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Munazah Yaqoob
Division of Entomology,
SKAUST-Kashmir, Jammu and
Kashmir, India

Umer Bin Farook
Division of Entomology,
SKAUST-Kashmir, Jammu and
Kashmir, India

Faizan Ahmad
Mountain Agricultural Research
& Extension Station, Kargil,
Ladakh, India

Ghulam Mehdi
Krishi Vigyan Kendra,
Kargil, Ladakh, India

Corresponding Author
Munazah Yaqoob
Division of Entomology,
SKAUST-Kashmir, Jammu and
Kashmir, India

Beekeeping: A sustainable enterprise for livelihood security for the scheduled tribe population of UT Ladakh, India

Munazah Yaqoob, Umer Bin Farook, Faizan Ahmad and Ghulam Mehdi

Abstract

The bee keeping is cost effective, eco-friendly, gender friendly enterprise that requires minimum land ownership to operate. It has the potential to alleviate the socio-economic conditions of the people *via* full time or part time hobby besides providing ecological services like pollination. The robust evidence that beekeeping can have on people of Ladakh (Kargil) is missing as the area is known for its harsh winter and dry conditions. This study reports the utilisation of the potential of beekeeping as a subsidiary mode of income and a possibility to develop apicultural activity in Ladakh as alfalfa a chief source of nectar and pollen.

Keywords: Alfalfa, beekeeping, Kargil & Ladakh

Introduction

Ladakh is a newly created union territory of India located in the northernmost side of Jammu and Kashmir, India between 32° 15' to 36° N and 75° 15' to 80° 15' E. It covers an area of approximately 98,000 km² (Akhtar and William, 2019) ^[1]. The Ladakh, literally means “the land of high passes” is bounded within the north by the eastern range of the Karakoram Mountains and to the south by the western extreme of the most Himalayas. The altitude, generally ranges from approximately 3,000 m (lower Indus and Nubra valleys) to 7,600 m (Zaskar and Karakoram ranges) (Kala, 2011) ^[3].

The climate of Ladakh is cold and dry with average annual precipitation of roughly 3 inches (80 mm). The occurrence of fine, dry, flaked snow is frequent and sometimes falls heavily. Vegetation is confined to valleys and sheltered spots. In horticultural products apricot is the trademark of the valley besides cultivation of apple, pear, cherry etc are primarily restricted to some commercial farmer fields, Research stations and KVK's. The principal agricultural products are wheat, barley, millet, buckwheat, peas, beans, turnips, broccoli, cabbage, cauliflower and capsicum that are gaining importance both in kitchen gardens and on commercial scales in fields and greenhouses (Farook *et al.* 2021) ^[2].

In terms of beekeeping potential in the area, a little or no literature is available owing to its harsh climatic conditions, frequent closing of roads due to landslides at zojilla pass, less information on beekeeping science and lack of awareness among the people.

As per the 119th meeting of the National Commission for Scheduled Tribes that was held on 11th September, 2019 under the Chairmanship of Dr. Nand Kumar Sai noted the fact that the newly created Union Territory of Ladakh is predominantly a tribal region in the country, where Scheduled Tribe population represent 66.8 percent in Leh, 73.35 percent in Nubra, 97.05 percent in Khalsti, 83.49 per cent in Kargil, 89.96 per cent in Sanku and 99.16 per cent in Zaskar areas of the Ladakh region. Since more than 97 per cent people of Ladakh area falls under the scheduled tribe category. It is imperative to disseminate the knowledge and trainings of different sustainable enterprises especially “Apiculture” so to make people of Ladakh ATMANIRBHAR as said by our Honorable Prime Minister Shri Narendra Modi ji. The report here summarized the efforts made to migrate the bee colonies and to initiate/revive the apicultural activity at kargil district of Ladakh from Kashmir during june-july 2019 & june to july 2020.

Material and Methods

To evaluate the feasibility of starting Beekeeping in Kargil, a total 50 colonies of honey bees of 10 frame strength with fresh queen in all of them were migrated from Faculty of

Agriculture, SKAUST-K in second week of June (2019) and brought back in August of the same year. This process was repeated the next year (2020) to check whether Honeybee are able to acclimatize the area properly.

The colonies were placed in the premises of MARES (Mountain Agricultural Research & Extension Station) Kargil & KVK (Krishi Vigyan Kendra) Kargil. The Alfalfa was taken as key crop for nectar and pollen supply as it a major food source for honeybees in the area. It is deep-rooted plants providing nectar and pollen when other sources are dried out, such as clovers.

Results

The alfalfa proved to be an important crop for continuous supply of nectar and pollen for nearly one and a half month. The bee activity was found impressive owing to the image

represented by the area from past ten decades. The bee activity started from 07:00AM to 12:00AM & 03:00PM TO 06:00PM with peak activity during 09:00 to 11:30 AM. The colonies were regularly inspected for diseases and pests. The area is pesticides and chemicals free owning an organic tag.

The Ladakh doesn't have the dreadful Varroa mite that is threat to beekeeping industry throughout the world. This makes the Ladakh a suitable place to migrate bee colonies during the dearth period as in Kashmir June to August is without any major flora for supplying nectar which makes them totally depend upon artificial feeding making beekeeping quite expensive and due to high temperature the colonies are prone to diseases and pests.

The honey was extracted at MARES kargil with average yield of 8-10 kg/ hive. The alfalfa honey was later sent to CSIR-IIIM Jammu for Biochemical analysis (fig 1).

Sample packed & collected by the Supplier: Dr. Munazah Yaqoob SKAUST-K, Wadura, Sopore (J&K)

S.No.	Parameters	Results	Limits			Method
			Special Grade	A Grade	Standard Grade	
1.	Acidity (expressed as formic acid) % by mass, Max.	0.04	0.2	0.2	0.2	As per FSSAI/IS-4941-1994 (Reaffirmed 2002) 2 nd Revision
2.	Ash, percent by mass, Max.	0.00	0.5	0.5	0.5	
3.	Fructose glucose ratio, Min.	1.54	1.00	1.00	1.00	
4.	Moisture % by mass, Max.	16.4	20	22	25	
5.	Specific gravity at 27 °C Min.	1.43	1.37	1.37	1.37	
6.	Sucrose % by mass, Max.	3.98	5.0	5.0	5.0	
7.	Total reducing sugar % by mass, Min.	68.87	70	65	65	

Analyst *Sumit*
Signature with Date *05-04-2021*

Deepika Singh
05/04/2021
Authorized Signatory
Signature with Date

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EPABX+91(0191) 2585006-09, Ext. (363, 322 QCQA Div.); (Fax) 2586333
 Director: 2584999, 2585222; COA-2585025, (Fax) 2585026
 Website: <http://www.iiim.res.in> E-Mail: asrcdeskqcqa@iiim.ac.in

Fig 1: Honey testing report of Alfalfa from Kargil, Ladakh

Discussion

The intervention of Beekeeping in the region of Ladakh is not less than a miracle to achieve. The beekeeping activity was found very promising during the two years as the area supplied the continues requirement of nectar and pollen (June-August) from different resources especially alfalfa and Buckwheat. The area doesn't need that much of attention and care as it took in Kashmir and other parts of the country as it is free from pesticide poisoning, diseases and pests. The area can serve as a buffer region during the dearth period in Kashmir valley. The people of the area needs Apiculture as source of secondary income so to uplift their socio-economic conditions.

There are certain areas where there is desperate need to improve in order to have Honey revolution in Ladakh, the people should be aware about the scientific ways of bee keeping their management and handling besides making of Farmer produce organizations (FPO) specially for Honey and other bee products.

Acknowledgement

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