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**The Constraints of Honey Production
in Beekeeping Cooperatives**

Case Study of KilliteAwlaloWoreda

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Statement of the Author

I, Biruk Deribe, hereby declared that this thesis entitled as **“The Constraints of Honey Production in Beekeeping Cooperatives, Case Study of KilliteAwlaloWoreda”** submitted by me in partial fulfillment of the requirements for the award of the Master of Arts degree in Development Studies, is my original work and it has not been presented for the award of any other degree, diploma, fellowship or other similar titles of any other universities or institution and all the sources of materials used for the thesis have been dully acknowledged.

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Certification

This is to certify that this thesis entitled “**The Constraints of Honey Production in Beekeeping Cooperatives (survey of KilliteAwlaloWoreda)**” submitted in partial fulfillment of the requirements for the award of Master of Arts degree in Development Studies through the department of management, college of Business and Economics, Mekelle University, is an authentic work carried out by him under our guidance. The issue presented in this thesis has not been submitted earlier for award of any degree or diploma to the best of our knowledge and belief.

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II Acronyms and Abbreviations

| | |
|-----------------|--|
| ADP | Area Development Program |
| AGM | Annual General Meeting |
| BH | Bee Hive |
| BK | Beekeeping |
| BKCs | Beekeeping Cooperatives |
| BfD | Bee for Development |
| BoARD | Bureau of Agriculture and Rural Development |
| ARSD | Apiculture Research Strategy Document |
| CSA | Central Statistics Agency |
| FEDO | Finance and Economic Development |
| FY | Fiscal Year |
| GA | General Assembly |
| GM | General Meeting |
| HELVETAS | A Swiss Interco operation NGO program focus on development |
| HHs | Households |
| HVCA | Honey Value Chain Analysis |
| ICA | International Cooperative Alliance |
| IG | Income Generation |
| IPMS | Improving Productivity and Market Success of Ethiopian Farmers |
| KAW | Killite Awlalo Woreda |
| Kg | Kilogram |
| MBH | Modern Bee Hive |
| MC | Management Committee |
| MOFED | Ministry of Finance and Economic Development |
| MPCs | Multi Purpose Cooperative |
| MoARD | Ministry of Agriculture and Rural Development |
| MU | Mekelle University |
| NGOs | Non Governmental Organizations |
| OoARD | Office of Agriculture and Rural Development |
| PAs | Peasant Associations |
| REST | Relief Society of Tigray |
| SoSSahil | A registered NGO by Ethiopian Ministry of Justice No. 1986 |
| TAMPA | Tigray Agricultural Marketing Promotion Agency |
| TBH | Traditional Bee Hive |
| USD | United States Dollar |
| WVA | World Vision Australia |
| WVE | World Vision Ethiopia |

Glossary

Woreda: the lower administrative unit next to zone in Ethiopia; equivalent to a district.

Kebelle: a fifth administrative unit down from the federal level; also referred to as a community or a peasant association.

Kiremt: the rainy season of Ethiopia from June to September

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Abstract

Beekeeping is a traditionally well-established household activity in almost all parts of Ethiopia. However, the benefit from the sub sector is not satisfactory compared to the existing potential. The objective of this study is conducted to identify the constraints of honey production in beekeeping cooperatives in Tigray Region, Killite Awlalo Woreda. Specifically, the study examined the social, environmental, and administrative constraints of these BKC's. The research design was survey type which incorporates 160 participants including 80 members and 80 nonmembers. Data collected for this study was processed using SPSS software and analyzed using descriptive statistics. As a result the Beekeeping cooperatives internal constraints which were identified by this study includes; lack of transparency, poor members participation controlling mechanism, limited capacity of BoD and lack of working capital. In addition, the study identified those constraints such as; honey bee pest attack, drought problems, distant location of apiary sites and increased price of beekeeping inputs as an external problems. Even if the BCKs do have a great potential to increase the honey productivity, due to the existence of these constraints, they didn't bring significant progress yet in the study area. To minimize the impact of their internal constraints, BKC's are expected to enhance transparency and accountability. In addition BKC's are expected to strengthen their members' equivalent participation together with its controlling mechanism to enhance the number of members which actually contributes for the increased honey productivity. As lack of working capital is also one of the problems of BKC's, they are expected to effectively mobilize members for additional share capital contribution. Due to distant location of apiary sites of BKCS at distant closure areas, their beehives are easily exposed for honey bee pests attack. Therefore, the day to day bee colony management work is expected from members to prevent the honey product decreased due to pest attack. Finally, to develop better bargaining power in the market, BKC's are expected to jointly collect, process and pack their better quality honey product. If integrated corrective actions are taken on these identified constraints of BKC's by members and stake holders, BKC's will play significant role on honey production and productivity in the study area.

Key Words: *Beekeeping Cooperatives (BKC's), constraints, honey production*

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Ethiopia is the first honey-producing country in Africa and the fourth bees wax producing country in the world, after China, Mexico and Turkey (Kebede, Subremani and Gebrekidan, 2011). In line with this, there is 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 (Gidey and Mekonen, 2010). However, the benefit from the sub sector to the nation as well as to the farmers, processors and exporters is not satisfactory (Beyene and David, 2007).

The direct contribution of beekeeping includes the value of the outputs produced such as honey, bee wax, queen, bee colonies, and other products such as pollen and royal jelly in cosmetics and medicine industry (Gezahegn, 2001). In Ethiopia, it is estimated that around one million farm households are involved in beekeeping business using the traditional, intermediate and modern hives. (Beyene and David, 2007)

A total of about 4,601,806 hives exist in the country of which about 95.5 per cent are traditional, 4.3 per cent transitional and 0.20 percent modern hives (Beyene and 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 two per cent of world honey production (MoARD, 2005). Beekeeping cooperatives play a significant role by enabling the beekeepers to jointly produce a high-quality organic honey (Claudia, 2009). In Ethiopia, some donors and NGOs work closely with government at the regional or local levels to enhance the establishment and promotion of beekeeping cooperatives. The tasks accomplished by SOS/Sahel Ethiopia in promoting beekeeping cooperatives on honey production and marketing are one of the good practices (Bezabih, 2009).

Currently, honey production is practiced in the region by individual small holders, cooperative societies, women's groups, youth associations and Churches with only limited funds (Meaza, 2010). Even if, there are promising opportunities exists to organize honey producers into beekeeping cooperatives and possibly unions, currently, the level of organization amongst beekeepers in the Tigray region is found on its early starting stage (Chris, 2011). Accordingly, there is a need for better beekeeping cooperatives organization in the honey production, collection and wholesale stages of the value chain including the establishment of strategically located production and collection centers.

Even if the beekeepers in Tigray Region are producing different type of honey, the amount of production by individual beekeepers is not satisfying the increasing demand of domestic and foreign customers. One major problem identified is low production and productivity of honey produced by individual small holder beekeepers (Chris, 2011). Organizing individual honey producers under beekeeping cooperative can create an opportunity to capacitate the members through training on better honey production techniques which improves the quality and quantity of the production (WV Australia, 2010). All the Woredas of Tigray produces honey of various types and colors from white to red/dark. This potential offers wider market range to producers in Tigray (TAMPA, 2007). KilliteAwlaloWoreda is also one of the potential Woredas of Tigray Region for beekeeping development. There are 16,803 Modern Bee Hives in this Woreda and beekeeping is among the major activities of households both for income generation and consumption (KAW, FEDO 2011).

The formation of beekeeping cooperatives and unions for the honey producers may play a significant role to enable them utilize improved honey production inputs and creates a better bargaining power during selling of their products and also provide them a benefit from bulk purchase of inputs (Chris, 2011). Accordingly, there are 27 beekeeping cooperatives in Killite AwlaloWoreda that are working to improve the production capacity of their members and to create a better bargaining power during selling of their products.

1.2 Statement of the Problem

Beekeeping is a traditionally well-established household activity in almost all parts of the country. But, the benefit from the sub sector to the nation as well as to the beekeepers, traders, processors and exporter is not satisfactory (Beyene and David, 2007). Due existence of many constraints, the honey sub sector production and productivity is low and it is now contributing much lower than its potential to the regional and national economy. Even if the intervention of the government to minimize the sub sector constraints is taken as a good practice, the beekeepers are not still producing the amount what they are supposed to produce (Gidey and Mekonen, 2010).

In most cases, beekeeping has remained traditional and never rewarding. Because of this, the yield of honey and other hive products have been constantly the same over the past years. It did not exceed 45 kg per modern hive per year and not more than 7 kg from traditional hive per year (REST, 2004). Other major constraint facing the sub sector is a weak market which led to lower contribution of honey sub sector (much lower than its potential) to the regional and national economy. The traditional beehives are not comfortable for sanitation and high level of production (Gidey and Mekonen, 2010).

Although thousands of tons of honey were produced every year, the products obtained from the sub sector were still low as compared to the potential of the country (Gidey and Abebe, FY'2012). To increase the yield and to improve the quality of honeybee resources in the region, the Tigray Government introduced modern bee hives and Kenya top-bar beehives and accessories. However, because this equipment is relatively expensive to buy, most smallholders could not increase their production as had been expected (Hailu et al, 2007). In addition, small scale producers are found in a scattered way and their capacity is also very low to produce at large volumes to satisfy the demand of honey processing factories of the region like 'Komel' at Mekelle and 'Dima' at Addigrat (WVA & WVE, 2011).

There are 27 BKC's which are organized in the study area, but their contribution in honey production and productivity of the Woreda is not yet separately studied. Even if government and NGO stake holders are supporting these beekeeping cooperatives by input and extension services, their production and productivity is still not as much as expected compared to their potential. Those main constraints, which are confronting BKC's from becoming being productive within the study area, are not separately justified by published studies yet. Accordingly, there is a gap of formally conducted and published studies which specifically shows the main causes of these constraints which are currently confronting BKC's from becoming productive. Therefore this study is done to specifically identify the constraints of honey production within beekeeping cooperatives in Killite Awlalo Woreda.

1.3 Research Questions

The research is aimed at assessing the constraints of honey production in Beekeeping Cooperatives, by taking the following research questions:

1. What are the perceptions of members on the performance of honey production activity of their bee keeping cooperative?
2. What are the major problems of honey production within beekeeping cooperatives?
3. What are the impacts of the major constraints of honey production on the productivity status of BKC's?
4. What kinds of actions are expected from BKC's to minimize the impact of honey production constraints?

1.4 Research Objectives

1.4.1 General Objective

The general objective of this study is to assess the constraints of honey production performance of Beekeeping Cooperatives, in Killite Awlalo Woreda.

1.4.2 Specific Objectives

Whereas, the specific objectives are:

- To assess the perception of honey producers towards their beekeeping cooperatives in the study area.
- To identify the specific constraints that confronts beekeeping cooperatives honey production activity
- To explore the impact of the identified constraints of BKC's on honey production and productivity
- To give important recommendations for the improvement of honey production performance of beekeeping cooperatives

1.5 Significance of the Study

Policy makers, non-governmental organizations and donor agencies in Ethiopia have been trying for decades how to design and implement beekeeping intervention programs. Organizing households under beekeeping cooperatives is one of these interventions. However, different constraints observed in the performance of beekeeping cooperatives honey production activity. Accordingly, this study is conducted to assess those constraints which confronts beekeeping cooperatives honey production and productivity in Killite Awlalo Woreda.

Accordingly, the findings of this study will initiate the concerned bodies like government officials, non-governmental organizations, development agents and farmers to give due attention for the solutions of the existing constraints related with the honey

productivity of beekeeping cooperatives. In addition, the results of the study will be significant for policy makers and implementers in providing basic information about those major constraints of beekeeping cooperatives that challenges their honey production and productivity.

1.6 Definition of Key Terminologies

Cooperatives- are autonomous and self-help organizations which are formed by individuals on voluntary basis who have similar needs for creating savings and mutual assistance among themselves by pooling resources, knowledge and property. According to the International Cooperative Alliance (ICA) 1995; *“a cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise.”*

Beekeeping Cooperatives-are cooperatives which are organized by beekeepers on voluntary basis in their residential area to improve their honey production quality and quantity ;in line with creating market linkage with better price giver honey purchasers and processors to make members benefited from their product.

Honey Production Inputs- can be categorized into two types: consumable and capital inputs. The former include MBH, Honey Bee Forage, insecticides, pesticides, wax, MBH accessories. On the other hand, capital inputs include Hygroscopic Honey extractor, Honey processing machine Honey Production inputs are used to be available for market to improve production and productivity of the apicultural sector.

1.7 Scope of the Study

This study is conducted in Northern part of Ethiopia, Tigray regional State, and Eastern Tigray Zone specifically at KilliteAwlaloWoreda. The study which is conducted on Killite AwlaloWoreda may not represent the whole beekeeping cooperatives activities of the region specifically and the country generally.

This study focuses only on the internal and external social, managerial and administrative constraints of beekeeping cooperatives. The biological constraints of honey production are not studied by this research work due to the focus of the objective of the study on the physical, social and administrative constraints of beekeeping cooperatives honey production. In addition, as the majority of bee keeping cooperatives use only modern bee hive for the process of their honey production, this study focuses on the honey production and related data of modern beehive for both members and nonmember respondents.

Generally, this study was done focusing on the honey production related data obtained from both beekeeping cooperative members and non-members in FY2013. This due to the absence of organized honey production related data of the years before FY 2013 by honey producers in the study area as it is observed during preliminary assessment.

1.8 Limitation of the Study

Since organizing beekeeping cooperatives is a recent phenomenon, there was shortage of published secondary data, particularly in the study area context, which obligated this study to emphasize on primary data. Even though, the result of this study represents the conditions of honey production constraints of beekeeping cooperatives found in Killite Awlalo Woreda, the results cannot be generalized to the whole part of Tigray Region.

1.9 Organization of the Paper

This paper is organized in to five chapters. Chapter one describes the background of the study, statement of the problem, objectives of the study, research questions, significance of the study and Scope and limitation of the study. The second chapter discusses theoretical literature, empirical evidence. Third chapter clearly shows the methodology of the study including data type and data source, method of data collection and instrumentation, research design and sampling procedure, data processing and method of data analysis. Fourth chapter give brief explanation on the result of data analysis by the study. The conclusion and the recommendation of the study are explained on the final fifth chapter.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1 Beekeeping Overview

Bees belong to the order of insects called Hymenoptera, which also includes ants, wasps, and hornets. There are over 20,000 known species of bees, but only 5 percent are social bees. Often, social bees occur in large colonies and can be a possible stinging threat. The most common social bees are honey bees (Reed, 2004). Beekeeping activities are possible in arid areas and places where crops or other enterprises have failed; the roots of nectar-bearing trees may still be able to reach the water table far below the surface. This makes beekeeping feasible in, which is important for people who need to restore their livelihoods or create new ones (Brad, 2003).

2.2 African Beekeeping Practices

Beekeeping in Africa is mostly carried out using traditional methods. In these methods, beehives are made out of logs, bark, reeds, gourds and pots among other materials. The enterprise is quite adaptable to various environments and circumstances although farmers are unable to access better markets due to the poor quality and low quantity of honey produced. Beekeeping is a source of food (e.g. honey, pollen and brood), raw materials for various industries (e.g. beeswax candles, lubricants), medicine (honey, propolis, beeswax, bee venom) and provides income for beekeepers (James .A, 2007). Most of African honey is harvested by smallholder farmers, and the selling of bee products is one of the feasible practices which contribute to get out of poverty (Bee for development, 2006).

A study from Tanzania shows beekeeping activities involved both genders at different stages of honey and beeswax processing and marketing. Traditionally, men are responsible for honey harvesting which is normally carried out at night because they are

scared of honey bees during the day (Lalika, 2008). Beekeeping can add to the livelihoods of many different sectors within a society including village and urban traders, carpenters who make hives and stands, tailors who make veils, clothing and gloves and those who make and sell tools and containers (Brad, 2003). East African nations export tremendous quantities of wax. Ethiopia and Tanzania produce about 2.5% and 1.15% of total world honey production, respectively. Keeping bees in beehives as practiced in Egypt, Kenya, Tanzania, is not well known in other part of Africa (Hussien, 2000).

2.3 Beekeeping in Ethiopia

Ethiopia has a huge natural resource base for honey production (Alem, 2011). Beekeeping is traditionally a well-established household activity in almost all parts of the country. But the benefit from the sector to the nation and beekeepers is not satisfactory (Beyene and David, 2007). About 4,601,806 hives exist in Ethiopia out of which about 95.5% is traditional, 4.3% transitional and 0.20% frame hives (Beyene and Davide, 2007). The traditional beekeeping accounts for more than 95% of the honey produced and nearly all the beeswax produced in the country (Alem and Betelhem, 2011).

There are about 10 million bee colonies and over 800 identified honey-source plants in Ethiopia. The annual honey and beeswax production are estimated at 24,700 tons and 3,200 tons respectively. More than 90% of the honey produced is used in the country for domestic consumption. Ethiopia is the first honey-producing country in Africa and the fourth bees wax producing country in the world, after China, Mexico and Turkey (Gebrekidan, Kebede and Subramanian 2011). According to Gebrekidan, Kebede and Subramanian (2011) in Ethiopia under modern management, the traditional yield of 5 kg of honey in one harvesting season can be improved from 15 to 20 kg. The major honey and beeswax producing regions in Ethiopia are the Southern Nations, Nationalities, and Peoples Region, Oromia Region, and Tigray Region. The amount of

honey produced in the Tigray Region is almost 15% of the global production of Ethiopian honey.

Ethiopia has 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 (Beyene and David, 2007). People are accustomed with bees and with their products. About two third of the honey goes into the popular traditional beer called 'tej'. Also in the cultural and religious life honey and beeswax play a prominent role. So the internal market is guaranteed while plenty of opportunities for export remain.

In fact, Ethiopia is a potential beekeeping giant. A thriving apiculture could significantly contribute to the well-being of its people. Apiculture may provide new hope for the poorest landless people and furthermore contribute to the empowerment of women-farmers. The Ethiopian authorities as well as donor organizations should appreciate the endowment of the Ethiopian highlands for beekeeping (Hussein 2001).

Beekeeping as a business is a recent development in Ethiopia. Presently, honey is highly commercialized and its market surplus accounts for over 90 per cent of the total harvest. The large portion (70 per cent) of the marketed honey goes to the production of Tej (beverage) and only around 30 percent is used as a table honey. Moreover, the volume of export in both honey and beeswax products has notably declined since the last decade. This is largely attributed to the deterioration in quality of the products, EU (European Union) restriction and increasing demand in the domestic market (Beyene and David, 2007).

In Ethiopia, beekeeping is a promising non-farm activity for the rural households. 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 (ARSD, 2000 and 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.

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). Honey and beeswax also play a big role in the cultural and religious life of the people of Ethiopia. Another very important contribution of beekeeping is through plant pollination and conservation of the 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).

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 per cent transitional and 0.20 per cent modern hives. The traditional beekeeping accounts for more than 95 per cent 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 Tej brewery 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 every place where humankind has settled. In addition, Ethiopia has probably the longest tradition of all the African countries 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 (Beyene and 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). In addition production of beeswax was three thousand tons per annum placing the country among the four largest world beeswax producers.

In the country, it is estimated that around one million farmer households participate in beekeeping. Honey is produced mainly as a cash crop, which is serving as a source of additional cash income for hundreds of thousands of farmer beekeepers. Honey is mainly produced for market. More than 95 per cent of the total produced is marketed, while the remaining is used for home consumption. In addition, a significant number of people are engaged in production and trading of honey at different levels and selling of honey wines (local beverage Tej) which create job and self-employment opportunities for large number of citizens. Export of honey and bee wax is estimated to contribute an average of 1.6 million USD to the annual national export earnings (Ethiopian Customs Authority and Export Promotion Agency, 2006).

2.3.1 Major Constraints of Beekeeping in Ethiopia

In Ethiopia there is a massive untouched potential for promoting beekeeping; both for domestic use and for export purpose. Nevertheless, like any other livestock sector, this sub sector has been confronted by complicated constraints. The predominant production constraints in the beekeeping sub sector of the country would differ according to the

agro ecology of the areas where the activities is carried out (Edessa, 2002). The differences of production constraints also spread in seasonal climatic conditions, socio-economic conditions, traditional practices, and behaviors of the bees.

The major beekeeping sub sector constraints explained by Ayalew (2001) and Edessa (2002) explained in different categories. In this way the major institutional constraints of the sub sector includes; lack of skilled manpower and training institutions, absence of coordination between research, poor extension services, absence of policy in apiculture, unsatisfactory linkage of the extension service and honey producers, shortage of records and up-to- date information; and inadequate research institutions to address the problems. They additionally explained the major constraints related to the poor utilization of improved technologies includes; high price of improved beekeeping technologies, low level of technology used, indiscriminate application of agrochemicals. On the other side, major constraint of the sub sector includes; poor post-harvest management of beehive products and absence of market linkage between producers and processors.

The final biological, environmental and pest related constraints explained by (Ayalew, 2001) and (Edessa, 2002) includes; drought and deforestation of natural vegetation, unpleasant behaviors of bees (aggressiveness, swarming tendency, and absconding behaviors), honeybee disease, pest and predators. The extents of the impact of these constraints vary significantly with in the country according to the context of the agro ecological characteristics of Zones and Woredas. Therefore, it requires characterizing the constraints in their respective places to take an appropriate development measure.

The current price of modern bee hives and its accessories are not affordable to the low income group rural communities. Due to this they are forced to take these materials by credit from by the facilitation of OARD. According to Tsegga (2009) many beekeeping projects that were implemented by government and various organizations to boost honey and beeswax production were not successful mainly due to inadequate management and above all the beekeepers lack of awareness and interest.

The effort made by Tigray Region OARD and NGOs, to create alternative IG for the low income group farmers and landless HHs by organizing them under BKC's is good practice. However according to Tsegga (2009) many beekeeping projects that were implemented by government and various organizations to boost honey and beeswax production were not successful mainly due to inadequate management and above all the beekeepers lack of awareness and interest. These problems are also confronting those BKC's organized in Tigray region in general and Killite Awlalo Woreda in particular.

2.4 Beekeeping in Tigray Region

The amount of honey produced in the Tigray Region is almost 15% of the global production of Ethiopian honey (Gebrekidan and Kebede, 2012). In Tigray Region, northern Ethiopia, apiculture is a good source of income for smallholder farmers, as both honey and bee colonies are in high demand. To increase the yield and improve the quality of honeybee resources in the region, the Tigray Government introduced modern bee hive and Kenya top-bar beehives with their accessories. Some innovative beekeepers started to use alternative equipment and practices to manage their bee resources and to improve the quality and quantity of the products (Hailu, 2007).

Tigray Region accounts for about 4.5 percent of the total bee colonies in the country and 5.5% of the total honey production. The annual production of both honey and beeswax are low compared to other region of the country (Mehari, 2007). In 2009/10 one season honey production was 25,454 quintal and in 2008/09 annual production was 31,000 quintal.

Even though this good practices of beekeeping commodity the contribution is low due to degradation of natural resource and weak market linkages and extension services (Mehari, 2007). According to the 2007 data, there are 204,000 bee colonies in Tigray of which only 53,282 have modern beehives. The majority of the colonies with modern hives were recently established. (Taddele and Nejdan, 2008). Some innovative beekeepers started to use alternative equipment and practices to manage their bee resources and to improve the quality of the products (Hailu, 2007). The theme of this

investigation was to examine the technological constraints, honeybee pests and their management, and assess the production systems under practice.

It is estimated that within the Tigray region, approximately 70% of hives being used are of the traditional, low yielding variety, with the remaining 30% being modern hives - mainly Langstroth frame hives, with a small number of Top Bar hives. In Killite Awlalo and Tseada EmbaWoreda, it is estimated that the ratio of traditional to modern hives is much closer, with some estimating that it could be as much as 50% modern hives and 50% traditional hives (Chris, 2011). Given the difference in yield between traditional and modern hives, it is clear that in order to improve productivity in the region, a significant adoption of newer hives is necessary. As well as the low productivity of hives, the number of hives under production per person is relatively low (HVCA Report, 2011).

Clearly, not all beekeepers are able to devote all of their time or have the land too many hives, but there is considerable scope for beekeepers to increase the number of hives under management, provided the cost of hives and colonies is reduced. (Rowland's 2011) The government in Tigray has recognized the importance of modern hives and some years ago began distributing modern hives utilizing a soft credit mechanism. Through the Bureau of Agriculture, more than 70,000 hives were distributed from 2004 to 2008 (Emerging Market Groups and USAID, 2008). The Regional State of Tigray is running a powerful development program in beekeeping and its products so that poor crop production zones of the region are involved mainly in beekeeping interventions to maintain food security and to empowering higher production at first to satisfy family needs as well as to meet the requirements of both domestic and international market (Gebreegziabher ,Gebrehiwot and Etsay ,2013).

2.5 Beekeeping in the Cooperatives Sector

2.5.1 Basic Concepts and Definitions of Cooperatives

Cooperatives are the means of getting things done together. The inter-dependence and the mutual help among human beings have been the basis of social life (Krishna swami, 1992). Nevertheless, modern type of co-operative enterprise has its origins in the 19th century and has become one of the most important example forms of economic enterprise. The Rochdale society was the first modern form of cooperative which was established in England in 1844. It started with 28 members who purchased one share each of stock (Chukwu, 1990).

Cooperatives are autonomous and voluntary associations of peoples having similar needs and objectives united together for the purpose of meeting their social, economic and cultural aspects that would have been impossible to achieve on individual bases (Mathur, 1989; ICA, 1995; ILO, 2005).

2.5.2 Basic Principles of Cooperative

Cooperatives have their own features that make them unique from other business organization. As a result of this, the ICA, adopted seven fundamental cooperative principles to guide the activities of international cooperative movements. These principles are increasingly being used as a basis for legislation and codes of good practices. In some instances, they are being utilized as a basis for cooperatives performance indicators (Linda, 2006). The principles are also enshrined in the cooperative society's proclamation No.147/1998 of the FDRE. These include the following:

- Voluntary and Open Membership
- Democratic Member control
- Member Economic Participation
- Autonomy and Independence

- Education, Training and Information
- Cooperation among Cooperatives
- Concern for Community

2.5.3 Development of Cooperative in Ethiopia

In Ethiopia the Modern Cooperative movement has been started in 1960 during the reign of Emperor Haileselassie I. Before the stated years and still today people are organized through traditional Cooperatives. The movement of cooperative in Ethiopia can be categorized under four phases: Traditional cooperative, cooperative under Haileselassie Regime (1961-1974), DergRegime (1975-1991), and Current Government (Post 1991).

2.5.3.1 Traditional forms of Cooperation in Ethiopia

Ethiopia has several cultural cooperative associations that have been playing a major role in socio-economic lives of the people. These associations are autonomous membership organizations that differ from one area to another area according to the context of culture and economic activities of the area. The traditional self-help groups may be classified into two main categories. These are: work groups whose members help each other in rotation or jointly carry out farming activities like (Jigie, Wonfel) and rotating saving and credit type association whose members make regular contributions to a revolving loan fund 'Iquib' (Tirfe, 1995; Yigremew, 2000; FCC, 2004).

Nevertheless, the potential of these associations was and is not fully utilized mainly as a result of the absence of supportive policy environment and the lack of adequate attention towards the role of the institutions on the part of the government and other development practitioners. Consequently, these cooperative institutions become victims of neglect, underutilization and performance (Kebebew, 1986; Tirfe, 1995; Yigremew; 2000; FCC, 2004).

2.5.3.2 Imperial Regime (1960- 1975)

The cooperatives was used by the Feudal Regime as tools for the mobilization of rural resources in Ethiopia for the first time in 1960, Decree 44/1960 and proclamation 241/1966 provided the legal ground for the development of cooperatives in Ethiopia in that period (Alemayehu, 2002). The cooperatives that were anticipated to be organized in accordance with the provision of the decree were in general to have, as their principal purpose and objective, the promotion of the economic interest of the country and of their members. According to (Alemayehu, 2002), five types of cooperatives were established through proclamation 241/1966. Multi-purpose, thrift and credit, consumers, artisans and farm workers cooperative societies were established and 700 peoples enrolled as a member of these societies and contributed about birr 25,000 towards purchase of share. As Kebebew (1986) stated, such modern form of cooperatives brought some changes on the productivity of the members.

But, the overall performance of the cooperatives was less than satisfactory compared to the expectations and intended objectives. Such undesirable conditions of the cooperatives to different limiting factors which include: prejudicial to poor peasants due to the discriminatory land tenure systems, inadequate supply of trained manpower, lack of access to marketing faculties, lack of membership training and education, excessive government intervention (Kebebew, 1986) and (FCC, 2004). Generally, due to these and other related problems had in one and another way contributed to the overall performance of cooperatives that below expectations during the imperial regime.

2.4.3.3 Derg Regime (1975-1991)

The development and establishment of legal ground for agricultural cooperatives was first provided by the proclamation 71/1975 (Wegenie, 1989). The Derg regime established an extensive network of socialist agricultural cooperatives throughout Ethiopia to organize the peasants, control agricultural prices, levy taxes, and extend government control to the local level. Farmers came to view the cooperative with

mandatory membership, quotas for grain to be delivered to the government, and boards of directors and managers appointed by the ruling party as a synonym for government oppression (ACDI/VOCA, 2002). The development of cooperatives was anticipated to proceed in four stages: Service cooperatives (credit and marketing), first stage producers' cooperatives, advanced producers' cooperatives and commune. Even if there was an understanding of the importance of the cooperatives for the development of the country by this regime there were problems in implementing them.

According to (Tesfaye, 1995), (ACDI/VOCA 2002) and (Subramai, 2005) the regime violated some of the internationally accepted fundamental principles and values of cooperatives and it made cooperatives a platform for conducting political agitation, rather ignoring their political neutrality. Cooperatives were managed by the government cadres and untrained manpower. There were corruptive practices in the cooperatives. Consequently, similarly as the previous government, cooperative movements during the regime had a life equal to the then government in power.

2.5.3.3 The Current Government (Post 1991)

The current government made re-organizations of the societies by proclamation No.85/1994. But, the effort made was not enough that gave solution for the problems of the formerly organized cooperatives.

After the proclamation 147/1998 (Federal NegaritGazeta, 1998) that people centered cooperatives came into existence. This proclamation paved a favorable environment for the development of cooperatives. To speed up the cooperative movement in the country, the government established the FCC by the proclamation No. 274/2002 (Federal Negarit Gazette, 2002). Again, the establishment of independent formal institutions to facilitate the establishment and expansion of cooperatives and promotion of cooperative education to satisfy manpower needs could be good evidence for such due emphasis towards cooperatives.

Formal government structure to support cooperatives consists of Federal Cooperatives Agency, Regional Cooperative Promotion Bureaus, Zonal Cooperative Desks and Woreda Agricultural and Rural Development Coordination Office (WRDCO).

2.5.3.4 Types of Cooperatives

According to(Federal Negarit Gazeta, 1998) a cooperative society may be engaged either in or production service rendering service or on both. For establishment of different types of co-operatives in the country, “Co-operative Societies Proclamation No. 147/1998” replaced the proclamation No. 85 / 1994. This proclamation shall in particular include the following: Agricultural, Consumer, Housing, Industrial and Artisan

Many scholars have been adopted various criteria of classifying cooperatives. But, here the criteria’s used by (Chukwu, 1990) are summarized as follows. The classification of cooperatives based on the sector in which the cooperatives engaged is the one among different criteria. Cooperatives that engaged in the agriculture sector are classified as agricultural cooperatives. There are many agricultural cooperatives operating in the different sub-sectors of the agricultural economy: dairy, fishery, beekeeping, coffee, and grain, input purchasing. Industrial cooperatives (small scale industry) engaged in the industry sector. These types of cooperatives include handicraft cooperatives and other metal and woodwork cooperatives.

Service cooperatives are those engaged in the service sector of the economy. They usually engaged in the banking, insurance, transport, health, electricity. Another cooperatives types of cooperatives are those single purpose cooperatives, which have only one field of activity (one purpose e.g. marketing) and multi-purpose cooperatives, which have more than one field of activity (two or more purpose e.g. credit and marketing) (Chukwu, 1990).Among the above stated cooperatives, this study focuses on beekeeping cooperatives, which are organized in Tigray region, Eastern zone, Killite Awlalo Woreda.

2.5 The Activity of Beekeeping Cooperatives in Tigray Region

It is identified that, there are many cooperatives in the Tigray region for beekeeping and honey production. But this could be seen as relatively few groups when considering the overall number of beekeepers in the region. (Rowland's 2011) Also, the strength and consistent collective behavior of these groups is not known, most of them are likely to be quite weak (Chris 2011). In some locations, beekeeping cooperatives are acting on collectively producing and selling to processors.

The number of farmers involved in beekeeping cooperatives is relatively few when considering the potential for beekeeping in the region. (Chris 2011) In order for improved technology to be adopted and for improved production processes to be shared, it is necessary for much improved coordination between beekeepers with in beekeeping cooperatives. Collective action will also enhance their ability to effectively produce, and then to negotiate with buyers during their selling process of their product. The number of beekeeping cooperatives is increasing from time to time in different Woredas of Tigray Region. For instance, according to WVE, Wukro ADP annual report (2012) the number of beekeeping cooperatives has increased to 49 and the number of HHs participating in these cooperatives has increased to 1089 in Killite Awlalo and Sasie Steada Emba Woreda.

According to the 2014 basic data report of Tigray Region Cooperative Promotion Office there are 429 Beekeeping Cooperatives organized under 30 Woredas of the region. These BKC's have 6367 male, 2055 female and totally 8423 members. According to this report, currently these BKC's have registered 6,171,209 birr working capital.

Even if this show there is a good beginning in the sub sector compared to the existing potential of the region it is expected much more. The existing beekeeping cooperatives gap identified that, as they lack appropriate skills in the area of association management, bookkeeping, cooperatives principles, financial and enterprise management. In addition to this the associations lack market information regarding

honey production. The quality, quantity, price, buyer-producer relationship in market and other honey by-products utilization are still not clear (WV Australia, 2010).

2.6. Conceptual Framework of the study

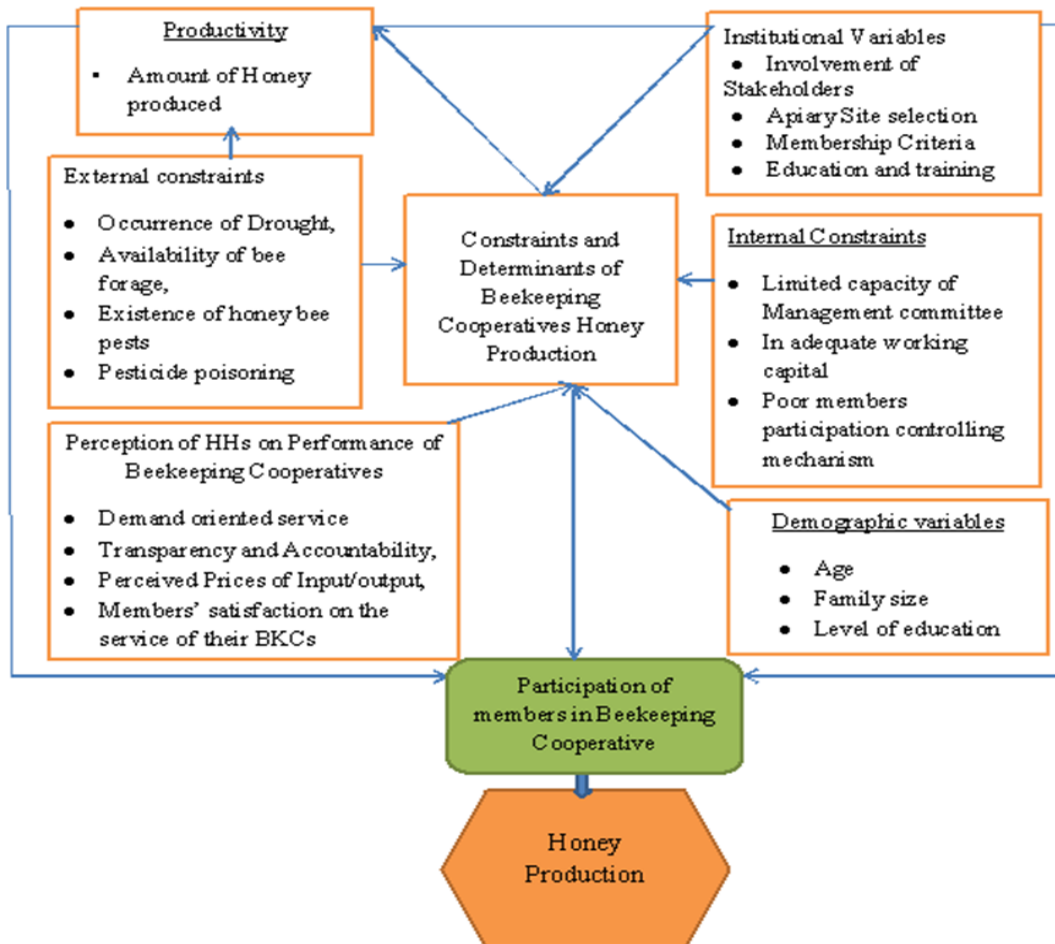


Figure 1 Conceptual Framework

Source: By this research study 2014

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Description of the Study Area

Killite Awlalo Woreda is found in Eastern Zone of Tigray Region at about 45 km away from Mekelle. The Woreda is located in the area stretching from 13°33'-13°58' North latitude and 39°18'-39°41' East longitude with elevation ranging from 1760 to 2720 meters above sea level. The Woreda is bounded in the north by Saese Tsaedaemba Woreda, in the south by Enderta Woreda, in the east by Astbi Wonberta Woreda and in the west by Hawzen Woreda.

The district has two distinct agro ecologies zones kola (lowland) and Weinadega (midland) with few exception of Dega (highland). The Woreda has a total area of about 101,757.63ha. Generally the Woreda has 81.5% Weinadega (Mid-Land), 15% Dega (High Land) and Kola (Low Land) 3%, respectively.

The Woreda has two main rainfall seasons: The short rains from April to May and the main rains from June to Mid-September. The average rainfall over the past 14 years is 450 mm per annum with a range of 217.3 to 638.4 mm per year. The mean annual temperature ranges from 17 to 23 degree centigrade. The Woreda is made up of 18 Peasant Kebeles and it has a total population of 129,896 of which male and female are 62,687 and 67,209 respectively (CSA, 2008).

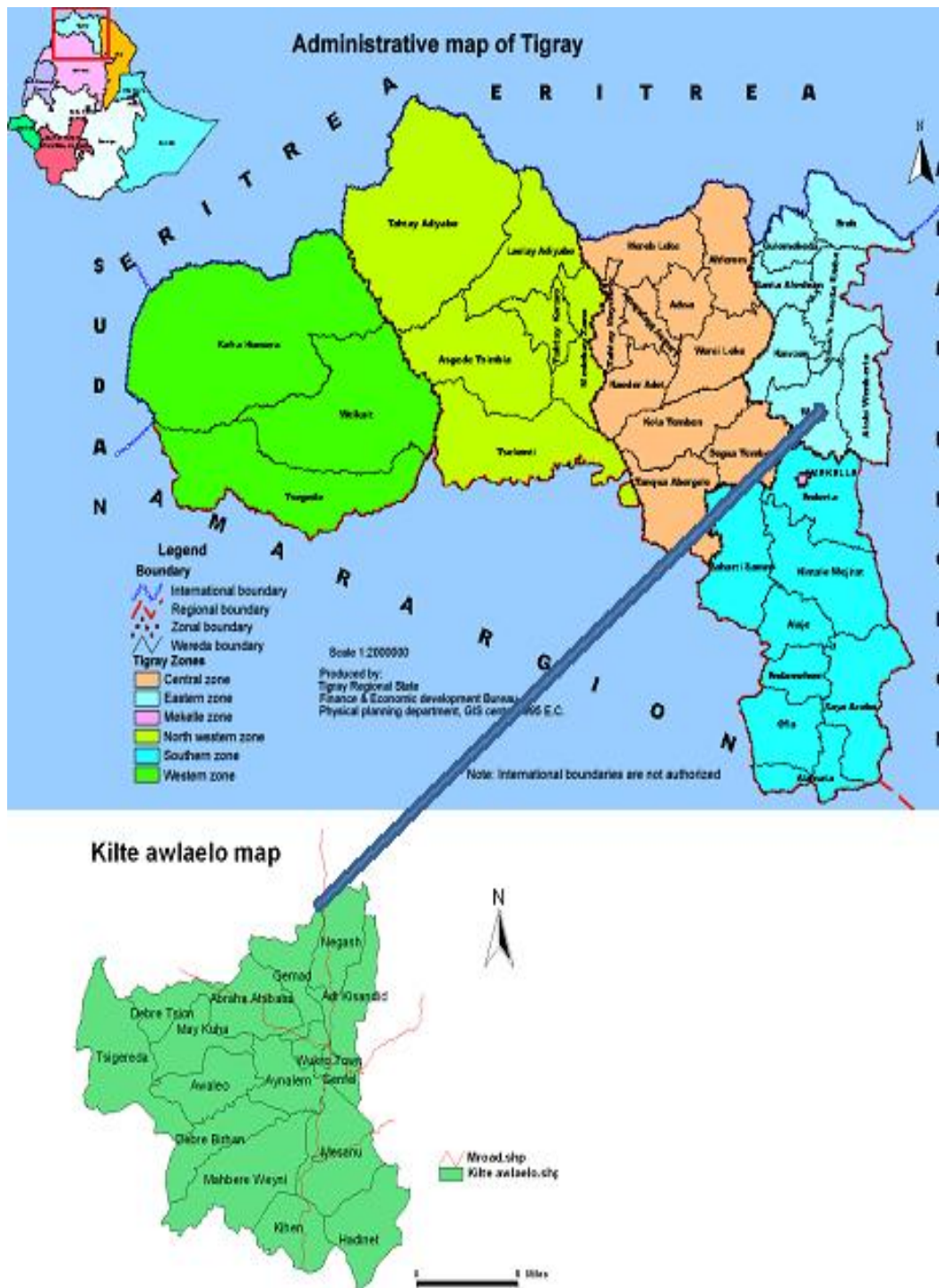


Figure 2 Location of the study area (KilliteAwlaloWoreda) in a map

Source: WV GIS Department (2014)

3.2 Data Type and Source

3.2.1 Source and Method of Data Collection

The data collected for this study includes both primary data and secondary data. The data collecting methods used by this study to collect primary data includes; Questionnaires, Interviews and Focus Group Discussions.

Primary Data

A. Survey Method

A survey study was conducted to gather data about; the specific constraints that confronts BKC's honey production performance, the perception of members towards their BKC's, and the impact of major honey production constraints on the production performance of BKC's. To collect such data, semi structured questionnaire was developed and distributed to sampled members of BKC members and nonmembers by translating the questionnaire in to 'Tigrigna' because many of the respondents in the area read and understand 'Tigrigna'.

B. Interviews

The researcher arranged an interview program for members and the management committees to get significant information about those constraints of honey production currently confronting the BKC's. In addition discussion was made with members of Agriculture and Rural Development Office and Cooperative Promotion Work Process, WVE Wukro ADP Honey Project staffs as well as key informants from the communities. In addition, the researcher utilized purposive sampling method to select interviewees from all the management committee of BKC's. For this purpose semi structured questions are prepared. Semi-structured interview is based on a set of core questions, but allowed for some deviation from those questions to explore relevant sub-topics that emerged in the interview process and they are advantageous as there is a chance of expanding question in the time of interview.

C. Observation

Observation was applied during this study in addition to questionnaire and key informant discussion, to clarify and determine the truth, and or define the existing situation in the study area. The researcher convinced by the appropriateness of this method because, a lot of issues relating to the constraints of BKC's honey production were noted in the visit to the BKC's apiary site than what members explained. Using this technique, the researcher collected the primary data on the issues related to the study.

Secondary Data

Secondary data source which are used by this study includes; stored and analyzed data, documents of beekeeping cooperatives, Cooperative Promotion office Report, and WVE Wukro ADP honey project report and from other NGOs working on beekeeping in the study area. Most of the data which do have relation with those constraints of honey production performance of the beekeeping cooperatives were collected from each three sample Kebeles.

3.3. Sampling Technique and Sampling Procedures

The total number of HHs in KilliteAwlaloWoreda is 27,049. (KAW FEDO, 2013) The target populations (universe) of the study are all the beekeepers found in 18 Kebeles of KilliteAwlaloWoreda. The 18 Kebeles of the target population is divided in to 3, based on their honey production potential in 2013 production year as it is explained in table1. Accordingly, those Kebeles which do have produced up to 120 quintal per year are classified under low production areas. Those Kebeles which do have produce from 121 quintal per year up to 300 quintal per year are classified as medium production areas. Finally those Kebeles which do have more than 301 quintal per year in FY 2013 production year are categorized under high production areas.

Table 1 Honey Production Data of KilliteAwlalo Woreda Kebelles in FY 2013

| No | Name of Kebele | Total Production/ Quintal | Rank | Production Category of Kebelles | Category |
|------------|----------------|---------------------------|-----------|---|----------------------------|
| 1 | Mesanu | 31 | 18 | From 31 Quintal/Year to 120 Quintal/Year | Low Production Category |
| 2 | May Weyni | 45.62 | 17 | | |
| 3 | Agula | 46.55 | 16 | | |
| 4 | Tsigereda | 61.255 | 15 | | |
| 5 | DebreBirhan | 69.89 | 14 | | |
| 6 | Kihin | 81.31 | 13 | | |
| 7 | A/Astbeha | 90.767 | 12 | | |
| 8 | Tsadenale | 95.75 | 11 | | |
| 9 | L/Addiksandid | 111.25 | 10 | | |
| 10 | M/Kuha | 132.23 | 9 | From 121 Quintal/Year to 300 Quintal/Year | Medium Production Category |
| 11 | Hayelom | 160.96 | 8 | | |
| 12 | D/Tsion | 181.5 | 7 | | |
| 13 | Gemad | 246.5 | 6 | | |
| 14 | Negash | 254.7 | 5 | | |
| 15 | Hadinet | 268.5 | 4 | | |
| 16 | Aynalem | 331.7 | 3 | From 301 Quintal/Year to 550 Quintal/Year | High Production Category |
| 17 | Genfel | 355 | 2 | | |
| 18 | T/Addiksandid | 542.06 | 1 | | |
| Sum | | 3106.5 | 42 | | |

Source: KilliteAwlalo Woreda Agriculture and Rural Development Office FY 2014

By using simple random sampling; one Kebele is selected from low production area, one from medium production area and one from high production area. In this way totally three sample Kebeles are selected by using simple random sampling from each low, medium and high production areas. In this way, based on the 2013 production year KilliteAwlalo Woreda honey production data of the Kebeles; LalayAddiksandid Kebele is selected from low production Kebele, Negash from medium production area Kebele and Genfel from high production Kebele.

There are several methods for determining the sample size of respondents from the finite population. The sample size of the study is determined based on Kothari's formula of (2004: 179) as follows:

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + z^2 \cdot p \cdot q}$$

Where

N = size of population

p = sample proportion of successes;

n = size of sample

$q = 1 - p$;

z = the value of the standard deviate at a 93% confidence level

e = acceptable error (the precision)

Thus, $N = 4675$ $p = 0.5$ $z = 1.81$ $e = 0.07$

$$\text{Therefore, } n = \frac{(1.81)^2 \cdot (0.5) \cdot (0.5) \cdot 4675}{(0.07)^2 \cdot (4675 - 1) + (1.81)^2 \cdot (0.5) \cdot (0.5)}$$

$$n = 160$$

The required sample households are selected randomly within each Kebele, by giving equal chance for every beekeeper. Accordingly, both beekeeping cooperative members and nonmember honey producer HHs have got equal chance of inclusion in the sample to make comparison of their honey productivity related factors. This was done by first listing the name of all honey producer member HHs and nonmember HHs currently existing in the sample Kebelles separately. Then using simple random sampling method equal number of sample member HHs and sample nonmember HHs are selected. The number of members and nonmembers has been made to be proportional to make effective comparison of their honey production status. In this way each Kebele BKC members and non-members was fairly represented.

Table 2 Sample Kebeles and Sample BKC members and non-members

| Kebele | Total households of Kebele | Number of Household sample size | | |
|------------------|----------------------------|---------------------------------|------------------------------------|------------|
| | | Beekeeping Cooperative members | Beekeeping Cooperative non members | Total |
| Genfel | 1,175 | 23 | 23 | 46 |
| Negash | 1,467 | 28 | 28 | 56 |
| LalayAddiksandid | 1,451 | 29 | 29 | 58 |
| Total | 4,093 | 80 | 80 | 160 |

Source: KAW plan and finance office 2014

This approach enabled to collect information about the constraints of beekeeping cooperatives honey production by gathering necessary information from both beekeeping members and nonmembers. From the total of 160 sample households, both members of beekeeping cooperatives and nonmember beekeepers were included.

A structured questionnaire was designed and the sample households were asked the questions that could help to investigate the real constraints of beekeeping cooperatives in the process of honey production in FY'2013. In order to cross check the productivity difference existing between beekeeping cooperative members and non-members the research tried to assess the amount of production they have got during FY 2013 production season.

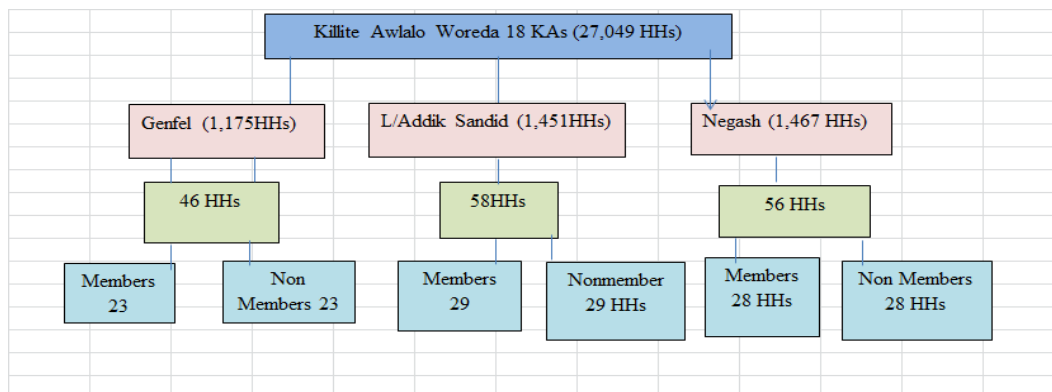


Figure 3 Sampling Figure which shows the sampling size of the respondents

3.4 Data Collection and Field Work

In order to collect data by using questionnaire, the researcher employed three experienced enumerators/data collectors/ who do have good awareness about the local context of the study area under a close supervision of the researcher. In this way the researcher continuously followed enumerators and conducted field edit to avoid collection errors such as omissions, illegibility and inconsistency, and corrected error on time.

3.4. 1 Method of Data Analysis

In order to identify those major constraints of honey production within BKC's, the researcher organized and applied statistical computations such as frequency, and percentage to describe the responses obtained. The information collected through survey method was processed using SPSS version 16.0 software. And the qualitative data obtained through interview was verbally described in sentence form. Finally, the results are summarized in tables so that the analysis and interpretation of the results are made to draw conclusions and recommendations.

CHAPTER FOUR

4. DATA ANALYSIS AND FINDINGS

This study was conducted based on the primary data collected using questionnaires, KII and from the secondary data sources. The questionnaires were filled by enumerators by making interview with BKC members and nonmembers. Separate questionnaires were prepared for both BKC members and nonmembers. On this separate questioner, additional contents are also incorporated to be answered both by members and nonmembers. From the total of 160 booklets of questionnaire 80 of them distributed to BKC members and the remaining 80 questioners were distributed to BKC nonmembers. As enumerators were interviewed all the sample BKC members and non members using the questioner, all 160 questioners were collected and analyzed by this study.

The data obtained from questionnaires result analyzed on the basis of percentage that corresponds with the number of respondents, who have provided the same answer to a given question. Those similar questions which were answered by both member and nonmember respondents are analyzed simultaneously. But for those questions which are not similar for both members and nonmembers, the analysis was made separately.

Secondary data are also incorporated on this study to justify the findings of this research study in detail. Information gathered from BKC members and BKC nonmembers with questionnaires distributed and secondary data collected from KAW Agriculture and Rural Development Office and NGOs working on honey production related activities in KAW are analyzed with descriptive method. In using all these analysis techniques the discussion was organized according to the basic questions of the research and the objective stated. There were four basic questions to be addressed by this research and it is based on those questions the discussions was made.

4.1 Demographic characteristics of sample households

Table 3 below briefly describes the background of respondents of the honey producers by categorizing them into four main groups. These categories are sex, age, family size and educational background. The first category of this study demographic characteristic is sex of sample respondents. Out of the total respondents 127 (79.38%) of them are male and the remaining 20 (20.63%) of the respondents are female. Out of the total respondents in strata of BKC members 67 (83.8%) of the respondents were male and the remaining 13 (16.2%) of the respondent were female.

Table 3 Demographic factors data on sex, age, and educational level of respondent

| No | Demographic Characteristics | BKC Members | | BKC Non Members | | Total | % |
|----------|---------------------------------|-------------|------------|-----------------|---------------|------------|---------------|
| | | No | % | No | % | | |
| 1 | Sex | | | | | | |
| | Male | 67 | 83.8 | 60 | 75.00 | 127 | 79.38 |
| | Female | 13 | 16.2 | 20 | 25.00 | 33 | 20.62 |
| | Sub total | 80 | 100 | 80 | 100.00 | 160 | 100.00 |
| 2 | Average Age | | | | | | |
| | 18 to 35 | 37 | 46.25 | 18 | 22.50 | 55 | 34.38 |
| | 36 to 45 | 34 | 42.5 | 35 | 43.75 | 69 | 43.13 |
| | 46 to 60 | 9 | 11.25 | 16 | 20.00 | 25 | 15.63 |
| | 61 and above | 0 | 0 | 11 | 13.75 | 11 | 6.88 |
| | Sub total | 80 | 100 | 80 | 100.00 | 160 | 100.00 |
| 3 | Average Family Size | | | | | | |
| | 1 to 3 | 14 | 17.5 | 8 | 10.00 | 22 | 13.75 |
| | 4 to 7 | 50 | 62.5 | 57 | 71.25 | 107 | 66.88 |
| | 8 to 10 | 16 | 20 | 15 | 18.75 | 31 | 19.38 |
| | Sub total | 80 | 100 | 80 | 100.00 | 160 | 100.00 |
| 4 | HH Head Education Status | | | | | | |
| | Illiterate | 2 | 2.5 | 15 | 18.75 | 17 | 10.63 |
| | Read and write | 14 | 17.5 | 11 | 13.75 | 25 | 15.63 |
| | Grade 1-8 | 47 | 58.8 | 42 | 52.50 | 89 | 55.63 |
| | Grade 9-12 | 12 | 15 | 12 | 15.00 | 24 | 15.00 |
| | Above 12 to Diploma Graduate | 5 | 6.2 | 0 | 0.00 | 5 | 3.13 |
| | Sub total | 80 | 100 | 80 | 100.00 | 160 | 100.00 |

Source: own survey 2014

Second group of respondents which BKC nonmembers are 60 (75%) of the respondents were male and the remaining (25%) of the respondent were female.

The second category in table 3 above is age, which is categorized in to four major series. Accordingly, out of the total 80 respondents from BKC members, 37 (46.25 %) of respondents were between age 18 to 35; 34 (42.5 %) of respondents were between age 36 to 45; 9 of the BKC member respondent (11.25 %) were between 46 to 60 years old. No respondents were above age 60 under BKC members category. This shows the majority (53.75%) of the respondents are between 18 to 45 years of age.

In respect of BKC nonmember honey producers, out of 80 respondents, 18 (22 %) of the respondents is between age 18 to 35; 35 (43.7 %) of the respondents were between age 36 to 45; 20 (25 %) of the respondents were between age 46 to 60 and the final group which were above 60 years of age were 13.8 (11%) of the respondents. This result indicates as the majority of nonmember honey producers are also engaged on honey production from 18 to 45 years of age. According to Gichora, (2003) most HH members are actively engaged starting from an early age in helping elder within their family during honey production basic tasks. By using this experience, young people gradually move on to become independent beekeepers as soon as they obtain their own hives. They continue adding experience by looking for practical advice from fellow beekeepers accordingly.

The third category in table 3 above is family size of honey producers which is categorized in to three major series. Accordingly, out of the total 80 respondents from BKC members, 14 (17.5%) of respondents do have a family member from 1 to 3; 50 (62.5 %) of respondents have an average of 4 to 7 family members; 16 of the BKC member respondent (20 %) do have a family member 8 to 10. No respondents were having above 10 family members under BKC members' category. In respect of honey producers, out of 80 respondents from the strata of BKC nonmembers, 8 (10 %) of the respondents do have 1 to 3 family members; 57 (71.25 %) of the respondents do have 4 to 7 family members; and 15 (18.75 %) of the respondents do have 8 to 10 family members.

The final category in table 3 above is educational background which is subcategorized into five series. And the response shows out of 80 total respondents in BKC members, only 2 (2.5%) were illiterate; 14 (17.5 %) of the respondents do have a basic knowledge of reading and writing; 47 (58.8 %) of the respondents have attended from grade 1 to 8; 12 (15 %) of the respondents have attended from grade 9 to 12. The remaining 5 (6.2 %) of the respondents are qualified with diploma.

Among the second BKC nonmembers strata, the response shows out of 80 total respondents in BKC members, 15 (18.8%) were illiterate; 11 (13.8present) of the respondents do have a basic knowledge of reading and writing; 42 (52.4 present) of the respondents have attended from grade 1 to 8; 12 (15 %) of the respondents have attended from grade 9 to 12. There were no respondents found during research that is qualified with diploma under BKC nonmembers' strata. Since low level of education attained by both members and nonmembers of BKC limits honey producers' access capacity to adopt and utilize new honey production technologies too.

4.2 Participation of HHs in BCKs

Organizing and promotion of BCKs in the study area began since 2008GC by KAW Office of Agriculture and Rural Development. In addition non-governmental organization like REST, World Vision and HELVETAS are also started to participate on the BCKs organization. According to Killite Awlalo Woreda Agriculture Office FY2014 report, until the end of FY2013 around 27 BCKs were organized and have got certificate in Killite Awlalo Woreda. Within these 27 BCKs, 644 male and 123 female members are registered and participated on honey production activity with 324,631 birr capital. The primary purpose of the expansion of the BCKs in the Woreda was to use the mountainous closure areas as an apiary site for creation of income for those HHs who do not have enough farm land in line with practicing soil and water conservation activities on these sites. As shown in Table 4 below, the majority of the BCKs were established in from 2009 to 2012 GC. For these study an average of 80 BKC members are selected randomly from; 8 BCKs of Negash Kebelle, 2 BCKs of Genfel Kebelle and 2 BCKs of Lealay Addiksandid Kebelle. Accordingly, 80 members of BCKs were participated during the survey of this study.

Table 4 Profile of BKC's found in KilleAwlealoWoreda

| No. | Name of BKC's In KilliteAwlealo Woreda | Kebele | Year of Establishment and Registration (GC) | Number of members | | |
|-----|---|-----------------------|---|----------------------|------------|------------|
| | | | | Male | Female | Total |
| 1 | SegemMearenNibihin | Negash | 2009 | 27 | | 27 |
| 2 | MarinetMearenNibihin | Negash | 2010 | 16 | 1 | 17 |
| 3 | Rahiwa | Negash | 2009 | 53 | 3 | 56 |
| 4 | Embeba | Negash | 2008 | 12 | | 12 |
| 5 | Selam | Negash | 2012 | 12 | 5 | 17 |
| 6 | FikireSelam | Negash | 2012 | 42 | 2 | 44 |
| 7 | HagereWeyini | Negash | 2012 | 15 | | 15 |
| 8 | Seret | Negash | 2012 | 14 | | 14 |
| 9 | MerayaMidihanWeled | Genfel | 2008 | 10 | 8 | 18 |
| 10 | Timiret | Genfel | 2012 | 11 | | 11 |
| 11 | Weyini | AbrehaAstbeha | 2010 | 30 | 57 | 87 |
| 12 | Maykot | AbrehaAstbeha | 2009 | 11 | | 11 |
| 13 | Awlaelo | AbrehaAstbeha | 2009 | 16 | | 16 |
| 14 | Hadinet | AbrehaAstbeha | 2009 | 20 | 1 | 21 |
| 15 | Kisanet | AbrehaAstbeha | 2009 | 35 | | 35 |
| 16 | Shewit | AbrehaAstbeha | 2009 | 26 | 4 | 30 |
| 17 | Meseret | AbrehaAstbeha | 2012 | 28 | 5 | 33 |
| 18 | KidisteMariam | LailayAddiksa ndid | 2012 | 15 | | 15 |
| 19 | Meibal | LailayAddiksa ndid | 2012 | 29 | 2 | 31 |
| 20 | HadinetBirki | Birki | 2012 | 44 | 3 | 47 |
| 21 | Tsega | Bahira | 2012 | 80 | 1 | 81 |
| 22 | MeseretBahira | Bahira | 2008 | 16 | 4 | 20 |
| 23 | Marta | Bahira | 2012 | | 12 | 12 |
| 24 | HawiltiAlmeo | Awaleo | 2012 | 15 | | 15 |
| 25 | Deber Genet | DebreGenet | 2012 | 20 | | 20 |
| 26 | SelamHayelom | Hayelom | 2012 | 19 | 7 | 26 |
| 27 | Ayinalem | Ayanalem | 2013 | 28 | 8 | 36 |
| | Total | | | 644 | 123 | 767 |

Source: KilliteAwlealoWoreda Cooperative Promotion Work Process, FY2014

4.3 Perception of members on the service rendered by their BCKs

Regarding to the role of targeted BCKs upon attaining their goal, the sample respondent members were requested certain questions. To understand members' perception on the role of BCKs, the following indicators were used: giving demand oriented service, giving good quality services and giving better marketing service. Accordingly, the research result on table 5 reveals that, 63.75%, of the total respondents disagreed that BCKs were playing important role in achieving the demand oriented service. In addition, 70% of the members are not happy with the honey marketing activity of their BCKs. Therefore, the study result indicates that, members' perception were negative on their BCKs towards achieving the targeted objectives. Whereas, among the total respondents, 61.25 % of BCKs members agreed as their BCKs supply beekeeping inputs on time (table 5). But this indicates that, the BCKs focuses much on input provision rather than focusing on a holistic work to effectively meet their objective and the needs of their members.

Table 5 Members Perception towards the service of their BCKs

| No | Variables | Category | BKC Members | |
|----|--|-----------|-------------|-------|
| | | | Frequency | % |
| 1 | Demand oriented service | Agree | 29 | 36.25 |
| | | Dis agree | 51 | 63.75 |
| 2 | On time Input Supply | Agree | 49 | 61.25 |
| | | Dis agree | 31 | 38.75 |
| 3 | Good quality services | Agree | 26 | 32.5 |
| | | Dis agree | 54 | 67.5 |
| 4 | Better quality honey production service | Agree | 53 | 66.25 |
| | | Dis agree | 27 | 33.75 |
| 5 | Better Honey marketing service/Selling potential | Agree | 24 | 30.00 |
| | | Dis agree | 56 | 70.00 |

Source: Survey result 2014

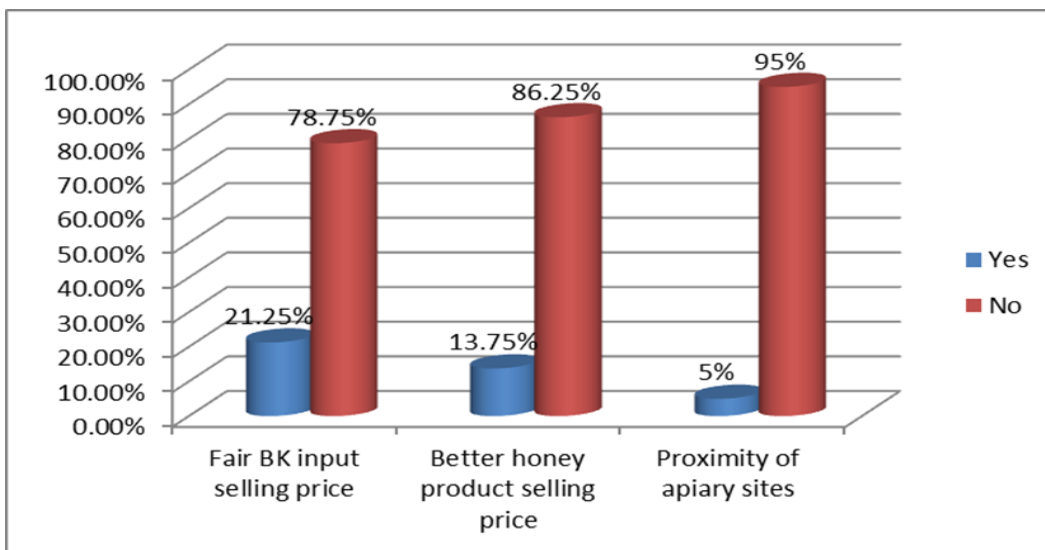
Regarding the quality of honey production activity, 66.25% of members agree as BCKs produce good quality honey (table5). The respondents in addition justified the achievement of good quality honey production by BCKs is due to the utilization of MBH and avoidance of adulteration. But the negative response of the remaining

33.75% about the quality of honey product of BKC's indicates that, these cooperatives are expected to do further strong quality focused honey production work (table5).

4.3.1 Members' level of satisfaction on the service given by their BKC's

Most BKC's, in the study area operate in commercial circumstances like any form of business enterprise. But their members are usually low income groups and subsistence farmers. Hence, members' may expect low BK input price, better honey selling price and closeness of the location of BKC's service to their village. Nevertheless, it could be beyond their capacities to meet all these criteria. An attempt was made to measure members' satisfaction using the indicators like BK input selling price, honey products selling price and the proximity of BKC's to the village of the members.

Figure 4 Members' satisfaction on the service given by their BKC's



Source: own survey result2014

Accordingly, the study result of (figure 4), 78.75 % of members were not happy on the performance of BK input provision price together with MPC's. During FGD conducted with the members they have explained the price of one MBH is from 1300 Birr to 1400 Birr. This indicates, the price of modern BK inputs provided by BKC's through the agreement of MPC's is expensive for members. The study result on bar graph 4 (figure 4) indicates as 86.25% of members are not happy with their BKC's honey product

selling price as compared to other private retailers. This response implies BKC's are not effectively in creating better market linkage with honey processors and better purchasing power honey buyers (collectors).

In addition, the study identifies the members' perception regarding the location of the apiary sites of their BKC's. Accordingly, 95% of BKC's members respond that, the apiary sites of their BKC's are located far from their village (figure 4). The long distance apiary site of BKC's from the residential areas of their members indicates the difficulty of the members to closely conduct their apiary site management work.

4.3.2 Members Perception about Transparency and Accountability of BKC's

Table 6 Members perception on the on transparency and accountability of BKC's

| No | Variables | Category | BKC Members | |
|----|---|----------|-------------|-------|
| | | | Freq. | % |
| 1 | Does BKC's conducting annual meeting timely? | Agree | 21 | 26.25 |
| | | Disagree | 59 | 73.75 |
| | | Total | 80 | 100 |
| 2 | Does BKC's give awareness for their members on the execution time of annual meeting and other regular meetings? | Agree | 37 | 46.25 |
| | | Disagree | 43 | 53.75 |
| | | Total | 80 | 100 |
| 3 | Does the BoD present clear and understandable s status report for members on GA and regular meetings? | Agree | 19 | 23.75 |
| | | Disagree | 61 | 76.25 |
| | | Total | 80 | 100 |
| 4 | Do the board and management pass decisions based on the mandate given to them in the by-law? | Agree | 25 | 31.25 |
| | | Disagree | 55 | 68.75 |
| | | Total | 80 | 100 |
| | Average Agreed members on transparency | | | 31.87 |
| | Average Disagree members on transparency | | | 68.13 |
| | Total | | | 100% |

Source: own Survey 2014

The administrative structure of cooperatives is made up of four stages: the general assembly, control committee, members of BoD's and employees. Each structure has clearly demarked duties and responsibilities. The General Meeting of members made

important decisions through the participation of all members on the overall objectives and responsibilities of the cooperatives. The control (audit committee) members are the delegates of the GA which control the administration of the BoDs based on the proclamation of cooperatives 147/91 and internally based on by law of the cooperatives. The BoDs are the delegates of the GA, which controls the works of cooperatives on behalf of members.

In most case the cooperatives have employees who are responsible to carry out activities such as book keeping, managing, store keeping, and guarding. According to the hierarchy of the cooperative administrative structure, employees are accountable to the board, and the board in turn accountable to the GA. Important indicators used to show the existence of transparency inside the cooperatives are: willingness and ability of the board to conduct AGM, passing decisions based on the by-law, and procedures used to distribute dividend were among the major factors. In addition, the willingness members' to exercise their rights, duties and responsibilities was taken as an indicator of accountability.

The cooperatives are expected to discuss with their members on identified time/date within a year to hold annual General Meeting. In this manner the AGM, is authorized to hear and approve the audit report, decide how any surplus shall be handle and distributed, electing members of board, approving the annual plan and budget etc. The study tried to recognize whether the BKC's had a regular AGM or not in the study areas. Primarily, this study requested the BKC's members whether their cooperative conduct annual meeting (GA) at the beginning of the budget year. Accordingly, 73.75% of the members responded that their BKC's didn't conduct the annual members meeting on time (table 6). These members have explained that, BKC's conduct annual meeting without schedule, rather they conduct GM when urgent cases which needs the members' decision happened. This result implies that, BKC's mostly do not conduct scheduled members annual meeting, rather they have conduct GA to solve those recurrent problems which needs the discussion of members. This phenomenon clearly indicates the lack of scheduled discussion of BKC's with their member. In addition, the

study result shows that 46 % of BKC's members were aware of the existence of regular annual meeting and were capable to attend (Table 6). The remaining 54 % of members among the total respondents were not well informed to attend the annual general meeting. As it was explained by BKC's management committee members during FGD, the general meeting is used to be carried on after several calls. One 43 years old member of Rahiwa BKC at NegashKebelle explained his opinion during FGD by saying *"It is too difficult to get the whole members of BKC's for meeting, because most of the members give priority for their personal work. Due to this the GA is conducted after several times call"*. This implies that, the communication between the members and the MCs is very weak.

The members didn't inform well regarding the program and the agenda of annual meeting in written form. Mostly the announcement of the program of the GA is announced on the major events with in the village which people found gathered together. This kind of informal GA program announcement is not effective to inform the schedule of GA to the members. Due to this problem, up to half of the members might not present on the GA while important decisions conducted. Among the total respondents interviewed regarding the reports discussed in the GM, 76 % of the respondents were not clear about the report or not involved in the meeting to be informed about the achievements (Table 6). On the other hand, 31.25 % of the total respondents also responded that the board and management were used to pass decisions based on the mandate given to them in the by-law, while 68.75 % said they have no ideas on what base the board and management used to pass decisions (table 6).

In general, the study result indicates that 31.88 %t of the total respondent agreed with the existence of transparency and accountability in the cooperatives, while 68.13 % of the respondent disagreed with this idea (table 6). Therefore, it is possible to say that, there is gap between the members and managing body in creating smooth communication and transparency. This is the result of weak performance both in the management committee and the individual members which in turn affects the entire honey production and BKC's leadership capacity.

4.2.4 Members perception about participation status of BKC members

The study result on table 7 shows 68.75 % members were not well aware about their duties and their rights with in their BKC. This implies the majority of the members were not aware on what they must do in order to be able to exercise their rights. According to the cooperative administration, every member is expected to participate or engaged equally on those identified activities to be performed by all members based the context of the given responsibility. But the result of this study shows that 90 % of respondents give feedback as the majority of the members couldn't participate or engage on the minimum time they are expected to participate on BKC's day to day activity (table 7)

Table 7 Members participation status of BKC's

| No | Variables | Category | BKC Members | |
|----|---|----------|-------------|-------|
| | | | Number | % |
| 1 | Do the majority have awareness on duties and rights | Agree | 25 | 31.25 |
| | | Disagree | 55 | 68.75 |
| | | Total | 80 | 100 |
| 2 | Do majority of members participate on the minimum time they are expected to be engaged on BKC | Agree | 8 | 10 |
| | | Disagree | 72 | 90 |
| | | Total | 80 | 100 |
| 3 | Is there good members participation controlling Mechanism | Agree | 9 | 11.25 |
| | | Disagree | 71 | 88.75 |
| | | Total | 80 | 100 |
| 4 | Does BKC gives benefit according to members participation | Agree | 15 | 18.75 |
| | | Disagree | 65 | 81.25 |
| | | Total | 80 | 100 |

Source: survey result 2014

Good members' participation controlling mechanism is mandatory to assure equivalent members participation within their cooperatives according to the context of their duties and responsibilities. In this regard the respondents were asked to give their feedback on the members' participation controlling mechanism of BKC's. Accordingly 88.75% of BKC members disagree the existence of good members' participation controlling

mechanism with in BKC's (table 7). Although maximum members' participation is considered as one of the pillars of agricultural cooperatives (Birchall, 2003), but the performance of the BKC's in this respect has been very low. It was argued that active and consistent members' participation controlling mechanism is necessary in realizing members' participation with in their BKC societies.

Deliverance of dividend differentiates feature of cooperatives from other form of business organizations. Creating awareness about the procedure of dividend payment and making the actual payment accordingly is among different factors that determine the performance of cooperatives (Birhanu, 2011). Accordingly, members are expected to be informed on when and how dividend is distributed to members. However, the study reveals only 18.75 % of the total sample respondents had clear understanding on the dividend distributing procedures and methods while the remaining 81.25 % lack the understanding (table 7). This study result shows the BKC's are not transparent enough in informing members about the procedure of dividend and making payment of dividend according to members' participation.

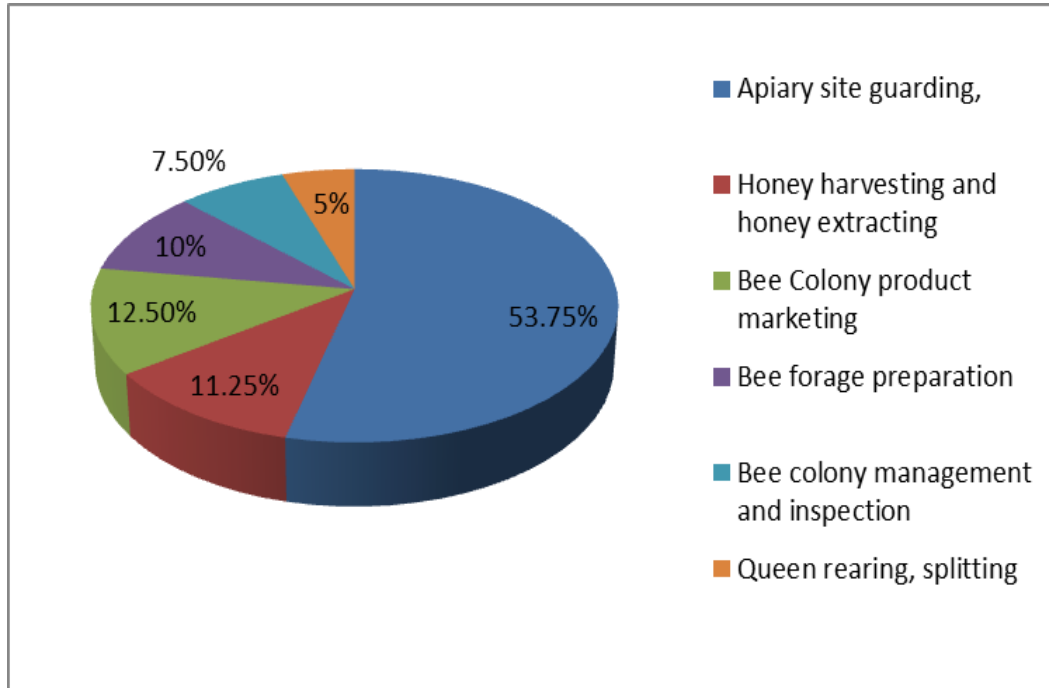
4.3 Major Role of Members in honey production practice of BKC's

As the finding of this study on table 15 shows, 83.7% of members have got improved bee colony management training. But the findings of figure 5 shows, more than half (53.75%) of members primarily participate on simply apiary site guarding work. Less than half of the BKC members participate on improved bee colony management work like; honey harvesting and honey extracting 11.25%, Bee Colony product marketing 12.5%, bee forage preparation 10%, transferring bees from common boxes to movable frame hives 7.5%, queen rearing and splitting 5% (figure 5).

These results indicates that the majority of BKC members simply participate on BKC's apiary site guarding, whereas only 46.25% of them tries to participate on improved bee colony management practices (figure 5). This shows that, the major production and marketing activities are conducted by small individuals. This indicates that there is

irregular participation of members on improved bee colony management practice with in the BKC.

Figure 5 Major Role of Members in honey production practice BKC



Source: survey result, 2014

4.3.1 Time Beekeepers spent on bee colony management

The study tries to analyze the total time the honey producers spent on bee colony management work within their apiary site with the exclusion of apiary site guarding activity. As it is indicated on figure 5, the major bee colony management practices considered under this study includes; inspecting bee colonies, bee forage cultivation, supplementary feed preparation and delivery for honey bee colonies, honey harvesting and honey extracting, and transferring of bees colonies from common boxes to movable frame hives, queen rearing and splitting are among the major bee colony management activities.

Table 8 Time Beekeepers spent on bee colony management

| S. No | Working Minutes per week | BKC Members | | BKC Nonmembers | | Total count | Total% |
|-------|--|-------------|------|----------------|-------|-------------|--------|
| | | Frequency | % | Frequency | % | | |
| 1 | 30 minute | | | 1 | 1.25 | 1 | 0.63 |
| 2 | From 30 minute to 1 hour | | | 1 | 1.25 | 1 | 0.63 |
| 3 | From 1 Hour to 1hour and 30 minute | 38 | 47.5 | 12 | 15 | 50 | 31.25 |
| 4 | From 1hour and 30 minute to 2 Hours | 42 | 52.5 | 32 | 40 | 74 | 46.25 |
| 5 | From 2 Hours to 2 Hours and 30 minutes | | | 31 | 38.75 | 31 | 19.38 |
| 6 | From 2 Hours and 30 minutes to 3 Hours | | | 3 | 3.75 | 3 | 1.88 |
| | Total | 80 | 100 | 80 | 100 | 160 | 100.00 |

Source: own servey2014

Accordingly, 47 % of members spent from 1 hour to 1 hour and 30 minute working on bee colony management work within a week (table 8). The remaining 47.5% of the respondents spent from 1 hour and 30 minute to 2 hours within a week on bee colony management work. Whereas 82.5% of BKC's nonmembers spent from 1 hour and 30 minute to 3 hours on bee colony management work (table 8). This figure clearly shows, even if the BKC members have a better access of improved beekeeping practices, the majority of members do not spend their time on bee colony management work (figure 5).

In other way, as the 89.10% of BHs of the nonmembers are found near their back yard, they spent much time than members on bee colony management work (table 14). As it is indicated on table 14, 100% of the BHs of the BKC's are found in the closure areas apiary sites. These factors do have its own impact on the members not to spend more time on bee colony management work as the apiary sites of BKC's are located far from the residence of the members.

4.4 Constraints / problem of beekeeping cooperatives

This study discussed below, the major constraints of beekeeping cooperatives by classifying them into three groups. Accordingly, from BKC's point of view, this study tries to identify those organizational (internal), external and infrastructural constraints that are confronting them from attaining their intended objectives effectively.

4.4.1 Organizational/ Internal Problems

Concerning internal (organizational) aspects of cooperatives, the general assembly, management committee and cooperatives' employees as well considered by this study. Additionally, physical and financial properties, in line with the systems and procedures also constitute the internal or organizational part of cooperatives.

Therefore, the capacity of MC or BoDs, initial capital, members' participation in joint monitoring, transparency and accountability of the board and management, awareness on duties and responsibilities, members to involvement in general meeting were used as an indicators to measure the internal or organizational problems of cooperatives.

Table 9 Internal problems of BKC's

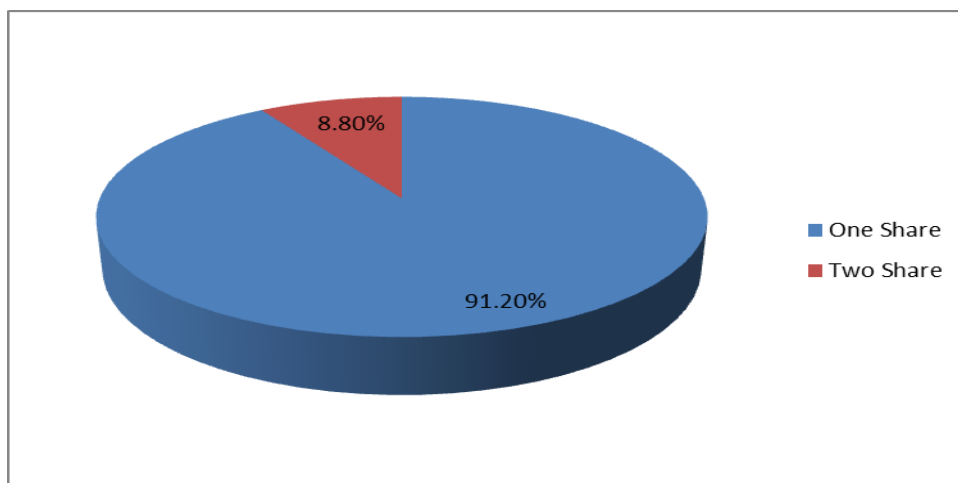
| S. No | Organizational/ Internal Problems | Important | | Less Important | | Not Important | | Total | |
|-------|---|-----------|-------|----------------|-------|---------------|------|-------|-----|
| | | Freq. | % | Freq. | % | Freq. | % | Freq. | % |
| 1 | Limited Capacity of Management Committee | 53 | 66.25 | 11 | 13.75 | 16 | 20 | 80 | 100 |
| 2 | Inadequate working capital | 59 | 73.75 | 7 | 8.75 | 14 | 17.5 | 80 | 100 |
| 3 | Poor participation of members controlling mechanism | 61 | 76.25 | 9 | 11.25 | 10 | 12.5 | 80 | 100 |

Source: own survey 2014

As the result of this study shows in Table 7, the sample respondents agreed that failure of members to involve in general meeting, poor participation in decision-making and limitation in exercising their democratic right were the most important problems to determine the performances of BKC's. This result in addition indicates that, the highest result was failure of members to attend the annual general meeting. Members can only have the opportunities to elect boards, approve annual budget and activities, and evaluate the audit as well as activities report in the annual meeting. If they failed to attend the meeting, they might not have a power to make decisions and opportunities to exercise their democratic right.

Among the total BKC member respondents (on table 9) 66.25% of them responded as the currently existing management committee have limited capacity to effectively lead the cooperatives. This result implies the management committees have limited capacity to plan, implement and monitor the overall BKC's activity by mobilizing the members. Regarding initial capital, 73.75% of members responded, their BKC's cooperative do have the problem of adequate working capital (table 9). The major problem of inadequate working capital of BKC's emanate from weak share capital contribution of the members. As the findings of this study on figure 6 shows 91.2 % of the BKC's members bought only one share at the establishment stage of their cooperative. Due to this insufficient share capital contribution of members, the BKC's are forced to rely on the credit given from NGOs like World Vision and HELVETAS.

Figure 6 Members share contribution within BKC's



Strong members' participation controlling mechanism is the mandatory activity to maintain the success of the cooperatives. Based on this idea, the study requested members' perception regarding the status of the existing members controlling mechanism with in BKC's. As a result 76.25% of members replied the existing members controlling mechanism is poor (table 9). This result indicates the existence of poor members' participation with in BKC's.

As it is known, the nature of beekeeping practice needs a continuous bee colony management work in order to get better honey production. But, the existence of poor members' participation controlling mechanism creates weak bee colony management trend. As a result, the aggregate of this problem contributes to the decrease of the production and productivity of BKC's. According to the result of this study, shortage of adequate initial capital is one of the major constraints which retard the performance of cooperatives. The creation of mutually owned capital by either reinvestment of profits or buying additional shares is a very important and necessary practice. But most of members failed to add more than one paid up share capital. The majority of the sample respondents agree that the indicators for the internal problems are real constraints to hinder the performance of BKC's honey production and marketing problem.

4.4.2 External Constraints

The external factors are beyond the control of BKC members as well as management committees. Considering the significant impact of the external problems in affecting the effectiveness of BKC's performance, the study tries to specifically address the major ones according to the context of the study area in the following way.

Table 10 External Problems affecting members' Participation

| S. No | External Problems | Important | | Less Important | | Not Important | |
|-------|---|-----------|-------|----------------|-------|---------------|-------|
| | | Freq. | % | Freq. | % | Freq. | % |
| 1 | Hilly and far apiary sites | 63 | 78.75 | 9 | 11.25 | 8 | 10.00 |
| 2 | Low availability of quality bee forage | 61 | 76.25 | 12 | 15 | 7 | 8.75 |
| 2 | Climate fluctuation /frost/ | 64 | 80 | 16 | 20 | | 0 |
| 3 | Pesticide impact | 41 | 51.25 | 22 | 27.5 | 17 | 21.25 |
| 4 | Price increase for modern beekeeping inputs | 58 | 72.5 | 22 | 27.5 | | 0 |
| 5 | Existence of other competitors | 43 | 53.75 | 24 | 30 | 13 | 16.25 |
| 6 | Unsatisfactory selling price of honey product | 52 | 65 | 16 | 20 | 12 | 15 |

Source: own survey result 2014

The BKC's found in the study area are working on areas where the mountainous land escape which were closed for soil and water conservation practices. The BKC's apiary sites located on these hilly areas are far from the residential area of the members to conduct the day to day bee colony management work.

Among the total member respondents (of table 10) 78.75% of them replied as their BKC's are located far from their village and located on mountainous areas. It is clear that accessible apiary site is an important factor for good beekeeping operation. But as the result of this study indicates, the location of the majority of the study area BKC's apiary sites is far from their village and hilly in its topographic nature. As a result of the location of the apiary sites on hilly and distant areas from the residence of the members hinder them from conducting of effective day to day bee colony management practice.



Photo 1 Beekeeping Cooperative Located on mountainous closure area at Negash Kebelle

(Source: own picture during filed visit)

On the other hand, unsatisfactory prices offered to purchase the bee colony products of BKC by private retailers and honey processors, an increase of beekeeping input price over time, were the most important problems affecting the BKC performance. Among the totally requested members 65% of them replied as the price offered by honey processors and private wholesalers to purchase the honey product of BKC is not satisfactory (table10). Most of the time, the private retailers affect the BKC by providing fluctuated and unfair price to take their advantage on the honey product of the BKC.

One of the members of BKC at Lealay Addiksandid Kebelle explained his opinion during focused group discussion (FGD) by saying *“even if our BKC produces better quality and non adulterated honey, the honey purchasers and processors are not willing to pay for us better price. Rather they give similar low price equally to the adulterated low quality honey product of private honey sellers. This condition most of the time disappoints the members of BKC.”* As it is indicated on FGD this situation discourages the BKC members and also prevents other nonmembers from becoming BKC member.

The presence of abundant bee forage will contribute for high honey production, if those other factors are suitable for honey production. But, rather than reliance on the naturally available bee flora, water and forage near the apiary sites, the trend of most BKC members in cultivation of improved bee forage is not satisfactory. Due to this, among the totally respondents 76.25% of the respondents answered as there is no abundant bee forage near their apiary site (table 10).

This result implies, during drought (water and feed shortage) period, honeybees store and utilize the honey produced for their own consumption. The harvesting practice of honey conducted during this period exploits the honey which the honeybees stored for their own consumption. As a result, honeybees face starvation due to lack of feed. This action will contribute for the decrease of the honey product of the BKC members significantly. From the total respondents 80% of the BKC members replied as frost (climate problem) is affecting their production and productivity (table 10). The occurrence of climate fluctuation, especially the occurrence of frost during the 'Kiremt' (from June to September) season will create a chilling effect on the honey bees. This will restrict the honey bees from their movement to collect food and nectars for honey production. Such kind of climatic problem significantly affects the productivity of the BKC members.

The main pesticides that kill bees are those chemicals used for crop protection. The use of chemicals and pesticides for crop pests, weeds, malaria and house pests control brings in to focus the real possibility of damaging the bee colony, as well as contamination of hive products. In this way among the respondents 51.25% of the BKC members explained the effect of pesticide is among the major factors which decreases the production and productivity of honey (table10).

Among the total respondents 76.2% of the BKC members explained that the market linkage of their BKC members with honey processors and whole sellers is weak (table 10). The low price given for BKC members collected honey product by the processors limits these cooperatives from creation of value chain with these factories. The price increase for BK input over time, unfair (low) price offered for honey products by processors and private retailers were the most important problems that are affecting the performance of

BKCs. Due to the increased price of BK inputs, the BKCs are forced to focus on the repayment of the loan for two to three years immediately after establishment. This will consequently decrease the motivation of the members.

4.4.3 Infrastructural Development Problems

Improvement in the bee colony products should be achieved through the use of improved beekeeping technologies. In line with this, honey producers should have access to market for their bee colony products. The bulky and perishable nature of beekeeping input and output requires massive transportation facilities, road networks, adequate warehouses, packaging materials, proper way of post-harvest handling and other infrastructural facilities. Most frequently, due to remoteness of the rural areas, market infrastructure tends to be deficient. There is lack of appropriate roads, communication means, and transportation. There is also lack of appropriate storage, marketing facilities. This resulted into significant losses of benefit by honey producers.

Table 11 Infrastructural development problems which affect the performance of BKCs

| S. No | Infrastructural Problem | Important | | Less Important | | Not Important | |
|-------|---|-----------|-------|----------------|-------|---------------|-------|
| | | Freq. | % | Freq. | % | Freq. | % |
| 1 | Lack of information on market oriented production | 56 | 70 | 14 | 17.5 | 10 | 12.5 |
| 2 | Lack of marketing Infrastructure | 55 | 68.75 | 11 | 13.75 | 14 | 17.5 |
| 3 | Lack of storage and transportation facility | 51 | 63.75 | 15 | 18.75 | 14 | 17.5 |
| 4 | Low linkage with Financial institution | 47 | 58.75 | 22 | 27.5 | 11 | 13.75 |
| 5 | Low linkage with honey processing factories | 61 | 76.25 | 19 | 23.75 | | 0 |

Source: own survey result 2014

The study result in the table 11 reveals that 70% of members explained as their BKC's lack information on market oriented honey production (table 11). This result implies, lack of information on market oriented production, communication facilities, marketing infrastructure implies the members are still focusing of traditional production trend by focusing on selling of their product for retailers by unsatisfactory price. Generally as the study result of (table 11) indicates; lack of appropriate storage and transportation facilities and low linkage with honey processing factories are affecting the performance of BKC's and members participation as well. Based on the result, the most important problem of infrastructure according to the sample respondents' view was lack of sufficient information on market oriented production. The extension service providing to the beekeepers focuses on increasing production and productivities. Extension workers trained on livestock production and natural resource management have limited skill and experience to let the producers plan by answering what, how, when, where and why they need to produce bee colony products especially honey.

Equally, communication facilities were also important infrastructural problem by retarding the flow of information. Information is crucial for agricultural producers. Cooperatives and member farmers may require information for planning, implementing farm production and marketing. The existing communication facilities are not adequate to enhance the concerted efforts of BKC's members. On the top of this, lack of storage and transport facilities (including road), electricity and beekeeping facility were among the important problems of infrastructure to affect performances of BKC's.

Most of the BKC's do not have storages or warehouses owned by them. While those few BKC's who do have storage are below the required standard. Inadequate size or capacity, unevenly leveled floor, holes on the walls, floor and roof were the most important problems of the stores. This will expose the honey product of the BKC's for the decreasing of their honey product due to humidity. Lack of electricity on the rural area especially on the hilly areas of the BKC's apiary sites is an obstacle to BKC's plans little bit-advanced activities of processing. Overall infrastructure is a key area where members were clearly understood its level of effect up on their own individual as well as collective efforts.

4.4.4 Honey Bee Pest attack constraints

4.4.4.1 Major honeybee pests decreasing the production of BKC's

Respondent of BKC's members and nonmembers were asked to identify those major pests that decrease the honey production. According to the findings of this study, the existences of pests were among the major challenge to the honeybees and beekeepers, especially BKC's. As most of BKC's are located in the closure bush areas, the BHs of these cooperatives are easily exposed for pest attack.

Table 12 Major honeybee Pests decreasing the production of BKC's

| S. No | Major Pests that decreases honey production | BKC Members | | BKC Nonmembers | | Total count | Total% |
|-------|---|-------------|---------------------------|----------------|-------------|-------------|-------------|
| | | Freq. | % | Freq. | % | | |
| | | 1 | Ants (both black and red) | 20 | 25 | | |
| 2 | Wax moth | 14 | 17.5 | 13 | 16.25 | 27 | 16.875 |
| 2 | Honey Badger | 18 | 22.5 | 16 | 20 | 34 | 21.25 |
| 3 | Lizard | 4 | 5 | 8 | 10 | 12 | 7.5 |
| 4 | Birds | 10 | 12.5 | 3 | 3.75 | 13 | 8.125 |
| 5 | Spider | 8 | 10 | 10 | 12.5 | 18 | 11.25 |
| 6 | Snake | 6 | 7.5 | 6 | 7.5 | 12 | 7.5 |
| | Total | 80 | 100% | 80 | 100% | 160 | 100% |

Source: own survey 2014

After having identified the major pests affecting the beekeeping activities, BKC's member respondents were requested to rank them and the result shown on table 12 indicated that ants (both red and black) 25%, honey badger (*Mellivoracapensis*) 22.5%, wax moth (*Galleria mellonella*) 17.2%, bee-eater birds 12.5%, spider 10%, snake 7.5% and lizard 5% were observed as the most destructive pests in order of decreasing rank.



Photo 2 Frame attacked by Wax Moth Photo 3 MBH distracted by hone badger

(Source: field visit picture 2014)

Regular assessments and rapid detection of honeybee pests at their respective areas has paramount importance to prevent the loss of honey product due to pest attack (Desaleggi and Amsalu, 2012). Therefore, the BKC members are expected to conduct continuous bee colony management and apiary site guarding work to prevent the impact of loss of honey product due to pest attack.

4.5. The impact of the major factors in BKC's on honey production and productivity

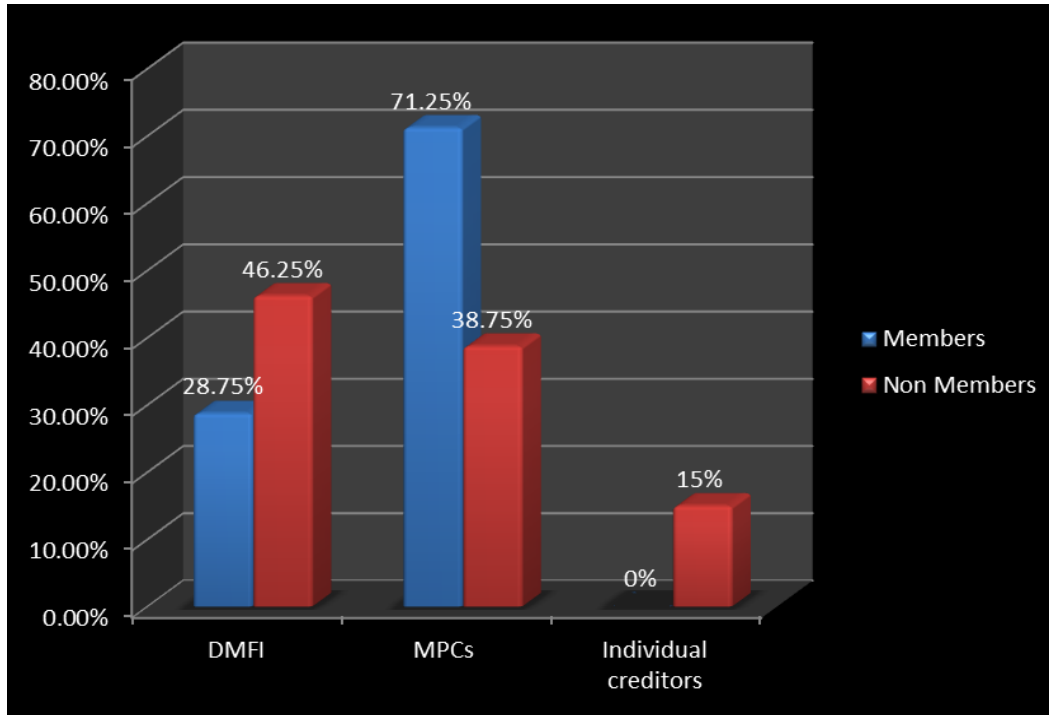
4.5.1 Dependency on External Fund Source

According to the results of this survey on figure 7, 100.0% of interviewed BKC members have access to credit services. The main credit sources of the sample respondents were MPCs (71.25%), and DMFI 28.75%. As it is observed during this study the main source of the credit rendered to BKC Members are NGOs like HELVETAS and World Vision. These NGOs gave the credit in the form of revolving fund through multipurpose cooperatives (MPCs).

This indicates that the majority of the BKC's are dependent on NGO funds rather than their members mobilized share capital. As it was investigated during the study, 97% of the BKC's members have only bought one share to meet the formality of membership (figure 6). It is observed that, the member's share capital contribution is not enough to

purchase the necessary beekeeping materials. Due to this the BKC's are dependent on NGO revolving credit fund through MPCs found in the villages. Whereas the major source of credit for BKC's nonmembers are DMFI. As it was observed during the study 46.25% of the nonmembers get credit from DMFI (figure 7).

Figure 7 Access (source) of credit for members and nonmembers beekeeping activity

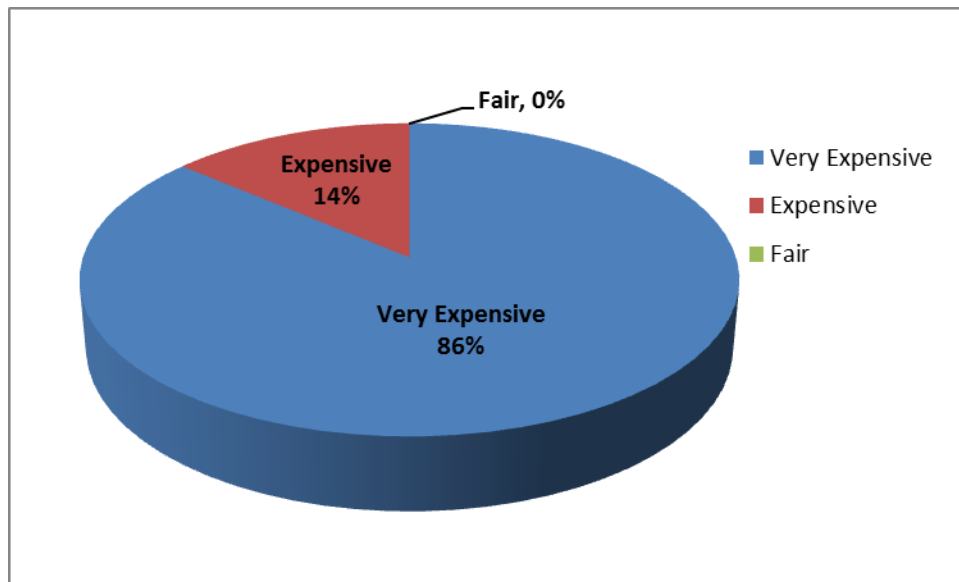


Source: own survey, 2014

4.5.2 Price of Modern Beehive and its accessories

It is obvious that, the willingness of honey producers to purchase beekeeping input is influenced by the expected bee colony products price. Members can utilize more improved beekeeping input when the price of these inputs is easily affordable to them. But when the price of modern beekeeping in put becomes very expensive, members couldn't utilize it

Figure 8 Members feedback on the price of modern bee hive and its accessories



Source: own survey 2014

In this way, members are very much price sensitive and enthusiastic to have great concern upon improved bee keeping practices. As figure 8 shows, among the total respondents, 86.25% of members responded as the current price of MBH and its accessories is very expensive. This result implies, the current very expensive price of MBH and its accessories is one constraint which hinders members from diversifying their production.

4.5.3 Beekeeping extension service access

The survey work result of table 13 illustrated that, 100% of BKC members do have get extension service at least one time within a month. Whereas, the study result indicates that, 86.25 % of BKC's nonmembers have been visited by the extension agent at least once a month with the study period (table 13). This indicates that as the Bee Hives of BKC's are found collectively and their members are also found collectively, it makes preferable for the DA to visit and to give the necessary technical support for the BKC

member honey producers. As a result the BKC do have better exposure to get extension service compared to non members.

Table 13 Beekeeping extension service

| S. No | Access of extension Service/Contact with DA at least once a month | BKC Members | | BKC Nonmembers | | Total count | Total% |
|-------|---|-------------|-----|----------------|-------|-------------|--------|
| | | Freq. | % | Freq. | % | | |
| 1 | Yes | 80 | 100 | 69 | 86.25 | 149 | 93.13 |
| 2 | No | 0 | 0 | 11 | 13.75 | 11 | 6.88 |
| | Total | 80 | 100 | 80 | 100 | 160 | 100.00 |

Source: own survey 2014

4.5.4 Location of Modern Bee Hives

Proximity of the BHs near to the residence of the honey producers is important factor to on time conduct bee colony management work. Continuous and strict bee colony management work has a direct impact on increasing honey production and productivity per hive. The long distance apiary site of BKC from the residential areas of the members indicates clearly the difficulty of the members to closely conduct their apiary site management work.

Table 14 Location of Beehives

| S. No | Place of MBH | BKC Members | | BKC Nonmembers | | Total count | Total% |
|-------|-----------------|-------------|------|----------------|--------|-------------|--------|
| | | Count | % | Count | % | | |
| 1 | Back yard | | | 72 | 89.10% | 72 | 45.00 |
| 2 | Under the roof | | | 8 | 10.90% | 8 | 5.00 |
| 3 | In the house | | | | | | 0.00 |
| 4 | In closure area | 80 | 100 | | | 80 | 50.00 |
| | Total | 80 | 100% | | 100% | 160 | 100.00 |

Source: own survey 2014

According to the result of table 14 of this study 100% of BKC members keep their colonies in the closure areas. Whereas 89.1% of nonmembers keep their colonies around their home stead (back yard) mainly to enable close supervision of colonies (table 14). The remaining 10.9% of non-members keep their BH under the roof near their house (table 14). This implies, the majority of nonmembers keep their BH near

their residence and this enables them to conduct the day to day bee colony management work effectively.

4.5.5 Access of Training

As the study result of table 15 indicates, among the total respondents 83.75% of members of BKC's have access of training on improved beekeeping practices. Whereas, among the total nonmember respondents only 41.25% of them have got improved beekeeping practice training (table 15). This shows that BKC members do have better access for improved beekeeping practices trainings compared to nonmembers.

Table 15 Access of training

| S. No | Access of training on improved Beekeeping practices in FY13 | BKC Members | | BKC Nonmembers | | Total count | Total% |
|-------|---|-------------|-------|----------------|-------|-------------|--------|
| | | Freq. | % | Freq. | % | | |
| 1 | Yes | 67 | 83.75 | 33 | 41.25 | 100 | 62.5 |
| 2 | No | 13 | 16.25 | 47 | 58.75 | 60 | 37.5 |
| | Total | 80 | 100 | 80 | 100 | 160 | 100 |

Source: own survey2014

4.6. Analysis of the honey productivity difference between members and nonmembers of beekeeping cooperatives in the study area

The amount of honey produced from one bee hive per season varies from places to places, which in most cases is determined by the existences of plenty pollen and nectar source plants and the level of management and input.

Table 16 Honey Production of BKC members and nonmembers in Kg per one season in FY2013

| | Honey Production in Kg per one season in FY2013 | Nonmembers | | Members | |
|---|---|------------|---------------|-----------|------------|
| | | Number | Valid Percent | Frequency | Percent |
| 1 | 8 to 10 KG | 12 | 15.00 | | |
| 2 | 11 Kg to 15 Kg | 6 | 7.50 | | |
| 3 | 16Kg to 20 Kg | 5 | 6.20 | | |
| 4 | 21Kg to 25 Kg | 18 | 22.50 | 67 | 83.8 |
| 5 | 26Kg to 30 Kg | 29 | 36.20 | | |
| 6 | 30 Kg to 45 Kg | 10 | 12.50 | 13 | 16.2 |
| | Total | 80 | 100.00 | 80 | 100 |

Source: own survey 2014

As the result of this study indicates on (table 16) 83.8% of the members replied their average BKC's apiary site honey product per hive is only 25Kg per hive per season where as 71.2% of the nonmembers produce from 25Kg to 45 Kg per season per hive. This implies the majority of the members practice better bee colony management practice as their bee hive is found near their home. Whereas, the majority of BKC's members didn't perform bee colony management work, their production decreases as a result of poor bee colony management and as a result of pest attack.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Killite Awlalo Woreda is well known by its long tradition and culture of beekeeping. However, mainly due to lack of improved bee keeping technologies, shortage of enough bee forage and weak market linkage development problem for bee colony product, the Woreda honey producers in general and the BKC members in particular have not been sufficiently benefited from the sub sector.

Based on the result of members perception on their BCKs the study concluded as follow:

The currently existing management committees of BCKs do have limited capacity. Consequently, they do have a limitation to effectively control members' participation, and to manage the physical and financial resources of the BCKs efficiently. The weak participation of members on general meeting, failure of MC to on time report the status of the cooperative for the members and the failure of the MC to make decisions based on the by law has exposed the BKC for the problem of transparency and accountability.

Due to lack of strong internal members controlling mechanism with in BCKs the majority of BKC members do not participate on the minimum time they are expected to be engaged on their main bee colony management work. Therefore, this weak member's participation is observed with in BCKs as a result of poor members' participation controlling mechanism. Even if the majority of BKC members have got improved beekeeping training, only half of the members perform bee colony management work at apiary site. This unbalanced participation of members on improved bee colony management work is among the major constraints which decreases the honey productivity of BCKs.

It was observed the majority of BKC's do have lack of working capital. The direct cause of weak financial capacity of BKC's is observed as a result of limited share capital contribution of members. The existing external honey processors and whole sale purchasers are not willing to give reasonable price for the BKC's better quality honey product. Due to this, the cooperatives are forced to sell their good quality honey product for private retailers and consumers by relatively low price.

The distant location of BKC's apiary site limits the members' not to nearly participate on the day to day bee colony management and inspection work effectively. Therefore, the BHs of the BKC's are easily exposed to honey bee pest attack like; ants, wax moth and honey badger. Therefore, the pest attack is observed as one of the major factor which decreases the productivity of BKC's.

Due to the aggregate effect of these internal and external constraints, the productivity of BKC's is not significant compared to their potential and it is also lower than private producers. Accordingly the non members who do have better productivity is by 32.5% greater than that of BKC members.

5.2 Recommendations

Based on the observed results, this study gives the following recommendations which are expected to contribute for reduction of the negative impacts of those identified constraints on BKC.

- The BKC are expected to perform the demand oriented production and marketing activities through providing BK inputs by fair price. In addition, BKC should create a better market linkage with honey processors and better honey purchasers to sell the honey product of their members by enhanced selling price which makes them profitable.
- The existing management committees of BKC do have limited capacity to effectively lead the cooperatives. Therefore, members have to focus on electing those committed and better educated members with in BoD. The stakeholders working on BKC are also expected to give capacity building trainings based on the identified gaps of BoD and the members as well.
- The BKC are expected to improve transparency and accountability. Accordingly, they are expected to improve the participation of members on the major decisions made with in BKC. In addition, the BoD are also expected to perform the leadership and to pass decisions only based on the mandate given to them on the bylaws of the BKC.
- As the majority of members are not effectively participating or engaging themselves on bee colony management activities within their BKC apiary site, the honey productivity of BKC is not satisfactory compared to private producers. Therefore, the cooperatives are expected to strengthen their members' participation controlling mechanism to enable them practically engaged on the day to day bee colony management activity and finally contribute for better productivity.
- The apiary sites of BKC are expected to have strong fence which do have a capacity to prevent entrance of pests like honey badger. It is also recommended for BKC to additionally use 'Top Bar Hive' to minimize the destruction problem of MBH by honey badger. As Top Bar Hive do have the strong bottom side made up of thick timber, it is not easily affected by the attack of honey badger.

- As weak share capital contributions is the direct cause for shortage of finance with in BKC's, strong members' mobilization work is expected for additional share contribution. In addition, developing organized marketing channel for BKC's starting from the local market to the central market should be intensively done to improve the income the BKC's expected to get. To realize this, applicable value chain analysis and market linkage work is expected to be done by the integration of governmental and NGO stake holders. Finally, besides establishing a number BKC's, it should also be expected from every stake holders in the study area to enable BKC's to focus on market oriented production system to be successful in their overall activity.

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6 APPENDIX

Appendix I: Structured questionnaire

Mekelle University College of Business and Economics

Department of Management

Development Studies Course

Interview Schedule developed for the study of

The Honey Production Constraints of Beekeeping Cooperatives

(Case study of KilliteAwlalo District)

I would like to thank you, for your cooperation and willingness to fill up the questionnaire. The aim of this research is to find out the honey production constraints of Beekeeping Cooperatives in KilliteAwlalo District. In addition, this study will also try to give recommendations which will contribute for the reduction of the investigated problems of beekeeping cooperatives.

Your information is used only for research purpose. It is not necessary to write your name.

- Date _____ Code No _____
- Name of Respondent _____ Woreda _____
- Kebele _____ Village _____
- Member Non Member
- If member, the name of the Bee Keeping Cooperatives the member currently participating _____
- Interviewer name _____

Part I

1 Household Characteristic

1.1 Age of the member _____ (years)

1.2 Sex Female (0) Male (1) _____

1.3 Family size in Number Male _____ Female _____ Total _____

1.4 Level of education of respondent

1. Illiterate (0) 2. Read and write (1)
3. Grade 1-8 (2) 4. Grade 8-12 (3)

2. Participation Status in Honey Production Activity

2.1 When did you start bee keeping activity? _____

2.2. How did you start beekeeping?

| |
|---|
| • Own interest and free choice (3) |
| • Awareness by agriculture extension agents (2) |
| • Influenced by neighbors (1) |

2.3.What are the driving forces to start honey production?

1. Income (0) ____ 2. Home Consumption (1) ____
3. To get better Skill (0) ____ 4. Others (specify) (4) ____

2.4. How did you start beekeeping?

1. By catching the swarm
2. By purchasing the honeybee colony
3. through inheritance
4. 1 & 2
5. 1, 2 &3 6. Any other (specify) ---

2.5 How many Modern Bee Hive do you have____ and how many Bee colonies do you have in your modern bee hive ____?

2.6 How many traditional bee hive do you have____ and how many bee colonies do you have in your traditional bee hive ____?

2.7 For how many hours do you spend working in your honey production site during normal working day on average?

(For Non Members on their Privet Apiary Site and for members' on their cooperative apiary site)

2.8 Did you ever get beekeeping training? 1. Yes 2. No

2.9 How many times did you get beekeeping training in 2013? _____ Times

2.10 If your answer for Q.2.9 is yes, from where did you have got the training?

- 1. Research center 2. Agricultural and rural development
- 3. Non-Governmental Organization (NGO) 4. Any other (specify) ----

2.11 If your answer for Q.2.10 is yes, on what area did you get training?

- 1. Colony split 2. Honey bee colony management 3. Queen rearing
- 3. Processing, handling & storage 4. Market information and linkage
- 5. Input utilization 6. Bee forage development 7. Other specify-----

2.12 If your answer for Q.2.11 is yes, what methods were employed during training?

- 1. Lecture 2. Demonstration
- 3. Group discussion 4. Combination of all
- 5. Any other-----

2.13 If your answer for Q.2.12 is yes, did you find the training useful? 1. Yes 2.No

2.14 What benefits have you gained by attending the training?

1. Understanding effective beekeeping management using modern hives

2. Understanding improved beekeeping management

(e.g. feeding, inspecting, spurring swarm control)

3. Any other (specify) -----

2.15 Where did you keep your honey bee hives?

1. Backyard 2. Under the roof

3. In the house 4. In the closure areas apiary site 5. Any other
(specify) -----

2.16 Which organizations are the major sources of finance for your beekeeping activity input purchase? 1. Agriculture Office Input supply department

2. NGO in the area (Please explain by their name)

3. Debit Credit and Savings Institution (DMFI)

4. from my own income

5. Other (Please explain by their name)

2.17 For what purpose would you practice beekeeping?

1. Traditional medicine

2. HH members Home consumption

3. Income

4. Other specify -----

2.18 Do you have contact with extension agent in FY 2013? Yes No

2.19 If your answer for Q.2.18 is yes, how many times do the extension agents visit your apiary site / bee keeping cooperative apiary site/ per month in FY2013?

2.20 Who assisted you for utilizing modern bee hive? Show in rank

1= 1-20% 2= 21-40% 3= 41-60% 4= 61-80% 5= >81

| No | Category | Rank in terms of providing | | |
|----|------------------------------------|----------------------------|------------------|----------------------|
| | | MBH | Advisory service | Technical assistance |
| 1 | Agricultural and Rural development | | | |
| 2 | Non-Governmental Organization | | | |
| 3 | Research Centers | | | |
| 4 | Other (Specify by their Name) | | | |

2.21 Have you visited beekeeping demonstration site in 2013? 1. Yes 2. No

2.22 If your answer for Q.2.21 is yes, where did you visit?

1. Neighbor private apiary site
2. Agricultural and Rural Development demonstration site
3. Research center 4. Nongovernmental organization demonstration site
5. Other Beekeeping Cooperative Apiary Site (Pleas state by name)_____

2.23 If your answer for Q.2.22 is yes, who organized the visit?

1. Agricultural & rural development
2. NGO 3. Research center/IPMS 4. Any other-----

2.24 If your answer for Q.2.23 is yes, what new things you learn during the visit?

1. Appropriate site selection 2. Appropriate apiary management
3. Other (specify) -----

2.25 What was your major practice in your honey production process? Show by rank.

Rank 1 = 0 2= 1-20% 3= 21-40% 4= 41-60% 5= 61-80% 6= >81%

| No | Activity in beekeeping | Rank |
|----|--|------|
| 1 | Apiary site guarding and inspecting | |
| 2 | Protecting the beehives from pest attack | |
| 3 | Queen rearing, splitting, swarm control | |
| 4 | Honey harvesting and honey extracting | |
| 5 | Honey marketing | |
| 6 | Colony marketing | |
| 7 | Bee forage preparation | |
| 8 | Transferring bees from common boxes to movable frame hives | |
| 9 | Apiary site compound strengthening and apiary site shade maintenance | |

2.26 Did you have borrowed money for beekeeping inputs purchase in 2013?

1. Yes 2.No

2.27 Was there any time you could not use improved beekeeping practice due to lack of access to credit in 2013? 1. Yes 2.No

2.28 Did you think that credit will help you to improve your beekeeping practice?

1. Yes 2.No

2.29 If your answer for Q.5.23 is yes can you clarify how credit contributes to your beekeeping activity in 2013? _____

2.30 If your answer for Q.2.29 is yes from where did you get credit in 2013?

1. Debit Credit and Savings Institution (DMFI) 2. Individuals'

3. Other banks 4. Credit and saving associations 5. Other (specify)

2.31 When is the peak honey production period? From _____ to _____Month

2.32 In transfer from traditional to MBH did the quality of honey improved? 1. Yes

2. No

2.33 If your answer in Q.5.33 is yes, how?

Harvesting _____

Extractor

Storage (container) _____

Market

3 Harvesting Activity

3.1 How many times do you harvest honey per annum per colony from your apiary site?

1. One times 2. Two times 3. Three times 4. Other specify—

3.2 What is the amount of colony products you have got in FY2013?

| Items | Unit | Yield/hive/Year | |
|--------------|--------------|-----------------|-----|
| | | MBH | TBH |
| White honey | Kg/Hive/year | | |
| Yellow honey | Kg/Hive/year | | |
| Red honey | Kg/Hive/year | | |
| Bee wax Kg | Kg/Hive/year | | |
| Crude Honey | Kg/Hive/year | | |
| Colony | Number | | |
| Total | | | |

3.3 Is there an increase in your production after you apply new technology/ innovation in honey bee keeping’?’?

1. Yes 2, No

3.3 What kind of management have you been applied for safe honey storage after harvesting? _____

3.4 Do you have used honey extractor in FY2013 for honey purification? 1. Yes 2. No

4 Marketing Activities

4.1 Honey income (estimated price or monetary value) you have got from bee products during the cropping season in FY 2013?

| Items | Unit | Unit price (birr) | |
|--------------|--------|-------------------|-----|
| | | MBH | TBH |
| White honey | Kg | | |
| Yellow honey | Kg | | |
| Red honey | Kg | | |
| Bee wax Kg | Kg | | |
| Crude Honey | Kg | | |
| Colony | Number | | |
| Total | | | |

4.2 When do you sell the largest proportion of your honey product?

1. During Harvest
2. Two to three Months after Harvest
3. Four and more than four months after harvest

4.3 What is your major reason to sell your honey product on the time stated at question No. 2.3

1. To meet immediate livelihood cash need of the family
2. for tax payment 3. for repayment of loan
4. For Celebration of holiday of marriage ceremony
5. For home furniture's
6. for student's educational material purchase
5. If other pleas justify_____

4.4 What do you think the price offered for your honey product?

1. Appropriate
2. Low
3. High

4.5 Where did you have sold the honey you have harvested in FY 2013?

Rank 1 = 0 2= 1-20% 3= 21-40% 4= 41-60% 5= 61-80% 6= >81%

| | Type of purchaser | Rank |
|---|----------------------------------|------|
| 1 | To consumers in the local market | |
| 2 | To the private retail traders | |
| 3 | To whole sell buyers | |
| 4 | To Honey processing factories | |
| 5 | To other beekeeping cooperatives | |
| 6 | To the government organizations | |
| 7 | To NGO | |
| 8 | Others, specify__ | |

4.6 Do you have faced honey quality related problems when selling? 1. Yes 2.No

4.7 If your answer to the question No 4.6 is yes what is the main reason for the problem of the quality of honey you have sold in FY 13

4.8 What was the trend of your beekeeping product since your start apicultural activities?

1. Sharply increased 2.Increased 3.Decreased
 4. Significantly decreased 5. No change

4.9 What does the trend of your profit on beekeeping since the last three years?

1. Sharply increased 2.Increased 3. Decreased
 4. Significantly decreased 5. No change

4.10 What was the average honey price (Birr/kg honey) for the top quality honey in 2013?

_____Kg

4.11 What percent of the income do you get from your beekeeping activity colony products did you have save in 2013? (Show in table using `√`)

| | |
|--------------------------|--|
| Saving from bee products | |
| 1-20% of sale | |
| 21-40% of sale | |
| 41-60% of sale | |
| 61-80% of sale | |
| >81% of sale | |

4.12 What was your expense from January to December in 2013?

| No | Expenditure for beekeeping production | Unit cost/birr | Total cost/birr |
|----|---------------------------------------|----------------|-----------------|
| 1 | Beekeeping materials | | |
| 2 | Bee forage (planting & cultivation) | | |
| 3 | Supplementary feed | | |
| 4 | Improved ant protection | | |
| 5 | Hive shading | | |

| | | | |
|----|-------------------------------------|--|--|
| 6 | Marketing cost(transaction costs) | | |
| 7 | Storage (container) | | |
| 8 | Beekeeping materials | | |
| 9 | Bee forage (planting & cultivation) | | |
| 10 | Other/specify | | |

5 Perceived Constraints Beekeeping Cooperative Activities

5.1 What are the critical constraints and problems affecting honey production in your area?

- 1 Inadequate availability of production technologies,
2. Limited availability of bee flora mainly due to deforestation,
3. Lack of beekeeping Knowledge/skill, 4. Lack of marketing accessibility.
5. Other _____

5.2 What do you think the cost of MBH is?

1. Cheap 2. Fair 3. Expensive 4. Very Expensive

5.3 From the total honey product affected by pests, which pest is the major honey production destructor? Put in rank

Rank 1 = 0 2= 1-40% 3= 40-80% 4= 81-100 %

| No | Pests | Rank |
|----|---------------|------|
| 1 | Ants | |
| 2 | Honey badger | |
| 3 | Lizard | |
| 4 | Others(state) | |
| 5 | | |

5.4 Based on your past beekeeping experience, put the following beekeeping cooperatives honey production constraints by rank

| No | Constraints | Important(2) | Not Sure (1) | Less Important |
|------------|---|--------------|--------------|----------------|
| I | Organizational/ Internal Problems | | | |
| 1.1 | Limited Capacity of Management Committee | | | |
| 1.2 | Inadequate initial capital | | | |
| 1.3 | Poor participation of members in DM | | | |
| 1.4 | Lack of transparency and accountability | | | |
| 1.5 | Failure to notify annual meetings | | | |
| 1.6 | Knowledge about duties & responsibilities | | | |
| 1.7 | Equal opportunity in passing decision | | | |
| 1.8 | Limitation to exercise their right | | | |
| II | External Problems | | | |
| 2.1 | Small and fragmented farm holdings | | | |
| 2.2 | High- influence of vested interest | | | |
| 2.3 | Low availability of quality bee forage | | | |
| 2.4 | Climate fluctuation | | | |
| 2.5 | Pesticide impact | | | |
| 2.6 | Price increase for agricultural inputs | | | |
| 2.7 | Existence of other competitors | | | |
| 2.8 | Low price of produces | | | |
| 2.9 | High cost of production | | | |
| III | Infrastructural Problems | | | |
| 3.1 | Availability of trained man power | | | |
| 3.2 | Information on market oriented production | | | |
| 3.3 | Communication Technology | | | |
| 3.4 | Marketing Infrastructure | | | |
| 3.5 | Storage and transportation facility | | | |
| 3.6 | Linkage with Financial institution | | | |
| 3.7 | Marketing cost(transaction costs) | | | |
| IV | Honey Production Material/ Input Problem | | | |
| 4.1 | Beekeeping materials (Inputs) | | | |
| 4.2 | Bee forage (planting & cultivation) | | | |
| 4.3 | Supplementary feed | | | |
| 4.4 | Improved ant protection mechanisms | | | |
| 4.5 | Hive shading | | | |
| 4.6 | Storage (container) | | | |
| 4.7 | Other/specify | | | |

6 Specific Suggestions

Please indicate your specific suggestions to improve the production performance of beekeeping cooperatives bee colony products production, marketing and members' economic benefit: _____

Part II To be answered only by Members of Beekeeping Cooperative

2.1 When did you start bee keeping activity? _____

2.2. How did you become member of beekeeping cooperative?

| |
|---|
| • Own interest and free choice (3) |
| • Awareness by agriculture extension agents (2) |
| • Influenced by neighbors (1) |

2.3. What are the driving forces to start honey production by participating in beekeeping cooperative?

1. Income (0) ____ 2. Home Consumption (1) ____

3. To get better Skill (0) ____ 4. Others (specify) (4) ____

2.4. How did your beekeeping cooperative start beekeeping?

1. By catching the swarm

2. By purchasing the honeybee colony

3. through inheritance

4. 1 & 2 5. 1, 2 & 3 6. Any other (specify) ---

2.5. Do you think that the majority of members do participate on the minimum time they are expected to be engaged on cooperatives beekeeping practices?

1. Strongly agree

2. agree

3. Dis agrees

4. Strongly dis agree

2.6. What is the trend of member’s participation controlling mechanism on your beekeeping cooperatives honey production process?

- 1. Very strong
- 2. Strong,
- 3. Weak
- 4. Very weak

2.7 Does the beekeeping Cooperative gives benefit (dividend) according to members’ participation?

- 1. Strongly agree
- 2. agree
- 3. Dis agrees
- 4. Strongly dis agree

2.8 Do you have earned dividend until now by participating in your beekeeping cooperative?

- 1. Yes
- 2. No

2.9 If your answer to Q. No 2.8 how many birr have you earned by participating in beekeeping cooperative in the form of dividend with in the last two years?

_____ Birr

2.10. How is your sense of ownership on your beekeeping cooperative?

- 1. Very high
- 2. High
- 3. Average
- 4. No sense of owner ship

2.11. Perception of members on cooperatives’ board and management Transparency and Accountability

| | Description | Yes (1) | No (0) |
|---|----------------------------------|----------------|---------------|
| 1 | Conducting Annual Meeting Timely | | |
| 2 | Reporting to the General Meeting | | |
| 3 | Deciding Based on the By-Law | | |
| 4 | Awareness on Duties and Rights | | |

| | | | |
|---|---------------------------------|--|--|
| | | | |
| 5 | Dividend distribution Procedure | | |

2.12 Perception of Members' Satisfaction on the honey production activity and the services rendered through beekeeping cooperatives?

| S. No | Indicators | Yes (1) | No (0) |
|-------|---|---------|--------|
| 1 | Price Differences | | |
| 2 | Demand oriented | | |
| 3 | Proximity to the village | | |
| 4 | Timing of Honey Production Input Supply | | |
| 5 | Costs to use the services | | |
| 6 | Quality of services | | |
| 7 | Quality Honey Production | | |
| 8 | Quality Honey Extraction and Storage | | |
| 7 | Better Honey Selling potential | | |

2.13. Did your beekeeping cooperative borrow money for beekeeping inputs in 2013?

1. Yes 2.No

2.14. Was there any time your beekeeping cooperative could not use improved beekeeping practice due to lack of access to credit in 2013? 1. Yes 2.No

2.15. Did you think that credit will help to improve beekeeping practice of your beekeeping cooperative? 1. Yes 2.No

2.16. If your answer for Q.2.15 is yes can you clarify how credit contributes to your beekeeping cooperative activity in 2013?

2.17 If your answer for Q.2.17 is yes from where did you get credit in 2013?

1. Debit Credit and Savings Institution (DMFI) 2. Individuals'

3. Other banks 4. Credit and saving associations 5. Other (specify)

2.19. What kind of management has been applied for safe honey storage by your beekeeping cooperative? _____

2.20. Did your beekeeping cooperative use honey extractor in 2013? 1. Yes 2. No

2.21 Did your cooperative have honey quality related problems when selling? 1. Yes
2.No

2.22. What was the major focus of your beekeeping cooperative activity in FY2013?
Show by rank. Rank 1 = 0 2= 1-20% 3= 21-40% 4= 41-60% 5= 61-80% 6= >81%

| No | Activity in beekeeping | Rank |
|----|---|------|
| 1 | Input supply: (hive and bee hive equipment's) | |
| 2 | Improved Beekeeping technology awareness creation for the members | |
| 3 | Processing: (careful harvest, honey extract, and packing) | |
| 4 | Storage and transportation | |
| 5 | Honey marketing | |
| 6 | Colony marketing | |

2.23 How many shares do you have in your beekeeping cooperative?

1. One Share 2. Two Share 3. Three share 4 More than three share

Part III To be filled Only by Non Members

3.1 Do you have an interest to be a member of beekeeping cooperative in the future?

1. Yes 2. No

3.2 If your answer to question No. 3.1 is yes, pleas state your reason

3.3 If your answer to question No. 3.2 is No, pleas state your reason

Thank You