

# PRODUCTION AND EXPORT HONEY IN DAK LAK

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## Abstract

*The region of Dak Lak has a number of features that make it particularly suitable for the development of honey. These features include: 1.7 million ha of natural forests, permanent industrial crops, and contains the largest food resources for honeybees throughout Vietnam. In recent years, honeybee- farms developed rapidly in Dak Lak, which became one of the leading province for exporting honey. Dak Lak Honey has been exported to America, Japan, England, and Germany, thus increasing the amount of foreign currency into Vietnam. In Dak Lak, honeybee farming has contributed to increasing household income. As a result, bee farming increased employment, utilizing the available forests to the bee farmer, and reducing pressure on the need to practice slash and burn farming.*

*Despite the potential of Dak Lak's honey to develop further, the quality of its honey have not yet met the demands of fastidious consumers in the larger markets such as Europe and America. Because of primitive processing techniques and a very limited array of products. These factors have limited the exportation of Dak Lak's honey. In order to increase international export of Dak Lak honey, local authorities must issue credit policies that support producers and processors, and help export companies to upgrade processing methods. They also must enhance market research and improve export skills of the cadres.*

## 1. General Introduction

Honey and its products are widely used in society - in crude and processed forms, as essential foodstuffs, and as luxury pharmaceuticals. Because of honey's value in so many different commodities, its production has been subjected to rigorous regulation and quality control in all stages, including beekeeping, harvesting, storage and processing.

The increasing international demands of honey commodities have made beekeeping become an industry with a high production value. The benefits of exporting honey products are shared by local and broader economic communities. In recent decades, the honey industry has developed strongly in many Vietnamese provinces, especially in Dak Lak.

The natural conditions in Dak Lak are good for developing honeybee-keeping industry. Dak Lak is one of several provinces occupying a diversified and high land-cover area both in nature and artificiality]. Dak Lak's specific geographic conditions, such as [separated terraces] and a clearly differentiated seasonal climate, are favorable for the development of diversified forest resources. Dak Lak not only has the largest natural forest area but it also contains several kinds of precious timber trees and hundreds hectares of coffee, rubber, and cashew. These natural forests provide a high-quality, abundant and stable food source for developing honey bee keeping with high quality and productivity. Thanks to large forest and industrial crop area, honey bee colonies could be increase nearly 300.000 ones.

Neighboring provinces of Dak Lak, such as Gia Lai, Kon Tum, Binh Phuoc, Binh Duong also have great potential for developing honeybee colonies and provide convenient locations to which colonies from Dak Lak may be shifted after the honey harvest there.

The Dak Lak honey industry is a relatively new one. It began to develop in 1990, and Dak Lak has exported natural honey commodities since 1998. To date, the Dak Lak honeybee industry has made considerable progress. The contributions of the Dak Lak honey industry, both locally and nationally, are numerous. Locally, the industry has helped to create jobs for bee-keeping households, protect the environment, and considerably increase the local budget. While Dak Lak's regional export turnover has increased, so has that of the Vietnam honeybee industry in general.

In 2003, the amount of honey products made in Dak Lak reached 4.173 tons, accounting for 43% of Vietnam's total national output. Local honey export products gained 3.000 ton or 33% of the nation in 2003. Currently, there are four kinds of honey products being consumed and highly appreciated in large markets, such as England, Germany, and America. Honey production and trade contributed to VND 1.320 million to the state budget in 2003.

## 2. The Honey Production Situation in Dak Lak in Recent Years:

For a long time, local people have been exploiting natural honey for their own use. In 1965, a Hong Kong trader realized the potential for a honey industry in Dak Lak. He imported local honeybee varieties and established a bee keeping farm. However, he did not widely develop it.

After 1975, honeybee keeping farms were built, forming a honeybee stock company. Today, this company plays a major role in honey production and export in Dak Lak.

**Table 1 : Honeybee Colony Structure in Dak Lak (Unit: Colony)**

Honeybee Colony Structure	1999	2000	2001	2002	2003
Honeybee Colonies in the Entire Province	51.500	60.000	87.167	193.000	190.000
Honeybee Colonies Owned by the company	32.000	53.000	69.000	135.000	152.000
Percentage (%)	62,13	88,33	79,15	69,94	80,00

*Source: Statistical book and honey bee stock company reports*

In the past, the company had honey bee keeping groups to oversee the colonies. Now, worker households are assigned to this task. The company supports input and output services for either workers' company or all honey bee keeping households in Dak Lak. As shown in Table 1, the number of honeybee colonies controlled by the company amount to over 60% of the total number of honeybee colonies in the entire province.

The honeybee stock company has invested in a number of services in order to guarantee favorable production conditions for bee-keeping households. The company's services include:

(1) Input services:

- Loans for developing honey bee colony size/scale
- Supply varieties and technical equipment (given by the company to households at the beginning of the season in exchange for payment in honey products during harvest season)

- Establish free training courses to transfer technological innovations to bee-keeping households

(2) Output services:

- Sign marketing contracts for honey bee keeping households
- To increase materials to sustainable export products, the company advances money for some beekeeping households to stimulate them buy honey products from other households, then re-selling to the company.
- Currently, honey products have face difficult in lack of store and preserve equipments due to beekeeping farms have developed with large scale. Therefore, the company supplies consignment services and pays at the existing price.

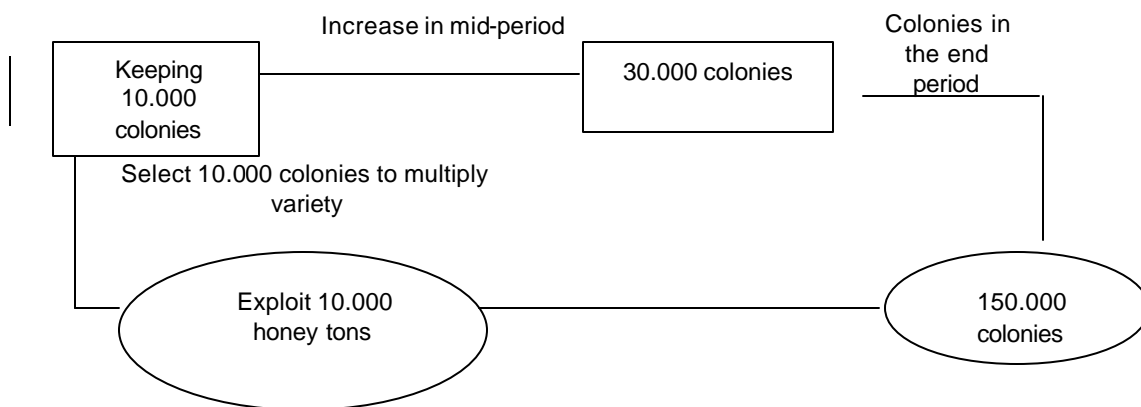
Diversity and timely services provided by the company, will guarantee sustainable export product quantities and quality, thus encouraging people to keep honeybees

### 2.1 Honey Production Process

The honey harvest occurs between December of one year to June of the following year, depending on the blossoming of flowers from plants such as coffee, rubber, *cay bong vang*, etc. Each honeybee farm raises about 200 to 250 colonies. The distance between farms ranges from 800 meters to 1.000 meters.

Production activities at honey farms follows a cyclical pattern. The first of these activities is the initial establishment of bee colonies, followed by the increasing of the numbers of colonies to prepare for honey exploitation. Next comes the increasing of colony numbers by over fifteen-fold in order to prepare for honey harvesting season. After that, honey is harvested from appropriate colonies five to seven times per season (at intervals of five to seven days) – a task that is performed by head farms. Finally, honeybee varieties from stable, disease-free colonies are selected and preserved for next season.

This entire process is shown in Figure 1:



**Figure 1: The Process of Establishing Honey Bee Colonies and Exploiting Honey**

### 2.2 Output and Productivity of Honeybee Industry in Dak Lak

Because the honey bee stock company has been ensuring inputs and outputs such as timely investment and meeting technical demands, the Dak Lak honey industry has been developing. Table 2 presents honey outputs over past years:

Table 2: **Output and Productivity of Honey Bee Industry in Dak Lak**

No	Product	Unit	1999	2000	2001	2002	2003
01	Honey output, in which:		685	975	1.179,0	4.141,7	4.173
	- Honey	Ton		975	5	4.100	4.670
	- Pollen	Kg			1.150		886
	- Royal Jelly	Kg			50	2.200	9.500
	- Beeswax	Kg			29.000	39500	95.500
02	National honey output	Ton	6.230	7.000	10.000	14.000	10.000
03	Proportion of total national output	%	11%	13,9%	12%	30%	43%
04	Average productivity	Kg honey/colony	13,3	13,4	13,5	21,5	22

*Source: The Dak Lak Trade Department, 2004*

As shown in Table 2, honey outputs have increased gradually over the past five years, with a sharp increase in honey outputs in 2002. The European Union stopped importing Chinese honey products after finding antibiotic sediment (cloramphenicol content) in some of them, thus reducing the demand for Chinese honey products among member and other countries. The result of this event was a dramatic increase in Vietnamese honey prices from 10.000 VND/kg to 16.000 VND/kg. In Vietnam, the number of honeybee herds increased over two hundred percent (221%) and honey output climbed 351%.

Dak Lak experienced a bumper honey harvest of 4,200 honey tons in 2002, breaking records for output and productivity, export and price, and producer's benefits.

In 2003, a decrease of over 20.000 ha of coffee-growing areas (for quality and efficiency enhancement) led to a reduction in feeding-material regions for honeybees. In addition, a long cold spell in early 2003, caused slow growth and damaged leaves on rubber trees, which are the source of rubber honey. After that, a drought occurred for 2 months, which constrained the blossom of many plants, resulting in a poor crop and disease among honey bees. Therefore, 2003 saw only a modest honey output.

Due to adequate financial investment, technology adoption, and favorable natural conditions, the honey-producing capacity of each bee colony has gradually and steadily increased gradually over the past few years.

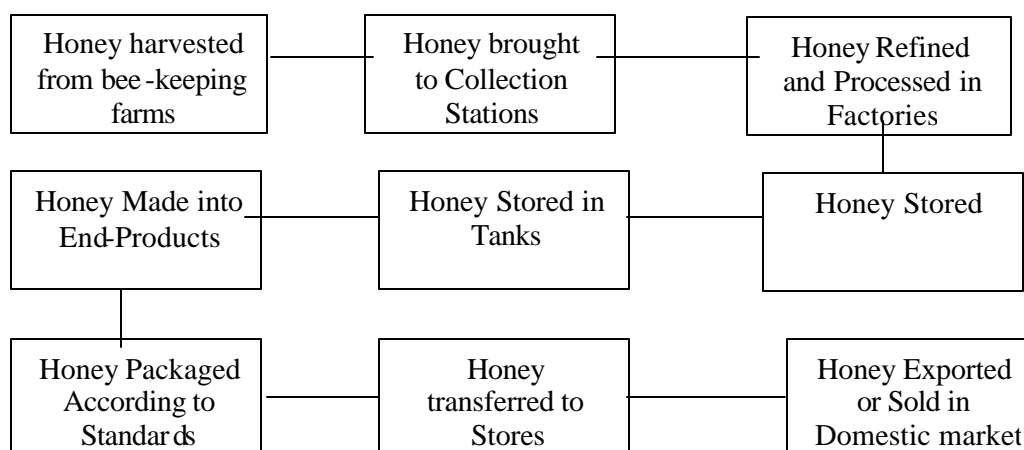
With an increase in honey output, its product categories become more diversified, increasing from only one product category to four, including natural honey, pollen, royal jelly, and beeswax. Royal jelly has a high nutrient content and its price is as much as 40 times that of natural honey (800,000 VND/kg and 20,000 VND/kg, respectively). Other categories, such as pollen, are used in the food industry, while honeycomb is used as material for producing honey pallets.

Being natural products, honey requires high quality and sanitation control. Collection, processing and storage activities are important factors in satisfactorily meeting these requirements.

### **2.3 Collecting, Storing and Processing**

This process consists of nine steps, beginning from the transportation of honey from farms to collecting stations. Then, honey samples are checked and analyzed for quality, sugar content, and signs of toxicity. This activity takes from 3 to 6 days, during which the honey is

temporarily stored in collection stations. After that, honey is transported to company's stores, where it is then put into tanks to conserve concentration, hydro dioxide content, etc. After refining the honey, it is used in making honey products.



**Figure 2: Honey Processing Stages**

In order export honey products, honey samples must be tested by importers according to EU or American standards. (Testing takes 7 to 10 days because of the time needed to send honey samples to importing countries). After the honey products have been packed in 250-Kilogram tanks, they are transported to ports. Overall honey quality depends on the quality of the following factors:

- Honey varieties and methods of honeybee keeping
- Flower sources: Coffee, Rubber, Longan, Cashew
- The quality of honeybee-keeping pipes and weather conditions
- Refining technology and conservation tools

It is important to ensure that Dak Lak honey products meet international quality standards. Because honey accounts for over 90% of its exports. Table 3 presents honey product quality standards.

**Table 3. Honey Quality Standards**

No.	Indicator	FAO/WHO Standard	Vietnam Standard		
			Flower Honey	Leaf Honey	Mixture
1	Water content (%)	< 21 %	< 23%	< 21%	< 21%
2	De-glucosidal content, %	> 65 %	> 70%	> 60%	> 65 %
3	Sacaroza content, %	< 5 %	< 5 %	< 5 %	< 5 %
4	Acid content (mlkg)	> 40	> 40	> 40	> 40
5	Amylaza (diastaza)	< 3 degree goth	< 7 degree	< 8 degree	< 8 degree
6	Indissoluble in water solid content %	< 1 %	< 1 %	< 1 %	< 1 %
7	NMP content (mg/kg)	< 80 mg/kg	< 20	< 40	< 30

*Source: Dak Lak honey company*

Honey quality under Vietnam standards nearly satisfies FAO and WHO regulations as well. However, each country has different specific requirements in terms of quality standards. To ensure Vietnamese honey's reputation in the international market and to increase export quantities, it is necessary to rigorously maintain standards for bee-keeping, harvesting, and processing processes.

## 2.4 Advantages and Disadvantages in the Development of Dak Lak Honey Production

In recent years, a considerable development has been witnessed in the Dak Lak honey industry. However, it still faces several difficulties. Shown on a table below, are the strengths and opportunities of, as well as weakness and threats to honey bee production in Dak Lak.

Strengths	Opportunities
<ul style="list-style-type: none"> <li>➤ Abundant natural flower sources</li> <li>➤ Honey keepers have high experience and education levels</li> <li>➤ Tight cooperation between honey companies and honey keepers. These companies supply input and output services. Honey keepers can concentrate on production.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Honey and other honey products, are natural products used for both food and pharmaceutical products. Therefore, there are great market demands for these goods.</li> <li>➤ The trend of globalization creates potential markets for products of the honey industry, encouraging its development.</li> <li>➤ The Vietnamese Government has issued several policies for developing household economies, that give preference to honey producers (among other small industries)</li> </ul>
Difficulties	Threats
<ul style="list-style-type: none"> <li>➤ Several honey-keeping households have not adopted technically rigorous requirements, thus affecting honey quality</li> <li>➤ Farm households lack capital to expand their scale and diversify into making other high value products</li> <li>➤ Households lack capital to invest in modern technologies for testing honey product quality and refine processing</li> </ul>	<ul style="list-style-type: none"> <li>➤ There is an increasing trend in intensive industrial tree production, potentially causing high protection plant residues and inorganic elements in honeybee feed sources</li> <li>➤ Unusual weather changes may affect nutrient quantities and conditions for creating honey.</li> </ul>

## 3. Honey Export Situation From 2000 to 2003

### 3.1 Honey Products on International Markets

With honey export quantities of around 9,000 tons, Vietnam is currently ranked sixth out of the top 10 honey export nations in the world. In Asia, it is ranked second after China.

**Table 4: Honey Exports For the Top 10 Export Nations in the World (1998- 2003)**

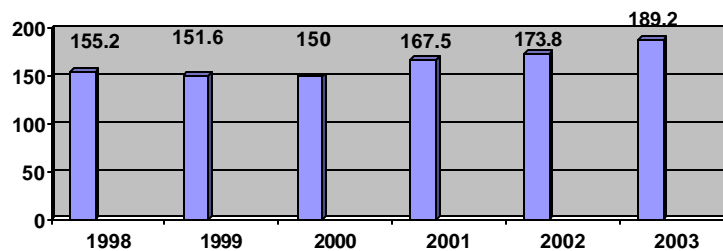
No.	Nations	Average export quantity (tons)
01	Argentina	80.000
02	Mexico	25.000
03	Canada	15.000
04	China	14.000
05	Brazil	10.000
<b>06</b>	<b>Vietnam</b>	<b>9.000</b>
07	Australia	8.600
08	Turkey	8.000
09	Uruguay	7.000
10	Chile	6.000

*Source: Web: www.iheo.org, 2004*

Vietnam honey products are mainly exported to Canada, America, Germany, Japan, England, and Taiwan. Honey product quality is highly appreciated in these markets due to its lack of antibiotic residues and chemical elements (like pesticides), while maintaining a high quality level at current Free on Broad price (FOB) of about 1,020 USD/ton for rubber flower honey. Importers have offered Vietnamese exporters the CFR EU price of 1,120 USD/ton.

Due to the country's highly sensitive features, Vietnam is located in a region where several diseases have happened in past years) and rigorous quality requirements, indicators always have to be adjusted. To maintain its rank among the world's top honey producers, Vietnamese producers and businessmen have to maintain an exact, rigorous, and effective management system.

One of Vietnam's great honey export markets is the American market. In the America, Honey is used widely in daily life - as in foodstuffs, in pharmaceutical technology, and in drinking water. The bar chart presents honey product sales in the American market from 1998 to 2003.



**Figure 1: Honey Product Consumption in America**

*Source: Collecting..., 2004*

According to the statistical data of the National American Honey Committee, the average quantity of honey consumed in America is about 340 million pounds, or 150,000 tons. In terms of total consumption volume America is first in the world, and in terms of consumption per capita, it ranks second behind Germany.

### 3.2 Honey Export Activities in DakLak

Dak Lak honey products are mainly exported; domestic consumption only accounts for a small proportion of the total output. As can be seen in table 5, Dak Lak's honey product exports were reported to comprise over 70% of its total honey output.

**Table 5: The Proportion of Dak Lak Honey Consumption from 2000 to 2003**

No.	Items	Unit	2000	2001	2002	2003
1	Total Output::		975	1,179	4,141	4,173
-	Honey	Ton	975	1,150	4,100	4,670
-	Honey Comb	Kg			97,500	95,500
-	Royal Jelly	Kg		29,000	2,200	9,500
2	Export output:	Ton	908	1,019	3,900	3,000
-	Honey	Ton	908	1,019	3,850	2,925.2
-	1 <sup>st</sup> Class Honey Comb	Kg			45,400	67,500
-	Royal Jelly	Kg			2,170	7,700
3	Export/Total Output	%	93.12	86.42	94.08	71.89

*Source: The Dak Lak Trade Department and Website: www.iheo.org 2004.*

In recent years, despite several price fluctuations on the market, quality standard adjustments of importing, countries and a decrease in areas containing materials for honey collecting, honey outputs have still increased.

**Table 6: Honey Product Exports in Dak Lak from 2000 to 2003**

No	Items	Unit	2000	2001	2002	2003
1	Export	Ton	908	1,019	3,900	3,000
1.1	- Honey (rubber and coffee honey)	Ton	908	1,019	3,850	2,925.2
1.2	- 1 <sup>st</sup> Class Honey Comb	Kg			45,400	67,500
1.3	- Royal Jelly	Kg			2,170	7,700
2	Total Honey Exports in Vietnam	Ton	6,300	9,000	12,600	9,000
3	Export Ratio	%	14.4	11.3	31.0	33.0
3	Dak Lak Honey Export Turnover	MI USD	0.658	0.861	5.4	4.6

*Source: The Dak Lak Trade Department and Website: 2004*

Dak Lak's honey products include two new types: royal jelly and honey comb. Royal jelly (the milk made by the Queen Bee) is a high-value commodity. It is favored by many countries and must meet quality standards three times as high as those for natural honey products. As shown in Table 6, honey comb just began to be exported in 2002. However, in 2003, the honey comb export quantity increased 148% compared to the year 2002. This increase is due to the exclusion of Chinese honey products from the market. Therefore, importing countries have had to look for new markets with sustainable quality. In past years, Vietnamese honey products have been paid more attention.

In early 2003, EU and American governments required rigorous quality standard tests for honey products imported from Vietnam in order to figure out the glucose content in honey and signs of mixture Chinese and Vietnamese honey, thus reducing dramatically Vietnamese honey export quantities. Although Dak Lak honey products overcome the above problems. However, its products have been strongly affected due to importers' subjective judgment; honey export quantities accounted for 77% of the year 2002.

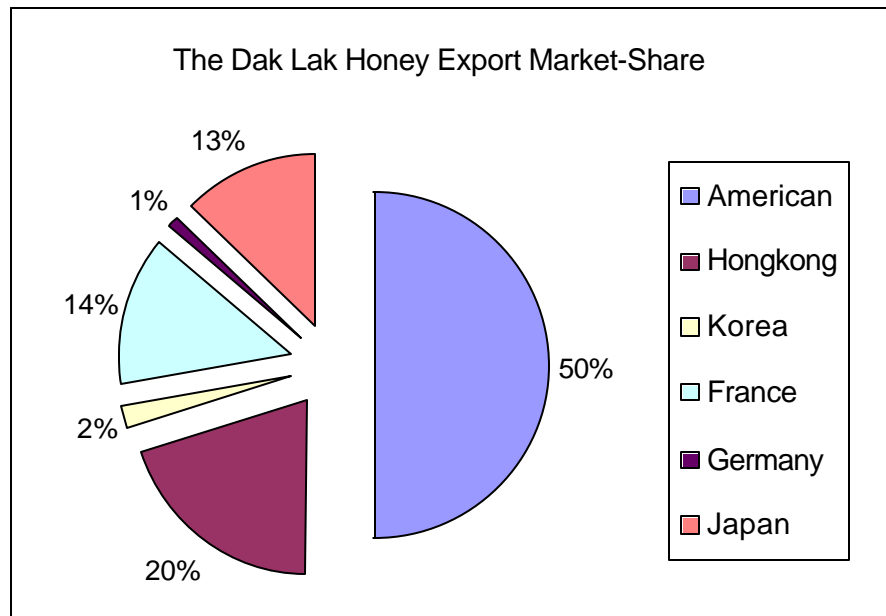
An increase of 22.3% Dak Lak honey products have enjoyed a 22.3% increase in their share of the export market, compared to Vietnam honey exports as a whole, thus illustrating the effectiveness of honey exploitation and development in Dak Lak.

### 3.3 Dak Lak Honey Export Market

Currently, America is the largest honey import market for Vietnam in general and Dak Lak in particular, accounting for 50% of total export quantity. The second largest importer is Japan, followed by EU countries such as France (accounting for 60% of total EU honey import), then Germany, Italia, and other Asian countries.

Europe and Japan primarily import Longan and Coffee honey. American customers, however, favor Rubber Leaf and Coffee honey. The four markets for Royal Jelly are France, German, Belgium and Italy, France being the leading import market. Honey comb products are only exported to Japan.

Currently, the FOB price of Vietnam natural honey is about from 1,500 to 1,700USD/ton. The FCA price of royal jelly fluctuates from 50 to 56 USD/kg. The honey comb export price is currently at 2.6 USD/kg.



**Figure 2 Illustrates Dak Lak's Honey Export Market Share**

*Source: Report on direct export of Dak Lak Trade Department in 2004*

On the world market, Vietnamese royal jelly has been favored because of its lower price and more sustainable nutrient content than that of other countries. In the near future, the position of the Dak Lak honey industry, and the Viet Nam honey industry more generally, will improve and will be more effective due to systematic investment in honey exploitation.

### **3.4 Factors Impacting Dak Lak's Honey Exports and Other Honey Products**

Factors determining the export quantity and quality include internal and external impacts.

#### **3.4.1 Internal impacts**

- Pollen and honey material zones ensure that no pesticides or other chemical elements will affect the products, as well as supplying adequate food sources for honeybee colonies.
- Making honey requires producers to follow a technically rigorous process, especially during the harvesting stage. If honey-keeping and processing have not been following these requirements, honey quality will be dilute, thereby using and diminishing more materials so that export processing will be effected.
- Individual households are responsible for the keeping and harvesting stages of the production process. Hence, the education level and vigilance of honey-keeping households greatly affects the honey product quality.
- Due to importing countries' rigorous quality test regulations, before a commodity lot can be exported, honey samples must be sent to the lab of the American Food and Drug Administration (FDA) for testing of 20 biochemical standards. Therefore, it is necessary to have honey-testing equipment already at the manufacturer before signing export contracts. However, this equipment is very expensive.
- Skills of export staff to access and expand markets are also important factors affecting Dak Lak honey export activities.

#### **3.4.2 External impacts**

- Natural factors like weather and environmental factors greatly affect honey productivity because features of beekeeping are portable, scatter and seasonal.
- Market factor: importing countries are upgrading their honey test standards. Asia is a plague prone region of the world. Therefore, honey importers are discreet.
- Fierce competition among big exporters could also cause a decrease Vietnamese honey prices.

### **4. Conclusion and Recommendations**

The Dak Lak honey industry has made significant achievements and considerable contributions to export turnover and socio-economic effectiveness for nearly 20 years. Honey production has created employment and increased household incomes. In addition, by gathering nectar and pollen, honey bees also contribute to pollinating crops so that crop productivities and outputs in honey keeping areas are normally higher.

Honey-keeping also contributes to environment protection, as an example of the trend of developing "clean production" industries.

Enhancing export honey products into fastidious food markets that require the rigorous quality standards of developed countries, the Dak Lak honey industry – and the Vietnamese honey industry in general - can advertise its development and integration into international economic trends.

The following several recommendations may help to improve Dak Lak honey production and export:

#### **4.1 Improving Product Competition**

Currently, price competition has not dominated no longer and been replaced by quality competition. Product competitiveness must be increased by improving product quality.

##### **Enhancing Product Quality**

In addition to Dak Lak honey producers implementing control techniques guaranteeing the strict observation of production processes, it is necessary to establish a quality guarantee, so that they can wed their interests with those for the sustainable development of the honey industry.

Export product collection departments have to invest in processing technology innovations and post-harvest conservation - particularly for royal jelly, which is prone to rot or degradation.

It is important to build the appropriate harvesting, processing, conservation, and packing infrastructures to comply with international standards. These structures must carefully manage the production process from bee-keeping households to workers and export staff, and from collection to processing and export. It is necessary to have specific rewards and punishments to ensure the adherence to standards as well as to prevent their violation.

##### **Brand building**

Being natural products, honey products predominate in the trend toward natural and environmentally friendly products. Dak Lak province has the greatest forest area in Vietnam, and contains numerous national parks and natural conservation zones. Hence, Dak Lak should focus its brand building efforts for honey products based on associating these advantageous features with the honey products in customers' minds. Brand building is based on product quality, label design and logo advertisement, and it establishes a loyal and lasting relationship between producers and customers, the market, environment, and society .

#### **4.2 Improving Enterprise's Competition**

Enhancing product competitiveness is a way to improve enterprise's competitiveness. They are often interconnected and gain effective business.

Enterprise competitiveness consists of material factors such as infrastructure, capital, labor, etc. and immaterial factors such as reputation, the relationship between the enterprise and customers.

To improve competition, enterprises have to invest in material factors such as product-testing equipment, modern conservation and storage systems necessary to guarantee product quality.

It is necessary to establish and maintain effective support services which keep honeybee farms involved and connect them to the responsibilities and interests of related partners in the process. Keeping and harvesting technology transfer to farms and widely and more effectively.

Management cadres must have high skills in management, production, and marketing. Export cadres have been trained frequently to improve their functioning and to help keep them up-to-date with existing market situations and new world trade regulations.

#### **4.3 Enhancing Export Market Studies**

Market studies are necessary to understand and to gain entry into new markets, as well as to meet customer tastes. Moreover, Market studies help producers more firmly grasp market information and production activities of competitors. This, in turn helps launch the

development plan of diversifying products and improving their quality through features such as more attractive labels etc., in order to meet many different kinds of market demands.

#### **4.4 Credit policy**

Several credit policies might be applied to help finance honey product export and production. For example, households can directly borrow medium term capital with preferential interest to invest in and develop production, thus not only increasing honeybee colonies, but also diversifying products (especially royal jelly with its high economic value).

Credit capital is not only essential to production, but it is also important for investment in refining and post-harvest conservation equipment such as tanks, frozen barrels, and testing equipment. Credit policies should allow importers to borrow long term capital with preferential interest so that they can invest in modern technologies aimed at increasing export product quality.

#### **4.5 Commodity policy**

It is essential to enhance honey product competitiveness by utilizing its competitive advantages.

Due to the specific characteristics of honey products, including their status as a food, they must adhere to the rigorous quality standard tests of importers. Therefore, authorities should cooperate with enterprises by helping to plan foraging material zones, giving advice, and issuing appropriate sanctions to ensure that honeybee-keeping farms maintain high input quality. Scientific centers can help by creating honeybee varieties that have high productivity and disease resistance. Cooperative programs between honeybee farms and owner gardens can help ensure that the “clean honeybee keeping” process is effective.