BIBLIOGRAPHY

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ABSTRACT

This study was conducted to investigate the production and marketing management practiced by beekeepers in La Trinidad, Benguet. A total of twenty-one beekeepers were selected to serve as sample respondents. Field observations and survey supplemented with personal interview was conducted to collect the needed informations.

Findings showed that the respondents performed proper management on beekeeping activities though some of them neglected the basics of beekeeping. Harvesting was done from December 2011 to March 2012. It was done by selecting the ripen combs of honey from the hive then shift it to extraction room for processing. Honey that were ready to be sold were delivered by the respondents to their respective market and were paid in cash upon delivery. Joining local trade fares was practiced by the respondents in promoting their products.

Beekeeping industry in the study area were found to be profitable, hence, individuals are encouraged to engage themselves on this activities.

RESULTS AND DISCUSSIONS

Demographic Profile of Beekeepers

Table 1 provides the profile of the respondents with regard to their age, gender, marital status, highest educational attainment, household size, occupation, and household's monthly income.

Gender. Table 1 shows that most (86%) of the respondents were male and three (14%) were female. The result shows that male dominated beekeeping in the study area and this conforms to the common thinking that beekeeping is men's job due to labor requirements.

Age. About eight (38%) of the respondents were in the age bracket of 31-40 years old, 33% belongs to 20-30 years old, and the rest or 24 and 5 percent belongs to age bracket of 41-50 and 51-60 years old respectively. The result shows that most of the respondents lies between the ages of 31- 40 years old.

Marital status. It could be seen from Table 1 that majority (52%) of the respondents were married while 48% were single.

Household size. The respondents have a small family size with a maximum and minimum family size of five and one respectively. Majority (67%) of the respondents ranged from 1-3 household members while 33 percent of them ranged from 4-6 household members.

Highest educational attainment. Respondents who obtained a college degree ranked the highest with 38%, followed by those that finished high school and technical/vocational graduate both with 24%. One of them was post-graduate; one is also under-graduate from

high school and one from college. The result implies that beekeepers in the La Trinidad, Benguet have attended formal education.

Experience in beekeeping. Some (48%) of the respondents had about 4-6 years of beekeeping experience. About 24% of them were engaged in beekeeping activity for 1 to 3 years followed by 7 to 9 years with 19%, and 10% were into beekeeping activity for 10 to 13 years. This result implies that the respondents were recently engaged in beekeeping industry.

Source of household income/occupation. The primary occupation of the respondents aside from beekeeping was farming (48%), followed by poultry/livestock raising and self-employed both with 19%.Two (10%) were government employees, another two (10%) were engaged in business, and one of them is employed in a private institution.

Household's monthly income. Since majority of the respondents were farmers, it is impossible for them to distinguish the exact amount of their monthly household's income. Majority (52%) of the household responded that they earned an income about P5,000 to P10,000 monthly, five (24%) of the respondents had about P11,000 to P15,000 monthly income, then 14% and 10% of them had a monthly income of P16,000 to P20,000 and P21,000 respectively. This implies that even an individual with small income can raise bees. Beekeeping needs only a little amount of effort, time and resources but provides many benefits to beekeepers such as health benefits and is worthwhile in terms of profitability. Hence, half of the respondents engaged in this activity are those with low income.

Table 1. Demographic profile of beekeepers

PARTICULARS	FREQUENCY	PERCENTAGE
Gender		
Male	18	86
Female	3	14
TOTAL	21	100
Age		
20-30	7	33
31-40	8	38
41-50	5	24
51-60	1	5
TOTAL	21	100
Marital status		
Single	10	48
Married	11	52
TOTAL	21	100
Household size		
One - Three	14	67
Four - Six	7	33
TOTAL	21	100
Educational background		
High school undergraduate	1	5
High school graduate	5	24
College undergraduate	1	5
College graduate	8	38
Vocational/technical graduate	5	24
Post-graduate	1	5
TOTAL	21	100

Table 1. Continued …

PARTICULARS	FREQUENCY	PERCENTAGE
Number of years engage in beekeeping		
One - Three	5	24
Four - Six	10	48
Seven - Nine	4	19
Ten - Thirteen	2	10
TOTAL	21	100
Households monthly income		
5,000-10,000	11	52
11,000-15,000	5	24
16,000-20,000	3	14
21,000 and Above	2	10
TOTAL	21	100
Source of income/occupation		
Government employee	2	10
Non-government employee	1	5
Business	2	10
Laborer/farm worker	10	48
Poultry/livestock raising	4	19
Self-employed	4	19

*Multiple response

Organizational Affiliations of Respondents

Table 2 presents the different organizational affiliation of the respondents. It shows that majority of the beekeepers (71%) are members of beekeepers or farmers associations and some of them are in cooperative (10%) while the others or 24% are not member in any organization.

Table 2. Memberships in any organizations

ORGANIZATIONS	FREQUENCY	PERCENTAGE
Farmer/beekeepers organization	15	71
Cooperative	2	10
None	5	24

*Multiple response

Apiary Profile

Table 3 shows the apiary profile of the respondents as to the source of capital, source of queen bee, source of colonies, and honeybee colony size.

Source of capital. All of the respondents started beekeeping using their own money.

Source of queen bee. Table 3 shows that majority (62%) of the respondents bought their queen bee from trusted sources while the rest or 38% produce it by themselves. Price of queen bee during the survey ranges from 600 to 800 pesos.

Source of bee colonies. Most (86%) of the respondents bought their colonies from trusted sources with a price ranges from P4,500 to P6,000 (five framers) and P11,500 to P12,000 for 10 framers. The rest or 10 and 5 percent of the respondents obtained their colonies from beekeepers organizations and grants/donations respectively.

Honey bee colony holding size. Beekeepers in La Trinidad, Benguet are mostly backyard bee raisers and they only maintain a few colonies. Most (81%) of the respondents started their apiary with colony ranging from one to three five framers while the rest or 19% of them started with a colony ranging from four to six five framers. The total present colonies of the entire 21 respondent in the study area were 160 beehives. Forty three of it was five framer colonies while the rest or 117 were ten framer colonies. Some (29%) of

the respondents owned from between 1 to 3 five framer colonies. There were 3 (14%) of them who has colonies ranging from 4 to 6 followed by 10% with 7 to 9 colonies. With regards to ten framer colonies, some (33%) of the respondents owned from between 4 to 6 colonies, 6 (29%) with 1 to 3 colonies, another 6 (29%) with 7 to 9 colonies and the rest or 10% owned from between 10 to 12 colonies.

During the survey, it was observed that many of their colonies were put in nucleus hives. This is because harvesting season has just ended, hence, the population of their colonies decreases. The beekeepers increase their bees by raising them and they split it when the colonies are strong enough to be divided.

Table 3. Apiary profile

PARTICULARS	FREQUENCY	PERCENTAGE
Source of queen bee		
Bought from trusted source	13	62
Reared	8	38
TOTAL	21	100
Source of bee colonies		
Bought from trusted source	18	86
Provided by organizations	2	10
Grants and donations	1	5
TOTAL	21	100
Honey bee colony holding size Starting colony		
1 – 3	17	81
4 – 6	4	19
TOTAL	21	100

Table 3. Continued . . .

PARTICULARS	FREQUENCY	PERCENTAGE
Present colonies Five framers		
1 – 3	6	29
4 - 6	3	14
7 - 9	2	10
Ten framers		
1 – 3	6	29
4 – 6	7	33
7 – 9	6	29
10 - 12	2	10
TOTAL	21	100
Total five framer colonies	43	
Total ten framer colonies	117	
Mean (Ten framer)	5.57	

Beekeeping Equipment and their Sources

During the survey, respondents were found to make use of beehives that were drawn from different sources. It was found that all improved box beehives were ordered from private institutions and some of the respondents produce it by themselves. At the time of survey, the price of one beehive ranges from 500 to 600 pesos (nuc hive) and 1,500 pesos for the complete standard hive.

When asked to list the equipments they use including their prices and sources, the respondents mentioned a wide range of accessories, prices and sources that goes hand in

hand with beekeeping practices. The full ranges of accessories are the following: smokers, uncapping knife, bee suit, water sprayer, hive tool, bee brush, queen excluder, pail containers, wax foundation and honey extractor. It was learnt during the survey that apart from the known basic hive tools, many beekeepers do not have all the materials needed for beekeeping specially the honey extractor which has a high price. During harvesting time, beekeepers that do not have honey extractor rely from the extractor provided by their organizations or they borrow it from their fellow beekeepers and pay rentals.

Fixed Assets

This section shows the average investment of fixed assets based on the information given by the respondents. It could be seen from Table 4 that most of the equipments of the beekeepers cost a bit of fortune especially the honey extractor that is used during honey processing. A beekeeper with a complete tools and equipments would need an amount of 57,600 pesos.

Table 4. Fixed assets in beekeeping

ITEMS	VALUE (PESOS)
Honey extractor	36,000
Hive box	7,500
Queen excluder	1,250
Pail container	300
Bee smoker	1,500
Bee suit	1,500
Hive tool	500
Wax frame	8,500
Uncapping knife	500
Water sprayer	50
TOTAL	57,600

Honeybee Production Management Practices

This section presents the routine activities of the respondents with regards to care and management of their honeybees.

Most (90%) of the respondents visits their apiary once a week while some of them visit their bees every three days to perform various tasks such as checking if the queen is present, to check if stored food is enough, to add empty combs if necessary and to check any other problems inside the hive. When there was no sign of stored food inside the hive upon inspection, the respondents were obliged to feed their bees with white sugar solution. According to them, food shortage usually occurs just after harvesting (April-May) and

during rainy seasons (June-August) from which the liberty of the bees to go out and find food was limited. An average of 2 kilograms of sugar per hive was used and majority of the respondents feed their bees once a week, while some feed their bees twice a week. There are two ways of making sugar syrup applied by the beekeepers; first is the 1:1 syrup (1 part (by weight) sugar — 1 part (by weight) water) and 2:1 syrup (2 parts (by weight) sugar — 1 part (by weight) water). The former method of producing sugar syrup was intended for brood rearing purposes and is the most method used by the beekeepers.

All of the beekeepers responded that they clean the areas around when they have available time or if it requires to be cleaned. They use high objects as hive stands and this serves as control to some pest and predators such as lizards and toads. Most (81%) of the respondents do not pasture their bees because it is costly and time consuming. However, there were four of them who pasture their bees to other location due to pest and diseases problems and for the purpose of nectar and pollen gathering. More than half (57%) of the respondents apply record keeping. Flowering events, types of pests and diseases and the month it occurred, and expenses are some of the things recorded.

Findings shows that production management practices adopted by beekeepers today is the same as the practices adopted by beekeepers in 2006.

During the survey period, it has also been observed that some of the respondent's beehives were old, as a result, their bees are more susceptible to pest and predators attack such as ants. This might be due to insufficient capital to buy for new hives or might be due to lack of beekeeping supply outlets.

Table 5. Production management practices

PRACTICES	FREQUENCY	PERCENTAGE
Visiting of apiary		
Weekly	19	90
Every three days	2	10
TOTAL	21	100
Feeding of bees		
Frequency of feeding		
Once a week	18	86
Twice a week	3	14
TOTAL	21	100
Amount of sugar used per hive (kg.)		
One	14	67
Two	4	19
Three	3	14
TOTAL	21	100
Pasturing of bees		
Pasture	4	19
Do not pasture	17	81
TOTAL	21	100
Other practices		
Clearing of apiary	21	100
Keeping the area of the apiary clean and tidy	20	95
Opening the hive only when needed to minimize disturbance of the bees	19	90
Incorporation of best management practices to reduce the incidence of swarming	10	48
Locating apiaries with consideration of the general public	1	5
Keeping records of pests and diseases and the month it occurred	12	57
Beehives are placed in areas where there is an abundance of nectar/pollen	3	57

*Multiple response

Bee Pests and Diseases

This section shows the different types of pests, predators and diseases of bees encountered by the beekeepers and control measures employed during the past years.

Pest and predators. It can be seen from Table 5 that the most serious pests and predators encountered by the respondents were bee mites with 100%, followed by wax moths and ants both with 57%, birds with 52%, beetles/cockroaches and wasp both with 24%, and lizards and toads with 10%.

Diseases. Diseases that were encountered by the respondents include chalk brood with 33% and sac brood with 29%. The most common diseases of bees are the American Foulbrood (AFB) and the European Foulbrood (EFB). These are severely infectious and the only way to manage them is to burn the whole beehive including the colony (SLU-EISSF. N.D.). Nevertheless, it is fortunate for the beekeepers in the study area because these kinds of diseases are common only in some countries and it has not been encountered yet here in the Philippines.

Beekeepers today encountered similar kind of pest, predators and diseases that were encountered by the beekeepers in 2006 while some of it is new.

Table 6. Types of pests/predators and diseases

TYPES	FREQUENCY	PERCENTAGE
Pest/predators		
Bee mites	21	100
Birds	11	52
Wax moth	12	57
Ants	12	57
Beetles and cockroaches	5	24

Table 6. Continued. . .

TYPES	FREQUENCY	PERCENTAGE
Wasp	5	24
Lizards and toads	2	10
Diseases		
Sac brood	6	29
Chalk brood	7	33

*Multiple response

Pest and Diseases Control Methods

Pest control. All of the respondents rely on application of chemicals such as, apistan, formic acid, and touch strips in controlling bee pest. Eighteen (86%) were applying physical control method specially in the case of predators, 90% maintains cleanliness in the hive to avoid reproduction of pest, 33% applies integrated pest management and 81% of them says maintaining strong colonies is a best practice to minimize pest population. They practice transferring their colonies to small hive when the bee population is low in order for the colony to strengthen and lessening the entrance of the hive, thereby, avoiding the incidence of pest or predators to enter.

It was observed that integrated pest management which is the best and economical way of preventing pest and predators were seldom applied by the beekeepers. This might be due to lack of adequate training to upgrade their knowledge on improved beekeeping management practices.

Table 7. Control measures

CONTROL MEASURES	FREQUENCY	PERCENTAGE
Pest control		
Application of chemicals (apistan/formic acid/touch strips)	21	100
Physical control method	18	86
Sanitation	19	90
Application of integrated pest management	7	33
Maintaining strong colonies	17	81
Disease control		
Sanitation	6	29
Maintaining strong colonies	5	24

*Multiple response

Disease control. Around seven (33%) of the respondents applied integrated pest management in controlling diseases. Six (29%) maintains their beehives clean to control occurrence of disease and about five (24%) of the respondents says maintaining strong colonies helps in controlling bee diseases.

Harvesting Practices for Honey

It is in nature of the bees to store food on the side or on top combs, hence, adding of hive body (containing honey super inside) on top of the beehive to serve as full depth super (used for storing surplus honey) were practiced by the respondents. Several hive body can be placed on top of the beehive depending on the strength of the beehive foundation but as observed during the survey, the highest number of hive body used by the beekeepers as full depth super was only two. The respondents also said that with these method, gathering of ripen combs during harvesting were much easier. It also reported that ripen honey from ten framer colonies were the one that was harvested.

From the total 21 respondents, majority (52%) of them harvest honey twice during honey flow, whereas 24 percent of them harvest three times a year and the other 24 percent harvest once in a year. It was reported that they do not harvest honey produced by bees during the remaining periods of the year to serve as food for the colony to strengthen it for the next honey season. The respondents harvest their honey from December to March.

The processes performed by the beekeepers during harvesting were as follows: First thing is to select ripen combs of honey. Some of them immediately extract and pack the honey just after the selection while some of them needs to collect the ripen combs and store it in a hive box for later extraction (this is true to the beekeepers who doesn't have extractor). Extracted honey was temporarily packed in pail containers and eventually transferred to smaller packaging materials. Some respondents store their extracted honey and sell it later while some of them sell it after packaging. Combs where honey was extracted were returned to the hives for cleaning, repair and for the bees to store honey again. The common hive products produced by the beekeepers for sale were honey followed by colonies and queen bees respectively.

Findings shows that practices in harvesting of honey adopted by beekeepers in 2006 were the same as the practices adopted by beekeepers today.

Table 8. Harvesting practices for honey

PARTICULARS	FREQUENCY	PERCENTAGE
Method of harvesting		
Honey extraction	21	100
TOTAL	21	100
Number of times harvesting		
Once a year	5	24
Twice a year	11	52
Three times a year	5	24
TOTAL	21	100
Products produced		
Honey	21	100
Colonies		
Ten framer	3	14
Five framer	2	10
Queen bees	3	14

*Multiple response

Marketing Practices

This section shows the beekeepers market outlets, product sold, packaging and labeling, types of buyers, how products were disposed and price determination.

Among the three hive products that were sold by beekeepers, extracted honey ranks the highest with 86%, followed by colonies and queen bees with 24 and 14 percent respectively. Majority (86%) of them packed their extracted honey in re-used bottle such as empty bottle of mayonnaise, 4x4, kaong, etc., 52% uses pail container as their packaging material specially when the product were stored or sold to wholesalers, while there are

three (14%) of the respondent who uses customized bottles which are bought from private enterprises.

All of the respondents sell their products within Baguio City and La Trinidad, Benguet. They sell their extracted honey to wholesalers, retailers, neighbors and walk-in-buyers while colonies and queen bees were sold to their fellow beekeepers and beekeepers association. Beekeepers who sell their product to wholesalers deliver it to the designated market and were paid in cash upon delivery and it is the same with the other buyers. They do not give much on the labeling of their products as majority of their buyers were neighbors and wholesalers and this kind of buyer do not require packaging with labels as long as the quality of the honey they sell is authentic.

More than half or sixty seven percent of the respondents sell their products to their neighborhood while 57% and 38% of them sell their products to wholesalers and retailers respectively. It was observed during the survey that some of the respondents have their own place where they display their products for sale. The rest (14%) of the respondent do not sell their products. When asked why they chose these kinds of market, most (81%) of them responded, it is more convenient while the rest or 29% responded because of higher price.

Ten (48%) said that they base their product's price on prevailing market price while the rest responded that the price was set by both parties. With regards to product promotion, 16 (76%) promotes their products through words of mouth while 7 (33%) promotes their products by joining local trade fares.

Findings in the study show that marketing strategies adopted by beekeepers in 2006 are the same as the marketing practices of beekeepers today.

Table 9. Marketing practices

PARTICULARS	FREQUENCY	PERCENTAGE
Products sold		
Extracted honey	18	86
Colonies	5	24
Queen bees	3	14
Packaging materials		
Customized bottle	3	14
Reused bottle (4x4/mayonnaise/kaong)	18	86
Pail container	11	52
Type of buyers		
Wholesaler	12	57
Neighbor	14	67
Retailer	8	38
No sale	3	14
Reason		
Convenience	17	81
Higher price	6	29
Manner of payment		
Paid in cash upon delivery	18	86
Price determination		
Based on current market price	10	48
Set by beekeepers	5	24
Set by buyers	2	10
Set by both buyer and beekeepers	5	24
Product promotion		
Words of mouth	16	76
Joining local trade fair	7	33

*Multiple response

Gross Income of the Respondents in Beekeeping

The annual gross income of respondents from the sale of hive products in the study area ranged from 11,000 to 150,000 pesos. As shown in Table 10, majority (52%) of the respondents earned an annual gross income of between 11,000 to 30,000 pesos. About 3 (14%) of them earned the lowest income which is below 10,000 pesos. On the other hand, only one (5%) of the respondents obtained the highest annual income which ranged from 131,000 to 150,000 pesos followed by another one with an income ranged from 111,000 to 130,000 pesos, while the rest or 10 and 5 percent earned an annual income of between 51,000 to 70,000 pesos and 31,000 to 50,000 pesos respectively.

The reason why majority of the respondents earned the lowest income might be due to low production, low product prices or buyers control price, few social linkages with other producers and potential buyers and lesser number of bee colony.

Table 10. Gross income gained from hive products

GROSS INCOME (PESOS)	FREQUENCY	PERCENTAGE
Below 10,000	3	14
11,000 - 30,000	11	52
31,000 - 50,000	1	5
51,000 - 70,000	2	10
71,000 - 90,000	2	10
91,000 - 110,000	0	0
111,000 – 130,000	1	5
131,000 – 150,000	1	5
TOTAL	21	100
Mean	P 38,523.81	

Volume of Production

As indicated in Table 11, the total annual production obtained by the respondents during the survey period was estimated at 2,196.50 kilograms.

The annual average production of the respondents was calculated at 104.6 kilograms. On the other hand, the average production per beehive was computed to be 18.77 kilograms. The survey result also shows that the production per beekeepers ranged from 10 kgs. to 310 kgs., and majority (52%) of respondents reported that their annual production during the time was between 10 kgs. and 60 kgs. In the same manner, 14 and 19 percent of respondents reported that their annual production ranged from 61 - 110 kgs. and 111 - 160 kgs. respectively. Whereas, only few of them scored the highest production with only two (10%) who produced an output ranged from 261-310 kgs. and one (5%) produced from between 161-210 kgs.

Even though the computed average production per hive appears to be lower than the stated national average which is 25kilograms, it is still encouraging that the beekeepers were able to produce that much despite the production problems they encountered.

Table 11. Volume of production

VOLUME OF HONEY PRODUCED (KGS.)	FREQUENCY	PERCENTAGE
10-60	11	52
61-110	3	14
111-160	4	19
161-210	1	5
211-251	0	0
261-310	2	10
TOTAL	21	100
Total annual production (kgs.)	2196.50	
Mean production/hive (kgs.)	18.77	
Mean production/beekeeper (kgs.)	104.60	

Cost and Profitability Analysis for Honey Production

Table 13 indicates the cost and profitability analysis for honey production in the study area for 2011-2012. Production per year in the study area was encouraging regarding its profitability. The Table below shows that a beekeeper with 18.77 average production of honey per beehive box with an average market price of 333.33 pesos would generate an annual return of Php 4,527.48 per beehive. For this study as indicated in the previous table (Table 3), the total number of ten framer colonies for the entire respondents was 117, the average holding size being 5.57 hives. If we consider the yield and the profit that is obtained from a given colonies per beekeeper, one can generate an annual profit of 25,218.06 pesos from the industry. With regards to the cost items, feed cost shares the highest (87.82%) followed by depreciation and labor cost with 4.86 and 2.99 percent respectively.

Table 12. Cost and profitability analysis for honey

PARTICULARS	COST PER HIVE (PESOS)	PERCENTAGE CONTRIBUTION TO TOTAL COST
Feed cost	1,518.48	87.82
Depreciation cost	84.01	4.86
Labor cost	51.66	2.99
Chemicals	11.9	0.69
Overhead cost	13.01	0.75
Packaging cost	50.06	2.90
Total cost/hive (TC)	1,729.12	
Average production/hive (AP)	18.77	
Average price/kgs. (P)	333.33	
Gross income/hive (GI) = AP*P	6,256.60	
Net income/hive (NI) = GI - TC	4,527.48	

Production Problems

Major problems in beekeeping in the study area arises from financial aspects, limited sources of supplies/equipment, and environmental factors that are beyond the control of the farmers. Table 14 summarized the major constraints identified and prioritized by the respondents throughout the production period.

The respondents mentioned that the major problem they encounter in production were lack of access to financing (100%), lack of government support to beekeepers (100%), pest and diseases (95%), low production (81%), limited source of beekeeping equipment and limited source of beekeeping supplies both with 81%. Other problems were poisoning of honeybees because area is near conventional farms, shortage of bee forage areas, unfavorable conditions, absconding/Swarming of bees, and vandalism/theft.

The respondents identified lack or limited access to financing as the primary constraint in beekeeping development in the study area. Money is necessary in beekeeping to be able to pay for such things as bee farm tools, hives etc. However, beekeepers have sometimes difficulty in finding the necessary money to be able to pay for all the expenses. This is typically because beekeepers have to pay for raw materials, initially and then wait quite some time to able to sell the bee products (Hilmi, M., 2005). Hence, support from the local government units would be of great help to beekeepers regarding this problem. However, it is also identified by the respondents that lack of government support to beekeepers was one of the major problems they are facing..

In order to work efficiently with the bees, beekeepers needs appropriate tools and equipment. Protective materials such as bee suits, hive tools and smoker are essential for the beekeepers. However, sources of these materials are limited in the study area.

Shortage of bee forage is the primary constraint in beekeeping development identified by beekeepers in the study area during the survey. It affects the feed source of bees adversely. SLU-EISSIF documented that the major source of food in the study area is from the indigenous bushes such as sunflower, vegetables, and fruits that are grown in the area. However, the growing population of organic farmers who utilize indigenous plants as compost materials and the continuous application of chemicals by conventional farmers to their farms threaten the existence of these plants to vanish. Unfavorable condition such as typhoons and rains also restricts the colonies to forage foods. Because of these, the bees are unable to forage enough food for the colony, thereby, alerting them to abscond to areas where resources are available for their survival or they eat each other in order to survive. The prevalence of disease and pests also forces the bees to abscond.

Beekeepers today encountered more problems than beekeepers in 2006. Some of these problems are the same problems encountered by beekeepers in 2006 while some of it are new. There is a diference on the way they address these problems. Beekeepers in 2006 relies only on their knowledge gained from experience and help from fellow beekeepers while beekeepers today relies on various methods. They practice incorporation of their updated knowledge about modern beekeeping and experience in addressing some of problems encountered.

Table 13. Production problems

PROBLEMS	FREQUENCY	PERCENTAGE
Lack of government support to beekeepers	21	100
Lack of access to financing (government or private sector)	21	100
Pest and diseases	20	95
Low production	17	81
Lack of beekeeping equipment	17	81
Limited source of beekeeping supplies	17	81
Poisoning of honeybees because area is near conventional farms	15	71
Shortage of bee forage areas	14	67
Unfavorable climatic conditions	3	14
Absconding of bees/Swarming of bees	2	10
Vandalism/theft	1	5

*Multiple response

Marketing Problems

Beekeepers are likely to encounter many constraints when it comes to finding a market for their products. Table 15 presents the problems faced by beekeepers in marketing.

Sixty two percent of the respondents identified lack of awareness of consumers in pure honey as their major problem followed by faked honey with 38%, lack of market price information and limited market channel for honey both with 33%, buyers control price with 19%, and transportation with 5%. Lack of awareness of consumers in pure honey lessens the number of potential customers. Also, the growing population of vendors selling fake honey destroys the image of pure honey.

Consumers lack of market price information, limited market channel for honey and buyers control price causes the beekeepers to sell their products at a lower price.

Table 14. Marketing problems

PROBLEMS	FREQUENCY	PERCENTAGE
Lack of awareness of consumers in honey	13	62
Fake honey	8	38
Lack of market price information	7	33
Limited market channel for honey	7	33
Buyers control price	4	19
Transportation	1	5

*Multiple response

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to investigate the production and marketing management practiced by beekeepers in La Trinidad, Benguet. Twenty-one beekeepers were selected to serve as sample respondents. An interview schedule was used as a guide to collect the needed information. The information was organized, summarized and classified according to the objective of the study. The data was tabulated and analyzed using frequency, percentage and mean average.

The result shows that beekeeping activities was dominated by males. This could be as a result of the primitive wild hunting system of beekeeping which predisposes only the men to practice due to its hard labour. Many of the youth were not involved in the enterprise, as majority of the beekeepers were the middle aged group. These trends do not favour the enterprise, as much can be gained if the youth are involved in honey enterprise in the area. Most of the beekeepers were venturing in the industry from 4 – 6 years, with farming as the primary occupation with a household income of 5,000 – 10,000 pesos monthly.

All respondents started beekeeping using their own money with 1 – 3 colonies as a start. Queen bees were bought from trusted sources and some were reared by beekeepers themselves. Colonies were bought from trusted sources and some were provided by organizations. Proper management on beekeeping activities were applied though some of them neglect the basics of beekeeping. The study revealed that beekeepers visits their respective apiary weekly and provides supplementary foods for the colony if necessary.

Migrating bees to other location were not practiced by most of the beekeepers because according to them, it is costly and time consuming. Keeping the apiary and the beehive clean and incorporation of best management practices were applied to avoid occurrence of problems such as pests. Despite all these methods practiced by beekeepers, their colonies still attacked by pest and diseases. Bee mites were found to be the common pest encountered by the beekeepers and majority of them relies on chemicals to address this problems.

Harvesting of honey was done from December to March. The respondents harvest by selecting the ripen combs of honey from the hive then shift it to extraction room for processing. After extraction, honey undergoes filtering using clean fabric or a sieve and then packed. Honey that is ready to be sold was delivered by respondents to their respective market and were paid in cash upon delivery. They join local trade fares to promote their products. The total annual production obtained by the respondents during the survey period was estimated at 2,196.50 kilograms with 18.77 kilograms as average production per hive. Regarding its profitability, production year in the study area was encouraging since the average annual profit generated by the respondents from selling honey was computed to be 25,218.06 pesos. With regards to cost items, feeding cost shares the highest percentage. Major problems encountered by beekeepers in production were limited access to financing, lack of government support to beekeepers, pest and diseases, limited source of beekeeping equipment and limited source of beekeeping supplies. Whereas, lack of awareness of consumers in honey, fake honey, lack of market price information and limited market channel for honey were the primary problems faced by beekeepers in marketing.

Conclusions

Conclusions that were drawn based on the results of the study were as follows:

1. Low production of honey is due to shortage of bee forage and because they maintains few number of colony. Lack of access to financing, limited source of beekeeping equipment and supplies discourage the beekeepers to maintain a large number of colonies as they want to. In addition, local governments units in the study area do not give much support concerning beekeeping industry;

2. Knowledge of beekeepers about improved beekeeping management practices was not upgraded. Some of the pests and diseases encountered by the beekeepers from 2006 is the same as the problems encountered by beekeepers today. Beekeepers from 2006 rely on chemicals to address these problems while beekeepers today not only rely on chemicals but also use different methods to address these problems;

3. Major problems encountered by beekeepers in production are lack of government supports to beekeepers, limited access to financing, occurrence of pest and diseases, limited source of beekeeping supplies, lack of beekeeping tools and equipment; and,

4. Market outlets of bee products are limited. Devising an attractive containers and labels which is one of the important factors in marketing were ignored. Poor promotional and advertising activities and lack of awareness of the consumers in honey impedes beekeepers to market their products at reasonable price and low production was found to be the major problem encountered by the beekeepers;

Recommendations

Possible recommendations that could be given on the basis of the study so as to be considered in the future intervention strategies which are amid at the promotion of honey production and marketing at the study area were as follows:

1. Individuals in the study area especially women and youth should be encouraged to participate in beekeeping seminars and start their own apiaries;

2. Shortage of foraging areas is one of the major problems identified and prioritized by farmers in the study area. To reduce this problem, it is essential for beekeepers to establish their own foraging areas such as engaging themselves in cultivation of coffee. It was identified that coffee was one of the major foraging plants that could be grown in the study area. In addition, Coffee is an in demand commodity all over the world, hence, engaging in coffee farming will not just fabricate plants for bee forage but is also a potential source of income for beekeepers. Educating the public about the importance of plants and linkage between beekeepers to farmer is also highly recommended. Organic farmers who utilize some of the existing indigenous bee forage such as sunflower as compost materials should be advised to minimize cutting them;

3. Lack of access to market information leads to low pricing of hive products by producers. The availability of timely and precise market information increases beekeepers bargaining capacity to negotiate with buyers of their products. Hence, improvements of extension system which focused on linkage of beekeepers with markets are necessary to ensure a reliable market outlet for beekeepers. This should be further strengthened by marketing organizations such as beekeeping organizations and other concerned sector to

involve in communicating beekeepers and the ultimate consumers so that they can sell their produce at reasonable prices; and,

4. Major problems of beekeepers identified and prioritized in the study area were lack of government support to beekeepers, lack of access to financing from government or private sector, pest and diseases, lack of beekeeping equipments, limited source of beekeeping supplies, insecticides and shortage of bee forage areas. Therefore, beekeepers in the study area badly need institutional support to address these problems. These problems cannot be addressed by a single organization, hence, collaboration of various institution such as; LGU's, beekeepers organizations, extension contacts and financing organizations in search for the best solution to address this problems and execute them; Beekeepers should try to search or contact for possible market of their products; Poor promotional activities and lack of awareness of consumers in honey were found to hinder the beekeepers in marketing their product. Hence, supports from concerned sector to educate the consumers about the importance and benefits of the product are recommended. Furthermore, devising an attractive packaging and leveling enhance the quality of the product, thereby, allowing the beekeepers to sell their product at higher price. In order to attain this, seminar regarding the importance of packaging and labeling of products should be implemented. Low production is also found to be the main problem of the consumer in marketing. In order to address this problem, beekeepers are advised to attend seminars to accumulate their knowledge regarding improved beekeeping management practices and concerned sectors must be liable in formulation of the said seminar.

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