

Pakistan is losing its honey bees to climate change

by Muhammad Faisal Sultan, Lecturer KASBIT.

In Pakistan honey production has reduced by up to 40% indicating that major changes in the environment have occurred. The changes in habitat and biodiversity, coupled with increasing use of chemicals and pesticides, have led to a sharp decline in bee populations in the Hindu Kush Himalayan region. Pakistan is not alone in this regard, with bee populations suffering decline across the world since 2006. As 90% of plants depend on insects to pollinate and reproduce, the drop in number of bees has impacts beyond the production of honey. In China some farmers have been forced to hand pollinate plants.

In Pakistan, though, the concern right now is the drop in production of honey. According to the Pakistan Beekeepers Association, there are 35,000 beekeeping farms in Pakistan. This season was the worst ever for them in recent history. Two things have done great damage to the production of honey. The first was the unchecked and illegal cutting down of berry trees upon which the bees feed, and second was the rains. Pakistan, which had become a significant exporter of honey, is now turning down orders because it cannot fulfil them.

Honey is the natural sweet substance produced by honey bees from the nectar of flowers. It is also produced from blossoms or secretions of living parts of plants or excretions of plant sucking insects, however, honeybees collect transform and combine nectar with specific substances of their own, store and leave in the honey comb to ripen and mature.

Bees produce blossom honeys from nectar and honeydew honey from honeydew. Honeydew is the product of small plant sucking insects. Honey is significantly sweeter than table sugar and has attractive chemical properties for baking. Honey bees convert nectar into honey by a process of regurgitation and evaporation. They store it

as a primary food source in wax honeycombs inside the beehive.

Honey gets its sweetness from the monosaccharides fructose and glucose, and has about the same relative sweetness as granulated sugar. Honey has a distinctive flavor which leads some people to prefer it over sugar and other sweeteners. Liquid honey does not spoil. Because of its high sugar concentration, it kills most bacteria. Natural airborne yeasts cannot become active in it because the moisture content is too low. Moisture content in natural raw honey varies from 14% to 18%.

Honey use and production has a long and varied history. Honey collection is an ancient activity. Humans apparently began hunting for honey at least 8,000 years ago, as evidenced by a cave painting in Valencia, Spain. In Pakistan, honey has been used both as a food product and medicine. Particularly, aging people and children are considered to be in more need of honey and its products. However, food table particularly of children and the older people is considered incomplete without the bottle of honey.

On the other hand, both eastern and western pharmaceutical companies exten-

sively use honey for the manufacturing of medicines. Particularly, eastern pharmaceutical companies are the largest consumer of the honey using it in almost all major prescription/medicine. It is suggested that honey business as a trader would best be suitable for those operating other food products business i.e. spice, pickle, jam & jellies etc. The government's apathy to support the honey-producing sector would ultimately hurt its production and exports, as the beekeeping trees are reducing due to unavailability of mandatory medicines at reasonable price.

The medicines useful for bee treatment were being imported from China, Australia and Germany, which were not only expensive but were often not available in remote areas of the provinces mainly Khyber Pakhtunkhwa (KP). There were about 36,000 beekeeping farms in Pakistan but only 10,500 of them were registered with the Pakistan Beekeepers Association (PBA) to meet its criteria. Due to the lack of rules and regulations, the state and the beekeepers are not getting full advantages of this product. According to a report, 20% of honey is lost every year due to untrained beekeepers. A scientist at the National Agriculture Research Centre's (NARC's)



Exclusive on Honey

Honey Bee Research Institute said that Pakistan, despite producing prime quality honey in the world, still falls at number 19th in terms of production, adding that the country is producing 300,000 metric tons annually, while China is the largest exporter of honey in the world.

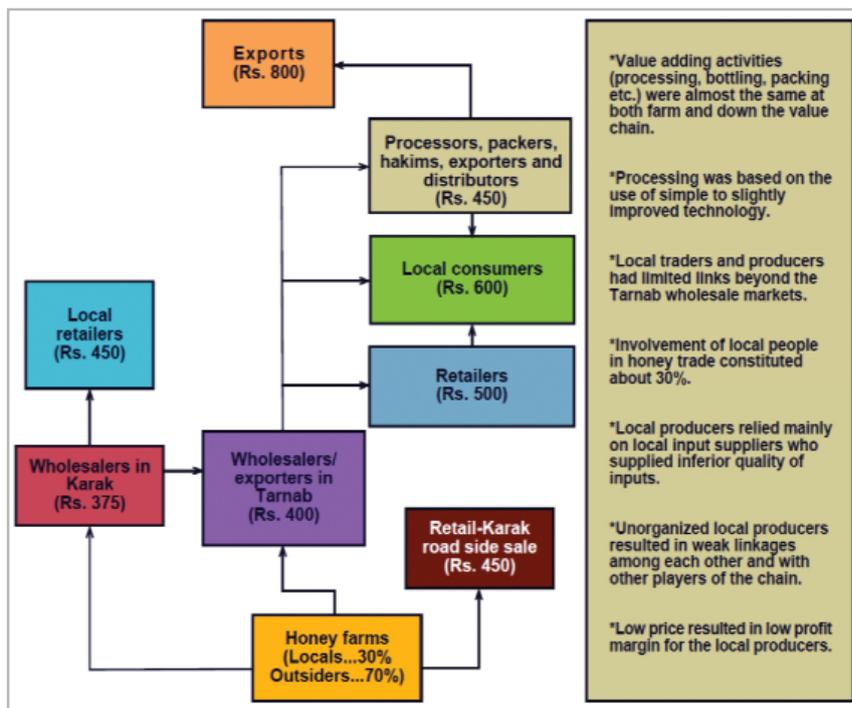
The NARC scientist said, "We are trying our best despite limited resources to improve the industry. We are training many beekeepers and also researching on the topic extensively." He said the demand of honey in the international market, particularly in Gulf, is manifold higher than the present supply. For increase in the production. He said Pakistani honey has big demand in Saudi Arabia, United Arab Emirates, Kuwait and Bahrain, adding that the price of one-kilogram honey in the international market is Rs 1,600 and each container contains 20,000 kilograms of honey.

Today, the honey business employs over 600,000. The industry has grown considerably from its earliest days which go back to the 1978 Soviet occupation of Afghanistan. Around that time, refugees began crossing the border into Pakistan and many of them settled in and around Peshawar. Countless families were signing up for programs facilitated by the United Nations Higher Commission for Refugees (UNHCR).

Among them was a programme for bee-keeping that provided startup equipment and training. A few bee boxes were donated to each migrant family to start their own small-scale honey business. UNHCR arranged for the bees to be imported from Australia and Italy - a fact present-day traders like Maaz Khan are quick to recount.

The major components of honey are sugars about 80% and waters up to 17 to 20 % , and minor components which make

Components	Pakistan's Standards	International Standards
Moisture	18.60	21.0
Ash	0.32	0.60
Acidity Expressed as Formic Acid present	0.69	--
Reducing Sugars	71.10	75.0
Fructose Glucose Ratio	1.40	--
Sucrose	2.75	5.0



up only the small part of total component. So far 181, such substances are identified from honey. Among them some are unique and do not exist anywhere else. Important minor components are mineral, lipids, amino acids, proteins, enzymes and organic acids etc.

This minor component of honey determines its aroma, flavor and color. Honey was reported to contain amino acids such as lysine, arginine, proline, methionine, isoleucine and leucine along with aspartic acid glutamine, serine, glycine, histidine, alanine and vitamins such as riboflavin, niacin thiamine and ascorbic acid. Some of the specification of honey from Pakistan and their comparison with the International Standards are given below:

Today, over 75 per cent of the traders in the honey business are Afghan nationals residing in Peshawar. Sher Ghafar, a honey-exporter who has been in the business for 18 years, heeds the fact, saying the refugees have contributed to the industry's expansion across the country.

The honey sector was predominantly operated by men whereas women were not having any significant involvement except some activities at household level. The profession was adopted mostly by the landless classes which are mainly involved as laborers.

As far as marketing was concerned, direct marketing (from producer to consumer) was the predominant method of sale whereas indirect marketing (from producers to wholesalers, or processors or retailers) through intermediaries also existed. The majority of honey farmers dealt with Peshawar wholesale market at Tarnab and some trade with Karak wholesale market to fulfill their immediate cash needs. Honey producers were not well conversant with the quality control aspects.

Trade was informal and therefore branding and certification did not exist. Market access was constrained by limited access to reliable market information. The following map shows the initial situation of the honey trade.

Problems and issues in production of Honey:

Conditions After 2014: After the 2014 Peshawar Army Public School attack that killed 144 children, the government has started cracking down against refugees, particularly those from Afghanistan. The result, according to Ghafar, has had a dire impact on honey production. Visa and work permit issues are coming in the way of a smooth honey production chain. "Proper work permits should be issued to them (refugees trading in honey) for the sake of the industry's survival."

Insufficient Expertise: An average Pakistani beehive produces 10 to 15 kilograms of honey per season. In comparison, Australian bees produce 25 to 30 kgs.

Saleem Khan, who represents a union of 5,000 bee-keepers in Peshawar, says the bees' breeding conditions are to blame. "The average life span of a normal bee is between 35 to 40 days," Saleem says. The queen-bee, however, lives for as long as a year, and lays about 4,000 eggs each day. But Pakistan's production is lower compared to other honey-producing countries, due to insufficient training of beekeepers and environmental threats such as deforestation.

The threat of climate change: Climate change, which has already affected Pakistan in the form of floods, off-season rains and severe temperatures, significantly threaten the honey bee business. Pakistan loses over Rs 6 Billion every year due to climate change damage, UNDP has estimated, lower than the Rs 1 Billion lost each year to terrorism. The country has doubled its expenditure on combating climate

change. Large-scale deforestation being carried out by various departments and companies do not help honey production either.

Loss of forest, declining bees: One reason for the decline of natural honey production is the rapid deforestation in the area. Abdullah has seen the forest shrink before his eyes. "In my experience," he said, "the tree from which I collected honey one year was not there the next year. This happened over the last ten-fifteen years and during the same time my collection of honey reduced every year."

Soaring prices, low production: Consequently honey prices have soared in Pakistan. Wild honey, usually available at between PKR 1,400 to 1,600 a kilo is now selling for between PKR 2,200 to 2,600. Home farm honey prices used to range from PKR 800 to 1,200 per kilo but now they fetch between PKR 1,400 to 1,800 per kilo. According to Mr Kamaluddin, the project director of the NGO Hashoo Foundation Pakistan, which works in the Kashmir and Gilgit-Baltistan areas of

Pakistan, confirms that honey production has reduced by up to 40% indicating that major changes in the environment have occurred.

Pakistan is not alone in this regard, with bee populations suffering decline across the world since 2006. As 90% of plants depend on insects to pollinate and reproduce, the drop in number of bees has impacts beyond the production of honey. In China some farmers have been forced to hand pollinate plants.

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"Health Benefits"

1. Prevent cancer and heart disease: Honey contains flavonoids; antioxidants which help reduce the risk of some cancers and heart disease.
2. Reduce ulcers and other gastrointestinal disorders: Recent research shows that honey treatment may help disorders such as ulcers and bacterial gastroenteritis. This may be related to the 3rd benefit.
3. Anti-bacterial, anti-fungal, anti-fungal: "All honey is antibacterial, because the bees add an enzyme that makes hydrogen peroxide," said Peter Molan, Director of the Honey Research Unit at the University of Waikato in New Zealand.
4. Increase athletic performance: Ancient Olympic athletes would eat honey and dried figs to enhance their performance. This has now been verified with modern studies, showing that it is superior in maintaining glycogen levels and improving recovery time than other sweeteners.
5. Reduce cough and throat irritation: Honey helps with coughs, particularly buckwheat honey. In a study of 110 children, a single dose of buckwheat honey was just as effective as a single dose of dextromethorphan in relieving nocturnal cough and allowing proper sleep.
6. Balance the 5 elements: Honey has been used in ayurvedic medicine in India for at least 4000 years and is considered to affect all three of the body's primitive material imbalances positively. It is also said to be useful in improving eyesight, weight loss, curing impotence and premature ejaculation, urinary tract disorders, bronchial asthma, diarrhea, and nausea.
7. Blood sugar regulation: Even though honey contains simple sugars, it is NOT the same as white sugar or artificial sweeteners. Its exact combination of fructose and glucose actually helps the body regulate blood sugar levels. Some honeys have a low hypoglycemic index, so they don't jolt your blood sugar. Watch this video Sweetener Comparison where I compare stevia, brown rice syrup, honey, molasses and agave, and discuss the strengths and weaknesses of each.)
8. Heal wounds and burns: External application of honey has been shown to be as effective as conventional treatment with silver sulfadiazine. It is speculated that the drying effect of the simple sugars and honey's antibacterial nature combine to create this effect.
9. Probiotic: Some varieties of honey possess large amounts of friendly bacteria. This includes up to 6 species of lactobacilli and 4 species of bifidobacteria. This may explain many of the "mysterious therapeutic properties of honey."
10. Beautiful skin: Its anti-bacterial qualities are particularly useful for the skin, and, when used with the other ingredients can also be moisturizing and nourishing! For a powerful home beauty treatment for which you probably have all the ingredients in your kitchen already, read Carrot Face Mask. ♦