

Factors influencing adoption potential of purple tea in Nyeri County: A geographic perspective

Huho, J.M.

*Department of Tourism and Hospitality Management, Karatina University,
P.O. Box 1957, Karatina, Kenya.*

Email: jmbhuho@gmail.com or jhuho2003@yahoo.com

ABSTRACT

Kenya is the world's third largest producer of tea after China and India. Tea plays a major role in Kenya's economy as it is the third major foreign exchange earner, behind tourism and horticulture and employs approximately four million people. Over 96% of the tea is produced and exported as black tea; largely for blending lower quality tea from other countries, leading to low market prices. Coupled with the effects of changing climate, the low prices have been threatening tea production. As a result, Tea Research Foundation of Kenya (TRFK) has developed the purple tea clone (TRFK306/1) which is not only high quality and high yielding but also drought, frost and diseases resistant. The release of purple tea clone to farmers in 2011 was in response to the Vision 2030 and Medium-Term Plan (MTP) 2008-2012 which targeted new tea products diversification and value addition so as to enhance tea productivity and to boost agricultural economic growth. Unfortunately, the adoption of the purple tea by farmers has remained relatively low with the awareness standing at 30%. To a large extent, this has been attributed to poor marketing of the purple tea and inadequate processing plants for the product. The need to enhance adoption potential on purple tea has therefore, led to emergence of researches largely focusing on economic aspects such as marketing and establishment of processing plants. However, other important factors influencing adoption potential such as climate change and demographic characteristics of the farmers have received less attention. This study investigated the socio-demographic factors affecting adoption potential of purple tea in Nyeri County from a geographical perspective.

Key words: Adoption, Climatic change, Demographic characteristics, Nyeri County, Purple tea.

INTRODUCTION

Tea growing is largely practiced in regions with tropical and temperate climates and where rainfall is well distributed throughout the year. Although it can be grown from altitude as low as sea level, the best quality tea is obtained from tea grown in high altitudes. As such, tea is grown in many parts of the world with Assam in India being the largest tea growing region in the world. In 2009, China produced about 35% of the world's production, India 25%, Kenya 8%, Sri-Lanka 7% while all other tea producing counties produced about 20% (Figure 1) (Kariuki, 2010). Today, Africa, which largely produces the crush, tear, curl (CTC) Tea, contributes up to about 15% of the world Tea (TeaGschwendner, 2013).

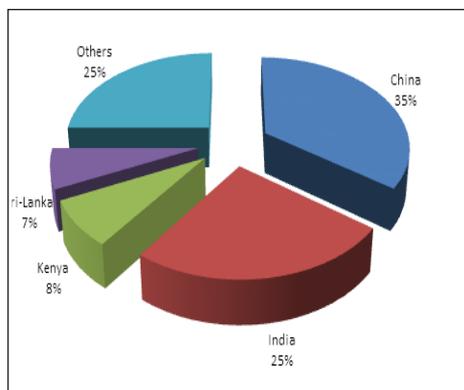


Figure 1: World tea production in 2009 (Kariuki, 2010).

In Kenya, tea was introduced during the colonial era at the turn of the 20th century and was first planted at the country's central highlands which have an optimal tea-growing climate. Later, growing of tea spread to other parts of the country with similar climates particularly in areas around Lake Victoria and near Mount Kenya. The ordinary green leaf tea remained as the sole tea type in the country until 2011 when the purple tea variety was introduced. The TRFK 306/1 tea clone, which is commonly referred to as the purple tea (Plate 1) that is rich in anthocyanin was propagated by the Tea Research Foundation of Kenya (TRFK) and was released for commercial cultivation by the Government of Kenya in 2011. This was in the bid to diversify and add value to the tea products for the domestic and international markets. Despite the economic and health benefits, adopting of purple tea among the small-scale farmers remained very low. A baseline survey conducted in 2014 by Karatina University established that about 26.1% of the farmers had knowledge about the purple tea but less than 1% had planted the clone. Similarly, TRFK estimated that only about 1% of the farmers have planted the clone in South Rift Valley. Poor marketing of the purple tea to farmers by KTDA and uncertainty of market were among the major factors that affected adoption. On the other hand, some large-scale commercial farmers had shown great interest in the crop. For instance Njeru Industries had started buying the produce from the farmers. According to Finlays (2012), Finlays Company was geared towards commercial production of purple tea as soon as sufficient volumes were harvested.



Plate 1: A section of land planted with purple tea in Mount Kenya region.

STUDY AREA AND METHODOLOGY

Data for the study was obtained from Nyeri County which is situated between longitudes 36°38" and 37°20" East and between the equator and latitude 0°38" South. The county that covers an area of 2,475.4 square kilometres borders Laikipia County to the north, Kirinyaga County to the east, Murang'a County to the south, Nyandarua County to the west and Meru County to the northeast (Figure 2). The county has a total population of 693,558 persons (population census, 2009) accounting for 1.8% of the national population. It is densely populated having 208 persons per square kilometre living in a total of 201,703 households. About 49% of the population comprises of male while 51% is female. Young people aged between 0 and 14 years accounted for 33.8% of the county's population, while those aged between 15 and 64, and 65 and above accounted for 59.7% and 6.5% respectively. Poverty level is relatively high at 32.7%.

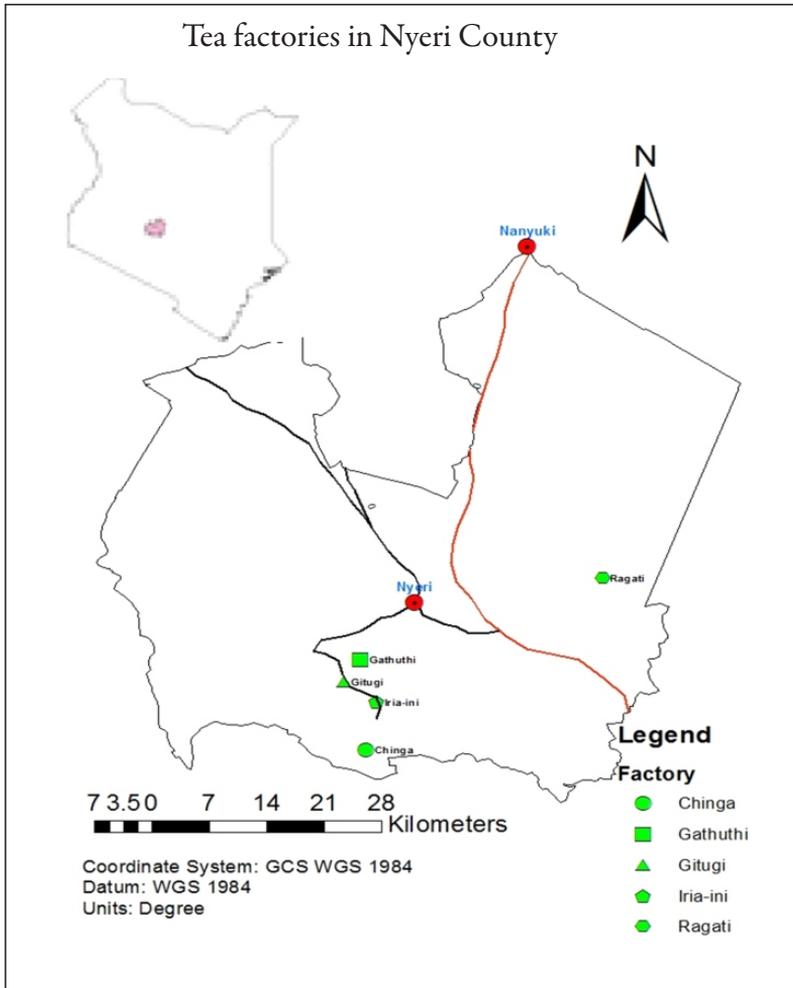


Figure 2: Location of the study area.

The county has an equatorial type of climate being in the highland equatorial zone of Kenya. Temperatures range from cool to warm averaging at 21°C with rainfall ranging between 550 and 1500 mm per annum that is well distributed throughout the year. However, rainfall varies from year to year and from season to season (Figure 3). The long rains occur from March to May while the short rains come from October to December (Figure 4), but with occasional disruption by adverse changes in climatic conditions.

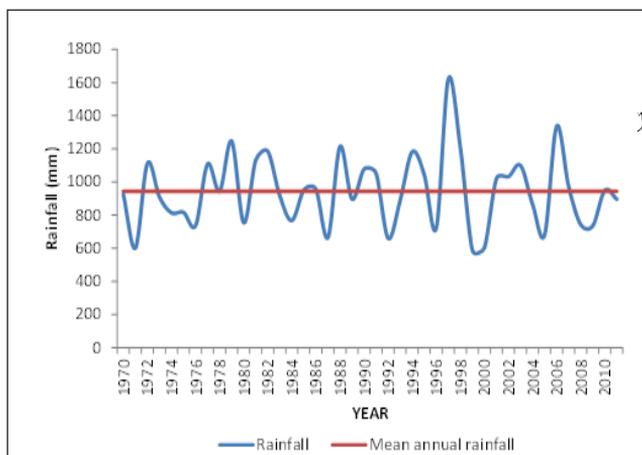


Figure 3: Annual rainfall variations in Nyeri County (1970-2011).

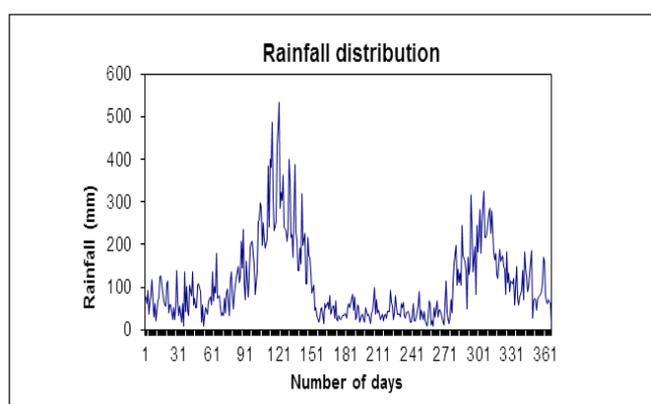


Figure 4: Annual rainfall distribution in Nyeri County.

The climate coupled with the land tenure systems has influenced agricultural development (the backbone of the economy) in the county. The mean holding size is one hectare for majority of the smallholders. Agriculture is largely from smallholders, where both food and cash crops are grown, particularly in Mathira, Tetu and Othaya areas. Tea is one of the main cash crops grown in the area. The warm and wet conditions allow rapid tea leaf production increasing the number of annual pickings. In Kieni plateau, the drier parts of the county, subsistence mixed farming with a mixture of horticulture, and wheat farming predominates.

Data was obtained from a sample of 90 respondents living in three tea growing areas. Respondents selected were among the farmers who sold their tea in Gathuthi, Iria-ini and Ragati tea factories. Stratified random sampling was used to select 32 farmers from each of the three zones; each sample comprising of 30 respondents, that is, 15 male and 15 female respondents. Content analysis was the method used for analysis since the data collected was largely qualitative. Frequencies were calculated using SPSS version 20.

RESULTS AND DISCUSSION

Tea farming in Nyeri County

Tea is one of the main cash crops in Nyeri County. Together with coffee, the two cash crops cover an approximate 21,593 hectares. Tea farming being a labour extensive business requires adequate human labour. Picking of tea is the most laborious activity and it is done at least thrice in every month. There is a clear division of labour in tea farming sector amongst the household

members. For instance, tea picking and transportation to the tea buying centres is dominated by female labour force with only about 20% male. On the other hand, pruning of tea bushes is a male dominated activity. Majority of tea pickers were aged between 30 and 40 years and accounted for 56.7% of the labour force due to the following reasons: (i) majority of tea pickers being women, this cohort comprised largely of married women who were unemployed and thus their major task was to tend tea farms (ii) this was the age in which most of the community members had to fend for their young families, and (iii) this was the most active and energetic age group with each picking between 25 and 45 kilograms of green leaf per day. People below the age of 30 years accounted for 27.3% while those above 40 years accounted for about 16%. Due to the cold weather conditions and amount of involvement associated with tea picking, young people below the age of 30 years avoided engaging in tea farming activities.

Growing of purple tea is a relatively new phenomenon not only in Nyeri County but in Kenya at large. Like in other parts of Mount Kenya region, growing of purple tea in Nyeri county dates back to 2011. A baseline survey by researchers from Karatina University in 2014 to establish the potential for growing purple tea and value addition indicated that about 26% of the farmers in Mount Kenya region (Nyeri County included) were aware of the existence of purple tea (Karatina University, 2014). In Nyeri County, the current study established four sources of awareness about purple tea. The major source of awareness was observation from purple tea farmers. About 46.7% of the respondents who know about the purple tea indicated that they first saw purple tea plant in their fellow farmers' lands and learned about its existence after being inquisitive. Other sources of awareness included information from Technical Extension Service Assistants (TESAs) (at 33.3%), visits to TRFK (13.3%) and media (6.7%).

Socio-demographic factors affecting adoption of purple tea

The number of farmers who had planted purple tea in the county was less than 1% despite the awareness on the existence of purple tea. Whereas 40% of the causes of slow adoption of purple tea were attributed to lack of adequate information on growing of purple tea and market for the produce, socio-demographic factors accounted for 60%. Of all the socio-demographic factors investigated, size of the land was perceived as the most influential factor that affected adoption of purple tea at 14%. Wealth, which was closely related to size of land, followed at 13% while age of the farmer and their mobility were third at 12% each. The percentage influence of the total and percentage influence of each socio-demographic factor in Nyeri County are given in Figures 5 and Figure 6.

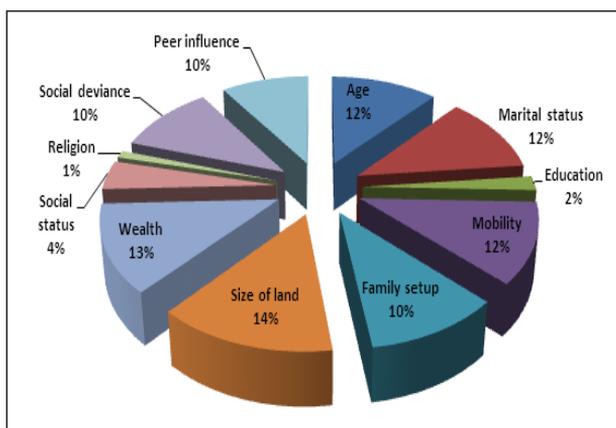


Figure 5: Influence of socio-demographic factors on purple tea adoption in Nyeri County.

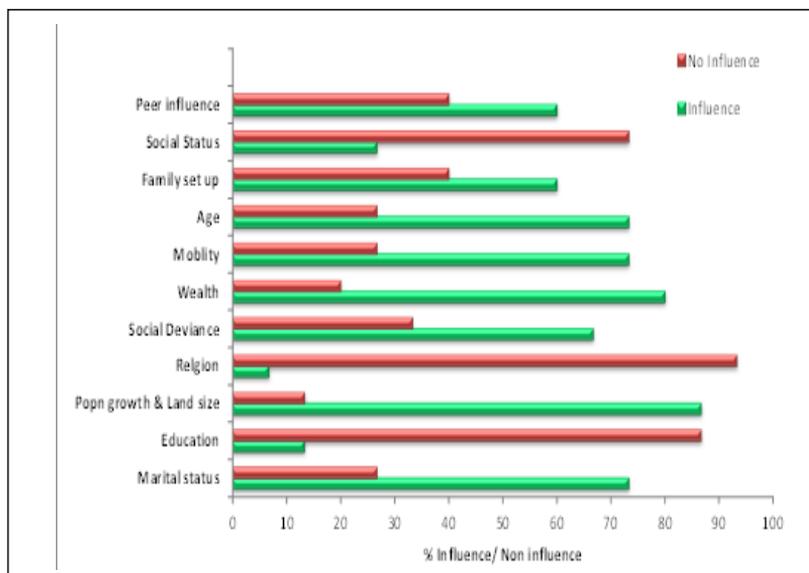


Figure 6: Percentage influence of each socio-demographic factor in Nyeri County.

Population growth and land size

The population of Nyeri County is high and has been increasing at an annual growth rate of 0.8%. Similarly, the labour force (14 – 64 years) has been rising, doubling between 1999 and 2010, resulting in increased unemployment. All farmers interviewed mentioned population increase as factor that hindered purple tea adoption. They observed an inverse relationship between population growth and size of the land available for farming. As population increased the size of the land decreased. About of 86.7% of the respondent stated that the size of the land was too small to allow introduction of purple tea. A large percentage of the farmers owned land through inheritance from their parents and as such owned small pieces of land of one acre or less. These portions of land were entirely covered with the green leaf tea type. Planting purple tea would have necessitated uprooting of the normal green leaf tea type. With high unemployment rate and dependency on the green leaf type for income, uprooting of the green leaf type to replace with purple tea meant loss of income for a period of three years. One of the farmers stated the following:

“I would like to try the purple tea since I understand it fetches higher returns. Unfortunately, all my land is planted with the green leaf tea type that I totally depend on for income. I have no extra land to plant the purple tea and therefore uprooting the green leaf tea type tea is not an option. Where will I be getting income from for the next three years as I wait for purple tea to mature?”

Wealth

Wealth, which is created through employment and income generating enterprises, was viewed as a key factor influencing adoption of purple tea. About 80% of the respondent argued that wealth influenced the adoption in three ways. Firstly, it enabled one to purchase more land. The study established that all farmers who had planted over 200 bushes of purple tea had done so in newly purchased or acquired lands. (A newly acquired land planted with tea in Othaya area of Nyeri County is shown in Plate 2). Secondly, it enabled farmers to sustain themselves after uprooting the section of the green leaf tea type by being a substitute source of income. Thirdly, it enabled farmers to purchase purple tea seedlings which retailed at a cost of Ksh 20 compared to Ksh 10 for the ordinary green leaf tea type.



Plate 2: Newly acquired land planted with purple tea in Nyeri County.

Age

Age of the farmer, as one of the factors that affected adoption of purple tea in the area was mentioned by about 73.3% of the respondent. Age affected adoption in two main ways: Firstly, age determined ownership of land. Land in Nyeri County was largely acquired through inheritance of family land and one was eligible to inherit soon after getting married. Despite the willingness to plant purple tea, young and unmarried members of the community did not have land to do so. Middle aged farmers between 30 and 40 years were enthusiastic about growing purple tea with about 60% of the respondents indicating the willingness of this cohort of farmers to plant the crop. These farmers, most of who were married and as such had inherited a portion of the family land, were eager to try the new tea clone in their land. The main motivating factor was the need for increased income to meet the demand for their young families. The study established that farmers aged below 25 years were not enthusiastic about planting purple tea due to the fact that majority of this age group of farmers did not own land and only worked in their parents' farms. Secondly, readiness to adopt new technology. Majority of the aged, over 50 years of age, expressed no interest in growing purple tea as expressed by one farmer who stated the following:

“At my age I don't need to plant purple tea. I am comfortable with the green leaf tea type which has sustained me all this time. If my children want to plant I have no problem let them do so.”

The findings confirmed (Mutengezanwa and Ngoma, 2013) that there exists strong relationship between the age and adoption of new technologies with older people having a negative attitude and younger adults embracing the new technologies.

Mobility

Mobility referred to the frequency of travelling outside Nyeri County to other counties in Kenya or other parts of the world. About 53.3% of the respondents stated that they frequently travelled within and outside the county while 46.7% were less mobile. Despite the fact that about half of the respondents were less mobile, 73.3% of the respondent argued that frequent travelling was vital in adoption of purple tea as it exposed one to more information about purple tea and other related developments. The study established that the 46.7% who were restricted in movement

obtained information about purple tea largely from farmers who had planted purple tea or TESAs within the area of residence.

Marital status

Adoption of purple tea in Nyeri County was influenced by marital status of the members of the community. About 73.3% of the respondents indicated that there existed a relationship between marital status and adoption of purple tea. Two main reasons were given: firstly, and the most important, was that only married people, particularly sons, were given land by their parents and thus were free to make any decision pertaining to the clone they wanted to plant; and, secondly, the unmarried members had no privilege of owning land and therefore the decision to plant specific clones relied heavily on the parents. Others included the need for high income to meet family demands.

Education

Contrary to the role played by education in adoption of new technology, the study established that education had no direct relationship with adoption of purple tea in Nyeri County. Whereas only 13.3% of the respondents stated that there was a direct relationship, 86.7% indicated that tea farming was a “way of life” and thus farmers, regardless of their education levels, followed the common tea farming practices in the area. Other factors such as size of the land were more important in adoption of purple tea than education. However, they pointed that influence of education in the adoption in the area was indirect particularly on employment and income which helped some farmers to acquire more land. The 13.3% of the respondents argued that educated people were keen on any available information and were more mobile; moving from one part of the county to the other. By frequently travelling in and out of Nyeri County, the educated people gathered information about purple tea that was lacking at farm level. The study established that these respondents made visits to Tea Research Foundation of Kenya (TRFK) in Kericho and Kangaita where they got much of the information concerning purple tea.

Family setup

Families in Nyeri County are patriarchal in nature. Male heads of households own the land and are the main decision makers in the family. With regard to tea farming, tea bushes were owned by men and, therefore, made decisions on what clone to be grown in the farmland. About 66.7% of the respondents stated that the decisions whether or not to plant purple tea depended purely on the male heads of household, 20% stated that the decision belonged to both the husband and the wife while 13.3% stated that decision depended on women where they were the heads of the households. Most women (73.2%) argued that despite having the urge to plant purple tea, they were limited since that decision was to be made by men.

Social status

The position one held in the society or social status had little influence on the adoption of the purple tea. Whereas all respondents indicated that the position held by one in the society required such a person to be in the forefront in adopting new technologies, 73.3% stated that factors such as size of land, age and gender hindered adoption of purple tea other than social status. For instance, being a patriarchal society, like other women, those in leadership position also owned no land and, therefore, the decision on which tea clone to plant dependent on their husbands.

Religion

Religion was found to have negligible effect on adoption of purple tea in Nyeri County. Only 6.7% of the respondents observed negative influences from religious bodies on the adoption citing

medicinal aspect of the crop. They argued that some religions prohibited use of medication or herbs as it contravenes their faith. Any substance with medicinal ingredients was, therefore, not acceptable. However, 93.3% of the respondent argued that most religion in the area supported the use of medication and, therefore, were no hindrance to growing of purple tea.

Social deviance

Social deviance in Nyeri County is manifested mainly through alcoholism, frequent family violence and being members of illegal groups particularly Mungiki. Whereas peaceful coexistence in the family is vital to any socio-economic development, frequent cases of family violence were reported in households where alcoholism levels were high. Similar observations elsewhere indicate that most of the reported cases of domestic violence in Nigeria, South Africa, Uganda, India, and Colombia are related to consumption of alcohol. In Uganda, for instance, about 52% of domestic violence against women were caused by drunk husbands (Tasha Foundations, 2012). Like in any other development, 66.7% of the respondents stated that adoption of purple tea depended on peaceful coexistence with each member of the family. The goodwill of each family member to support farming activity was perceived to play a centre role in adoption of purple tea. For instance, although tea farms belong to the male heads of households, the responsibility of tending the tea farms rested on women. Violence against women discouraged them from taking up their responsibility sometimes leading to leasing out their entire tea farms by their spouses. About 60% of the respondents stated that alcoholism led to misuse of available income prompting little or no investment at all. Alcoholism reduces work productivity due to lower performance, lack of self-direction and problems with interpersonal relationships. For example, 10% of productivity losses in Latvia are associated with alcoholism (Tasha Foundations, 2012).

Peer influence

Peer influence plays a role in adopting new technologies in any society. With regard to adoption of purple tea, about 60% of the respondents stated that peer influence played a role. Forty-five per cent stated that it impacted negatively on the adoption of purple tea. The fact that farmers were uncertain about the economic benefits and market of the purple tea produce led some of the farmers to advise their colleagues to be cautious about adopting the crop. One of the respondents equated the purple tea growing with quail farming, as follows:

“We only hear about the economic and health benefits of the purple tea but we are not sure whether it is true. Moreover, we do not know where the market for purple tea products or where to sell the fresh leaves since our tea factories don't process purple tea. This could be another quail business and I cannot uproot the green leaf tea type in my farm nor advice anyone to do so.”

Interviewed women who indicated that peer had a negative influence argued that the alcoholic husbands spent most of their income on alcohol with very little left for development. One of the respondents stated the following:

“These alcoholic husbands influence each other particularly on non-developmental issues. Anything that may force them to use money in other issues other than buying alcohol is less likely to be encouraged. Knowing that the price of purple tea seedling is high, they may not be interested in investing in it as it will affect their alcohol budgets.”

Based on the “said” economic benefits from the purple tea, about 15% of the respondents argued that the peer pressure amongst farmers will lead to adoption of the purple tea. That is, some farmers will plant purple tea to be at par with their colleagues whom they “compete” with.

CONCLUSION AND RECOMMENDATIONS

The role played by socio-demographic characteristics of farmers cannot be underestimated in adoption of new technology. Adoption of purple tea in Nyeri County and other parts of the country will highly depend on the socio demographic aspects of the adopting society compared to physical environment, economic and health benefits of the purple tea. The main hindrance to the adoption will be size of the land. Population increase, individual wealth, marital status and age which influence availability and access to land will be key in determining the adoption potential. Current alcoholism status in Nyeri County may pose a threat to investment in purple tea production due to misuse of available income. On the other hand, religion will have no significant influence. To enhance adoption of purple tea, the study recommended the use of a multifaceted approach in introducing purple tea amongst farmers. This should involve all stakeholders dealing with the social wellbeing of the society, for instance, churches and also those dealing with the economic empowerment of the society.

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