Socio-Economic Profiles of Beekeeping Farmers in Marigat, Baringo County – Kenya

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Abstract: Knowledge of demographic characteristics of farmers is very critical in the design, implementation and review of policies geared towards adoption of new technologies by farmers. This study was set to establish the demographic profiles of beekeeping farmers in Marigat, Baringo County. The paper estimated the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera and probability of each demographic variable. The results are presented below. The paper recommends policy makers to consider demographic characteristics of beekeeping farmers when designing policies.

Keywords: Beekeepers, demographic characteristics, Marigat, Kenya

I. BACKGROUND INFORMATION

Beekeeping is one of the more universal agricultural activities. Bees are found all over the world (Adjare, 1990). Bees work a dual agricultural role by both producing honey and aiding in the pollination of flowering crops. Although much work has focused on improving the practice of beekeeping, it is still possible to manage beehives at a very low level of technological and capital input. Their cosmopolitan distribution, multipurpose nature and relative simplicity in management combine to make bees a natural agricultural supplement for many types of farm systems, (Bradbear, Fisher and Jackson, 2002).

II. THE STUDY AREA

Marigat is in Baringo County and was purposively selected for this particular study because it is one of the favourable areas for honey production in Kenya. Other areas that produce honey include Kitui, Machakos and North Eastern. Honey production is expected to have alleviated poverty levels because of its favourable climatic condition, abundant natural flora, non application of agro-chemicals, rich indigenous knowledge of local people, huge honey market locally and internationally.

Marigat covers an area of 1,677.4 km² (KNBS, 2009). It borders Baringo Central constituency to the west, Mogotio constituency to the south, Laikipia and Nyahururu constituencies to the east and east Pokot (Tiaty) constituency to the north east.

Marigat’s estimated arable land is 215 km²; 140.5 km² surface water for which lake Baringo covers 130 km², Lake Bogoria 9.5 km² and “Lake ‘94” which formed itself in 1994 heavy rains, cover 1 km², forest cover is 29 km² (GoK, 2012). The rest of the land is categorized as semi - arid and arid, very hilly with steep slopes or rough rocky terrain. Its growth is supported by the Perkerra irrigation scheme where onions, pepper, papaws, rice seed and maize, among other crops are grown. Administratively Marigat is divided into three divisions, 18 locations and 37 sub-locations with a total population of 73,177 and poverty level of 56 percent (GoK, 2010). It is inhabited by the Tugen (Samor) mainly from the upper regions of south, southeast and southwest, the Njemp (Ilchamus) mainly from the lowland regions northwards and western region and the Pokot community living in the lowlands of Baringo East (presently Tiaty Sub-County), Baringo County.

III. RESEARCH DESIGN

Following Masuku, (2013) a descriptive cross-sectional research design was employed in the study with the aim of describing the farmers’ characteristics and identifying factors that influenced honey production.

Sampling Procedure

The target population is 1500 beekeepers in Marigat, Baringo County based on a sample frame from the Ministry of Agriculture, Apiculture Section. The study engaged 134 purposively selected beekeepers to capture geographical topography and distribution of population. This helped in ensuring that every member of the population had an equal chance of being chosen in the study (Key, 1997).

Data Collection Procedures

The data were collected in December 2013 using prepared and pre-tested structured questionnaire. A full understanding of the complexities involved in honey production and the impact they have can only be achieved by mixing methods, such as surveys, qualitative interviews and focus groups discussion (Dick et al., 2004). Accordingly, the data were collected from beekeepers and extension workers in Marigat. To obtain the relevant information, observations and personal interviews were conducted with beekeepers, extension workers and bee experts.
Observation and key informant discussions were also used to collect information on beekeeping, general view of the respondents on technology and management practices of their apiary. The prices of improved box hives, pure bees—wax and accessories were collected from Kerio Valley Development Authority office. Honey yield price, labour cost and traditional log hive cost was taken from sampled respondents.

IV. RESULTS AND DISCUSSION

4.1 Age of the Respondents

Most beekeepers of the study area in age group of 26 to 35 years where 44.78 percent, Young people in age group of 20 to 25 years where 32.09 percent, aged group above 45 years where 12.69 percent and between 36 to 45 years where 10.44 percent.

It was a good sign of creating self-employment. This enterprise will help reduce unemployment and involve youth in the country. These results are consistent with the findings of Quddus 2012, Nsubuga (2000) and Feder et al., (1985). However, results contradicts findings by Cicek et al., (2007), who found that age and education level of producer play a positive role in production of honey in India. We can deduce that gradual exposure of modern techniques of beekeeping to young people influence their choice of method while aging population remained loyal to method they long understood.

4.2 Educational Status of Beekeepers

Results indicated that most of the beekeepers were educated. It found only 20 percent of beekeepers in the study area had primary level of education. About 33 percent were up to middle level, 40 percent were at secondary school certificate and only 7 percent were higher secondary certificate and above. Bee keepers without basic education constitute majority (50 percent) of bee keepers in the traditional bee keeping system. This can be adduced to simplicity of bee keeping material available locally. The need for basic educational knowledge to learn the intricacy of modern bee keeping was evidence in high proportion of secondary school leavers (43%) who practiced modern bee keeping.

Among such factors, education may be one of the most frequently used variables in empirical models perhaps because it is also one of the most theoretically uncontroversial factors to positively influence technology adoption. In general, farmers with higher education have better access to information and knowledge that are beneficial to farming operation (Uematsu & Msihra, 2010). They also tend to possess higher analytic capability of the information and knowledge necessary to successfully implement new technology and realize expected results. Hence, higher education allows farmers to make efficient adoption decision Rahm and Huffman, 1984 (as cited in Uematsu & Msihra, (2010)) and be the early adopters who can take advantage of new technology and profit most from it (Gardner & Rauss, 2001 as cited in Uematsu & Msihra, (2010)). Highly educated farmers also tend to adopt technology with greater intensity (Saha, et al., 1994as cited in Uematsu & Msihra, (2010)).

4.3 Land Holding Status of Beekeepers

Landless people (23 per cent) engaged in beekeeping activities in the study area. This showed that bee keeping is not a land based enterprise. Most beekeepers were small scale and had marginal land holding categories. About 76.7 percent of total beekeepers owned land of 0.06 to 20 acres. The average land size was 3.91 acres per beekeeper.

4.4 Beekeepers Occupational Status

In study area, 92 percent of beekeepers were male while 8 percent of beekeepers were female had an occupation of farming. 18 percent of trained females were students of different educational levels and the remaining 74 percent had no occupational status. About 33 percent of female beekeepers were married and 67 percent were single.

4.5 Average Household Size

Results of study indicated that female were more in number in average household size as compared to male. The trend showed female were not interested in bee keeping as compared to males and very few young females were involved in bee keeping activities, they prefer to work at home but some of them were involved in off farm activities. Most male were involved in off farm activities with minimum monthly income. Unemployment exists in the area and most youth were unemployed.

4.6 Beekeeping Practice

Practicing scenario of beekeeping, most of them practiced this activity right from childhood. They graduated into the activity as they grew up with beekeeping as a hobby and societal setup groupings. Most of the female discontinued because of no proper maintenance and time constraint were their main issue whether married or single. Other factors were bees absconding due to different factors; bees were dead due to pests and deceases, charcoal burning, lack of bee forage, bee management problems and improper maintenance of apiaries, honey burger menace, drought and high temperatures inside modern types of hive like KTBH and Langstroth.

4.7 Constraints and Suggestions

Results of the study revealed constraints faced by respondents in the beekeeping activity. The major problem was frequent droughts that drain on colony management during dry season, diseases and pests (Honey burger, Safari ants) poses a major threat to beekeeping practices, environmental degradation especially charcoal burning poses a threat, poor road infrastructure is a challenge to bee keepers of Marigat and high cost of bee hives to poor beekeepers of Marigat. Another problem was marketing of honey outside and get good price thus limiting them to roadside sales by women and exploitation from middlemen.
4.8 Role of Gender in Beekeeping

The results of the study show gender role in beekeeping activities. The district level data shows variation in the role of gender. According to the perception of respondents, tasks like colonies replacement and queen rearing were done by males and supplement feeding and pest management tasks were easily done by females in Marigat. Also in Marigat colonies replacement and honey extraction were male tasks whereas, supplement feeding and grading or packing were done by female. Similarly, beekeeping activities involved both genders at different stages of honey and beeswax processing and marketing. Traditionally, men were responsible for honey harvesting which is normally carried out at night because they are scared of honey bees during the day. The gender distribution showed that practice of bee keeping was somewhat gender sensitive given the larger (92 percent) proportion of male than females (8 percent) bee keepers who practiced both traditional and modern bee keeping respectively.

4.9 Beekeeping Effects on Other Household Activities

According to the results 30 percent of the respondents who got beekeeping training were affirmative that, beekeeping affects household activities because this activity needs time and proper maintenance of bees and hives. This was very difficult for female to manage time from household chores. 4

4.10 Access to Credit by Beekeepers in Marigat Sub-County

Figure 4.1 presents histogram for credit access (0) by bee keeping farmers in Marigat. The histogram showed that majority of farmers (120) did not access credit facilities from financial institutions. 5

Figure 4.2 shows where farmers sold their harvested honey. The histogram showed majority of the farmers sold their honey output by road sides; next was to local brewers’ followed by sale to organized groups and local consumption. Few farmers sold their honey output to value addition plant. This result was consistent with Berem et al., (2010), who found out that there was low value addition of honey production in Baringo County.

Figure 4.3 presents histogram for credit access (0) by bee keeping farmers in Marigat. The histogram showed that majority of farmers (120) did not access credit facilities from financial institutions. 5

Figure 4.2 shows where farmers sold their produced honey

Source: Research Data, 2015

Source: Research, 2015

Figure 4.3: Distribution of Farmers’ Membership to Groups in Marigat.

Source: Research Data, 2015

<table>
<thead>
<tr>
<th>Series: GROUP</th>
<th>Sample 1 134</th>
<th>Observations 134</th>
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</thead>
<tbody>
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<td>Mean</td>
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<tr>
<td>Median</td>
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<td></td>
</tr>
<tr>
<td>Maximum</td>
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<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>1.000000</td>
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</tr>
<tr>
<td>Std. Dev.</td>
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<td>Skewness</td>
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<td>Kurtosis</td>
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<tr>
<td>Jarque-Bera</td>
<td>93.36457</td>
<td>Probability 0.000000</td>
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</tbody>
</table>

[1 = Sale to Local brewers; 2 = Consume Locally; 3 = Roadsides sales to passersby; 4 = Sale to organized groups 5 = Sale to value addition plant]
Figure 4.4 depicts that majority of the farmers were not visited by the extension officers (0) followed by a group of farmers visited twice a year (3), once a year (4), once a month (2) and once a week (1) respectively. This may imply that there are few extension officers in Marigat to undertake frequent visits.

Figure 4.4 Frequency of Extension Visits to Farmers in Marigat.

Source: Research Data, 2015

Figure 4.5 exhibits that majority of the farmers did not access extension services (2).

Source: Research Data, 2015

Figure 4.5 Extents of Government Extension Services in Marigat.

Source: Research Data, 2015

Table 4.1: Extent of Government Extension Services in Marigat

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<th>Series: EXTENT</th>
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<th>Observations 134</th>
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<td>Minimum</td>
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<td>Probability</td>
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</tbody>
</table>

[1 = Access to Extension Services 2 = did not access extension service]

Figure 4.5 Extents of Government Extension Services in Marigat.

Source: Research Data, 2015

Figure 4.6 displays farmers who are members of cooperative societies in Marigat, Baringo County. The study sought to find out distribution of farmers’ membership to cooperative society (1). Majority of the farmers were non-members to cooperative society (2). This was because of lack of information on benefits of being a member to the society.

Figure 4.6 Farmers Membership to Cooperative Societies in Marigat.

Source: Research Data, 2015

4.11 Beekeepers Experience

Result from the distribution of bee keepers according to farming experience shows that farmers with 6 – 10 years of experience constitute the largest proportion (55 percent and 56 percent) of traditional and modern bee keeping respectively. This result shows that large proportion of the bee keepers in the study area had a good experience in bee keeping practices.

4.12 Marital Status

Distribution of bee keepers according to marital status revealed that large proportions (50 percent) of bee keepers both modern and traditional were married. Result from the distribution of bee keepers’ source of labour shows that large proportion of labour source came from both hired and family labour (63 percent and 60 percent) for traditional and modern bee keeping respectively. The distribution of bee keepers according to source of funds shows that large proportion of 75 percent modern bee keeper and 57 percent traditional bee keepers respectively depended on personal savings especially for initial capital. Most bee keepers, modern (75 percent) and traditional (75 percent) hadn’t the privilege of being visited by extension workers. This explains why most bee keepers were not well informed on ways of exploiting other potentials of bee keeping such as brand marketing the product and other production intricacies.

V. CONCLUSIONS

Knowledge of demographic characteristics of beekeeping farmers is very critical in the design, implementation and review of policies geared towards adoption of new technologies by farmers. This study was set to establish the demographic profiles of bee keeping farmers in Marigat, Baringo County. Results indicate that the average age of the beekeeping farmers was between 26 to 35 years at 44.78 percent, thus a good sign of reducing the rate of unemployment of youth in the region. Also most of the
farmers had secondary level of education at 40 percent, thus promoting the basic education knowledge in learning the intricacies of modern bee keeping farming.

Suggestions for Further Studies

There is need for research to characterize how socio-ecological factors can shape variability in honey bee floral resource abundance and quality across land covers.

REFERENCES