Value Addition and Marketing of NTFPs (Animal Origin): Wild Bee Keeping and Processing

PROGRESS REPORT

(05-27 December, 2019)

ENVIS Centre on Himalayan Ecology

G.B. Pant National Institute of Himalayan Environment

Kosi-Katarmal, Almora (Uttarakhand)

Submitted to

ENVIS Secretariat

Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India

Banner for Wild Bee Keeping and Processing

Content

Background

Mountain farmers in Uttarakhand are facing extreme difficulties in meeting their basic needs because of meager opportunities to engage youth in respectable employment. Traditionally rural communities were engaged in agriculture, animal husbandry (including bee keeping), and other allied sectors. These occupations are gradually weakening because of increasing input costs and low returns, changing socio-economic demographics and polity. Efforts of developing innovative livelihoods for the region have achieved little success so far with sporadic individual's examples thriving on their own capacities, capital and physical assets, therefore not up-taken and up scaled by the masses. Secondly, industrial outreach to this area has many economic impediments and ecological implications. However, with the advent of scientific and technological expertise, scope for diversification for improved income flow has opened new avenues of developing sustained livelihoods.

Historically, among the traditional occupations in Uttarakhand, bee keeping or apiculture is perhaps the most promising sector. This is a promising venture for rural income that can be diversified and substantially improved, considering its i): low cost investment module, ii): diversity of products (honey, bee wax, propolis, royal jelly and bee venom), iii): less gestation period in terms of return flow, iv): economic and ecological benefits (improved fruit and seed set via pollination) and v): less stakeholders in value chain from production to end users. In addition, besides the carpentry work for making modern bee hives, it also offers business opportunities, like renting colonies for crop pollination (as evidenced in Himachal, Jammu and Kashmir and Uttarakhand during apple bloom) and making of value added products from bee hive products.

Despite the numerous benefits and technological advancements in apiculture sector, bee keeping has remained a traditional activity in this region and did not flourished and evolved to its full potential yet. It has been observed that bee keepers (here usually farmers), still prefer traditional wall hives over modern bee hives despite low qualitative produce and high mortality of broods. Likewise, technical know how of bee management in modern bee hives is relatively lacking, like maintaining colony strength, colony division, inspection of diseases, pest and predators, seasonal foraging requirement, and many more particularly related to extraction of different honey types (unifloral and multifloral) and other hive products.

Considering the above following (i): diversity of topography, climate and floral resources (ii): knowledge base of traditional bee keeping, (iii): impediments of promoting migratory bee keeping, (iv): scope of skilling the farmers for adapting more profitable modern bee keeping practices, (v): potential of turning bee keeping enterprise into a viable commercial activity, a comprehensive schedule for strengthening capacities for beekeepers was designed (Annex-1), which covered various onscreen and

off screen deliberations/ demonstrations and hands-on trainings in the field conditions on diverse aspects of traditional and advanced beekeeping including recent technologies of honey extraction and processing.

Objective of the course

To overall objective of the course was to develop skills of the trainees in various aspects of bee keeping (see the course module), so that the trainees could uptake the learning's of the course for creating their choice of niche, either as an enterprise or could become a part of beekeeping value chain/ business.

Approach and Methodology

While submitting the proposal for the GSDP course on Value Addition and Marketing of NTFPs (Animal Origin): Wild Bee Keeping and Processing, all possible venues and institutions were explored in advance as per the modules designed for course implementation. However, institutions were formally contacted soon after receiving the approval and grant from the Ministry concerned.

Considering the expertise and long history of promoting apiculture in the region, mainly, two institutions of Uttrakhand, State Apiary Board Jeolikote, District Nainital and Directorate of Extension Education, G. B. Pant University of Agriculture and Technology, District Udam Singh Nagar were approached and subsequently brought to an agreement after detailed discussions on course modules and negotiations on logistics and facilities. The accepted GSDP course module was shared with the above institutions for further exploring their expertise and facilities to do necessary alignments and to propose the duration for the course execution. Consequently on receiving their proposal and course curriculums (Annex II and Annex III), two sub sets of one week and ten days course deliberations were finalized for SAB Jeolikote and GBPUAT, Udam Singh Nagar, respectively.

In addition to the above, expertise of the host institute GBPNIHE, Vivekananda Parvatiya Krishi Anushandhan Sansthan (VPKAS), and Society for people's Action and Rural Development in Himalayan Area (Spardha) were also put into the loop for technical deliberations, hands-on and exposure to the trainees. Likewise, exposure visits to nearby progressive farmers who were already doing bee keeping in their area were also considered to make the course package complete.

Finally, considering the low uptake of course learning's into practice, provisioning of a complete bee hive (hive with bees) to all the trainees was also budgeted, so that they can start Bee Keeping immediately after completing the training course in their own villages.

Advertisement, Course modules and selection of Trainees

The certificate course on Value Addition and Marketing of NTFPs (Animal Origin): Wild Bee Keeping and Processing was advertised on GSDP web portal and local print media by ENVIS centre on Himalayan Ecology, GBPNIHE. Based on qualification criteria 15 applicant trainees were selected for the course. Formal (email) and informal (telephonic as well as what's app message) communications were made to ensure participation of the trainees. Following are the shortlisted trainees for the Course (**Table. 2**).

Table. 1- Training modules of the course

Days (1 day = 8-10hour	Session Modules/ Course Module
Unit 1. Animal based NTFP Management (Common Module)	
Day 1-7	Opening – introduction, expectations, and objectives
	Introduction to NTFPs- Resources, potential in economy and livelihood generation
	Conservation awareness and approaches
	Indigenous traditional knowledge and its role in NTFP management
	Sustainable and harvesting: Principle and practices
	Intellectual property rights and the patent regime
	Understanding of NTFP market dynamics
Unit 2. History of Beekeeping in Himalaya, Life cycle and Morphology (Theory)	
Day 8-9	Introduction to beekeeping/apiculture – Importance, status, and challenges
	Bee species in the Himalayas – Characteristics and conservation
	Life cycle of honey bee
	Morphology and work division in honey bee colony
Day 10-11	Observational tour -visit to State Apiary Board (SAB), Jeolikote, Nainital, Uttarakhand
	Beehives types
	Colony inspection (queen, new queen cell formation, fertilized virgin, queen mating, drone, etc
	Annual colony cycle (swarm colony and natural colony)
	Swarming and absconding
	Queen less colony control and apply of queen cell, control of worker laying, etc.
Unit 4. Bee hive Management (Theory and practical)	
Day 12-15	Methods of modifying traditional hives into modern hives
	Transferring bees from a traditional hive to a movable frame hive
	Site selection
	Bee colony migration

	Artificial diet , comb foundation and management
	Type and uses of grafting equipment
	Artificial queen rearing, etc.
	Seasonal management-(drone control, swarm control and queen control, rainy season, etc)
	Honeybee diseases, malnutrition, and mortality
	Bee parasite, pests and disease management
Day 16-17	Honey bees and agriculture
	Management of honey bees and other wild bees
	Forage vegetation/ crops for honey bees
	Dearth period; growth period; honey flow period
	Herbarium collection and preservation
	Calendar development on bee flora
	Pesticide poisoning and integrated pest management
Unit-6. Marketing aspects and Entrepreneurship awareness	
Day 18-19	Honey and other hive products value chain and market management
	Beekeeping as an enterprise and institutional development
	Bee hive carpentry
	Equipments used in bee keeping
	Honey production, harvesting, processing, storage, and use
Unit 7. Awareness on Institutional support , Resources and Opportunities available	
Day 20	Exposure to GB Pant Agriculture University
	Knowledge on supporting agencies-KVK, NABARD, DICC, SIDBI, MSME, Banks, etc.
Day 21	Interactions with successful bee keepers
	Exposure to indigenous practices and management
	Demonstration of flow hive and equipments
Day 22	Record and book keeping
	Achievement motivation training
	Examination and result
	Feedback
Unit 10. Valedictory	
Day 23	Closing ceremony
	Participants/group presentation and way forward
	Certificate distribution and incentives (Modern bee hives one with bees one without bees)
Total Hours	**200**

Table. 2- List of selected candidates for wild beekeeping and processing GSDP course

S. No.	Name of Trainee	Gender/ Category	Date of birth	Qualification	Unique ID	Mobile no./ E-mail	Address
1	Suraj Arya	M/ SC	15/06/ 1997	Bachelors	Sura15061997	9917914081 Surajarya862@gmail.com	Vill-Matena P.O.- Deenapani, Almora, Uttarakhand
2	Rohit Singh Mehra	M/ Gen	01/04/ 1999	Bachelors	Rohi01041999	7351202042 Rohitmehra3273@gmail.com	Vill-Gadholi P.O.- Deenapani Almora, Uttarakhand
3	Subham Bhakuni	M/ Gen	01/07/ 1995	Bachelors	SUBH01071995	9536255015 subhambhakuni52@gmail.com	Vill-Hadoli Post –Bhansori, Almora, Uttarakhand
4	Gokul Singh Rana	M/ Gen	30/01/ 1986	Masters	Goku30011986	9837131402 Gokulrana08@gmail.com	Vill- Dwarson Post-Dwarson – Almora, Uttarakhand
5	Harsh Singh Dangwal	M/ Gen	03/08/ 1953	Bachelors	Hars03081953	7417369500 dangwal@rediffmail.com	Vill- Sunkiya, PO-Bheteliya, Nainital, Uttarakhand
6	Devi Datt Kuniyal	M/ Gen	04/03/ 1963	Intermediate	Devi04031963	8006192601 maheshlyf87@gmail.com	Village Jawahar Nagar, DF Nagla U.S. Nagar, Uttarakhand
7	Gaurav Kumar	M/ SC	15/01/ 1998	Intermediate	Gaur15011998	7351909969 irish.ksp@gmail.com	Hemapur Ismile Himmatpur Ward C Near Bazpur Road Kashipur US Nagar, Uttarakhand
8	Dharam Datt Bhatt	M/ Gen	03/04/ 1964	Intermediate	Dhar03041964	9759995915	Vill- Narayan Bagard, Chamoli, Uttarakhand
9	Shubham Singh Bisht	M/ Gen	06/06/ 2001	Bachelors	Shub06062001	7251816130 shubhambisht898@gmail.com	Postoffice line Gangolihat, Pithoragarh, Uttarakhand
10	Manoj Singh	M/ OBC	10/05/ 1992	Bachelors	Mano10051992	7900887858	Vill- Khetbharar, P.O Bansbagarh, Pithoragarh, Uttarakhand
11	Virendra Kumar	M/ SC	14/07/ 1999	Intermediate	Vire14071999	9690635416 Veerukaliaash63@gmail.com	Vill- Bhounakpur PO Krimcha Mailak Rampur Uttar Pradesh
12	Mohan Singh	M/ Gen	10/08/ 1976	Eighth Pass	Moha10081967	9756677117	Vill & PO- Nakholi, Thrali Chamoli, Uttarakhand

13	Diwan Singh Bisht (Drop out)	M/ Gen	15/12/ 1959	M.Sc.	Diwa15121959	9411322613	47 Anand lok colony Devalehar kham PO manpur west Rampur Road Haldwani distt Nainital
14	Priyanka Pant (Drop out)	F/ Gen	08/09/ 1995	Bachelors	Priy08091995	9627785457	Haldwani, Nainital, Uttarakhand

Trainee's Profile

The profile of trainees revealed representation of five districts of Uttarakhand, namely, Almora (06), Nainital(02), Udam Singh Nager (04), Pithoragarh (02) and Chamoli (01), whereas category profile revealed representation of three groups, General(11), Scheduled caste(03), and Other Backward Class (01). As far as the gender representation is concerned only one female trainee attended the course, who however left in between because of some personal reasons. Considering the depth of course module there are 23 resource person selected

Table. 3- Resource person list for wild beekeeping and processing GSDP course

S. No.	Resource Person/ Expert/Instructor Name with Designation	Centre Name	Mobile Number	Email ID
1.	Dr. G.C.S. Negi Scientist-G, Coordinator ENVIS	GBPNIHE, Almora, Uttarakhand	9411105170	negigcs@gmail.com
2.	Mr. P.S. Kanwal	State Apiary Board, Jeolikoat	9410381943	Kanwal.@gmail.com
3.	Mr. Govind Ballabh Pathak	State Apiary Board, Jeolikoat	9410171137	
4.	Mr. Yashoda Rawat	State Apiary Board, Jeolikoat	8954989753	Negiyashoda19@gmail.com
5.	Mr. H.C. Tewari	State Apiary Board, Jeolikoat	9412436222	
6.	Mr. J.C. Bhatt		9456340278	
7.	Mr. Himanshu Jeena	State Apiary Board, Jeolikoat	8859418744	himanshujeens426@gmail.com
8.	Mr. Sanjay Joshi	Chetnya Monalay	9412134920	Sanjos1979@gmail.com
9.	Mr. Prem Ballabh Pandey	Dhari Almora	9997255937	
10.	Mr. Bashnat Pandey	Dhari Almora	9997552814	
11.	Dr. Ravindra Joshi Freelance Fauna Expert	Almora, Uttarakhand	9456105533	rhinoraboo@yahoo.com
12.	Dr. Pramod Mall	GB Pant Agriculture Institute Pantnagar, U.S. Nagar	9456345516	drmall722000@gmail.com
13.	Dr. M.S. Khan	GB Pant Agriculture Institute Pantnagar, U.S. Nagar	7500241513	sarfrazms65@yahoo.co.in
14.	Dr. J.P. Purwar	GB Pant Agriculture Institute Pantnagar, U.S. Nagar	9411324356	jppurwar@gamil.com

15.	Dr. Ruchira Tiwari	GB Pant Agriculture Institute Pantnagar, U.S. Nagar	9411006092	ruchis03@rediffmail.com
16.	Dr. Renu Pandey	GB Pant Agriculture Institute Pantnagar, U.S. Nagar	9873239377	renu.pandey17@gmail.com
17.	Mr. Durgesh Shukla (Research Shukla)	GB Pant Agriculture Institute Pantnagar, U.S. Nagar	9915691610	durgeshshukla0000786@gmail.com
18.	Dr. Arns Subbanna	VPKAS, Hawalbagh, Almora	9639175431	subbanna.ento@gmail.com
19.	Mr. J.P. Gupta	VPKAS, Hawalbagh, Almora	9451761932	guptajp80@gmail.com
20.	Dr. Mahesha Nand Programme Officer	ENVIS, GBPNIHE, Almora, Uttarakhand	9627785457	maheshlyf87@gmail.com
21.	Mr. Vipin Chandra Sharma Information Officer	ENVIS, GBPNIHE, Almora, Uttarakhand	9720335427	deepudun28@gmail.com
22.	Dr. Pradeep Singh, Research Scholar	GBPNIHE, Almora, Uttarakhand	8126230214	pradeep23mehta@gmail.com
23.	Vijay Singh Bisht	GBPNIHE, Almora, Uttarakhand	8979001275	vijays290@gmail.com

Launching of GSDP course

Programme schedule of the launch of the training course

10:00-10:20 AM	Registration	ENVIS Centre
10:20 -10:30 AM	Lighting of Lamp	Director, GBPNIHE& Guests on Dias
10:30-10:40 AM	Welcome Address	Dr. R.S. Rawal Director, GBPNIHE
10.40-10.50 AM	About GSDP Course	Dr. G.C.S. Negi Coordinator ENVIS, GBPNIHE
10.50-11:00 AM	Introduction of Trainees	
11:00-11.10 AM	Experience sharing by Resource Persons	
11.10 - 11.20 AM	Address by Senior Entomologist, Government Bee Keeping Centre, Jeolikote, Nainital	Mr. H.C. Tiwari, Sr. Entomologist & Incharge Scientist
11.20-11.30 AM	Address by Chief Guest	Mr. Manuj Goyal Chief Development Officer, Almora
11.30-11.40 AM	Release of ENVIS Publications	By Guests on Dias
11:40-11:50 AM	Felicitation of Guests	Director, GBPNIHE
11.50 AM	Vote of Thanks	Dr. Mahesha Nand ENVIS, GBPNIHE
11.50 AM	Inaugural Tea	
12:00-1.00 PM	Introduction to NTFPs-Resources, economic potential and livelihood generation (NILC)	Dr. G.C.S. Negi Coordinator ENVIS
1.00 PM	Lunch	
2:00-5:00 PM	Institute Laboratory, RTC and Surya Kunj Visit	Dr. Harshit Pant, Scientist-B GBPNIHE
Rapporteurs	Dr. Ravindra Joshi, Fauna Expert Dr. Mahesha Nand, ENVIS	

Day 1(5 December 2019)

Session - 1

Inauguration of Value Addition and Marketing of NTFPs (Animal Origin): Wild Bee Keeping and Processing

Expert and chief guest

Mr. Manuj Giyal, Chief Development Officer, Almora
Mr. H.C. Tiwari, Senior Entomologist, Government Beekeeping Centre, Jeolikote, Nainital
Dr. R. S. Rawal, Director, GBPNIHE, Kosi-Katarmal, Almora
Dr. G.C.S. Negi, Coordinator ENVIS, GBPNIHE, Almora
Dr. R.C. Sundriyal, Centre Head CSED, GBPNIHE, Kosi-Katarmal, Almora
Dr. J. C. Kuniyal, Centre Head CEA&CC, GBPNIHE, Kosi-Katarmal, Almora

Inaugural session

The lighting of the lamp ceremony was followed by the welcome address by Dr. R.S. Rawal, Director, and GBPNIHE. Addressing the gathering Dr. Rawal highlighted the scope of bee keeping in creating livelihood opportunities for diversification of income avenues as well as in achieving good agriculture yield by way of ensuring pollination services around their farmyards. He appealed the trainees to explore beyond the tangible and immediate benefits (i.e. honey) of bee keeping in the region to harness the unseen, unexplored and likely benefits of the beautiful business of apiculture. Following, the Directors address, Dr. G.C.S. Negi, Scientist G, & ENVIS Coordinator, GBPNIHE through a Power Point presentation deliberated on the overarching objectives of the GSDP in creating livelihoods opportunities in different environmental sectors. He informed the gathering about the previous GSDP courses held in 2018-19 organized by the ENVIS centre. He also said that the course was formulated considering the bee potential of the region while having a informal discussion with the ENVIS Secretariat during the review of the first phase of GSDP in 2018-2019.

Following the remarks of ENVIS Coordinator, the trainees of the course introducted themselves briefly citing background, present working profile and purpose of selecting the course for skill development.

Thereafter, Mr. H.C. Tiwari, Senior Entomologist, Government Bee Keeping Centre, Jelolikote, Nainital addressed the trainees. He focuses on various aspects of bee keeping and told that the course has genuine scope of income generation if the steps and procedures are followed scientifically and religiously. He said, it is perhaps the only low - cost investment enterprise where returns are visible in shortest period of two years. He expressed that the trainees would learn much more while they visit the State Apiary Board, Jeolikote during the course tenure and have extensive deliberations and hands-on by the expert.

In succession to Mr. Tiwari, Dr. R.C. Sundriyal, Centre Head CSED, and Dr. J. C. Kuniyal, Centre Head CEA&CC, of GBPNIHE, Kosi-Katarmal, Almora shared their experiences of Sikkim and Himachal Pradesh, respectively and highlighted the scope of renting bee hives for crop pollination , especially of apple and other pomes fruits.

Concluding the Session in his address Chief Guest Mr, Manuj Goel, Chief Development Officer (CDO), Almora expressed happiness over inviting him for the launch event. He said he didn't know much about beekeeping much before, but learned many things today related with bee keeping. Emphasizing the demography of the region he said, although bee keeping promises scope and opportunities for many aspirants, yet for poor and marginalized sections of the society, the investment of even few thousands is a distant dream. Emphasizing further, he stated the need to reorient the scientific research to come with low cost bee hive structures so that poorest of the society can also be benefitted. He also stressed the need to translate scientific findings and course material in easy and bilingual format for improved outreach and up-scaling. Sharing his contact details at the end of his remarks, Mr Manuj Goel, CDO Almora extended his

full cooperation and help to avail benefits of different government schemes available with line agencies for the promotion of bee keeping in the district.

After the address, the ENVIS newsletter on previous GSDP courses (*Nature Conservation and Livehood: Nature Interpretation*) was released by the Chief guest and others followed by felicitations of guests by the Director of the Institute. Finally, the inaugural session was concluded with the vote of thanks by Dr. Mahesha Nand, Programme Officer of the ENVIS centre.

Glimpses of inaugural session

Session-2

Post lunch session

To impart the understanding of trainees for various Non Timber Forest Produce (NTFPs) and their potential in harnessing economic benefits, one onscreen deliberation was made by ENVIS Coordinator Dr. GCS Negi on Introduction to NTFPs- Resources, economic potential and livelihood generation at the Nature Interpretation and Learning Centre (NILC) of the Institute. The deliberation was focused on various NTFPs of plant as well as animal origin (honey, lac, silk, tussar & eri silk, etc.).

At the end of day, the trainees visited the Institute premises, and Rural Technology Centre (RTC) of the Institute, where they were exposed to various Himalayan rural technologies by Dr. Harshit Pant, Scientist-B GBPNIHE and her team. It included demonstrations on low-cost cooling chamber, bamboo made poly houses, pine bio-briquettes, pine cone artifacts, pine paper making unit, different types of compost making, integrated fish farming, mushroom cultivation, handicraft and off-season vegetable cultivation and others.

Photos of Rural Technology Centre (RTC) visit

Day 2 (6 December 2019)

Session-1

Departure from Institute Visit to State Apiary Board, Jeolikote, Nainital

Expert

Mr. P.S Kanwal, SRA, State Apiary Board Jeolikote, Nainital

Session-2

Visit to State Apiary Board, Jeolokiote, Nainital

The team of trainees visited the State Apiary Board, Jeolokiote, Nainital for a one week course tenure. The team reached SAB in the late hours of the post lunch session after a tedious and long journey across the mountainous terrain. On reaching the venue, the team first had lunch and thereafter went through the registration process. After formal introduction the team attended deliberations on ancient and traditional bee keeping; evolution of beekeeping and Contemporary Scientific beekeeping by P.S Kanwal, SRA, State Apiary Board Jeolikote.

Day 3 (7 December 2019)

Session-1

Exposure Visit and Hands on Training

Expert

Mr. Govind Pathak , Ret. SRA, State Apiary Board Jeolikote, Nainital

Ms. Yashoda Rawat, SRA, State Apiary Board Jeolikote, Nainital

Exposure visit , hands-on by Mr. Govind Pathak

On the third day of the course, the team visited to the house of Mr. Govind Pathak, an ex faculty of SAB for hands-on understanding of the colony structure of *Apis cerana* and its behaviour. Mr. Pathak, who after his retirement pursued his interest of *Apis cerana* bee keeping in his farmyard deliberated enthusiastically on the colony structure by showing the distinctive morphological features of queen, workers and drones to each participants. Explaining further on the behviour, he said being indigenous to the India, *Apis cerana* is one of the most adapted bees to our environmental and ecological setups, therefore less likely to be looked after than the European bee species *Apis mellifera*. In addition, while showing his hives, he deliberated upon many more interesting facts about the Indian bee.

Session-2

Deliberation by Ms. Yashoda Rawat

During the post lunch session, Ms. Yashoda Rawat, SRA, SAB through an onscreen presentation deliberated upon different bee hive products, such as honey, propolis, pollen bread, royal jelly, bee venom, etc. Citing example of Sherpur village, popularly known as honey gram (as 50-60 families are involved in bee keeping business), she linked beekeeping with other the benefits like, crop pollination. Focusing on the bee keeping economics she revealed the pros and cons of both *A. indica* and *A. mellifera* and suggested outmost care of species selection for starting beekeeping in their respective regions. Concluding her deliberation, she said beekeeping business could yield desirable income, if efforts are put in place to improve consumption awareness of honey in India. She said presently, the awareness level is quite low despite numerous known benefits, thus making it less lucrative business because of low demand in the domestic market.

Day 4 (8 December 2019)

Session-1

Bee Keeping Carpentry

Expert

Mr. Vinod Kumar, State Apiary Board Jeolikote, Nainital

Mr. HC Tewari, Senior Entomologist, State Apiary Board Jeolikote, Nainital

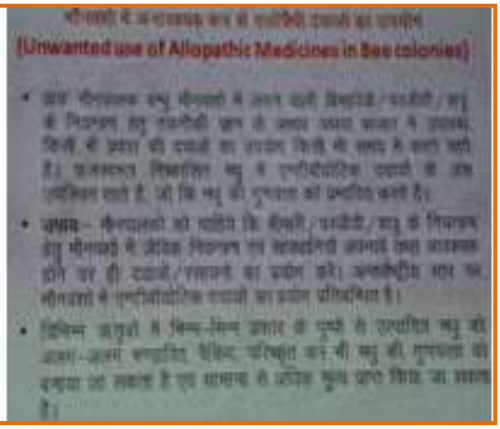
On screen deliberation and hands-on on Bee hive carpentry by Mr. Vinod Kumar

Fourth day of the course was exclusively devoted on bee hive carpentry. Terming bee hive a important subsidiary of bee keeping business Mr. Vinod provided every detail of preparing bee hives for both *A. indica* and *A. mellifera*. Showing pictorial images of hives, he deliberated keenly on measurements details, gaps between the frames, bee space principle, different parts of hives (bottom, brood chambers, and super/honey chambers), preferred wood types, life span and cost involved in hive making. Soon after the deliberation, Mr. Vinod provided hands-on bee hive making in the SAB workshop, where he showed the use of different equipments and machinery used in hive carpentry to the trainees. Focusing on the scientific bee keeping and showing a modified wall hive, he said traditional wall hives can also be fitted with modern bee frames and similarly modified into modern hives for minimizing the brood mortality and to get much purer honey.

Session-2

Deliberation by Mr H.C. Tiwari, Head SAB and Senior Entomologist

In the post lunch session, an onscreen deliberation was present by, Mr HC Tiwari, Head and Senior Entomologist of SAB. Deliberating on the historical background of the centre he revealed that the modern *A. cerana* hive was developed at Jeolikote center and also previously known as Jeolikote villager. Focusing on the scientific methods of selective queen breeding, bee hive management, and improved yield with pollination of crops, he said, beekeeping can be a great tool for Sankalp to Sidhi mission Govt. of India of doubling the farm income by 2022.



Day 5 (9 December 2019)

Session-1

Exposure Visit of to Pt. Rajendra Prasad Muttu Museum

Visit of to mushroom centre

Expert

P.S Kanwal, SRA, State Apiary Board Jeolikote, Nainital

Mr. JC Bhatt Mushroom cultivation and training centre, Jeolikote, Nainital

Visit to Pt. Rajendra Prasad Muttu Museum

On the fifth day the trainees visited the Pt. Rajendra Prasad Muttu Museum at SAB to get familiarize with the history and

evolution of modern beekeeping in the India. The visit was lead by Mr PS Kanwal, SRA, SAB. During the visit the trainees were exposed to different types of hives, bee keeping equipments, beekeeping products, different unifloral and multifloral honey types, various models and charts showing morphology and anatomy of queen, workers and drones, and many more interesting things. The excursion was quite useful for the trainees in furtherance of their understanding for beekeeping.

Session-2

Visit of to mushroom centre

During the second half the trainees also visited the adjoining Indo-Dutch mushroom centre, where, the centre in-charge on request organized a training capsule (comprises of an interaction and exposure visit) on mushroom cultivation for the trainees. The interaction was quite useful as it provided additional learning on a quite a new aspect of farm income diversification.

Day 6 (10 December 2019)

Session-1

Valedictory, Certificate distribution

Cleanliness drive

Visit to Chaitanya Apiary and GBPUAT

Expert

Mr. HC Tewari, Senior Entomologist, State Apiary Board Jeolikote, Nainital

P.S Kanwal, SRA, State Apiary Board Jeolikote, Nainital

Mr. Vinod Kumar, State Apiary Board Jeolikote, Nainital

Ms. Yasodha Rawat, SRA, State Apiary Board Jeolikote, Nainital

Valedictory, Certificate distribution, Cleanliness drive, visit to Chaitanya Apiary and GBPUAT

On the final day, the trainees attended the valedictory session where a Course Certificate of SAB (Govt. of Uttarakhand) on Bee

keeping was distributed to all the trainees. The course certificate would help the trainees to avail all the schemes of the SAB centre in future, especially to get equipments and hives in subsidized rates. Thereafter, an extensive cleanliness drive was organized around the SAB campus and the connecting road to it. The trainees collected all the non-biodegradable waste and disposed them properly in the nearby trash bin of the Jeolikote town.

Session-2

Visit to Chaitanya Apiary and GBPUAT

After then the trainees along with SAB,s Ms. Yashoda Rawat departed to Dewalchaur, Haldwani at Chaitantya Apiary, a known beekeeping commercial enterprise owed by Mr. Sanjay Joshi. With formal introduction formalities, Mr. Joshi first showed an apiary of *Apis mellifera* and deliberated extensively on his journey from a struggling youth to establishing his beekeeping enterprise. He then motivated the trainees to open the hives of European honey bees and urged the trainees, especially the novice ones to shed their inhibitions and fears to get connected with the bees. In progression, he then led the team to another apiary of *A. cerana*, where he explained the difference between European and Indian bees by pointing out minute details of behavioral response while the bees were experiencing interruption by human presence. Explaining the importance of enterprise sustainability he stated reasons of setting apiaries of both the bee species. Lastly he shared his contact details for any kind of assistance in near future. After the visit the team reached GBPUAT, Pantnagar in the evening and readied themselves for next day.

Day 7 to Day 16 (11 December to 20 December 2019)

Livelihood diversification

Swarming behavior of Bee

Types of Bee species

Techniques of modifying wall hive in modern hive

Techniques of Beehive management

Pesticide poisoning on Bees

Hands on training on Artificial Queen rearing

Cleanliness drive

Valedictory & Certificate distribution

Expert

Dr. Pramod Mall, Professor & Head of the Entomology, GBPUAT, U.S. Nagar

Dr. Ruchira Tiwari, Assistant Professor, Entomology. GBPUAT, U.S. Nagar

Dr. M.S. Khan Professor, GBPUAT, U.S. Nagar

Dr. J.P. Purwar Associate Professor, GBPUAT, U.S. Nagar

Dr. Renu Pandey Assistant Professor, GBPUAT, U.S. Nagar

Day- 7, Session-1

Livelihood diversification

On day seven the trainees were once again enrolled by Directorate of Extension Education at GBPUAT. After formal introduction of the trainees Dr. Pramod Mall, Professor and Head of the Entomology Department deliberated extensively on various

aspects of beekeeping enterprises for generating employment as well as livelihood diversification. Sharing his experiences with the trainees he said, besides the usual perceived benefit of a bee hive i.e. honey, one can harness numerous other benefits by establishing a commercially viable apiary. Interacting with the trainees, he stated that the selling of bee frames, colonies and hives; renting colonies for crop pollination; extraction of other bee hive products like; beewax, and pollen bread are some immediate profit making avenues, whereas other hive products like propolis, royal jelly and bee venom which appeared to be more lucrative can also be harnessed while up scaling and achieving expertise.

Session-2

Swarming behavior of Bee

Continuing the interaction with the trainees, Dr. Promod Mall deliberated upon swarming behaviour of a bee hive. He said bees usually left a hive in two conditions either favourable or adverse. During favourable conditions when the hive is overcrowded, a swarm accompanied by a newly emerged bee left the hive to established a new colony, whereas in adverse conditions the entire swarm abscond the hive and moves to new and safer place. Furthering the discussion, he said traditionally a beekeeper is after a swarm, which left the hive during favorable conditions to colonies and establish a new hive, which is rather a cumbersome approach and depends often on chance and luck. Elaborating on the bee management techniques, he said continuous observations are very crucial like, noticing the overcrowding of a hive and development of queen cells for proper management and colony division before bee swarm naturally.

Day- 8, Session-1

Types of Bee species

During the post-lunch session another faculty of GBPUAT, Professor M.S. Khan interacted with the trainees on management of different bee species. He took all the trainees to a nearby apiary where he showed hives of European honey bee, *Apis mellifera* and discussed its structure in detail. Elaborating on different cells of a

brood frame he showed empty cells for egg laying, brood cells where eggs are already deposited, fresh honey cells, ripened honey cells etc. Answering queries of the trainees, he said harvesting honey from *Apis dorsata* and *Apis florea* is also feasible, yet a risky business therefore, require expertise and proper safety measures. Thereafter, showing the hives of *A. dorsata* (Giant honey bee) and *Apis florea* (Little bee) he deliberated on the behavioral difference between the all *Apis* species. He said while the Indian and European bees prefer dark close areas to establish a hive, the other two species, the Giant and Little bees prefer open and lighted areas, therefore difficult to manage and domesticate. He said although the honey production potential of *Apis dorsata* is quite higher than all other *Apis* species , yet because of its violent behavior and hive location (preferably higher on tree branches) honey extraction from its hives remain a traditional activity. Finally deliberating on Little bee, he said, *A. florea*, prefers lower elevation areas and establishes its hive close to the ground and because of very low honey production (despite being considered medicinal), it also remains a amateur and traditional activity.

Session-2

Techniques of modifying wall hive in modern hive

The session started with onscreen presentation on techniques of modifying wall hive in to modern beehive by Dr. Pramod Mall, Professor/Head, Entomology Department, Pant Nagar Agriculture University. Sharing his experiences across different Himalayan states he said provisioning of bee frames and making a traditional wall hive similar to modern bee hive is one of the easiest way to improve honey quality, which otherwise is always a mix of bee eggs, larvae and wax. He said installing movable frames not only improves monitoring of hives but also significantly reduces mortality of bee broods. He said wall hives could also be used as donor colony to create new hives or to revive a queen-less hive, however require due consideration, like timing when brood numbers are higher, preferably from November-March; structure and composition of bee hive, it should always be double wall Jyolikote hive and made of non-smelly (no plywood); location with good, warm and cozy conditions; nearly provisioning of water but no humid conditions; directions of entrance either east or south facing; handling of queen (thorax region, sprinkling of water, clipping of forewing); wire positioning less windy conditions and soaring temperature, with important while transferring bee from wall hives sit e selection is a critical process for setting an apiary.

Day- 9, Session-1 & 2

Techniques of Beehive management

Thereafter, the trainees attended a onscreen deliberation on colony division, artificial queen rearing and indigenous techniques of beehive management (Cow urine and local herbs) by Dr. Ruchira Tiwari, Assistant Professor, Entomology Department, Pant Nagar Agriculture University. During her deliberation she enthusiastically revealed methods of colony division before a colony is about to swarm. Revealing about the importance of selecting a robust bee hive, identifying the developing queen cell, precautions during establishing a queen cell (queen cage method) she discussed in detail about the precautions to be taken in advance to do successful colony division and establishing a new hive. Secondly, she deliberated upon methods of preparing artificial queen rearing cells not only for a queen less colony but also for the extraction of the royal jelly, the most precious hive product. Addressing the queries of trainees, she stated that the commercial extraction of royal jelly in India is in a nascent stage, but has a promising potential as some commercial apiaries has started its extraction. Continuing the deliberation, she finally revealed about some scientifically tested indigenous and traditional methods of bee hive management, especially to control some pathogenic infections of a hive with the steadily use of cow urine and local herbs.

Day- 10, Session-1& 2

Field demonstration and deliberations on wild bees (Dammer, Giant and Little Bee)

The day ten was exclusively devoted to field demonstration and deliberations on wild bee species, the Indian stingless bee or Dammer bee, *Tetragonula irridipendis* by Dr. Ms Khan Professor, Entomology Department, Pant Nagar Agriculture University. Showing his experimental site, Professor Khan deliberated in detail about the behavior, colony structure, and many other interesting details about the Dammer bee, the smallest of all bees seen by the participants. Further revealing about the commercial value he said the bee is responsible for pollination of variety of plants which are often not visited by large size bees. Owning to this virtue honey produced by them although in very small quantity is considered of premium medicinal value and relished by connoisseurs in lieu of handsome remunerations.

In addition to the Dammer bee, Dr. Khan also deliberated on two other honey producing *Apis* species, namely *Apis florea* and *Apis dorsata*. Showing nest of both the species he provided intricate details of the comb structures, honey producing capacities, behavior and nesting requirements. Concluding the hands-on, Mr. Khan said although the

attempts have been made to domesticate the species, yet little and no success has been achieved to put them into the boxes.

Day- 11, Session-1& 2

Exposure visits to Farmers Field School

On day 11, and an exposure visit on farmers field school of agriculture subsidiaries was organized, where participants were exposed to various agricultural technologies adopted by farmers of Tarai region as means of income diversification, reducing labour inputs and sustaining livelihoods. The participants visited farms of Shri D.D. Kuniyal And Shri Dharam Dutt Bhatt who after completing their services in Indian armed forces started agriculture and gradually incorporated various rural technologies to increase their farm income. It is very interesting to mention that the both the farmers have also enrolled themselves for the course to further diversify their agriculture. Revealing their journey as an agriculturist both the participants interestingly revealed that although they were apprehensive about the success because of the small landholdings they bought with the retirement money, yet they were very optimist because of their past training and always open to new ideas. Showing their little interventions, they explained how the interventions have eased their life, improved family income and provided a fulfilling satisfaction. The intervention included dairy farming, plantation of fodder species, Cow dung gas plant, fodder cutting machines and others. Sharing their experiences they told it is always much satisfying to be a owner of less giving avenue than to earn better in someone's ownership. Concluding their statement they said, there is no short cut to success and to achieve it, sincere and consistent efforts are required with patience and perseverance.

Day- 12, Session-1

Deliberations on enterprise and institutional development, pesticide poisoning and apiary management

On day 12, an informative deliberation on enterprise and institutional development was given by Dr. Pramod Mall, Professor&Head, Entomology Department, Pant Nagar Agriculture University. Emphasizing on the requirements of a bee keeping enterprise, he said an interested individual should have a minimum of two bee hives and few empty hives and keep learning and experimenting with the

techniques bee hives management and propagation. He said after acquiring knowledge and getting familiarize with bee behaviour and hive management techniques one should think of furtherance and upsacling of beekeeping into development of an apiary. He said despite the availability of attractive and easy subsidized government schemes, one should not opt for them at the initial stage because of likely setbacks. Thereafter, considering the background of the participants, Prof. Mall deliberated on cost benefit analysis and pro- and -cons of developing hives of *Apis cerana* and *A. mellifera* and suggested recommendations for both the terai and hilly regions of the Uttarakhand state.

Pesticide poisoning on Bees

Continuing the session another faculty of GBPUAT, Dr. J.P. Purwar interacted with the participants with his presentation on Pesticide poisoning and integrated development. During the session Dr. Purwar focused on the indiscriminate use of cidal chemicals on agricultural crops which along with harmful pest species also negatively impacts diversity of the beneficial insect groups. Citing some examples of harmful pesticides, especially, neonicotinoids he said application of pesticides application should be done with proper assessment and recommendation instead of copying others as an essential agriculture input. He said beside being a major cause of insect mortality, pesticides also contribute to behavioural change, colony disruption, and absconding, thus depriving farms of pollinators. Concluding his interaction, Dr. Purwar said, application of pesticides during flowering of crops should be avoided because of likelihood of honey contamination and falling short of qualitative standard parameters.

Session-2

During the post lunch session the participants had an interaction with Dr. Renu Pandey, who intensively deliberated on apiary management. During the deliberation she emphasized the need to have knowledge of important bee flora of the region, so that year-round availability of forage would be ensured either through agricultural maneuvering or undertaking migration. She said an apiarist should develop a calendar keeping in view their regional flora and identify the resource rich and dearth months to timely undertake appropriate measures. She said although providing readymade sugar syrups (in varying concentrations for different seasons) are recommended as a survival tactic to sustain a bee hive not as a long - term solution.

Day- 13, Session-1& 2

Exposure visit on backyard bee keeping and bee breeding

On day 13 an exposure visit on backyard bee keeping was organized where participants got an opportunity to interact with Mr. Vikramjeet Singh, owner of the Randhawana Bee Breeding Centre at Dineshpur (Uttarakhand). The team was led by Dr. Ruchira Tiwari of GBPUAT. On reaching the centre and the team was welcomed family members of Mr. Singh where after having formal introduction, Mr. Singh revealed his journey from a novice beekeeper to establishing his enterprise as Bee Breeding centre. Showing his backyard setup, he said after being into honey business for almost a decade he learned many techniques of apiary management and colony division from his own experience and various supporting institutions, especially GBPUAT. He said that sale from honey and other hive products was limited, therefore started to explore and try other subsidiaries to upscale and improve his income resources. He said establishing a bee breeding centre was not a new idea but innovative in many sense as bee keepers here were usually concerned with sale of honey and bee hives. Showing his apiary he said the centre outsourced empty bee empty hives and resale them with filled bee frames. He said participants should learn all aspects of bee keeping and experiment themselves to harness all possible benefits from a bee hive.

Day- 14, Session-1& 2

Practical Demonstration on Artificial Queen rearing

On day 14, the theoretical learning of day 9 by Dr. Renu Pandey on artificial queen rearing was experimented by participants at the bee keeping research premises. The session was coordinated by Dr. Pramod, Dr. Renu Pandey and researchers of the centre. During the session, the coordinator's team created a mock drill where participants developed a wooden tool for themselves and learned the ways of preparing an artificial queen cell with bee wax. During the

session participants made several attemptes to make a perfect sized artificial queen cell. Later on while stating the importance of practice and patience the experts examined the samples and appreciated the zeal and efforts of the participants.

Day- 15, Session-1& 2

Exposure on various bee keeping tools and cleanliness drive

On the final day of training at GBPUAT, participants were exposed to various tools used in bee keeping. The session was deliberated by Dr. Pramod Mall and his team of researchers. Showing various tools in beekeeping Dr. Mall emphasized the importance of getting familiarize with the basic know - how and equipments frequently used in bee keeping, like, smoker, bee veil, queen gate, queen cage, mittens, honey extractor, wax sheet, pollen trap, pollen tray, etc. Concluding the session he said understanding bee keeping is a learning process and exploring, experimenting with scientific principles could fetch unexpected results, only if continued with full dedication, perseverance, and self belief in oneself. Aligning the training with Swach Bharat mission of GOI, a cleanliness drive was organized in the second half of the session around the premises of the training centre. During the cleanliness drive all kinds of non-biodegradable waste (plastic wrappers, bottles, polythene bags, sachets, etc.) were collected and disposed of properly in the nearby dustbins.

Day- 16, Session-1& 2

Certificate Distribution at GBPUAT, Pant Nagar, U.S. Nagar

The training at GBPUAT was completed on day 16 of the GSDP schedule with the organisation of a valedictory function during the pre lunch session. The session was chaired by Dr. Vir Singh, Dr. SK Bansal of GPUAT and ENVIS Coordinator Dr GCS Negi, who shared many instances of experiential learning and cases of success stories to motivate the participants. They said success has no short cuts,

therefore, participants should initially apply the acquired learning and wisdom into practice with minimum possible investment and subsequently with gaining experience and confidence should upscale their plans for establishing an apiary unit. They said initiating bee keeping not only fetch them additional or full time income but they could also develop a sense of pride by way of contributing towards biodiversity conservation and supporting pollination and subsequently field of crop and farmers income.



Day 17- 19 (20- 22 December 2019)

Visit to village Dhari village

Exposure visit to SPARDHA NGO

Lecture on Waste management

Expert

Mr. Prem Ballabh Pandey, Bee keeper, Dhari

Mr. Deep Chandra Bisht, SPARDHA NGO, Almora

Er. Himanshu Joshi, Almora

Day- 17, Session-1& 2

Visit to village Dhari

After the return from GBPUAT, participants visited to Dhari, a typical mid Himalayan village with terraced agriculture in Pine forest dominated subtropical zone. The visit was envisaged so that participants could relate with their surroundings as well as most of the participants are from hilly regions of the Uttrakhand state. On reaching Dhari, trainees visited to house of Mr. Prem Ballabh Pandey, a progressive farmer who has been doing bee keeping for more than two decades. Interacting with the

participants, Mr. Pandey shared his journey from being a high school drop out to a successful farmer. He said, he realized very early in his youth that with agriculture alone and limited landholding it would not be possible to sustain and support a happy family life, therefore whenever he received any technical support he whole-heartedly accepted and applied for diversifying his farmland income. Showing both, traditional wall hives and modern bee hives of Indian honey bee, he deliberated extensively on various bee aspects like, behavior, benefits, market value, predators, remedies, seasonal bee forage and others.

Day- 18, Session-1& 2

Exposure visit to SPARDHA NGO

On day 18, the trainees visited to SPARDHA NGO at Patal Devi, Industrial area Almora for demonstration on honey processing unit and marketing of bee hive products. Interacting with the trainees, Mr. Deepak deliberated extensively on the honey value chain. Citing the collecting mechanism and challenges of collecting honey from distant rural locations, he said that there always remain a huge gap in honey supply because of lesser availability, thus it becomes difficult to run the unit in its full potential. He said that promoting house hold bee keeping in hills would be a good option for diversifying farm income and to ensure availability of good quality honey for high end consumers. In addition to the demonstration of unit Mr. Bisht gave an interactive presentation on *Apis cerana* bee keeping and addressed the queries of trainees.

Day- 19, Session-1& 2

Deliberation on waste management

As per the directives of Swachh Bharat Mission, Ministry of Jal Shakti, GOI, a mandatory discourse on 'waste management' was organized on day 19 of the GSDP course. Interacting participants with an onscreen presentation, Er. Himanshu Joshi, B.Tech Civil of BPJKS (Bashundhara Paryavaran Avum Jan Kalyan Samiti), Almora deliberated extensively waste and its management. The presentation included definition of waste; differentiation of waste and by product; factors affecting waste generation; classification of solid waste; outlining necessity and activities associated with efficacious waste management; waste management hierarchy

and its components; integrated waste management; techniques of domestic and municipal waste management (reuse, repurposing, recycling, recovery, disposal); concept of waste to energy and wealth and attitude building and behavioral change.

Day 20- 21 (23- 24 December 2019)

All Trainees prepared their progress report, data compilation, PPTs and feed back of the centre from day 20-21.



Day 20 (25 December 2019)

Valedictory & Certificate Distribution

Day-20

Valedictory and Certificate distribution

To commemorate the completion of GSDP on Wild Bee keeping and Processing, a ceremonial valedictory was organized at the open auditorium facility of the GBPNIHE at the Surya-kunj facility. The session was jointly chaired by institute Director Dr. R.S Rawal and District Horticulture Officer, Almora, Mr T.N. Pandey. At the beginning of the session, welcoming the chair, institute faculty and researchers, Dr. G.C.S. Negi ENVIS Head and Coordinator gave detailed outline of the course, methodology, approach and achievement of the course. Continuing the session, he thereafter invited course trainees for brief introduction and sharing their learning and experiences.

Expressing happiness over the course trainees reflections, Director of the institute, Dr. Rawal gave meaningful insights to the participants by citing examples from his own learning and outcomes of the Global Pollination Project. He said that bee keeping is perhaps the most desirable and low investment rural technology that need to be uptake and upscale for meaningful livelihood. He said the spirit of trainees is quite satisfying as they have explored the diverse aspects of bee keeping which could assist the trainees to look beyond traditional thinking of honey business only. He said reflections like bee tourism is quite innovative and success of such idea is awaited for further documentation and promotion.

Addressing the participants, Mr. TN Pandey, DHO Almora expressed happiness over inviting him for the valedictory session of the GSDP. He said the initiative of GOI to create self employment through GSDP courses has adequate potential for self employment as trainees could now explore and avail many government schemes related for the promotion of bee keeping and allied activities like, floriculture, off season vegetable cultivation, orchard development . Sharing his contact details he said willing candidates can approach him directly for any kind of assistance to avail schemes and benefit themselves and other by setting success stories.

Reflections of the Trainees

- Trainees considered the course very informative and productive in terms of diversifying their skills.
- Trainees said the GSDP course has comprehensively enhanced their understanding of doing bee keeping as they were unknown earlier of various other hive products, such as propolis, bee pollen, royal jelly, etc which could also be harnessed at least for personal use initially and later on for commercial purposes.
- Trainees revealed that they could do species level differentiation of honey producing *Apis* species.
- Trainees were delighted to reveal that avenues like, renting colonies for crop pollination, hive carpentry, sale of either bee frames or complete hives could also be renumerative.
- Trainees said that unnecessary fear of getting attacked/bitten by bee sting while in close proximity of a hive diminished completely with the periodic exposure visits and hands on.
- Trainees said the exposure and hands during the course also helped them in getting familiarise with ground realities of the bee keeping business.
- Trainees said that the first excitement of touching/exploring a bee filled frame to locate queen and drones could also be tapped of commercial gains from the tourist.
- Trainees said instead of selling honey various herbal concoctions with a tinge honey could also fetch higher monetary gains.

Media Coverage

हिन्दुस्तान 10

हल्द्वानी • शनिवार • 14 दिसंबर 2019

पंतनगर में मौन पालन प्रशिक्षण

पंतनगर। वन पर्यावरण एवं जलवायु परिवर्तन मंत्रालय के इनविस सचिवालय द्वारा संचालित हरित कौशल विकास कार्यक्रम के तहत गोविन्द बल्लभ पंत राष्ट्रीय हिमालयी पर्यावरण संस्थान कोसी कटारमल, अल्मोड़ा के इनविस केन्द्र द्वारा चलाये जा रहे 23 दिवसीय प्रशिक्षण कार्यक्रम वन्य मौन पालन एंव प्रसंस्करण विषय पर दिसम्बर माह के पहले सप्ताह से 27 दिसम्बर तक चलाया जायेगा। इसके दूसरे चरण में 10 दिवसीय प्रशिक्षण कार्यक्रम पंतनगर विवि में शुरू होगा। पहले दिन प्रशिक्षण प्रभारी डा. एसके बंसल द्वारा विवि में प्रशिक्षण की विषयवस्तु के बारे में जानकारी दी गई। इस दौरान विवि के डा. प्रमोद मल्ल, डा. एमएस खान व डा. जेएस पुरूवर आदि मौजूद रहे।

दैनिक जागरण हल्द्वानी, 15 दिसंबर 2019 8

मौन पालन की वैज्ञानिक तकनीक बताई

अल्मोड़ा : मौन पालन की तकनीक, उनके व्यवहार व वंश वृद्धि कर स्वरोजगार से जोड़ने को विशेषज्ञों ने ग्रामीणों को प्रेरित किया। बताया कि मौन पालन के जरिये वह आर्थिकी मजबूत कर सकते हैं। वन पर्यावरण एवं जलवायु परिवर्तन मंत्रालय (भारत सरकार) की पहल पर हरित कौशल विकास कार्यक्रम के तहत जीबी पंत राष्ट्रीय हिमालयी पर्यावरण शोध एवं सतत विकास संस्थान कोसी कटारमल के इनविस केंद्र में 23 दिवसीय प्रशिक्षण कार्यक्रम हुए।

उत्तर उजाला 4

नैनीताल, शनिवार 14 दिसम्बर, 2019

किसानों को दिया जा रहा मौन पालन का प्रशिक्षण

वैज्ञानिक विधि के फायदे बताए

पंतनगर। वन पर्यावरण एवं जलवायु परिवर्तन मंत्रालय के इनविस सचिवालय द्वारा संचालित हरित कौशल विकास कार्यक्रम के तहत गोविन्द बल्लभ पंत राष्ट्रीय हिमालयी पर्यावरण संस्थान कोसी कटारमल, अल्मोड़ा के इनविस केन्द्र द्वारा चलाये जा रहे 23 दिवसीय प्रशिक्षण कार्यक्रम 27 दिसम्बर तक चलाया जायेगा। इसके दूसरे चरण में 10 दिवसीय प्रशिक्षण कार्यक्रम पंत विश्वविद्यालय में शुरू होगा।

पहले दिन प्रशिक्षण प्रभारी डा. एसके बंसल द्वारा विश्वविद्यालय में प्रशिक्षण की विषयवस्तु के बारे में जानकारी दी गई। प्रशिक्षण के दौरान विश्वविद्यालय के मौन विशेषज्ञों डा. प्रमोद माल, डा. एमएस खान व डा. जेएस पुरुवर आदि ने मौन पालन के इतिहास, मौनगृह के प्रकार, मौनों के जीवनचक्र, हिमालयी क्षेत्रों में मधुमक्खियों, कृत्रिम रानी मक्खी पालन, कीटनाशकों का प्रभाव आदि महत्वपूर्ण जानकारियों प्रशिक्षणार्थियों को प्रदान की गयी।

उन्होंने वर्तमान में मौन पालन से होने वाली दिक्कतों के विषय में बताते हुए कहा कि वैज्ञानिक विधि द्वारा मौन पालन से रोजगार बढ़ाया जा सकता है। उन्होंने बताया कि पर्यावरण प्रभावित होने से किस प्रकार हिमालयी एवं मैदानी क्षेत्रों में इनकी संख्या में कमी आयी है। कार्यक्रम में डा. रविन्द्र जोशी तथा इनविस केन्द्र के डा. महेशानन्द, विपिन शर्मा व विजय सिंह बिष्ट ने भी प्रशिक्षणार्थियों का उत्साहवर्धन किया।

राष्ट्रीय सहारा (देहरादून)
21 दिसम्बर 2019 पृ०-7

मौनपालन पर दी जानकारी

पंतनगर। पर्यावरण एवं जलवायु परिवर्तन मंत्रालय द्वारा संचालित हरित कौशल विकास के अंतर्गत राष्ट्रीय हिमालयी पर्यावरण संस्थान कोसी कटारमल के इनविस केंद्र द्वारा चलाए जा रहे वन्य मौनपालन एवं प्रसंस्करण विषयक 10 दिवसीय प्रशिक्षण कार्यक्रम पंतनगर विवि में कराया जा रहा है। प्रशिक्षण के दौरान पंतनगर विवि के मौन विशेषज्ञों डॉ. प्रमोद मल्ल, डॉ. एमएस खान, डॉ. जेएस पुरुवार, डॉ रेनू पांडे, डॉ. संगीता तिवारी आदि ने मौनपालन के इतिहास, मौनगृह के प्रकार, मौनों के जीवनचक्र, हिमालयी क्षेत्रों के मधुमक्खियों, कृत्रिम रानी मक्खी पालन, कीटनाशक का प्रभाव आदि महत्वपूर्ण जानकारियां प्रशिक्षणार्थियों को दी। कार्यक्रम का संचालन डी शर्मा एवं डी मोहन सिंह द्वारा किया गया। पादो पर्यावरण संस्थान के निदेशक डॉ आरएस रावल एवं इनविस केंद्र के समन्वयक डॉ. जीएस नेगी सहित डॉ. महेशानन्द, विपिन शर्मा एवं विजय सिंह बिष्ट आदि मौजूद थे।

उत्तर उजाला
नैनीताल, गुरुवार 26 दिसम्बर, 2019 7

मौन पालन प्रशिक्षण सम्पन्न

उत्तर उजाला ब्यूरो

अल्मोड़ा। वन, पर्यावरण एवं जलवायु परिवर्तन मंत्रालय के इनविस सचिवालय द्वारा संचालित 23 दिवसीय हरित कौशल विकास कार्यक्रम गोविंद बल्लभ पंत राष्ट्रीय हिमालयी पर्यावरण संस्थान कोसी कटारमल में संपन्न हो गया। इनविस केंद्र द्वारा मौन पालन एवं प्रसंस्करण विषय पर दिसंबर माह में चलाये प्रशिक्षण कार्यक्रम के समापन पर मंगलवार को संस्थान के निदेशक डॉ. आरएस रावल एवं जिला उद्यान अधिकारी टीएन पांडे ने प्रशिक्षणार्थियों को प्रमाण पत्र वितरित किये। यह प्रशिक्षण कार्यक्रम राजकीय मौनपालन केन्द्र ज्योलीकोट एवं गोविंद बल्लभ पंत कृषि विश्वविद्यालय पंतनगर में संस्थान के इनविस टीम द्वारा संचालित किया गया। प्रशिक्षणार्थियों को विषय विशेषज्ञों ने मौनपालन के इतिहास, मौनगृह के प्रकार, मौनों के जीवनचक्र, हिमालयी क्षेत्रों की मधुमक्खियों आदि के बारे में जानकारी दी। जीबी भट्ट और जीबी कृत्रियात ने प्रशिक्षणार्थियों को मौन पालन की स्कीमों के बारे में जानकारी दी। पंतनगर विश्वविद्यालय की प्रो. रेनू पाण्डे आदि ने कीटनाशकों, धुंए और अन्य पर्यावरणीय घटकों का मौन पालन पर पड़ने वाले प्रभावों के बारे में जानकारी दी। कार्यक्रम समन्वयक एवं संस्थान के इनविस केन्द्र के प्रभारी डॉ. गिरीश चंगेरी ने प्रशिक्षण कार्यक्रम की आख्या प्रस्तुत की। इस अवसर पर डॉ. आईवी भट्ट, डॉ. रविंद्र जोशी, इनविस केन्द्र के डॉ. महेशानंद, विपिन शर्मा एवं विजय सिंह बिष्ट, प्रदीप सिंह, सुमन किरौला एवं संस्थान के शोधार्थी आदि मौजूद रहे।

हिन्दुस्तान हल्द्वानी

25 दिसंबर 2019 • 04

मौन प्रशिक्षण का समापन

अल्मोड़ा। जीबी पंत राष्ट्रीय हिमालयी पर्यावरण एवं सतत विकास संस्थान कोसी-कटारमल के राष्ट्रीय हिमालयी अध्ययन मिशन एवं इन हाउस परियोजना के तहत हवालबाग विकासखंड के 11 गांवों के 30 से अधिक काश्तकारों का मधुमक्खी पालन प्रशिक्षण कार्यक्रम संस्थान के ग्रामीण तकनीकी परिसर कोसी में मंगलवार को संपन्न हुआ।

कार्यक्रम की अध्यक्षता संस्थान के निदेशक डा.आरएस रावल व जिला उद्यान अधिकारी टीएन पांडे ने संयुक्त रूप में की। कार्यक्रम का संचालन डा.नेगी ने किया। कार्यक्रम में मुख्य अतिथि तथा संस्थान के निदेशक डा.आरएस रावल द्वारा सभी काश्तकारों को सार्टिफिकेट प्रदान किये गये।

6 दैनिक जागरण हल्द्वानी, 25 दिसंबर 2019

सौगात | हरित कौशल विकास के तहत दिया प्रशिक्षण

पलायन रोकने में मददगार साबित होगा मौन पालन

मंगलवार को गोविंद बल्लभ पंत राष्ट्रीय हिमालयी पर्यावरण संस्थान में मौन पालन के बारे में प्रतिभागियों को जानकारी दी गई • जागरण

संवाद सहयोगी, अल्मोड़ा : गोविंद बल्लभ पंत राष्ट्रीय हिमालयी पर्यावरण संस्थान कोसी कटारमल में हरित कौशल विकास कार्यक्रम का आयोजन किया गया। इसमें प्रदेश के सात जिलों से आए पंद्रह प्रशिक्षणार्थियों ने हिस्सा लिया। इस दौरान विशेषज्ञों ने मौनपालन के संबंध में जानकारी दी।

23 दिवसीय प्रशिक्षण कार्यक्रम में वन्य मौनपालन एवं प्रसंस्करण विषय पर विशेषज्ञों ने मौनपालन के इतिहास, मौनगृह के प्रकार, मौनों के जीवन चक्र, हिमालयी क्षेत्रों की मधुमक्खियां, कृत्रिम रानी मक्खी पालन, कीटनाशक का प्रभाव आदि की विस्तृत जानकारी दी। वहीं मौन पालन में उपयोग होने वाले उपकरणों, रानी मक्खी को पकड़ने व संरक्षित रखने, शहद एकत्र करने की तकनीक को बताया। जिला उद्यान अधिकारी टीएन पांडे ने कहा कि मौन पालन कृषकों की आय दोगुनी करने और उत्तराखंड में पलायन को रोकने में उपयोगी सिद्ध होगा। प्रशिक्षणार्थियों को क्षेत्र भ्रमण भी कराया गया। इस दौरान मौन पालन कर रहे प्रेम बल्लभ पांडे ने मौनपालन की तकनीकों को बताया। डॉ. प्रमोद माल द्वारा प्रतिभागियों को प्रशिक्षण दिया गया। समापन अवसर पर निदेशक डॉ. आरएस रावल ने प्रशिक्षणार्थियों को प्रमाण पत्र वितरित किए। इस दौरान पंतनगर विश्वविद्यालय की प्रो. रेनू पांडे, प्रो. जोशी पुरस्कार, प्रो. एमएस खान, डॉ. आईवी भट्ट, डॉ. आरसी सुंदरियाल, कोट विशेषज्ञ डॉ. रविंद्र जोशी, इनविस केंद्र प्रभारी डॉ. गिरीश चंगेरी, के डॉ. महेशानंद, डॉ. रविंद्र जोशी, विपिन शर्मा एवं विजय सिंह बिष्ट, प्रदीप सिंह, सुमन किरौला एवं संस्थान के शोधार्थी आदि मौजूद रहे।

Outcomes

- प्रशिक्षणार्थी प्रमाण पत्र के द्वारा यदि मौनपालन व्यवसाय हेतु ऋण लेते है तो उत्तराखण्ड सरकार द्वारा 80 प्रतिशत तक की आर्थिक छूट दी जाती है।
- उत्तराखण्ड सरकार द्वारा चलायी जा रही मौनपालन व्यवसायिक परियोजनाओं में इन प्रशिणार्थियों को वरियता दी जायेगी।

Bee Boxes Distribution- After completed the training of Bee keeping, we are distributed the bee boxes of all trainee to start the bee business in initial phase. Some trainee start their bee business and multiple their box into two and more boxes and also give training to other peoples of their village and other area.




Special issue of Newsletter

- All articles were written by GSDP trainees on Value Addition and Marketing of NTFPs (Animal Origin): Wild Bee Keeping and Processing on following topics.
- One Honey box (Beehive) was provided for each trainees for initiation of the business.

Topics	GSDP trainees/ Resource Persons
उत्तराखण्ड में मौनपालन द्वारा आर्थिक समृद्धि की संभावना	दीप चन्द्र बिष्ट, मुकेश देवराड़ी, देवेन्द सिंह चौहान, कैलाश रौतेला, राजू काण्डपाल (रिसोर्स पर्सन)
प्रतिकूल ऋतुओं में मौनवशों का प्रबन्धन	दीप चन्द्र बिष्ट
मधुमक्खी का इतिहास एवं मानव हेतु योगदान	हर्ष सिंह डंगवाल
मौनपालन व्यवसाय हेतु महत्वपूर्ण सावधानियाँ	देवी दत्त कुनियाल एवं धर्म दत्त भट्ट
मधुमक्खियों की प्रजातियां एवं विशेषताएं	मनोज भण्डारी,
मौनपालन– मूल्य संर्वधन एवं विपणन	गोकुल सिंह राना
मधुमक्खियों का परिवार एवं जीवन चक्र	शुभम सिंह बिष्ट एवं रोहित बिष्ट
मधुमक्खियों में होने वाली सामान्य बिमारियां एवं उपचार	शुभम भाकुनी एवं सूरज आर्या

Success story/ Placement Status

S.No	Name	Current Organisation	Designation	E-mail ID
1.	Harsh Singh Dangwal	Organic Producer Group (Organic Vegetables) Lakshmi Udyan Sawyam Sahayata Group, Sunkya (Fruits Production)	Manager	dangwal@rediffmail.com
2.	Manoj Singh	Trivani Sangam Fedration	Farmer	-
3.	Shubham Singh Bisht	Higher Education from Kumaun University		shubhambisht898@gmail.com
4.	Virendra Kumar	Progressive Bee keeper	Farmer	veerukaliaash63@gmail.com
5.	Dharam Datt Bhatt	Progressive Bee keeper	Farmer	-
6.	Mohan Singh	Retired Army Person	Farmer	-
7.	Gaurav Kumar	Framnet Biotech Organization	Farmer	irish.ksp@gmail.com
8.	Devi Datt Kuniyal		Farmer	maheshlyf87@gmail.com
9.	Gokul Singh Rana	Aajivika Organization, Almora, Progressive Bee keeper	Team leader	gokulrana08@gmail.com
10.	Subham Bhakuni	Prabhu G Sugandh Enterprises(Gulab jal Production)	Self Employement	subhambhakuni512@gmail.com
11.	Suraj Arya	Running his Own Restaurant	Self Employment	surajarya862@gmail.com
12.	Rohit Singh Mehra	-	-	rohitmehra3273@gmail.com

Acknowledgment

- ENVIS Secretariat, Ministry of Environment, Forest & Climate Change, Govt of India, New Delhi
- Director, G.B. Pant National Institute of Himalayan Environment, Kosi- katarmal, Almora
- Chief Development Officer, Almora (Govt. of Uttarakhand)
- Director, Extension, Education & Research & Faculty, GBPUAT, Pantnagar
- District Horticulture Officer, Almora (Govt. of Uttarakhand)
- Director & Faculty, ICAR-VPKAS, Almora
- Officer In charge, State Apiary Board, Jeolikote, Nainital (Govt. of Uttarakhand)
- Dr. Ravindra Joshi, Wild life Expert, Almora
- Er. Himanshu Joshi, Almora
- Mr. Prem Ballabh Pandey, Dhari, Almora
- ENVIS Coordinator (Dr. G.C.S. Negi Scientist 'G' & Head) & ENVIS Team (Dr. Mahesha Nand, Mr. Vipin Chandra Sharma, Mr. Satish Sinha & Mr. Vijay Singh Bisht) G.B. Pant National Institute of Himalayan Environment, Kosi- katarmal, Almora

GSDP Flyer

Green Skill Development Programme (GSDP)

Importance of Skilling India's Youth

India's youthful manpower, a result of the demographic dividend, need to be provided with skills and ability to tackle global challenges. The more we give importance to skill development the more competent youth will be. It is important to predict the possibilities of the future, and prepare for them today itself. We have to make India the skill capital of the world.

Shri Narendra Modi, Prime Minister of India

To protect the environmental right of our future generations, all of us have a green social responsibility. The fast evolving and emerging technologies in dynamic world to combat the menace of environmental degradation need to be complemented by specially trained and skilled manpower in various field at all levels. Imparting skill sets for greener transformation will generate employment opportunities and strengthen our resolve to conserve and preserve the priceless environment.

Dr. Harsh Vardhan, Minister, Environment, Forest and Climate Change

Background

India being the second most populous country in the world is bestowed with a large working population. India has advantage of reaping this demographic dividend. However, high drop-out rates from school coupled with poor vocational skills may hinder in reaping this dividend. There exists a demand supply gap of skill sets, both cognitive and practical, at various levels in the Environment/ Forest fields in India

Opportunities

The candidates completing the Course(s) may be employed gainfully in the zoos/wildlife sanctuaries/national parks/ biosphere reserves/ Botanical Gardens/Nurseries/wetland sites/ State Biodiversity Boards/Biodiversity Management Committees/Wildlife Crime Control Bureau; industries (involved in production/ manufacturing of green products, as ETP operator); tourism (as Nature/Eco-tourist Guides), agriculture (as organic farmers/ green practitioners), education & research sectors as well as engage in waste management (in Municipal Corporations/ Councils/Urban Local bodies to advise on how to improve sewage, sanitation, land use services/ tackle pollution), water management, construction related areas, etc. Some of the courses enable the candidates to become self-employed.

Achievements

The first GSDP course was formulated for skilling Biodiversity Conservationists (Basic Course) and Para-taxonomists (Advance Course) of 3 months duration each, on a pilot basis in ten select districts of the country (covering nine bio-geographic regions). 94 Trainees successfully completed the basic course qualifying as skilled Biodiversity Conservationists and 152 Trainees completed the Advanced Course qualifying as skilled Para-taxonomists. BSI and ZSI were the nodal Centres for the pilot programme.

For further details:

ENVIS Secretariat
Ministry of Environment, Forest & Climate Change (MoEF&CC)
New Delhi- 110 003

ENVIS Flyer

ENVIS CENTRE ON HIMALAYAN ECOLOGY

G.B. Pant National Institute of Himalayan Environment & Sustainable Development

(An Autonomous Institute of the Ministry of Environment, Forest & Climate Change, Govt. of India)
Kosi-Katarmal, Almora - 263 643, Uttarakhand, India

Background

ENVIS Centre on Himalayan Ecology at the G.B. Pant National Institute of Himalayan Environment & Sustainable Development (GBPNIHESD) was established in 1992-93 with the financial support from the Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India, New Delhi.

Mandate

To spread environmental awareness and help Research and Development (R&D) in the areas related to Himalayan Ecology

Objectives

- To collect, compile and process information on different aspects of Himalayan Ecology.
- To disseminate available information to various stakeholders through electronic and print media.
- To develop, up-grade and maintain ENVIS website.

STATE AT A GLANCE

Indian Himalayan Region

- ISSN : 2455-8133 (Online)
- Open Access
- 12 Issues (since 2014)

Himachal Pradesh, Arunachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand, Nagaland, Mizoram, Manipur, Meghalaya, Tripura, Assam Hills & West Bengal Hills

More Information
http://gbpihedenvis.nic.in/State_at_Glance.html

ENVIS Bulletin

HIMALAYAN ECOLOGY

- ISSN : 0971-7447 (Print)
- ISSN: 2455-6815 (Online)
- Annual Publication
- Open Access
- 25 Volumes (since 1993)

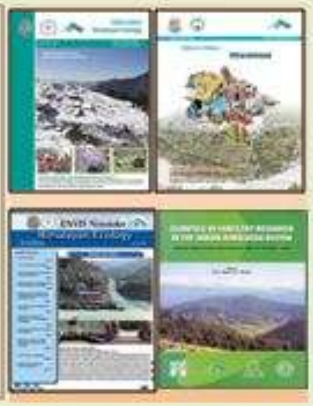
More Information
http://gbpihedenvis.nic.in/Envis_bulletin.html

ENVIS Newsletter

HIMALAYAN ECOLOGY

- ISSN : 2277-9000 (Print)
- ISSN: 2455-6823 (Online)
- Quarterly Publication
- Open Access
- 14 Volumes (since 2004)

More information
http://gbpihedenvis.nic.in/Envis_Newsletter.html



Coverage and Indexing of ENVIS Bulletin & Newsletter

Himalayan Database

Indian Himalayan States

- Social Profile (Demography, Literacy, Birth Rate, etc.)
- Educational Infrastructure (Universities, Schools, etc.)
- Health & Family Welfare (Hospitals, Blood Banks, etc.)
- Climate (Rainfall, Temperature, etc.)
- Land (Classification, Area, Wasteland, etc.)
- Water (Glaciers, Lakes, etc.)
- Agriculture (Area, Yield, Irrigation, Growth rates, etc.)
- Horticulture (Area, Production, Productivity, etc.)
- Livestock (Number, Production, etc.)
- Forest & Protected Area (Area, Cover, etc.)
- Minerals and Petroleum (Production, Reporting Mines, etc.)
- Industry (Industrial Estate, Area, Setup, Tourism, etc.)
- Road and Transport (Length of Roads, National Highways, etc.)
- Miscellaneous (Registered Newspaper, Post Offices, etc.)

Web Directory of various Govt. Offices/ Organizations

Weather data

- Different meteorological Stations of the Institute

Academic data

- Experts, Ph.D. Theses, Research Abstracts, Books, etc.

Biodiversity

- Medicinal Plants, RET species, Protected Area Networks, etc.

Books/ Reports/Documents on IHR

News Clippings:

- Convention on Biological Diversity (CBD) news
- News Articles (Daily news papers in Hindi & English)

Facilities and Other Services

ENVIS Library, Kids Corner, Glossary, Frequently Asked Questions (FAQs), Updates of Media Coverage, upcoming Events, E-section, Himalayan Initiatives Information (Himalayan Young Researchers' Forum, Himalayan Popular Lecture Series), other organizations, E- Alert services, Facebook, etc.

Contact us: Coordinator, ENVIS Centre on Himalayan Ecology
Phone: +91-05962-241024, Email: gbpihed@envis.nic.in, Web: http://gbpihedenvis.nic.in
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