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Strengthening livelihood spirit of mountain community



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PREFACE

The year was cradled for new ideas and dedicated to the promotion of technically rich systems with communities of Himalayan region. Climate being the major player, plays hide and seek with communities and leaves them limited options to act upon. Now a days, the challenges becoming more subtle to the marginal communities, especially those are living in fragile ecosystem of the mountain terrain. HARC managed to move some steps - helping marginal communities develop adaptation against extremes of climate change and livelihood vulnerability. HARC took a concentrated effort on identifying and promoting methodologies and systems which could easily supplement communities with their livelihood activities. Past 2 years HARC is trying to provides more options and cushions to the communities by promoting climate-resilient commercial crops with technological advancement. Parallel to it, initiatives were also taken to enhance their farm skills on new farm techniques, backward-forward linkages integration, through infrastructure creation, package of practices, value chain strengthening & networking. HARC also provided pro-poor market and convergence support to farmers, and farmer interest group through interfaces with government line departments, market players and related stakeholders. The major objectives of the HARC is to promote livelihood opportunities for hill communities can be depicted from the fact that, an Entrepreneurship cum Mushroom Spawn Production Centre was established in association with Uttarakhand Science Education & Research Centre "USERC" at HARC, agriculture extension Centre,..... Naugaon- Uttarkashi. Relationships with scientific knowledge and skills development various training, & workshop on tissue culture technique, mushroom cultivation, soil health management, off-season vegetable cultivation were also conducted to rural educated youths, farmers, officials of line departments, and new entrepreneurs. apart from it, a detailed study on cultural and livelihood dependency and issues related to non-timber forest-based products "NTFP" livelihood and forest resource management practices by forest fringe dwellers was also conducted by HARC in Garhwal region of Uttarakhand .

We are, therefore, truly thankful to our partner knowledge institutions, resource persons, volunteers, media persons, well-wishers of HARC who have been immensely helping us in achieving and striving hard to make the society vibrant and resilient against the backdrop of Climate Change and livelihood vulnerability.

PROMOTIONS OF LIVELIHOODS BY INCLUSIVE DEVELOPMENT APPROACH AMONG THE MARGINAL COMMUNITY OF NAUGAON BLOCK OF UTTARKASHI DISTRICT

PROJECT FOCUS AREA: Skill training and livelihood enhancement, Natural Resource management



BACKGROUND: Under project, the Naugaon Block of Yamuna valley of District Uttarkashi has been selected for improving livelihood. Nested remotely in the high Himalayas, the Banal Ghati & Yamuna Ghati is mainly inhabited by ethnic & indigenous communities dwelling twenty-five odd scattered villages dotting the landscape. Located in the rural area of Uttarakhand, Under project during the period of 3 years total



of 2000 marginal beneficiaries out of which 1250 directly & 750 Indirectly have been targeted to intervene. The project is being implemented with a participatory approach by ensuring participation at all levels of planning & execution. The targeted group is being strengthened majorly on livelihood and natural resource management thematic areas of HDFC Bank Ltd. Over the 3 years, period project will cover 30 villages of 2 geographic clusters, one is *Naugaon* and the other is Dhari-Kafnol. During the year 600 new farmers from 19 selected villages were targeted for project interventions. Through project interventions, emphasis is being given to enhancing the livelihood of small and marginal farmers by increasing the crop production and productivity through intensification, crop diversification (among citrus fruit and vegetable varieties), area expansion (bringing the new area under horticultural crops) improving the storage infrastructure and backward and forward market linkages for improving the marketing of produce. Thus, climate-resilient improved varieties added with better water management and better soil health management practices will ensure sustainable means of livelihood among the farmers in the future. Following is the brief narrative of major interventions carried out between 1st April 22 to till March'23 .

GOAL:

Empowerment of 2000 (1250 Direct &750 Indirect) marginal farmers in Yammuna valley of Naugaon block through organizing them in Farmers Interest Groups and building their capacities for better farm-based livelihood.

OBJECTIVES

- To improve the livelihoods and economic security of rural communities through farm production capacities and create a positive impact on their social and economic status.
- Strengthening planning & technical capacities of small & marginal farmers of target project areas through the introduction of eco-friendly and water-efficient technologies for livelihood improvement
- To provide diverse income generation options for sustained livelihood through self-help promotion system, smart technical interventions, and supply chain management.

MAJOR INTERVENTIONS:

MOBILIZATION AND FORMATION OF FARMERS INTEREST GROUP “FIG”

Farmers' Interest Group (FIG) is a group approach concept which helps fellow farmers in gaining more profit by means of collective farming and collective selling of their produce. Under the project implementation strategy, in 2nd year total 600 farmers has been plan to cover, hence during the year total 30 new Farmers Interest Groups “FIG” (by federating 600 farmers in 30 groups) formed in 19 villages both in Dahari kafnol and naugaon clusters of Naugaon block . The groups were orientated on need and importance of FIG formation further roles & responsibilities of group office bearers and members were briefed to the FIG. Moreover use of precise farming techniques and advantage of collective approach to production and marketing was also emphasized. The new formed FIG’s are intended to uplift the marginal farming community and to uplift the livelihood via aggregate agriculture practices. Further to promote a good governance system and strong internal management system and transparency in the process, various documents in the form of a register like minutes book, producers level contribution register, and production cum income register provide to FIG level which is being maintained at FIG level regularly.



STRENGTHENING EXISTING FARMER INTEREST GROUPS “FIGS”

Community empowerment is vital to effectively implement the project activities thus farmer interest groups “ FIG” were selected to implement project activities in assigned clusters. HARC has a common approach to conducting each FIG monthly meetings and plans for farm-based activities, inputs planning of specific crop value chain, collective marketing of their produce, and strengthening the internal management system. In order to improve the quality of life of target farmers and to enable them to undertake farm-based livelihood systematically, during the year, a total of 235 meetings were conducted with all FIG level as per the meeting schedule roster. The major agenda of the meeting were focused on strengthening production planning , supply chain management, marketing, and internal documentation system of groups, where capacity building & queries, issue related to its addressed by HARC team jointly with group members. Apart from regular facilitation through meetings, for establishing good governance among FIGs indicators have been developed to monitor the progress of groups. further regular technical facilitation was also provided by the HARC team to FIGs members followed by designed packages of practices to improve farming practices.



IMPACT OF CAPACITY BUILDING :

- 70 % FIG members are now capable to maintain their books of accounts by themselves.
- Nearly 98% of FIG office bearers are participating in decision-making process.
- All FIG members are now adopting high-yielding seeds and modern techniques for agriculture sector.
- Along with HARC project team FIG members playing an important role in the beneficiary selection and collection of community contributions and supply chain management .
- FIG have also started dialogue with the PRIs on the issues related to village development.

DEMONSTRATION OF IMPROVED AND MARKET LED VARIETY OF FRENCH BEANS:’

With the objectives to ensure “food, nutrition & economic” security of marginal farmers, 2 improved variety of French beans i.e. Falguni as a dwarf and Moraleda as a Creeper variety introduced with 400 new farmers of Yamuna valley of Naugaon block. With covering to 400 new farmers total 2.4 MT improved seed were procured and demonstrated in total 24 hectares land, further to ensure better knowledge management & scientific package of practices i.e. line sowing, Nutritional and pest management etc. field level training was provided to all 400 farmers. Thus, by improved knowledge management practices and the introduction of high yielding variety of French Beans will definitely contribute to the economic empowerment of marginal farmers of the project area.



PROCUREMENT AND DEMONSTRATION OF IMPROVED VARIETIES OF TOMATO

In Naugaon region, there is a critical need to explore alternative agro-based livelihood options to ensure “food, nutrition & livelihood” security. Considering these factors, two improved variety of Tomato i.e. INDAM 1313 and INDAM 13405 has plan to introduce with targeted new farmers. based on feedback from the market player it has noticed that proposed variety is well suited, adaptive and market-led crop having special features of an Indeterminate plant with moderate height. Thus an improved variety of Tomato (12 kgs) seed were procured which was demonstrated with 600 new farmers in 36 hectares in 19 targeted villages of the project area. To transfer better knowledge on a package of practices like line sowing, Nutritional and pest management, grass mulching, staking etc. field level training has been planned to carry out between April to May '23. Apart of it, for improving per-plant yield appropriate IPNM practices is also very important factor to achieve per plant productivity. During the soil testing carried out in the selected field of the project area, it showed that the soil of the most of area is deficient in micro and macronutrient. Hence under the project IPNM material was also procured and its will be further applied in demonstrated crops with identified farmers so that nutritional and disease problems at pre and post-harvest levels could be reduces. During the demonstration process of the crop following actions were carried out to achieve the increase income goal of the project :

- Field level demonstration cum technical training on nursery raising, by inviting in house and technical expert from seed company at project village.
- Assessing the germination percentage of nursery, which reported 95%
- Briefed on manuring, IPNM, and irrigation scheduling in the field
- Trained farmers on appropriate line Spacing methods in crop transplantation.
- Frequently monitoring of nurseries, and ensuring proper bed raising and technically sound transplantation in fields



PROMOTION OF SOIL HEALTH MANAGEMENT SYSTEM THROUGH SOIL TESTING AND ANALYSIS

Soil is the key source of nutrients for crops and it provides adequate support for plant growth in many ways. Soil is a valuable natural resource and hence soil health management is important for sustaining its productivity over long run. So to assess the quality of soil and the potential of crops can be grown in specific land it is very essential soil need to get tested, which provides appropriate manure application recommendations for improving soil health. Particularly in new villages covered under HDFC-funded projects villages' major constraint of the farmers of the region is low productivity and less awareness of soil health management, due to this they are not getting proper returns from their agricultural land. Considering it, prior to sowing the selected market-led cash crop i.e. Tomato, French beans, Cucumber, and Colocasia, total 150 soil samples were taken from different hamlets' of 17 new selected villages of the project area. During Soil Sample collection, farmers were also trained on soil sample collection process, techniques and also educate on the importance of soil health and testing components. In this exercise, it is found that 75% of the test results are found same. Further analysis report, results, and recommendations were also shared with the targeted farmers as well as other FIGs members during village-level meetings, and soil health cards which contain all the information regarding their soil and a total physical and chemical profile of the soil were also provided to the farmers.



मिट्टी रासायनिक सूचक SOIL CHEMICAL INDICATORS			
सूचक	एकक		
	कृषि क्षेत्र	सूचक	संश्लेषण
pH	7.2-3	अम (ACIDIC) < 6.5 क्षारी (ALKALINE) > 7.5	सामान्य (NORMAL) 6.5-7.5
ऑर्गेनिक कार्बन (ORGANIC CARBON)	0.47%	अम (ACIDIC) < 0.25 क्षारी (ALKALINE) > 0.5	सामान्य (NORMAL) 0.25-0.5
नाइट्रोजन (NITROGEN)	5.8	अम (ACIDIC) < 4.0 (मृदा-मृदा) क्षारी (ALKALINE) > 7.0 (मृदा-मृदा)	सामान्य (NORMAL) 4.0-7.0 (मृदा-मृदा)
फॉस्फोरस (PHOSPHORUS)	0.315	अम (ACIDIC) < 0.10 (मृदा-मृदा) क्षारी (ALKALINE) > 0.40 (मृदा-मृदा)	सामान्य (NORMAL) 0.10-0.40 (मृदा-मृदा)
पोटेशियम (POTASSIUM)	1.94	अम (ACIDIC) < 1.0 (मृदा-मृदा) क्षारी (ALKALINE) > 3.0 (मृदा-मृदा)	सामान्य (NORMAL) 1.0-3.0 (मृदा-मृदा)
कैल्शियम (CALCIUM)	—	अम (ACIDIC) < 1.0 (मृदा-मृदा) क्षारी (ALKALINE) > 3.0 (मृदा-मृदा)	सामान्य (NORMAL) 1.0-3.0 (मृदा-मृदा)
मैग्नेशियम (MAGNESIUM)	—	अम (ACIDIC) < 0.10 (मृदा-मृदा) क्षारी (ALKALINE) > 0.40 (मृदा-मृदा)	सामान्य (NORMAL) 0.10-0.40 (मृदा-मृदा)
विद्युतीय चालकता (ELECTRICAL CONDUCTIVITY)	0-2.01	अम (ACIDIC) < 0.10 (मृदा-मृदा) क्षारी (ALKALINE) > 3.0 (मृदा-मृदा)	सामान्य (NORMAL) 0.10-3.0 (मृदा-मृदा)

DEMONSTRATION OF IMPROVED VARIETY PEA GS-10 IN LINE SOWING CULTIVATION-

Sudden change in average weather conditions in Naugaon valley has perilously affected traditional agriculture which also constitutes the mainstay of the rural economy. Thus there was a critical need to explore alternative cash crop-based cropping patterns to ensure “food, nutrition & economic” security. Considering these factors, an improved variety of Pea GS- 10 was introduced with 400 targeted farmers. GS10 variety is market-led crop for commercial farming. Traditionally, the broadcasting practice of seed sowing is applied by farmers that required higher seed rate 5-6 kg per .02 hectare and do not support to plant growth and post-harvest operation due to crop intensity. Hence to avoid such practice, improved scientific practice of line sowing (.06 hec/farmer) followed by proper field preparation, IPNM management ensured with targeted 400 farmers of



the project area, pea crop was scientifically demonstrated in 24 hectare land of 13 project Villages in majorly sowing period i.e. November-December. The estimated volume of the crop will be about 160 MT which is generally harvested & marketed between end March – May 23. Further to strengthening supply chain, forward linkages also developed by channelizing through proper marketing linkages with various mandies at Dehradun, Vikash Nagar, and Delhi, where farmers

transported their produce and could fetch a better price than local level. It is envisaged that crop will defiantly make a significant impact on the increasing income of marginal mountain farmers of Naugaon valley.

DEMONSTRATION OF IMPROVED VARIETY OF COLOCASIA :

To establish climate resilient & climate-smart agriculture practices for food, economic and nutritional security of the region, crop diversification is well defined suitable solution in the mountain region, which offers scope of the cultivation of vegetables under mountain climatic conditions. Hence considering to seasonality, market demand, and climate change situation. an improved traditional variety of Colocasia seed was demonstrated with 100 targeted farmers of 4 target villages of the project area in 6-hectare land especially in the Upper hamlet of DhariKafnol cluster of Naugaon Block. The crop demonstrated crop is good and resilient to tolerate drought as well as heavy rain situations. Apart from that , the crop is high-yielding, disease resistant, and have better market demand. Crop demonstration followed by POP on-field preparation; line sowing etc. to ensure better productivity.



INTRODUCTION OF IMPROVED AND HIGH YIELDING HORTICULTURE (CITRUS) CROP -

The diverse climatic conditions of Uttarakhand promote the production of various sub-tropical as well as temperate fruits. Horticulture sector is declining in many sectors as if we compare it with neighboring state of Himachal Pradesh, in spite of similar kind of climatic conditions. Although mid hills to sub temperate area is more in Uttarakhand, which shows the potential of cultivation of citrus fruit species. With the objective to get long term sustainable income as well as ensuring environment, nutritional and food security of the marginal community an improved variety of citrus crop's 2,000 plantlets of lemon and sweet orange demonstrated with 100 farmers of 7 Selected Villages of the project area. In long run, citrus plantations will definitely contribute to create green canopy and sustain food and economic security of marginal Himalayan farmers. To retain survivable

% and ensuring plant growth, HARC expert frequently visit and ensure knowledge management activity at field level related to layout planning, pit digging, IPNM and other aspects of better plant management at pre-harvest level . result of it so far survival % age of the plants were recorded 92% which is a positive sign of intervention initiatives at the primary level.



DEMONSTRATION OF CHAIN LINK FENCING (IN CITRUS PLANTATION)

Human and wild conflict is one of the major challenging issue in most of the region of mountain. It was observed that due to non-consolidation of farm land, lack of protected fencing and scattered mountain terrain, a higher percentage of farm produce get damaged by domestic and wild animals. Recently lot of effort has been made by the government and development agency to resolve this issue by finding long term and cost effective solutions. GI wire-based chain link fencing is one of the proposed solutions which is being highly adopted by farmers due to its easy handling and its effectiveness. Thus, under the project intervention, a demonstration of chain link fencing in citrus plantation area was carried out about 520² m specifically in Dhari kaffnol cluster. Under the chain fencing demonstration, 10 farmers are covered (protected), particularly for citrus crop about 1280² m plantation area. The main intent of this fencing is to protect the plant from wild and domestic animals that majorly damaged the standing crop or plant. Chain Link fencing will definitely help to prevent human and wild animal conflict and also ensure the optimum survivable percentage of citrus plants.



ORGANIZED EXPOSURE VISIT OF SELECTED FARMERS ON IMPROVING CULTIVATION AND PACKAGE OF PRACTICES-

It is a common scenario that most of the mountain farmers are under marginal land holding capacity besides per acres production of crop is also very less in comparison to the national production average. So it is necessary to increase per acres yield by adopting an appropriate package of practices in mountain agriculture. Exposure visit is an effective tool to learn by observation and sharing knowledge, especially for those who are adults, it also allows farmers to interact with each other and learn successful integration of sustainable practices applied by them in their respective area. Hence, a 2-days, exposure visit was organized at recognized horticulture institutes like Krishi Vigyan Kendra, Regional Horticulture Research & Training Station, Dhaulakunwa & Nirmal Nursery-Dharmawalaat Dehradun between 26th to 27th October '22. The major objective of the exposure visit was to improve the knowledge level of target farmers, especially for citrus crop management so that desirable outcomes through the demonstrated crop could be achieved. Besides, citrus, exposure was also focused on available knowledge on farm-related techniques. During the exposure visit, 18 selected farmers from FIGs of the project villages were taken participation. The process adopted a more participatory, interactive, and need-based approach. To transfer exposure visit knowledge among other farmers, follow-up and knowledge-sharing sessions were also organized during the FIG level monthly meetings.

TRAINING CUM EXPOSURE VISIT OF FIG MEMBERS ON MARKET NORMS, QUALITY STANDARDIZATION, QUALITY, PACKAGING & DOCUMENTATION –

HARC perceives that knowledge and linkages development is the key factor that can lead to sustainable make-shift changes in lives and livelihoods of marginal farmers of the Himalayan region. Market linkages is a continuous process to find out and develop market linkages with the reliable market channel is very essential to the success of the project. Thus to ensure it, as well as to get feedback on previously supplied produces to buyers a market follow-up cum linkages development visit organized during October'22 at the regional level market. During the visit, 18 selected farmers among FIG, interact with regional-level buyers and officials of APMC market located at Vikashnagar and Dehradun. To make process more interactive and meaningful, FIG members from project

villages shared their learning and challenges faced on quality retention, price-variation, and logistic management with the buyer to whom they supplied their produce like tomato, french bean, and cucumber previously, under follow up strategy of exposure learning, further knowledge and skills gained by selected farmers, shared with the rest farmers of the FIG members (farmer's interest groups) during their monthly meeting.



DEMONSTRATION OF WIRE STACKING TECHNIQUE IN CROP FIELDS:

Adopting technical farming to sustain the agricultural production system is the need of the hour. Therefore, under project intervention, it was proposed to increase per plant productivity via technical interventions. Wire staking in creeper crops is one the major technique, equipped to increase the per-plant productivity and net income of the beneficiaries. Wire staking helps boost the growth of healthy plants, thus eliminating the previously used technique of staking using hedges from the forest by farmers, which lead to forest degradation, less productivity, and more pre and post-harvest losses by being a vector to various bacterial and fungal diseases. Hence wire stacking in tomatoes and French bean crops was demonstrated with 200 selected farmers from all the 20 FIG's which showed good results in terms of comparison to traditional practices productivity reduction in pre and post-harvested losses recorded about 15- 20% by adopting the modern agriculture technique.



DEMONSTRATION OF IMPROVED VARIETY OF CUCUMBER -

The enhanced way of promoting commercial vegetable production for sustainable income for the marginal farmers of the rain-fed, fragile ecosystem of the Himalayan region. Under project strategically to achieve the scale of good income it has been planned that each farmer will adopt 2-3 crops cycle, Cucumber is one of them which has the plan to be cultivated minimum in .02 hectare/farmer. Thus, along with tomato and French bean, an high yielding and disease-resistant variety of cucumber seeds was demonstrated among selected 94 farmers, the proposed crop assist farmers in ensuring a diversified way of their farm-based livelihood. As an outocmen selected 94 farmers produced & supplied about 70.67 MT, worth of Rs. 15.96 lacs at local and regional level market.



INSTALLATION OF ROPEWAY FOR TRANSPORTATION OF VEGETABLE COMMODITIES FROM FARM TO COLLECTION:

Major farmland of the higher terrain of targeted project area especially in Dhari -Kafnol cluster, is either barren or not being used for cultivation of cash crops, due to the non-availability of transport facilities. In the Kaslana hamlet of Dhari -Kafnol, there is a small stream in the mid of two crop production zone, normally farmers transport their agricultural commodities and produce through mules which takes 2 hours to carry a load of 50 kg. from field to road head and in that case farmer needs to pay Rs 150/round. Due to this constraint, farmers were not able to grow cash crops as well as not able to fetch good price due to higher transportation



cost for the cultivated produce. To resolve this constraint under the project, a rope way at near Kaslana Tok of Dhari Kafnol cluster installed for providing a viable solution for transportation of farm produce from farmland to road head. The proposed solution not only reduce the logistic cost but also encourage approximately 100 farmers indirectly in the current crop season and 200 directly in upcoming crop season. The intervention has targeted to facilitate marginal farmers from nearby 4-5 villages for easily transport their cultivated crops. The patch of land falling under the area of the gravity-based ropeway system will decrease the extra transportation charges and thus contribute to the net income of beneficiaries.

CROP EXPERT FIELD VISIT -

An expert field visit by subject matter expert was conducted at both the clusters in the Naugaon block to guide farmers related to management practices in demonstrated crops, Adding to various queries of by the subject matter. During the year a total of 10 crop expert field visits on pre and post harvest management were carried out at Naugaon and Dhari kafnol clusters & trained 379 farmers. The overall objectives of the frequently crop expert’s visits were not only to address farmers current crop problem but also to train farmers on appropriate scientific package of practices at both pre and post-harvest level so that, knowledge could retain with farmers even project get over .



PROMOTIONAL SUPPORT TO FIG -

PACKAGING MATERIAL, WEIGHING SCALE TO STREAMLINE SUPPLY CHAIN OF FARM PRODUCE - CHECKED

Proper packaging helps in increasing the shelf-life of the produce, for example, if one rotten tomato is packed along with good tomato then that rotten tomato will spoil the other good product, therefore by introduction and utilization of appropriate packaging



material could avoid such post-harvest losses and helps in increasing the shelf-life of the products. It is well-known fact that during the initial phase of FIG's no or very less packaging materials were available with farmers to supply quality and packaged produce to buyers at targeted markets. Considering to it, reasonable promotional support with tagging "Project supported by HDFC bank" following packaging material were provided to the 17 FIG's which was commonly used by FIG member during the supply of their surplus produces :

- 1000 poly sac - Netlon bags (40 to 50 kgs capacity for wholesale pack) packaging of the Cucumber, French bean to 10 best FIG for proper air passage through the crop due to which chances of post-harvest losses occurred during the transportation.
- 250 plastic crates (20 to each FIG) provided to 17 FIG for storage and transit of produce from the village to the collection center.
- 1 weighing scale to 1 FIG, thus total 10 weighing scales provided to 10 FOG for common utilization of weighing related operations of various cash crops being produce through project support



ESTABLISHMENT OF COLLECTION CENTER CUM PACKING HOUSE AT PRODUCTION ZONES 1 COLLECTION CENTER

Under the project, many market-led cash crops like tomato, French bean, and cucumber were demonstrated with targeted 400 farmers, these crops are highly perishable and need to be stored and pre-cooled before shipping to the targeted market either Dehradun, Delhi, or any vegetable mandi. Hence it was necessary to create a common place for its aggregation and transportation, considering it, it is necessary to establish 1 collection center cum packing house established at Matad Tok of Dhari Kafnol, where major crops belonging to 5 villages farmers is being



produced and marketed. The proposed solution assists farmers to store and undertake primary value addition such as grading, sorting, and storage of perishable commodities for a short duration. The collection center not only provides a common platform for packing marketable surplus but also facilitates raising their income by supplying quality products to buyers at markets. Further, the constructed collection center is well aerated and is adjusted to a connecting highway making it easy for farmers to transport their products to targeted mandies. A common collection center further helps to farmers to train them on best post harvest practices/ operations like sorting, grading, and packaging of harvested produces. Through the collection centre, about 200 farmers from 5 project villages are being get benefitted.

DEMONSTRATION OF “SHIVANSH KHAAD” TO MINIMIZE THE GAP BETWEEN SOIL AND PLANT HEALTH

One hand productivity enhancement and sustainable agriculture by promoting soil health is need of hour and another hand a huge quantity of biomass is always available on a farm often in hill terrain. Shivansh Khaad is the cost-effective means for converting bio-degradable material into organic fertilizer. It helps to enhance the absorption of water & water retention capacity, better soil aeration, improved soil tilts, better soil permeability that allow better utilization of nutrients from the soil. Therefore considering to organic manure’s importance in the agriculture production



system and minimizing gaps between soil and plant health management, total 49 organic manure techniques “Shivansh Khaad” were demonstrated at selected 10 villages. This is an effort for improving poor manuring practices & promoting organic farming as well. As per need, it can be easily shifted one place to another place and due to darkness environment in inside of the bed decomposition process becomes fast about 18 -20 days in comparison to open pit.

DOVETAILING FOR FARM MACHINERY BANK AT CLUSTER LEVEL :

Under the project to avail benfites of farmer welfare development schemes, initiatives were taken to convergence support through department of agriculture specifically for farm machinery bank. It

enhance the way of living, gain capital and reduce the labour- intensive work by adopting mechanization solution in farm field . In other way in mountain though agriculture is the prime source of livelihood but at present livestock population is decreasing result of it, farming is becoming more drudgery prone and expensive so need base solution to farmers is being provided at the development and government level. Hence farmers have been promoted to take benefits of the government scheme by a convergence, under which

minor contributions by farmers and project were provided, while major contribution about 80% were availed though government scheme (promotions of farm machinery bank) . Under farm machinery convergence initiatives worth of 6 lakhs farm



machinery bank (Power tiller) availed for FIG Members of 6 villages of Dhari Kafnol clusters, named- Khabla, Paluka, Pamari, Bajladi, Naryunka, Manargaon. Under farmer machinery 6 Power tillers are procured. In the long term benefits of Farm machinery will be as follow :

- Power Tiller is a farm machine that is mainly used to cultivate the land. It works effectively as it can reverse and cut soil simultaneously.
- In term of maintenance, it is cheaper and economical to use and also require less space.
- It is ideal where the land side is small. In the project area, where only terrace farming is possible in such type of topography power tiller is to be extraordinarily useful.for farmers

INSTALLATION OF SOLAR-BASED WATER LIFTING SYSTEM FOR PROMOTION OF WATER CONSERVATION TECHNIQUE FOR UNFERTILE LAND CONDITION IN THE PROJECT AREA: (BHATIYA VILLAGE)-

Agricultural technology is changing rapidly. Farm machinery, farm structure and production facilities are constantly being improved. In the project area, most of the farm fields of the intervention area are rain-fed and rely mostly on rain for their production. Over the years, with sudden and erratic changes in climate, the iterations of the prolonged dry season have increased drastically, leading the marginal farmers with little or no production. Besides, having a land and water resource farmers can't cultivate any cash crops on this land, due to either water streams being quite far from farmland or situated at a very low or high altitude. To address these problems, a solar-based water irrigation

system with a distribution system is installed at Bhatiya village at Naugaon cluster. The lifted and harvested water helps to fulfil the water requirement of demonstrated crops during the lean period/water scarcity period. The intervention has targeted to increase at least 4 hectares irrigated land of targeted village and now farmers are able to cultivate cash crops production which was not possible earlier due to non availability of irrigation facilities. Apart from a solar irrigation system, 3 water harvesting tanks (each of 15,000-liter capacity) along with HDPE (25mm) pipe to channelize water from the source to the tank demonstrated at 3 locations (Bajladi, Naini & Krishna) of the project area, which is directly impacting the livelihood of about 100 farmers by altering 4-hectare rain-fed land into irrigated land and producing cash crops where water facility was not available earlier. The intervention of GEO and rainwater harvesting tanks will not only provide farmers an upper hand to use this technology for better production but also disseminate the significance of a low-cost system among the beneficiaries.



ORIENTATION OF FIG & WATER USER GROUP ON DEVELOPMENT SCHEMES AND CONVERGENCE OPPORTUNITY:

With intend to, sensitize farmers on farmers welfare schemes, the interaction of farmers and government officials is one of the best tools to achieve the desired outcome of dovetailing interventions. Interaction program not only helps to understand the process, criteria and features of livelihood promotion schemes but also facilitate to possible convergence opportunities that farmers can avail and use through government departments. During the year



total 2 meeting cum workshop on convergence opportunities and sensitization on various development schemes related to agriculture promotions organized at Naugaon and DhariKafnol cluster, apart from it, project activity also briefed by visiting at district and block level officials. During the visit interacted held with District Magistrate, Chief Development Office, District Horticulture Officer, Project Director- District Rural Development Authority “ DRDA” and Block Development Officer of Uttarkashi district. Officials briefed about various interventions like solar irrigation, ropeway and crops diversification activities carried out with the financial support of HDFC bank. the process facilitates leveraging convergence opportunities to farmers through ongoing agr. based farmer welfare schemes, a result of it, the convergence of fam machinery bank ensured for the marginal farmers belonging to Dhari Kafnol cluster.

PROGRAM MONITORING QUARTERLY MEETING ON PROGRAM PROGRESS AND FINDINGS-

During the year, total 4 quarterly program review cum planning meeting was organised . which was more focused and followed by presenting project progress, output, and changes faced during the implementation by the team. The meeting was structured by individual presentations on their role, the task performed and target VS achieved during the quarter, participatory group exercise, and based on feedback/ suggestion suggested by the Secretary, board members incorporated as corrective measures under upcoming plan and field action strategy.



IEC MATERIAL DEVELOPMENT :

During the year under project, various activity cum demonstrated carried out with 1000 farmers, out of total 400 farmers are previous year and 600 new farmers recent quarter from 30 villages. Hence to brand project interventions and an indication of covered villages under focused development project “FDP” interventions, 13 sign boards containing village information and HDFC bank CSR branding’s tag line were developed and same were installed in all selected 13 villages to visualize the project initiatives.



CONSOLIDATION OF DEMONSTRATED CROPS SUPPLY CHAIN OUTPUT :

To improve the economic security of the marginal farmers’ climate resilience, short duration and market-led cash crop like French bean, cucumber and Tomato were demonstrated with targeted 400 farmers between April’22 to Jun’22. Most of demonstrated crop’s harvested from mid-May and ended till August ’22. Supply chian output, learning and challenges faced during the supply chain management were discussed with FIG members at the cluster-level meeting. Further commodity volume and income gained by the individual farmer member of FIG updated in FIG level production cum income register by FIG members as well as in HDFC -DHWANI portal. In conclusion, following are the crop-wise output status depicted in below table and the result shows that French bean and Cucumber crops performed well, while tomatoes as satisfactory due to heavy rains & inflow of higher volume from the plain area :

#	Crop	Production	Income in lacs
1	French bean	243 MT	116
2	Tomato	935 MT	59

3	Cucumber	70 MT	15
Total			190



ACHIEVEMENTS:

Deliverables	Achievement
No of community institution "FIG" formed -30	<ul style="list-style-type: none"> • 30 FIG
Increase in Income:	<ul style="list-style-type: none"> • 100% of farmers adopted cash crops as commercial farming for their livelihood development. • Linked 1000 farmers under cash crop production. • Established 1.91 Crore supply chain through covering 400 farmers in 3 crop cycle. • 95 % adopted line sowing, improved POP of cash crop production e.g. tomato, French bean.

Area under vegetative covers-	<ul style="list-style-type: none"> • Demonstrated 2000 Improved citrus cultivar of lemon and Mausambi , which create green canopy cover about 4 acres specifically in barren and non-cultivated land as well as serve the purpose of long-term economic and environmental security of 100 marginal farmers.
Area under irrigation	<ul style="list-style-type: none"> • 6 hectare of land of 235 households covered through 2 by creating irrigation facilities in barren land through solar water lifting system. • Install 49 Shivansh khaad unit in 06 villages to promote soil health management practices. • Demonstration of Wire stacking technique with 200 farmers to reduce the negative impact of deforestation and women’s work drudgery, besides it is also useful to reduce to pre-harvest losses.

A PILOT STUDY ON CENTRE OF EXCELLENCE ON FOREST BASED LIVELIHOODS IN UTTARAKHAND

BACKGROUND

Ministry of Forest and climate change created a Environment, (MoEF\$CC) Centre of Excellence (CoE) on Forest based Livelihood in Uttarakhand with Uttarakhand State Sate Council for Science and Technology (UCOST) . A first of its kind in the state, the CoE delves on issue related to forest based products and dependence of forest fringe dwellers on forest resources . the uniqueness of the mountain specificities of Uttarakhand forest and grassland and their contribution to livelihood will collect, accounted, collated and an analytical approach based on secondary data resource will be devised to establish a link between the ecological and economic concern of the region. In addition to this, the generated data on various aspects of forest resources in the region will be hosted in a web server such that it is accessible to wider masses. The CoE will be the nodal hub in providing the updated dataset and information related to forest based livelihood. Under the CoE, HARC assigned for conducting pilot survey in seven districts of Garhwal region namely - Uttarkashi, Rudraprayag, Tehri Garhwal, Dehradun, Chamoli, Haridwar and Pauri Garhwal focusing to NTFPs.



GEOGRAPHIC COVERAGE : The study was undertaken in 96 villages of 7 districts of Garhwal region.

OVERALL OBJECTIVES OF STUDY:

- a) To collect all the available data on forest based produce with focus on non-timber
- b) products like medicinal plants and bamboo and to create a clearing house for the same.
- c) To create a resource directory of various government and non-government organisations, private institutes and experts working in the area of forest livelihood.
- d) To interact with people through Focused Group Discussion (FGD) and to estimate their dependence on forests for their livelihood.

ROLE OF HARC, UNDER STUDY EXECUTION:

1. To conduct Household (HH) surveys and Focused Group Discussion (FGDs) in selected forest fringe villages of Uttarakhand for socio economic study and analysis of culture dependency of the people on the forest
2. To visits forest mandis for collection of NTFP's auction data of different agencies (UAFDC, Bhesaj Sangh, Van Panchayat, G. M. V. N.
3. To interview collectors, middleman and traders at Mandi for data collection and study value and supply chain of selected species.
4. To visit of local fairs for estimation of cultural dependency of people on forest
5. Study of market linkages and value & supply chain analysis of selected NTFP's (Example-Bhimal etc.)
6. Collection of publications and reports from non-government organizations (NGO)
7. Collection of secondary data from thesis, dissertation and other reports from Universities present in Uttarakhand

METHODOLOGY ADOPTED FOR THE STUDY

Sampling Method

Out of the seven districts pure random sampling method could have been applied but it would have given wrong results so it was decided to apply the following steps as sampling:

STEP-1: Enlisting all the villages of the selected seven districts

STEP-2: Classifying all the villages of the districts into three categories – Grade 1 (Villages situated at the elevation of less than 800 Metre); Grade 2 (Villages situated at the elevation between 800m to 220 m) ; and Grade 3 (Villages situated above 2250 m)

STEP-3: Applied stratified random sampling so that villages from each strata is drawn for the study. This was done so that the results of the study represent the whole population of the villages. Villages with less than 500 households were not removed from the survey as it was having its own relevance. The villages in remote areas have less population but it was having high value for the study in the context of NTFPs and also the problems faced by them. Hence, it was prudent to include all the villages.

STEP-4: Within the strata of Grade1, Grade 2 and Grade 3 villages, attempts were made to draw sample of variety of villages i.e. small, medium and large villages. It was essential to ensure representation of all sizes of villages across all altitudes in the final survey. The details of the villages surveyed by HARC in 7 districts of Grawal region are as below:

ELEVATION WISE SAMPLED VILLAGES THAT WERE SURVEYED IN THE GARHWAL REGION BY HARC :

Grid Code	Elevation	Number of selected villages for survey in Garhwal region
1	Less than 800m	15
2	Between 800m to 2250m	71
3	Greater than 2250m	10
Total		96

KEY FINDINGS UNDER PILOT STUDY :

- Most of the people in villages are dependent on forests for fuel and fodder.
- In few cases, it was also observed and seen that people are using wild NTFPs like Rhododendron, Lingura (fern), wild mango, sea buckthorn, beal etc. for their livelihoods which include own consumption and commercial harvesting, and value addition.
- Commercial value chain are seen for commodities like rhododendron, linguda, bay leaves, and wild edible commodities like Anwal, kafal, nettle, wild mango etc. which is contributing livelihood

promotion of locals.

- There is still gap in the horizontal and vertical integration in the value chain, and it is strongly recommended by the community that there is ample scope and need to develop skills on product processing techniques and technology pertaining to NTFP commodities.
- In fringe villages, the products are exploited for livelihoods which have impacted the forest to some extent. Due to exploitation of forest products in a non-systematic way, there has been a decrease in the products and the height of the forest has also been affected. Due to the exploitation of forest products, the issue of wild animals damaging the crops of the village has also been identified.
- The Fringe villages Households mostly depends on forest for Fuel and Fodder
- Some of the NTFPs are very well used for livelihood by the villagers in different districts -
 1. **Burans (Rhododendron arboreum) (Chamoli , Uttarkashi ,Tehri Garhwal, Rudraprayag)(Based On FDGs)**
 2. **Linguda (Diplazium esculentum) (Chamoli , Uttarkashi, Tehri)**
 3. **Ringal(a variety of Bamboo) (Uttarkashi, Tehri, Rudraprayag)**
 4. **Aawla (Indian gooseberry- Emblica officinalis) (Chamoli, Rudraprayag)**
 5. **Kaaphal or Kafal (Bayberry, the fruit of Myrica esculenta) (Chamoli, Tehri)**
 6. **Jhulaghaas (Lichen) (Chamoli, Uttarkashi , Tehri)**
 7. **Tejpatta /bay leaf (laurel leaf) Chamoli**
- NTFP self consumed by the villagers and sold in the market for subsistence - Burans (Rhododendron arboreum),Kaaphal or kafal (Bayberry, the fruit of Myrica esculenta), linguda (Diplazium esculentum -Dryopteridaceae, aanwla (Indian gooseberry- Emblica officinalis), bale (stone apple -Aegle marmelos, of India) are some of the products that are self consumed
- Marketing of NTFPs - NTFPs are also marketed by the villagers as raw materials to the local processing units. Some products such as Jhula ghaas (Lichen), bay leaf (laurel leaf) are marketed through local traders and traders visiting villages from the market.

- To purchase NTFPs from the villagers, local traders who collect the products from villagers, the department of forest and also the traders of the market (mainly Ramnagar) are involved. In the areas of higher altitude, rural people are doing business of medicinal plants.
- Benefits from NTFP to groups of traditional medicine, business, artisans - Traditional medicines from forest products are not been traded directly
- Some Ayurvedic doctors /Vaidyas at the local level in selected clusters
- NTFP based livelihoods are going on well i.e.Ringal based activities in Pipalkoti area of district Chamoli and in Yamnotri area of district Uttarkashi.
- Good Business of trading Burans (*Rhododendron arboreum*),Kaaphal or Kafal (*Bayberry*, the fruit of *Myrica esculenta*), Linguda (*Diplazium esculentum* -Dryopteridaceae and Aawla (Indian gooseberry - *Embllica officinalis*) is seen in Chamoli; and Business of medicinal plants in Gangi and Pinswad of Tehri Garhwal district.
- Dependency on external sources especially in view of migration pattern in Uttarakhand -Self-employment activities are not dependent on NTFP.
- Possibility to develop a permanent collection scheme for forest products - It is possible and important to develop a permanent collection scheme for forest products so that sustainable harvesting of forest products can be done and it can become a means of livelihoods for the rural households especially tribals.
- At the local level, the villagers are not aware of the use of forest herbs, wild vegetables and wild fruits which is needed. Training is also needed on processing and storage of forest products
- Level of technical knowledge available with the collectors/resources - The level of knowledge and also consciousness about not exploiting forest products indiscriminately is not high in rural areas.
- People are not aware about the possible damages to products or trees. There is limited information, knowledge and skills about the processing of NTFPs .

VALUE CHAIN STUDY :

Non Timber Forest Products (NTFPs) have a long history of harvest and traditional use by forest dependent communities and the residents of the villages located in the fringe areas of the forests in Uttarakhand. Timber was, till recently, and considered the only important contribution of the forests, remitting sizable revenues amounting to 2% of India's GDP. NTFPs, particularly dipterocarp NTFPs such as mohua /Sal leaves and seeds, dammars, resin, butter fats, tannin, etc., are gaining importance for sustainable forest management as nearly 80% of forest dwellers in India depend on NTFPs (Shiva & Jantan 1998). The forest-dependent communities of Garhwal are using the NTFPs and MAPs for treatment of ailments since time immemorial. These NTFPs are traded as well used for income generation by the residents of nearby villages that live in the outskirts of the forests. Although NTFP sector is of great importance for the forest dependent communities, their proper trade mechanism has yet to be developed properly. In Uttarakhand, forests have been an essential part of the state development and nearly 80% people are directly or indirectly dependent on forests either for their sustenance. Forests create a microclimate for cultivation of several crops of the hill and also provide various forest-based products like fodder, fuel wood and fruits etc.

VALUE CHAIN APPROACH

Value chain is defined as the goods and services provided to the people to ease the process of production and marketing of the products, it may be raw materials or the finished (value added) products. Here value addition is the process of adding value to the raw materials by processing them. It increases the monetary value of raw materials. The NTFP sector in India is starving of proper management and planning. The existing value chains better we can say supply chain of different NTFPs products is un-organised. As this sector is unorganized, there is need of hour to develop a better value chain. During the survey following value chains were identified and surveyed.

POTENTIAL NTFPS BASED VALUE CHAIN IDENTIFIED IN GARHWAL REGION OF UTTARAKHAND

Cinnamomum tamala is one of the NTFPs which supports significantly to the rural economy of the forest dependent communities of Hindukush Hills of Indian sub continents. These trees are tall and found in the forests and farmlands in the Middle Hill Range of India. Both wild and domesticated Cinnamomum species fulfill subsistence requirements of millions of people. The leaf of these spices

is called Tejpatta. *Cinnamomum tamala* is found abundantly in the forest of Nizmoola Valley of Chamoli district, Uttarakhand. The communities are mostly dependent on nearby reserve forest for fodder and fuel wood. A preliminary survey of the few villages was done to get the information regarding the involvement of the community of the Nizmoola Valley in the Bay leaf value chain. As per the Officials of BDS, the future of the bay leaf trade is very good as the demand is increasing year after year both in national and international markets. They suggest that the area under cinnamon cultivation should be increased in order to meet the demands. It can be a good source of rural economy and can be targeted to reduce the poverty of the rural communities of Garhwal region.

Linguda is another NTFP important in Garhwal region in context of giving value to the collectors of Linguda. It is a wild fern that mostly grows near water springs and in moist climatic condition in mountain region. For centuries, local community have used Linguda as a vegetable. This fern is popular among the folk of Uttarakhand and other parts of the Himalaya. It is rich in micronutrients, beta-carotene, folic acid, and minerals (Ca, Fe, and P). Raw Linguda is being collected by the producers belongs to Ghaat and Pokhri block of Chamoli district from forest area with sustainable harvesting method.

Rhododendron arboreum, the tree rhododendron, is an evergreen shrub or small tree with a showy display of bright red flowers. The Tree Rhododendron, one of the most majestic and imposing species of rhododendrons, is the official state tree of Uttarakhand. Rhododendron commonly known with local name buransh found at an altitude of 1500–3000 m in the Garhwal Himalayan region with red, white & pinkish flowers. These flowers are edible and commonly harvested for the preparing squash called 'buransh Juice'. Rhododendrons flower are extracted for both local and commercial use in the most of Garhwal region. The study reveals that Rhododendron squash provides many economic benefits to the local communities, . Rhododendron value chain provides an important source of livelihood for the local community of Garhwal Himalaya.

KEY RECOMMENDATIONS BASED ON THE STUDY

1. **Need of More Research and Development-:** Current method of processing of the raw material is very primitive and traditional with high level of wastage, technology. Thus R&D support should be provided to target group to promote value addition and by products development by NTFP.
2. **Training on various strategic activities** of the value chains of different products: Product-specific training should be provided on value addition, marketing, quality control, and sustainable harvesting of NTFP produces.
3. **Promotion of Cultivation of Medicinal Species - :** NTFPs especially medicinal species cultivation should be encouraged under a management action plan to increase people's participation and improve the local economy.
4. **Technology Transfer -** Missing function of NTFPs value chain like technique, capacity building need to identified to promote is as alternative viable livelihood sources
5. **Orientation of community on protecting and sustaining NTFPs - :** Orientation of community belonging to higher Himalaya villages is needed. There is a need to reorient on cultivation, sustainable harvesting, cultivated and non-cultivated varieties, marketing and policy framework.
6. **Advanced Technologies to be Adopted -**Cost-effective and appropriate technology like cultivation NTFPs crops in green net house, propagation, and value addition should introduce among the targeted community.
7. Regular Linkage with Research and Capacity building Institutions Needed
8. There is a need for **clear classification of the NTFPs** in different terms- Edible NTFPs Edible but used in the form of Spices /Medicines – For Example Tejpatta - Bay leaf (Cinnamomum Tamala),Curry Leaves ,Stinging Nettle Grass (BichhuGhas), Jhula etc. ; Non-Edible Such as - Ringal, (dwarf bamboo), Bamboo etc.
9. **Promotion of Tourism –** More Publicity of Benefits of Wild Edible plants needed
10. **Source of Food Security -**Wild edible plants play an important role in food supplements during scarcity for local inhabitants. Research says that many wild edible species of Himalayan region

have various medicinal and nutraceutical properties.

11. **Industrialist and Scientist should focus on research and developments** - Industrialist and Scientist should focus on research and developments related to these crops for the benefit of Society.
12. **Active role of Bhesaj Sangha and PACS** -Government may provide a special working capital support to Bhaesajsanghas for the purchase of NTFPs from the people dependent on NTFP collection.
13. **Recognizing Ecosystem services** – Systematic Data of extraction of NTFPs - It is important to have a systematic extraction of NTFPs. Awareness among the traditional societies about the vital resources and systematic extraction of the NTFPs is needed. There can be a good data base on extraction which can be monitored by the community institutions of the area.

QUALITY SPAWN PRODUCTION AND BUILDING KNOWLEDGE OF STAKEHOLDERS IN MUSHROOM PRODUCTION

BACKGROUND-

The cultivation of edible mushrooms is a biotechnological intervention for the conversion of various Lignocellulosic agro-wastes into proteins.

The commercial mushroom cultivation is an appropriate agribusiness, suiting the agro-climatic conditions of Uttarakhand State. Its cultivation involves low-cost eco-friendly technology wherein locally available farm wastes are utilized as raw material. Mushrooms not only contribute in meeting the human food requirement but also have enormous medicinal and pharmaceutical value. Mushrooms are well-suited to supplement diets which lack proteins and in sense they are rightly called “vegetable meat”.



But the mushroom cultivation require quality spawns, good knowledge and hand on skills, for which under the project entitled “To promote quality spawn production and building knowledge of stakeholders in mushroom production in Naugaon village of Uttarkashi district” it is planned to develop better spawns and mushroom production via skill training and knowledge management regarding mushroom cultivation. Mushroom being a high in-demand protein substrate that can be cultivated in a confined area, will be a step to uplift he socioeconomic status of the farmers and stakeholders of the area. For which under the project supported by Uttarakhand Science Education and Research Center (USERC), capacity building though in-house & on field level training has plan to organise target stakeholders i.e students, farmers, entrepreneurs on quality spawn production carried out.

GEOGRAPHICAL AREA : Uttarkashi district of Uttarakhand

OBJECTIVES:

- To develop quality spawn of various varieties (Button, Oyster and Ganoderma), for mushroom production in Himalayan region
- To provide the sustainable source of income and promote mushroom cultivation in the region
- To build capacity of progressive farmers, small entrepreneurs and researchers through trainings and demonstrations.

MAJOR INTERVENTIONS:

VISIT TO DMR FOR KNOWLEDGE BUILDING AND MOTHER SPAWN PROCUREMENT:



Mushroom cultivation is a promising practice with proper skills and knowledge related to its cultivation practices. As per the major goal of the project to develop knowledge of stakeholders and farmers related to mushroom cultivation in the area it becomes the first step to gather knowledge and skill training to the staff that will further outsource the knowledge to farmers and stakeholders. Moreover a good mushroom spawn development requires quality mother culture that can be further used to make mother spawn

and commercial spawn after the process of mass multiplication. Mother cultures and commercial spawns were procured from DMR Solan and staff was trained regarding the mushroom mother spawn production and cultivation. After collection of quality mother culture from DMR Solan, the task remained were to produce mother spawn from the mother cultures and cultivation of commercial spawn in prepared bags.

PREPARATION OF MOTHER SPAWNS FROM THE MOTHER CULTURES:

Mother culture tubes procured from DMR Solan were to be revived so that culture can be made for mass multiplication, the mother culture tubes were to be revived on plates which will then be transferred for the production of mother spawn. The culture from culture tubes were transferred on to PDA plates under aseptic condition in Laminar Air



Flow (LAF). The plates were then incubated at 27°C in BOD incubator for 7 days, after the incubation period the fresh culture on plates were cut in pieces with cork borer under aseptic condition and were transferred to conical flask with half boiled and autoclaved grain with a non-absorbent cotton plug. The conical flask with cultures were then kept for incubation under aseptic condition until a white sheath is covering the grains, this ends the process of mother spawn production,



the produced mother spawn in conical flask will further be transferred to grains in autoclavable bags for production of commercial spawn. Later to that the commercial spawns inoculated in bags prepared for mushroom cultivation containing all the required nutrients for mushroom growth.

COMPOST PREPARATION

Compost is a selective decomposed substrate for growing white button mushroom. Composting leads to indefinite microbial degradation of organic wastes. The process of composting involves microbial decomposition of organic material, synthesis of microbial protein and conditioning of

fibrous materials to absorb and retain moisture. The microbial action not only induces changes in the physical and chemical properties of compost but also minimizes the growth of competitive microbes. The compost prepared acts as substrate for the mushrooms to grown on and attain nutrition from, finely chopped paddy straw stands to be the most efficient and easily available source of substrate for the mushroom cultivation. As being farmers paddy straw is readily available by product that can be utilized in the growth mushrooms thus turning waste into a valuable product. For preparation of compost for oyster mushroom the chopped paddy straw was soaked in mixture of fungicide and insecticide to remove any trace of contamination. For 10 kg straw about 500 liters of water is needed to which 7.5g carbendazim (50WP) and 125 ml formalin is added. Soak the straw in this solution for 18 hours and then take out and air dry for 2-4 hours depending upon the season. The straw is to be soaked for 18 hours for proper compost preparation, then is soaked straw is stained out and removing extra moisture and packed in the bag mixed with spawn and kept in cultivation room for cultivation of mushrooms.

HANDS ON TRAINING AND DEMONSTRATION

To strengthen and promote mushroom cultivation in the project area, it is necessary to build up knowledge of farmers and stakeholders regarding mushroom cultivation. As mushroom cultivation is good earning and technical agro farming which requires skills other than traditional farming skills, for which 2 training program were organized for college students, farmers and hands on training were provided regarding every step of mushroom cultivation. Training sessions for target group were organized at HARC agriculture extension Centre Naugaon- Uttarkashi, where participants were provided with hands on training in mushroom cultivation. Training methodology followed by presentation, group discussion and practical demonstration regarding quality mushroom cultivation i.e. Button and Oyster . Further laboratory functioning and protocol preparation process were demonstrated by subject matter expert. Thus, uplifting the knowledge regarding mushroom cultivation which will pave the way to a flourished mushroom belt in the area, as the climate is suitable for edible mushroom cultivation.

OUTPUTS:

- 59 Participants were aware about commercial mushroom cultivation.
- Participants aware about composting, mother culture multiplication & spawning technology for oyster mushroom cultivation.
- Farmers aware about mass multiplication of spawn for commercial mushroom cultivation.



CAPACITY BUILDING CUM AWARENESS WORKSHOP ON FOREST BASED LIVELIHOODS TARGETING LOCAL COMMUNITY

Forests and forest produce play an important role in the economy of a country, be it urban or rural. NTFPs offer great promise for women producers in the informal economy. Although official production and trade statistics and research have somewhat neglected the sector, there is a sizeable and growing international market for NTFPs. The majority of mountain community depends on natural resources and agriculture for their livelihoods. Non-timber forest products (NTFPs) constitute an important source of livelihood for millions of people from forest fringe communities across the Himalayas. But due to climate change mountain livelihood is severely affected, which has somehow affected their food and economic security. Furthermore, the NTFP extraction has multiplier effects on the economy by generating employment and income in downstream processing and trading activities. However, depletion of NTFPs resources on account of indiscriminate exploitation, deforestation, and forest degradation have a major issue of concern that may affect the NTFP based livelihood and economics. Conversion of underutilized resources of Himalayas (like fruits, plants, wood etc.) and value addition of the same into marketable products will definitely a leeway for sustainable livelihood to the masses and source of food and economy security. Considering the importance of forests in human life, there is a need to better understand, manage and protect the forest ecosystems. Mountain population living in rural areas depends heavily on forests for daily needs of fuel, fodder, food and livelihood support activities. HARC with the collaboration of Uttarakhand Council for Science and Technology (UCOST), conducted 3 workshop with marginal farmers of Chamoli, Bagheshwar and Pithoragarh districts. The workshop was an attempt to outline the extent, reliance and livelihood significance of NTFPs and forest based resources for forest-dependent communities and to suggest strategies for their sustainable development and utilization. The purpose of the workshops was to sensitized locals about the importance of NTFP and forest based livelihood. The workshops was designed, which included guest interaction, presentation and practical session (FGD) with the participants. Invited guests Dr. Rajendra Dobhal, Director General -UCOST, Dehradun, Dr. Vandana Thapliyal , EX- Director World Wide Fund, Dr. Himashu Bagri, Divisional Forest Officer, Bageshwar, and Secretary of HARC provided descriptive and effective ways of Utilization & skill improvement pertaining to NTFP based livelihood



as well as future perspectives. During the 3 workshop total 183 Participants were presented. These workshops was organized to bridge up the knowledge gap between the local community and government officials. Knowledge awareness workshops definitely play a strategic role by increasing self-confidence among farmers and in undertaking small-scale value addition through NTFP based produces at household level.

RECOMMENDATION AND OUTCOME OF THE WORKSHOP:

During the workshop, meticulously group discussion held jointly with subject expert and participants and following recommendation cum suggestion were suggested by participants as listed below :

- Similar kind of series of workshop cum awareness programs on NTFPs and livelihood opportunities should be organized at blocks & cluster levels.
- Training should be provided on value addition, marketing, quality control, and sustainability on NTFP management.
- Current method of processing of the raw material is very primitive and traditional with high level of wastage, technology and r&d should provide target group to promote value addition and by products development by NTFP Like tea variant from bay, eaves, rhododendron, Ghandrayani, Ghingaruru etc.
- NTFPs especially medicinal crop cultivation should be encouraged under a management action plan to increase people's participation and improve the local economy.
- Proper documentation of ethnobotanical/indigenous knowledge need of hours.
- Missing function of NTFPs value chain like technique, capacity building need to identified to promote is as alternative viable livelihood sources
- Orientation of community belongs to higher Himalaya villages need to reorient on cultivation, sustainable harvesting, cultivated and non-cultivated varieties, marketing and policy framework
- Cost-effective and appropriate technology like cultivation MAPs crops in green net house, propagation, and value addition should introduce among the targeted community.
- Improving the knowledge base concerning the social, economic, technological, institutional and environmental conditions for NFPS sector promotions and conservation.
- Building capacity – Strengthening capacity of key stakeholder to monitor, evaluate and learn lessons from other area on NTFPs based livelihood activities

- Linking policy into practice – Based on lessons learnt, experiences and best practice from other long-term strategies should developed same should communicated to CBOs, Governments, NGOs. Besides NTFPs prometon policy should bring into practice by engaging key stakeholders by organizing seminar and sensitization workshop
- Promote partnerships model with key stakeholders to promote and conserve NTFPs
- Use the outcome of the workshop to influence decision-makers development agencies to mobilize resources and promote NTFPs based livelihood .
- Improved varieties of Walnut and grafting of improved varieties of pear in Mehul should be promoted in agroforestry model as it is naturally grown in the forests.



BUILDING CAPACITIES OF COLLEGE STUDENTS THROUGH ORGANIZING CERTIFIED TRAINING ON “PLANT TISSUE CULTURE TECHNIQUE” AT RAWAIN VALLEY OF NAUGOAN BLOCK OF DISTRICT UTTARKASHI.

BACKGROUND: Naugaon region is a picturesque valley of the Rawain region situated in the catchment area of river Yamuna. Nestled remotely in high Himalayas, the region is mainly inhabited by ethnic & indigenous communities. Horticulture and Agriculture crops remains the primary source of sustenance for a majority of residents who mostly belong to the socially backward castes. For quality planting material like apple, potato and other horticulture crops, farmers majorly depend to other state like Himachal, Punjab and Jammu Kashmir, it is due to non-availability of authentic planting material. Recently due to advancement in technology, farmers are looking more advance variety of horticulture crop (apple, potato, flowers etc) which have less disease and give good production . The constraints being faced today is the lack of awareness and quality crop stock/ resources in the rural areas of the Uttarkhand which pulls back the pace and efficacy of this tissue culture technique. Thus plant tissue culture technique is one of the best solution which is being adopted worldwide for quality plant propagation. Under the project HARC plan to build cadre of students, through structured training in Himalayan Action Research Centre “HARC” tissue culture lab located at Naugaon -Uttarkashi. The training program aims was imparting hands-on tissue culture techniques training to the student of Ranwai valley. Recently **National Education Policy 2020**, also recognized the role of education in providing students with the right skills, it is also in line with the sustainable development goal “SDG”, thus proposed skill program also serve the national and global goal of skills developmet.. Under the project skill training program, total 45 youth students (15 in each batch thus total 3 batches) were trained on plant tissue culture technique followed by lab to land approach.



OBJECTIVES:

- I. Provide platform to college student to understand the basics of tissue culture techniques.

- II. To develop skilled cadre of youth in the area of plant tissue culture and also equip them with advanced theoretical and practical knowledge.
- III. Popularisation of science among youth for better skills and entrepreneurship

GEOGRAPHIC COVERAGE: 45 college students of Ranwai valley of Naugaon block of district Uttarkashi (Uttarakhand)

INTERVENTIONS:

Training Course cover orientation lectures along with in-depth hands-on experience in a variety of plant tissue culture techniques like Plant tissue culture – principles and concepts, media culture conditions & preparation, sterilization, explants preparation, aseptic inoculation, direct multiple shoot induction, culture multiplication, in vitro and in vivo rooting, potting mixture preparation and acclimatization of tissue culture plants, Quality assurance of TC plants etc. with special emphasis were given in structure training on micro-propagation of horticulture crops. Following is the methodology followed to implement training program:



1) Develop short duration certified training manual:

Tissue culture training itself a long duration course to understand complete cycle from lab to land. But consideration to time limit prior to commencing structured training to targeted student, it is necessary to reframed long duration course into very precise (3 weeks) and relevant to fresher. thus training module designed as per the need of target group.

2) Selection and registration of interested student:

Ranwai valley itself large geographic area and number of schools and colleges are situated here. So rather than keeping training invitation in open, HARC select and registered interested candidate for training, for that



HARC approached to local level belongs to Ranwai valley.

3) Organizing structured training:

Under this, students studying in PG college located in Purola block were orient on plant tissue culture technique. thus total 3 training to 45 selected students, 15 in each batch were trained through structured and practical training :

i) **Orientation of program & tissue culture technique relevancy:** In this program trainer give theoretical orientation on - tissue culture techniques, stock preparation, and media preparation, multiplication of plants & precaution of handling of laboratory instruments.

ii) **Stock solution preparation:** In experimental work it is necessary to make major qualitative & quantitative changes in the organic & inorganic constituents of the medium, it to prepare a series of concentrated stock solution. thus practical training on stock preparation given.

iii) **Preparation of PGRs Solution:** Plant growth regulators plays pivotal role in plant tissue culture. Small amounts of plant growth regulators elicit large response in culture. There is a broad range of plant growth regulators specially used for inducing differentiation in plant cell and tissue culture. In this respect, hand hold training on PGRs solution delivered.



iv) **Media preparation:** When tissues/organs are excised from a plant, the cell there in undergo changes at physiological & molecular levels and are under severe stress. In order to make the cells and tissue grow, a number of physico-chemical requirements are to be met which can vary with the plant species, with the tissue selected and with its position on the parent plant. Thus practical orientation and lab exercise carried out with participants.

iv) **Autoclaving:** This techniques used for sterilization of media in a specific temperature & pressure. hence handing of autoclaving process will be educated to participants.

v) **Inoculation of plants:** Last but not least the most important activity of the training & under this training will done on fresh inoculation & establishment of plants & multiplication of plants with hand

on practices in the lab, along with this orientation on primary hardening, Rooting of the plant tissue cultures also given to trainees.

vi) **Feed back & awarding training certificate:** After completion of above technicalities involved in basic plant tissue culture technique, evaluation process followed by feedback on skills acquired by the individual participant , further certificates were awarded jointly by HARC, USERC and Govt. P.G College officials to recognize the value and skills of students.



ACHIEVEMENT :

As an outcome of the Project, total 45 college youths were trained on plant tissue culture techniques, which will enable them to take informed decisions and explore their technical skills in the field of agriculture/ horticulture to serve their own and promoting community livelihood through adaptive technology and skill.

ESTABLISHMENT OF USERC- MUSHROOM SPAWN PRODUCTION CENTRE AT HARC- NAUGAON BLOCK OF UTTARKASHI DISTRICT

BACKGROUND :

In Himalayan region Mushroom cultivation has aroused as sustainable mean of income generation. But due to less availability of quality spawn, it is difficult to achieve the production. Similar as other part of Himalaya, Agriculture remains the primary source of sustenance for a majority of residents of Ranwai valley who mostly belong to the socially backward castes. apart from farming, the community has less accessibility to livelihood diversification. At present HARC intensively working with 1000+ producers, which has been federated into SHGs, FIGs and Federation. To promote agri. allied based livelihood there is ample scope and favourable factors for promoting mushroom cultivation but due to the non-availability of quality spawn and its scientific management practices peoples are not able to adopt it commercially. Thus there is a need of introduce and promotion of other mean of livelihood which can give both Livelihood and nutritional security. Through proposed mushroom spawn production centre which will act as knowledge management centre related to package of practices to achieve quality production as well as act as a important centre for providing continuous supply of quality spawn for better production of mushroom in the region.



GEOGRAPHIC COVERAGE: About 200 farmers, entrepreneurs, college students of Ranwai valley of Naugaon block of Uttarakashi.

OBJECTIVES

- To develop quality spawn of various varieties (Button and Oyster) for mushroom production in Himalayan region
- To provide the sustainable source of income and promote mushroom cultivation in the region
- To build capacity of progressive farmers, small entrepreneurs and researchers through trainings and demonstrations.

MAJOR INTERVENTIONS:

ESTABLISHMENT OF SPAWN PRODUCTION CENTRE : For production quality spawn, it is very necessary to equipped Centre with some basic instruments like laminar air flow, autoclave, incubator, racks etc.. HARC have already most of the equipment but few equipment/accessories were proposed to procure under project support. Hence under project following equipment/ accessory were procured with following purpose.



BOD Incubator: BOD Incubator is necessary required for incubation of culture materials in media in initial stages includes test tubes, Petri-plates etc. and regulating culture materials speedily growth at a fixed temperature.

AC: In inoculation and growth room A.C. is necessary to use for maintaining room temperature for better growth of master and commercial spawn in growth room and better production of commercial spawn.

Digital balance: This is used for weighing of chemicals, wheat grains and other materials for mushroom spawn production. .

Boiling cattle: This is used for half boiling of wheat grains for better growth of mycelium on boiled grains for commercial spawn production.

INAUGURATION OF HARC - USERC ENTREPRENEURSHIP DEVELOPMENT CENTRE :

A half day inaugural program organised by Himalayan Action Research Centre at HARC Agriculture extension Centre - Naugaon, Uttarkashi for inaugurating “ **HARC-USERC Entrepreneurship Development Centre**”. during the event director of USERC Professor (Dr.) Anita Rawat inaugurated and visit the centre for its current status and future strategy to serve the purpose for Himalayan community. She stated that the proposed centre will act as a knowledge management



centre for locals to promote entrepreneurship, especially in Mushroom production sector. During the event HARC Secretary were also presented, he briefed to stakeholder on HARC vision and perspectives to promote such kind of initiatives to bring applied science more close to community for their well-being, total 89 participants were presented during the event.

VISITORS/VOLUNTEERS

During 2022-23, 79 different visitors visits to our centers at Dehradun, Naugaon & Kaleshwar centre , around 13 people from diverse background and experiences made the scheduled visits to the organization. In addition, regular networking and linkages were established with 16 other experts from various resource institutions and agencies. During the year, the organization also hosted 5 students from different universities for internship activities. During their internship with the organization, the students learned and provided their assistance in rural livelihood, forest conservation and livelihood, and plant tissue culture techniques.

ANNEXUARE -1 -HARC BOARD MEMBERS

#	Name	Design.	Address	Skill/ Expertise	Education Qualification
1	Dr. Vandana Thapliyal, W/O Shri Praveen Thapliyal	President	Shiv Krippa Sangam Vihar Chaura PO Kilkeshwar, Tehri Garhwal	Environment educator	D.Phil
2	Dr. MahendraS. Kunwar, S/O Late Shri Kundan Singh Kunwar	Secretary	103, Engineers Enclave GMS Road, Dehradun	Environmentalist and livelihood development expert	D.Phil
3	Shri Ramesh Singh, S/O Shri Abbal Singh	Treasurer	Vill. Kulendu, Masauli, Chamoli, 246473	Livelihood development expert	Masters in Commerce
4	Prof. OP Kandari, S/O Shri Narain Singh Kandari	Member	C- 105, Alfa Tower, Haridwar-ISBT bypass road, Ajabpur Kalan, Dehrdun,	Rural Tourism development expert	D. Phil
5	Prof. D.R. Purohit, S/O Late Sh. UrbiDatt Purohit	Member	Vidhyadhar Shri kala, Veer Chand Garhwali Marg	Uttrakhand Tradition and culture expert	D.Phil
6	Shri. Ajay Agrawal, S/O Shr. D.L. Agrawal	Member	D-10 Tula's Garden 8 Kalidas Marg, Dehradun	Finance & Enterprise Development Expert	Masters in Commerce
7	Shri. Uday Shankar Gupta, S/O Shri A. S Gupta	Member	100, Anand Lok New Delhi	Finance Management Expert	Masters in Commerce

रादून, 15 जून, 2022

गढ़वाल जागरण

फ्रेंचबीन की फसल बेच कमाए 36 हजार

नौगांव और कफनोल में हाक के प्रयास किसानों के लिए बेहतर साबित हो रहे हैं

तिलक चंद रमोला • नौगांव

हिमालयन एक्सन रिसर्च सेंटर (हाक) के प्रयास यमुना घाटी के नौगांव एवं धारी कफनोल में किसानों को आर्थिक के लिए बेहतर साबित हो रहे हैं। 400 किसानों की ओर से औसतन 240 मीट्रिक टन फ्रेंचबीन का उत्पादन का अनुमान है। फिलहाल डेढ़ माह में हर किसान फ्रेंचबीन की फसल बेचकर 36 हजार रुपये की कमाई कर चुका है। काश्तकारों के खेतों से ही 60 रुपये प्रति किलो फ्रेंचबीन बिक रही है।

हाक सचिव महेश सिंह कुंवर ने बताया कि हाक की ओर से फाल्गुनी प्रजाति का तीन किलो बीज तीन नाली के लिए प्रत्येक परिवार को निशुल्क उपलब्ध करवाया गया। जिसमें



नौगांव में खेतों से फ्रेंचबीन निकालते काश्तकार • जगल

नौगांव, मुराड़ी, मंजियाली, कृष्णा, भाटिया, नैणी, किमी, बजलाड़ी, पमाड़ी, खाबला, नरयुंका, पालुका, मानडगांव के कुल 400 किसानों की बीज दिया गया। साथ ही उन्हें तकनीकी ज्ञान भी दिया गया। सभी किसानों ने फ्रेंचबीन का बेहतर

उत्पादन किया है। औसतन 240 मीट्रिक टन फ्रेंचबीन का उत्पादन का अनुमान है। जिससे इन किसानों की 1.50 करोड़ से अधिक की आर्थिकी सुजित होगी। हाक सचिव महेश सिंह ने बताया कि हालांकि नकदी फसल उत्पादन में इस क्षेत्र

में कोई नई बात नहीं है, लेकिन, बदलते परिवेश में उत्पादन की उन्नत वैज्ञानिक तकनीक, उन्नत बीज एवं कृषि क्रियाओं को किसानों के मध्य हस्तांतरित करना आज भी उतना आवश्यक है, जैसे की पूर्व में था। उन्होंने बताया कि फ्रेंचबीन की फसल 45 दिनों में तैयार हुई है। काश्तकार श्रीचंद, बलबीर सिंह चौहान ने बताया कि तीन नाली जमीन में तीन किलोग्राम बीज की बुआई की और अब तक छह किबटल फ्रेंचबीन का उत्पादन हुआ है। इससे हर किसान की 36 हजार रुपये का उत्पादन की आय प्राप्त हो चुकी है। अभी फसल की पक-दो तुड़ाई शेष है। इतने कम समय में किसी भी फसल चक्र में उन्होंने अब तक किसी अन्य फसल से इतनी आय प्राप्त नहीं की।

छात्र-छात्राओं को दिया टिशू कल्चर का प्राशिक्षण

संवाद सूत्र, नौगांव: पुरोला: उत्तराखंड साईंस पेंड एजुकेशन रिसर्च सेंटर यूसक एवं हाक के सहयोग से टिशू कल्चर तकनीकी पर आधारित प्रशिक्षण कार्यक्रम आयोजित हुआ। जिसमें महाविद्यालय पुरोला के 45 छात्र-छात्राओं ने प्रतिभाग किया। तीन सप्ताह तक चले कार्यक्रम का समापन 19 मार्च को हुआ। यूसक निदेशक डा. अनीता रावत ने सभी को प्रमाण पत्र देकर सम्मानित किया।

21 दिवसीय प्रशिक्षण में विशेषज्ञों ने छात्र-छात्राओं को बायो टेक्नोलॉजी की तकनीकी उत्सक संवर्धन (टिशू कल्चर) ग्राफ्टिंग, कोको पीट का प्रयोग और मृदा परीक्षण की जानकारी दी। प्राचार्य प्रो. एके तिवारी ने कहा कि महाविद्यालय और हाक संस्था के मध्य पांच वर्षों के लिए सम्झौता पत्र (एमओयू) भी हस्ताक्षरित किया गया। यूसक निदेशक डा. अनीता रावत ने हाक परिसर में यूसक उद्यमिता विकास केंद्र का उद्घाटन किया। जिसमें मशरूम का उत्पादन किया जाएगा। डा. अनीता ने कहा कि यूसक के



हाक नौगांव में पुरोला महाविद्यालय के छात्र-छात्राओं को टिशू कल्चर सहित अन्य प्राशिक्षण दिया गया • जगल

और महाविद्यालय की ओर से छात्र-छात्राओं में विज्ञान के प्रति जिज्ञासा पैदा करने और विषय में विशेषज्ञता हासिल करने के लिए महत्वपूर्ण भूमिका निभा रहा है। हाक सचिव महेश सिंह कुंवर ने हाक की गतिविधियों एवं आजीविका संवर्धन में विज्ञान एवं तकनीकी की भूमिका पर जानकारी दी।

इस मौके पर लोक सेवा आयोग

के सदस्य प्रो. जगमोहन सिंह राण, महाविद्यालय के प्राचार्य प्रो. एके तिवारी, डा. नवीन नीटियाल, डा. विश्वम्भर जोशी, राजीव नीटियाल, जगदीश प्रसाद, राकेश कुमार, लक्ष्मण सिंह, विपिन, नीता चौधन आदि मौजूद थे।

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मास्टर समाचार सेवा

• नौगांव के हाक परिसर में आयोजित हुई यूसक की कार्यशाला

बड़कोट। नौगांव में उत्तराखंड विज्ञान शिक्षा एवं अनुसंधान केंद्र यूसक के सहयोग से हाक परिसर में आयोजित कार्यशाला के दौरान यूसक की निदेशक प्रो. डॉ. अनिता रावत ने यूसक उद्यमिता विकास केंद्र का उद्घाटन किया।

प्रो. डॉ. अनिता रावत ने कहा कि उद्यमिता विकास केंद्र की स्थापना से क्षेत्र के युवाओं के अंदर उद्यमिता की सोच विकसित होगी और वे स्वरोजगार की ओर बढ़ेंगे। यूसक की अभिनव पहल के तहत उत्तराखंड में स्थापित यह दूसरा उद्यमिता विकास केंद्र है, जिसमें

मशरूम स्थान का उत्पादन तथा मशरूम उत्पादन के क्षेत्र में ज्ञान प्रबंधन का भी कार्य होगा।

उन्होंने हिमालयन एक्सन रिसर्च सेंटर हाक में बाकिता लाल जर्वाल राजकीय महाविद्यालय पुरोला के विज्ञान वर्ग के छात्रों के लिए आयोजित तीन साप्ताहिक प्लॉट टिशू कल्चर तकनीकी प्रशिक्षण के समापन पर छात्रों को जानकारी दी। बताया कि समाज के हर वर्ग तक पहुंच बनाना यूसक का प्रयास है।

उन्नत किस्म के बीज से बढ़ेगा उत्पादन

संवाद सूत्र, नौगांव: हिमालयन एक्सन रिसर्च सेंटर हाक तथा एचडीएफसी बैंक के वित्तीय सहयोग से फोक्स डेवलपमेंट प्रोग्राम के तहत नौगांव ब्लाक के 400 किसानों के साथ मटर की उन्नत किस्म जीएस-10 तथा इडिम प्रॉनवुड का तकनीकी विधि से प्रदर्शन किया गया। हाक प्रभारी हाक के राकेश कुमार ने बताया कि इस समय क्षेत्र में 250 किसानों ने अब तक 148 मीट्रिक टन उत्पादन का लगभग 67 लाख के उत्पाद बाजार में विपणन किया जा चुका है। इसके अलावा 150 उत्पादकों की ओर से 95

मीट्रिक टन का हावैस्टिंग किया जाना शेष है। इस प्रकार धारी-कफनोल कलस्टर बजलाड़ी, पमाड़ी, नरयुंका, मानडगांव, खाबला, पालुका तथा नौगांव कलस्टर के नैणी, किमी, नौगांव गांव, मंजियाली, मुराड़ी, कृष्णा, भाटिया के 400 किसानों के साथ किए गए फसल चक्र से लगभग एक करोड़ की आर्थिकी सुजित होगी। नैणी गांव के प्रगतिशील किसान मनमोहन सिंह ने कहा कि हाक व एचडीएफसी बैंक की ओर से उन्नत किस्म की मटर बीज तकनीकी का सहयोग लिया गया।

स्कूली बच्चों ने किया लाखांमंडल गंगनानी धारा व हाक का भ्रमण

संवाददाता (जनगत टुडे)

नौगांव: समय शिक्षा अभियान के तहत पुरोला ब्लाक के छह विद्यालयों ने देहरादून क्षेत्र के ऐतिहासिक स्थल लाखांमंडल के साथ नौगांव के बर्नीगाड़ में स्थित गंगनानी धारा, हाक नौगांव के साथ कोल्ड स्टोर का शैक्षिक भ्रमण किया।

शैक्षिक भ्रमण में राजकीय उच्चतर प्राथमिक विद्यालय कुमोला, छिवाला, श्रीकोट, पुजेली, चंदेरी, सौंदाड़ी के छह विद्यालयों के 28 छात्र शामिल थे। नोडल अधिकारी चंद्रभूषण विजलवाण ने बताया कि शैक्षिक भ्रमण

पुरोला से शुरू कर कमल नदी के सुरम्य तट के साथ कमलनदी तथा यमुना नदी के संगम के साथ ऐतिहासिक नगरी लाखांमंडल, हाक नौगांव में स्थित टीसू कल्चर समेत आधुनिक तकनीकी से जुटा नौगांव में स्थित कोल्ड स्टोर के बारे विस्तार से छात्रों को जानकारी दी। बताया शैक्षिक भ्रमण के दौरान छात्रों को लक्ष्यगृह के ऐतिहासिक महत्त्व को भी छात्रों को अवगत करवाया गया। शैक्षिक भ्रमण में नोडल अधिकारी चंद्रभूषण विजलवाण, सुरेश शाह, कविता जैन, मनोज कुमार आदि अध्यापक शामिल थे।

सेंटर ऑफ एक्सिलेंस बनेगा नोडल हब : डोभाल

■ गोपेश्वर/एसएनबी।

उत्तराखण्ड राज्य विज्ञान एवं प्रौद्योगिकी परिषद (यू-कोस्ट) के महानिदेशक डा राजेंद्र डोभाल ने कहा कि राज्य में वन आधारित आजीविका को लेकर स्थापित सेंटर ऑफ एक्सिलेंस राज्य का नोडल हब बनेगा। कहा कि लघु वन उत्पादों से ही आजीविका को बढ़ावा मिलेगा।

यू-कोस्ट तथा हिमालयन एक्सन रिसर्च सेंटर (हार्क) के संयुक्त तत्वव्ययन में कालेश्वर में उत्तराखण्ड में लघु वन उत्पाद एवं वनाधारित आजीविका विषय पर आयोजित कार्यशाला में डा डोभाल ने कहा कि यू-कोस्ट द्वारा स्थापित सेंटर ऑफ एक्सिलेंस उत्तराखण्ड राज्य में एक नोडल हब होगा। इसके माध्यम से एक ही स्थान पर वनाधारित आजीविका से जुड़े अपडेट सूचना एवं डाटाबेस उपलब्ध रहेंगे। कहा कि आजीविका और अन्य विकास से संबंधित कार्यों में विज्ञान एवं तकनीक का समावेश होना समय की पहली जरूरत है। उन्होंने लघु वन उत्पाद के वैज्ञानिक दोहन पर बल देते हुए कहा कि जंगलों से लघु उत्पाद का दोहन एक निर्धारित तरीके से ही किया जाना चाहिए। उन्होंने कहा कि संसाधनों का दोहन इस तरह होना चाहिए कि वह मनुष्य, जानवर अथवा पक्षी सभी के लिए पर्याप्त रूप में मिले।

हार्क के सचिव महेंद्र सिंह कुंवर ने समाज में महिलाओं की महत्वपूर्ण भूमिका पर प्रकाश डालते हुए कहा कि महिलाएं आज हर क्षेत्र में अग्रणी रूप में काम कर रही हैं। कहा कि पुरुषों के बजाय महिलाओं का अनादिकाल से जंगलों से गहरा नाता रहा है। वनों की महिलाओं का पहले से ही मायका भी कहा जाता रहा



गोपेश्वर, कालेश्वर में आयोजित कार्यशाला में मौजूद प्रतिभागी।

है। चूंकि वनों की उपलब्धता एक सूक्ष्मपरी जीवन का सूचक रहा है।

समुदाय अपनी दैनिक जरूरतों को प्रतिपूर्ति वनों से ही करता आया है। यही वजह है कि लोगों में वनों के प्रति लगाव एवं इसके संरक्षण के प्रति संवेदनशीलता आदिकाल से ही रही है। समय के साथ साथ इसमें हो रहे ह्रास को देखते हुए वनों का बेहतर संवर्धन कर आजीविका से जोड़ने की जरूरत है। उन्होंने कहा कि आज लोग वन उत्पाद से बेहतर मूल्य संवर्धन कर अनेक प्रकार के उत्पाद बनाए जा सकते हैं। हालांकि मूल्य संवर्धन से जुड़े कौशल, तकनीक तथा बाजार आदि की सुनौतियां भी आ सकती हैं। उन्होंने कहा कि कंडाली, तिमला, लिंगुड़ा आदि वनोत्पादों को नियोजित तरीके से आजीविका के बेहतर स्रोत के रूप में विकसित किया जाना चाहिए।

वर्ल्ड वाइड फंड की पूर्व निदेशक डा वंदना थपलियाल ने वनों एवं महिलाओं की आजीविका के

अंतर संबंधों पर रोझनी डालते हुए कहा कि जंगल से जुड़ा होना एक प्राकृतिक स्वभाव है। उन्होंने ज्वाइंट फोरेस्ट मैनेजमेंट के तहत वनों के प्रबंधन में महिलाओं की भागीदारी को प्रोत्साहित किया जाना चाहिए। कहा कि वन आधारित संसाधनों के मूल्य संवर्धन की अपर संभावनाएं हैं। उन्होंने रोज, गिर, बुरांश, कचनार, कंडाली आदि लघु वन उत्पादों से बने वाले मूल्य संवर्धित उत्पादों की भी विस्तार से

जानकारी दी। इस दौरान उन्होंने लघु वन उत्पाद के व्यापारिक उत्पादक और संघनित उपयोग तथा सस्टेनेबल हार्वींग के बारे में भी विस्तार से जानकारी दी। वन दारोगा चंद्र प्रकाश गुंसाई ने लघु वन उत्पाद के बेहतर संवर्धन तथा दोहन के बारे में जानकारी दी। इस दौरान यू-कोस्ट के संयुक्त निदेशक डा डीपी उनियाल, डा वासुदेव प्रसाद पुरोहित, हार्क के हरिश पांडे, गणेश उनियाल, शैलेश पंवार, रमेश नेगी आदि ने भी कार्यशाला में विचार व्यक्त किए।

राष्ट्रीय सहारा 24 अप्रैल 2022

लघु वन उत्पादों के वैज्ञानिक दोहन से बढ़ेगी आय

कार्यशाला

बायोमैर, संवाददाता। लघु वन उत्पाद एवं वन आधारित आजीविका एक उत्कृष्ट विकल्प विषय पर हार्क एवं यू-कोस्ट के तत्वव्ययन में डा. एक दिवसीय कार्यशाला आयोजित की गई। इसमें किसानों को आजीविकार होने के बारे में विस्तार से जानकारी दी गई।

वन विभाग में महात्वा का आयोजित कार्यक्रम में मुख्य अतिथि प्रभागीय बायोमैरकारी हिमांशु बाबरी ने लघु वन उत्पाद के वैज्ञानिक दोहन पर बल दिया। उन्होंने कहा कि वैज्ञानिक दोहन से इसकी उपयोगिता सभी जगहों के लिए बढ़ती



बायोमैर में महात्वा को आयोजित कार्यशाला में मौजूद लोग।

है। उन्होंने कहा कि वहां पाए जाने वाले वन उत्पाद का एक विशिष्ट गुण है। वर्तमान के अलावा भावें गंधी भी इसका लाभ ले

सके। लघु वन उत्पाद से जुड़ी खेतों के लिए विभाग कल्टीवेटेड वैरायटी का उत्पादन, मूल्य संवर्धन की संभावना

लाहसोमर, परिश्रमण आदि विभाग देता है। हार्क के मुख्य कार्यक्रम प्रबंधक ने कार्यशाला के उद्देश्य के बारे में बताया। पर्यायी मनुष्य का वनों गहरा नाता है। एवं में वनों को महिलाओं का मायका भी कहा जाता है। वनों की उपलब्धता एक सूक्ष्मपरी जीवन का सूचक भी है। समुदाय अपनी दैनिक आवश्यकता में लकड़ी, चारा, औषधीय को आर्पित वनों से ही करता आया है। यही वजह है कि लोगों का वनों के प्रति गहरा लगाव रहा है। एनबी अवस्थी वरिष्ठता चंद्र पांडे ने कहा कि बायोमैर में लघु वन उत्पाद की अपर संभावना है। कार्यक्रम प्रबंधक जगदीश प्रसाद ने जानकारी दी। इसमें लघु वन उत्पाद का दोहन से जुड़ी खेतों के लिए विभाग कल्टीवेटेड वैरायटी का उत्पादन, मूल्य संवर्धन की संभावना

वनों के संरक्षण को आजीविका से जोड़ा जाना जरूरी: डा. कुंवर

कर्णप्रयाग, संवाददाता। जल और जमीन का संरक्षण करने वाले वनों के संरक्षण के लिए वनों को आजीविका से जोड़ा जाना आज के दौर में जरूरी है। जिससे लोग वन उत्पादों से स्वरोजगार के लिए वन उत्पादों के साथ ही वनों का संरक्षण भी करें। यह बात कालेश्वर में आयोजित एक दिवसीय वन उत्पाद एवं वन आधारित आजीविका पर आयोजित गोष्ठी में हार्क के सचिव डा. महेंद्र कुंवर ने कही।

हिमालय रिसर्च सेंटर हार्क एवं यू-कास्ट के संयुक्त कार्यक्रम में वनों से प्राप्त होने वाले उत्पादों से आजीविका को जोड़ने पर चर्चा की गई। गोष्ठी में यूकास्ट के डा. राजेंद्र डोभाल ने कहा कि वन आधारित आजीविका को लेकर एक एक्सिलेंस सेंटर की स्थापना की जाएगी। जिसके माध्यम से एक ही स्थान पर वन आधारित आजीविका से



जुड़ी जानकारी एवं अन्य सूचनाएं प्राप्त हो सकेंगी। डा. डोभाल ने एक वनों के लघु उत्पादों का दोहन निहित एवं वैज्ञानिक तरीके से किया जाना चाहिए। जिससे वन, पर्यावरण एवं पूरे पारिस्थितिकीय तंत्र का संरक्षण हो सके। वहीं हार्क के सचिव डा. महेंद्र कुंवर ने कहा कि वनों पर निर्भरता अनादिकाल से रही है। डा. कुंवर ने कहा कि वनों से कंडाली, तिमला, लिंगुड़ा सहित अनेकों लघु उत्पादों को आजीविका से

- 01 एक्सिलेंस सेंटर की स्थापना की जाएगी
- 01 दिवसीय गोष्ठी का आयोजन किया गया

■ यूकोस्ट के डा. डोभाल रहे मुख्य वक्ता

जोड़ा जा सकता है। कार्यक्रम में वर्ल्ड वाइड फंड की पूर्व निदेशक वंदना थपलियाल महिलाओं को स्वरोजगार के कई टिप्स दिए। वन दारोगा प्रकाश गुंसाई ने लोगों को वन उत्पादों के दोहन की जानकारी दी। इस अवसर पर यूकास्ट के संयुक्त निदेशक डा. डीपी उनियाल, डा. वासुदेव पुरोहित, हरिश पांडे, गणेश उनियाल, शैलेश पंवार, रमेश नेगी, खुशहाल सिंह सहित ग्रामीण एवं हार्क से जुड़े उत्पादक मौजूद थे।

