



Khat (Catha edulis): Botany, Distribution, Cultivation, Usage and Economics in Ethiopia



*By Dechassa Lemessa (Agriculturalist), UN-Emergencies Unit for Ethiopia
Addis Ababa, June 2001*

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Introduction, objectives and methodology

Despite the daily use and consumption of *khat* by millions of people in Ethiopia and other countries, very little is known of the cultivation or economics of what is viewed as cash-crop of growing importance. It is evident that most users' knowledge is limited to only the mildly narcotic effects of the plant. This also applies to a large number of agricultural experts and researchers not only due to lack of reference material on the subject but also due to classification of the plant as a drug by most international and national institutions. Consequently, the crop has received little attention from researchers or, for obvious reasons, the agricultural extension services.

This study was therefore initiated and conducted by the UN-Emergencies Unit for Ethiopia (UN-EUE) to gather and document comprehensive information on the husbandry, economic, social and ecological importance of the crop and to disseminate this information to relevant and interested stakeholders.

Though officially discouraged, *khat* stands among the most important cash crops in Ethiopia, with strong markets domestically as well as in neighbouring Somalia, Djibouti, Yemen and the Gulf State. As a cash crop commonly grown in otherwise food insecure parts of the country, the need to understand better the cultivation, botanical characteristics and economics of the plant has been highlighted.

The study was initially conducted in Haromaya (Alemaya) *wereda* of East Hararghe Zone in Oromia Region which was selected for its extensive *khat* production, huge dependence of the people on the crop and the well-developed *khat* culture due to the development of basic infrastructure, mainly roads and the proximity to market centres, vital for the commodity. However, to investigate ranges of production conditions across different ecosystems in Ethiopia the study also covers other main *khat* growing areas of the country. Key informants include *khat* growers, zonal and *wereda* Agriculture officials, *khat* brokers and traders, students, teachers and toll-gate workers in the eastern corridor of Ethiopia. Available secondary information sources were reviewed in which case the Alemaya University of Agriculture (AUA) library was visited.

Various Participatory Rural Appraisal (PRA) techniques including semi-structured interviews, field and market visits, pictures, proportional piling, transect walks and observations were used during the study.

The socio-economic aspect of the crop, which is a more sensitive issue, mainly as *khat* growers and those involved in trading *khat* fear the imposition of heavy taxes, will be taken as the second phase of the study. Information presented in this paper are dominantly concerning *khat* husbandry and is aimed at developing an understanding of the subject, paving the way for future research and development by development agencies, researchers, extension agents, policy makers and other interested stakeholders. This synopsis is based on the main study and is meant for the general reader and those who might be interested to know more about the crop and its cultivation.

Plant origin, history and geographic distribution

Much of the lore of *khat* has been passed on orally from generation to generation, leaving inadequate written records largely due to lack of interest in the crop by institutions, policy makers and researchers. Hence, the history of its importance as a crop is neither clear nor certain.

Some oral traditions claim that *khat* originated from Yemen, however the literature indicates that *khat* originated from Ethiopia, specifically in Hararghe with a gradual expansion to different parts of Ethiopia, Yemen and other parts of the world (Huffnagel, 1961).

Legend has it that the use of *khat* was first discovered by a herder who noticed the effect of the plant on his goats and who tried it and experienced wakefulness and added strength.

The distribution of *khat* in tropical Africa extends from north Arabia to South Africa. In Africa it is well established in Ethiopia, Eritrea, Somalia, Kenya, Tanzania, Uganda, Burundi, Rwanda, Democratic Republic of Congo, Zambia, Zimbabwe, Southern Rhodesia and South Africa, despite efforts of the respective governments to discourage its cultivation. In East Africa it grows in the range of 1500-2500 metres above sea level (masl). Outside Africa it is planted in the Arabian Peninsula, Yemen, Afghanistan, India and Sri Lanka for consumption and in the USA, UK and France for experimental purposes.

The plant

Khat is an evergreen perennial shrub plant that belongs to the Celastraceae family. The plant is known with different vernacular names: *Khat* in English and in Arabic, Jimaa in Oromiffaa (language of Oromo people growing the plant extensively in Ethiopia) and *chat* in Amharic. *Khat* usually grows up to 7 meters but occasionally reaches as high as 15 to 25 meters. Leaves are simple, elliptic, oblong and are glossy green above but lighter below, leathery and stiff tapering to both ends. The buds and leaves contain an alkaloid and are chewed in a fresh or dried condition as a stimulant. Flowers are small and white. The fruit is smooth and narrow splitting to release narrowly winged reddish seeds when matured. The stem is straight and slender; the bark has different colours depending on the variety and age of the stem and branches. The young branches are smooth and green to pinkish but grey and sometimes rougher and darker on older branches and stems. The root system can grow as deep and as long as 3-5 m.



Uses

Economic use: In Ethiopia *khat* is an important and potentially lucrative cash crop. The employment opportunity created through the cultivation of *khat* is very high in that large number of people are involved in growing, harvesting, sorting, packing, transporting, loading and unloading the commodity.

The wood of the plant is commonly used for fuel and due to its resistance to termite is used in the construction of houses and fencing. It is also used for making rafters, handles of farm tools (hammers and chisels) and handles of household articles such as pots and pans, rolling pins, and to make forks, combs, spoons and for rulers.

Medicinal use: Processed leaves and roots are used to treat influenza, cough, gonorrhoea, asthma and other chest problems. The root is also used for stomach ache and an infusion is taken orally to treat boils.

Social value: *Khat* has considerable social value. It is served to welcome and entertain guests, in mourning, weddings and circumcision ceremonies and collective labour works. *Khat* chewing has its own associated ceremonies like smoking of incense, cigarettes and use of drinks (soft drinks, tea and milk).

Khat chewing is addictive and has negative physical, economical and social connotations. Although non-users both in rural and urban areas condemn the practice of chewing, the number of people chewing is increasing particularly among the youth. In urban areas, chewing *khat* is a common leisure activity which, combined with the consumption of it, followed by alcohol is having an adverse effect on family life. Students and a number of staff in higher education institutions and high schools are using *khat* to “increase” their concentration levels and attention span.

Some of the farmers consulted said that *khat* gives them energy and strength to accomplish a great deal of agricultural and other hard work, which they say, would otherwise be impossible. According to farmers in Hararghe where hand cultivation is extensively used in seedbed preparation and cultivation, *khat* chewing enables them to accomplish the work without fatigue. They also cited the additional “advantage” of a reduced appetite in food shortage periods. The crop also has prestige value for people who grow large quantities.

Farmers in eastern Ethiopia often start chewing *khat* right after breakfast and work for about 3 hours without any feeling of fatigue. After lunch, they resume chewing and work through the remaining afternoon with intermittent chewing. It is evident that *khat* chewing competes for active working time in that the actual working hours do not exceed 6-8 hours a day. Furthermore, in areas where *khat* chewing is common, such as in Afar, Somali regions and Hararghe zones of Oromia Region, punctuality of business appointments is a frequent problem, as the time after lunch is usually spent in chewing *Khat*.

Environmental value: In Hararghe *khat* is grown in an intensive production system. It is planted in rows on hillsides along terraces in association with different food crops, mainly annuals, and oriented against slopes. As such, *khat* cultivation plays key role in controlling soil erosion, which is a major threat in the area due to the undulated topography and intensive deforestation for farmland expansion and hence *khat* culture is considered to be the best agro-forestry system practiced by farmers. Had it not been for the cultivation of *khat*, the erosion of topsoil would have been severe and possibly disastrous in midland areas of East and West Hararghe zones.

Distribution in Ethiopia

The total area of land under *khat* cultivation in Ethiopia in the year 1997/98 was estimated at 78,570 hectare (Central Statistics Authority, 1997/98). Oromia, mainly East and West Hararghe zones, is the most important centre of *khat* production (East Hararghe zone alone contributes 53.4% of the total production area) in Ethiopia. Hararghe is considered to be the most important producer of quality *khat* in the world (Peter, 1952).

Despite silent support and objection against the crop by development institutions, *khat* is cultivated and expanding in different parts of Ethiopia (Map 1). It can be grown rain fed and/or irrigated, though the later covers less than 20% of the total *khat* area. The crop could be planted both in home garden or in the field.

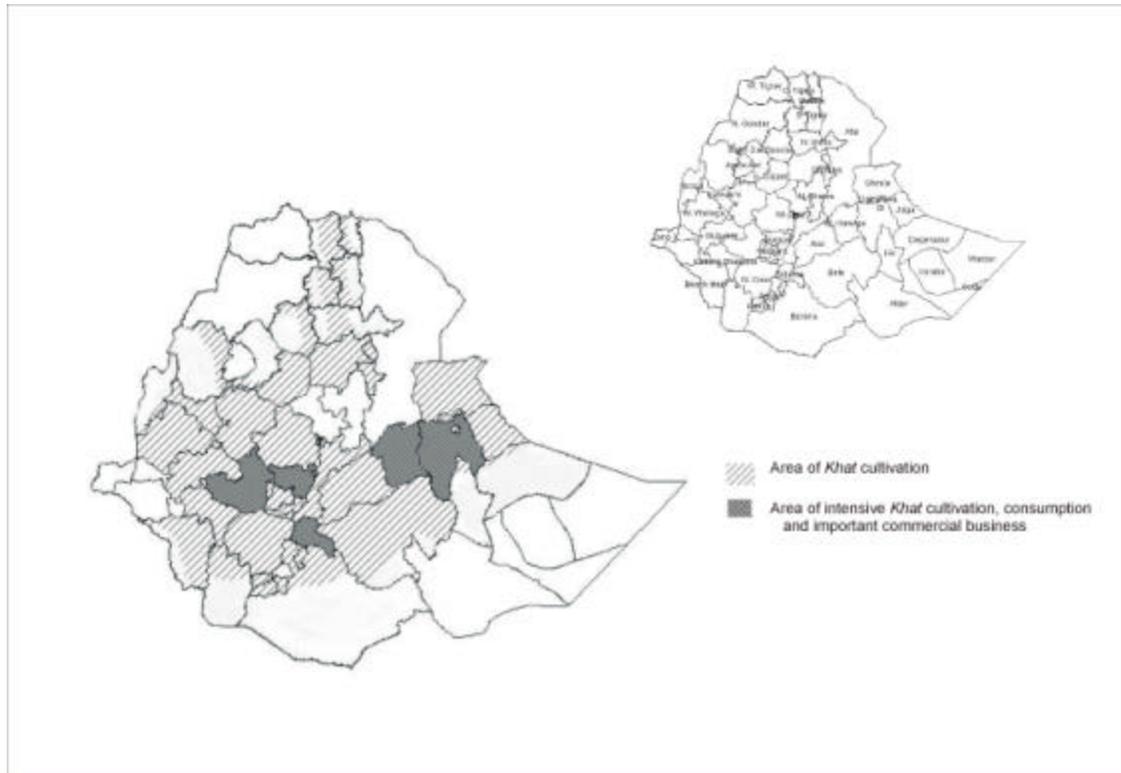


Fig 1. Map showing distribution (rough) of khat in Ethiopia

Soils and topography

Soil with high clay content is not suitable for *khat* production. The crop requires well drained dark red-brown, sandy loam with a low percentage of clay and medium to high amounts of total nitrogen, organic matter, available phosphorus, calcium, potassium and magnesium (Murphy, 1959). *Khat* performs best on soils with a pH of 6.0-8.2. Nevertheless, once established, *khat* grows well under a wide range of soil types and climatic conditions. The optimal altitude for growing *khat* ranges from 1500-2100 masl. In Ethiopia *khat* is extensively grown and thrives best in mid-land (1500-2500 masl), but it can also be grown with irrigation down to 1000 m asl if the area is free of frost. At the early development stage of the plant, water supply is more critical than soil type. The field should be well manured and drained for good crop performance.

Rainfall

Khat is tolerant of a wide range of rainfall patterns, the distribution of rains in one season is more critical than the total amount of annual rainfall received. Annual rainfall ranging from 1,000-1,500 mm is considered as ideal for good performance and productivity of the crop. In Hararghe both the short rains (March - May) and the long rains (June/July-September) are essential for rain fed *khat* producers but for optimum production farmers also hand-water their *khat* fields once or twice during the dry season.

Site selection, land preparation and planting

An ideal site for *khat* growing should have well-drained fertile soil, free of rocks and frost. *Khat* fields are usually prepared during the dry season, before the rains start.

The propagation method of *Khat* is by cuttings or suckers having root (s). These planting materials are the only means of propagating, as seeds are not used for propagation due to poor germination rate of the seeds. Planting materials are selected and planted directly in the prepared planting pit. The suckers or cuttings should have circumference of 8-10cm at the base and 50cm long. Suckers are preferable compared with cuttings as the former establishes the plant faster and will be ready for harvest sooner.

Planting pits should be 1 m long, at least 50cm deep and 50cm wide and should be prepared at least 2 to 4 weeks before planting. At a planting time two suckers are planted in each pit and selected later on the basis of their performance and vigour. No single period is determined for planting *khat*, it all depends on the availability of water. In general the spacing between rows ranges 1-5m and 0.4-1m between plants.

In Hararghe *khat* is often grown in association with different food crops and is highly compatible when intercropped. The practice of row planting and intercropping simplifies agricultural operations besides easing up the existing land shortage. In marginal and steep sloping areas, where other crops can not be grown, pure stands of *khat* are planted.

Manure

Continuous harvesting of *khat* exhausts and debilitates the mother plant unless fertiliser is used to maintain soil fertility. Manure is applied on *khat* every year based on the availability of manure or compost. Farmers prefer organic fertilizers (manure and compost) as compared to inorganic (chemical) fertilisers. The volume of manure available is limited and too scarce to satisfy the needs of farmers. Thus, farmers in Hararghe prepare their own compost and use this to improve soil fertility.

Weeding

Farmers in Hararghe have a good reputation in terms of managing and keeping their crop fields weed free and clean. *Khat* fields are weeded and harrowed/cultivated at least 3-4 times a year. Cultivation is the means of controlling weeds and farmers make sure that no weeds grow under the crop. Mulching *khat* plots with different available materials is another cultural practice used to control weeds and conserve soil moisture.

Thinning, pruning and stumping

Despite the lack of extension support and advice, farmers in Hararghe are well versed in *khat* management. Among the management practices thinning or removing poorly performing damaged and infected branches is an important one. *Khat* reacts very well to pruning and stumping, producing long, straight stems in a few years though frequent harvesting done in a proper manner tends to make pruning unnecessary. When *khat* attains about half of its life the stand will be pruned to about a meter height. Stumping initiates new shoots regenerating from the rootstock.



Khat sprouting from an old pruning

Harvesting

From planting a stand of *khat* to regular harvesting normally takes 2 to 3 years though Amare & Krikorian (1965) state five to eight years. In the first year, farmers prune/harvest a small amount mainly to train and control the growth habit, to initiate more shoots with better twigs and to reduce wind damage. This harvest, locally known as *Kolasa*, is mostly used for self-

consumption rather than for sale. From the second to third year, however, the harvest volume steadily increases over all 8-10 years period, but afterwards the plant becomes old and needs to be renewed by stumping at soil level or at the middle of the stem.

Khat is harvested by breaking off the young branches from the main branches and trimming it to about 40-cm. Depending on growth stage of the harvestable products there are different types of *khat* products. Young and soft shoots are detached with the bare hands, while hardy shoots are cut off by hand tools. Each harvestable product is locally given name (s).

Khat can be harvested year round at any time of the day, but is often harvested in early morning or late afternoon. Generally, harvesting is possible 2-3 times a year from a well-established rain-fed matured *khat* stand depending on the age, management practice and the fertility of the soil.

If a matured plant is harvested in August, as is mostly the case, the second harvest will be followed in November. However, with sufficient rains in March well-managed and established stands can give an early harvest in May. If such is the case, harvesting is followed by a grace period from June to August for the plant to maintain itself for the second and third harvesting in September and November. Often, even in one field there are *khat* plants planted at different times and hence harvest is available year round.

Khat has short shelf-life and cannot be kept for longer than 2-3 days. Mature *khat* should be harvested and marketed without delay; otherwise the quality deteriorates and loses market value.

A one-year harvest (1963-64) from three fields around Alemaya University of Agriculture indicated an average production of 0.81 mt per hectare (Hill, 1966). Klingele (1998) also cited a yield of 0.7-1 mt per hectare. In less productive areas like Jijiga for example, an average of 0.5 mt per hectare is reported.

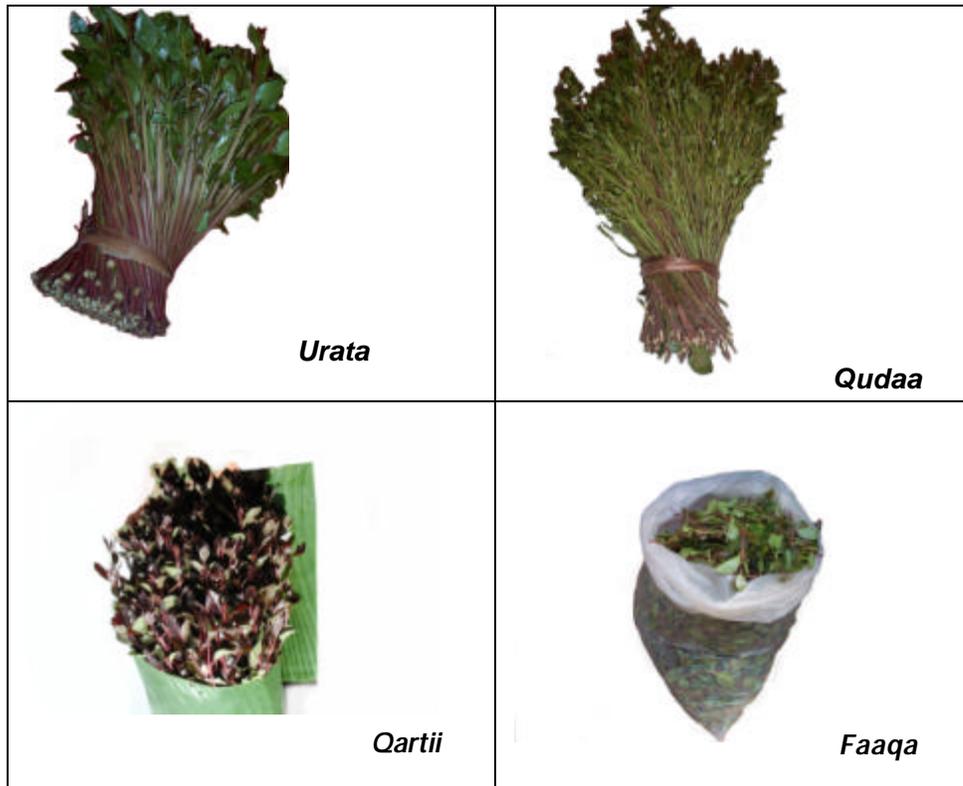
Although farmers found it difficult to quantify their annual income from the commodity, farmers in Haromaya *wereda* said that *khat* is bringing them a much higher income per year than any other crop they grow.

Varieties and kinds of marketable *khat* products

Oromo people in Hararghe recognise three types/traditional “varieties” of *khat* plants classified physically based on the colour of the young shoots of the plant. These identified types are: *dimaa*/red, *dalota* (*dalacha*)/whitish and *hamarcot* the later being in between *dimaa* and *dalota* in colour according to most farmers. There are people who also say that *dalota* and *hamarcot* are one and the same but could have slight differences based on the level of care and management practices provided. The red/*dimaa* type has a reddish tinge, withstands harsh conditions, tolerates poor management, extensive harvest (exhaustion) and gives reasonable harvest even with less care compared with the other varieties. However, it is of inferior quality and is less preferred by consumers and has low market value as compared to the other two varieties. *Hamarcot* has broad leaves and is less branched out, it is superior in quality and hence has better market value. *Dalota* is white or light in colour, has narrow leaves and more branches compared to *hamarcot*. Unlike the other two varieties, *hamarcot* does not have clear distinguishing characteristics for easy identification. But through experience it is possible to distinguish it fairly easily. It is not clear whether the said types of *khat* are true or scientific varieties or just traditionally categorised as types of the plant.

Some of the criteria farmers’ use to grade the quality of *khat* are; exciting rate or narcotic effect, taste, physical appearance, demand and market value. According to farmers and *khat* users in Hararghe *hamarcot*, *dalacha* and *dimaa khat* are ranked as first, second and third, respectively, using the above criteria.

The harvestable part of *khat* has consumable and non-consumable portions. The chewable portion is succulent and tender while leathery part is unfit for consumption. Based on the growth stage of the shoots and proportion of chewable parts four major grades/ kinds of products are identified by local people (farmers, traders and consumers), namely; *urata*, *qudaa*, *qartii* and *faaqa/chira/tacharo*. Each *khat* type (*dimaa*, *dalota* and *hamarco*) could have these three qualities. Distinguishing the different products requires well-experienced person to be sure of the specific types.



Different types of marketable products of Khat

Forms of consumption

Khat is grown for its tender leaves and twigs/stems, which are chewed for their mild stimulating effect. They taste sweet to bitter when fresh, based on the type of *khat* consumed. Although the most common way of obtaining the stimulating effect of *khat* is by chewing fresh leaves and soft twigs, consuming dried and pounded materials, in the form of tea, infusion and smoking is also seen.

As with most other addictions, when a regular *khat* chewer is not getting *khat* he/she feels uncomfortable, becomes restless and aggressive. In Hararghe a person in such a state is locally known as *jazba* (literally meaning inactive or dull) and the condition of an extraordinary desire for *khat* is called *harara*. During this period one cannot be expected to behave well or to respond positively to any query. However, when a regular chewer gets *khat*, after about one and half to two hours she/he will become calm as the narcotic effect begins to work. This state of quenching the chewing desire is locally known as *mirqaana*. According to key informants, the time taken to get the stimulating effect varies based on the body weight of the person, room temperature and type and quality of the material. It is said that a heavy person will sense the feeling late as compared to a person with less body weight while warm room temperature will hasten the narcotic effect or the excitement.

In Ethiopia, *khat* consumers include both sexes (at varying level), farmers, traders, teachers, students, health and military people, drivers (mostly for night driving), government officials and foreigners.

The increasing use and consumption of *khat* has become a major concern to many countries especially to Djibouti, Somalia and Ethiopia who have found it necessary to prohibit its cultivation at different times. Nevertheless, past efforts to ban the crop in these countries and to replace it with coffee in Ethiopia and uprooting the crop after paying compensation in Somalia did not last long. The failure was largely due to the exclusion of the farmers from the decision-making process and more importantly, due to an absence of any viable substitute that could fully compensate the merits (traditional, economic, social, environmental benefits) obtained from the cultivation of *khat*. *Khat* sparked a commission of inquiry, under the auspices of the League of Nations while in more recent years the UN Commission on Narcotics and Drugs (UNCND) found the issue of *khat* consumption and its effects quite controversial often postponing several meetings as the plant's narcotic effect was insufficiently understood due to lack of viable clinical research information.

Pests and other constraints

Khat is subject to a wide range of insect pests, diseases, weeds and animals that damage its leaves, newly growing shoots, stems and roots. At worst, the result could be a total destruction of the plant but mostly the damage is to the quality of the harvested material, which affects the economic gains from the crop. In most cases, traditional pest control practices like hand picking, spraying a solution of hyena faeces (against deer and antelopes), botanical or plant origin solutions such as an infusion of crushed garlic, tobacco and soap are commonly used. Nevertheless, the occurrence and severity of pest damage has increased and therefore synthetic insecticides are becoming increasingly common.

Other potential threats that might limit production and marketing of *khat* include frost, hailstorm and drought.

Inaccessibility of markets and extreme fluctuation of market prices are additional problems that impact on *khat* growers. Effective *Khat* marketing depends on the availability of basic infrastructure like roads and the proximity to market centres. Important constraints to production are shortages of manure, irrigation water and lack of small credit facilities for purchase of water pumps and other accessories for irrigation.



Khat stands dried from moisture stress due to prolonged dry spell, Jijiga

Processing methods

There are a number of procedures and processes employed to ensure the marketable value of the harvested material of *khat*. The consumable part is harvested and put in shawls or plastic sacks at farm level and taken home for sorting and grading by plucking off the leathery leaves and trimming the long stems. The selected material and the unfit/ unmarketable portion, locally called *garaaba*, are separated. The unfit part is set aside for animal feed and as compost material for later use as manure. The selected and marketable part is tied into *haqara* bundle (40-60 selected slender twigs) and splashed with water to keep the product wet and fresh. It is

then wrapped with fresh leaves and twigs of different plants and grasses. The bundles of the commodity will finally be placed in burlap or plastic bag, sack or shawl ready for transport to market for sale. The way the commodity is packed varies depending on the distance to the final destination and the purpose it is sent for (local consumption or export).



Khat being wrapped with banana leaf, Borana

Marketing: volume and earnings

In Ethiopia *khat* is used for direct consumption, local sale and for export. It is estimated that 85 to 90% of *khat* production is sold, the rest is used for local consumption.

Information obtained from one of the *khat* exporting enterprises in Dire Dawa showed that out of 99,432 kg of bulky *khat* purchased in December 2000, 71% of the material was qualified and presented for export to Djibouti. The quality, prices and taxation rate of export *khat* are quite high as compared to that used for local consumption. For example, the tax for locally used *khat* is Birr 2 per kg while the levy for exportable *khat* is Birr 5 per kg.

Khat appears to make a significant contribution to the foreign currency earnings of Ethiopia. It is exported to various parts of the world including: Djibouti, UK (London), Somalia, and a number of Arab Countries. Since the formal export to Aden in 1942 markets were developed (when exports totalling 1,485.8 mt valued over Birr 6.4 million were recorded), exports have increased dramatically. In 1999/2000 Birr 0.464 billion worth of *khat* was exported to different countries and ranked second replacing hides and skins in export revenue (The Reporter, 2000). The above figures do not, however, include the huge volume of *khat* smuggled to different countries.

Currently, there are 5 registered and official *khat* exporting enterprises in Ethiopia. Despite the economic benefits drawn from *khat*, some countries, including the Ethiopian government, have repeatedly attempted to limit the production and export of *khat* and forced replacement of the crop with coffee, in accordance with proposals made by the United Nations Commission on Narcotic Drugs (Huffnagel, 1961).

Neither locally nor internationally *khat* producers do not have much control over market prices. Prices often increase by over 900% between the farm and market because of the virtual monopoly held by just a few traders who effectively control supply and dictate price to both producers and consumers.

Farmers generally sell their *khat* to buyers who directly come to the field and negotiate a price with the producer. When farmers take the commodity to local whole sale markets they mostly do not sell it directly to traders, rather they sell through regular brokers (locally known as *qabqabii*) who negotiate on the price on behalf of the farmer/owner. Each trader has a number of brokers and operates through them. After negotiation on the price with the buyer, if the farmer agrees to the offer by the buyer, the broker sells the material to the buyer and receives a 10% commission from the farmer/seller but allegedly not from the buyer.

Once harvested, *khat* is a perishable commodity. There is no affordable means of storing *khat* for a longer period of time other than the local and traditional way of sprinkling with water and wrapping it airtight with transparent plastic sheets. Thus, proximity to market centres and efficient transportation are the blood stream of *khat* marketing.

In Ethiopia, the full range of means to transport *khat* are employed including: headload, human shoulder, packing animals, small automobiles, trucks, trains and aeroplanes, progressing from the farm level through to regional and international markets.

According to informants contacted in Awaday market, prices are generally low in September, October, April and August but high in November, December, January, February, March, May, June and July as harvest is scarce in the later case.

Composition of *khat*

Despite efforts by scientists to illuminate the chemical and pharmacological aspects of *khat*, little is known. Stockman (1912) reported that leaves and twigs of young *khat* contain different groups of alkaloid (cathine, cathinine and cathidine). Alkaloid is the ingredient that affects the central nervous system (WHO Document, 1964). The alkaloid content has been found to be higher in Ethiopian and Tanzanian varieties than those grown in other countries *khat* (Paris & Moyse, 1958), which is why the former varieties are preferred.

A study revealed that fresh leaf and tender twigs of *khat* can contain and contribute an important amount of nutrients to the diet of consumers (Darby et al, 1959). According to this study per 100 gm of fresh consumable parts the following contents are found.

Item	Amount
Ash	1.6 gm
Protein (Nx6.25)	5.2 gm
Fiber	2.7 gm
Ascorbic Acid	161.0 mg*
Thiamin	<0.05 mg
Niacin	14.8 mg
Riboflavin	<0.05 mg
Beta-carotene	1.8 mg*
Calcium	290 mg*
Iron	18.5 mg*

* Important amounts to user's diet.

Gender issues

Most of the labour required for the cultivation of *khat* is undertaken by men and boys. Women are traditionally prevented from land preparation for the work is difficult to them if not physically impossible. Conversely, household chores are exclusively left for women and girls. Nevertheless, the role of women in *khat* production is immense and includes: transporting manure to near by *khat* fields (men and children transport the manure to distant sites using donkey), harvesting and marketing of *khat* for local sale, sorting and grading of marketable parts and preparing and taking food to the family members working in field. In *khat* production night-guarding, largely due to the problem of theft a most demanding and expensive task in terms of labour and time is undertaken by men.

Effects of *khat* on human health

Khat is a stimulant with a mild narcotic effect when taken in moderate quantities. However, little is known of the plant's health effects (Hill, 1996). Hill states that *khat* is not clearly addictive, as it has been observed that abrupt withdrawal of *khat* from the habitual consumer does not necessarily lead to withdrawal symptoms. The plant stimulates or charges human bodies for action due to its alkaloid content. Excessive consumption of *khat* is said to induce symptoms of

hallucination or illusion, intoxication and short energy boosting effect. Extended use is also reported to cause emaciation, may be as a result of suppressed appetite, and impotence. Generally, chewing *khat* causes constipation though some also report that it reduces constipation. It is not clear what is considered to be moderate consumption and what would amount to an over dose leading to health related problems. In this case further research and investigation is needed.

Conclusion and recommendations

Khat is clearly an important cash crop in Ethiopia well-known for its foreign currency earnings. Nonetheless, it is little understood and given no development and research attention as yet. Millions of people both in Ethiopia and other countries are making a living from the crop. Nevertheless, it is mostly viewed as a socially undesirable “drug plant”.

Different countries have attempted to impose restrictions (by substitution or compensation) against the crop at different times considering it socially undesirable apparently because the economic and sociological aspects of the crop are not well understood.

This study has helped underline the considerable level of sophistication that characterises the cultivation and marketing of *khat* in eastern Ethiopia. Farmers possess considerable knowledge of the crop and appear to be the best experts of *khat* production than any body else so far. They also appear to derive a substantial cash income from the sale of the *khat* despite the absence of technical support and massive differences that exist between producer and retail prices. Estimating the actual economic and agricultural importance of the crop, however, is difficult due to the dearth of credible data relating to the area under cultivation, yields and market volumes.

It is recommended that a better understanding of the economic benefits and disbenefits of *khat* be developed through a multidisciplinary approach with the full involvement of *khat* growers and traders. The findings derived from such an approach should then be considered against an understanding of the negative physical and social effects of *khat* use/abuse before considering possible strategies to assist *khat* growing communities through the substitution of alternative crops, such as coffee. Only through a balanced analysis, taking into consideration all factors (economics, social, cultural and environmental), can the cultivation, use and economics of *khat* be understood in a proper context.

In Summary, any desire to find substitutes for *khat* should fulfil desirable parameters and need to compensate for most if not all benefits obtained from this crop by many communities that would otherwise face severe economic difficulties.

Acknowledgements

The author would like to express his sincere thanks and gratitude to those farmers who generously provided him their life-long knowledge and experience in *khat* production. Without their support, unreserved contributions and friendship this study would not have been possible.

Special thanks go to *Obbo* Musa Yusuf and *Obbo* Musa Ahimed both very skilled in *Khat* husbandry and who shared with me their extensive knowledge on the subject. I am equally indebted to *Khat* traders who provided me with market information on the commodity.

I am also grateful to all employees of Department of Agriculture in Hararghe Zones and weredas who accorded me generous assistance in the course of the study. Ato Seyifu W/Kidane is thanked for the views and personal notes he shared.

I am especially thankful to *Obbo* Abdul Latif Ahimed who is doing his M.Sc. studies at Alemaya University of Agriculture, for his unfailing co-operation in arranging interviews with farmers and *khat* merchants besides sharing his own experience in the subject.

Finally, I would like to thank Mr. Gromo Alex and Mr. Mark Bidder for their support, encouragement and constructive ideas they furnished me through out the study.

DISCLAIMER

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June 2001

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Literature cited

1. Abebe D. & Ayehu A. 1993. Medicinal plants and enigmatic health practices of Northern Ethiopia, Addis Ababa, Ethiopia.
2. Central Statistics Authority. 1993, 1998, Addis Ababa, Ethiopia.
3. Fanie and Julye-Ann V. 1996. Making the most of indigenous trees (pp 44-45).
4. Fortune (Newspaper). 2000. Volume 1, Number 21, dated September 24, 2000, Addis Ababa, Ethiopia.
5. Getahun A. and Kirkorian D. 1973. Chat: Coffee's rival from Harar, Ethiopia. I. Botany, Cultivation and Use.
6. Guinand Y. 1999. Mission report-East and West Hararghe, UN-Emergencies Unit for Ethiopia.
7. Guinand Y. 2000. Hararghe Agro-pastoralists face an uncertain future, UN-EUE Field report.
8. Hill, B. 1966. Chat (*Catha edulis* Forsk.). Journal of Ethiopian Studies 3: 13-23.
9. ICRA & AUA. 1997. Strengthening farmers' participatory research and development in Jijiga zone. Working document series 60. pp 63-64.
10. Katende A. et al. 1999. Wild food plants and mushrooms of Uganda.
11. Kelecha W.M. 1976. A glossary of Ethiopian plant names, Addis Ababa, Ethiopia.
12. Kirkorian D. and Getahun A. 1973. Chat: Coffee's rival from Harar, Ethiopia. II. Chemical Composition.
13. Klingele R. 1998. Hararghe farmers on the cross-roads between subsistence and cash economy. UN-EUE Field Report, Addis Ababa.
14. Maundu P. et al. 1999. Traditional food plants of Kenya (pp 87-88). Nairobi, Kenya.
15. Mbuya L. et al. 1994. Useful trees and shrubs for Tanzania.
16. Mitiku H. and Abdul A. 1992. Alley Farming in a sorghum/*khat*-based cropping system in Hararghe highlands, Eastern Ethiopia. AUA, Dire Dawa.
17. Murphy, H.F. 1959. A report on the fertility status of some of the soils of Ethiopia. College of Agriculture 2000, Experiment Station Bulletin No. 1. Alemaya, Ethiopia.
18. Peter D. 1952. *Khat*: its history, botany, chemistry and toxicology. *Parmac. Journal* CLXD: 36.
19. Stockman R. 1912. The active principles of *Catha edulis*. *Pharm.J. and Pharmacist* 35: 676-678; 685-687.
20. The Reporter. 2000. Vol.V No. 219, dated 15 November Addis Ababa, Ethiopia.