Original Research Article

HONEY BEE PRODUCTS MARKETING PRACTICES: CHALLENGES AND OPPORTUNITIES IN AND AROUND MAKSEGNIT TOWN, AMHARA REGION, ETHIOPIA

ABSTRACT

The study was conducted in Amhara region Maksegnit town north Gondar Ethiopia with the objective of investigating honey bee products marketing practice; opportunities and constraints. The data was collected from 40 households from four PAs by using pretested semi structure questionnaire. The collected data revealed that the major products of honey bee are honey (67.5%) and the rest (32.5%) colony itself. The major reason of keeping bees in the study area is for income source. The value obtained by ranking index revealed that middlemen, tej (a mead or honey wine) houses and retailer are the three major honey buyers with the index values of 0.30, 0.24 and 0.21, respectively. The price of honey is majorly governed by quality and color of the honey with index values of 0.4 and 0.3, respectively. The highest and the lowest price of honey in the study area was found to be 133.50 ± 6.222 and 69.25 ± 12.483 Ethiopian birr (ETB) for white and black honey, respectively. Lack of road, lack of materials for measuring the quantity of honey and the variation in the color of the honey were found to be the three major constraints of honey marketing with the index value of 0.16 of *0.143 and 0.141, respectively. The major challenge for marketing of bee colony is unavailability of organized marketing place. The Increment in number of unemployed youth, increment in price of honey and colony and the high demand of honey and colony in the area are the three major opportunities available to be engaged in beekeeping sector in the study area. To alleviate challenges of bee product and colony marketing, the government should provide important inputs and awareness should be created for the farmers.*

Key words: *Bee product marketing, Challenges, Colony, Opportunities.*

INTRODCTION

Ethiopia is a leading honey producer in Africa and one of the ten largest honey producing countries in the world. Beekeeping contributes to peoples' livelihoods in almost every country in the world. Particularly in developing countries, small-scale beekeeping contributes significantly to the livelihood security by producing honey and accessing it into market (FAO, 2009). The beekeeping sector is also an integral part of agriculture in Ethiopia. It is contributing to the household food security and national economy through export.

Beekeeping is valued environment friendly agricultural activity. It produces mainly natural honey and its associated by-products - beeswax, royal jelly and pollen. Honey is one of the products of beekeeping which has nutritional and medicinal value. It is a useful source of high-carbohydrate food. According to Kumar and Debjit (2010) a 100mililitre of honey contains about 300 to 320 calories. Honey also contains anti-bacterial, anti-inflammatory and anti-oxidant properties that may be beneficial for combating multi-drug resistant bacteria as well as for preventing chronic inflammatory processes, such as atherosclerosis and diabetes mellitus (Natalia.et al. 2014). Due to its wide climatic and edaphic variability, Ethiopia is a home to some of the most diverse flora and fauna in Africa that provide surplus nectar and pollen source to foraging bee colonies (Girma, 1998). This assisted to exist more than 12 million honey bee colonies in the country (Gezahegn, 2001). Despite the favorable agro ecology for honey production and the number of bee colonies the country is endowed with, the level of honey production and productivity in the country is remain low. Ethiopia has the potential to produce 500,000 tons of honey per year and 50,000 tons of beeswax per annum, but currently production is limited to 43,000 tons of honey and 3,000 tons of beeswax (MoARD, 2009).

The major honey and beeswax producing regions in Ethiopia are Oromia (41%), Southern Nations Nationalities, and Peoples' Region (SNNPR) (22%), Amhara (21%) and Tigray (5%) however, the country is suffering from the ecological degradation of its natural resources and this means the basis for any honey production is threatened and affected. in many regions of the country, beekeeping is considered as one of the income-generating activities for resource-poor farmers including women, youth and the unemployed sectors of the community (CSA,2011).

Ethiopia produces about 43,373 metric tons of crude honey per year, thus shares 23.5% of Africa and 2.35% of the world's honey production. This makes the country rank 1st in Africa and 10th in the world (AMP, 2007). Despite the long tradition of beekeeping in Ethiopia, having the highest bee density and being the leading honey producer as well as one of the largest beeswax exporting countries in Africa, the share of the sub-sector in the Gross Domestic Product (GDP) has never been commensurate with the huge numbers of honeybee colonies and the country's potentiality for beekeeping. Productivity has always been low, leading to low utilization of hive products domestically, and relatively low export earnings. Thus, the beekeepers in particular and the country in general are not benefiting from the sub sector (Nuru, 2002).

North West part of the Amhara region is believed to have diversified type of vegetation and cultivated crops and potential for beekeeping activities. In north Gondar zone large proportion of inaccessible lands for agriculture are covered with various types of trees, shrubs, bushes, and field flowers that make this part of the regions still potential for beekeeping. This could be great opportunity to tackle food insecurity through beekeeping. However, it requires making efforts to address some of the major problems of honey bee product marketing and opportunities and to keep it productive and profitable in the sustainable way. Therefore this research was aimed at investigating honey bee products marketing practices: challenges and opportunities to generate baseline information for further research and policy makers.

MATERIAL AND METHODS

Descriptions of the Area

The study was conducted in Gondar Zaria District (Maksegnit town) in North Gondar Zone, Amhara National Regional State of Ethiopia. The District is located at 37° 24' 24' 'E - 37° 45' 43' 'E and 12° 7' 23' 'N - 12° 39' 24' 'N and its estimated total area is 1286.76 km2. Being part of the North Gondar Zone, it is bordered to the South by Libo Kemkem District of South Gondar Zone, to the Southwest by Lake Tana, to the West by Dembiya, to the North by Lay Armachiho, to the Northeast by Wegera, and to the Southeast by Belessa districts. Gondar Zuria District is located at about 1107 - 3022 meters above sea level, and falls in to two agro-ecological zones. The two agro-ecology zones, Weynadega (1500-2300 m.a.s.l) and Dega (2300-3200 m.a.s.l.) constitute the largest area coverage. In the District, temperature ranges between 14 – 20 °C with the mean

annual temperature of 17.9 °C. Rainfall ranges between 1030 - 1223 mm with the mean annual of 1100 mm.

Figure 1. Map of Amhara Region, Maksegnit town.

Study Design

For this study cross sectional design was used, and it was conducted starting from February up to June 2018.

Sampling size and Sampling Techniques

The study was conducted in beekeeping potential around Gondar Zuria district in Maksegnit town of the Amhara region. To conduct this research, multistage stage sampling techniques was utilized. Prior to the actual survey, information was gathered from primary data and informal survey from key informants. Based on the information obtained from primary data and informal survey study Peasant Associations (PAs) were selected purposively. Selection was based on accessibility of road and honey bee population in the study area. Accordingly, a total of four PAs namely Seguaj, Jayra, Tsiyon, Chichaye were selected for this study. From each PAs, 10 respondents with a total of 40 household's was randomly selected after identifying beekeepers purposively.

Data Sources and Data Collection Method

Both Primary and secondary data was collected. The primary data was gathered by using questionnaires, focus group discussions, and direct observation. Whereas secondary sources of data was collected from previous reports of agricultural office of the district. The secondary data was also collected from previous documents, internet, published books. Semi-structured questionnaire interviews was developed to discover demographic characteristics, honey bee products acquisition and reasons for keeping them (including, income from honey bee products and use), major constraints and opportunities of honey bee products in the study area.

Data Analysis

Depending on the type of information collected different analysis methods was applied. Data collections were organized, summarized and analyzed used SPSS statistical package (SPSS 20). Descriptive statistics such as mean, percentages, standard deviation was used during analysis and it was presented by using tables and graphs.

Rank of Responses were calculated based on the following formula.

Index = sum of [The last rank * respondents in rank 1 + the second rank from the last * respondents in rank 2 … will continue as per the rank level + 1 * respondents in the last rank] for particular purpose divided by sum of [The last rank * respondents in rank 1 + the second rank from the last * respondents in rank 2 ….will continue as per the rank level + 1 * respondents the last rank] for all purpose.

RESULT AND DISCUSSION

Purpose of keeping Bee colony and Major Honey Bee Products

The Major honey bee products and purposes of keeping honey bee in the study area is presented in Figure 2. The major purpose of beekeeping in the study area is for cash income and the majority (67.5 %) of respondents revealed that honey is first bee product in the study area. Other finding in the region also indicated that income source and consumption are the two major purpose of keeping bees in Amhara region and in Gamo Gofa Zones of Southern Ethiopia (CACC 2003; Keralem, 2005; Yemane and Taye 2013). The majority (45 %) of households

starts of beekeeping by catching swarms. In line with this research, honey (97.5 %), and bee colony (46.7 %) are the major bee products in Burie district (Tessega, 2014).

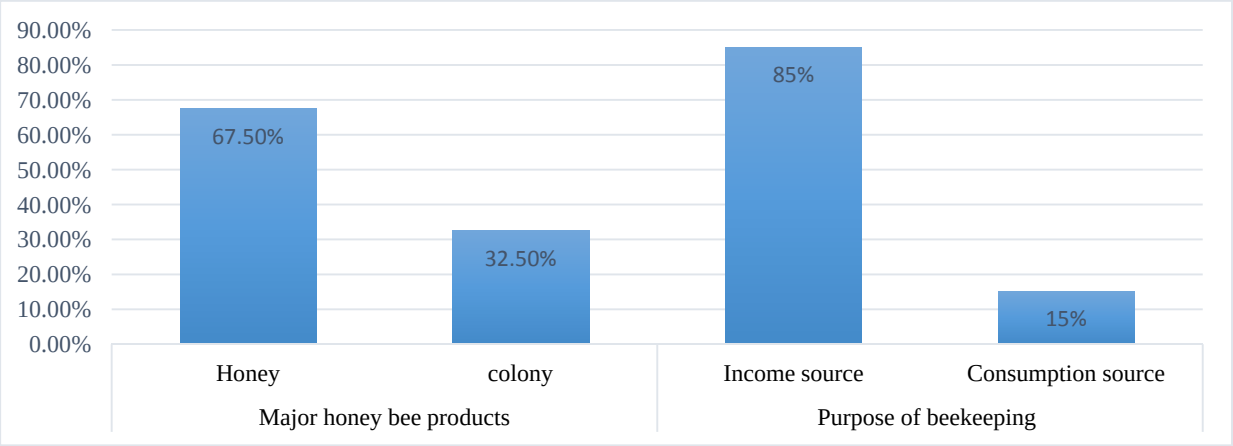

Figure 2. Major honey bee products and purpose of production

Marketing system of honey

Customers of honey in the study area

A customer of honey in the study area is presented in Table 1. Beekeepers of the study area produce honey for income source and for consumption and sell their produced honey at original market places and have different costumers. In the study area, honey is transported to the market more of by human labor due to lack of road access. The major customers of honey in the study area are middlemen, tej (a mead or honey wine) house and retailer with the index value of 0.30, 0.24 and 0.21, respectively. In line with this finding the major customer of honey major customer of honey in Bure districts are tej houses (Tessega, 2014).

Table 1. Customers of honey in the study area.

Customers	**Sample of respondents n=40**							
	1st rank	2nd rank	3rd rank	4th rank	5th rank	weight	index	rank
Tej house	6(15)	14(35)	17(42.5)	3(7.5)	0(0)	143	0.24	2
Middlemen	25(62.5)	11(27.5)	4(10)	0(0)	0(0)	181	0.30	1
Wholesaler	2(5)	15(37.5)	9(22.5)	12(30)	2(5)	123	0.09	5
Retailer	0(0)	1(2.5)	2(5)	6(15)	31(77.5)	53	0.21	3
consumer	6(15)	0(0)	8(20)	19(47.5)	7(17.5)	99	0.17	4
Total weight				599				

Values in bracket are percentages

Factors that govern the price of honey

The factor which govern the price of honey is presented in Table 2.The survey results indicates that the marketing system or the price of honey is affects by different variables. Among many factors, the first is quality of honey, followed by color of and taste of honey and season of honey production with the index value of 0.40, 0.30, and 0.18, respectively. In line with this finding color and test of honey and season of honey are found to be the major factors that govern the price of honey in Gamo Gofa Zones of Southern Ethiopia (Yemane and Taye 2013). According to the survey, the price of honey is in the study area subjected to price fluctuation with the highest price in the dry seasons, especially during the wedding time from January to April and in wet seasons from June to August, the period when there is no honey production. The lowest price is during honey harvesting season from October to December and June to August. In agreement with this, beekeepers sell the largest proportion of their honey during harvesting season at low price mainly to meet their demand for cash to pay taxes, debts and other social obligation in Burie district of Amhara Region (Tessega, 2014). The highest price of honey in the study area was 133.50 $\pm$ 6.222 for white honey while the lowest was 69.25 $\pm$ 12.48 ETB for black honey Table 3. The price of honey of in the study area was found to be very high compared to the study conducted in burie district (Tessega, 2014) and Gamo Gofa Zones of Southern Ethiopia (Yemane and Taye 2013). On the other hand the price of one bee colony ranged from 600.00 to 1000.00 ETB with a mean of 800.00 (ETB). The same is true for other places in Ethiopia (Gezahegne, 2001; Assefa (2009).

Table 2. Governing factors for the price of honey in the study area

Factors	**No of respondents n=40**						
	1st rank	2nd rank	3rd rank	4th rank	weight	index	rank
Quality of honey	40(100)	0	0	0	160	0.4	1
Color and taste of honey	1(2.50)	35(87.50)	4(10)	0	117	0.3	2
Distance from market	0	0	11(27.5)	29(72.5)	51	0.13	4
Season of honey production	0	4(10)	25(62.5)	11(27.5)	73	0.18	3
Total weight	401						

Numbers in brackets are percentages

Table 3. The price of honey by color (ETB)

Types of honey	No of respondents N=40			
	minimum	maximum	mean	Std. deviation
Red honey	70	110	97.75	10.975
White honey	120	150	133.50	6.222
Yellow honey	60	100	78.25	8.738
Black honey	50	100	69.25	12.483

Major challenges of honey and colony marketing

The challenges of honey marketing system is presented in Table 4. The result of the finding revealed that lack of roads for transportation of honey followed by, Lack of modern measuring devices like kilo and color of honey" are the three major constraints that affect honey marketing. In contrast to this, Beyene and David, (2007) and Tezara (2013), indicated that lack of information is the first challenge for honey marketing in Lasta district of Amhara region. Other studies also supported that the major challenge of honey marketing is the discouraging price of honey, quality problem and lack of market information (Gezahegne 2001; IVCA, 2009; Legesse, 2013). On the other hand lack of organized market was found to be the major challenge of colony marketing in the study area. In support of this finding, poor extension systems, lack of credit service, lack of information are found to be the major constraints of honey and colony marketing in Amhara region (Ejigu et al. 2009).

192 Table 4. Major challenges of marketing system of honey

Challenges	**No of respondents n=40**											
	1st rank	2nd rank	3rd rank	4th rank	5th rank	6th rank	7th rank	8th rank	9th rank	weight	index	rank
Lack of container for storing and transporting	3(7.5)	0	0	0	0	2(5)	9(22.5)	4(10)	22(55)	92	0.05	9
Lack of roads for transporting	19(47.5)	7(17.5)	8(20)	0	0	0	4(20)	2(5)	0	299	0.16	1
Lack of measuring device	0	8(20)	23(57.5)	5(12.5)	0	0	2(5)	2(5)	0	265	0.143	2
Lack of training and technical advice	1(2.5)	0	1(2.5)	11(27.5)	8(20)	2(5)	0	17(42.5)	0	166	0.089	8
Lack of market information	0	0	4(10)	1(2.5)	5(12.5)	28(70)	0	2(5)	0	175	0.094	6
Fluctuation of honey price	5(12.5)	0	2(5)	0	22(55)	1(2.5)	5(12.5)	1(2.5)	4(10)	212	0.115	5
Lack of market linkage	0	3(7.5)	0	3(7.5)	1(2.5)	5(12.5)	15(37.5)	9(22.5)	4(20)	146	0.078	7
Quality of honey	3(7.5)	18(45)	2(5)	3(7.5)	1(2.5)	1(2.5)	3(7.5)	1(2.5)	8(20)	232	0.125	4
Color of honey	11(17.5)	0	2(5)	0	22(55)	1(2.5)	5(12.5)	1(2.5)	1(2.5)	262	0.141	3
Total weight										**1849**		

193 Number in bracket is percentages

Opportunities of honey bee products marketing system

Honey bee products marketing opportunities are examined with seven measuring items is presented in Table 5. The survey data illustrates that the major opportunities of bee products marketing system are increment in number unemployed youth, increment in cost of honey bee products and increasing demand of honey and colony with index value of 0.91, 0.90 and 0.175, respectively. In agreement with this finding, Tessega (2014), reported that an increment in production amount of honey and presence of organized unemployed youth are the major opportunities in Bure district, Amhara Region. Increasing demand for honey for domestic consumption and export by different customers and organizations was also found to be the major opportunity of beekeeping practice in Haramaya District, Eastern Ethiopia (Serda et al., 2015). In Amhara region, presence of high honey bee races and forages, attention of the government and NGOs, and the presences of micro finance are among the major opportunities of beekeeping (Ejigu et al., 2009). On the other hand Melaku et al. (2008), reported that potentials for apiculture development in Yere and Zuquala watersheds are numerous which consists of availability of strong colonies and high yield, Availability of forages and Market access.

209 Table 5. Opportunities of honey bee products marketing system

opportunities	**Number of respondents n=40**									
	1st rank	2nd rank	3rd rank	4th rank	5th rank	6th rank	7th rank	weight	index	rank
Increase in demand of honey and colony	8(20)	1(2.5)	22(55)	3(7.5)	2(5)	0	4(10)	194	0.175	3
Increase in the number of unemployed youth	24(60)	1(2.5)	4(10)	0	0	7(17.5)	4(10)	212	0.191	1
Increment in support of Gov,t and NGO to honey market	1(2.5)	3(7.5)	2(5)	1(2.5)	10(25)	24(57.5)	0	115	0.103	6
Improvement of infrastructure	0	0	3(7.5)	20(50)	4(10)	0	13(32.5)	120	0.108	5
Improvement of extension and training	0	2(5)	1(2.5)	14(35)	0	5(12.5)	18(45)	101	0.091	7
Increase in population size of colony	1(2.5)	5(12.5)	9(22.5)	1(2.5)	23(57.5)	0	1(2.5)	156	0.140	4
Increase in price of honey and colony	1(2.5)	28(70)	3(7.5)	2(5)	1(2.5)	5(12.5)	0	211	0.190	2
Total weight	**1109**									

210 Number in bracket is percentage

CONCLUSION AND RECOMMENDATION

From this study, it was concluded that lack of infrastructure like road for transportation and absence of important inputs like measuring devices are the major problems in the study area. In addition to this, lack of organized marketing place for sale and buying of colony were found to be the major problems for colony marketing in the study area. Therefore, to alleviate the problems, well developed market channel has to be built in order producers to fetch reasonable income.

ACKNOWLEDGEMENTS

The authors would like to thank beekeepers in the district for providing valuable information to the work

CONFLICT OF INTEREST

The authors declare that they have no competing interests

REFERENCES

Assefa A (2009). Market chain analysis of honey production: in Atsbi Wemberta District, Eastern Zone of Tigray National Regional State. A Thesis Submitted to College of Agriculture Department of Agricultural Economics, School of GraduateStudies.Haramaya University, Haramaya.

Beyene T and David P (2007). Ensuring small scale producers in Ethiopia to achieve sustainable and fair access to honey markets. Paper prepared for International Development Enterprises (IDE) and Ethiopian Society for Appropriate Technology (ESAT). Addis Ababa, Ethiopia, pp 30-39.

Central statistical Authority (CSA) (2011). Agricultural sample survey. Survey on honey bee production. Statistical bulletin 505. Report on livestock and system in west Shoa zone proceeding of the Livestock characteristics (prevent peasant holdings), Ethiopian beekeeper association. Addis Ababa, February 2011.21

Ethiopian Agricultural Sample Enumeration (CACC) (2003**).** Ethiopian Agricultural Sample Enumeration 2001/ 02 Results for Amhara Region. Statistical Reports on Livestock and Farm Implants (Part IV), Central Agricultural Census Commission, Addis Ababa, Ethiopia, pp 45-46.

Ejigu K, Gebey T and Preston T R (2009) Constraints and prospects for apiculture research and development in Amhara region, Ethiopia. *Livestock Research for Rural Development.*

Volume 21, Article #172. Retrieved November 14, 2018, from http://www.lrrd.org/lrrd21/10/ejig21172.htm

FAO (2009). Statistical Data base- Livestock of Ethiopia. http://faostat.fao.org/site/339/default.aspx

Gezahegne T (2001). Marketing of honey and beeswax in Ethiopia: past, present and perspective features: Proceedings of the third National Annual Conference of the Ethiopian Beekeepers Association (EBA), September 3-4, 2001, Addis Ababa, Ethiopia, pp. 78-88.

Girma D (1998). Non-Wood Forest Products in Ethiopia. EC-FAO Partnership Programme, .1998-2000. Addis Ababa. pp. 1-5.

Integrated Value Chain Analyses (IVCA) (2009). Integrated Value Chain Analyses for Honey and Beeswax Production and Marketing in Ethiopia and Prospects for Exports .The Netherlands Development Organization (SNV). pp 9-10.

Keralem E (2005**)**. Honey bee production system, opportunities and challenges in Enebse Sar Midir Wereda (Amhara Region) and Amaro Special Wereda (Southern Nations, Nationalities and peoples Region), Ethiopia. M.Sc. thesis, Alemaya University, 133p.

Kumar K. P & Debjit B (2010). Medicinal uses and health benefits of Honey: An Overview Journal of Chemical and Pharmaceutical Research, 2(1).

Legesse G (2013). Review of Progress in Ethiopian Honey Production and Marketing. Livestock Research for Rural Development 26(1): 4-5

Melaku G, Shifa B, Azage T, Negatu A and Lulseged B (2008). Approaches, methods and processes for innovative apiculture development: Experiences from Ada'a-Liben Woreda, Oromia Regional State, Ethiopia. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project Working Paper 8. ILRI (International Livestock Research Institute), Nairobi, Kenya. 48 pp.

Ministry of Agriculture and Rural Development (MoARD) (2009). Comprehensive bees and beeswax marketing, 2nd draft. Addis Ababa, Ethiopia, ARS publications

Natalia G V, Angelos E, Alexandros S, and Christos K (2014). Honey and cancer – a review. Current topics in nutraceutical research Vol. 12, No. 3, pp. 69-74, www.newcenturyhealthpublishers.com.

Nuru A (2002). Geographical races of the Honeybees, Apismellifera, L. of the NorthernRegions of Ethiopia. Ph.D dissertation. Rhodes University, South Africa.

Serda B, Zewudu T, Dereje M, Aman M (2015) Beekeeping Practices, Production Potential and Challenges of Bee Keeping among Beekeepers in Haramaya District, Eastern Ethiopia. J Veterinar Sci Technol 6: 255. doi:10.4172/2157-7579.1000255

Statistical Package for Social Sciences (SPSS) (2011). Version 20.

Tessega (2014). Honeybee Production and Marketing Systems, Constraints and opportunities in Burie District of Amhara Region, Ethiopia. A Thesis Submitted to the Department of Animal Science and Technology, School of Graduate Studies Bahir dar University, Ethiopia.

Tezera A B (2013). Honey market constraints and opportunities in the case of lasta woreda north wollo Zone, Amhara regional state, Ethiopia

Yemane N and Taye M (2013). Messele Taye Honeybee production in the three Agro-ecological districts of Gamo Gofa zone of southern Ethiopia with emphasis on constraints and opportunities. Agriculture and Biology Journal of North America, doi:10.5251/abjna.2013.4.5.560.567