

Full Length Research Paper

The socio-economic potential of under-utilized species to small holder farmers: The case of Khat (*Catha edulis*) in Ethiopia

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"Agriculture is an important part of Ethiopia's economy constituting a significant proportion of its Gross Domestic Product (GDP) and total export earnings. The method of agricultural production in Ethiopia has led to increased deforestation and degradation. In order to reverse the trend, government of Ethiopia together with its development partners are in search of strategies to address the situation. Among others, Agroforestry has been considered as a potential strategy that can reduce the increasing deforestation and degradation; whilst at the same time can enhance food production and increased the income of small holder farmers. Khat (*Catha edulis*), an indigenous shrub species offers the potential to be intercropped with other food crops in an Despite its potential, limited attention has been given to it in terms of assessing its potential and profitability. The aim of this article is to assess the competitiveness of khat production and commercialization as a complementary source of income for farmers in the West Shewa and East Wollega zones in Ethiopia. Three focus group discussions (FGD) with khat producers were conducted in 3 villages to obtain data for the analysis. This was supplemented with key informant interviews with traders in order to obtain further information about its production and marketing. Porter's five forces was adopted as the conceptual framework for analysis. The results indicate that demand for khat exceeds its current supply and farmers have power to determine the price. However, there is high level of competition among traders in sourcing from the farmers leading to price competition among traders. The agro ecological suitability for khat production in the area indicates that more farmers can produce it if the awareness of its market potential is created. The study concludes that khat can be promoted as a profitable crop for agroforestry practices in Ethiopia.

Key words: Agroforestry, market analysis, competitiveness, Porter's five forces, neglected species, market analysis.

INTRODUCTION

Agriculture is an important part of Ethiopia's economy constituting more than 40% of its Gross domestic product

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Ethiopia has resulted in increasing deforestation and degradation of forest, land and other natural resource (GDP) and more than 90% of total export (Franzel and Houton, 1992).

The method of agricultural production in Agroforestry may be considered as a potential alternative to some land-use practices such as slash and burn and intensive mono-cropping which characterize many farming systems in Africa including Ethiopia. Agroforestry is defined as a dynamic, ecologically based, natural resources management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels (World Agroforestry Centre (ICRAF), 2003). These practices enable producers to enjoy the dual benefits of generating income from the production of a wide range of products while protecting and conserving soil, water and other natural resource at the same time (Gold et al., 2004).

In the West Shewa zone of Ethiopia, many different tree species have been identified as ecologically suitable for agroforestry practices and farmers have expressed the willingness to plant these in an agroforestry system (Field research, 2012/2013). One of the priority species according to focus group discussions and key informant surveys carried out by ICRAF scientists in 2013 is *Catha edulis* commonly called khat in Ethiopia. It is a slow growing shrub which can reach a height of 1.4 to 3.1 m, depending on region and rainfall. Its 5 to 10 cm long leaves are used as a tea and often masticated. It grows at an altitude of 1600 to 2600 metres and adapts to a range of soil and climatic conditions. It is often cultivated on terraces built on hillsides where the trees grow in rows and can be combined sometimes with other crops (Peters, 1952; Brooke, 1960; Getahun and Krikorian, 1973). The khat tree is not often affected by diseases and can live up to 75 to 100 years if taken care of properly (Peters, 1952; Brooke, 1960; Kennedy, 1987). One important reason for the expansion of khat production is that when intercropped with other food crops, productivity and earning per unit land area is improved. For instance, the khat–maize intercropping system has been found to be 2.7 times more profitable per hectare than maize mono-cropping.

In addition, khat is also less risky to grow compared to other crops like cereals and coffee because its production is less vulnerable to drought (Feyisa and Aune, 2003).

According to the Survey of Ethiopian Economy-II carried in 2005, khat is planted and chewed for various purposes: it is a stimulant that is said to cause excitement, loss of appetite and euphoria. It occupies the second place among export commodities after coffee. In Ethiopia, 85 to 90% of the khat produced is exported (Lemessa, 2001) and thus makes a very significant contribution to the country's foreign exchange earnings.

Belwal and Teshome (2010) argued that despite socio-economic importance of khat, existing studies have often concentrated on its history, botany and its narcotic, pharmacological and medicinal properties. Up to now, not much has been done on assessing the market potential of khat and its competitiveness in general.

Belwal and Teshome (2010) contributed to the literature on khat in Ethiopia by assessing the opportunities and dilemmas associated with its production and marketing. Despite these efforts, some knowledge gaps still remain. In particular, to the best of our knowledge, there is no study that addresses the industry-wide competitiveness of Khat production as a potential income source for farmers.

This study aims to fill this knowledge gap by assessing the competitiveness of Khat production and marketing as a complementary industry for farmers in the West Shewa and East Wollega zones in Ethiopia. Porter's five forces model (Porter 2008) is used as a framework for analysis since it offers a robust approach to examine the efficiency of under-developed markets like that of khat. The model can assist smallholders who want to participate in markets by helping them to understand market characteristics and strategies for the product they want to produce (Gold et al., 2004). This is particularly important as some producers may be reluctant to produce khat in the absence of readily available market information, which is important for the production of a niche product like khat (Gold et al., 2006).

The remaining sections of the article are organized as follows: First, the study provide a brief overview of khat production and supply chain. Next, the conceptual framework, which is the Porter's five forces model, is presented and is followed with data collection and analysis. Results are then presented. The article is concluded with recommendations for the promotion of khat in agroforestry systems in the study area.

METHODOLOGY

Description of the supply chain

The main actors involved in the khat supply chain are the seed and seedling suppliers, producers, local collectors, traders from outside and exporters. Farmers obtain germ plasm from either their own source or buy from the market. Farmers either sell the khat leaves directly to the traders from the nearby towns or sell through local collectors who subsequently sell to the traders. Traders may sell directly to consumers and in some cases also to exporters who are either individuals or cooperatives (Belwal and Tesome, 2011). Most of the producers of khat are men although women were observed as traders in some places. The main markets are domestic markets and export to countries like Djibouti, Yemen, Australia, China, England, USA and Canada. However, England, USA and China have banned the importation of Khat (Figure 1).

Conceptual framework- Porter's five forces model

The competitiveness of khat production is assessed using the Porter's five forces model in combination with the analysis of the

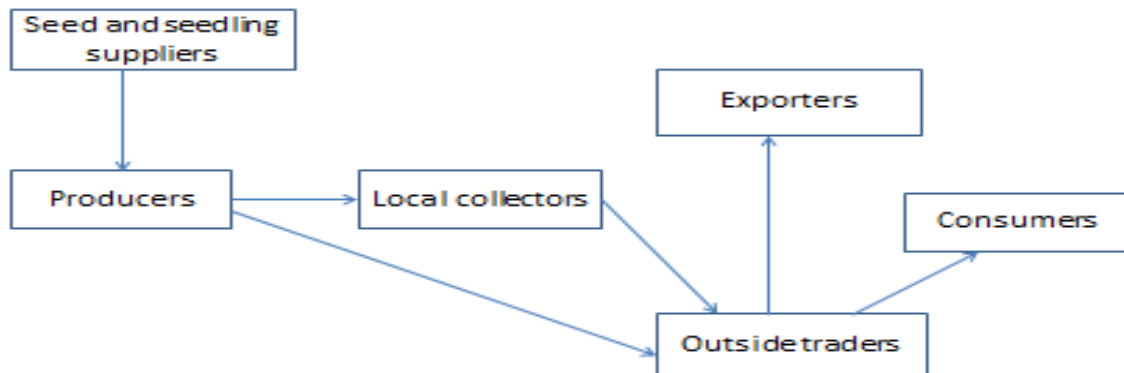


Figure 1. Map of the supply chain of khat.

external environment which affects its production and marketing. According to the Porter's five forces model (Porter, 2008), before investment, any business or firm should first of all evaluate its internal attractiveness and market potential. Michael Porter's five forces model is a model used to explore the environment in which a product or company could operate to generate competitive advantage. This model suggests that the expected profitability of any industry can be identified by examining how rivalry among existing competitors, threat of entry, power of suppliers, power of buyers, and the threat of substitutes affect it. The core concept of this model is that the profitability in the industry will be greater the weaker these five forces are. Bechdol et al. (2010) suggested to use Porter's five forces model to assess the potential profitability of any given crop for farmers. Porter's five forces of competitive market forces provide a structure for examining competition applicable to all industries and business sectors (Perdana et al., 2012). The five forces are:

rivalry among existing competitors, threat of entry, power of suppliers, power of buyers and threat of substitutes.

The degree of rivalry determines the extent to which the value created by an industry is dissipated through head-to-head competition (Tavitiyamana et al., 2011). According to Porter (2008), high rivalry limits the profitability of an industry and the degree to which rivalry drives down an industry's profit potential depends on the intensity with which companies compete, and on the basis of which they compete. Competition increases as rivals' competitive goals increasingly congregate or intersect. This happens when rivals coincide in using similar competitive strategies as competitive advantage, envisioning similar target markets, or an increase of similarity occurs in business plans.

The *threat of entry* influences the profitability of the industry and when the threat is high, existing firms must hold down their price or boost investment to discourage new competitors (Porter, 2008). There also are some entry barriers whenever it is difficult or not economically feasible for an outsider to replicate the existing firms' position. Apart from some intrinsic physical or legal obstacles, the common forms of entry barriers are the scale and the investment required to enter an industry as an efficient competitor (Karagiannopoulos et al., 2005).

According to Porter (2008), power of suppliers is another factor which influences the competitiveness of industry. Suppliers, if powerful can exert an influence on the producing industry, such as

selling raw materials at a high price, limiting quality or services, or shifting costs to industry participants in order to capture some of the industry's profits. A supplier becomes powerful if it is more concentrated than the industry it sells to, it does not heavily depend on the industry for its revenue, industry participants face switching costs in changing suppliers, suppliers offer products that are differentiated, there is no substitute for what the supplier group provides and the supplier group can credibly threaten to integrate forward into the industry (Porter, 2008).

The *power of buyers* is the impact that customers have on a producing industry. Buyers with bargaining power can extract excess profit from an industry by putting downward pressure on prices, demanding better quality products or services, and play industry participants off against one another (Porter, 2008). According to Karagiannopoulos et al. (2005), the determinants of buyer power are the size and the concentration of customers, the extent to which the buyers are informed and the concentration or differentiation of the competitors.

Finally, substitutes perform the same or similar functions as an industry's product by a different means. The threat that substitute products pose to an industry's profitability depends on the relative price-to-performance ratios of the different types of products or services to which customers can turn to satisfy the same basic need. The threat of substitution is also affected by switching costs; these are costs in areas such as retraining, retooling and redesigning that are incurred when a customer switches to a different type of product or service (Karagiannopoulos et al., 2005) (Figure 2).

Description of the study area

West Shewa is a zone in the Oromia Region of Ethiopia and takes its name from the kingdom of Shewa. It is bordered on the southwest by Jimma, on the west by Misraq Welega, on the northwest by HoroGudru Welega, on the north by the Amhara Region, on the northeast by Semien Shewa, and on the east by Oromia Special Zone Surrounding Finfinne. It has a rugged landscape consisting of mountains, hills and valleys. Depending on the topography, agro-ecologies vary, but many of the administrative zones are dominantly sub-humid: kola-warm lowland (orange in legend) and waynadega – tepid mid highlands (greenish yellow in legend) (Figure 3). Some areas with river gorges have more warm moist lowland climates, while toward higher altitudes tepid

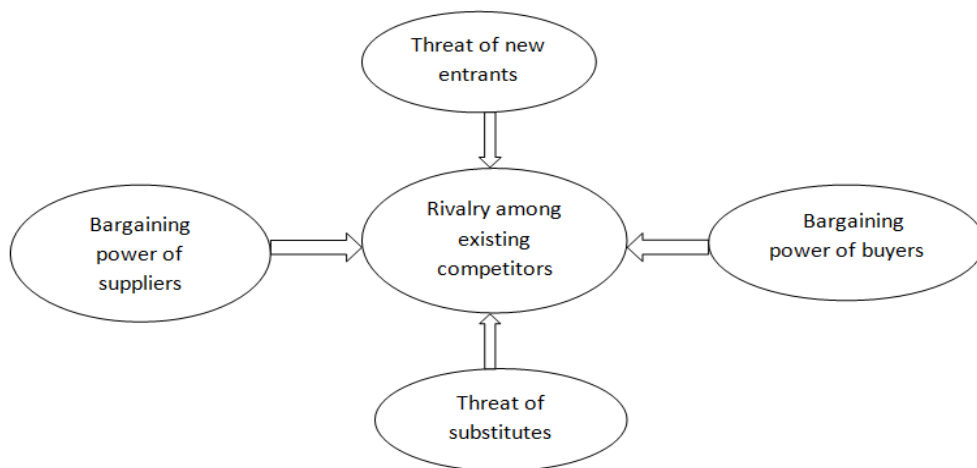


Figure 2. Porter's five forces model (Source: Porter (2008)).

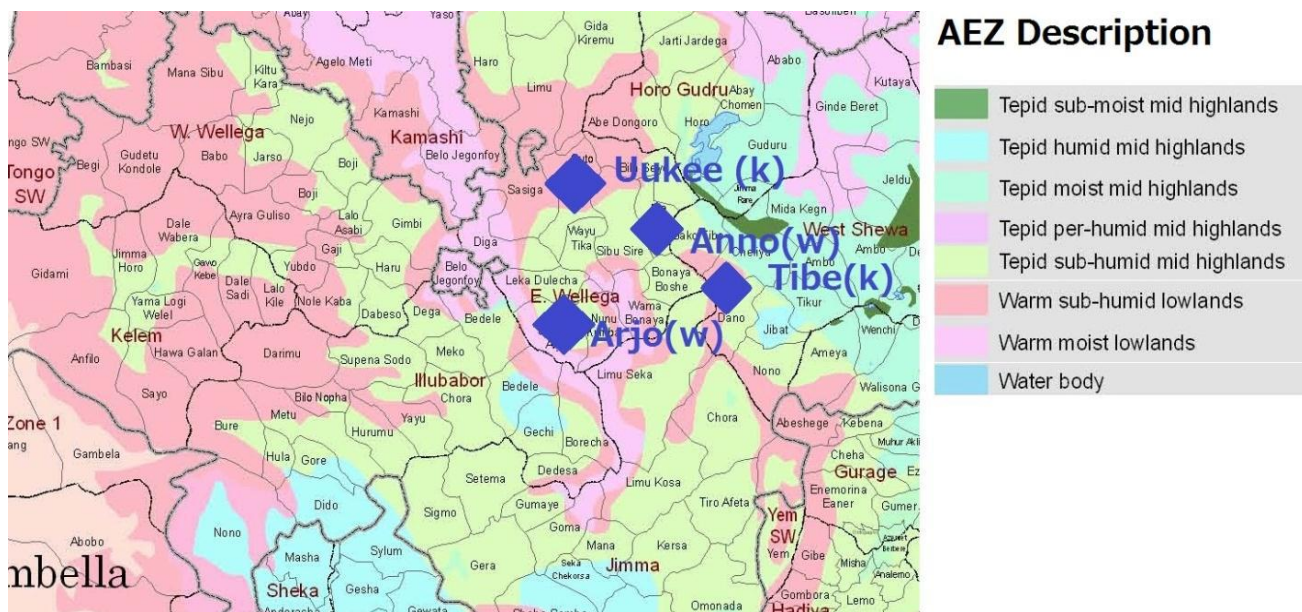


Figure 3. Map of the study area (Source: Field survey 2012/2013 (ICRAF)).

humid/moist climates are prevalent (ICRAF field observation, 2012/2013). According to the Central Statistical Agency of Ethiopia (CSA), this Zone had a total population of 2,058,676, in the year 2007.

Data collection

A qualitative research method involving focus group discussions (FGD) and key informant interviews was used for collecting the data. In view of the limitations of traditional quantitative bases for knowledge (Goulding, 1998; Somogyi *et al.*, 2009), the qualitative research approach, which is adopted for this study is quite

relevant. A FGD was conducted in each village. Fourteen farmers each from Arjo and Ukee and 16 farmers from Bako (in the West Shewa region and East Wollega) were involved in the interviews which were carried out in January 2013. Participants were both males and females who resided in the area and who are knowledgeable about khat and other agricultural activities. In addition, Five khat traders in the villages and the nearby market centers in Nekemte were also interviewed using an interview guide with set of questions of interest. Questions asked include how prices are determined between producers and traders, their relative power in the business, level of competition among producers and traders, threat of substitutes and other external environmental factors, such as regulations and policies, that influence the

Table 1. Khat farm and farmers' characteristics in Ethiopia.

| Total participants (% male) | Arjo | Ukee | Bako |
|---|----------|----------|----------|
| | 14 (93%) | 14 (79%) | 16 (81%) |
| Average age respondents (in years) | 45.2 | 41.5 | 50.2 |
| Education | | | |
| None | 2 | 4 | 6 |
| Primary | 4 | 6 | 7 |
| Secondary | 5 | 3 | 3 |
| Post-secondary | 3 | 1 | 0 |
| Average land size (acres) | 1.5 | 5.5 | 1.5 |
| Income sources (house hold (hh)) | | | |
| Crop (%hh) | 35 | 40 | 40 |
| Livestock (%hh) | 25 | 35 | 10 |
| Off-farm (%hh) | 20 | 10 | 15 |
| Tree products (%hh) | 20 | 15 | 35 |

production and marketing. In addition, social demographic characteristics of the respondents and information about their farming practices were sought. The interviews were conducted in Aramaic language and the responses were translated into English.

RESULTS AND DISCUSSIONS

Most khat producers involved in the focus group discussions were male and over 40 years of age. All the farmers had food crop production (particularly cereals like maize, teff and sorghum) as their main source of income. Farming was the primary occupation of all the participants, although all of them had a secondary source of income from off-farm activities like local brewery, casual labour, cereal trading, and livestock trading, local trading and pottery. Average reported land holding is between 1.5 to 5.500 ha. khat was planted as a cash crop on marginal lands occupying less than 10% of total land holding and was ranked by all the groups as one of the priority species for agroforestry because of its high market potential (Table 1).

External environment for the production and marketing of khat

Khat also called Arabian tea or qat is a shrub that contains cathinone, an amphetamine-like stimulant, which is said to cause excitement and loss of appetite, hence can be consumed to control hunger. In Ethiopia, there seems to be no specific government policy that promotes or hinders the production of khat, a situation, which differs from other tree crops such as coffee where the market is regulated and production inputs are sometimes

supplied. khat as a cash crop experiences some form of double taxation from regional and federal Governments and these taxes are not collected from other cash crops (Belwal, 2003). This situation is corroborated by a trader who said that:

“Khat is taxed more compared to other cash crops. We don't understand why it is like that but we have to live with it”

Despite the fact that some countries like Germany, Canada and the United states have considered khat as a drug, no ban has been placed on it by the Ethiopian Government and it obtained the status of a cash crop in 2003. The chewing of khat is widely practiced in East Africa and parts of the Middle East, such as Yemen where it performs a deep-rooted social and cultural function (Drake, 1988). Its production, sale and consumption are legal in other nations, including Djibouti, Somalia and Yemen. Gebissa (2004) mentions that there has been an increase in the trade and export of khat as a result of the construction of rail and road transport between Ethiopia and Djibouti after the Second World War.

Gebissa observed that in decades after the Second World War, a large amount of land in Ethiopia was dedicated and converted to khat production. Khat-chewing, which used to be mostly in the Harar region is now common in other parts of Ethiopia. Al-Hebshi and Skaug (2005) estimated the prevalence rate of khat chewing to be 30, 50 and 31.7% respectively for the years 1996, 1999 and 2000. Data from a survey conducted in 1996 in Addis Ababa and 24 towns across Ethiopia showed that khat usage has been increasing

and that it has become popular among all segments of the population (Selassie and Gebre, 1996) indicating that the market for khat is expanding. Furthermore, there is sense of land tenure insecurity which may affect the planting of long term shrubs/trees such as khat. A khat farmer mentions that:

“Khat production is easy but sometimes we are disrupted by legal plurality between the state and tradition. We feel insecure”

In many areas, successive attempts by Ethiopian authorities to demonstrate and exercise control over tenure relations has disrupted the role of customary institutions in land administration and allocation. Given Ethiopia's history, there is continuing lack of clarity or assurance regarding the rights of farmers and others to manage, access, or use land, forest, water, and mineral resources upon which they depend for their livelihoods (USAID, 2011).

Competitive analysis of Khat production

Rivalry and threat of new entrants among farmers

This variable in the Porter's model describes the degree of competition among existing businesses in the same market especially when there is little opportunity for growth in the market (Gold et al., 2004). In the khat industry, there is no rivalry among producers, as each producer produces its own khat and there is enough demand. Most sales are done on spot market and producers do not see themselves as competing with each another. A focus group discussant in Arjo opined that:

“We don't see ourselves as competing with one another since there are enough traders to buy our Khat. We rather try to link each other to a trader if we cannot have enough to supply to them”

A trader of khat from Nekemte who was probed about the possibility of rivalry among his suppliers had this to say: “I don't think they (farmers) see each other as business rivals. They rather see themselves as families and they sometimes lead me to buy from another farmer if I don't get enough from them”

The agro ecological suitability of the study area for the production of khat indicates that farmers can easily convert part of their land to its production. However, the quantity can be constrained by the size of land available since farmers have to divide the land among the various agricultural enterprises they are involved in. Despite the low entry costs, farmers generally do not see new entrants as a threat. This is against the background that farmers think there is still adequate demand from traders. Besides, khat has regional and international market,

which can be exploited if production exceeds local demand.

Moreover, there is no large capital requirement which will serve as a constraint for its production implying that there is little barrier to entry by prospective producers. However, in view of the fact that demand hugely exceeds supply of the khat coupled with large export market implies that industry wide profit will not be eroded with new entrants. This may explain why there is no rivalry among the producers. Gold et al. (2006) have argued that rivalry within an industry depends on many factors including the number of competitors, the size and distribution of the competitors, the homogeneity of the products, the level of fixed investments and the volatility of market demand. Since there is no direct competition and rivalry, khat producers will be expected to work together to pursue common interest. This is in line with observation by Gold et al. (2006) who observed that in the face of less competition like hazelnuts (*Corylus avellana*) or non-native chestnut (*Castanea* spp.) in the Pacific Northwest, rivalry among producers was not a factor and market participants worked together to further the demand for their products and increase profitability for all participants.

Power of buyers

There is limited buyer power as producers are the price makers especially during periods of shortage. Demand for khat exceeds the current level of supply and buyers are often forced to accept the terms and conditions offered by the producers. Although the general mode of trading is spot market, some producers mentioned that traders sometimes provide advance payment when the product is not yet harvested to ensure supply. Producers generally sell to the highest bidder and they argue that there are often price wars among traders in an effort to secure the supply of khat.

“I give my khat to the person who gives the highest price unless it has been paid in advance before harvesting is done” is a comment from a Khat producer.

A khat trader commented that:

“we have to walk between 3-10 kilometres to look for Khat and you often go and meet many other traders especially on Saturdays when the producers bring the products to the roadside.”

“it is difficult to find supply especially during the dry season and we have to pay high price to secure whatever is available”

Since producers are price makers in the market, there is the potential for them to improve or sustain their earnings from the sale of khat.

Power of suppliers

According to Porter (2008), suppliers' bargaining power will be high if there are fewer large suppliers selling to large number of producers, when there are no alternative source of supply and when switching cost to a new supplier is high. All these conditions seem not to prevail in connection with the supply of input for khat production. The main input used in the production of khat is the seed and seedlings. Most producers use their own source with limited purchase from the market, so seedlings are affordable and readily available. Unlike other tree crops like coffee and to some extent mango, there is no supply farmers. Supply of germplasm from the market is available although farmers contend that there could be improved planting materials if the government were to show interest in the production of khat. There is no supplier power that can influence the production of khat in the study area. A producer mentioned that:

"planting materials are from our own sources and sometimes we can buy it very cheap from the market" another mentioned that "there is no supply of germplasm from the ministry or the research institutes... the research institutes could provide better planting material..."

Threat of substitutes

Substitute products can replace other products with little or no lost value to the consumer. This means consumers might buy more of the commodity in question if the price of a close substitute increases. As a result, close substitutes can have an effect on market prices by providing an option to consumers when prices fluctuate. A threat of substitutes exists when there are products which provide similar benefits or use as khat in the market. In lieu of this, farmers and traders were asked if there are known substitutes for khat.

According to Belwal et al. (2011), khat is chewed in occasional events such as social meetings, prayers, wedding and funeral ceremonies, and during wake keeping for the dead (Gebissa, 2004). It is also served in welcoming and entertaining guests, mourning, weddings, circumcision ceremonies, and in collective labour works (Lemessa, 2001).

According to farmers although there may be other products which can be used as substitutes at some of these social events, these may not be seen as a direct substitute to khat since it has its own peculiar properties when it is chewed. This was supported by a statement by a trader who sells Khat:

"I don't think we have a direct substitute in the market for khat. ... khat is khat and cannot be replaced ... the feelings cannot be obtained from using other leaves, may be not that I am aware of"

Producer of khat argued that " ... well, khat has its own uniqueness and as such I don't think there are substitutes. There are many different types of khat and sometimes a particular type can be substituted for another but not substituting another product for khat"

Since there are no known substitutes for khat in terms of its mastication properties, it has the potential to remain competitive as a source of income for farmers.

CONCLUSIONS AND IMPLICATIONS

An analysis of the khat industry in Ethiopia using the Porter's Five Forces model indicates that increased productivity and scale efficiency will continue be critical for the profitability of the khat industry. This is against the background that increasing demand and high returns are likely to be responded by producers by increasing their production. However, given that land is limited due to competition from the production of food and other cash crops, producers of khat will have to improve the productivity of the land they manage. This will require the use of new production methods and technologies that will increase the output per land area. Furthermore, although seedling suppliers power and competition among producers are not important factors that may influence the profitability of the khat industry, the relative ease of entry into production of khat may have long-term effect on the profitability and competitiveness of production. This notwithstanding, there is constraint on the size of land available to farmers and hence may continue to regulate the quantity of khat that can be supplied to the market. The findings have some major implications for the promotion of khat in particular and development of neglected species in general.

Implications for the development of the khat industry in Ethiopia

First, it is recommended that for the producers to continue to have control over the price of khat, some form of collective action and cooperative will be needed. This will ensure that producers are able to market their khat as collectively even in the face of increasing production and new entrants. Farmers working together as a group will enable them to secure the necessary recognition by government and national authorities, and can then agitate to have some form of assistance such as planting materials which is offered to other tree based products like coffee and mango in the study area.

Secondly, there is also the need for stakeholders along the value chain to devise strategies to prolong the shelf life of khat after it is harvested. The active substance in khat is effective during the first 48 hours after it is harvested and therefore loses its effectiveness thereafter. This is a major limitation for the marketing of khat. This is

even more challenging in the context of export market which rely on rail and air transport which are often not reliable in Ethiopia. Against this background, there is the need to explore strategies on post-harvest handling of khat thereby improving its shelf life.

In addition, most rural producers of khat do not have adequate market information especially upstream the supply chain and the export market. Consequently, many farmers are of the perception that middle men reap a greater part of the industry wide margin serving as a disincentive for growing although price is relatively high compared to other crops. In view of this, promoting effective market information and market intelligence for khat can help to improve producers' understanding of the market which will enable them to make right marketing decision on if and when to harvest and market.

Government must also play a role in enhancing the competitiveness of khat as an income source for farmers. For instance there is currently no government incentive to promote the cultivation of khat although statistics show that it is one of the important export crops in Ethiopia. Government's interventions may include provision of improved germplasm for khat, improving extension education for the production and marketing, promoting technologies to increase productivity per land area as well as regulating the industry as is the case for coffee.

Furthermore, land and tree tenure systems in Ethiopia which prevent the cultivation of trees can be addressed. Despite recent measures to encourage Ethiopia's farmers to plant trees on their land, the country's complex feudal past still discourages tree as farmers' still have some sense of insecurity. In view of this, it will be important for the Government to further develop and harmonize the legal framework at federal and regional levels in order to strengthen property rights in land and natural resources and continue to support the formulation and implementation of appropriate land policies and legislation by removing restrictions on transfer of land use rights.

Implication for the development of neglected species

The analysis of the competitiveness of khat indicates that some neglected species may have important potential for income and poverty alleviation in many developing countries. In spite of this, experience from khat indicates that a holistic approach to the analysis will provide a good basis for its promotion. Whereas the agro-ecological suitability of the species is important for its development, consideration must be given to other factors such as the social acceptability, existing services and infrastructure support, as well as the competitive forces and government policies that shape and guide the development of the industry.

For instance, although the study have demonstrated the broader social-economic potential of khat, there are legal and ethical issues concerning its consumption in certain jurisdictions such as the European Union and the

US which have recently put a ban on its importation and consider it as a narcotic limiting its market potential. Furthermore, some studies have reported on the health hazards associated with khat consumptions.

Finally, although many well-known species such as khat continuous to be grown on marginal lands, many are still considered as under-utilized because they are locally abundant in developing countries but rare globally. In addition, they have limited scientific information and knowledge, and their current use is limited relative to their economic potential (Gruère et al., 2009). In view of this, enhancing research and development for these products will be an important step towards their commercialization.

Disclaimer: Views expressed in the article are solely that of the author and not the World Agroforestry Centre or the financiers of the field work.

Conflict of Interests

The author has not declared any conflict of interests.

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