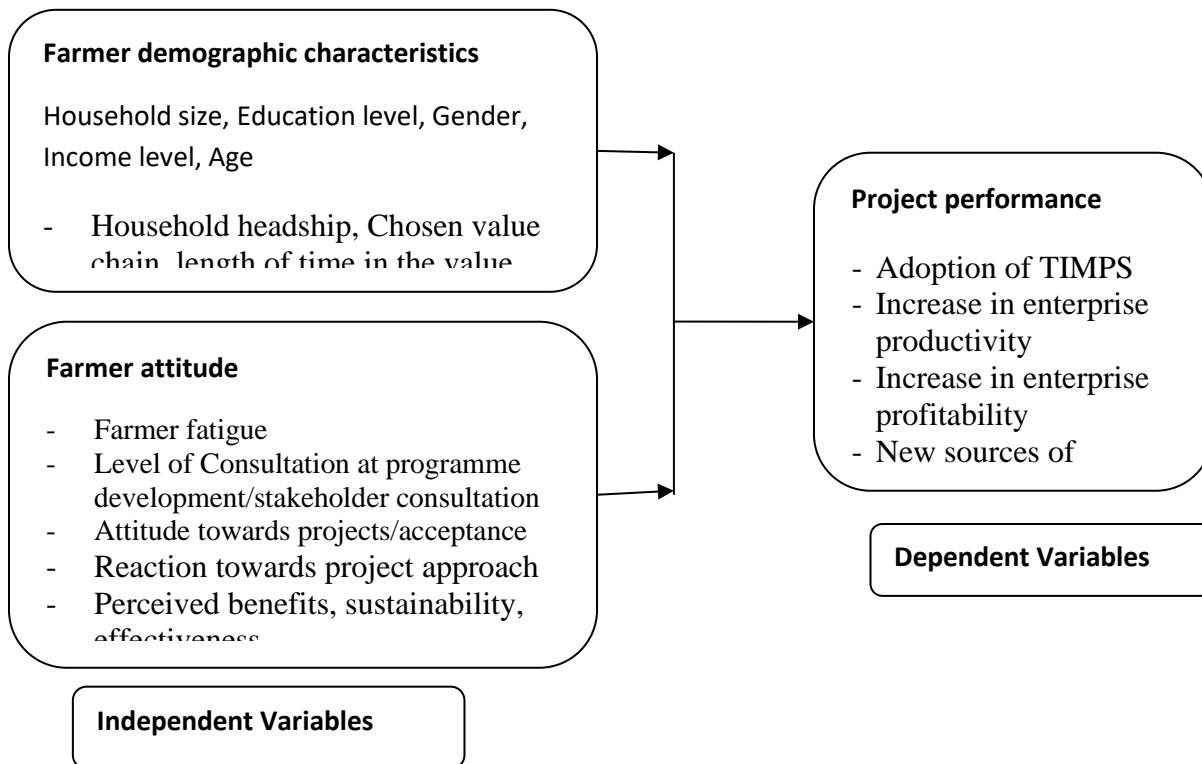
including intention and perception were identified as possible impediments to participation in agricultural projects (Adeyanju et al., 2021). Top-down approach in implementation of some projects significantly influences the involvement or noninvolvement of farmers in agricultural projects (Botlhoko & Oladele, 2013). According to a study by Irungu and Moronge (2016), stakeholders' participation had a beneficial impact on the effectiveness of agricultural based projects, with the most significant positive influence observed in project performance specifically related to agriculture.

Farmers' adoption of sustainable agriculture methods is influenced significantly by their perceptions of sustainable agriculture and their assessment of its viability (Waseem et al., 2020). A crucial prerequisite for adoption is how farmers perceive a new technology (M. Mwangi & Kariuki, 2015).

Conceptual Framework

Project performance

- Adoption of TIMPS
- Increase in enterprise productivity
- Increase in enterprise profitability
- New sources of income
- Creation of employment

Farmer demographic characteristics

Household size, Education level, Gender, Income level, Age

- Household headship, Chosen value chain, length of time in the value

Farmer attitude

- Farmer fatigue
- Level of Consultation at programme development/stakeholder consultation
- Attitude towards projects/acceptance
- Reaction towards project approach
- Perceived benefits, sustainability, effectiveness

Project performance

- Adoption of TIMPS
- Increase in enterprise productivity
- Increase in enterprise profitability
- New sources of

Dependent Variables

Independent Variables

RESEARCH METHODOLOGY

The research design encompasses a descriptive survey methodology. The descriptive survey research design examines a subset of the population to generate quantitative insights and descriptions of the population's attitudes, opinions, or trends. It entails direct contact with individuals who possess traits, behaviors, and attitudes that are pertinent to the inquiry in order to characterize a specific state of affairs that is present at a specific time (Bostley et al., 2019). Without altering any data, it provides statistical data on population characteristics that are of importance to policymakers and assesses the situation as it stands at the time (Mugenda & Mugenda, 2003).

The research was based in Makueni County, one of the 47 counties in Kenya. Makueni County is located in the South Eastern region of the country and shares borders with Machakos to the North, Kitui to the East, Kajiado to the West, and Taita Taveta to the South. It covers an area of approximately 8,176.7 square kilometers and is situated between Latitude 1°35' South and Longitudes 37°10' East and 38°30' East (GoMC, 2016).

All of the farmers who have been brought on board and provided with funding from the NARIGP in Makueni County were targeted for this study. A total of 18,754 farmers in 540 groups were involved in the project and received funding between 2018/2019 financial year and 2020/2021 financial year.

The research adopted stratified and purposive random sampling. The project is implemented in 20 wards out of 30 wards in six sub-counties. The study selected two sub-counties, Mbooni to represent the higher zones and Kibwezi East to represent the lower zones and then two wards were selected from each Sub-county. The target subpopulation was then divided into four strata (male adult, female adult, female youth, and male youth) and subjected to strata at two levels, first along the value chains to ensure that each value chain is represented. To choose the participants for each stratum, a simple random sampling was employed to guarantee that all respondent categories were represented and that the selected sample accurately represents the entire population under investigation.

Based on our population of 18,754 and working with a confidence level of 5%, the sample size lay between 390 and 392. The study adopted the higher value of 392. The sample was distributed among the four identified strata in the population. This study used a structured questionnaire with closed ended questions as stated by Taherdoost (2019) and Saeidi & Khaliliaqdam, (2013). The questionnaire items were formulated in alignment with the research objectives and research questions to ensure their relevance and effectiveness.

Data for this research was collected using the structured questionnaire as an online tool through interview. The selected respondents were interviewed by research assistants identified and trained for the tasks to ensure consistency in data collected.

Data from the online forms was downloaded into an excel form and checked for consistency and cleaned. The data was the analyzed by both descriptive and inferential statistics and presented through percentages, charts and explained in continuous prose. The study utilized Python 3.11 as the primary programming language for data analysis. The independent variables' frequencies, means, and percentages were calculated against the demographic data using descriptive statistics. The independent and dependent variables' connections were examined using the Pearson correlation coefficient and regression analysis to evaluate the degree of

correlation between the independent and dependent variables and to determine the collective influence of all independent variables on the dependent variable.

RESULTS AND FINDINGS

Out of a sample size of 392, a total of 351 farmers were reached and interviewed. However, 16 of the 351 respondents had some missing values and were therefore not analyzed. 335 responses which translated to 85% of the sample were analyzed. Findings on demographic information showed that on gender, 63% of the respondents were female while 37% were male. These study findings are in line with a report by World Bank. According to estimates from the World Bank (2014), women make up between 42% and 65% of the global agricultural labor force. Findings on age of the respondents indicated that the mean age of the respondents was 52.37 years with a standard deviation of 13.42. The minimum age was 22 years old while the maximum age was 85. None of the respondents was less than 20 years, 6% were between 21 and 30 years, 17% between 31 and 40 years, 23% were between 41 and 50 years, 25% between 51 and 60 years, 22% between 61 and 70 years, 7% between 71 and 80 years and 1% above 80 years. Findings on the level of education showed that 46% of the respondents had primary level education, 42% had secondary level education, 7% had a certificate, 4% had a diploma and only 2% had a degree. Data on levels of income per month indicated that The mean monthly income of the respondents was Ksh 9,995.18 with a standard deviation of 10,624.72. 49% of the respondents earned between Ksh 0 and Ksh 5,000, 19% earned between Ksh 5,001 and Ksh 10,000; 9% earned between Ksh 10,001 and Ksh 15,000; 8% earned between Ksh 15,001 and Ksh 20,000; 3% earned between Ksh 20,001 and Ksh 25,000; 6% earned between Ksh 25,001 and Ksh 30,000; 2% earned between Ksh 30.001 and Ksh 35,000; 3% earned between Ksh 35,001 and Ksh 40,000 and 1% earned between Ksh 40,001 and Ksh 50,000.

Findings on the size of the household indicated that 5% of the respondents were from a household (HH) of one (1), 9 percent from HH of two (2), 16% from a HH of three (3), 22% from a HH of four (4), 17% from a HH of five (5) and 30% from a HH of six (6) or more. Data on family headship showed that 66% of the respondents are the heads of families while 34% are not.

Descriptive Statistics

Farmer attitude

*Figure 1: Descriptive statistics – Farmer attitude*

Farmer Attitudes
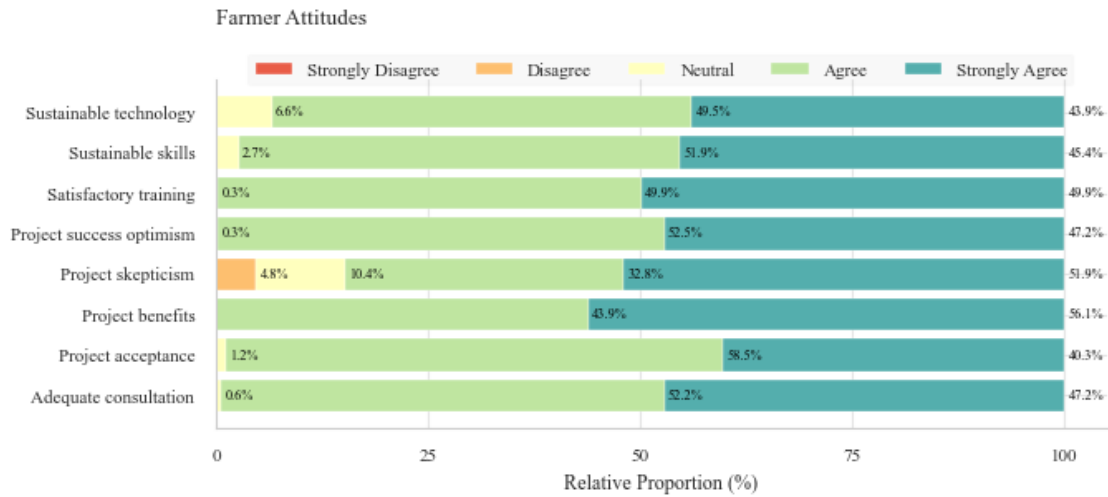
Source: Author (2024)

The study findings indicated that 51.9% of the respondents strongly agreed that they were skeptical about the success of the project due to past experience with other donor funded projects, 32.8% agreed, 10.4% were neutral while 4.8% disagreed. The findings indicated that 47.2% of the respondents strongly agreed that there had been adequate consultation at the project inception making them feel part of the project, 52.2% agreed, 0.6% were neutral. 40.3% of the respondents strongly agreed that they had fully embraced the project, 58.5% agreed, 1.2% were neutral. Further, the study findings indicated that 49.9% of the respondents strongly agreed that they were happy with the approach to farmer training adopted by the project, 49.9% agreed while 0.2% were neutral. The findings indicated that 47.2% of the respondents strongly agreed that the project had good chances of success, 52.5% agreed while 0.3% were neutral. The findings indicated that 56.1% of the respondents strongly agreed that they believed the project would be beneficial to them, 43.9% agreed. The findings indicated that 45.4% of the respondents strongly agreed that the skills learned and acquired through this project would ensure its sustainability, 54.9% agreed while 2.7% were neutral. The findings also indicated that 43.9% strongly agreed that the technology acquired through this project would ensure its sustainability, 49.5% agreed while 6.6% were neutral.

Farmer knowledge

Figure 2: Descriptive statistics – Farmer knowledge
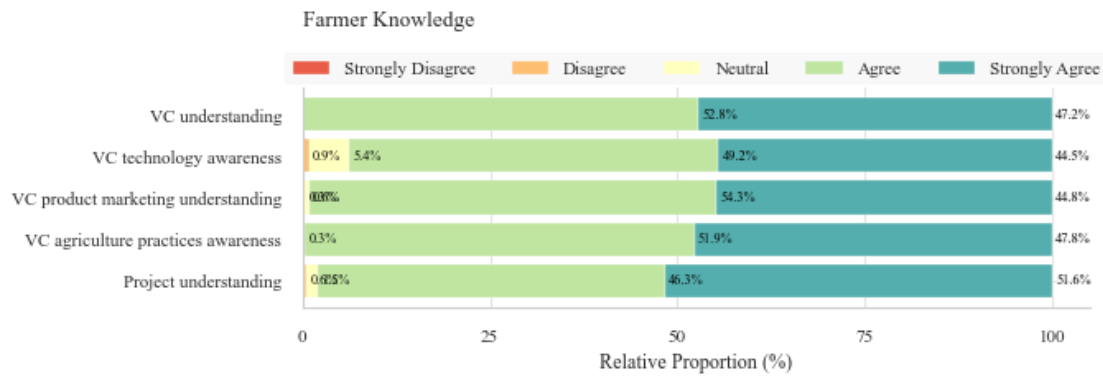
Source: Author (2024)

Study findings indicate that 51.6% of the respondents strongly agreed that they understood the NARIGP objectives, 46.3% agreed, 1.6% were neutral while 0.6% disagreed. 47.2% of the respondents strongly agreed that they understood their value chains generally while 52.8% agreed. On understanding good agricultural practices in their value chains, 47.8% of the respondents strongly agreed, 51.9% agreed, 0.3% were neutral. 44.5% of the respondents strongly agreed that they understood the modern production technologies in their value chains, 49.2% agreed, 5.4% were neutral while 0.9% disagreed. 44.8% of the respondents strongly agreed that they had knowledge in product marketing in their value chains, 54.3% agreed, 0.6% were neutral while 0.3% disagreed.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From the findings of the study, it can be concluded that gender, level of education and household size, monthly income, experience in the value chain and age play no significant role in the performance of NARIG project in Makueni County while family headship, chosen value chain and the sample ward play some significant role. Farmers attitude, knowledge and practices influence the performance of NARIG project and by extension Agriculture development projects.

Recommendations

Policy makers who are formulating agricultural projects and programmes should take into account the attitude towards the projects by the potential beneficiary farmers, the knowledge level of the farmers and type of practices by the farmers.