

The Significance of Honey Production for Livelihood In Ethiopia

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Abstract

In Ethiopia, bee keeping practice has old age historical practice even though it is difficult to estimate when bee keeping practice had been started accurately. Honey production and beekeeping is a promising non-farm activity for the rural households. It directly and indirectly contributes to the income of households and the economy of the nation. Honey and bee wax considerable to the national economy through the export earnings. Beekeepers, honey and bees wax collators', retailers, tej brewers, processors and exporters are identifying to be the factors in the value chain of the sub-sectors. Beekeeping is believed to play a significant role and one of the possible options to the smallholder farmers in order to sustain their livelihood. In addition to their financial values, honey and bees wax have many cultural values and forms apart of ceremonies for birth, marriage, funeral, charismas and other religious celebration in many society.

Key words: Bee harvesting, Traditional beekeeping, Market, Poverty alleviation. Traditional medicine.

List of Abbreviations

ARSD	Agriculture Research Strategy Document
CBI	Centre for the Promotion of Imports
CSA	Central Statistics Authority
EARO	Ethiopian Agricultural Research Organization
MoARD	Ministry of Agriculture and Rural Development
NGO	Non-governmental organization
NTFP	Non-timber forest products
UN	United Nations
WHO	World Health Organization

1. Introduction

1.1 Background

In Ethiopia, bee keeping practice has old age historical practice even though it is difficult to estimate when bee keeping practice had been started accurately. It may be started when ancient Egypt refers to Abyssinia as the source of honey and bee wax before 5000 years ago (Gezhegne cited by Tessege, 2009).

In Ethiopia about 1.9 million farm households involve in bee keeping and there are 10 million bee colonies. This study puts the country 1st in bee colony in Africa 10th in honey and 4th bee wax producer in the world, but honey industry in Ethiopia did not reach at developed stage and market structure to benefit the actors. There are different problems in both sides, bee keepers have lack of knowledge how to do business in terms of increasing productivity and producing quality honey and bees wax, but also the marketing system is biased against them (PILB, 2011).

Beekeeping is a promising non-farm activity for the rural households. It directly and indirectly contributes to the incomes of households and the economy of the nation. The direct contribution of beekeeping includes the value of the outputs produced such as honey, beeswax, queen and bee colonies, and other products such as pollen, royal jelly, bee venom, and Propolis in cosmetics and medicine (ARSD, 2000; Gezahegn, 2001). It also provides an employment opportunity in the sector. The indirect, but very important contribution of beekeeping is through plant pollination and conservation of natural environment. Beekeeping is environmentally sustainable activity that can be integrated with agricultural practices like crop production, animal husbandry, horticultural crops and conservation of natural resources. Thus, it would be one of the most important intervention areas for sustainable development of poor countries like Ethiopia (Gibbon, 2001).

Moreover, beekeeping is an appropriate and well-accepted farming technology and is best suited to extensive range of ecosystems of tropical Africa. To date, over 10 million of bee colonies are in the country, which include both feral and hived ones (Ayalew, 2001). However, like any other livestock sector, this subsector has been ceased by complicated constraints. The prevailing production constraints in the beekeeping sub sector of the country would vary depending on the agro-ecology of the areas where the activities is carried out (Edessa, 2002).

In general, the potential areas for honey and beeswax production in the country include Southwestern, Western and Northwestern parts of the country (ARSD, 2000; Gezahegn, 2001). These are grouped into high, medium and low potential areas. More specifically, southwestern and western areas of Kef zone, Masha, Tepi, DembiDolo, Gerra, Limu, Metu, Yayu-Hurumu, SekChekorsa, She be do have high honey production potential.

These areas are covered with abundant forest, shrubs, bushes and comparatively less cultivated.

Areas covered with moderate forest trees, shrubs, bushes, herbs and cultivated crops such as the southern, southeast and the northwest zones, and Central high lands of the country have medium potentials for beekeeping. These include most of the areas in west Gojam, south Gondar, Jimma, west Shewa, Bale, Borena and Gofa. On the other hand, many of the districts in Tigray, Wollo and Hararge and in some other parts of the country which are covered with marginal forests do have relatively low potential in honey production.

A huge natural resource base for honey production and other hive products, and beekeeping is traditionally a well-established household activity in almost all parts of the country. However, the benefit from the sub-sector to the nation as well as to the farmers, traders, processors and exporter is not satisfactory because there is no enough understanding of the importance of honey production.

1.2 Justification of the seminar

1.2.1 Statement of the problem

In Ethiopia the existing income generation capacity of honey as compared to its immense potential macro and micro level is not encouraging. The knowledge gap on honey production techniques and processing technology is high. Also knowledge of domestic consumer of the benefit of honey is confined to very few varieties of honey. Even though honey is economically and socially important honey marketing channel and their characteristics have not yet been studied and analyzed for the target study for set study where great potential of honey production is needed.

1.2.2. Significance of seminar

This study generated useful information in order to formulate honey production development project and guide lines for intervention that will improve the efficiency of honey production system. The potential users of the finding are primarily the farmers (producers) mainly for sell and what left for consumption. Secondly traders, government and nongovernment organization that have interested in improving honey production system to increase national wellbeing.

1.3. Objectives of seminar

1.3.1. General objective

The general objective is to review the importance of honey production for Livelihood in Ethiopia.

1.3.2. Specific objectives

- To review the history of honey production in Ethiopia.
- To review the importance of honey production to farmers in Ethiopia.
- To review the constraints and opportunities facing the honey sub-sector.

2. The Importance of Honey Production for Livelihoods in Ethiopia

2.1. History of Honey Production in Ethiopia

Among all countries of the world, probably no country has a longer tradition of beekeeping than Ethiopia (Hartmann 2004). Ethiopia in former times has been known as “Abyssinia” and evidences from Hieroglyphics in Egypt, dated 5000 years ago suggests that in Abyssinia, honey production and beekeeping used to be an age-old tradition (Belie, 2009). Later with the spread of Christianity in the country, the use of honey and beeswax candles became part of the Orthodox Church (Greiling, 2001). Apart being a domestic item, honey was treated as an export commodity since centuries in Ethiopia when other items were not exportable (Gezahegne, 2001). However, in modern times Ethiopia lost its charm as honey exporter and produced largely to serve the demands of local markets and those in neighboring countries.

Honey has been highly prized for its flavor as well as nutritional and medicinal values by the local communities. In areas deficient in other sugar sources, it is highly sought after for its sweetness and energy-giving properties. According to information compiled in the National Apiculture Research and Development Strategy Program, Ethiopia ranks 10th and 4th in the world in honey and wax production, respectively. The current annual honey production is estimated at approximately 24 thousand tons, accounting for about 24 and 2% of the total Africa and world honey production, respectively. With this level of production, the beekeeping farmers of the country gain approximately ETB 450 million annually. However, these resources are underutilized due to the traditional beekeeping methods that currently prevail in the country (ARSD, 2000)

2.2. Critical Review about Marketing of Honey Production

According to the Codex Alimentarius (Standards, codes of practice & guidelines for food products established by the FAO / WHO of UN in 1963), “Honey is the unfermented, natural sweet substance produced by honeybees from the nectar of blossoms or from secretions of living parts of plants or excretions of plant sucking insects on the living parts of plants, which honeybees collect, transform and combine with specific substances of their own, store and leave in the honeycomb to ripen and mature. Honey shall not have any objectionable flavor, aroma or

taint absorbed from foreign matter during its production, harvesting, processing and storage and shall not contain natural plant toxins in an amount that may constitute hazard to health.”

The contributions of beekeeping in poverty reduction, sustainable development and conservation of natural resources have been well recognized and emphasized by the government of Ethiopia and non-governmental organizations (NGOs). As the country is endowed with varied ecological zones and different flora, it has a huge potential for beekeeping. However, the roles of beekeeping as income generation or diversification for subsistence farmers and generating foreign exchange earnings have been very minimal. Based on the level of technological advancement three types of beehives are used for honey production in Ethiopia. These are traditional, intermediate, and modern hives. A total of about 4,601,806 hives exist in the country of which about 95.5 per cent are traditional, 4.3% transitional and 0.20 % modern hives. The traditional beekeeping accounts for more than 95 % of the honey and beeswax produced in the country.

In Ethiopia, honey has long tradition and cultural values, for instance as a gift in dowries during marriage, as an important ingredient for processing honey wine locally called Tejbrewery and beeswax is used to produce light candle particularly in the Orthodox churches (Beyene and David, 2007). In Ethiopia, beekeeping is an integral part of the life style of the farming communities, and except for a few extreme areas, it is a common practice in everyplace where humankind has settled. In addition, Ethiopia has probably the longest tradition of all the African counties in beeswax and honey marketing. The time is immemorial as to when and where marketing of honey and beeswax has been started in the country (Beyeneand David, 2007). The national average honey produced for the year 1997 to 2004 was estimated at 30 thousand metric tons, which accounted over 23 per cent of the total African production and about 2 per cent of world honey production (MoARD, 2005).

2.3. Honey production areas in Ethiopia and its uses

Based on their level of technological advancement, there are three types of beehives used for honey production in the country. These are traditional, intermediate (transitional) and frame hive (modern) beehives. The CSA census of 2001/02 indicates that a total of about 4,601,806 hives exist in the country out of which about 95.5% was traditional, 4.3% transitional and 0.20% frame hives. The traditional beekeeping accounts for more than 95% of the honey produced and nearly all the beeswax produced in the country. However, the intermediate hive is said to be the most appropriate for the resource poor as it requires low skill and low cost of production, but significantly higher yield than the traditional one. The average productivity of the three types of hives is indicated in Table 1. Information from the Ethiopian Quality Standard Authority indicated that, regardless of the type of hives, both honey and beeswax produced in Ethiopia do fit to the internationally required qualities if properly handled.

As stated by Ayalew and Gezahegn (2002), Ethiopia is the leading honey producer in Africa and one of the ten largest honey and beeswax producing countries in the world. Volume of production of crude honey and wax has been slightly increasing over the period of observation). The national average honey produced for the year 1997 to 2004 was estimated at 30 thousand, which accounted over 23% of the total African production and about 2% of World honey production (MoARD, 2005). 3.0 thousand tons per annum placing the country among the four largest world beeswax producers.

Table 1: Production of honey and beeswax (metric tons) in Africa and selected African Countries in 2005

Country	Honey	Beeswax
Angola	23,000	2,000
Burundi	240	45
Cameroon	3,000	287
Central A.R	13,000	690
Chad	960	0
Ethiopia	39,000	4,300
Guinea	600	0
Guinea-Bissau	65	100
Kenya	21,000	2,400
Madagascar	39	0

Source: FAO, 2005

African production represents only 9.8% of the World production of honey and 23.5% of Beeswax. Exports of honey from sub Saharan Africa countries in 2004 were 184 metric tones Valued at US\$ 469,000 whereas in the same year there were imports of 874MT valued at US\$ 2,708,000. Exports of beeswax from sub-Sahara Africa in 2004 were 721MT valued at US\$ 465,000 but in the same year there imports of 255 MT valued at US\$ 224,000 (FAO, 2005). These amounts of exports and imports are minimal in World trade figures. They show, however, that African honey is sold on the World market price of US\$ 2,549 per MT whereas imports are valued at US\$ 3,098 per MT and beeswax is sold at US\$ 645 per MT and bought at US\$ 878 per MT. There thus seem to be considerable opportunities not only for increasing the quantity of African’s major hive products but

also for improving their quality.

Honey varies in taste and color according to the plants upon which the bees forage for nectar and pollen. Several products result from beekeeping and honey is the most important one. Honey has four main applications: honey for direct consumption, honey as an ingredient in products, industrial honey and honey as a raw material. Approximately 15% of all honey is processed into other products; an estimated 85% is used for direct consumption (CBI, 2009). As for indirect consumption, honey is also processed into many other products varying from honey wines, sweets, cosmetics, candles, cereals, tobacco, pharmaceuticals and bakery products. Only a small portion of the honey produced in Ethiopia is marketed, and the remaining 80% goes into the production of local *Tej*, a honey wine widely consumed in Ethiopia (Hartman, 2004). With average honey production estimated to be around 26000 tons per year, Ethiopia is regarded as a potential beekeeping giant (Hussein 2000). With this production level Ethiopia improved its position from the tenth largest honey producer in the world (Hussein, 2000) to ninth largest world producer of honey and in Africa, Ethiopia is the largest producer of honey and beeswax (FAO, 2005). Only a small portion of the honey produced is marketed, and the remaining 80% goes into the production of local *Tej*, a honey wine widely consumed in Ethiopia (Hartman, 2004).

Today Ethiopia owns, with around 10 million of bee colonies, the largest bee population in Africa. In Ethiopia, honey is produced in different land use types (commercial beekeeping, home gardens, primary forest, secondary forest and grazing land but, the main way of income-generation for rural population in Ethiopia is collections from forests in a traditional way. The small-scale farmers in forest fringes are using the system of collection from primary forests because of the low management effort, low investment (only a knife is used) and the high efficiency. however, some major disadvantages of this system can be mentioned:- high time demand for manufacturing the beehives (only natural 10 materials used), low yields (c.a. 5kg honey/ colony), no reproduction of the bee colonies, destruction of the bee population during honey removal, high competition (more beehives in the forest, land-use rights) and the dangerous nature of the job (Hartman, 2004).

MAP SHOWING HONEY AND BEESWAX COLLECTION WOREDAS BY EHBPEA

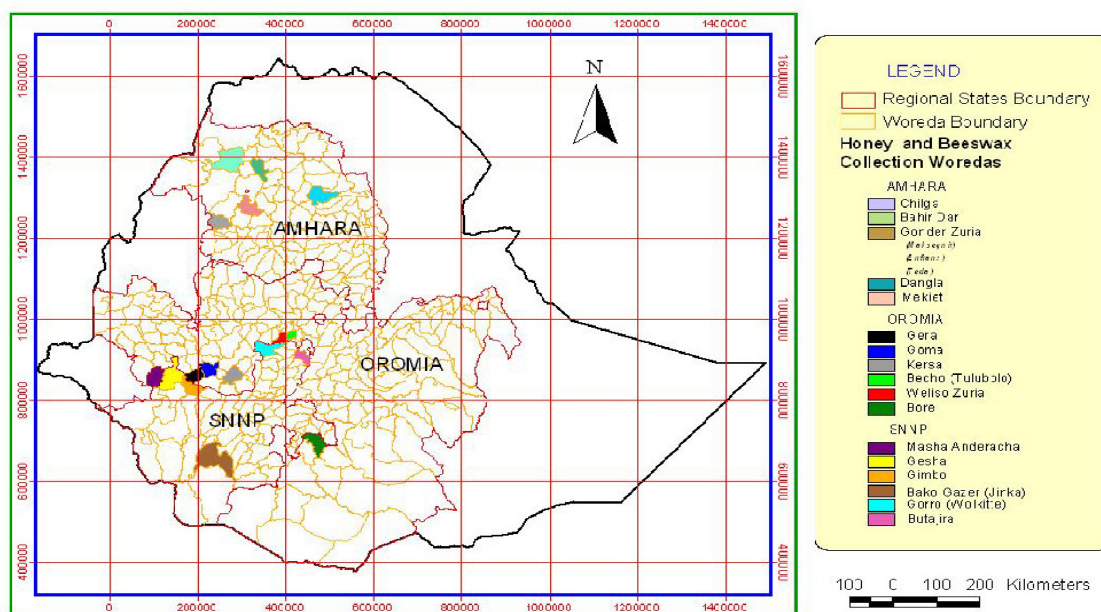


Figure 1. Major Honey and Beeswax Production Areas in Ethiopia
 Source: Holota Bee Research Centre, 2003

2.4. The Importance of Honey Production to Farmers in Ethiopia

Honey has multiple market opportunities, unlike many other commodities. If an export market collapses, people still have some chance to sell or use the honey within towns and villages at home, or create secondary products. Producers largely sell their honey in the nearest local market (usually at a distance of 5 to 10km away from their residential areas) except farmers in Dangla who sell to the Marketing Cooperative. On average, sample farmers in Dangla sell 95% and those in Bore 85% of their total harvested honey. Therefore, honey is more commercialized in Dangla than in Bore. Nearly all sample farmers from Dangla and 52% from Bore sold over 85% of their honey immediately after harvest. The remaining 48% of the Bore sample farmers wait for price rise (on average for 3 to 5 months(Belie ,2009)Beekeepers sell the largest proportion of their honey during harvest at

low price mainly to meet their demand for cash to pay taxes, debts and other social obligations. In addition, beehives and bee colonies were well marketed in Dangla areas (but not so in Bore).

Nevertheless, the market for honey is generally not well developed, mainly due to a limited number of buyers relative to the number of producers (suppliers), poor market infrastructure and information. Because the buyers were few, prices of honey were largely determined by them. The local collectors (traders) in both locations also lacked basic business concepts (do not have sense of competition, poor in client handling, weak in information gathering, etc.). They also lacked facilities like proper container and processing materials (Belie, 2009)

Economic importance

Beekeeping is a promising non-farm activity for the rural households in Ethiopia. It contributes to the incomes of households and the economy of the nation. The direct contribution of beekeeping includes the value of the outputs produced such as honey, bee wax, queen and bee colonies, and other products such as pollen, royal jelly, bee venom, and Propolis in cosmetics and medicine (Gezahegn, 2001). It also provides an employment opportunity in the sector. The exact number of people engaged in the honey sub-sector in Ethiopia is not well known. However, it is estimated that around one million farm households are involved in beekeeping business using the traditional, intermediate and modern hives (Gidey and Mekonen, 2010). It could also be observed that a large number of people (intermediaries and traders) participate in honey collection and retailing (at village, district and zonal levels), and thousands of households are engaged in *Tej*-making in almost all urban areas, also hundreds of processors are emerging and exporters are also flourishing (Beyene and David, 2007).

Table 2: Productivity of Honey in Ethiopia

Hive Type	Yield (Kg/hive)			
	Farmers Yield	National Average Yield	Research Centre Yield	Potential Yield
Traditional	3-5	5	no	10
Transitional (Intermediate)	10-15	13	15-20	40
Modern (Framed hive)	15-20	15-20	20-30	60

Source: Holota Bee Research Centre, 2003

Honey and beeswax also play a big role in the cultural and religious life of the people of Ethiopia (Gidey and Mekonen, 2010). The basic economic pillars of the current land use system are the use of non – timber forest products for cash, especially beekeeping for subsistence in southwest Ethiopia (Hartmann, 2004). On average, households in southwest Ethiopia own 20-30 beehives (Adilo et al, 2005). Although the yields vary with the rainfall, in good years one hive can produce about 5-6 kg of honey, and household production from honey can reach 100-200 kg per year and fetches price per kg of 8-10 Birr (Adilo et al., 2005). Thus the potential annual income from honey can reach 800-2000 Birr (Adilo et al., 2005). According to Pol (2001), Ethiopians annual honey production in 2001 was 24,000 MT, equal to about one third of the total honey production in Africa (Pol, 2001), and it rose to 43,000 tons in 2007 (MARD, 2008). Of the total domestic production, around 20% is used as table honey in rural areas and only a small portion of the product is marketed (Adilo et al., 2005). An average of 3.05 tons per annum has been exported to neighboring countries over the years 1984- 1994 (MTI, 1995). On average between 1998 and 2003, 307.22 tons of honey, worth 88,679 Birr has been exported yearly

Table 3: Trends in National Production of Honey and Beeswax ('000 tons)

Years	Hive Products	
	Honey	Beeswax
1997	28.0	2.80
1998	28.5	2.85
1999	28.5	2.85
2000	29.0	2.90
2001	30.7	2.90
2002	31.0	3.10
2003	32.5	3.20
2004	32.5	3.20
National Average/year	30.1	3.0

Source: MoARD Report, 2005

Employment opportunity

The exact number of people engaged in the honey sub-sector in Ethiopia is not well known. However, it is estimated that around one million farm households are involved in beekeeping business using the traditional,

intermediate and modern hives. It could also be observed that a large number of people (intermediaries and traders) participate in honey collection and retailing (at village, district and zonal levels). Thousands of households are engaged in Tej-making in almost all urban areas, hundreds of processors are emerging and exporters are also flourishing (Beyene and David, 2007).

Income Generation

Beekeeping is believed to play a significant role and one of the possible options to the smallholder farmers in order to sustain their livelihood. It does not only serve as a source of additional income, but also quite a number of people entirely depend on beekeeping and honey selling for their livelihoods. Nuru (2002) indicated that honeybee and their products provide direct cash income for beekeepers. In areas where honey production is not attractive, beekeepers can sell their colonies in the market. In this regard honeybees serve as 'near cash' capital which generate attractive money.

Input (raw material)

As for indirect consumption, honey is also processed into many other products varying from honey wines, sweets, cosmetics, candles, cereals, tobacco, pharmaceuticals and bakery products.

As an export crop

As standards of living rise, honey consumption increases. Most industrialized countries import honey to meet demand. This requirement can provide developing countries with a useful source of foreign exchange from honey exports. All developing countries can export honey if production is in excess of local requirements. Because beekeeping does not use land, production of honey for export need not conflict with growing crops for local consumption.

As a cash crop

Fresh local honey is always more highly valued than imported honey. Many beekeepers sell their product directly to consumers. Honey is often used as a barter commodity in villages, especially in remote areas or areas isolated by war or sanctions. Honey is a stable commodity with a long shelf life. If harvested carefully, it will remain wholesome for many years.

Increasing a gender inclusive activity

Honey Production is increasingly a gender inclusive activity; also because low-technology bee keeping can be done near the homestead and modern methods make the production easier and safer. Even though men are mostly involved in beekeeping activities, women commonly use the products of beekeeping in making secondary products. For example, the important industry of 'tej' (honey wine) making in Ethiopia is run by women.

Traditional medicine

In addition, the nutritional and medicinal benefits of honey and other bee products may also lead to an increase in their demand in association with the epidemic. Honey, as a source of energy, has been advocated in the diets of people (FAO, 2002). Bee products are also widely used in Africa's traditional healthcare system. Roughly 80 percent of Africans rely on traditional medicine to some extent. Though traditional medicines definitely cannot replace the antiretroviral that are urgently needed in the region; traditional medicines do however, effectively treat opportunistic infections (e.g. *candidacies*; *herpes simplex*, and *zoster*) and symptoms (i.e. appetite loss, nausea, fever, diarrhea and coughing). These medicines are affordable and easily accessible. Honey has antiseptic properties and is used as a medium for the topical and internal delivery of herbal remedies used in treating illnesses such as those described above.

Cultural values

In addition to their financial value, honey and beeswax have many cultural values and form part of ceremonies for birth, marriages, funerals, Christmas and other religious celebrations in many societies. Beekeepers are generally respected for their craft. All of these aspects are Livelihood Outcomes from the activity of beekeeping. While some may be difficult or impossible to quantify, they are real outcomes that strengthen people's livelihoods and therefore should be acknowledged by a beekeeping intervention.

2.5. Opportunities and Constraints of Honey Product in Ethiopia

To identify major constraints of the honey sub-sector, a review of literatures and thorough discussions were made with key information such as representatives of concerned government and non-government institutions, collectors, wholesalers, retailers, processors and exporters, and professionals. Accordingly, some of the principal constraints and problems are highlighted below.

Low quality of honey products

Because of adequate knowledge at all levels (particularly farmers and intermediaries) the natural quality of honey and the sanitation is not maintained in the process of harvesting, storing and transporting. Excessive use of smoking during harvesting and adulteration are underlined as serious causes of the problem. Consequently, most of the honey currently produced and marketed is poor quality unsuited for processing and export.

Lack of organized marketing channel

At present, there is no strong and formally or informally organized market channel for honey products in the

country. This resulted in lack of grades and standards, in poor quality control, inadequate and inconsistent supply to the wholesalers and processors making a critical problem to the processors and exporters. The present low involvement of private sectors in processing and export of honey products could be partly attributed to these problems.

Inadequate government support in promoting apiculture development

This could be manifested in absence of strong and adequate research and training institutions, policies and strategies on the sub-sector. In addition, since decades, there has been only one research and training center in the country (the Holota Beekeeping Research Center) responsible to generate technologies and transfer to the users. Regional states have just started to incorporate beekeeping research in the crop and livestock research programs. There also appeared poor extension service in the sub-sector; the Ministry of Agriculture paid attention exclusively to food crop production.

Lack of skilled manpower and training institutions

Beekeeping is one of the disciplines which suffered and is being suffering from the lack of skilled manpower, appropriately skilled trainers, training materials and training institutions in the country. Majority of the beekeepers lack the knowledge of appropriate methods of beekeeping. In the country there is no concerned college or university which can provide diploma or certificate level course in beekeeping. Holetta Bee Research Center is the only institute that provides basic trainings to farmers, technicians, and experts. However, this doesn't meet the ever increasing demand of trained manpower in the region.

Lack of access to world market

Despite the fact that globalization or market integration is widely advocated in this era, many stakeholders interested to involve in export of honey and honey products are suffering from lack of certification to be accredited to fit into the international quality 15 standards. There is a clear restriction by European Union of imports of honey products from poor countries like Ethiopia.

3. Conclusion and Recommendation

3.1. Conclusion

Beekeeping is a promising non-farm farm activity for the rural households. It directly and indirectly contributes to the incomes of households and the economy of the nation. The direct contribution of beekeeping includes the value of the outputs produced such as honey, beeswax, queen and bee colonies, and other products such as pollen, royal jelly, bee venom, and Propulsions cosmetics and medicine. Beekeeping in Ethiopia is still very traditional. It is carried out dominantly in forest/bushes, and only few in home gardens in all parts of the country.

Honey is the unfermented, natural sweet substance produced by honeybees from the nectar of blossoms or from secretions of living parts of plants or excretions of plant sucking insects on the living parts of plants. Honey production and beekeeping is one among the oldest ways of subsistence in Ethiopia which stretches back into the millennia of the country's early history. Honey production and beekeeping is one among the oldest ways of subsistence in Ethiopia which stretches back into the millennia of the country's early history.

Honey has multiple market opportunities, unlike many other commodities. If an export market collapses, people still have some chance to sell or use the honey within towns and villages at home, or create secondary products. Honey production contributes to the incomes of households and the economy of the nation, economic importance include ,earn foreign currency, employment opportunity ,income generation , row materials, poverty alleviation, as an export crop ,as cash crop honey production also importance for increasing a gender inclusive activity ,as traditional medicine and as cultural values.

Therefore, an understanding of honey production in Ethiopia is very important for the development of the country in general and increases the cultural values, gender inclusive activities, the diet and the industry input.

3.2. Recommendation

- ❖ Despite all these problems and constraints, there are still a lot of opportunities to gain from this sub sector in the future.
- ❖ Although there is continues problem of deforestation, there are still immense resource base (if properly conserved and managed) that can provide huge opportunities for apiculture.
- ❖ The Ethiopian government has recognized the role of the apiculture and has put in its development agenda, mainly as a non-farm income generating activities, to increase income of the rural and urban households and to promote the export sector. There is an encouraging support from the government and NGOs to develop micro and small scale enterprises in apiculture. It should be also understood that the road infrastructure and the telecommunications sector are increasingly improving (though a lot still remains). This will give a possibility of reducing transport cost and improving the market efficiency.
- ❖ The government policy also highly encourages private investments in the processing and export of such products. Coupled with the government support, the increasing intervention of NGOs (like SOS-Sahel) in the production, processing and marketing (including exports of honey products) and the existence of

several concerned associations are expected to create a breakthrough in the production.

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