



Collaborative project development on honey bee products with medicinal value and their marketing: Cliff honey bee (*Apis laborisa*)

Introduction of product/ technology

Honey has high nutritive importance. It consists of several kinds of sugar, protein, elements, enzymes and vitamins. In Agriculture Perspective Plan, apiculture is also considered as high value income generating activities. Contributing 27.08% to national GDP and employing 65.6% of national population, agriculture has been the mainstream of Nepalese profession since ages. Beekeeping has been regarded as the potential business sector for employment and improvement of income and livelihood of rural poor and landless people in Nepal. In the initial years, honey was just considered as gift for family and friends, and thus, was almost free. However, the scenario has changed in recent years; honey prices has spiked given the increase in harvest and viability of commercial business. Honey has the potential to grow 100 folds as it can be produced throughout the year. There are other positive sides of honey production besides from profit generation. Honeybees are good pollinators and they help in increasing the production and productivity of crops.

Growth and activities of honeybee depends on various factors like availability of pastureland and climatic condition. The geographical condition, climatic and floral variety of Nepal favors the optimum growth of honeybees. Nepal is a mountainous country and home to several native species of honey bee. Out of the 7 species, 5 species can be found in Nepal. Honey production is also dependent on the availability of floral resources. In Nepal, honey are usually produced from chiuri, buckwheat, mustard, rudilo, sunflower and fruits. About 70% of the honeybee produced in Nepal comes from wild flora. In Nepal, there is estimated demand of up to 300-350 mt. However, the quantity and quality produced of honeybee are not satisfactory which may be due to insufficient management of practices and lack of income. To address this problem, Beekeeping Development Section (BDS) was formed for the development of extension of the Apiculture under Nepal Agriculture Research Council mandated to conduct research on various aspects applied industrial entomology.

Nepal has started exporting honeybee in last few decades. Nepalese honeybee has reached to India, USA, Japan, South Korea, and Thailand. However, developed countries like China and Japan produce honey at low rate and export at low rate in the world market which makes it difficult to Nepalese honey producer to compete at the world market, and thus, availability of Nepalese honey is not continuous. Shortage of honeybee production is due to the degradation of environment, human interference and recent climate change in the area where the honeybee forage for the food. This change in the environment is creating threat to *Apis dorsata*, giant honeybee, which is more widespread than its sub-species, the Himalayan Giant honey bee. Because of the climate change, The *Apis dorsata* are moving up to the higher altitude at the zone of *Apis laborisa*. At higher altitude, problems are comparatively much less since they are free from chemicals.

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Apis laborisa is usually found in mountainous region of Nepal. It lives up to a range from 1200masl to 3600 masl and forage up to 4100m. Depending upon the seasonal availability of bee forage, it makes seasonal migration and tends to colonize on one site on a reproductive season. It builds large single comb under rock edges in deep vertical river valleys. *Apis dorsata* builds nest during the months of April- May at the same altitude where *Apis laborisa* lives. *Apis dorsata* then moves down to the low altitude area indicating that both species can be found at the same altitude, but not at the same time or during the same season.

Similarly, gathering of *Apsilaborisa* in the mountains attracts a large number of foreigners in the honey season. *Apsilaborisa* builds its nests on the over hangs of the southwestern faces of the vertical cliff, and because of this peculiar behavior, it is also called as ‘Himalayan honeybee’. Productivity of *Apis laborisa* is 20-100kg year which is higher than the productivity of *Apis dorsata*, *Apis mellifera*, *Apis cerana* and *Apis florea*. Three species of *Apis laborisa* can be found. *Apis laborisa* produces different quality of honey at different altitude. Red honey is created from the flowers at low altitude, spring honey from flowers at the middle and low altitude and autumn honey from flowers at any altitude. Red honey has a peculiar intoxicating effect and is highly valuable. Honey hunters prefer to sell it at high altitude. Red honey has been exported to Japan, Korea and Hong Kong previously. This honey is valued highly because of its medicinal values and intoxicating quality, and thus, has an immense scope in international market. However, many problems have been encountered in the production, procurement and marketing of *Apis laborisa* honey. ICIMOD have pointed out that the honey hunters harvests the whole comb and all of the colonies which forces the bee to leave the nesting site. ICIMOD studies of 2003 has found out the several resting shelter has shrunk.

Further, there has been significant problem in exporting Nepalese honey. Although, exports have been done to Norway and South-Korea, there has been a ban in our honey by the European Union and the USA. They are unwilling to import honey with any trace of pesticides or toxin or elevated moisture content. Entire batch of honey is useless if it does not meet the quality standards. In 2017, EU imported honey valued at 516 million dollars from the world according to UN comtrade. Since, most of Nepalese produce of *Apis laborisa* is mostly organic, there is a scope of exporting honey to a international market by meeting the quality standards. Collection *Apis laborisa* honey with the mutual contracts between the localities and processing with the action of good residue monitoring can prove to be a game changer in honey export. It can then be marketed meeting the quality standard of EU with proper branding and packaging at several sizes (100 ml, 250 ml, 500 ml and so on). This will not only aid in international trade and trade deficit but also will help improve the income and living standard of honey producers of Nepal.

Need of the product/technology

There are three different types of *Apis laboriosa* honey: spring or red honey that is created from flowers at higher altitudes, spring honey created from flowers at mid and lower altitudes, and

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autumn honey is created from any site. Red honey has an intoxicating effect and various relaxing qualities that decrease over storage. It is not consumed locally as it is valuable, and honey hunters prefer to sell it at a high price. As hive bees are not kept at such high altitudes, *Apis laboriosa* is the only bee to produce this honey. The wholesale price of the red honey is about five times the price of regular honey from *Apis mellifera* or *Apis cerana* and large amounts of it are exported from Nepal to Japan, Korea, and Hong Kong. The red honey is prized for its purported medicinal value and intoxicating qualities which are attributed to the grayanotoxin present in the nectar collected from white rhododendrons. Honey bees forming mad honey forage on a special type of rhododendron belonging to the family Ericaceae which contains a compound called “grayanotoxin”, the key element of mad honey. Therefore, this psychoactive compound facilitates recreational and hallucinogenic effects in the mad honey when consumed. This makes a person feel numb, lightheaded, trippy, and relaxed; the sensation is felt due to neurotoxic compounds.

In recent years, however the controlled use of the purified physio-chemical of the hallucinogenic honey upon further purification and in properly administered dosages can be used as a new novel drug to treat several neuroleptic disorders. Integrated exploration in this honey and also in the bees may lead to discovery of new noble compound that may lead to humanity to a new stepping stone of drugs of tomorrow.

Benefits of himalaya giant honey:

- Helps to lower the risk of heart disease.
- Enhance the immune system.
- Helps to treat respiratory diseases.
- Helps in preventing acid reflux.
- Helps in fighting infections.
- Honey helps beautifying Skin and Hair.
- Reduces ulcers and other gastrointestinal disorders.
- Anti-bacterial and anti-fungal.

1 table spoon of giant honey equals 60 calories. Mad honey has proven to be an agent for an active lifestyle. It acts like an energy drink all day long. It helps to address sexual problems and boost performance. Locals have been using this honey from ancient days to address such issues and it is working on them. Many customers also claim that it works as a sexual stimulant.

Cost, return and profit estimate of *Apis laboriosa* honey

Cost price of honey(including transportation) = Rs 2500/kg

Cost price for 1 quintal = Rs. 250,000

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Packaging cost for 100 gm = Rs 30

i.e. for 1 kg total packaging cost = $10 * \text{Rs } 30 = \text{Rs } 300$

For 1 quintal, total packaging cost = $300 * 100 = \text{Rs } 30,000$

Storage cost = Rs 10,000/quintal

Labor cost (by assuming that a single labor package 15 kg/day) = $7 * \text{Rs } 800/\text{day} = 5600$

Additional cost per quintal = Rs 30,000

Total cost/quintal = $250,000 + 30,000 + 10,000 + 5600 + 30,000 = \text{Rs } 325,600$

Selling price = 4,000/kg (wholesale) i.e. Rs 400,000/ quintal

Total profit/quintal = Rs 74,400

Marketing strategy of the product and the technology generated

Starting a honey business will require you to properly plan and prepare before starting any operation. You will need adequate resources to buy the materials and equipment you will need. It is also useful to have some knowledge about beekeeping and the know how of running a business in general.

Prepare business card and letter head

The business card you will be using will address, "Please contact me for more information about today's Honey Service." This will give you contact information that you can plug into a newsletter or even just use as a business card, but you will be using your letterhead instead. It is important you find out beforehand what your company looks like, where it is situated, how many employees you have, what the prices of your honey services are, the location of your apiary, what type of honey you will provide, specialties you have, and a variety of other necessary information.

Create a website for your business

The next thing to do is to quickly create a site that will contain all of the information that you have gathered about your business including pricing, honey samples, honey sales and services, directions, hours of operation, contact information, and even a honey bee FAQ. You will need to have a domain name and core system administrator.

Be prepared for local honey bee Associations and honey bee clubs

The first way to further promote your honey business is to travel to the local honey bee association the month before you start selling honey. This will help to circulate the word that you are selling honey while providing some expertise to the people who are interested in bee keeping. It is also important to let these associations know that you are not only selling honey, but that you are also selling bees. This will give you an additional reason to do advertising in the community as well.

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Making announcement in the newspaper

A great way to promote your business is to place an ad in your local newspaper. This will help provide competition for those that are already selling honey and entice individuals to visit your honey operation. This is a great way to test whether or not people will buy the samples and will give you valuable feedback that you can use to improve your business. The newspaper will also provide listing of what other honey companies are doing in the area. When visiting your honey bees, ask your customers if they have heard of these companies and what they think of them or if they know if them.

Invite local honey bee vendors for testing

Another way to promote your business is to invite as many honey vendors for a tasting at your location. This will give you the discovery of what different kinds of honey they have available as well as giving you the opportunity to have the opportunity to meet other professionals in the industry. All you have to do is prepare the honey de-stems, storage and honeycomb and then offer the honey tasting. The sales will be more than enough for you to have and you can then turn around and sell honey at wholesale prices.

Branding

One of the best ways that you can market your honey business is to develop your own logo. There are a number of ways to do this and it is recommended that you spend some time to research these options. Your logos can be art or word design and should serve as your company's identity. The words may be an name of a natural product and the art can demonstrate what you are selling. It is also a good idea to include your website address because the branding will help people to choose you over other competitors.

Budget

To successfully run a honey business, we need to have a plan about how you are going to make it happen. If we do not have a budget, then you will not be able to proceed with your other plans effectively. To find out how much it costs to keep bees, you will need to ask someone that has been in the industry before. You will learn that it costs a bit of money that could be better spent on equipment because you are using bees for pollination. Bees are natural pollinators, however, they will be able to migrate and provide a great service for your honey business. In order to get started, it is recommended you start from the ground up and invest in new equipment. Try to find out what other honey bee suppliers are doing in the area and what different services they provide. For instance, if you are selling honey, you want to make sure that you are selling some kind of machine to clean honey jars.