

BEE RESEARCH AND DEVELOPMENT CENTRE

REPORT

AN ASSESSMENT OF BEEKEEPING EFFECTIVENESS

IN FIVE PROJECT COMMUNES OF RUDEP

QUANG NGAI PROVINCE

(QUANG NGAI RURAL DEVELOPMENT PROGRAM)

Hanoi, October 2007

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1 INTRODUCTION

The Quang Ngai Rural Development Program (RUDEP) jointly funded by Australian Government and Vietnamese Government aims to improve livelihood sustainability through increase income for a better living standard focusing on its rural development and poverty reduction goal. Its activities are currently conducted in 19 official communes and 4 substitute ones of 12 districts in Quang Ngai.

Beekeeping is one among activities belonging to Agricultural Support component. It has been conducted in five communes of Son Tay, Son Ha, Binh Son, Minh Long and Ba To districts with the technical support from Bee Research and Development Centre (BRDC). With the introduction of beekeeping to those communes, farmers get used to a new pattern of livelihood.

2 ACTIVITIES OF INTRODUCING PROGRESS

The surveys by which the natural, economic, social and beekeeping conditions at some communes in the project area were totally discovered aimed to propose an beekeeping program appropriate to local people's life and education. The first survey implemented on 13th to 24th of March 2006 in 4 communes including 2 communes (Son Bua and Son Mua) of Son Tay district and 1 commune (Son Hai) of Son Ha district and 1 commune (Binh Minh) of Binh Son district. The second one implemented on 3rd to 14th of January 2007 in 1 commune (Ba Le) of Ba To district and 1 commune (Long Hiep) of Minh Long district. Findings from those surveys indicated the feasibility of development of a beekeeping program for farmers in the project communes through showing proof of favorably natural conditions as well as people's expectation.

To provide basic concepts of beekeeping to farmers, BRDC hold training courses for 40 participants from Son Bua (15th to 20th of April 2006) and Son Hai (21st to 26th of April 2006), for 24 participants from Binh Minh (28th of November to 3rd of December 2006), for 39 participants from Ba Le and Long Hiep (30th of January to 4th of February 2007). Totally, the participants were 36 H're, 17 Cadong and 50 Kinh.

After training, three beekeeping groups of Son Bua, Son Hai and Ba Le and 2 beekeeping clubs of Long Hiep and Binh Minh already established to become a place with which members used for learning and exchanging experience. Boards of leadership self-elected by club members were responsible for linking its members and project staff and BRDC experts.

Materials from the project including 4 bee colonies per member, beekeeping tools and equipments provided to farmers after courses to facilitate the start of beekeeping.

The counseling performed at the households helped farmers to apply their knowledge into real practice. Being consulted, beekeepers realized what among bee administrative skills they did correct or not to self-reduce their technical errors.

Club meetings for learning and exchanging experience usually held by leaders of clubs were the great opportunities for members to learn lessons from each other especially making beekeeping equipments and product consume.

The advanced training course dated 5th to 9th of September 2007 fulfilled necessarily advanced skills of colony-scaling development, product quality enhancement and beekeeping enlargement in the community for farmers of two selected communes Binh Minh and Long Hiep. The total number of beekeepers trained was 24 in Binh Minh and 13 in Long Hiep.

The study tour lasted from 4th to 10th of July 2007 at the communes where the successful beekeeping models supported by government and NGOs were being operated for the purpose of poverty reduction and income improvement virtually created chance to members learn more lessons from other beekeepers, improve their knowledge of beekeeping benefit and value, get more experience on market research for beekeeping products, as well as strengthen awareness on the need of protection of living environment and forest natural resources, and enrich their social knowledge.

Particularly, the Training of Trainer course set up a team of extension workers who would become urgently and regularly technical supporters to local beekeepers in order to reach a sustainably developmental status for beekeeping in RUDEP project area. It lasted from 7th of March to 15th of April 2007 in two places: one was the training room of BRDC and the other was BRDC's experimental base.

Moreover, regular telephone contact between BRDC experts and members/leaders of beekeeping clubs/groups have been done to maintain the technical support in typical time of beekeeping.

3 OBJECTIVES

The overall objective of the assessment is to evaluate the effectiveness of beekeeping activities done within the project area.

For more specific, it aims to:

- assess the appropriateness of beekeeping activities;
- assess the economic and social effectiveness of beekeeping activities towards households;
- assess the direct and indirect impact of beekeeping activities on beneficiaries and community;
- evaluate the sustainability of maintaining beekeeping activities;
- draw recommendations/lessons learned for the improvement.

4 PLACES, TIME AND HUMAN RESOURCE

4.1 Places of the assessment

The assessment conducted in 5 communes: Son Bua (Son Tay dist.), Son Hai (Son Ha dist.), Binh Minh (Binh Son dist.), Long Hiep (Minh Long dist.), and Ba Le (Ba To dist.)

4.2 Time

- Son Bua 14th September
- Son Hai 17th September
- Binh Minh 20th September
- Long Hiep 23rd September
- Ba Le 25th September

4.3 Human resource

- BRDC staff: Pham Thi Huyen, Eng.; Vu Dinh Cong, Eng.
- Leaders of beekeeping groups and clubs:
 - *Son Bua*: Nguyen Ba Ngoc, Ngo Thi Gai
 - *Son Hai*: Dinh Van Su, Dinh Van Boi
 - *Binh Minh*: Le Hong Minh, Tran Thi Le Hoa
 - *Long Hiep*: Luu Van Nhat, Nguyen Thanh Phung
 - *Ba Le*: Pham Van Le, Vo Tan Long

5 METHODS

5.1 Interviews

A quantitative method using structured interview and a qualitative method using in-depth interview were applied in the assessment.

Interview participants included three groups:

- Leaders of communes
- Leaders of beekeeping groups/clubs
- Beekeepers and non-beekeepers

5.2 Sampling

Table 1: **Distribution of respondents into groups**

Commune	Participants			
	Leaders of communes	Leaders of beekeeping groups/clubs	Beekeepers	Non-beekeepers
Son Bua	1	1	3	2
Son Hai	1	1	4	4
Binh Minh	1	1	12	4
Long Hiep	1	1	8	4
Ba Le	1	1	5	2
Total	5	5	32	16

The total number of interviewed subjects was 58 persons enabled the level of reliability for the assessment.

6 FINDINGS

6.1 Appropriateness of beekeeping activities

Researching the socio-economic conditions of the locals

As the complex of geographical position, the disadvantages of transportation, less agricultural land, living activities related to forestry exploitation to be banned, no sideline, low education, many negative backward customs existed and limited approach of technologies, people's living are hard.

Table 2: **Socio-economic conditions**

TT	Commune	No. of household (household)	Population (person)	Income per capita per year (thousand VND)	No. of poor households in 2007 (household)	General education level
1	Son Bua	295	1,208	1,000	213	Primary
2	Son Hai	675	2,750	2,400	41	Secondary
3	Binh Minh	2,310	9,777	5,000	-	Secondary
4	Long Hiep	920	4,000	3,300	625	Secondary
5	Ba Le	329	1,458	2,300	176	Primary

(Source: Commune People's Committees)

Table 2 shows that in 2006, average income per capita per year was 2,800 thousands VND ([1,000 – 5,000] thousands VND), and 4.2 times lower comparing to 11,715 thousand VND of Vietnam (source: 2006 Vietnam Living Standard Survey by General Statistics Office, informed by 1080 telephone service dated 9th of September 2007). It was very clear that the living standard of people of the 5 assessed communes was ranked as *very poor*.

Researching the natural conditions of the locals

The tree system existing in the area of the project communes is multiform with wild plants living in the forests such as *Sapium discolor Muell.*, fragrant thoroughwort, *Bidens pilosa*; with human-grown plants for the development of forestry such as *Acacia mangium*, eucalyptus, rubber tree, areca-nut, cashew; with fruit plants for example watermelon, coconut, longan trees; with wild plants living surrounding rice fields like as purple-leafed trees, dayflower; with wild or human-grown plants living in the sides of

road such as *cay trung ca* (Vietnamese name); with plants living at the hedgerow of houses such as *Tetracera seandens* (L) Merr...By a such diversified planting system, the amount of honey and nectar provided is large. People here however had no thought of exploiting this natural resource to improve their living and to benefit the environment through beekeeping.

Table 3: **Natural conditions**

	Commune	Area of natural land (ha)	Area of wild forest (ha)	Area of agricultural land (ha)	Area of floral & nectar planting land (ha)
1	Son Bua	4,739.00	1,650.50	253.27	1,655.50
2	Son Hai	2,466.00	350.00	443.00	250.00
3	Binh Minh	4,173.96	350.00	2,792.16	1,324.00
4	Long Hiep	1,726.00	1,225.20	343.70	450.00
5	Ba Le	9,473.00	3,143.46	44.00	851.75

(Source: Commune People's Committees)

Attention:

For more detail, the land area of agricultural, forestry, industrial crops which are considered as floral & nectar resource in Binh Minh is 1,324 ha where:

- *Acasia mangium* accounts for 507 ha
- Rubber accounts for 500 ha, newly-grown (2001 to date): 150 ha
- Eucalyptus accounts for 167 ha

As indicated at the table 3, the total area of wild forest is 6,719.16 ha with the largest part belonging to Ba Le commune (3,143.46 ha) and the smallest ones belonging to Binh Minh and Son Bua (350 ha for each). The quite large area of human-grown floral plants (1,324 ha of Binh Minh commune) in which 507 ha is the area of *Acasia mangium*, 167 ha of eucalyptus, 150 ha of newly-grown rubber. In Long Hiep, the growing area for *Acasia mangium* tree increased by 80 to 100 ha annually plus 50,000 areca trees newly grew in the bank of streams, rivers and forest's edges. All of these things described is a very much supportive factor for development of beekeeping.

Comments of beekeepers and non-beekeepers

Through interviews, 100% among beekeeping respondents reported that the locally natural conditions were appropriate for beekeeping – the type of livelihoods which matches their expectation.

Regarding the comments from non-beekeeping households, 75% of respondents expressed the feasibility and appropriateness of development of beekeeping activities at their locals due to the variety of floral plants. 25% of them were not very clear about if the implementation of beekeeping at the local appropriate or not.

Comments of local leaders

Moreover, as reported by chairman of Son Hai, Binh Minh, Ba Le, Long Hiep people's committee, the implementation of beekeeping activities was definitely sufficient to the conditions of their locals. People's income might go up through beekeeping activities because of the more plentiful honey resource.

As an exception, Pham Van Thinh – a vice-chairman of Son Bua communal people's committee – said that the beekeeping activities conducted at his communes at this point of time was not very due. The reasons given were:

- Low education and awareness of people
- Limited capacity of technological comprehension
- People spent time working in the field whole day for living needs, as a result, less time-consuming plus less experience and limitation of material conditions favorable for beekeeping

“Some activities of the project which support farmers in big and duck breeding did not already succeed at the first time being implemented, although it is considered as the traditional livestock breeding at the local and people have used to its skills. Thus, we did not expect that the beekeeping activities conducted reached very good achievements right after being introduced to farmers, especially if it is not the traditional occupation here”

Pham Van Thinh, vice-chairman of Son Bua people's committee

In conclusion, all of the project communes was clearly potential for implementation of beekeeping activities due to:

- A favorably various food system
- The need of improving living standard for poor people
- Features of small-scaled beekeeping suitable for local people: no land area usage, moderate time consuming that is not totally affected to farmers' main living activities, not very hard, products of beekeeping that is highly value, easy for carrying, consuming and preserving
- Expectation of people for being involved in beekeeping activities

Excluding from Son Bua commune by reason expressed by its leader, it was appropriate to disseminate beekeeping techniques to farmers.

6.2 Effectiveness of beekeeping activities

6.2.1 Economic effectiveness

Bee status and output gained by beekeeping groups/clubs are shown as table 4 below.

Table 4: **Bee status and output gained by beekeeping groups/clubs**

	Beekeeping group/club	No. of initially provided colonies		No. of current colonies maintained		Volume of honey harvested (kg)	Duration of time bee kept
		Colony	Frame	Colony	Frame		
1	Son Bua	80	240	4	9	24,2	17 months
2	Son Hai	80	240	19	58	59,4	17 months
3	Binh Minh	80	240	78	216	610,4	10 months
4	Long Hiep	80	280	38	121	53,2	5 months
5	Ba Le	80	278	22	71	25,2	5 months
	Total	400	1.278	161	475	772,4	

The quantity of initially provided colonies was 80 units per commune leading to a total of 400 units 1.278 frames for all five communes.

From the start to 2 months after that, 8 Cadong beekeepers of Son Bua let 32 colonies to be absconded. By October 2006, the other 9 members of the commune had colonies totally absconded highlighting the number of members who had no colonies for keeping up to 17 out of 20. During period of time that is from October 2006 to August 2007, there has 4 Kinh households remaining who have 12-21 colonies being fed, then some of colonies was destroyed by cow and buffalo at the time when beekeepers/their family members were absent at home or was stolen. A special case that 2 times Thanh residing at Mang He village had colonies to be thieved, despite that the commune is the place where people may leave a newly-bought motorbike in the road or an edge of stream for several days or may not need to close the house doors during time without anything being stolen. Consequently, there were 2 households keeping 4 colonies, 76 units declined in Son Bua.

In Son Hai, 5 out of 20 households were keeping 19 colonies, 61 units reduced. In Ba Le, 7 out of 20 households were keeping 22 colonies, 58 units reduced. The data for Long Hiep was 12 households with 22 units being kept among total of 20 households, with 42 unit reduced. In Binh Minh, 24/20 households were keeping 78 units, 2 units declined. Conclusively, the number of colonies reduced was 239 units with 803 frames.

By 24th of September 2007, beekeepers of the overall five project communes had 161 colonies, 475 frames (not include a number of colonies borrowed by local people from members to be fed). The problem was the consequence of not only the objective factor that was rather bad honey cultivation in 2006 leading to weaker work force and easily absconding of colonies but also the subjective factor that was the poor perception of members. Illustratively, many households of Son Bua involved in cutting frames to eat while the colonies did not already recover from being transferred because of a conception that the colony might not abscond if there was no frame existing. Some beekeepers in Son Hai who have just already technical consulted the administrative methods in the harsh season immediately cut frames to soak into wine for drinking whenever honey was stored in the frames obtained with sugar syrup supplementation. Together with attacks from bee's foes (wild bee, wax moth, ant, etc.), beekeepers' faults probably caused a mass absconding of colonies.

On the contrary of the weaknesses on bee administration of members in mountainous area, members of Binh Minh – a flatter commune – maintained the amount of initially provided colonies. In the favorable season from March to May 2007, the quantity of colonies extended by 30 units. Kinh beekeepers in Ba Le, Long Hiep well administered their colonies. To current date, the remaining colonies of beekeeping groups/clubs are going stable, however, the quantity of colonies probably reducing in the next rain season is due to joining colonies together asked by technical requirements.

Besides, table 4 shows the productivity of honey harvested of the five communes was 772.4 kg which mainly came from Binh Minh with 610.4 kg. Some outstanding beekeepers in Binh Minh such as Tinh, Huynh Tan Thanh, Tan, Tran Van Thanh, Hoa, Minh collected 20-60 kilos of honey per person.

Despite the economic benefit from beekeeping in four more special communes was not very high due to poor crop (in Son Bua, Son Hai) or due to newly involved in beekeeping (beekeepers in Ba Le, Long Hiep), they got honey to eat or gift. Mostly, members of Binh Minh beekeeping club have earned extra money from honey sale, with the amount goes from 50 thousands to 500 thousands VND.

For more details, the total monetary value come from honey sale was 38,620 millions VND (excluded with expenditure, without labor paid) if the unit price per kilo of honey at the local was estimated at 50 thousands VND. Some beekeepers such as Minh, Hoa (in Binh Minh), Vuong (in Ba Le), Phung (in Long Hiep) already exploited wax for use in their continuous beekeeping activities. Many of beekeeping households had chance to use a product from beekeeping that was wine containing bee frames.

In conclusion, 90% of interviewed respondents replied that comparing with other income sources of household the beekeeping has not brought about a very obvious benefit. Factually, beekeeping much depends on the weather, natural food resources and asks for several typical skills as well as the patience from keepers. As a matter of fact, the low/unsatisfied results due to being newly introduced and a short duration of practice of bee administration (with 5 months in Ba Le and Long Hiep, with 10 months in Binh Minh and 17 months in Son Bua and Son Hai) even the failure model as in Son Bua were easily understandable.

6.2.2 Social effectiveness

Currently, although economic effectiveness gained from beekeeping activities has not clarified, at least they provided the 50% of participated households opportunity to approach a pattern of livelihood to increase income for a better living standard, within the overall sake of rural development and poverty reduction goal of the program.

Beekeeping activities done in the area of the project communes *initially encouraged a movement on improving economic status* through beekeeping, especially in the three communes Binh Minh, Long Hiep and Son Hai. Regularly, 4 non-beekeepers in Binh Minh learned experience from participants, started to have beekeeping products for domestic consume.

In terms of spiritual aspect, beekeeping activities have been *reinforcing the cherish between relatives and neighbors*. 20 out of 32 respondents revealed that honey gained from beekeeping activities was usually used as the gift for parents and relatives. On those days of honey cultivation, neighbors frequently went to beekeepers' houses for help, chat, experience learning and enjoying honey.

Beekeeping helps to improve the community health with usage of its products. 50% of interviewees strongly expressed the use of honey to partly treated some certain diseases such as stomachache or cough which was applied to themselves or their family members/relatives. Honey has been considered as a nourishing food to foster human's

strength. They, the people living in the high land who knew the fame of natural honey even have never eaten it before, now already tried its taste.

An interesting point is that the involvement of women in beekeeping activities could be seen as *a contributing factor of gender inequity elimination*. As reported by female respondents who were invited to interviews, all of them realized that they have undertaken a more important role in the families thank to beekeeping.

Finally, beekeeping helped to *improve people's perception towards living environment*. Some beekeepers have not preferred to use chemical insecticide for crops and plants living very near their houses. Some intended to grow more floral resource plants.

6.3 Impact

6.3.1 Direct impact on beneficiaries

Economically, beekeeping increased keepers' income. 34 percent of respondents afforded to support their distance children studying out of the local by means of full payment for their books, shoes, hats, cloths, training fee and living expenditure, besides, people had money to buy household equipments such as water pump, or invested back in beekeeping with utilities, sugar, saw and chisel...

6.3.2 Indirect impact on community

Together involving in beekeeping activities strengthened the support and collaboration between farmers even in agricultural works. 3 out of 5 club leaders revealed that the beekeepers got a closer relationship to others either in beekeeping activities or in agricultural activities for example learning experience of planting fruit trees which are also the floral resources or of breeding live-stocks, besides, the closer neighborhood represented by actions such as visiting sick persons or transferring colonies (done by Nguyen Phu, Hien) to whom were new comers to experiment with beekeeping.

6.4 Sustainability of maintaining beekeeping activities

6.4.1 Sustainability of activities maintainance

In a situation that quantity of colonies in 3 communes Long Hiep, Son Hai, Ba Le significantly decreased during time or of no colonies existed in Son Bua, beekeeping activities still have been implemented in 4 out of 5 communes with 50 beekeeping households. 100% of beekeepers in Binh Minh said that they continue keeping bee – it is

becoming a new occupation at the local – even in case of with an unnoticeable productivity of honey harvested under their constrained technical skills on bee administration.

Some beekeepers of Ba Le and Long Hiep who did not own any colonies due to being absconded/stolen have always positively found sources of bee breeding supply. Ngo Minh (Long Hiep) climbed to catch a colony on a high tree despite of a not very good health condition. Boi and Dinh (Son Hai) have actively caught wild bee contributed to an enlargement of the number of colonies.

Four heads/chairmen of beekeeping groups/clubs expressed their strong expectation of maintainance of the beekeeping groups/clubs activities to create chance for members sharing and learning experience from each other even if the project is going to an end. Through the telephone report of leader of Binh Minh beekeeping club, it held a meeting in the evening of September 20th for organizational structure strengthening. It now has 16 members including a few new ones and is on the way to set up its action regulations.

6.4.2 Perception

Basic and advanced trainings, counseling visits, meetings, chats strengthened members' awareness on bee administration, economic benefit of beekeeping, therapeutic functions of honey/bee venom, as well as good effects on plants from pollination done through bee's food-collecting activities. Specially, the study tour in Quang Binh and Da Nang not only created opportunity for them to communicate with people from various settings to learn beekeeping lessons and to have some basic concepts on market research, but also broadened their knowledge of home country Vietnam, human, famous landscape and magnanimously historical monuments of the nation.

6.4.3 Skills

The “direct hands-on approach” and the “role modeling” applied to train farmers who have a low educational level proved to be an effective method that helped learners quickly acknowledge the basic skills of beekeeping techniques, for example, examination, imprisoning, and combination, ect. 3 out of 5 extension workers (Boi, Hoa, Minh) become more skillful on simplified queen rearing and disease treatment owing to being attended the advanced training course. With the queens reared by those people, colonies in Binh Minh and Son Hai recovered and stabilized over the recently harsh season.

6.4.4 Equipments and tools

Equipments and tools given to beekeeping groups/clubs by the project were being well managed. 100% of beekeepers totally recognized the importance of beekeeping equipments such as honey centrifugal extractor, sting-protected hat which are hardly self-equipped, as a result, they took care of equipments well. Besides, Nguyen Trung Hai, Dinh Vui, Le Hong Minh, Dinh Van Boi, Nguyen Binh Dinh built modern hives and traditional hives themselves.

6.4.5 People's enthusiastic and authorities' support to beekeeping development of the locals

Despite the fact that beekeeping has not brought about a remarkably economic benefit during last time, 32 interviewed households manifested their firm determination that they keep trying to feed bee colonies. Dinh Roi – a H're man in Long Hiep – still participated the advanced training course even if he did not have any colonies at the moment. Four non-beekeeping young youths told that they did not pay much attention to beekeeping until directly saw the honey collected as well as the not-very-complicated process of catching wild bee living in a stone hollow done by Boi. At the present, they wanted to try keeping bee to get experience. Almost all the non-beekeeping households gave beekeeping households support without making any barriers. They, the non-beekeepers, also comprehended the good effects on plants from pollination done through bee's food-collecting activities. Besides, they understood that beekeeping does not cause any bad effect on human's health.

Leaders of authority of the all five communes including Son Bua extremely supported beekeeping activities to be done at their locals. They believed that beekeeping has made a good contribution to improving farmer's lives. Nguyen Dinh Dung, chairman of Long Hiep people's committee, affirmed the continuous support and concern of the communal authority to beekeeping activities even when the project is now coming to an end or while farmers might not be technical consulted by BRDC experts. Factually, before being funded by RUDEP, Long Hiep authority proposed to select 2 extra livelihoods that were beekeeping and silkworm feeding to introduce to farmers in order to improve economic situation for local people. Being carefully considered by the people's committee through a look at the rich of natural resource of floral and nectar availability, beekeeping was set as the most suitable livelihood for Long Hiep. Communal leaders had the proposal to ask for help from Quang Ngai Provincial Centre for Agricultural Development on beekeeping techniques provision to farmers. To date, as planed by Long Hiep people's committee, at the finishing point of the RUDEP, it is going to help the beekeeping club to consolidate its structure, and keep asking the technical assistance

for colony development as well as for the establishment of some professional beekeeping models from Quang Ngai Provincial Centre for Agricultural Development. Furthermore, as stated by Nguyen Cong Cuoc - the chairman of Binh Minh people's committee, the authority totally supported beekeepers who wanted to borrow fund for agricultural production. Fund (1 million dong) now was liberating to borrowers to help them invest in live-stock or forestry planting, etc.

Totally, two general conclusions are given by the assessment team as below:

1. Although beekeeping performance done in Son Bua was assessed to be failed, it still got success in the four remaining communes expressed by effective activities which have continued being conducted and honey harvested from those.
2. From the evidence of beekeeping effectiveness obtained by farmers; with the supportively and favorably natural conditions such as the breeding availability, diversified natural forest, the expansion of the human-grown forestry area; with people's enthusiastic in beekeeping development as well as the entire support from almost local authority levels, it is definitely confirmed that the beekeeping activities performed at the RUDEP area will be sustainably maintained.

7 ACHIEVEMENTS AND SHORTCOMINGS

7.1 Achievements

1. Farmers gained economic benefit through beekeeping products.
2. Four modern models (bee kept in square hive) and two traditional model (in Son Hai and Binh Minh) were successfully established.
3. Five women perceived knowledge and well practised skills of beekeeping.
4. Beekeepers' comprehension on forest development and protection aiming to maintain the food resources for bee was strengthened.
5. IEC on sense of protection of natural will bee was totally done. People were introduced using appropriate methods of honey exploitation which will maintain the sustainable development of wild bee.
6. IEC on harmful effects of insecticide to life of honey bee and environment was totally done.
7. Beekeeping activities improved people's community spirit through learning and sharing actions conducted via the operation of beekeeping clubs/groups.
8. Natural resources in the project area have been taken full advantage of by beekeepers.
9. Honey production of the project area made contribution to an increase of honey production throughout region and nation.

7.2 Shortcomings

1. We did not achieve a very great success in provision of traditional beekeeping techniques to low-educated and poor farmers in Son Bua and Ba Le.
2. We have not completely found an effective method to motivate the learning actions of beekeeping groups in Son Bua, Son Hai and Ba Le yet.
3. There was not any guidelines for beekeeping groups to draw the participation towards its activities from new members.
4. Did not significantly improve people's perception on conservation of wild bees for ecological diversification.

7.3 Recommendations

1. Women should become the target subject of attending beekeeping activities firstly is to strengthen their role on family and society and secondly is because they are more patient and skillful proper for this kind of handicraft.
2. Noticing to the development of floral resource plants: forest tree, human-grown trees, fruit trees (coconut, longan, Acasia mangium, etc.) for a more various honey and nectar provision.
3. Training the extension workers for Long Hiep and Ba Le for a sustainable development of beekeeping activities.
4. Provision of the equipment for water reduction in honey should be done to enhance quality of honey harvested in Binh Minh and Long Hiep
5. Technical assistance should be provided to two beekeeping clubs of Binh Minh and Long Hiep to help them establish the trademark for honey and find the consuming market in the future.

8 LESSON LEARNED

Lesson 1: A more simple beekeeping method should be provided to farmers in Son Bua, Ba Le and Son Hai

It was clearly recognized that farmers of the three communes Son Bua, Ba Le and Son Hai might perceive and conduct modern beekeeping method, however, the disadvantaged living place and economic conditions were the reasons why they did not have so much chance of buying some utilities and tools used in modern beekeeping (such as steel wire and wax foundation). Thus, a simple beekeeping method as like top-bar hive beekeeping or round hive beekeeping highly recommended to be provided.

Lesson 2: Trainees should be selected as people who do not involve in too many social activities or whom are multi-roled persons

As recognized by the research team, among trainees selected in Ba Le, Son Hai, Long Hiep, Binh Minh included village leaders. In spite that they had an enthusiastic participating in beekeeping, they likely did not have the amount of time relatively enough to invest in taking care of bee colonies in the harsh season. For this reason, selection of trainees should focus on the groups of people who do not involve in too many social activities or whom are multi-roled persons in the community.

9 CONCLUSIONS

1. With technical and financial supports of BRDC and RUDEP, successful beekeeping model managed by farmers were firstly built in Quang Ngai. In addition, the province had a team of beekeeping extension workers/trainers who would become the key persons to train other farmers for the first time.
2. Currently, although economic effectiveness gained from beekeeping activities had not been clarified, at least, they provided the 50% of participated households opportunity to approach a pattern of livelihood to increase incomes for a better living standard, within the overall sake of rural development and poverty reduction goal of the program.
3. Involving in beekeeping activities, poor farmers started to earn extra income for an improved living standard that was one of the factor contributed to rural development and poverty reduction within Quang Ngai province.
4. Beekeeping helped women to undertake a more important role in the family and community.
5. Farmers had opportunities to take part in a study tour for a better perception on beekeeping, market research for beekeeping products, society and people of their country.

10 References

1. Introductory documents about RUDEP
2. Survey reports on beekeeping potentiality
3. Training reports
4. Reports on results of technical counseling visits
5. Advanced training report.

Hanoi, October 3rd 2007

Written by

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Vu Cong Dung, Eng.

Annex 1: Images of assessment survey implementation

Image 1: An interview with a non-beekeepers in Ba Le

Image 2: An interview with the chairman of Binh Minh
Commune People's Committee

Image 3: H're language translation by Dinh Van Boi

Image 4: A discussion with the head of beekeeping group
of Ba Le commune

communes with participation of local leaders

Image 5: A summary meeting for the assessment of beekeeping results
in Binh Minh

Image 6: An interview with beekeepers in Son Hai commune

Image 7: A floral tree favorable for beekeeping in Son Bua
(photographed on 15th of September 2007)

Image 8: Coconut root – an available material for hive making in
Binh Minh & Long Hiep

Image 9: Beehives in the garden of Tuyen in Long Hiep commune

Image 10: Beehives in the garden of Vuong in Ba Le commune

Image 11: Capturing wild *Apis cerana* living in stone hollow in Son Hai

Image 12: An *Apis dorsata* colony in Long Hiep
(a proof the ecological variety at the local)

Image 13: Honey produced by bee of Thanh in Son Bua who has colonies lost 2 times

Image 14: Frame has a part removed to harvest honey in the harsh season in Son Hai (leads to the absconding)

Annex 2: **Assessment schedule**

<i>Activities</i>	<i>Date</i>	<i>Who?</i>	<i>Where?</i>
PREPARATION			
• Documents review to collect needed information	Aug 30	Huyen	Hanoi
• Assessment protocol and questionnaire design	Aug 31	Huyen	Hanoi
FIELD TRIP			
• Departure from Hanoi	Sept 3	Huyen, Dung	
• Assessment implementation in Son Bua	Sept 14	Huyen, Dung, Ngoc, Gai	Son Bua commune, Son Tay dist.
• Assessment implementation in Son Hai	Sept 17	Huyen, Dung, Su, Boi	Son Hai commune, Son Tay dist.
• Assessment implementation in Binh Minh	Sept 20	Huyen, Dung, Minh, Hoa	Binh Minh commune, Binh Son dist.
• Assessment implementation in Long Hiep	Sept 23	Huyen, Dung, Nhat, Phung	Long Hiep commune, Minh Long dist.
• Assessment implementation in Ba Le	Sept 25	Huyen, Dung, Le, Long	Ba Le commune, Ba To dist.
• Back Hanoi	Sept 27	Huyen, Dung	
REPORT WRITING			
• Report writing	Oct 2-3	Huyen, Dung	Hanoi

Annex 3: **List of beekeeping participants**

	Name	Age	Ethnicity	Where?
1	Dang Van Ty	41	Kinh	Mang He vill., Son Bua
2	Nguyen Thi Anh Tuyet	32	Kinh	Mang He vill., Son Bua
3	Dinh Van Canh	46	Cadong	Mang He vill., Son Bua
4	Dinh Van Sem	26	H're	Lang Lanh vill., Son Hai
5	Nguyen Binh Dinh	51	H're	Lang Lanh vill., Son Hai
6	Dinh Van Loeo	56	H're	Lang Lanh vill., Son Hai
7	Dinh Van Boi	24	H're	Ta Mat vill., Son Hai
8	Ho Anh Hoang	38	Kinh	Village 2, Binh Minh
9	Vo Thi Kim Lien	47	Kinh	Village 2, Binh Minh
10	Huynh Van Tinh	49	Kinh	Village 2, Binh Minh
11	Tran Van Thanh	46	Kinh	Village 2, Binh Minh
12	Nguyen Van Ut	37	Kinh	Village 2, Binh Minh
13	Le Hong Mlnh	46	Kinh	Village 2, Binh Minh
14	Tran Van Chi	50	Kinh	Village 2, Binh Minh
15	Do Hung	65	Kinh	Village 2, Binh Minh
16	Bui Thanh Quang	41	Kinh	Village 2, Binh Minh
17	To Thi Anh Tuyet	36	Kinh	Village 1, Binh Trung, Tra Binh
18	Nguyen Trung Hai	56	Kinh	Village 2, Binh Minh
19	Tran Thi Le Hoa		Kinh	Village 1, Binh Minh
20	Ho Quang Tuyen	50	Kinh	Village 1, Long Hiep
21	Vu Thi Hiep	47	Kinh	Village 2, Long Hiep
25	Le Minh Thuc	37	Kinh	Village 2, Long Hiep
22	Nguyen Ba Hien	19	Kinh	Village 3, Long Hiep
23	Nguyen Thanh Phung	50	Kinh	Village 3, Long Hiep
24	Ngo Minh	42	Kinh	Village 3, Long Hiep
26	Dinh Ui	40	H're	Ha Boi vill., Long Hiep
27	Dinh Phieu	40	H're	Ha Liet vill., Long Hiep
28	Nguyen Cong Minh	34	Kinh	Dong Lau vill., Ba Le
29	Vo Tan Long	34	Kinh	Dong Lau vill., Ba Le
30	Pham Van Pua	40	H're	Dong Lau vill., Ba Le
31	Pham Van Gheu	29	Kinh	Dong Lau vill., Ba Le
32	Nguyen Thanh Vuong	34	Kinh	Dong Lau vill., Ba Le

Annex 4: List of non-beekeeping participants

	Name	Age	Ethnicity	Where?
1	Dinh Thi Nga	38	Cadong	Mang He vill., Son Bua
2	Dinh Van Lang	27	Cadong	Mang He vill., Son Bua
3	Dinh Van Su	25	H're	Lang Lanh vill., Son Hai
4	Dinh Van Bia	19	H're	Ta Mat vill., Son Hai
5	Dinh Van Buon	20	H're	Ta Mat vill., Son Hai
6	Dinh Van Biet	24	H're	Ta Mat vill., Son Hai
7	Nguyen Van Tinh	26	Kinh	Loc Thanh vill., Binh Minh
8	Nguyen Van Bang	28	Kinh	Loc Thanh vill., Binh Minh
9	Ngo Van Duoc	49	Kinh	Dong Thuan, Binh Trung, Binh Son
10	Nguyen Phuong Cuc	26	Kinh	Loc Thanh vill., Binh Minh
11	Nguyen Thi Tuyet	45	Kinh	Village 1, Long Hiep
12	Nguyen Quang Thanh	24	Kinh	Village 1, Long Hiep
13	Phan Thi Hoa	42		Village 3, Long Hiep
14	Dinh Van Riet	25	H're	Ha Boi vill., Long Hiep
15	Huynh Thi Thu Dong	25	Kinh	Dong Lau vill., Ba Le
16	Huynh Thi My Hanh	26	Kinh	Dong Lau vill., Ba Le

Annex 5: List of leaders of beekeeping groups/clubs interviewed

	Name	Title	Commune
1	Nguyen Ba Ngoc	Head of group	Son Bua
2	Dinh Van Su	Head of group	Son Hai
3	Le Hong Minh	Chairman of club	Binh Minh
4	Luu Van Nhat	Chairman of club	Long Hiep
5	Pham Van Le	Head of group	Ba Le

Annex 6: List of leaders of CPCs interviewed

	Name	Title	Commune
1	Pham Van Thinh	Vice-chairman	Son Bua
2	Ton Long Sang	Secretary of Communist Party	Son Hai
3	Le Cong Cuoc	Chairman	Binh Minh
4	Nguyen Dinh Dung	Chairman	Long Hiep
5	Dinh Van Nau	Chairman	Ba Le

Annex 7: **Questionnaires used in the assessment**

Annex 8: Some quantitative data

Table 1: Appropriateness of beekeeping – household interview

Item (N=32)	n (%)
Purpose of beekeeping	
• Better income	32 (100.0)
• Entertainment	-
• Disease treatment	-
• Pollination	-
Whether beekeeping affects other household activities	4 (12.5)
Whether beekeeping affects human-grown plants	1 (3.0)
Whether beekeeping well influences on the environment	27 (84.0)
Whether beekeeping affects respondents' health or other family members' health	-
Assess the feasibility of beekeeping at the local	32 (100.0)
Whether beekeeping suits to women (N=5)	27 (84.0)
Whether women's husbands welcome their participation in beekeeping activities (N=5)	5 (100.0)
Whether their husband give them a hand in beekeeping (N=5)	5 (100.0)
Whether honey easy to be sold at the local	32 (100.0)

Table 2: Effectiveness of beekeeping – clubs/groups leader interview

Item	Son Bua	Son Hai	Binh Minh	Long Hiep	Ba Le
• Total number of colonies	4	19	78	38	22
• Productivity of honey harvested (kg)	24.2	59.4	610.4	53.2	25.2
• Productivity of wax haversted (kg)	0	0.5	2.0	1.5	0.5