Api NEWS

A half yearly publication of
Nagaland Beekeeping & Honey Mission(NBHM)

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Cover Photo: Deventhong, Team Member NBHM

'Perhaps the need of the hour is to impress upon the policy makers and the Government of the day to declare one day of the year as **'NAGALAND HONEY BEE DAY'** which will go a long way in educating the masses on honey bees and putting us on the global beekeeping map.'

NBHM eco-bee

Photo by Bokali A Chikhe, Team Member NBHM

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Editorial

We believe that the beekeeping communities have had a good beekeeping season with good yields during the last honey season/ months of November, December and January, while we kept the buzz going with our travel itineraries, training programmes, documenting, participating, deliberating, promoting, reflecting and chasing datelines as expected from a Multi tasking team. But while on the task we could not afford to be complacent on our little feats for know we have many more milestones to reach.

We had shared and educated many people from all walks of life who called on us many a times with a sense of curiosity and a yearning to learn more about honey bees. Going by the footfalls made at our centre the student communities both from the humanities and agricultural streams who visited us, and with whom we had the privilege to share our Bee Talks has been a rewarding experience for us. It is very encouraging to know that the young Naga Agriculture graduates from NU and other Universities under their RAWE program have undertaken Beekeeping in a serious and focused manner. For young minds awareness and education is the key to inspire them to undertaken path breaking initiatives. Some of these students have established their own campus apiaries which is indeed commendable.

Such initiatives can give way to 'Campus Bee Awareness Day' or give the leeway to form 'Bee Clubs' in various Schools, Colleges and Universities. This in turn paves the way for interesting urban beekeeping initiatives where communities living in urban locales can be motivated to establish ideal bee habitation sites in urban spaces. Honey production may not be the objective in such cases, but an important aspect would be the community services provided by the pollination of honey bees that will aid in conserving urban flora and fauna.

In the United States of America, the National Honey Bee Day is celebrated every year on the 22nd of August. This was started by beekeepers of the United States in the year 2009 to create public awareness and educate on honey bees and the important role they play in the eco-system. Given the existence of huge native bee resources in our home State, coupled with the growing interest generated on the importance of honey bees through the mission's initiatives, perhaps the need of the hour is to impress upon the policy makers and the Government of the day to declare one day of the year as 'Nagaland Honey Bee Day' which will go a long way in educating the masses on honey bees and putting us on the global beekeeping map.

This issue also features articles on the best innovative practices developed by some of our innovative beekeepers through their wide traditional knowledge and whose practices have been adopted by the mission to be replicated. Also a valuable insight on field experience and observation is being shared by a team member who has a keen sense of observation and a research bend of mind.

In the Travelogue section, a Team member's exiting and vivid account of the team's trip to witness the extreme yet time tested traditional practice of wild honey hunting is guaranteed to capture the imagination of the readers and lure the true adventure seekers no end.

We believe that there may be more species of the stingless bees in the State than the honey bee (Apis). The success story of stingless bee keeping is on the rise in many parts of the State. The story of stingless bee rearing in villages like Tuzatsü of Phek District is one example which is inspired by their motivation to conserve the native species of bees and their shift from deforestation activities to undertake stingless bee rearing is sure to pay rich dividends, as their bees will help in pollinating a wide range of forest trees and plant species in their village area, thus making their village area a community protected area.

Beekeeping with stingless bees or Melliponiculture is gaining importance with researchers and agriculturalists who are now looking at native bees like the stingless bees as promising group of pollinators. By using them as pollinators it will in a way reduce the dependence of honey bees and other insect pollinators who may be susceptible to many hive pests and diseases. Yet their potential is largely unexplored due to lack of research undertakings on these species of bees.

Also there is a need for investigation on the medicinal uses of stingless bee honey. A complete physiochemical analysis will help in establishing a data base of stingless bee honey and give scientific validations for all the claims about cure of various ailments by the honey of stingless bees, which is referred to by its many names such as honey pots, dammer, grape honey or sugar bag which has the scope of fetching a premium price in the markets.

On this note we urge our valued readers to be Bee Aware and continue to give your support to the honey bees and the beekeeping community.

Chubamongla Shilu
Editorial Member
Api News

APITHERAPY- A CROWD PULLER AT THE NATIONAL TRIBAL FESTIVAL, NEW DELHI

A 6(Six) days National Tribal Festival organized by the Ministry of Tribal Affairs Govt of India was held at Central Park, Connaught Place and Indira Gandhi National Centre for Arts, New Delhi from 13th to 18th February, 2015 where participants from NE-India and across the country took part in the diverse cultural programmes, art & craft exhibition and display of various tribal products which was showcased in the Festival. A five member team from Healing Home of Teregonyu Village of Tseminyu Sub-division under Kohima District who were facilitated & supported by the Nagaland Beekeeping and Honey Mission(NBHM) also participated in the Festival for Demonstration and Treatment of Various Ailments and Sicknesses of People through Apitherapy by use of Bee Venom. The Nagaland Apitherapy Stall (bee venom treatment) attracted the attention of the Capital crowd where thousands of people got tested or treated and many experienced the instant healing through the therapy by Ms.Lily Tep and her team. During the event there was high demand for Bee Venom Apitherapy Centre to be established in the Capital City by its denizens and participants coming from across the country. The Nagaland Team of Apitherapist was supported by Tribal Cooperative Marketing Development Federation of India (TRIFED), Ministry of Tribal Affairs. They managed to create awareness on the importance of Apitherapy which has become very popular in Nagaland. Apitherapy which is an alternative and natural treatment through the natural bee has gained its poularity in the State and Country as a whole and it is envisioned that through such events appropriate policy support will be forthcoming from both the State and Central Govertments in the days to come. The Team was led by Mr. Letgong Patrick, Team Member of NBHM.

BEEKEEPING PROGRAMME FOR SUSTAINABLE AGRICULTURE IN NAGALAND

under RASHTRIYA KRISHI VIKAS YOJANA (RKVY).

Bees are the crucial indicator of the state of the ecology, where 80% of all plant species, including most food crops, fruits, vegetables and some bio fuel crops depend on bee pollination. They provide wider functions in maintaining our natural ecosystems and have an economic, cultural and social value which is widely regarded as a key symbol of the natural world. Bee -pollinated plants and their fruits or seeds are also important to non-market benefits such as landscape, wider biodiversity, providing food, shelter and other resources to mammals, birds and other insects.

Beekeeping contributes to sustainable rural livelihoods through honey & by-products and also maintains biodiversity with increase in crop production through its pollinating services. About one third of the human diet is derived from insect –pollinated plants, and honeybees play a significant role in pollinating the crops. Beekeeping is simply the practice of rearing bees for their honey, wax and other by-products. It is a useful means in strengthening the source of income by creating a wide range of assets and also ensures continuance of ecosystem.

NBHM was supported under RKVY by a grant during 2014-15 through a project entitled "Beekeeping for Sustainable Agriculture in Nagaland". The main objective of the project was to build human capacity through beekeeping trainings and securing the benefits of beekeeping for enhancing crop production through pollination services of bees.

Keeping in view of the above objective, NBHM has initiated and executed the project in all the districts of the State. It has succeeded to widen the scope of the people in this region to explore the vast potential beyond their normal subsistence agricultural activity.

Some of the anticipated outcomes from the phase 1 are given as under;

- Anticipated to sensitized at least 3000 farmers on the role and importance of bees & beekeeping.
- Notable boost in crop productivity &production is expected through bee-pollination.
- Increased in numbers of beekeepers in the state.
- 750 farmers are anticipated to be trained professionally on scientific beekeeping.
- Anticipated 3 % increase in population of bee colonies in the state.
- 7.5% increase in honey production.
- 600 farmers will be generating additional income of Rs. 10,000 – 15,000 annually through sales of honey & bees wax by the end of this project.
- 12 people will be directly employed from diversified avenues through, manufacturing of bee boxes & equipments and honey trade.
- As a part of convergence programme, the NBHM will be conducting training on scientific beekeeping in all the KVK centres in Nagaland and also set up a model apiary for demonstration purpose for the farmers of the district.

MACCIA team visits MUC

On 6th December 2014 an Official team from Maharasthra Chamber of Commerce, Industry & Agriculture (MACCIA) comprising of top business honchos from various business houses from the State of Maharasthra paid a visit to our centre. Their visit was initiated from the Office of the Honourable Governor of Nagaland ShriP. B Archarya. The visiting entrepreneurs were shown around the honey processing Unit and Bee museum during which time they interacted with the team and learnt about the mission's initiatives. They were accompanied by officials of Dimapur District Chamber of Industries and Commerce.

Some comments left behind by the visitors; In the words of Mr Sunil Zode, Chairman of Conait re Group, 'It was a very inspiring visit, it motivated me to start new business in honey marketing in Maharastra'; In the opinion of Mr Atul Kalkarni 'the bee museum has a very good collection and very informative, the team was cooperative and explained the process efficiently' while Mr Shantanu Dhadkumkar had this to say, 'very good explanation given by a hospitable team. The facility is neat & clean, will be happy to visit again'.

MACCIA Team with NBHM and Dimapur District Chamber of Industries & Commerce

Agriculture Students trained on Beekeeping

A total of 9 students from Doon (P.G) College of Agriculture Science and Technology, Garhwal University, Dehradun Uttarkhand & Dolphin (P.G) Institute of Biomedical & Natural Sciences, Garhwal University, Uttarkhand undertook a 2 days Basic Training on Scientific Beekeeping Management from 2nd to 3rd March 2015 at NBHM's Multi- Utility Centre located at 6th Mile, Sovima Dimapur Nagaland under their college syllabus of 8th Semester B.Sc course under Apiculture component and RAWE Program.

The Training schedule included Technical lectures and field level practical sessions with personnel of NBHM as the resource persons. It may be mentioned that this was the third batch of Agriculture students from Dehradun University who have availed such training programs on Beekeeping through NBHM. Such training programmes have managed to sensitize and generate a lot of interest and enthusiasm for beekeeping to the State's young agriculturalist who are slated to become the future ambassadors of honey bees.

Republic day participations at Dimapur and Kohima

NBHM participated at the Republic Day Celebration at Dimapur on 26th January 2015 by setting up an exhibition-cum sales counter at the DDSC Stadium Dimapur and Secretariat Plaza at Kohima where Nagaland honey was sold to honey lovers.

A certification of Participation was awarded to NBHM for participation at the Exhibition-cum-Sale on the occasion of the 66th republic Day at Kohima by the Chief Secretary Nagaland Mr C.J Ponraj.

National Flag hoisted at our office premises on Republic day 2015

NABARD & NBHM conducts FINANCIAL LITERACY PROGRAMME at Mima village

Ms. Neilazonuo Terhüja, Team Member, NBHM explaining Financial Planning in Tenyidie

A one day Financial Literacy Programme (FLP) was conducted at Mima village, Jakhama block, Kohima district on 10th October 2014. This programme has given the much needed boost to deepen Financial Inclusion in the village and enabled them to take informed financial decisions. Discussion on the recently launched Prime Minister Jan Dhan Yojana (PMJDY), Electronic Benefit Transfer (EBT), seeding of Aadhar No. with bank account, allocation of new Sub Service Area (SSA) under Sampoorn Vittiyea Samaveshan (SVS), kiosk banking though Common Service Centre (CSC), financial planning, Self Help Group (SHG) and importance of developing long term relationship with bank for all round development were the major highlight of the programme.This was followed by an interactive session where queries were satisfactorily responded by the Resource Persons.

The Resource Persons comprised of Ms. Neilazonuo Terhüja, Team Member, Nagaland Bee Keeping and Honey Mission (NBHM), S/Shri A. Lyngdoh, Chairman, Nagaland Rural Bank (NRB), H. Islary, Branch Manager, SBI, Jakhama branch, Vizo Kere, Manager, Nagaland State Co-operative Bank (NStCB), Kevisetso Miachieo, District Co-ordinator (Financial Inclusion), Nagaland State Rural Livelihood Mission (NSRLM) and Bendang Aier, AGM, NABARD (National Bank for Agriculture and Rural Development). Under the newly allocated SSA, the Jakhama branch of State Bank of India (SBI) has been entrusted with the responsibility to provide banking services in Mima village, Kigwema village and Kigwe Town by establishing a banking outlet at Kigwema village. Shri Bodevi Shuya, Team Member, NBHM chaired the programme and pronounced the vote of thanks which was attended by office bearers of Village Council and VDB, members of Village Bee Keeping Committee (VBKC), farmers and SHG members totalling 162 participants.

The programme was supported under Financial Inclusion Fund (FIF) which is managed by NABARD.

VIDEO DOCUMENTATION OF MODERN APIARIES AND ESTABLISHMENT OF HONEY PROCESSING UNIT AT MIMA VILLAGE, KOHIMA DISTRICT A PROJECT FUNDED UNDER NABARD'S RURAL INNOVATION FUND (RIF)

During the year 2014-15, NABARD had started the initiative to video document successful interventions through interns. This was the first such initiative and they were asked to take up the more challenging job of covering such projects in North East India.

For Nagaland state , NABARD's Rural Innovation Fund (RIF) project at Mima village was selected. The project covered establishment of modern apiaries and improvement of traditional underground hives, and setting up of a 50kg.capacity honey processing unit covering 60 odd beneficiaries. The project was successfully video documented by four (4) interns from Xaviers College of Communication, Mumbai. Ms.NeilazonuoTerhüja, Team Member, Nagaland Bee Keeping and Honey Mission (NBHM), Shri Bendang Aier, AGM, NABARDand members of MimaVBKC provided the necessary support and facilitated their work.

Their video documentary can be viewed at https://www.youtube.com/watch?v=WcS68pbywp8

NBHM AT LOOK EAST BUSINESS SHOW-2015

Indian Chamber of Commerce in collaboration with NEC organised the Look East Business Show -2015 from 26th to 28th February 2015 at Central Library Campus, Shillong. Besides various departments and NGOs from the NE states, participants from Thailand, Vietnam ,Pakistan and Bangladesh put up their wares to sell. The three day event was inaugurated by Chief Minister of Meghalaya, Shri Mukhul Sangma. He was accompanied by a host of officials from Govt of Meghalaya, NEC and ICC besides others.

Honey Mission displayed and put on sale different types of honey such as honey of the common honey bee or Apis cerana, stingless honey also called medicinal honey and Rock bee honey or wild honey and a host of books published by the Mission. Hand book on " Beginner's guide to Beekeeping" was a sold out. The three day show attracted a modest crowd who showed a keen interest in bees, beekeeping and honey. Not quite a honey bumper sale but a decent amount of honey was sold and a tons of experience gained.

M.P Bezbaruah Member NEC at Rusoma Village

Hon"ble member of NEC Shri Besbaruah and his Lady wife Mrs Anuradha accompanied by Joint Development Commissioner Mr.Charles Nosezol visited the NEC funded projects at Rusoma village under Kohima District on 8th December 2014. Team Leader, Wonchoi Odyuo & 5 Team members along with members of Rusoma Village Beekeeping Committee took the visiting dignitaries to three apiary sites where beekeeping is done in an integrated manner such as in orchards, gardens and jhum fields. After the field tour , a meeting was convened at the Common Facility Centre (CFC). During the meeting, Team leader gave a welcome speech and a brief report on NEC scheme undertaken by NBHM, Neituo Keyientsu, Secy, Rusoma VBKC presented the success story of the scheme , where the scheme had provided financial assistance for construction of the CFC and expansion of apiaries. Village Gaonbora , Vikietuo Manyao also spoke on behalf of the village council.

M.P Bezbaruah, Member NEC along with Team Leader Wonchio Odyuo interacts with a beekeeper from Rusoma

Shri Besbaruah in his speech expressed his happiness over the additional income earned through beekeeping, its synergy with nature in maintaining the biodiversity of the area and the great regard he has for the rich traditional knowledge and wisdom evolved through time. He also suggested that Nagaland honey be elevated to a higher brand image , focus on its organic status, also to look for avenues for value additions to Nagaland honey. He also promised to support Honey Mission in exploring avenues for honey processing, packaging and marketing. The official was given, a brief tour of the village area to check on the stingless bee rearing and to see the panoramic view of the village, and finally a stopover at the famous mythical stones called "Sopfunuo Tsie."

Later on the 10th Dec 2015, he dropped by the Multi-utility centre at 6th Mile, Dimapur and was shown around the honey processing unit and the bee museum.

NEC Advisor interacts with NBHM team

Mr M Iboyaima Meitei, Advisor to North Eastern Council (NEC) visited our Centre on 30th March 2015 and had an interactive meeting with the Team leader and Team members. During the meeting the team shared with him the various activities and achievements of the mission besides highlighting the various challenges and gaps that needed to be addressed. He said it was quite encouraging to know the activities undertaken by the mission and extended his full cooperation in addressing the gaps and also gave his valuable advice and suggestions for improving the mission's activities.

Exposure visit of Progressive beekeepers from Arunachal Pradesh

A delegation of 9 progressive bee farmers from Arunachal Pradesh came to visit NBHM on 13th January 2015. Their visit was facilitated by the newly launched Arunachal Pradesh Bee and Honey Mission (ABHM) as part of an exposure visit to gets firsthand knowledge on the success of bee farming in Nagaland.

The team of farmers was led by Mr Tare Kahe, Agriculture Development Officer (ADO) and In-Charge of ABHM, Papum Pare District Unit.

During the trip, the visiting farmers were taken to an apiary at Bade Village, where they had the opportunity to interact with the beekeepers of the village and also taken to bee equipments manufacturing unit at 4th Mile where they got to see the various tools and kits used for beekeeping. Upon arriving at the Multi-Utility centre they were shown and explained on the process of honey processing and packaging. They also learned about the various species of honey bees and important hive products of beekeeping at the museum.

The ABHM expressed their willingness to conduct such exposure visits in the near future too.

RAWE Students visits NBHM

A group of 20 students from SASRD Nagaland University paid a visit to the mission's Multi-Utility Centre on 19th March 2015 Led by Dr H.K Singh, Associate Professor& Head, Department of Entomology SASRD, Nagaland University Medziphema. The visiting team were enlightened on the process of Honey processing and at the Bee Museum they were delighted to learn the many facets of honey bees and beekeeping. A lecture on the importance and Scope of Bees and Beekeeping was also delivered by NBHM for the benefit of the students. The visit was part of the experiential learning on beekeeping under RAWE program.

Rapunzel Company visits NBHM

Representatives from Rapunzel, a leading organic food producers in Europe based in Germany paid a visit to NBHM on 30th March 2015 and had an interaction with the Team Leader and Team members of the mission.They were appraised on the beekeeping activities undertaken by the mission and the scope of producing Organic honey from the State. Samples of organic Nagaland honey was given to them during the visit. In the words of Joseph Wilhelm the company founder and managing Director of Rapunzel, the mission's was doing a great job and should continue to grow stronger in the days to come. The visit was facilitated through the initiative of the Horticulture department and SASRD Nagaland University to enable the State's organic produces to be showcased to potential buyers from abroad.

NBHM at Matti Ka Rang Festival

The mission participated at the Matti Ka Rang Festival organized by the NEZCC at the Zonal Centre, 3rd mile Dimapur from 13-18th Jan 2015. During the six days event the mission participated by setting up a stall displaying various information on bees and beekeeping and also sold Nagaland honey. Visitors were enlightened on the prospects of beekeeping and different types of honey produced from the State.

NBHM at Hornbill Festival 2014

The mission participated at the annual Hornbill Festival from 1st-10th December 2014 at Kisama, Kohima district. During the event the mission's stall was thronged by visitors from all over the country and other foreign tourists who interacted with the members and gained some valuable information on the nature of beekeeping practices in the State. They also sampled the various types of honey on display, browsed through the various literatures on bees and beekeeping and also took away the delicious Nagaland Honey that was put on sale during the event.

A moment to remember was when on the first day the Honourable Prime Minister of the country Shri. Narendra Modi stopped over the mission's stall on the Inaugural day along with a host of accompanying delegates. The PM was gracious enough to stop over for a brief moment to inquire about a stingless hive that was displayed at the mission's stall, which probably attracted his valuable attention.

IETC STUDENTS Visit to NBHM

A study tour of 65 students from Integrated Extension Training Centre (IETC) Medziphema paid a visit to our Multi-Utility Centre on 21st January 2015 as part of their educational curriculum in the current academic session. The team of students was led by Agriculture Inspector IETC, Ms Arenjungla. During their visit they were taken around the honey processing Unit and the bee museum. For many of the extension trainees this exposure visit was a first time introduction into the world of bees, beekeeping and honey enterprise. In the opinion of Ms Arenjungla, 'it was worth visiting the centre'. While they benefit from such exposure visits, we on our part are encouraged to know that we are in the right direction in educating about the role of honey bees to diverse groups of people.

SUMMARY REPORT ON THE EXPOSURE VISIT OF THE BENEFICIARIES OF THE APICULTURE PROGRAMME TO NBHM, PROMOTED BY THE BORDER AREA DEVELOPMENT DEPARTMENT, TURA & ORGANISED BY NBHM.

Beneficiaries at the start of the journey

Total number of days : 7 days.
Date : 11th – 17th November 2013.
Total Beneficiaries : 14.
Places of visit : Kohima District, Dimapur District, Guwahati KVIB.

The Exposure Visit on Beekeeping had been planned as a follow up of the Awareness cum Training Programme conducted at Raksamgre Village, Tikrikilla Development Block, West Garo Hills held from 14th – 16th October 2013. The tour had been planned with the intention to provide exposure for the beneficiaries to gain additional knowledge and understanding on beekeeping as well as to provide motivation so that they would immediately start off the implementation full heartedly. Accordingly, 14 beneficiaries along with a Master Trainer on beekeeping had been selected and taken for the tour. The trip commenced from the 11th to 17th November 2013. Several Project Villages under the Nagaland Beekeeping Honey Mission (NBHM) had been visited both at Kohima District as well as in Dimapur District. The beneficiaries also visited the Multi – Utility Centre at Dimapur as well as the Khadi and Village Industries Board at Hengarabari, Guwahati.

The Exposure Trip started on the 11th November 2013. The beneficiaries initially travelled at their own expense from Tikrikilla area to Bajengdoba, and they were picked up by the Coordinator from there as it was difficult for both parties to travel to and wait at Assam, due to the constant bandh in the area. The team stayed overnight at Guwahati as it was already late in the evening to travel further.

On the second day, the team travelled to Dimapur via Nagaon and Karbi Anglong Districts and stopped at Dimapur for


NBHM Officials greeting the participants.


Explanation being given on a bee house at Merima Village.

lunch, and then proceeded to Kohima, the capital of Nagaland. On arrival, the team was greeted by the officials of the NBHM and the Team Leader or the Director of the Mission was kind enough to make an effort to visit and give a word of advice in spite of his busy schedule. A small informal meeting was arranged at the hotel premises where the team introduced themselves and the NBHM officials greeted and shared on the work done by their Mission.

It was on the third day that the actual field visits took place. Smt. Neilazono Terhuja, Team Member, NBHM and Kohima District In - charge coordinated the programme for the day and acted as the guide as well. The first project village visited by the team was Meriema village, where a progressive beekeeper, Mr. Neizolie Shunyu showed his homestead integrated farming along with the bee hives. It was here that the team learnt that NBHM had provided assistance for the construction of a low cost bee house, where the bee boxes were kept during extreme weather conditions to avoid heavy rainfall or extreme cold. After the interaction, the team learnt that it is better to keep the bee hives in the garden or forested areas in the dry season and then keep them in the bee house during the rainy season for protection. The team then visited the next village at Pheza and met another progressive farmer Mr. Shurokietuo who enlightened on his apiary at his orange orchard and also elaborated on its economic value. It was learnt that in the local market, he is able to sell a kg of honey at Rs 500/- . The team then stopped at a shop for a cup of tea where they were introduced to a young and energetic beekeeper who being a farmer had also recently graduated. He introduced the team to his integrated farm near his shop, which also happens to have a lovely view.

A bee box distributed by NBHM, at Pheza Village.

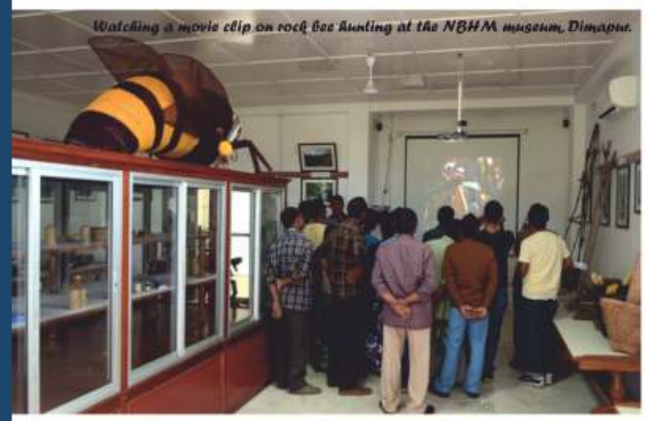

A Beekeeper showing a box filled with honey at Chiephobozou Village.


Participants at the Kohima War Cemetery


View from the road at Pheza Village.


Beneficiaries at the Research Farm Ruzaphema.


Participants at Peda Village, Dimapur.


Watching a movie clip on rock bee hunting at the NBHM museum, Dimapur.

Participants with a starter kit at the Multi Utility Centre Dimapur.

The NBHM Coordinator then took the team to a village called Chiephobozou, where they met Mr. Kereishilie Kiewhuo, an avid beekeeper who also happens to be a retired government servant. He enlightened the team on his experience and also showed the honey which he had collected which amounted to approximately 30 kgs. He happens to rear several common bees (apis cerana) as well as a number of stingless bees (trigona sps). The team learnt many useful tips from his experience and thereafter headed back to Kohima.

On the fourth day the team visited the war cemetery early morning before leaving Kohima. The team was led by Mr. Nzanbemo K. Lotha, Team Member NBHM, In-Charge of Dimapur District. On arrival to Dimapur District, Mr. Nzanbemo took the team to a Research Farm at Ruzaphema, where he introduced the team to the technique of traditional beekeeping as well as the modern scientific beekeeping. He gave a clear technical description on the design of several boxes and also gave usable tips on the topics covered.

The team then proceeded to a project village called Bade where the comparison was done on beekeeping at Dimapur with Kohima, where there is huge difference in elevation. The team was also introduced to a Village Beekeeping Committee. In the interaction, it was learnt that the Committee has proved to be useful in the mass production of honey in the village.

On the fifth day, the team visited the Multi – Utility Centre of the NBHM at 5th Mile Dimapur. It consisted of a mini museum which proved to be a gateway to beekeeping at Nagaland. The team was also shown a video clip of traditional beekeeping and hunting practiced in Nagaland. Mr. Nzan practically illustrated on the working of several bee boxes including the use of an extractor. Mr. Francis, in charge of the packaging unit, described the utility of the honey processing machine and also illustrated the packaging of honey in food grade bottles. The beneficiaries were given a booklet and a bee veil as a starter kit at the end of the meeting, and thereafter headed back to Guwahati.

On the sixth day, the team visited the Khadi and Village Industies Board at Hengarabari, Guwahti. There the team experienced the manufacture of modern bee boxes and also purchased ready-made Queen Bee Gates to start beekeeping on their return home. The team stayed back at Guwahati for the night as return journey was not possible due to the bandh at Goalpara District. It was the next morning that the team returned home and parted ways at Paikan, to go back to their respective villages.

The Exposure Trip was a indeed an eye opening experience for many as there were many beneficiaries who had not been exposed to bee keeping on a commercial scale. It was a platform for learning many new ideas and in gathering knowledge of both the indegeneous as well as of the modern scientific technique. The success of the programme was evident when the beneficiaries resolved to start their own apiaries after reaching home and as a starting initiative, purchased several beekeeping item at their own expense. Overall the trip had been really useful and had been a wonderful learning experience to all the participants


A colony of bees swarming below a bee box.


Bee Boxes kept under a protective cover at Ruzaphema.


The Team near a roadside apiary at Chiephobozou Village.

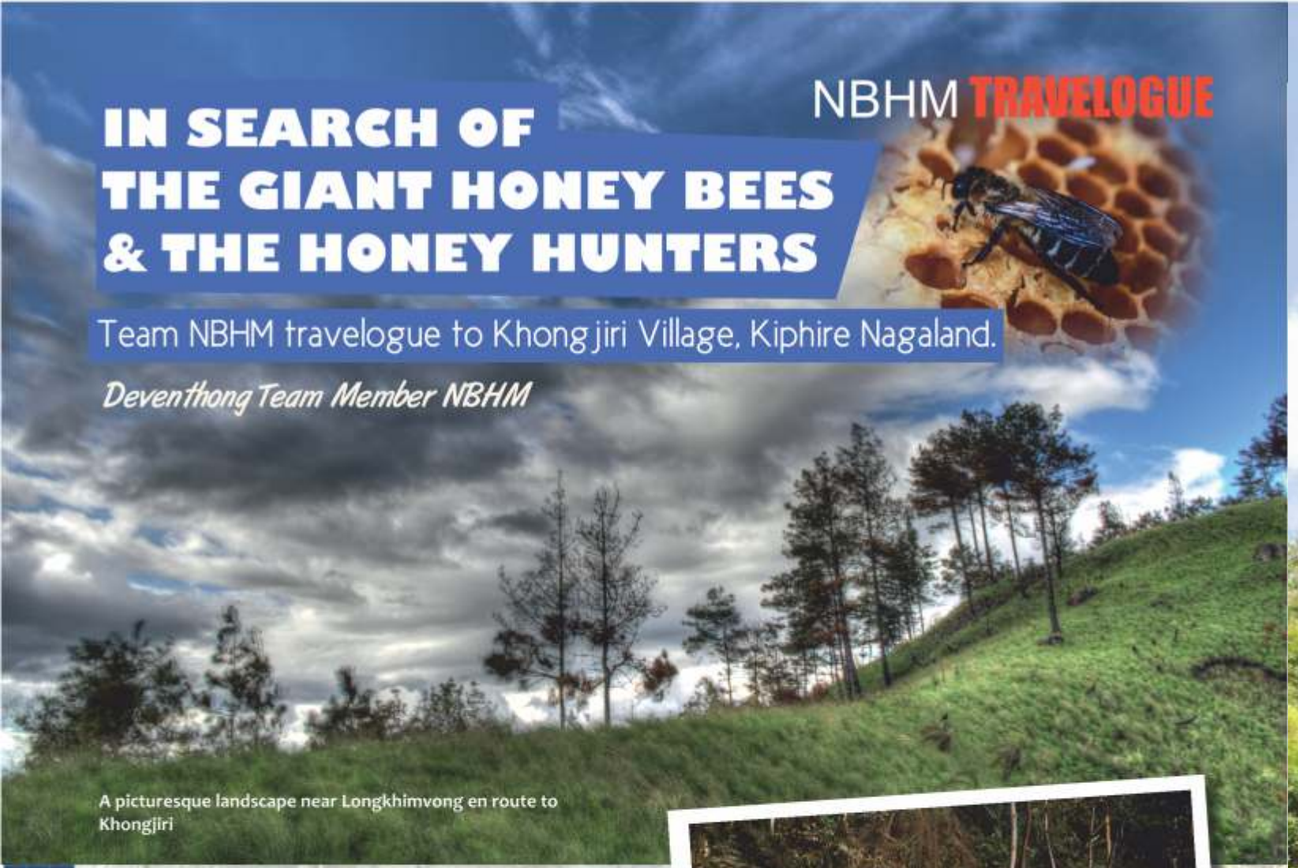

Mr. Francis, Project Assistant at NBHM Centre Dimapur.


A traditional Naga Log Bee Hive.

IN SEARCH OF THE GIANT HONEY BEES & THE HONEY HUNTERS

Team NBHM travelogue to Khongjiri Village, Kiphire Nagaland.

Deventhong Team Member NBHM

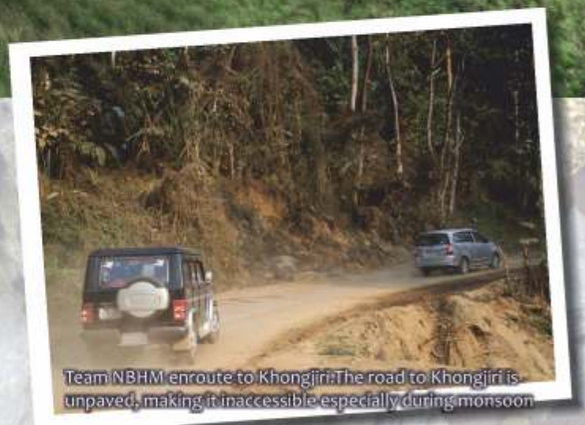


A picturesque landscape near Longkhimvong en route to Khongjiri

Khongjiri, a tiny hamlet, nestled in the foothills of Mt. Saramati range in the Indo-Myanmar border is home to the planet's largest honey bees-the apis dorsata laboriosa (Rockbees). The dense forest and steep escarpments of the Mt. Saramati range provides a critical resting place and a home for the giant honey bees, contributing substantially to the diversity of the forest of this region.

Honey hunting, the collection of honey from the nests of wild rock bees built on steep rock cliff is an age old tradition for the Longpfürr community of the Yimchunger Naga tribe who inhabit this area. Historically, honey hunting has been the main profession for the people of this area besides agriculture. The honey harvested was mainly for domestic consumption as a delicacy, while the wax was bartered for goods across the border in Burma.

Nagaland Beekeeping & Honey Mission, with the support of Navajbai Ratan Tata Trust, Mumbai have been working for the last few years to develop the enormous potential of rockbee in this area that would lead to



Team NBHM enroute to Khongjiri.The road to Khongjiri is unpaved, making it inaccessible especially during monsoon

Dozens of Apis laboriosa hives clings to the surface of the rock cliff, shimmering and pulsating every few seconds like ripples across water

sustainable livelihood opportunities. With this initiative, NBHM have succeeded in infusing new life into the almost dying art of honey hunting and also upgraded the traditional knowledge and practices of rockbee harvesting on scientific know how for optimum harvest.

Thus, as part of NBHM's continued effort to enhance livelihood through rockbee harvesting in the region, Team NBHM led by the Team Leader Mr. Wonchio Odyuo NCS undertook a trip to Khongjiri village from 16th to 18th October, 2014 to interact with the honey hunters and also witness the honey harvesting process.

After days of planning and preparation, the day finally arrived and team NBHM was all set to undertake the adventurous trip.

The first day of the trip from the plains of Dimapur through the serpentine roads of the hills up to Pungro was pleasant yet back-breaking. The daylong drive was uneventful; except for some mechanical glitches of our ageing boleros along the way which made us reach our rest camp at Pungro late into the night. More drive and trekking awaited us the next day and so after a scrumptious meal, the team retired for the night at GA Rest House in Pungro.

The drive from Pungro to Khongjiri on the second day was almost off-road all the way. The road itself is surely not for the faint hearted but will surely delight the adventure seekers and off-road enthusiasts. The narrow road with steep drops passing through the hills and meadows with pine trees standing against the clear blue sky with puffs of white clouds is a captivating sight to behold. Tall grass and trees form a canopy over the road at some stretch, making the road look almost like a tunnel. After 3 hours of continuous drive from Pungro, we reached Khongjiri where the village elders were eagerly waiting for our arrival. It was almost 11 in the morning and we were told the honey harvesting was about to be started. Without wasting much time, we started our trek from Khongjiri to the rock bee nesting site, every now and then stopping along the way to catch a breath.

Finally, after an exhaustive 40 minutes trek (20 minutes trek for the villagers though) through the fields and dense vegetation, we came across a clearing where a makeshift shack with views towards towering moss and lichen-like vegetation covered rock cliff. A villager pointed to the cliff where the bees were nesting. We followed his gaze and saw what look like dozens of brown disc on the cliff face, ranging from 2-5 feet wide. Every few seconds, they shimmer and pulsate eerily, like ripples across water. These are the hives of the apis dorsata laboriosa, the planet's largest honey bees, layered thick and brown and numbering up to 20-30 thousand per hive, moving as one. It was a mesmerizing and frightening sight.

Our team, the spectators will be witnessing the harvesting from a small clearing opposite the rock cliff. Eventually, we reached the clearing and settled down to watch as some villagers gathered leaves and wood to lit fire for us, while the rock bee hunters continue to prepare for the harvest. The towering limestone cliff face gleamed in the radiant October sunlight providing a spectacular backdrop for the honey harvest.

A prayer is uttered before the fire is lit at the base of the rock cliff to subdue the bees. Within minutes of fire being lit, smoke billows upwards and the buzz of the giant honey bees got louder as the smoke drove them out of their hives. The edges of the hives slowly turned from brown to orange, and after a few minutes the honeycomb was almost entirely exposed. The hunters at the top of the cliff lower the ladder and a bamboo basket (khang) in which to deposit the honey. A hunter then starts to descend down the ladder with a torch to smoke the bees, and a wooden spatula to cut off the hive. The lower part of the comb is occupied by the brood cells harboring the larvae, while the honey is stored in the upper bulging part of the comb, attached to the rocks.

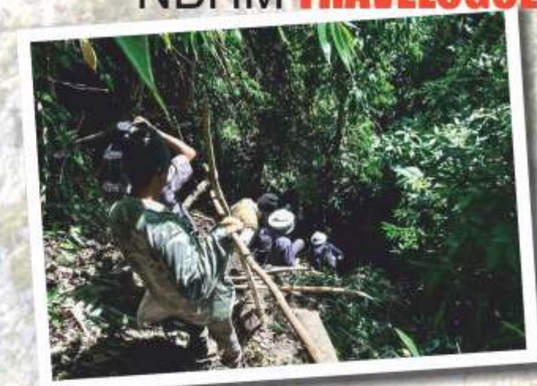
The hunter must first slice away the brood section using the spatula and maneuver the basket below the combs and cut off the honey portion into the basket. The collected honey is then lowered and the hunters at the base empty the basket into banana leaves and primary filtration of honey is done using bamboo strainers.

For hours, the hunter stays suspended between earth and sky to harvest the rock bee colonies, with each new colony harvested setting off a renewed attack by the bees. With his hands and face unprotected, the hunter endures repeated attacks by hundred of enraged bees while hanging in acrobatic position without anything to protect him from a fall as he moves along the ladder. Honey hunting/harvesting is a remarkable endeavor, fraught with danger, and of course bee stings but the honey is worth the trouble.

It was well past 4 pm in the afternoon and the sun was soon setting over the horizon. The team had a brief interaction with the hunters before we bade each other good. Our quest to witness the harvesting and more importantly interact with the hunters accomplished, the team headed back to Likimro Hydro Electric Project, our camp for the night.

Exhausted and famished, we reached our camp after 8 pm in the evening, and feasted upon a deliciously prepared pork and Mithun intestines. The mithun intestines seasoned with generous amount of Naga king chilly was indeed once in a lifetime culinary experience.

An arduous day coupled with late night helped us sleep well past 7 am in the morning. After sipping a cup of hot tea with some snacks, we hurriedly packed our bags and headed our way homewards through miles of winding road. The rock bee harvesting spectacle in Khongjiri had us all mesmerized and the drive back home was even more memorable. Thanks to the famed naga delicacy, the Raja Mircha and the gastronomical genius of the cooks at Likimro, the team was coerced to make numerous stops throughout the journey to attend to nature's unforgiving call!



Trekking to the rock bee site has been arduous yet rejuvenating for the body and mind.

Team NBHM witnessing the honey harvest

Hunters relishing the sweetness of honey

Spending a day out with the dauntless rock bee hunters of Khongjiri has been a rewarding experience. All in all, the trip was fun and rejuvenating.

Honey harvesting is an age old tradition for the people of Mimi & Khongjiri area. One can witness this amazing spectacle twice a year in May-June and in Mid October. The villagers regularly check the hives during this time to ascertain the day of harvesting. A lot depend on the weather condition.

Team interacting with the rock bee honey hunters

Khongjiri is a 3 hours drive from Pungro ADC HQ. From the state capital Kohima, it takes about 8 hours to reach Pungro. Tourists can avail accommodation in government guest house at Pungro, while village guest house are also available both at Mimi and Khongjiri

The NBHM Team who undertook the trip.

NOTES FROM THE FIELD OBSERVATION

Dr.ThungbenYanthan,Team Member, NBHM.

Before I joined this noble profession, whatever little I know about bees is that it gives us honey and it is a stinging insect, beyond that I know nothing about bees. As a small boy, I remember collecting bees that visits flowers in empty bottles just to watch the bees struggling to come out of the bottle. I felt restless ifa rested swarm bee is located on a tree branch, until they are chased out or burnt down. That was how I was ignorant about bees. The older people say that, it is not a good sign if A.dorsata swarm bees sting us (I don't know what bad sign they mean). I also remember the elderly peoples expect guests if they found a bee hovering in their house. Some believed that it is a bad omen ifA.dorsataswarm bees rested in the house.

But then people believe that honey is medicines and every household will have atleast some quantity of honey in their home for remedial measures. For this, people go out for collection of honey in the forest using very crude and bee-killing method of harvesting. I noticed people collecting honey from forest by burning their nest. Sometimes the honey hunters used barks of Gynocardia odorata (Chaulmogra) and Clerodendrum viscosum (Hill glory bower) leaves to stun or immobilised the bees by plugging the nest entrance for harvesting honey. Once the bee nest is cut opened and exposed, they remove everything what is present in the hives, be it honey, pollen or brood. Just to collect few kilos of honey, the entire colony is subjected to destruction. I regretted what have been done without knowing the importance of bees.

Clerodendrum viscosum

Working in the Mission as a Team Member, I have the privilege to travel to all the Districts of the state and had the opportunity to make some observation in the field of beekeeping and the resources needed for beekeeping.

Basing on my observation, it can be said that the indigenous bee species (Apis cerana) which we are dealing with may not be regarded as commercial bee. The volume of honey produced by this species is very low as compared to the European race. Hence the honey production by this bee's species will not achieve as estimated and expected because of the following reasons.

Firstly, it is observed that, the behaviors of this bee species is unpredictable in nature and has strong tendency of absconding. As such it is difficult for beekeepers to maintain specific number of colonies at any time of the year. The beekeepers may have many colonies at one point of timebut has the risk of having the colonies reduced to few or no colonies at other time, for which they are referred as "Accordion Beekeepers". The reason is that, the bees tend to desert the hive even with abundant food reserves in the hive besides good management practices. One unpredictable phenomenon in Apis cerana is that, the worker bee's deserts the hive leaving only the queen behind which has been observed in many occasions. This phenomenon is seen where the queen is kept confined in the hive by placing the queen gate.

Secondly unlike the Italian bee species, the Apis mellifera, Apis cerana bee does not like to work in the older combs. So when an old and worn out combs fills up the hive; the worker bees instead of repairing the old combs they abscond leaving the old hive in search of a new home unless those old and worn out combs are removed. A new comb is built each year for honey storage and brood rearing. It is also observed that, though wax is the main constituent in comb building yet the amount of wax content in Apis cerana comb is very less as compared to Apis mellifera comb. Which is why in most of the cases extraction of honey is more difficult or impossible keeping the comb intact as in the case of Apis mellifera. This is the reason why the Apis cerana comb is more brittle and tends to break easily at the time of extraction. Production of bees wax from Apis cerana comb is also negligible.

As regard to bee resources, different species like Apis cerana, Apisdorsata, Apis laboriosa, Apis florea, Apis andreniformis commonly known as little bees or dwarf bees and a number of stingless bee species (Lepidotrigona ventralis, Tetragonula irridipenis, Tetragonula laveceps) are found in different parts of the state. However with the abundant bee resources is found to be dwindling drastically. It is mainly attributed to human wanton destruction of forest such as like indiscriminate logging, Jhuming, forest fire and jungle clearance for replacement of natural habitation with extensive Agro forestry plantations, which deplete the natural abodes of our little; but most beneficial insects. The most effected species are one with single comb which nest in the open spaces, Apis dorsata, Apis laboriosa, Apis florea, Apis and reniformis

However, in many areas it is observed that the Apis cerana population has increased manifold by way of rearing and incorporation of bee colonies in the agriculture and horticulture farming. People has developed interest and created awareness in beekeeping sector and their importance. One good sign that is being observed is that, the honey hunters no longer practice bee killing method of honey harvesting unlike in those earlier days. There used to be altercation over swarm bees in some cases claiming that he/she spotted the colony first, the colony rested in my garden, the bees are from my hives etc. However honey production is not proportionate with the number of colonies maintained. In the last decades as per the beekeepers statement they yield 6-8 kilograms per hive per harvest. But keeping more colonies does not elevate the production, as because these days though colonies are much more than decades ago but production per hive per year is diminishing. The reason for low production of honey is that, more bee colonies are maintained but food resources are not taken into consideration. The available resources are only sufficient for their colony maintenance and survival and no surplus honey for the beekeeper.

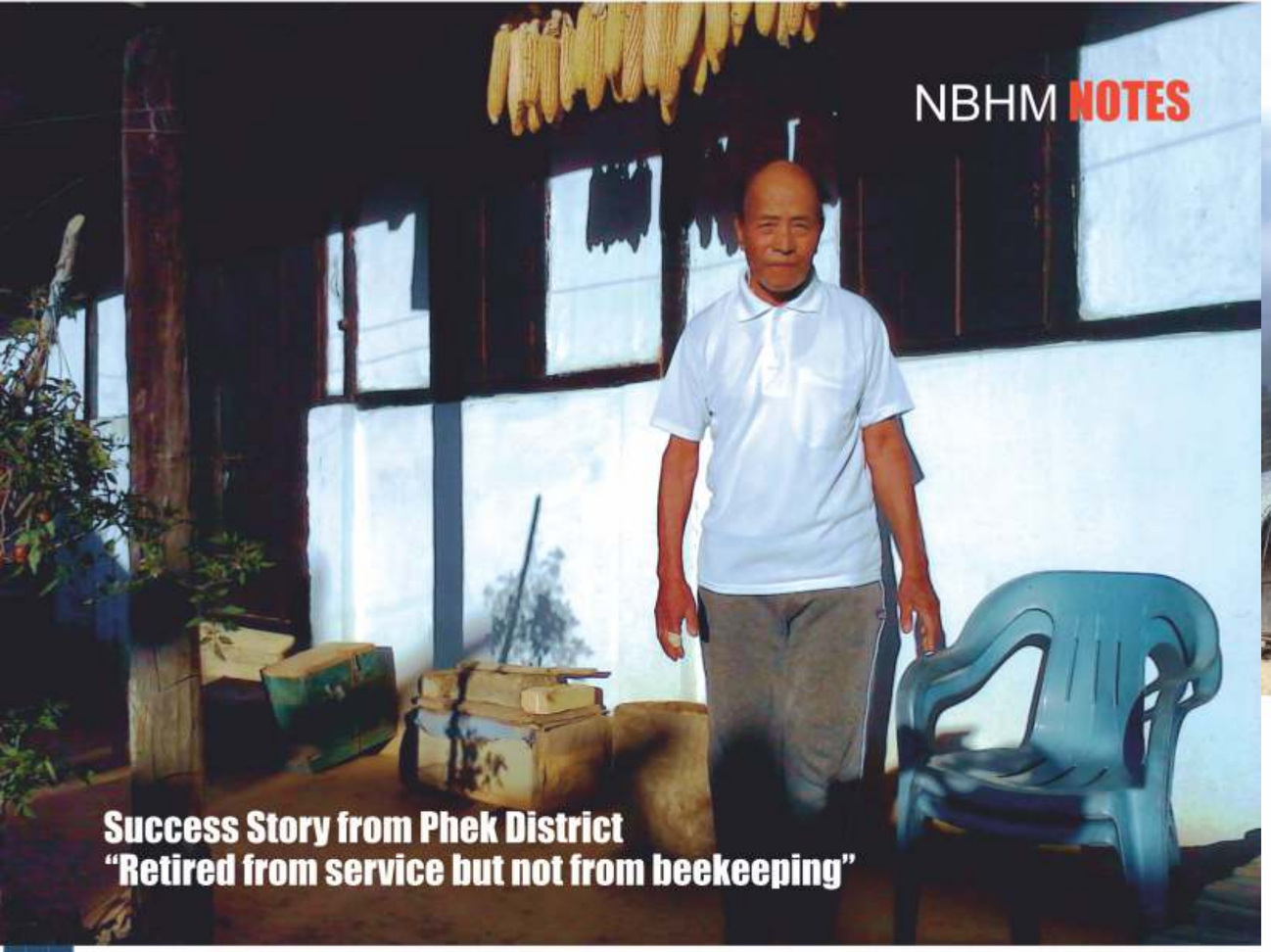
While on the lookout for bee floras, it is observed the bee flora varies widely within any major climatic zone. Some of the floras that are seen in one district are not available in other district. Even if present it is thinly populated and spread over a wide range. Natural factors also affect the environment but mainly human interventions alter the suitability of a region for beekeeping by their land use patterns or agricultural practices. Cutting down large areas of suitable bee forage and devoting these areas to monoculture can destroy a good bee area if the introduced crop is a poor resource for bees. It is also noted that not all plants are attracted to bees and cannot be considered as bee floras.

In a small-scale beekeeping project, it may not require to put much emphasis on bee flora. However identification of bee flora is an integral part of beekeeping. A special study has not been made but then, over hundred species of melliferous plants both pollen and nectar sources have been identified by observation. Nevertheless if the density ofthe plant population in a given area is sparsely distributed this may not be adequate for the colonies maintenance and honey production.

It is also observed that the climatic condition affects honey production. Flowers which usually blooms in the winter starts blooms in the summer. The unpredictability of nectar flows makes it more difficult for the beekeeper to prepare the colonies. There as on for not yielding honey as expected is that, the colony number increases whereas the foraging areas decreases because of the above mentioned reasons.

In conclusion to address all these problems for what needs to be done, the general public is therefore encouraged to consider one or more of the following as their contributions towards the conservation of our bee diversity:-

1. Develop keen interest and learn about bee keeping.
2. Planting of trees and other flowering plants that provide shelter and forage for the bees.
3. Campaigning against bush fire.
4. Judicious use of agro chemicals including pesticides and herbicides.
5. Setting up Bee clubs or environmental societies in schools and institutions.
6. Establishing more forest reserves and conserving river bank vegetation as bee habitat areas.
7. Creating awareness among communities to protect and conserve natural vegetation and forested land as bee sanctuaries.
8. The use of hive products as food supplement for good health& primary health care should be encouraged.



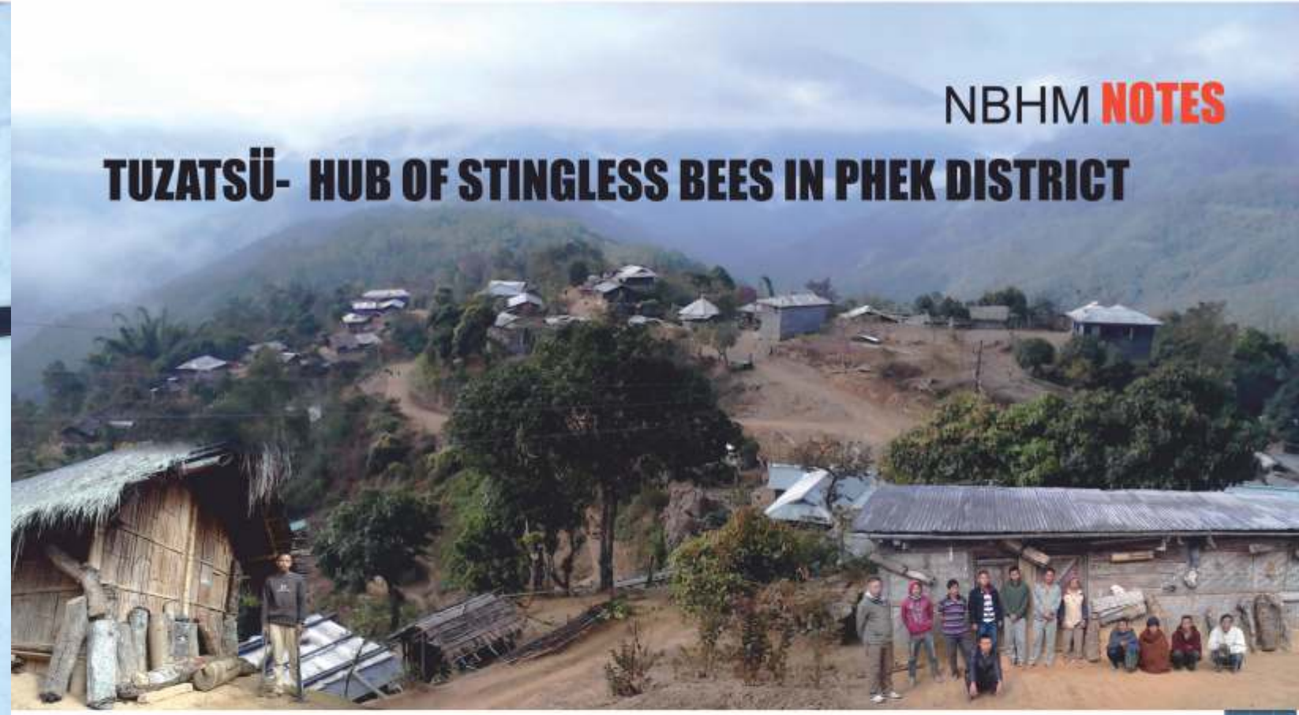
Success Story from Phek District
"Retired from service but not from beekeeping"

Neruno Puro from Kekruma Village under Phek District who served as a Fitter in the PHED department has since retired from government service, yet his passion for beekeeping has not diminished. Having learnt the art of beekeeping during his youth, he has always been an ardent beekeeper who reared bees both as a source of income as well as a source of additional income.

Today at the age of 93 years, he is unable to cultivate his farmlands but he purchases paddy grains from the income generated from the honey sale which is able to sustain his family for 2 years. Honey from his 15 colonies of bees is usually booked in advance by buyers who considers the honey from his farm as good quality honey. He ensures that honey is harvested in a hygienic quality which fetches a good income for him. Though his honey is priced at a higher rate as compared to other beekeepers in the village, buyers prefer to get their honey from his apiary.

His vast experience in beekeeping is being taught to upcoming young beekeepers of his village by him willingly. Though in his old age Neruno Puro is still very agile and enjoys good health due to his regular intake of honey. He encourages other villagers to also consume honey regularly as he believes that honey has the power to heal many ailments. He also enjoys good eyesight, which he attributes to his habit of cleansing his eyes with honey. His sharp eyesight is demonstrated through his ability to put a thread through a needle even to this day. This is one beekeeper who never say die when it comes to his love for bees and honey.

TUZATSÜ- HUB OF STINGLESS BEES IN PHEK DISTRICT



A small village with a household numbering 85 under Tizu Area of Phek block is Tuzatsü Village, which is about 25 kms away from Phek town. This small hamlet is among the most remote village in the district where metaled roads were constructed just a couple of years back.

Besides cultivation, the inhabitants of this village were engaged in no other economic activity until they decided to take up rearing of stingless bees. This activity proved to be the best alternative livelihood option for the villagers. Excepting 2 households, all the other households are today actively involved in rearing stingless bees, which has enabled them to earn a decent income from the sale of stingless honey. A total of 485 stingless bee colonies exist presently in the village which produces around 700 kg of honey annually.

They are well versed in the types of stingless bees and honey; one can observe that per household an average of 30-40 stingless colonies are kept, while some households maintain even up to 57 colonies. They priced their honey as per the quality of the honey. Having learned that this activity is a sustainable and major source of income for the whole village, they try to preserve the stock of stingless bees in the village area and never sale the bee colonies to outsiders through a resolution with the aim to preserve the stock of stingless bees for posterity. Earlier, to earn additional income, they used to cut down a lot of trees from the village area to sale as firewood, but today since their source of income comes from sale of honey they are no longer involved in felling of trees. As a result deforestation activity in the village has been reduced to a large extend.

The beekeepers take their produce to the markets in Meluri and Phek town. The income earned is used for paying of school and college admissions for their children and to meet other household expenses. They also swear by the medicinal benefits of stingless honey as they use it for various purposes like treatment of coughs and colds, for women's health problems, during child delivery and many other ailments.

GOOD BEE PASTURAGE AND ITS BENEFITS

Dr.ThungbenYanthan,Team Member, NBHM.

In Beekeeping, there is a close relationship between the bee and the flower. Each is dependent upon the other to a very great extent — that sort of dependence which is extremely common in many of nature's works. The beekeeper should understand this dependence as no one can successfully manage bees unless he also knows something of the flowers which supply the basis for his work.

Our beekeepers are often confused as to what honey plants and flowers they should plant in order to provide bee forage for their bees. They fail to realize that plants suitable for bee pasturage must be planted in high numbers before any noticeable results are seen in the amount of honey that is stored in the hive. They also fail to understand that not all flowers are worked by bees. Why bees don't work on certain flowers? Well, for a start, planting red flowers and hoping to attract bees to your garden is of no use because it is believed that bees cannot see red. On the other hand, bees are more attracted to blue, white, yellow, and purple coloured flowers.

Nagaland and the whole of North East region falls under mega biodiversity hotspot area. The region is thus considered as the cradle of flowering plants and availability of abundant bee flora blooming throughout the year. However, due to the practice of Jhuming (Slash and burn), replacement of natural forest by agro forestry plantation, indiscriminate logging and jungle fire, many plant resources are drastically reduced. Knowing that nectar and pollen producing plants in an area is an integral part of beekeeping, It points to the fact that even with the best management; bees cannot produce honey without a source of the raw materials; nectar and pollen.

Different plant species have different requirements for optimum nectar secretion. Soil moisture, soil type, precipitation, air temperature and the number of sunshine hours may all affect the quantity of nectar secreted and its sugar concentration. Beekeepers refer to a "honey flow" when they see surplus honey being stored in their hives. Perhaps the term "nectar flow" is more apt since it is the nectar that flows from the flowers and is collected and converted into honey by the bees. The main nectar flow supplies the surplus honey harvested by the beekeeper. Generally, nectar flows are accompanied by pollen flows because nearly all nectar plants are visited for pollen as well.

It is a good practice for a beekeeper to know and keep a record, when the nectar flows begin in his or her area and how long they last. These will give the beekeeper a general idea of what to expect, but considerations must be made for different regions, climatic regimes and cropping patterns as well as yearly variations in weather patterns.

Bees collect nectar and pollen from many different plant species, but only a few of these plants grow in enough profusion and produce enough nectar. Nectar production by a particular plant species may vary under different soil and climatic conditions. Plants considered a major nectar source

in one region may be only a minor source in others. Yearly variations may also cause minor honey plants to occasionally yield heavily or major plants to yield poorly. Again, the beekeeper must become familiar with the peculiarities of the region through observation of flowering plants and dates, and weather and scale colony records.

Many horticultural crops and ornamentals are good nectar and pollen sources. To name but a few, all yield nectar or pollen and are freely visited by foraging honey bees. As a rule of thumb, all monocot plants are rich source of pollen but provides scanty or no nectar. It is desirable for a backyard beekeeper to plant a "bee garden" to supply the bees with extra nectar and pollen. Each species of plant produces nectar with unique properties which in turn, affects its value as a honey crop. Characteristics of honey such as its color, aroma, flavor, sugar composition and speed of granulation are all influenced by the nectar source. The colors may range from nearly colorless to dark brown, the flavor may vary from delectably mild to distinctively bold, and even the odor of the honey may be mildly reminiscent of the flower.

Color of honeys varies with botanical origin, age and storage conditions; however transparency or clarity depends on the amount of suspended particles such as pollen. Color is one of the most important factors affecting honey grading and consequently, the price the producer receives for the crop. In general, light coloured honeys such as those produced from Syzygium cumuni (Java plum) and Prunus cerasoides (Himalayan wil Cherry) tend to sell for a higher price when sold in bul quantities. Dark colored honeys from Leucoseptrum cannum (Fox tail) Fagopyrum esculentum(Buck whea tend to sell for a lower price. Darker honeys are more often for industrial use, while lighter honeys are marketed fo direct consumption.

As a general rule, the flavor of lighter colored hone is milder, and the flavor of darker colored honey is stronger. Why some plants are not good for beekeeping. It is believe that certain bee plants are not good for hone making as the honey it produces can cause severe illnes resulting in abdominal pains, nausea, headaches, dizziness hallucination and even vomiting, what is known as poisonous honey .Plants such as Rhododendrons, Azalea Angels trumpet (Brugmansia arborea), monk's hood (Aconitum napellus) all contain a glucoside of andromedotoxin. Strangely, plants that are known to be poisonous to man such as Conium maculatum (hemlock),Neriun oleander (oleander), Hyoscyamus niger (henbane)and Digitalis purpurea (foxglove) are perfectly safe for nectar collection and honey making.

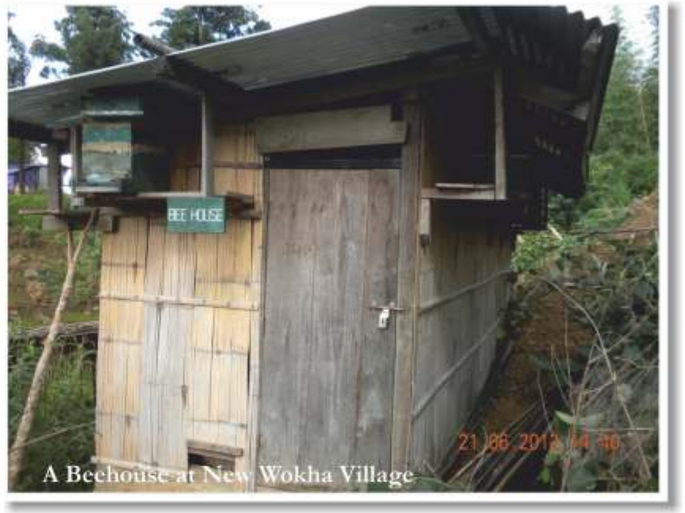
BEE HOUSE

Dr. Thungben Yanthan, Team Member NBHM

A house where bee colonies are kept or a house containing a number of beehives.

Utilities:

Like all other animals bees are no exception, they are susceptible to Diseases, Pests and Predators. Bees, like any other animals need favorable working environment. They are an insect which do not work well when there is extrinsic or intrinsic interferences besides unfavorable climatic condition. For the bees to perform their best ability, the environment should be conducive free from all encumbrances. For this reason, the mission has come up with bee house which houses the hives that protects the bees from many pests and predators. The bee house not only provides shade to the bee colonies but has many advantages over other structures in beekeeping.



A Beehouse at New Wokha Village


A Beehouse at New Wokha Village

The Bee house can be used as:-

1.Store house for tools & equipments needed for beekeeping when not needed.
2.It protects the bee boxes from inclement weather which increase the durability.
3.While working on the hives, it is easier for the beekeeper to work in a closed environment.
4.As it housed more number of colonies in a single bee house, it saves time & energy while inspecting the bees.
5.It also protects the bee hives from thieves and other animals from vandalism.
6.At the time of hornet and wasps invasion, it is easier to keep guard the colonies against those predators.
7.More numbers of colonies can be kept in a small area, saving spaces.
8.Harvested honey can be stored before shifting it for filtering, processing and marketing.

Dimensions:

To house 16 numbers of colonies the dimensions of (L10' x B 8' x H 7') is sufficient, but can vary depending on the number of colonies to be housed. It also depends on the availability of raw materials and land availability. Bee house can be constructed in any dimensions; considering the height at 7feet to 8feet at the post plate level. The length can be increased as per the beekeeper's requirement.

Materials required:

Locally available materials are mostly used for the construction of bee house to be cost effective.
1.Usually split bamboo is used for the construction of the wall.
2.Thatch or Fan Palm (Livistona jenkinsiana) leaves for economic roofing. Using thatch or palm leaves as roofing materials is more economical instead of Asbestos or corrugated galvanized iron sheets, but also provides better shade by absorbing less heat during hot weather. .
3.Wooden poles are used for the posts and purling.

Hive Arrangement:

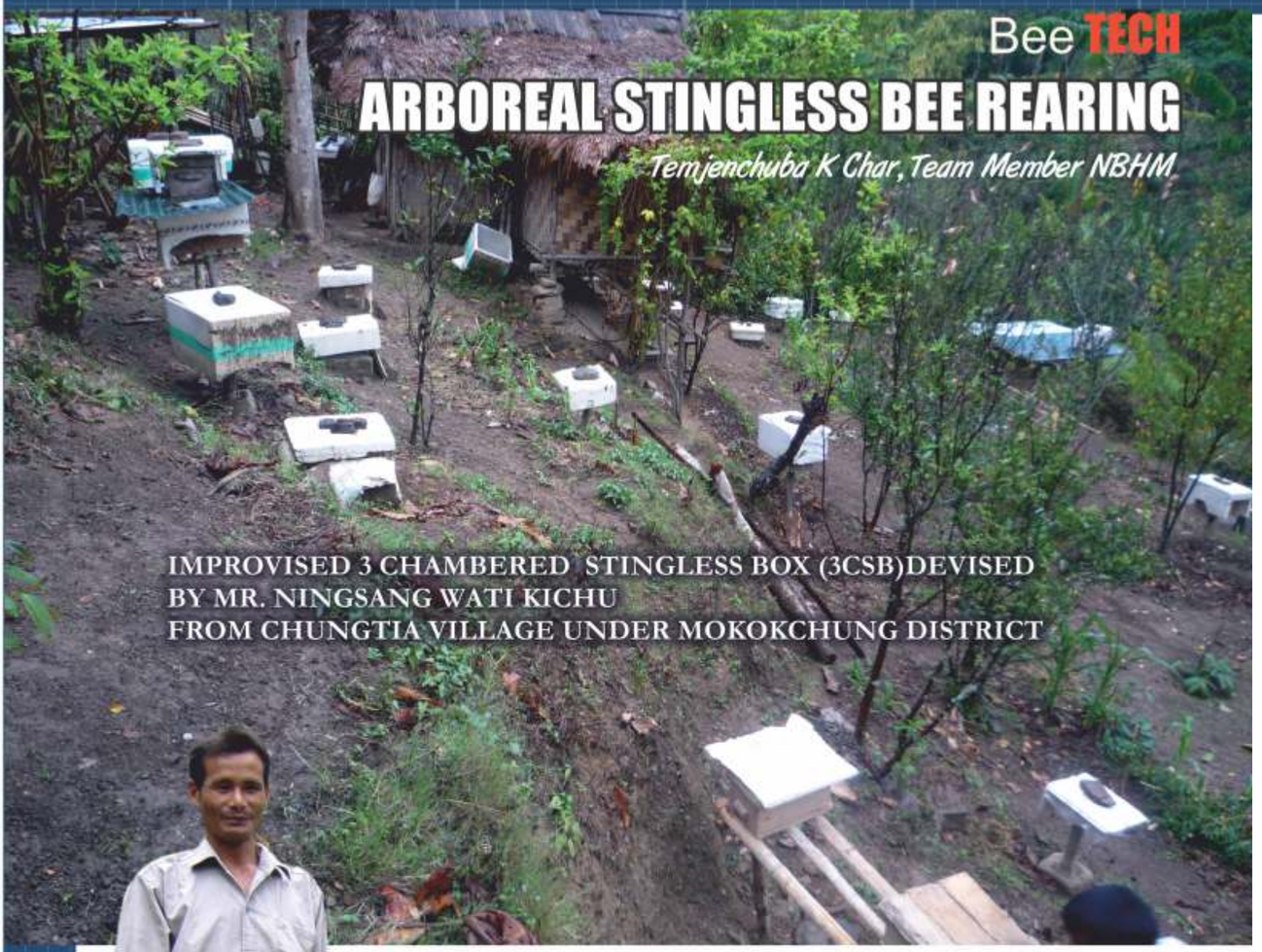
1.The hives are arranged inside the bee-house in such way that more number of hives can be kept in small area.
2.The hives are kept in two tier system where 4 boxes are placed in each 4 sides of the house.
ie, 16 number of bee hives in one bee house.
3.The second tier is constructed at the height of chest level, so that inspection of the hives is made easy.
4.The entrance of the boxes is kept in aligned with the slit on the wall, so that the bees can easily access outside through the slit.


R Vizo a progressive beekeeper from Kohima Village outside one of his Bee house.

Bee TECH

ARBOREAL STINGLESS BEE REARING

Temjenchuba K Char, Team Member NBHM



IMPROVISED 3 CHAMBERED STINGLESS BOX (3CSB)DEVISED
BY MR. NINGSANG WATI KICHU
FROM CHUNGTIA VILLAGE UNDER MOKOKCHUNG DISTRICT

Specimen	*: 3 chambered stingless box (3csb)*
Developed by	*: Ningsangwati kichu*
Age	*: 44*
Village	*: Chungtia*
Dist	*: Mokokchung*
Occupation	*: Apiarist*
Current apiary status	*60 stingless colonized*
Overground species	*: 38*
Underground species	*: 28*
Beekeeping experience	*since 2006*

ADVANTAGES OF THE 3 CHAMBERED STINGLESS HIVE

1. Diagram 'A' : Brood & Honey+Pollen cover

As indicated by the diagram, instead of a single cover the 3CSH has been provisioned with a simple split of the top cover into (i) Brood cover & (ii) Honey+ Pollen cover which provides the following advantages:-

I) During hive operations for cleaning, dividing, honey extraction, etc, the colony is least disturbed. For instance if there arises the need for extracting honey, one has to to open only the H+P chamber & do the needful while the brood & colony remains largely undisturbed.

II) Likewise if the colony attains full maturity & there is a need to divide the colony, one needs to simply get access to the brood while keeping the Brood chamber as it is.

III) During hive inspections & operations a good %age of bee mortality rate occurs especially under inexperienced hands. As any species of honey bees thrives best when lest disturbed, hence having the separate top covers minimizes this problem.

2. Diagram 'B'& 'c'- Brood divider board.

i) As seen in the diagram, the brood divider board as well as the honey+pollen divider board are provided with small split holes & grooves just narrow enough for the stingless bees to get across between the chambers in carrying out their hive activities.

ii) The design provides for directing the bees to instinctively segregate the brood building from that of honey & pollen to a great extend. Hence it provides much convenience for the beekeeper in dividing the colony, extracting honey, cleaning, etc.

3. Diagram 'D'- Bottom board.

At one end of the bottom board housing the H+P chamber, a hole is provided for honey extraction. This hole is always kept plugged & opened so only during honey extraction.

Advantages:

I) At the time of honey harvest, the honey pots are pricked to let the honey trickle down to the bottom board surface.

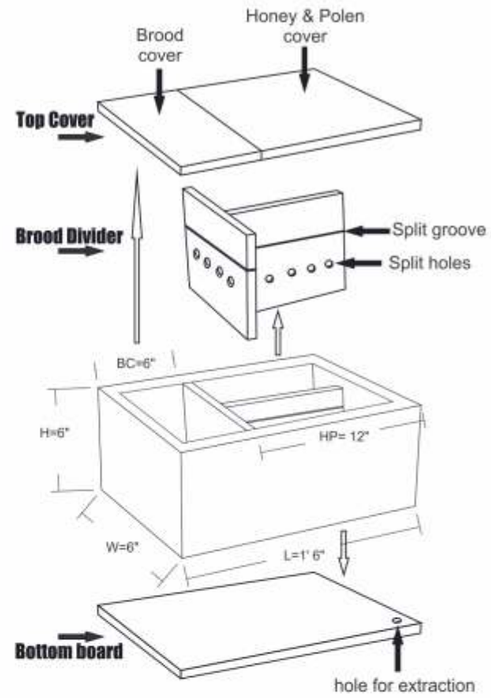
ii) The honey trickling down drains its way towards the unplugged hole by tilting the box slightly to assist the direction of flow. This way honey is harvested without much wastage & without disturbing the colony.

iii) The remains of honey that stains the bottom board are lapped up by the worker bees & refilled into the sugar pots.

Note: before assembling this type of box, one has to ensure that the bottom board surface is finely finished to give a smooth surface so that maximum honey from the honey pots reaches to the container.

Bee TECH

SPECIMEN: 3 Chamber Stingless Box



Dimensions of the 3 chambered stingless hive

1. Length=1'6" (1 ft 6 inches)
2. Height=6" (6 inches)
3. Width=6" (6 inches)

Specifications of the Pollen, Honey & Brood chambers

A. Brood Chamber (6 inches cube)

i) Height=6"
ii) Width=6"
iii) Length=6"

This much volume of space was found to be ideal for brood development taking into account the cycle of the following events:-

- Emergence of new queen cells.
- Maximum growth in size being attained by the brood and subsequently the space covered during growth period & honey flow.
- If the volume of space exceeds this limit it becomes natural for the bees to fill up the gap by stocking up the H+P as well, which is undesirable from the beekeepers point of view.

Note: At this stage colony division is done.

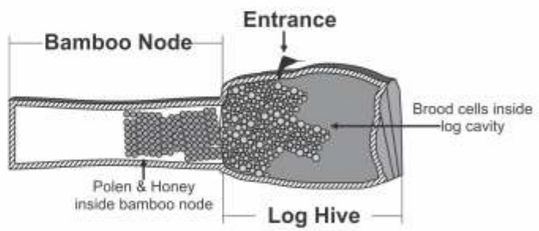
B. Pollen & Honey chamber.

i) Length=1 ft (12 inches)
ii) Height & width=6" (6 inches)

- This area of pollen & honey chamber is sub compartmentalized by placing a divider board running through the mid section and along the length of the box.
- Although the P+H chamber is further sub compartmentalized, it necessarily doesn't follow the expectation that the bees compulsorily pile up these resources (pollen & honey) entirely separate, but do enable the separation to a great extend.

Concept behind the design of the box

Mr. N. Wati came up with this improvised contraption having observed & learned the behaviour of arboreal stingless bees commonly reared in bamboo & log hives wherein they naturally tend to segregate their brood from the pollen & honey as illustrated by the diagram.



TOP BAR HIVE

Bodevi Shuya, Team Member NBHM

Introduction.

A top-bar hive is a single-storey frameless beehive in which the comb hangs from removable bars. Top-bar hives are rectangular in shape. They are usually not portable but allow for beekeeping methods that interfere very little with the colony.

Before the introduction of the scientific method of beekeeping, the traditional beekeepers have been using this technique.

This is a low cost method of beekeeping and involves the use of available local materials for the hive construction.

Dimensions

	Internal	External
Length	45 cms	50 cms
Breath	23 cms	30 cms
Height	20 cms	25 cms
Bar thickness	5 -8 cms	
Bar Length	14 cms	

The box is constructed mostly of seasoned Hardwood which is locally available and the top bars are made from split bamboos.

The thickness of the box is generally 2.5 cms to 8 cms. two Holes are made in the front of the box the Upper entrance is generally used to lure bees into the hive and is closed once the bees have entered the box, the lower opening is the main entrance. some slight modifications has been introduced viz the bottom of the box is made to swing open so as to have access in cleaning the bottom of the box which is usually filled with debris.


Top view with the top cover


Top view of the top bar without cover


Front view


Side view


Bees on a top bar

FLOWER POWER

Zea mays
(Maize)

Source	:Pollen
F/Time	:Yearlong
Distribution	:Cultivated
Photo	:Kohima

Manihot esculenta
(Tapioca)

Source	:Pollen/Nectar
F/Time	:Oct-Nov
Distribution	:Cultivated
Common Name	:Tapioca
Photo	:Dimapur

Cardamon

Source	:Nectar
F/Time	:March-May
Distribution	:Cultivated
Photo	:Mon

FLOWER POWER

Sesamum indicum
(Sesame)

Source	:Nectar/Pollen
F/Time	:Sept-Oct
Distribution	:Cultivated
L/NamePhoto	:Wokha

Vicia faba
(Broad bean)

Source	:Nectar
F/Time	:Feb-Mar
Distribution	:Cultivated
Photo	:Wokha

Raphanus sativus
(White Raddish)

Source	:Nectar/Pollen
F/Time	:Nov-Jan
Distribution	:Cultivated
L/Name	:Mola (L)
Photo	:Wokha

Photos by: Dr. Thungben Yanthan, Team Member NBHM

1 Trainees at Mopunchuket village, Mokokchung District Under RKVY
2 Pratical Demonstration at Mopunchuket Village, Mokokchung
3 Hands on learning at Ghathashi village, zunheboto during the training conducted under RKVY
4 Beekeeping trainees pose for the lens at Mohung Village, Mon
5 Bee Boxs distribution under RKVY-NBHM Training at Phek
6 Trainees at Ghathashi village, Zunheboto.
7 Dr.HK Singh and others during the monitoring visit to VBKCs in Tuensang.
8 Team member I/C of Phek district Khuvoyi Vese with beekeepers of Tuzatsu during a monitoring visit

9 Dr Utz Scholz from Germany in a meeting with Team NBHM on 26th Nov 2014
10 Dr Utz Scholz from Germany at the Processing Unit
11 An apiary for crop pollination at Lizuto village Zunheboto
12 A beekeeper from Ngozubo village who has kept his hive in this same locaton for 10 years.
13 NEC Member along with Team NBHM at an Apiary at Rusoma, Kohima
14 workshop on beekeeping at science college.
15 Major General AK Nandi CMOC(EC) during his visit to MUC on 28 Feb 2015
16 Team NBHM having a fun time playing Tambula during pre christmas 2014.

HONEY GLAZED PORK TENDERLOIN RECIPE

Honey Glazed Pork Tenderloin is a mouth watering recipe. Learn how to make/prepare Honey Glazed Pork Tenderloin by following this easy recipe.

Preparation Time :15 Minutes
Cooking Time :60 Minutes
Serves :6

INGREDIENTS:

a). 1/3 cup Honey
b). 2 tbsp Soy Sauce
c). 1tbsp Brown Sugar
d). 2 tbsp Sesame Oil
e). 2 tbsp Balsamic Vinegar
f). 3/4 pound Pork
g). Tenderloins (2 nos)

DIRECTIONS:

1. Mix the honey, soy sauce, brown sugar, sesame oil, and balsamic vinegar in a bowl.
2. Roast the pork for 15 minutes in a preheated oven at 230 degrees C.
3. Remove the pork and baste with the honey sauce and then roast at 175 degrees C for 45 minutes.
4. Baste the roast with honey sauce occasionally.

HONEY PORK *with* PEPPERS

The delicious Honey Pork With Peppers.
Learn how to make/prepare Honey Pork With Peppers by following this easy recipe.

Preparation Time :30 Minutes
Cooking Time :45 Minutes
Serves :4

INGREDIENTS:

- 1 1/2 pounds boneless Pork Loin (cut into 1 inch cubes)
- 2 tbsp Vegetable Oil
- 0.75 oz dry Brown Gravy Mix
- 1 cup Water
- 1/4 cup Honey
- 3 tbsp Soy Sauce
- 2 tbsp Red Wine Vinegar
- 1/2 tsp Ginger (ground)
- 1/8 tsp Garlic Powder
- 1 Onion (cut into wedges)
- 1 Green Bell Pepper (chopped)
- 1 Red Bell Pepper (chopped)

DIRECTIONS:

- Heat the oil in a skillet and then sauté the pork cubes for 15 minutes until all the sides are brown.
- To it add the gravy mix, water, honey, soy sauce, vinegar, ginger and garlic powder.
- Stir and mix well.
- Reduce the heat and then simmer for 15 minutes until the sauce is thickened.
- Put the onion, green bell pepper and red bell pepper and then simmer for another 15 minutes, until the vegetables are tender.

Sourced from Internet

SACBROOD
A brood disease of bees caused by a filterable virus which interferes with the molting process; the dead larva resembles a bag of fluid.

SCOUT BEES
Worker bees searching for a new source of pollen, nectar, propolis, water, or a new home for a swarm of bees.

SELF-POLLINATION
The act of a single flower, or flower from the same plant, pollinating itself.

SELF-STERILE
The inability of a flower, such as a fruit tree, to be fertilized within its own variety; it is only fertilized by pollen from another variety.

SETTLING TANK
A large capacity container used to settle extracted honey; air bubbles and debris will float to the top, clarifying the honey.

SLUMGUM
The refuse from melted combs and cappings after the wax has been rendered or removed; usually contains cocoons, pollen, bee bodies and dirt.

SMOKER
A metal container with attached bellows which burns organic fuels to generate smoke; used to control aggressive behavior of bees during colony inspections.

SOLAR WAX MELTER OR EXTRACTOR
A glass-covered insulated box used to melt wax from combs and cappings using the heat of the sun.

SPERMATHECA
A small sac connected with the oviduct (vagina) of the queen bee in, which is stored, the spermatozoa received in mating with drones.

SPLIT
To divide a colony for the purpose of increasing the number of hives.
A large capacity container used to settle extracted honey; air bubbles and debris will float to the top, clarifying the honey.

STIGMA
Receptive portion of the female part of a flower to which pollen adheres.

STING
An organ belonging exclusively to female insects developed from egg laying mechanisms, used to defend the colony; modified into a piercing shaft through which venom is injected.

SUCROSE
Principal sugar found in nectar.
SUGAR SYRUP
Feed for bees, containing sucrose or table (cane) sugar and hot water in various ratios.

SUPER
A receptacle in which bees store honey; usually placed over or above the brood nest; so called brood supers contain brood.

SUPERING
The act of placing honey supers on a colony in expectation of a honey flow.

SUPERSEDURE
Rearing a new queen to replace the mother queen in the same hive; shortly after the daughter queen begins to lay eggs, the mother queen disappears.

SURPLUS HONEY
Any extra honey removed by the beekeeper, over and above what the bees require for their own use, such as winter food stores.

SWARM
A collection of bees, containing at least one queen that split apart from the mother colony to establish a new one; a natural method of propagation of honey bees.

SWARM CELL
Queen cells usually found on the bottom of the combs before swarming.

SWARMING
The natural method of propagation of the honey bee colony.

SWARMING SEASON
The time of year, usually mid-summer, when swarms usually issue.

TERRAMYCIN
an antibiotic used to prevent American and European foulbrood. See Oxytetracycline.

TESTED QUEEN
A queen whose progeny shows she has mated with a drone of her own race and has other qualities which would make her a good colony mother.

THIN SUPER FOUNDATION
A comb foundation used for comb honey or chunk honey production which is thinner than that used for brood rearing.

THORAX
The central region of an insect to which the wings and legs are attached.

TOP BAR
The top part of a frame.

TRANSFERRING
The process of changing bees and combs from common boxes to movable frame hives.

TRAVEL STAINS
The darkened appearance on the surface of honeycomb caused by bees walking over its surface.

UNCAPPING KNIFE
A knife used to shave off the cappings of sealed honey prior to extraction; hot water, steam or electricity can heat the knives.

UNCAPPING TANK
A container over which frames of honey are uncapped; usually strains out the honey which is then collected.

UNFERTILIZED
An ovum or egg, which has not been united with the sperm.

UNITING
Combining two or more colonies to form a larger colony

VARROA JACOBSONI
An external mite parasite on honeybees.

VEIL
A protective netting that covers the face and neck; allows ventilation, easy movement and good vision.

VENOM ALLERGY
A condition in which a person, when stung, may experience a variety of symp toms ranging from a mild rash or itchiness to anaphylactic shock. A person who is stung and experiences abnormal symptoms should consult a physician before working bees again.

.....to be continued