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Improved Beekeeping Technologies as Intervention for Unemployed Youth Group

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Abstract
Beekeeping practice is as an important income-generating activity, employment and tourism. Its investment costs are relatively low which makes beekeeping a thriving business that can contribute invaluably to a household income. The main objective of this study is to evaluate the socio-economic contribution of beekeeping to youth by establishing beekeeping cooperatives of unemployed youth group around protected forest area. As to method, Ambo Woreda is selected purposively and two youth group which consist 34 members established. Two round training on improved beekeeping management practices and business planning given for group members. Forty box hives with honey bee colonies, beekeeping equipments and accessories delivered with technical support in establishment and follow up of honey bee colonies during the study period. Planting and managing multipurpose tree seedlings undertaken around the apiary with group members. As to the result, on average of 85.5kg kg pure honey harvested per season and marketed in surrounding local market and 21,375 Ethiopian Birr per season obtained from honey sold. Improved beekeeping knowledge, skill and awareness created on beekeeping as business are non financial results achieved as result of the intervention. The overall finding of this study mainly underlined beekeeping can be used as intervention tool for youth unemployment with integration of other income generating activities.
Keywords: Beekeeping, intervention, income generation, unemployment
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1. Background and Justification

Unemployment is a worldwide challenge that has been rising steadily for the past years and will continue rising (Ndegwa, 2016). Sub-Saharan Africa's unemployment rate is forecast to be 7.2 per cent in 2018, unchanged from 2017. While the unemployment rate remains stable, the number of unemployed is expected to increase from 29.1 million in 2017 to 30.1 million in 2018 due to the region's strong labor force growth (ILO, 2017). A high level of un-and underemployment is one of the critical socio-economic problems facing Ethiopia (Berhanu et.al., 2005). While the labor force grows, with an increasing proportion of youth, employment growth is inadequate to absorb labor market entrants. As a result, youth are especially affected by unemployment and it has a number of socio-economic, political and moral consequences. (Berhanu et.al., 2005).

To reduce the problem of unemployment, livelihood strategies that integrate youth is critical. Beekeeping is one of the livelihood sources in most developing countries and plays a valuable part in improving rural livelihoods. Its success can be noted in countries like Ethiopia (Mazorodze, 2015). Many studies show importance of beekeeping from different aspects. It can be viewed as a means of eradicating poverty (Goldenberg, 2004; Mickels, 2006; Ogaba, 2007; Lalika, 2009; Ayansola, 2012). Others have shown that beekeeping practices as an important income-generating activity, employment and tourism (Joni, 2004; Workineh, 2007; Ajao and Oladimeji, 2012; Chazovachii et. al., 2012 Qaiser et.al. 2013; Azeez et.al. 2014; Wongelu, 2014). Others demonstrated as it plays major role in natural resource management and ecosystem service via pollination (Chazovachii et. al.,2012 ; Azeez et.al., 2014 ;Ndegwa,2016) and other studies demonstrated investment costs are relatively low being less than 50% of the income generated, making beekeeping a thriving business that can contribute invaluably to a household income(Saha,2002;Bradbear,2009; Ndegwa,2016, Wongelu, 2017).

One of the fields benefitting from entrepreneurship is the beekeeping industry. Beekeeping is an age old practice that creates sustainable livelihoods both locally and internationally. It is fairly easy to start and maintain with the right equipment and training (Ndegwa, 2014). Therefore, the intention of this project is to evaluate the socio-economic contribution of beekeeping to youth welfare by establishing cooperatives of unemployed youth group around protected forest areas.

2. Objectives

- To evaluate the socioeconomic contribution of beekeeping to youth welfare and
- To identify opportunities and challenges for youth to engage in beekeeping activities

3. Study design

For implementation the intervention, unemployed youth selected and beekeeping cooperatives with help of stakeholders. Beekeeping site was selected and used as a center for learning. Training, honeybee colony, bee

equipments and accessories delivered after youth group established. All members participated in capacity building process for the establishment of beekeeping apiary, bee forage development, seasonal management, honey production and marketing the output.

4. Materials and Methods

4.1 Youth Selection and Coop Establishment

For this study, one Agricultural Growth Program [AGP] Woreda specifically Ambo Woreda selected as intervention Woreda based on the assumption of high rate of youth unemployment, protected/demarked forest areas for implementation, potentiality of the Woreda for beekeeping and close follow up one Village Administrations [VA] selected purposively based on floral resources of the forest areas and convenience of the sites for beekeeping and two youth groups as one cooperative established. Thirty four youth selected purposively as a member of groups in close consultation with the respective Woreda level stakeholders. Dobi VA and selected area for beekeeping apiary used as center for intervention, capacity building, learning and data collection.

4.2 Approaches and Methods for Implementation

The two youth groups established for the intervention in the target area merged for establishment of one strong honey producers cooperative and used for intervention tool. All the activities in the intervention process were undertaken with this coop. As to the method, group discussion at Woreda and VA level frequently arranged to introduce objective of the study, roles and responsibilities of stakeholders and expected output at the end of the study period. Consecutive training and capacity building activity conducted during the study period. Selected and organized youth actively involved starting from site selection for establishing to marketing of the output.

4.3 Method of Data collection

Primary data collected and documented using data collection sheet, personal observation of the site and group discussion. Secondary data also collected from respective Woreda livestock office, literatures, research reports and internet search.

4.4 Method of Data Analysis

Quantitative data was analyzed descriptively by using statistical techniques such as frequency counts, percentages, arithmetic means and tabulation. After analysis of the data obtained, the data was then presented using tables and for easy understanding and representation. The qualitative data was analyzed through explanation of idea, opinion and concept explanation method.

5. Result and Discussion

5.1 Capacity Building

5.1.1 Training

Capacity of selected youth, DAs and experts to apply improved beekeeping technology package built through two rounds theoretical and practical training conducted at their beekeeping site, VA. In the first round of the training, practical training given is given for three consecutive days on site selection, hive standing making, foundation sheet making, colony transferring and follow up of established colony. The second round training also given on improved beekeeping technologies and management practices, selection of materials for construction of chefeka hives, construction of chefeka hives, top bar preparation, seasonal management of honey bee colonies, protection of bee colonies from pest and predators and value addition to beekeeping products and marketing aspects. Besides basics of beekeeping practices, training on beekeeping business planning, saving and fattening of sheep and goat given to the members to diversify their income and save what they gain. As shown on table one below, 34 youth, two DAs and 5 experts trained two rounds for three consecutive days at each round.

(a) (b) (c)

Photo one. Trainees photo during theoretical (a) and practical training(b, c & d), Dobi, 2019

5.1.2 Technology Transfer and Skill Improvement

After first round training, 40 set box hives with its equipments and accessories like honey extractor and casting mold 34 honeybee colonies, protective cloths such as jacket style bee veil, bee suit and bee glove delivered for the coop and 34 honey bee colonies established in selected apiary during the first phase of the implementation.

After establishment, regular honey follow up activities such as inspection, feeding, inserting/removing partition, honey harvesting and processing undertaken at each season with active participation of each member on queue base which is made obligatory and included in their bylaws. In improving knowledge and skill of the youth, Development Agents (DAs) and Woreda level experts participated with technical coaching and back up of Holeta Bee Research Center (HBRC) technical staff. In this process, five researchers and 11 technical and field assistants participated during the intervention period.

Photo two. Members participation in seasonal honey management


Photo a) wax melting for printing, 2019 Photo b) Honey Extracting, 2020

5.1.3 Apiary Improvement

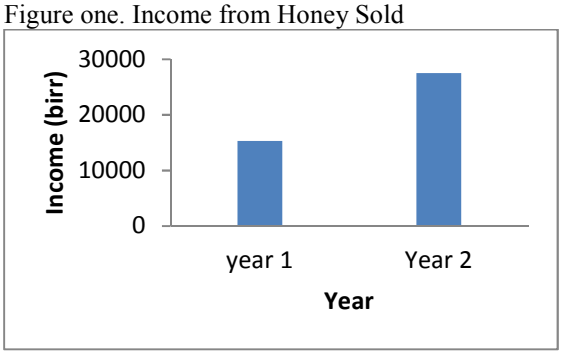
Now a day plantation and management of multipurpose seedlings are critical. These plants play a major role for bee forage development of the apiary site. Availability of bee forage around the apiary has contribution in honey yield during honey season and as a source of food for the honeybees during the dearth period. It also contributes to natural resource improvement and conservation activities in the village. As shown on table two below a total of 750 seedlings of different type multipurpose bee forages planted in the apiary site and photos taken during plantation and management also shown on photo to below.

Photo three. Transportation of seedlings (a, b), plantation(c) and management of seedlings (d), 2019

5.2 Honey Yield and Economic Benefit

Honey was harvested once every year from established colonies, extracted and marketed. Accordingly, 61 kg pure honey harvested in the first year of the intervention and sold with 250 ETB/kg and total of 15,250 ETB gained. In the second year also 110 kg pure honey harvested and sold with 250 ETB/kg and total of 27,500 ETB gained (in first year December 31, 2018: 1 USD = 27.8597 ETB and in the second year December 31, 2019: 1 USD = 31.692 ETB). The annual income obtained from honey sell shown in figure below.

Figure one. Income from Honey Sold



Source: Own data, 2020

Photo four. Honey Harvested in 2020

a) Sealed honey with frame b) Extracted honey in honey container

5.3 Opportunities and Challenges for Youth Engagement in Improved Beekeeping

To reduce the problem of un employment, beekeeping can be a good entiry business activity that can be intgrated with other alternate income genereting activity. This sector have a lot of opportunities if utlized with approprate beekeeping technologies. The major opportunities identified were listed below.

- Availability of different flowering plant species makes beekeeping conducive for beekeeping practices,
- Availability of alternate beekeeping technologies that increase production and productivity per hive, assist product diversification and value addition,
- Governmental and NGOs attention to the sector as one of potentials for youth job creation, natural resource conservation,
- Existence of closure areas and rehabilitated to carry honeybee colonies,
- High demand for honey at local, national and international markets and
- Better price for one kilogram of honey are the major.

There are also challenges for active engagement of youth in beekeeping as alternet income. The first challenge is that the youth didn't have patience to wait at least six months or a year to harvest honey and generate income. The other challenge is initial investment cost for protective cloths, equipment and accessories to start beekeping is difficult for the unemployed youth.

6. Conclusion and Recommendation

It can be concluded that the youth benefited financially by selling the output. They also gained non financial benefits like improved beekeeping knowledge and skill of improved beekeeping management practices. To make the results long lasting, continuous follow up should be given by DAs and experts and all concerned stakeholders. The overall finding of this study mainly underlined beekeeping can be used as intervention tool for youth unemployment with integration of other income generating activities.

7. Acknowledgements

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8. Declaration

I declare that this manuscript is my work and that all sources of materials used have been duly acknowledged. I solemnly declare that this manuscript is not submitted to any other journal. Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgement of the source is made.

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List of Tables

Table one: Number of Youth, Development Agents, and Experts participated on training

No	Category	Number of trainee		
		Male	Female	Total
1	Youth	30	4	34
2.	Development Agent	5	0	5
3.	Expert	2	0	2

Source: Own data, 2020

Table two. Types and number of seedlings planted

Botanical name	Common name	No. of seedlings planted	Survival %	Uses other than bee forage	Remarks
Becium grandiflorum	Tebeb	100	96	In local medicine, the herb is used against malaria	Indigenous
Callistemon citrinus	Bottle brush	200	86	Cultivated for ornamental purposes it is to some extent salt tolerant and can grow on very poor dry soils	Exotic
Dovyalis caffra	Koshom	450	90	Used for fences	Exotic

Source: Own data, 2020