A Report

Training Programme

On

Capacity Building on Promoting Bee keeping for Livelihood Generation
Amongst Self Help Groups of Distt. Mandi, Himachal Pradesh

ICFRE-HFRI, Shimla and JICA, State Forest Department, Himachal Pradesh organized three-days (4-6 January, 2024) training workshop on capacity building for promoting beekeeping for livelihood generation among the Self-Help Groups of District Mandi, Himachal Pradesh at Nehri (District Mandi, Himachal Pradesh) in which 34 participants from 3 forest ranges i.e. Jhungi, Kangu and Jayadevi and 6 self-help groups were participated. Main objective of this training program was to sensitize people towards alternative source of income through beekeeping.

DAY ONE (4/1/2024)

Dr. Pawan Kumar, Scientist-F, Training Coordinator started the proceedings of the first day by welcoming the Chief Guest and participants. He formally welcomed all the participants along with other officers and officials of JICA and State Forest Department and explained about the main objective of the training programme. Through his presentation he also informed the participants about the major achievements of the Institute and the varieties and products released by the Institute. He talked about the role of pesticides in the decline in population of native bee species. He lays emphasis on conservation of native honey bee species.

Sh. Ved Prakash Pathania DFO (Retd) Suket and JICA consultant formally welcomed all the participants and said that this training will help in the pollinators conservation through sensitizing peoples about the factors responsible for their decline. He also said that peoples will be befitted by earning good amount of money through marketing of honey and other important bee products. He said that this particular area is rich in natural vegetation which is definitely beneficial for beekeeping and farmers can benefit from their services. He is of the view point that during the training programme hands on training of handling of bee colony will be provided to participants and after completion of this training programme bee boxes will be distributed amongst the participants.
Dr. Sandeep Sharma, Chief Guest and Director, ICFRE- Himalayan Forest Research Institute, Shimla, in his inaugural address said that this special area is rich in medicinal plants and herbs, hence if people engage in beekeeping, it will be of great benefit to them. It will be beneficial to get the higher price price of their honey and other produce from bee colony. He said that apart from honey production, bee conservation can also be done for pollination services. He also laid emphasis on marketing of bee products like pollen, wax etc. He also explained about the conservation of bees in different seasons of the year. He concluded his talk by emphasizing on improving livelihood generation through beekeeping.

Dr. Jagdish Singh Scientist and Head Extension Division ICFRE HFRI Shimla in his opening remarks informed the participants about the role of agroforestry in improving the livelihood of farmers. He said that farmers can grow medicinal plants among their apples and other horticulture plants, this will help them in getting higher prices of medicinal plants besides fair horticulture produce. So by doing this it is possible to increase their economic condition of the local people also.

Inaugural session ended with vote of thanks by Dr. Pawan Kumar, Scientist –F, who proposed formal vote of thanks on this occasion. He specially thanked Chief Guest Dr. Sandeep Sharma for sparing his valuable time and gracing the occasion as Chief Guest of the Inaugural Session. He formally thanked Sh. Ved Prakash Pathania, DFO (Retd.) Suket Forest Division, Dr. Jagdish Singh, Dr. Vijay Singh and all the participants. He also extend his vote of thanks to JICA for sponsoring the training programme.

During the Technical Session of first day, Dr. Pawan Kumar, Scientist- F, HFRI, presented the diseases of bee colony and their eco-friendly solutions. He also talked about the economic importance of honey bee species, further he made the participants aware about the types of bee species and also
talked about *Apis mellifera* and *Apis cerana indica*. He further describes honey bee diseases causing agents like Protozoan -Nosema, Amoebic, Bacterial- American and, European Foul brood, Fungal - Chalk brood, Stone brood, Viral -Thai sac brood, Acute and Chronic bee paralysis. Diseases caused by Mites viz. Acarosis (Tracheal mite) and Varroasis (*Varroa* mite) Disorder- Colony Collapse Disorders (CCD). Talking about diseases caused by mites i.e. Acarosis also known as Acarine disease, he said that it is caused by honey bee tracheal mite, *Acarapis woodi*, a small parasitic mite. It affects mostly the trachea and body fluid. He further explained disease caused by *varroa* mites and said that *Varroa* reproduce on honey bee pupae and feed on bee hemolymph. *Varroa* are also known to carry and vector bee viruses that are particularly damaging to the bees. *Varroa* infestations can cause irreversible damage to honey bees that can lead to honey bee colony loss. Talking about the Nosema disease in honey bees he said that they infects the intestinal tract of adult bees. It is a serious adult disease, further talking on Symptoms he said that Bees become dysenteric with distended abdomen with faeces.

Sh. Ved Prakash Pathania, DFO (Retd.) Suket Forest Division & JICA Consultant in his talk explained about the various schemes operated through JICA projects and he also told the participants how progressive farmers can benefit through these livelihood schemes for their economic upliftment. He further said that these bees are ray of hope for the society and people can earn handsome amount of money through selling honey and other bee products. He also presented data on various schemes run through JICA like mushroom cultivation, Knitting and crafting, products making from pine needles and said that we have organized groups viz., VFDS like Shradha, Radha Krishan, Saraswati, Dev Bala Tikka etc. in different ranges of district Mandi and each group consists of 7-8 peoples. He further briefed that training will only be provided to the groups for their social upliftment and improvement of the forest ecosystems. This training programme is one of them which involve technical personal and experts from the apiculture field.

Dr. Vijay Singh, scientist from College of Horticulture and Forestry (CoHF), Neri, Hamirpur, gave information to the participants about the bee colony and its members. He also showed worker bees, drones in the bee colony to the participants and also told about the role of the queen honey bee. During his first day talk he emphasized on topics like bee colony maintenance, how to nurture the colony, precautions to be taken for a healthy bee colony.

He also told the participants how to maintain bees on artificial diet during dry months when there are no flowers around. He explained about the beekeeping equipment and demonstrated the practical utility of the equipment like bee cover, bee box, super box, knife and honey extractor etc. He also informed the participants about the practical operation of a bee colony. He further talked about the life cycle of the bee, importance of pheromones in the colony, royal jelly and pollen.
Technical demonstration of bee colony begins with interaction of Sh. Gopal Kapoor, Progressive bee keeper from Gwalpathar, Dhaneta, Naduan, Hamirpur (H.P.), where he explained participants about the equipments required for bee keeping like bee veil, knife, bee brush, fogger etc. He also demonstrates participants different members of bee colony, Dr. Vijay Singh showcased participants hexagonal comb of bee colony, drones, worker honey bee and queen honey bee, he further demonstrates role of worker honey bee in collection of pollen, nector and honey making process. Participants also interact with the experts and handled the bee colony.

DAY TWO (5/1/2024)

Proceedings of the second day begins with talk by Dr. Vijay Singh CoHF, Neri Hamirpur, where he explained different bee products to the participants talking about bee wax he said that it is pure and natural product used in cosmetic and home care products. Emphasis on beeswax he said that it is the substance used by bees to construct their nests. Young honeybees make it, which release it as a liquid from specific wax glands. When worker bees are 14 to 18 days old, they begin to produce wax. When wax comes into touch with air, it solidifies and creates scales, which look as tiny wax flakes on the bee's underside. Continuing his talk he stressed upon Bee Venom which is the sting of a worker bee is connected to a poison sac that stores the venom. A newly emerging bee is unable to sting because the sting is not fully chitinized and hence cannot be inserted. The venom sac also stores a little quantity of venom. When a bee is two weeks old, her poison sac has the most venom Histamine, apamine, acithinase, hydrochloric acid, formic acid, orthophosphoric acid, sulphur, calcium, copper, and magnesium sulphate are all present in bee venom. Bee Venom in Apitherapy, which involves causing bees to sting the patient, can be used to treat rheumatism. He further talked about another product of bee colony i.e. Propolis gathered by bees from resinous exudes of tree. In the bee colony propolis is used for sticking frames, sealing cracks and crevices but it is a contaminant of comb wax Propolis is obtained by scrapping it from the frames. It contains resins and balsams 55 per cent, ethanol and scented oils 10 per cent and pollen 5 per cent. Polyphenols are antioxidants that fight diseases. He said that Royal jelly Is secreted by gland of nurse bees of the age of 6 to 12 days when the glands are fully active. It is very nutritious food and is fed to
the young worker larvae and pale in the colour. It also contains lipids 2 to 6 per cent, carbohydrates 9 to 18 per cent (glucose, fructose, melibiose, trehalose, maltose and sucrose) and ash 0.7 to 1.2 per cent. Vitamin A, B and C, iron, copper phosphorus, silicon and sulphur are also present.

In his second talk of the day he emphasis on Honey extraction form the bee colony, he said that Flowers nectar is a mixture of sugars and other minor components collected by bees and concentrated into honey. Honeybees create a delicious, viscous substance called propolis. It’s harvested as nectar from nectarines at the flower’s base. Extra floral nectarines, nectar produced by plant components other than flowers, are also collected. It can also be obtained from fruit juice. Talking on utility of honey he said that Honey is valuable as a food, a medicine, a cash crop for both local and International markets, and a component of various cultural traditions it is a valuable carbohydrate source that includes trace elements and gives nutritional variety to low diets during times of food scarcity Honey is used as a medicine or tonic in many regions of the world, as well as a particular treat for children. Honey is increasingly being used in modern medicine for a number of therapies Fresh local honey is always more valuable than imported honey as a cash crop. He also told the participants about the manual and electric honey extractor machine.

Dr. Pawan Kumar, Training coordinator, begins his talk on bee enemies and their management, he said that Pests of honey bees includes Wax moths, Ants, Wasps, and some birds. Talking on wax moths he said that it is one of the most observed throughout the year but more common and severe during July to October and November to December. Combs of all the species of Apis are freely attacked. It is one of the most important enemies of the bee colony causing serious damage particularly to weak colonies where the number of bees are not sufficient enough to cover all the combs. The insect can be controlled by frequent examination all the crevices of the hive and removing all debris. The excess of the hive not covered by the bees are removed and stored after fumigation with ethylene bromide. Stressing upon another pest i.e. ants he said that they attack weak colonies and carry away the honey, pollen and the brood. Strong colonies are able to withstand the ants, but in weak colonies ant attack will result in destruction and end of the colony. By providing ant pans around the bases of the stand or oil bands over the stands ants can be kept away. Underground ant nests are eliminated by dusting of Methyl parathion or carbaryl or pouring 0.1% chlorpyriphos solution. Talking on wasps he said that it is a social insect constructing papery nests in hollow spaces. It waits area the entrance of the hive, catches bees as they come out, macerates them for feeding the juice to its young. It captures bee in the field
also. By reducing the width of the alighting board of the hive, the wasps can be prevented from sitting near the entrance. Wasp nests should be destroyed by burning them.

The technical session started with the demonstration of bee colony by Shri Gopal Kapoor known as Honey Man of Himachal Pradesh. He informed the participants about the colony management of honey bee, he also demonstrated the colony of Apis mellifera worker bee, drone and queen bee, he also told the participants about the process of making honey and its extraction. He further explained about the role of the queen bee in the colony and demonstrated the different life stages of the honey bee.

**DAY THREE (6/1/2024)**

Proceedings of the third day begins with talk by Sh. Ved Prakash Pathania, DFO (Retd.), JICA Consultant, he encouraged the participants to adopt beekeeping as their primary source of income for their social upliftment. He also said that through beekeeping, farmers can earn good amount of money by selling bee products like honey, pollen etc. besides preserving pollinators for pollination of their apples and other crops. He further said that under this scheme, bee boxes will be provided to the farmers and if required, further technical assistance will be provided to them through technical persons.

Second talk of the day was delivered by Dr. Vijay Singh, he deliver his presentation on Seasonal Management of honey bee colony, he said that Seasonal colony management is the set of management practices designed to meet the different needs of a colony over the year. During extremes in climate like summer, winter and monsoon certain specific management tactics are required. Honey flow season management this season coincides with spring. During this season Provide more space for honey storage by giving comb foundation sheet or built combs confine queen to brood chamber using queen excluder. Prevent swarming. Prior to honey flow, provide sugar syrup and build sufficient
population divide strong colonies into 2-3 new colonies, if colony multiplication is needed Queen rearing technique may be followed to produce new queens for new colonies. He further talked on spring, summer and winter management of bee colony.

Dr. Pawan Kumar, Training coordinator begins his third day proceeding by delivering presentation on social behaviour of honey bee colony, he explained the participants about the casts of honey bee colony, and works done by each member of colony. He also talked about the role of pheromones in the colony functions. Talking on bee dance he said that Honey bees use a complex form of spatial referential communication. Their “waggle dance” communicates the direction, distance, and quality of a resource to nestmates by encoding celestial cues, retinal optic flow, and relative food value into motion and sound within the nest. He ends his talk by laying emphasis on excessive use of chemical pesticides in the crops because of which many bee colonies are unable to perform their regular functions and hence lapse. He also aware participants about the use of recommended dose of pesticides in their crops. He said that these chemicals interfere with the communication by bees in their colony.

The three-day training program concluded with the distribution of certificates to the participants and a vote of thanks by Training Coordinator Dr. Pawan Kumar, where he expressed his thanks to Dr. Sandeep Sharma, Director, HFRI, Shimla, Dr. Jagdish Singh, Head, Extension Division HFRI Shimla, Dr. Vijay Singh, Scientist Neri Hamirpur (CoHF) and other officers and employees of State Forest Department, Himachal Pradesh.

In the end he also thanked the funding agency JICA for funding this training program for this new objective of conservation of bee species besides social upliftment of the farmers.

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Some of the Glimpses of training programme
Media Coverage
आजीविका सुजन के लिए मधुमचक्षी पालन को बढ़ावा देने के उद्देश्य से तीन दिवसीय कार्यशाला सम्पन्न

अभ्यास जागरूक / बलात

अभ्यास के लिए मधुमचक्षी पालन का उपयोग करने वालों की आवश्यकता की है जो दूसरे 3 वर्षों के दौरान मधुमचक्षी पालन के अनुसार किया जा रहा है। इसके लिए कई अभ्यास कार्यक्रमों का आयोजन किया जा रहा है जो आजीविका के लिए महत्वपूर्ण है।

फ्राइडा टाइम सांबर

अभ्यास का मुख्य लक्ष्य है कि मधुमचक्षी पालन के लिए आवश्यक तंत्र के लिए आवश्यकता है। यह तंत्र का उपयोग करने के लिए पूर्व प्रजनन के साथ-साथ मधुमचक्षी का उपयोग करने के लिए महत्वपूर्ण है।

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उपयोग के लिए मधुमचक्षी पालन का उपयोग करने वालों की सहायता के लिए कई अभ्यास कार्यक्रमों का आयोजन किया जा रहा है। इसके लिए कई अभ्यास कार्यक्रमों का आयोजन किया जा रहा है जो आजीविका के लिए महत्वपूर्ण है।

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