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Inside the issue ...

COVID-19 and Livelihood Option in Himalayas

COVID-19 that was arisen in the Province Wuhan China, a contiguous infectious disease. Moreover, it is fundamentally spread by respiratory droplets. In a short period, this spread most of the habitations of this green planet. Due to its high infection rate, a notable population of the world are affected. Even the advanced countries have suffered a lot by the terrible wave of this Pandemic. This result of the respective Governments of the world came up with the traditional method lockdown to curb the rate of infection. These lockdown has shown negative repercussions on the economy and hindered the livelihood of the affected population. The same thing happens with India as the country used the lockdown to stop the infection rate; however, the vast number of the population has suffered a lot and have lost their livelihood. Regarding the Indian Himalayan region that covers 537000Km^2 about 16 Percent of India's is the total geographical area. The Indian Himalayan region consists of 11 states with diverse traditions and rich cultural heritage. The study by the integrated Mountain Development ICIMOD Nepal has shed light on how the Covid-19 pandemic would be the double trouble for the Himalayan population (Singh 2020). The study in its report mentions that the 300 million natives of the Himalayas are already in the grip of climate crises and now face risks to their livelihood from the downturn caused by the Covid-19 pandemic(Nepali Times 2020). Even it was reported from the central Himalayas Uttarakhand the pandemic has hit the collection of Rhododendron flower, according to the report the lockdown has reduced 60-70 per cent collection of this flower(Bilalwan at all 2020 Down to earth). Overall, the region was more venerable of this Covid-19 because the region lacks the adequate facilities in every dimension, the residents are migrated from the hilly areas towards the plan areas especially the migration velocity in hilly areas of Uttarakhand. Therefore, during these pandemic times, a number of the residents came to their villages back, and the substantial mass reverse migration takes place.

There are various options of livelihood in the Indian Himalayan region in the era of Covid-19 are : Herbal farming,House gardening,Dairy farming,Apiculture etc.

Herbal farming- The first option that the researcher witnessed while living in the Kumaun region of the Uttarakhand. The choice is Herbal farming, as these Himalayas are loaded in these Herbal Plants. It is also documented by the number of studies that show some natives are associated with this business. However, there is a need in the future to design the capacity building programmes for the inhabitants of the Indian Himalayan Region to thrive the herbal farming in the area with modern technology.

Home gardening- It is also one of the methods to reach the livelihood and support the economic conditions of the household the idea of home gardening is also an eco-friendly sustainable approach to secure the livelihood during these hard times of Covid-19.

Dairy farming- The natives of the Indian Himalayan Region have some livestock like goats, sheep, cow, buffaloes. This dairy farming is the simple way to get the livelihood in the present times of pandemic. Various studies have reported the role of dairy farming and its role in the livelihood of the residents of the Indian IHR Region.

Apiculture- The raring of the bees is likewise one of the critical livelihood means of the residents of Himalayas. In this pandemic, this Apiculture is also one of the options as a livelihood means. The other means are the design of small-scale projects like designing eco-friendly stuff like carrying bags, developing the wearing masks for the people. Besides, the Panchayat Raj institutions can also ignite some of the eco-friendly projects like a plantation in the barren areas to generate one of source of employement in the local people.

Farooq Ahmad Bakloo (*Farooqmajeed19@gmail.com*)
Research Scholar Department of Political Science
Kumaun University S.S.J Campus Almora, Uttarakhand

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The "ENVIS Centre on Himalayan Ecology" collects, collates, compiles and builds quantitative and qualitative databases of information in the fields related to the Himalayan Ecology. The information is disseminated regularly via online as well as hardcopies to several valuable stakeholders and various users such as DICs, universities, institutions along with other ENVIS Centres running parallel to support overall Environmental Information System in India.

Editor's Note

यह सर्वविदित है कि कोविड–19 की वैश्विक महामारी ने दुनिया के सामाजिक, आर्थिक भविष्य को नए राह की तरफ बढ़ा दिया है। दुनिया के 219 देशों में इस वैश्विक महामारी का असर देखने को मिला है जिससे दुनिया के अधिकांश देश प्रभावित हुए है। अंतर्राष्ट्रीय मुद्रा कोष (आई.एम.एफ) के अनुसार इस महामारी के चलते, वैश्विक महामंदी की भविष्यवाणी की गयी है। कोविड–19 के प्रभाव से पूरे विश्व में भारत, अमेरिका के बाद दूसरा सबसे ज्यादा प्रभावित होने वाले देशों में सम्मिलित है। इस महामारी का असर भारत के हिमालयी राज्यों में भी पड़ा है। जहाँ एक ओर ग्रामीण क्षेत्रों का एक बड़ा तबका अभी भी आधुनिक विकास से अछूता है, वहीं दूसरी ओर कोविड–19 के बढ़ते प्रभाव के बीच शहरों की बड़ी आबादी गांव की तरफ वापस लौटी है। उदाहरणार्थ अकेले उत्तराखंड में लगभग 2–2.5 लाख लोग वापस लौटे है। ऐसे वक्त में एक नई रणनीति के साथ ग्रामीण अर्थव्यवस्था के नव–उत्थान की परिकल्पना की जा सकती है। विशेष तौर पर कृषि क्षेत्र में कहीं अधिक संभावनाएं दिख रही हैं। हम सभी को मिलकर कोशिश करनी चाहिए कि ग्रामीण स्तर पर नकदी फसलों, कृषि उत्पादों के प्रसंस्करण, भंडारण और क्रय–विक्रय केंद्रों की व्यवस्था की जाए, ताकि कृषि को एक लाभप्रद व्यापार बनाकर एक बड़ी आबादी जो शहर से गांव की तरफ लौटी है उसको स्वरोजगार की तरफ मोड़कर कर रोका जा सके। इस महामारी ने हमें स्वास्थ्य संबंधी सुविधाओं पर गहरा विश्लेषण करने को भी मजबूर किया है.। फार्मास्यूटिकल्स सेक्टर जो कि अधिकांश भारत के उच्च हिमालयी क्षेत्रों कच्चा माल प्राप्त करतें है जिससे भारत दुनिया में जेनेरिक दवाओं के सबसे बड़े आपूर्तिकर्ताओं में से एक है। इसके अलावा, मौजूदा संसाधनों के साथ भारत ने लगभग दुनिया के कई देशों में कोरोना वायरस के खिलाफ अपनी लड़ाई को मजबूत बढ़त देने के लिए आवश्यक दवाओं की आपूर्ति की है। जिससे भविष्य में भारत एक जेनेरिक और आयुर्वेदिक दवाओं के बड़े बाजार रूप में उभर सकता है। भारत में जनसांख्यिकीय लाभांश, मांग–आधारित अर्थव्यवस्था, निर्णायक केंद्रीय नेतृत्व और ईज ऑफ डूइंग बिजनेस की रैंकिंग में हुए सुधार ने पिछले कुछ वर्षों में विदेशी निवेश को आकर्षित किया है।

प्रस्तुत त्रै–मासिक पत्रिका के इस अंक में कोविड–19 के दौरान हिमालयी क्षेत्रों में रोजगार की सम्भावनाओं पर आधारित 19 लेखों का संग्रह किया गया है जो मुख्यतः कृषि, मौन पालन, डेरी व्यवसाय, जैविक खेती, वन्य आधारित खाद्य एवं पेय पदार्थों, पर्यटन, लोक कला एपण, आदि शीषर्कों पर आधारित है। जो कोविड–19 के समय में हुई बेरोजगारी से निपटने हेतु रोजगार के वैकल्पिक माध्यम सिद्ध हो सकते है। आशा है कि यह पत्रिका उन पाठकों के लिए उपयोगी होगी जो कृषि एवं इसके उत्पादों पर आधारित व्यवसायों में भविष्य की राह देखतें है।

जी.सी.एस. नेगी
कार्यकारी सम्पादक

Prospects of Traditional Foods as a Livelihood Option in Northeast India in Post- COVID-19 Scenario

Traditional foods may be defined as food items that are prepared with locally available ingredients derived from the natural environment and are unique to a certain culture or region. These foods are prepared using indigenous knowledge and skills that are usually passed down orally from one generation to the next. The indigenous communities of north-eastern India possess immense knowledge in traditional food processing using edible plant parts, meat, fish and milk. Though these food items are sold in the local markets, their production is only at household level and contribute very little to the income.Pondering on the post-COVID-19 scenario, the IHR is also facing the problem of reverse migration from people who have lost their livelihood in the big cities and returned to their native places in mountain states. Recently, the Hon'ble PM of India has emphasised on the need for the country to achieve self-sustainability through the Aatma Nirbhar Bharat Abhiyaan and his vision of 'vocal for local' to promote local-made products. In this context, the NE region has a great potential to enhance the existing skills in traditional food processing for value-addition of local products and make them competitive in the national and even international market. Two most popular food products from this region which have upscale potential are mentioned below:

Bamboo shoot- Northeast India is rich in bamboo resources with over 180 speciesidentified (Hazarika et al 2008). Besides its wide application as a traditional construction material, young shoots of bamboo are popular ingredient in the ethnic cuisine ofdifferent tribes of NE India. Bamboo shoots are sold in local markets either in fresh, dried, and fermented forms, with price varying from Rs. 80-100/ kg for fresh, to more than Rs 800-1000/kg for dried or fermented ones. This indicates that there is a great potential to develop the bamboo shoot processing industry in the regionas a livelihood option. Moreover, skill building in clean and hygienic methods of processing, product handling, packaging and marketing can help create products that are appealing to the consumers.

Fermented soyabean- Soyabean (Glycine max) is widely cultivated in rain-fed conditions throughout the Northeast region of India for its edible bean seeds. Fermented soyabean, known by different names ashawaijar, tungrymbai, bekang, axone, andperuyaanamong the different tribes of NE India is mainly used in a variety local cuisines. Although there is a good demand for fermented soyabean products in the local markets of northeast India, production is only at household level. Moreover, it is traditionally produced using natural fermentation process which makes it difficult for quality control of the end product. There is a huge potential to develop this household industry into a large industry with the help of scientific fermentation techniques so that the end product would be acceptable not only in the local markets but also outside the region.

Way forward- The imposed lockdown due to Covid-19 pandemic has resulted in mass reverse migration of workers,who have lost their livelihood,from urban areasto their home states mostly in rural areas. This calls for an ingenious way to develop mechanism to create 'green jobs' for the returnees through sustainable utilization of the vast wild plant resources and agri-horticultural products of the region. Development of the traditional food processing industry through integration of traditional knowledge with scientific knowledge is a promising venture which will not only create livelihood opportunities but also progress the region towards self-sustainability in food and nutritional security. Besides, bamboo shoot and soyabean products are also popular in other countrieslike Japan, Korea, China and other Southeast Asian countries, which presents an opportunity to develop products that would be acceptable in the international market as well.

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Wishfully Mylliemngap (*wishfully.mgbpihed.nic.in*), NERC, GBPNIHE, Itanagar, Arunachal Pradesh

Alternative Livelihood Development to Overcome the Risk Possessed by COVID-19 Pandemic in the Indian Himalaya

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Background- The Indian Himalayan Region is spread across 12 Indian States (namely Jammu & Kashmir, Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, two districts of Assam namely Dima Hasao and Karbi Anglong and Darjeeling and Kalimpong in West Bengal) stretching across a length of 2500 km and width of 250 to 300 km. Nearly 50 million people reside in the Indian Himalayan Region (IHR) alone. The IHR is characterized by diverse demographic, economic, environmental, social and political systems. The 2011 census demonstrated that the majority of these states' populations live in rural areas. The major problems in most mountainous regions are the lack of education, medication, and employment facilities. Lack of these amenities/services is the major causes of migration from IHR mountain regions to the urban areas, as people pursue access to better jobs and education. People work in urban areas and persist through tough living and working conditions to send money back to their families (Schoff *et al.*, 2020).

Introduction- The inhabitants of the mountains of the Indian Himalayan Region, already threatened by the climate crisis, now face new risks to their livelihoods from the economic downturn caused by the Covid-19 pandemic. Thousands of workers have come home to their villages in the mountains from the South India, Other Metro cities of India, Gulf States as well as further overseas. Their families face an uncertain future because of the loss of income. As a result, people already facing water shortages and extreme weather now have to contend with mass unemployment, hunger and disease. IHR are no exception in suffering economical losses due to the Lockdown. All the hotels, restaurants, shopping malls, many marketplaces, etc are closed. Taxi services were also put on halt during the first three phases of Lockdown period. In India including the Himalayan mountain region 12.2 crore people lost their jobs and 27 million youths in the age group of 20-30 years lost their jobs in April 2020 due to Lockdown. The situation was even getting worse in June-July. It is high time to take necessary steps for alternative livelihood development in our country specifically for the already fragile, Indian Himalayan Region.

Suggestive Measures for Livelihood Generation in the IHR- It is required to create green job opportunities both on and off farm specifically for migrant returnees in the mountains focusing on eco- or adventure tourism, aesthetic and spiritual tourism products, nature-based green products like health drinks and food, natural colours and dyes, or natural essential oils for cosmetics and other uses. Alternate non-farm livelihoods could help absorb the growing Himalayan population and their growing needs.State government shall provide mechanisms for promotion of high value products such as tea, medicinal and aromatic plants, wild edibles, fruits, buckwheat, major and minor millets, barley, and pulses. Administration should Rehabilitate and repatriate migrant workers in local economic activities and provide them with technical and financial support to start economic activities. Local administration or ULBs should revive tourism with an emphasis on community benefits, eco-friendly objectives and assist the tourism sector to put in place business risk assessment and mitigation measures. Government should provide technical and financial support to small, medium and large mountain agri businesses. Mountain-specific entrepreneurship skill development for youth and women will be especially important, with financial support through soft loans. Development of digital infrastructure within sectors like tourism and agriculture could help mountain farmers and entrepreneurs for accessing and sharing information, marketing and providing services.

Alternative Options for Livelihood Generation in the IHR- The eco-friendly, appropriate technology for mountains means a technology which people can easily adopt to meet their needs, socially, economically and culturally embedded in the way that local communities derive their livelihoods (Maikhuri *et al.*, 2007). High mountain regions have the potential to produce variety niche products for which latent markets exist; additionally, the burgeoning tourist market in these regions has substantial consumption capacity for a range of goods and services. Area-specific produce such as medicinal plants and crafts, as well as ecotourism and culture-based products, can be developed as niche sector clusters with a high income and employment-generating potential. Biocomposting and Vermicomposting can also be used for alternative livelihood generation in this region. Vermicomposting is a simple technique in which biodegradable waste i.e. agricultural and vegetable residues, weeds, excreta of animals etc are converted into organic manure with the help of earthworms. Vermicompost provides the necessary ingredient for optimum growth of cultivated plants. Continuous use of vermicompost replenishes soil fertility quickly by improving physico-chemical and biological properties of the less fertile soils. Higher and quality production can be achieved through this.

Mushroom cultivation can be considered as a good source of employment for landless farmers and unemployed people. Its production can be started in a room at low cost. It is considered as the best food for diabetic and heart patients. Various cost- effective technologies can be used for alternative source of income. Such as water harvesting tank technology. It is easy and cost- effective. Water harvesting tank can store rain water or unused spring or waste water for irrigation and other purpose during lean period. This technique is of great value for areas having paucity of water for livestock and minor irrigation needs. These tanks can retain rain water for a year. Because of diversity of rich flora, the hills and mountains of IHR are suitable for honeybee rearing. Honey is used as a medicine and bees are known to be a good pollinator and improve the agricultural production. Short term employment can be generated through adopting this venture as a small entrepreneurship. Bioprospecting of wild fruits can also play a significant role in hill area development, poverty alleviation, livelihood and nutritional security of local communities through some appropriate technological interventions. Farmers can adopt this as small household activity for income generation. Floriculture is also emerging as a good option for alternative employment generations. Cultivating different species of flowers provides good source of income to rural farmers. Medicinal and aromatic plants (MAPs) are an important component for economic development of the mountain people. Migrant returnees can be trained in MAPs cultivation, post harvesting techniques and marketing of MAPs. As a result they can find it an option for livelihood enhancement as against the traditional farming.

Conclusion- In this hard time Government as well as local people must join hand together to beat Covid-19 as well as to boost up the economy through cultivating the alternative sources of income generation. Government shall organize various skill development program for the people of IHR so that they will be empowered with skill and critical thinking which will fosters a sense of self- reliance, self-confidence and ability to evaluate what is beneficial and which will improve their access to affordable, environmentally sound technologies and generate meaningful employment based on locally available natural resources of the region.

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Rakesh Kumar Singh, Sayanta Ghosh and **Renu Lata**
GBPNIHE, Himachal Regional Centre, Mohal, Kullu, Himachal Pradesh

Bhamora: An Economically Important but Neglected Wild Edible Fruit from Higher Himalaya

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Wild edible fruits have played a vital role in supplementing the diet of the economically poor population in the rural areas. Wild fruits have high nutritional food value and provide the vitamins and minerals like sodium, potassium, magnesium, iron, calcium, phosphorus and are rich in fibres. The wild fruits have immunity increasing potential against numerous diseases and often used in different formulation of Ayurvedic or indigenous medicine system. However, today the dependence on the wild fruits has gradually decline as more exotic fruits have been introduced in the market. Moreover, peoples of Himalayan rural areas still use the wild fruits as a supplement of their basic need of food. Some of the mare preserved for use in dry period or sold in rural market example Amesh, wild Apricot, Anwala, Amara, Bel, Kaphal, Hinsalu, Berberis, Ghingharu, etc. But recently the popularity of wild forms has decreased. Apart from their traditional use of food, potentially they have many advantages as pharmaceuticals and nutraceuticals industries.

Out of many wild edibles, *Cornus capitata* Wall.inRoxb. synonyms *Benthamia capitata, B. fragifera, B. capitata var. khasiana, Cornus capitata subsp. capitata, C. capitata* var. *khasiana, Cynoxylon capitatum, C. glabriusculum, Dendrobenthamia capitata, D. Emeiensis* is an economically important but neglected wild edible fruit tree mostly grows wild in the Himalayan region since immemorial times. The evergreen fruit tree, *Cornus capitata* is the member of family Cornaceae (Dogwood family) and locally known as Bhamora in Garhwal and Kumaun region of Uttarakhand Himalaya. It is also commonly known as Tharmal and Tharbal in Hindi, Thamia, Guldhara in Himachal Pradesh, Dieng-sohjaphon in Assam,Gulna in Nepal, Bentham's cornel, evergreen dogwood, Himalayan flowering dogwood, Himalayan strawberry-tree and mountain moon in outside of Himalayan region.

The trees of the *Cornus capitata* distributed in East Asia-China in the Himalaya and grow in the moist mixed evergreen forest especially in Oak-Rhododendron forests from 1500-2400m above mean sea level. The nature of the tree is a small evergreen with smooth grayish bark; up to 12 meter tall. The leaves are light green, narrowly elliptic or oblong-lanceolate, 5-12 × 2–3.5 cm in size, leathery, scabrous, with 3-4 veins and densely pubescent with thick white appressedt richomes on the lower side (Fig. 1 A& B). The mature trees are generally wider than tall. The bark of old branches is grayish brown to blackish gray in colour. The flower buds are globose and subtended by four (rarely six) rounded, dark creamy or yellowish petal-like bracts. The globose cymes are approximately 1.5 cm in diameter having 30-50 minute (3-4mm) flowers.

The calyx is campanulate and hairy. The petals are 2-4mm long and greenish in colour. The style is cylindrical, 1.5mm, densely pubescent with white trichomes. The aggregate fruit is an etaerio of drupes, reddish, spiky and succulent, globose head and 2.5-5cm across in diameter (Fig.1, C& Fig.2). Each drupe is a one seeded stone, roughly six-sided and with a stubby remnant of central-style. Flowering appears in *Cornus capitata* from May to July (Fig. 1 A&B) and fruiting from August to November. The harvesting of the ripen fruit can be from September to November (Fig. 1 C& Fig. 2) for different uses. The ripe fruits of *Cornuscapitata* are edible, having the quite pleasant sweetness and sometimetaste like an over-ripe banana. The fruits can be used raw or cooked and can also be used in preserves.

The ripe fruits are good source of income in the value added form as making jam by local peoples. The fruit of *Cornus capitata* is also a good source of food for wild bear. The local peoples of the Uttarakhand Himalayas said that the use of ripen fruits of *Cornuscapitata*, instantly give the power to body and improve the immunity of the human as well as wild animals. The bark is a source of tannin which is used as an astringent and as medicinally. The young twigs are used as fodder and wood is mainly used as fuel and for making agriculture tools. It prefers heavy clay and moist soils for growth. The new plants can be raised from seeds, but seed germination is very low (15-25%, authors observation). Although, the fruits of *Cornus capitata* are rich with vitamins, minerals and other phytochemicals, but still there is no systematic study has been carried out to understand its propagation behaviour, biochemical, phytochemical, morphological and genetic variation in North West Himalayan Region, particularly in the state of Uttarakhand.

In view of nutritional, medicinal and economic value of this wild edible fruit a special attention should be paid in order to maintain and improve this important natural source of food supply. Also, in order to remedy, a wider and sustained acceptance of wild fruits as important dietary components must be promoted particularly situation like Covid-19.

Fig.1. Flowering and fruiting in *Cornus capitata*
(A) & (B) Flowering in the month of June-July
(C) riped fruits ready to harvest in the month of mid-November to December.

Fig. 2. Fruiting in *Cornus capitata*

Vijay Kant Purohit[1] (*vijaykantpurohit@rediffmail.com*), **Jaidev Chauhan, Vishwapati Bhatt**[2] and **Madan Singh Negi**[3]
[1]High Altitude Plant Physiology Research Centre (HAPPRC), H.N.B. Garhwal University, Srinagar (GarhwaL), Uttarakhand
[2]Govt. P.G. College, Karanprayag, Chamoli, Uttarakhand
[3]The Energy and Resources Institute (TERI), New Delhi

Urtica dioica: A Traditional Herb for Possible Treatment of COVID-19 in Uttarakhand

The Corona virus epidemic has recently shown the dangers of epidemics related to diseases that transfer from animals to human hosts to the world. The first case of the corona virus disease (Covid-19) in India was reported in January 2020 from. Slowly, the pandemic has spread to several states and territories including the states of Uttarakhand, with the first case recorded in March month. The economic, physical, mental, and emotional costs of Covid-19 can vary in degree, but the experience has been similar around the world. However, Covid-19 lockdown has proven good for the natural regeneration of the environment due to the limited involvement of human activities within nature. Residents of the Himalayan region of Uttarakhand have been particularly affected by the pandemic because mountain communities have limited occupation and heavy reliance on the plains and cross-border trade for their livelihood. The pandemic has disturbed everything, local businesses, shopkeepers, and daily laborers are mainly affected. There is hardly any work left at the moment except for some menial labor. Streets were almost empty, hardly any people were coming to purchase items, and the market and shops were opened for limited hours. The closure has caused many workers and villagers to stay away from their homes, and new places have been opened where they can live until the closure ends. The government has opened a care fund was opened, which provides money to people in need throughout India. In addition to the national government, state governments and NGOs have provided food and shelter to people in need. Numerous webinars were held to spread awareness to overcome the situation and to spot the challenges and opportunities in Uttarakhand during Covid-19. Despite these challenges, the ability of mountain people to cope with the crisis was high. India is rich in floral diversity and particularly, the Indian Himalayan area is rich in terms of natural herbs. It consists of a variety of medicinal plants that are traditionally being used by the local people to treat many disorders or diseases. We are well aware of the side effects of allopathic medications. Hence, it is safe to go natural to care and nourish our body using herbal remedies. Many of our mountain people have started their livelihood using this natural wealth of Uttarakhand to sustain themselves after Covid-19 pandemic. The nettle leaf herb (*Urtica dioica*) is one of the most important and popular herbs grown in rural areas of Uttrakhand. Nettles are famous for their ability to sting. The leaves and stems have fine hair that has an irritating compound that is released when the plant comes into contact with the skin. Years ago, *Urtica dioica* and closely related *Urtica urens* were exploited as a diuretic (to remove excess water from the body) and for joint pain treatment. The leaves have a great role in the treatment of osteoarthritis and inflammation of the skin. It is also used traditionally in Uttarakhand as a vegetable. The roots of this herb contain plant lectins, known as *Urtica Dioica* Agglutinin (UDA). UDA is known in immunology as a superantigen, a lectin that induces cell growth and division (clonal activation). When these lectins induce the multiplication of specific white blood cells, they are known as mitogens. UDA lectin has properties that may make it worthy of being considered as an anti-coronavirus agent. Previously, it has shown antiviral activity against RSV, HIV, H1N1, CMV and SARS-CoV viruses (Mitchell *et al.,* 2017). In one experiment, it has been observed that UDA inhibited coronavirus in in-vitro conditions in mice. The reduction of IL6 in the lungs, as well as 50% survival of the mice, was considered as evidence to support further investigation of UDA treatment regiments as potential anti viral therapies (Meer *et al.*, 2007). Therefore, nettle root may have a significant advantage as a potentially safe, cost-effective and readily available traditional drug for Covid-19. Nettle leaf extract exhibits promising capabilities to inhibit corona virus infections. Thus, health authorities took this traditional medicine into account in evaluation panels exploring potentially effective treatments for Covid-19. Recently, "Tea chemicals could be effective in boosting immunity as they can block coronavirus activity better than anti-HIV drugs," said Dr. Sanjay Kumar, Director of the Institute of Himalayan Bioresource Technology (IHBT), based in Palampur, Himachal Pradesh during a webinar held at IHBT on the occasion of International Tea Day. Now, products like immunity booster herbal tea and Doon Nettle Tea-Stinging Nettle Leaf Tea from Garhwal Uttrakhand (*Urtica Dioica*) Herbal Tea, (*Fennel Flavor)* are available online to order with the benefits of kidneys cleansing and immunity booster. Before this pandemic, hilly regions were considered as undesirable places to live due to a shortage of facilities and services. But Covid-19 has created many unlikely blissful gatherings in empty houses in these mountains, regardless of the fear and uncertainty. Most people are now ready to return to their native homes in the mountains, where the pandemic has barely affected their lives.

Fig. 1. A rural woman collecting Nettle leaves (*Urtica dioica*) for her living

Fig. 2. *Urtica dioica*

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Jyoti Rawat (*jyotirawat@kunainital.ac.in*)
and **Veena Pande**
Department of Biotechnology,
Sir J. C. Bose Technical Campus Bhimtal,
Kumaun University Nainital,
Bhimtal, Uttarakhand

Role of Women Self Help Groups During Covid-19 in Himachal Pradesh: A Review

Today whole nation is under the influence of deadly virus COVID-19 which is not only affecting the present population medically, but also physically, mentally and economically. Himachal Pradesh Government was among the first ones in the country to take the precautionary step to implement a strict curfew, lockdown, in order to control the spread of corona virus. The major impact of COVID-19 was noticed to small daily wages workers and farmers of all the sectors including agriculture, food industry, handloom industry due to lockdown and non-availability of transport. People lost their jobs and they were forced to return to their home town with insecurity in their mind about their livelihood. They were unable to move from one place to another, instead they had to follow some guidelines or precautions such as social distancing, proper hygiene and protection by wearing masks. Several suicides were reported in past few months due to insecurity related to livelihood, depression and financial status. Government on their behalf tried their best to create opportunities to overcome this situation by providing free ration, medical facilities and giving liberty in some essential commodities. But, there is an ultimate need to move further to overcome from this situation financially and improve economically. In this context, women self-help groups in Himachal Pradesh played an important role in combating COVID-19 pandemics and upgrading livelihood.

Women NRLM self-group are involved in fulfilling short falls in facemasks, sanitizers, preparation of soaps, protective equipment, face shield for medical, police staff and cleaning staff, running community kitchens and fighting misinformation. It has been found that around 2000 women from 50 self-groups are preparing about 15,000 masks and 100 personal protective kits per day to provide helping hand to fight against Covid-19 and also in-turn generate their livelihood by selling this product to concerned authority at very low rate. Women member of Vishwa Karma Self-Help Group (SHG) in Palkwah village of Haroli Block in Himachal Pradesh's Una district produces about 100 face masks per day to meet the demands by allocating their extra time that they can spare from farming activities, household work and receiving about Rs.4 to Rs.5 for stitching a three-layered mask (Brara, 2020). Women members of self-help groups were also arranged food items and other necessary household materials to labourer's workers which were facing difficulty in earning due to lockdown. Self-help group of some educated women provided knowledge by digitalization and involved in awaking people for proper utilisation of natural resources, proper hand hygiene and misinformation regarding spread of this pandemic and its prevention. The main advantage of digitisation is women can work from her own home, connected to each other and communicate, aware people through the help of media maintaining social distances. Some of the women's group have been trained to prepare sanitisers as well with the help of technology and in turn they help to promote awareness regarding hand hygiene in their communities and also motivating people to buy affordable hand sanitizers. Women self-helping group "Akal" in Sirmour District has also prepared a sanitizer which costs Rs.100 per 200 millilitre bottle (Bodh, 2020). Another initiative step taken by women self-help group to become self-reliant during this pandemic situation is to prepare rakhis from household material which generates livelihood options. Total 200 women were trained in handmade rakhis and nearly 2,000 rakhis have been sold in the market by self-help groups with prices ranging from Rs 10-Rs 50 3. Thus, women have been playing an important role in fighting the COVID-19 by making their valuable contribution and sustaining their livelihoods through social approachable endowment (IANS, 2020).

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Nitasha Thakur (*nitasha.nitasha.thakur@gmail.com*) and **Sarla Shashni**
GBPNIHE, Himachal Regional Center,
Mohal - Kullu, Himachal Pradesh

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Avitourism or Bird Tourism: A Source of Livelihood after Covid- Pandemic Era

The national lockdown from 25 March 2020 has severely affected lives and livelihoods across the India. The Covid-19 pandemic has caused significant disruptions in the global economy. Covid-19 is a health and economic crisis on a global scale. During the course of this pandemic many people have lost their jobs and are unemployed now, people in the hills are facing the similar problem. By producing some source of livelihood in Himalayas we can solve this problem which have stood in front of us. Hills are known for tourism and hence younger generation can be employed by bird tourism. Birds are eye catching and very fascinating creature in nature and an indicator of healthy ecosystem. Himalayan forest provides a good shelter and food resources to birds. Many studies showed that the Himalayas are rich in avian biodiversity (Joshi and Bhatt 2011; Singh *et al.,* 2018). It is a home of magnificent and rare bird species. The green forest cover of Himalayan range is home to these beautiful creatures and helps them to sustain their life and reproductive cycle. Tourism is a major source of employment globally; one of the fastest growing economic sectors and is an important driver of economic growth and development. Avitourism has the potential to provide considerable benefits but the extent of these activities needs to be properly evaluated to assess their ability to deliver sustainable conservation and tourism development outcomes on both public and private lands. Avitourism or bird tourism is a niche sector of the nature-based tourism market (Biggs *et al.,* 2011). The popularity of birds as interesting wildlife to watch among the wider community, increasing disposable income and the growing affordability of travel, has extended avitourism beyond the historical practice of localised bird watching, such that it has become a global pull. Avitourists are also reported to be among the most sensitive to nature conservation providing reinforcement for avitourism being one of the most sustainable nature based tourism activities (Li *et al.,* 2013).

Peoples are stuck in their houses for so long due to covid-19 and as once this pandemic will get over tourism will take a new turn. People will head over to hills for trips once again and local people can be employed as bird watchers for providing an informative and adventurous tour to them. Once the proper training is given to the locals afterwards they can guide the local and global tourists as well. The informative bird watching is not only fun but act as an information pool for educating oneself and others too. Hence, avitourism can not only resolve the livelihood problem which has stood in front of our people from hills during this pandemic but can also provide tourism in future too.

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Vinay Singh (*singhvinay.vs93@gmail.com*)
Satpal Singh Bisht and Neha Rajwar
Department of Zoology, Kumaun University,
Nainital, Uttarakhand

Bee a Part of Solution: Honey Production Supporting Livelihoods

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Background- Pollination is one of the important phenomena that promotes biodiversity and also maintain life on Earth. India Hold eleventh position in honey production in World where Uttrakhand holds ninth position. Honey Production Has been considered as important part of rural communities promoting subsistence farming. Uttrakhand is home to large bee industry exporting INR 80Crore of organic honey annually. In Uttrakhand bee keeping known to be supplementary source of livelihood. Honey is on demand due to its health benefits and it majority has good medicinal value. Natural honey as natural potent considered as good alternative for antiviral and antimicrobial infections .Uttrakhand need to apply this beekeeping sector to buisness level promoting conservation and enhancing economy and fighting Covid-19.

Introduction- Recently corona virus disease 2019 (COVID-19) is a serious concern worldwide. It is anticipated that, during end of year 2019, Covid-2019 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been identified in Wuhan City of Hubei Province of China(1). Within a short period of time, due its easily transmissible nature, it spread to almost 210 countries in the world thus declared World Pandemic by WHO on 11th March, 2020 (2) . As of 17th June 2020, 8,322,910 people had been infected by this novel virus and the number of deaths is 447,959 (3). Before Covid-2019, there were other two virus belonging same genus had been found to cause severe infection of the lower respiratory tract in the form of pneumonia(2,4) . The Covid19 readily triggers infection in several organ including lung, digestive system as well as liver(4). The reason behind high fatality rate of this virus is probably the acute lung injury (5) . It's a misfortune that no proper treatment method has been introduced till date (6).This Year Covid-19 Arrived with spring that disturbed connection between farmers, bee and beekeepers. The use of chemo drug comes with several problems including multidrug resistance, side effects and other difficulties which leave us to think about other alternatives like natural products for reducing the unavoidable side effects (7–9). So Production of honey in this pandemic not only influence economic security but also local biodiversity due to pollination provided by bees. Bee keeping Should be employed to poor people of Himalayan as it provides social along with nutritional benefits. Apiculture requires low credit and limited land than other agricultural activities.

Apiculture promotes women participation- Bee keeping can be done by any gender or any age group member .Both youth and Women can participate so that it can contribute to their livelihoods.Women thought to look over household works but Women of Uttrakhand was always strong and hardworking. They should be made to hugely participate in agricultural activities also. They should also be made to participate in beekeeping activities like colony transfer, catching of queen , moving of hives etc.This way it can promote Women Employment and Empowerment together. Another best advantage is it will engage Women in community involvement and will create platform to explore ideas and experience and meet new people.

Honey production creating income- Bee has supported ecosystem in many ways from anchoring food chain to ensuring human agricultural security .Bee keeper play major role in commercial production around the world but Human was unable to move colonies of bees due to lockdown caused by this pandemic .The Honey production and pollination of crops affected due to loss of new bees colonies. However due to lockdown pollution decreased improving air quality due to which health and population of honey bee improved. The resultant activity of increasing population of honeybee led to increase in honey production .Bee keeping considered to be integral part for livelihoods diversification.

Steps by government- Bee keeping in India is best Agri-business providing important income generating employment. For Apiculture, National Honey Board India is important. KVIC (khadi village industries commission) besides imparting training like rearing and honey extraction providing advance training to selected farmers through its Central Bee Research Institute situated in Pune.Honey and its by-product like Royal Jelly, Propolis, Pollen, Wax etc. has high value creating additional income. Modi Government has also called sweet (honey) revolution that help to transform farmers lives hence honey act as alternative employment.

- It provide training to rural farmers interested in bee farming.
- Government is helping to markets honey .
- Government Provide 35% Subsidy on bee farming .Bee keeping is profitable, when you reach high amount of hives.

Conclusion- Beekeeping provide positive impacts to achieve livelihoods security.It has always proved to be best support for poor farmers. It however don't have negative impact on other community. More initiatives should be taken to boost this market oriented business to escape poverty, earning cash and diversification of livelihoods. This build up confidence among farmers so that they can effort to cope up poverty in this pandemic. Even use of modern technology adding improved management using capacity building programs is dependent on assumptions theories that this might influence yield. Without financial support, frame hives it is hard for poor farmers to afford .

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Manisha Bisht[1] (bishtmanisha396@gmail.com),
Deepika Goswami[1], V.P Uniyal[2],
[1]D.S.B Campus Nainital, Uttarakhand,
[2]Wildlife Institute of India, Dehradun , Uttarakhand

कोरोना संकट और उद्यमियों की सकारात्मक पहल

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भारत में कोरोना संकट के संभावित खतरे को देखते हुए भारत सरकार की ओर से मार्च 2019 माह के अंतिम सप्ताह में लॉकडाउन की घोषणा की गई। प्रधानमंत्री ने देशवासियों ने जहां जिस स्थिति में हैं वहीं रहने की अपील की। लॉकडाउन की अवधि बढ़ती चली गई और देश में अनेक औद्योगिक नगरों ही नहीं छोटे नगरों में भी तेजी से कोराना पीड़ितों की संख्या बढ़ती चली गई। विश्व स्वास्थ्य संगठन सहित अनेक एजंसियों ने भारत में इसके जन फैलाव की चिंताओं के बीच लॉकडाउन को और सख्ती से लागू करने के सुझाव दिए। इस दौरान बड़ी संख्या में आर्थिक गतिविधियों का संचालन ठप्प पड़ गया। दो तीन सप्ताह बाद भी देश में यह संकट व्यापक होता चला गया। बड़ी संख्या में श्रमिकों ने पैदल चलकर महानगरों से गॉवों की ओर रूख किया वहीं सरकार ने दो से तीन माह के खाद्यान्न वितरण कर सामाजिक तनाव को कम करने के भरसक प्रयास भी किए।

उत्तराखण्ड राज्य का भूगोल काफी हद तक पहाड़ी है। चिंता का एक प्रमुख कारण ग्रामीण से अर्द्ध शहरी या शहरी क्षेत्रों में अर्द्ध स्थायी या स्थायी आधार पर लोगों का पलायन है। क्योंकि इसके परिणाम स्वरूप गांवों की जनसँख्या में गिरावट आई है; जो कई गांवों में दो अंकों में पहुंच गयी है। और इसने प्राथमिक क्षेत्र (कृषि) को भी घटाया है। दूसरी तरफ, शहरी क्षेत्रों में लोगों का प्रवास, राज्य के भीतर और बाहर दोनों संसाधनों पर तनाव पैदा कर रहा हैं। पहले से ही शहरीकरण की समस्या से जूझ रहे कस्बों और शहरों में पानी की कमी, भीड़भाड़, स्वच्छता और शहरी प्रदूषण से समस्या और भी गंभीर हो रही है।

१. उत्तराखण्ड के ग्राम पंचायतों में पलायन की स्थिति पर अंतरिम रिपोर्ट , ग्राम्य विकास एवं पलायन आयोग रिपोर्ट 2018 , प्रस्तावना के आधार पर सरकार द्वारा राज्यों के माध्यम से मनरेगा जैसी अनेक योजनाओं के द्वारा अधिक से अधिक नागरिकों को लाभ पहुंचाने के प्रयास भी किए। प्रवास पर लौट रहे युवाओं हेतु सरकार ने अनेक वित्तीय योजनाओं के द्वारा लाभ पहुंचाने अथवा उन्हें उद्यम की ओर प्रोत्साहित करने का प्रयास किया गया। लॉकडाउन की अवधि तीन से चार महीने आगे जाने पर यह प्रक्रिया वर्तमान में भी जारी है। उत्तराखण्ड राज्य जो सर्वाधिक पलायन ग्रस्त था यहां लॉकडाउन के कारण हजारों की संख्या में लोग महानगरों से गॉवों की ओर लौटे। 30 प्रतिशत से अधिक युवाओं और कामगारों ने पुनः सरकार के समक्ष यही रहकर काम करने का विकल्प भी दिया। क्वारंटीन केंद्रों में विभिन्न विभागों द्वारा किए गए सर्वे में यह बात सामने आई। राज्य में सरकार के समक्ष जहां इनती बड़ी संख्या में लौटे परिवारों को लाभ पहुंचाने का संकट है वहीं रोजगार के अवसरों को पैदा करना बड़ी चुनौती है। इस संकट काल में सरकार के साथ समाज ने भी अपने स्तर से स्वावलंबन की दिशा में आगे बढ़ने के नए प्रयासों को शुरू किया है जिससे एक नई उम्मीद जगी है। उत्तराखण्ड राज्य के देहरादून और हरिद्वार तथा उद्यमसिंह नगर मैदानी जिलों को छोड़कर कुल 59,360 प्रवासी अप्रैल माह 2019 तक राज्य में लौट आये ।

२. राज्य ग्राम्य विकास एवं पलायन आयोग की अंतरिम रिपोर्ट के 23 अप्रैल 2020 के अनुसार उत्तराखण्ड में पर्वतीय क्षेत्र सघन प्राकृतिक संसाधनों से लैस है। प्राकृतिक संसाधनों की बदौलत ही इस राज्य की आत्मनिर्भर बनने की कल्पना सदैव की जाती रही है। लेकिन उत्तराखण्ड में जहां वन्य जीवों की समस्या के चलते लोग खेती से विमुख थे वहीं सिंचाई, सड़क और विपणन आदि समस्याओं के चलते व्यवसायिक खेती हतोत्साहित थी।

कोरोना संकट काल में उत्तराखण्ड राज्य में समाचार माध्यमों और सोशल मीडिया मंचों पर अनेक ऐसे उदाहरण सामने आए जिसने समाज और सरकार में नई ऊर्जा का संचार किया। अनेक ऐसे स्थान भी हैं जहां वन्य जीवों की समस्या नहीं थी अथवा कम थी वहां के कृषि उद्यमियों ने इस दिशा में नई मिशाल कायम की है। जनपद चमोली के देवाल विकासखण्ड के ग्राम हिमनी के सुचा आनंद सिंह पटाकी देहरादून में प्रतियोगिता परीक्षाओं की तैयारी कर रहे थे। लॉकडाउन ने उन्हें घर भेजा, गांव में जड़ी बूटी की अपार संभावनाओं को तराशते हुए उन्होंने गांव में कुटकी, अतीश, कूट, चोरू और जटमासी का उत्पादन कर व्यापार शुरू किया। क्षेत्र में जड़ी बूटी शोध संस्थान गोपेश्वर से जुड़े नरेंद्र बिष्ट ने उन्हें ही नहीं अन्य ग्रामीणों को भी इस कार्य के लिए मार्गदर्शन कर प्रोत्साहित किया। यूरोपियन देशों ही नहीं भारतीय क्षेत्र की डाबर, इमामी फार्मास्यूटिकल कंपनियों के द्वारा इन उत्पादों को खरीदा जा रहा है और हर साल लाखों की आमदनी इन गॉवों की हो रही है। पहाड़ी जिलों में प्रति व्यक्ति आय मैदानी जिलों की तुलना में काफी कम है, जिन जिलों में सबसे कम प्रति व्यक्ति आय है। वे बागेश्वर , चंपावत, उत्तरकाशी है। जहां प्रति व्यक्ति आय उद्यमसिंह नगर , हरिद्वार और देहरादून के मैदानी जिलों में से 40 प्रतिशत है। यह ध्यान रखना दिलचस्प है कि इन जिलों के सकल घरेलू उत्पाद, विशेष रूप से उत्तरकाशी में प्राथमिक क्षेत्र का योगदान राज्य औसत से काफी अधिक है।

३. उत्तराखण्ड के ग्राम पंचायतों में पलायन की स्थिति पर अंतरिम रिपोर्ट , ग्राम्य विकास एवं पलायन आयोग रिपोर्ट उत्तराखण्ड सरकार, पेज 11 2018

सुदूरवर्ती गॉव वांण चमोली की 60 वर्षीय दम्पत्ति, पान सिंह व बचूली देवी ने बताया कि वे जड़ी बूटी विपणन से साल में 3 से 4 लाख रूपए की आमदनी कर लेते हैं। बेमौसमी दौर में वे मटर उत्पादन कर अतिरिक्त आय करते हैं। ग्रामीणों के अनुसार वे साल में औसत 50 से 60 हजार रूपया इन उत्पादों से प्राप्त कर लेते हैं जिससे उनका जीवन आत्मनिर्भर है।

इसी प्रकार बागेश्वर जनपद के कपकोट तहसील निवासी बौराचक झरकोट में भी युवा महानगरों से लौटकर गॉव में पुस्तैनी भेंड पालन को प्रोत्साहित कर अपनी आय का माध्यम बना रहे हैं। उनके अनुसार साल में 70 से 80 हजार रूपए उनके भेड़पालन से प्राप्त हो जाते हैं। इसके अतिरिक्त भेंड़ ऊन से कंबल, दन, थुलमा आदि बनाकर ग्रामीण महिलाओं को रोजगार दे रहे हैं तथा अतिक्ति आय कर रहे हैं। अल्मोड़ा के नौबाड़ा निवासी युवक दान सिंह रौतेला के अनुसार दिल्ली मैट्रो की नौकरी छोड़कर इस संकटकाल में उन्होनें पहाड़ी बिच्छू घास को सुखकर औषधीय चाय उत्पादन कर 1000 रूपए प्रतिकिलो बेचना शुरु किया है। अब तक वे 40 किलो से अधिक की चाय बेच चुके हैं। साथ ही अमेजन से उन्हें 150 किलो चाय का ऑर्डर मिल चुका है। वहीं पिथौरागढ़ जनपद के बेरीनाग निवासी पंत बंधुओं द्वारा बैग बनाने के कुटीर उद्योग की सफल कहानी समाचार पत्रों में चर्चाओं में रही जिसमें वे 50 हजार रूपए से अधिक मासिक आमदनी प्राप्त कर रहे हैं। इसी प्रकार कुवैत से लौटे एक युवक ने भी बागेश्वर में फास्ट फूड का नया रेस्त्रां खोलकर आत्मनिर्भरता की मिशल कायम की। इस प्रकार इस कोरोना संकट काल को अवसर में परिवर्तित कर युवाओं ने समाज के सम्मुख नई उम्मीद का संचार किया है। दूसरी ओर सरकार द्वारा प्रवासियों के लिए स्वरोजगार और स्वावलंबन के लिए किए जा रहे प्रयासों को भी इससे दिशा मिल रही है। उत्तराखण्ड जैसे विषम भौगोलिक क्षेत्र वाले राज्य में आज भी अनेक क्षेत्रों में इस प्रकार उद्यमों को खड़ा करने की संभवनाएं हैं जिसमें कुछ क्षेत्र निम्नवत् हो सकते हैं।

- दोना पत्तल काम
- मुर्गी पालन,
- अचार व अन्य फल प्रसंस्करण,
- मसाला उद्योग,
- अगरबत्ती,
- पहाड़ी अनाज का विपणन
- जड़ी बूटी उत्पादन
- टिफन तैयार करना
- पापड़ व साबुन बनाने के काम
- नेचर फोटोग्राफी आदि।

आज आवश्यकता है कि सरकार एक ओर इस प्रकार के उद्यमों को प्रोत्साहित कर और दूसरी और हिमांचल प्रदेश सरकार की तर्ज पर इन उत्पादनों के विपणन की दिशा में आगे कदम बढ़ाए। सरकार द्वारा लौट चुके प्रवासियों के सामाजिक–आर्थिक स्तर का अध्ययन करने भी भी घोषणा की है। इस प्रकार के प्रयासों से जहां उत्तराखण्ड राज्य कोरोना संकट काल से उबर पाएगा वहीं प्रतिव्यक्ति आय बढ़ाकर विकास की गति को आगे बढ़ाएगा और सामाजिक उन्नति की दिशा में आगे बढ़ेगा।

संदर्भ

दैनिक अमर उजाला, विभिन्न सम्बंधित अंक
दैनिक जागरण विभिन्न अंक
सांख्यिकी विभाग, उत्तराखण्ड सरकार की विभिन्न रिपोर्ट
उत्तराखण्ड सरकार, पलायन आयोग रिपोर्ट
उत्तराखण्ड रोजगार और श्रम कार्यालयों की रिपोर्ट

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Extending the Reach of Agricultural Extension Services by Villagers of Pauri and Tehri Garhwal, Uttarakhand

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On 11 March 2020, WHO declared the coronavirus disease (COVID-19) outbreak as a global pandemic. Although research is very much still underway and data are constantly being reviewed and updated. Where until now approximately 24,628,607 cases have been registered and 835,637 deaths have been reported. If we talk about our Country, India it is also leading in the race of corona cases where total cases yet reported are 3,387,500 and total deaths reached to 61,694 (WHO Covid-19 Update).Since majority of the cases of Covid-19 comes from peninsular India but recently in Himalayan states or region the cases of Covid-19 are emerging rapidly. Since mountain people are already living in a fragile landscape. Their marginalization makes them even more sensitive to such natural disasters (pandemic) like Covid-19. To cope up with this pandemic situation is not so easy but also being not so tough. As the lockdown announced by the Govt. of India, many of the peoples of Uttarakhand come back to their native villages, which could not be done by several efforts made by govt. of Uttarakhand time to time. This come back of peoples due to Covid-19 pandemic, create an opportunity to Govt. for rehabilitation of declared ghost villages in Uttarakhand. Covid-19 also plays an important and positive role towards the reverse migration and put the challenge before govt. for retaining this reverse mass in Uttarakhand through viable livelihood option. Therefore the present article highlighted the extension and adoption of medicinal plant cultivation by several creative mind who got time to resilience the problems into opportunities. A few months randomized natural trial tested how to engage local farmers as partners in augmenting extension services. The findings have provided a basis to rethink strategies for delivering extension services. Since during this period it is not easy to travel from one place to another hence this hit and trial method got success. The study tested the use of combinations of incentives and knowledge sharing among lead and peer farmers and found lead and peer farmers can be just as effective at transmitting agricultural technologies and knowledge as extension workers. It is important to utilize local networks in disseminating new technologies and practices and to recognize the important role that women play. When lead and peer farmers shared information about agricultural technologies, there were significantly higher adoption rates among households headed by both men and women, highlighting the benefits of engaging youth also. During this period the role of not only farmers increased but the responsibility of Institutes also gained since in case of HAPPRC, H.N.B.G.U, Srinagar (Garhwal). The HAPPRC provided/ distributed more than 500 saplings of different avenue, horticultural, evergreen trees to nearby villagers (altitude upto 500-1000 m asl) and to the lead farmers. Most of the lead farmers not only to want enhance their economic return but also their villagers too. Simultaneously, during this crises period HAPPRC take the opportunity to extend the impact of their research as extension help to villagers of village Naula Bhaiswara (2230 m asl), Khirsu, Pauri Garhwal. Which is known to be one of the remotely located villages of the district Pauri Garhwal. There one enthusiastic entrepreneur farmer Mr. Vinod Singh Rawat (Rathi) take the lead and planted more than one lakh plants of highly risk species kutki (Picrorhiza Kurrooa) under technical guidance of HAPPRC. Mr. Rathi creates a Self Help Group (SHG) of village women and successfully registered under Uttarakhand Govt. as Himrath Jaivik Krishi Utpadan Swayat Sahkarita for organic cultivation of medicinal and aromatic plants (Rectified Certificate No. IN-UK73198657604625S). At present Mr. Rathi is not only providing employment to its own villagers but also providing to villagers of nearby villages like Syoli, Talli etc. As incentive, HAPPRC provided him seedlings of Kutki (Picrorhiza Kurrooa), Kuth (Sassura costus), Jatamansi (Nardastachys grandiflora), Ateesh (Aconitum heterophyllum) and Archa (Rheum emodi) and hold the meetings with villagers during the COVID-19 pandemic period for generating the awareness about importance of organic farming and conservation of high altitude medicinal plants.

Similarly, HAPPRC done the plantation of numbers of medicinally important tree species with the help of former Pradhan and lead farmer Mr. Raghuveer Singh Rawat of village Bandasa (1200m asl), Keertinagar, Tehri Garhwal. In this village number of youth has come back to village from different metropolitan cities like Delhi, Mumbai etc. and interested to begin the work in Agricultural/ horticultural field as option of their livelihood in village as well as income for future. In motivational leadership of Mr. Raghuveer Singh Rawat and technical guidance of HAPPRC, the villagers cultivating aromatic crop Rosemary & Dandelion (a new emerging crop for hills) in >0.5ha of land. Mr. Rawat is continuously increasing the cultivation area of some MAP's which gives fast returns to him. He also plan to cultivate the large cardamom in >2 ha of lands in near future.

Fig.1. Photographs of Village Nyola Bhaisnwara of Pauri Garhwal District cultivating High Fetch Market Crop Kutki under the Supervision Of Dr. Vijay Kant Purohit. (A) Remote Area Village View, (B-D) Giving Technical Know-How By Senior Scientist. Dr. V.K. Purohit, (E) Cultivation of Kutki at field, (F) Registered SHG during Lockdown Period & (G) Group View of Villagers.

Reference

WHO COVID-19 Updates -https://www.worldometers.info coronavirus.

Jaidev Chauhan (*jai devchauhan678@gmail.com*) ,
Vijay Kant Purohit and Pradeep Dobhal
High Altitude Plant Physiology Research Centre (HAPPRC),
H.N.B. Garhwal University, Srinagar (Garhwal), Uttarakhand

The Scope of Vermicomposting and Organic Farming in Himalayas During COVID-19

Since March 2020 with the revelation of Covid-19 in China, the world has stood still. It has affected every continent, every country and every sector with no distinguish between people. The world's economy is falling down day by day and half of the working class has lost their jobs and facing financial crunch in this pandemic. The people in the hills are affecting more severely as there were already shortage of livelihood options in hills before the hit of this pandemic. Now their options has not only shortened but to earn bread and butter for their family is a challenging concern in upcoming time.

Himalayan region is well known for its farming practices since old times. The people residing in these Himalayan terrains are sowing and growing their own food for many years. For this they have their own cattle and depends on them for farming and milk production sometimes solely. On the other hand organic farming includes holistic production that dodges the use of synthetic and non – synthetic fertilizers. The byproducts of these cattles such as cattle dung can be used to make vermicompost and can be commercialized.Vermicomposting is a bio-oxidative process which includes the involvement of earthworms. The earthworms feed on the organic wastes and produces vermicast. As this organic waste passes through the earthworm gut which is loaded with microbes which in turn break down the complex nutrients present within it into much simpler forms and make them readily available for plant roots to take in. Hence, the vermicast of earthworm is full of nutrients and supports the growth of plant and thus productivity.

Earthworms are ubiquitous and are present in gardens, near streams, fields and mostly in the places where the moisture and food is in adequate amount. The vermicomposting capacity of endemic earthworms of Himalayan region such as Drawidanapelensis, Metaphirehoulleti, Perionyx excavates, Amynthas gracilis, Octolasion tyrteum, Amynthas alexandriand Octolasion cyaneum has been well studied by many researchers(Kaushal *et al.,* 1994; Kaushal *et al.,* 1995; Bisht *et al.,* 2006). To produce the valuable vermicompost, organic wastes such as kitchen wastes, wheat straws, leaf litter (pine and oak etc.) and cattle manure can be used. The waste ismixed with manure in 1:1 and left for 10-15 days in a compost pit for composting. Water is sprinkled regularly to cool down the raised temperature and later on earthworms can be introduced in the pit. The warms starts feeding on this mixture and produces the valuable vermicompost also known as black gold. The vermicompost thus produced can be extracted and packed for sale in local market as well as in other Himalayan villages or town. This black gold is loaded with nutrients can be commercialized in the market by the farmer himself or through some supporting NGO.

The no cost vermicomposting pit can be established by any willing farmer and house maker as well. This will benefit the farmers as they can use this vermicompost in organic farming as well as can earn their livelihood. This black gold enriched with nutrients fulfills the organic farming requirement and can increase the crop production as well. 'Support local' which is the theme of progress mantra given by our Hon'ble Prime Minister during this pandemic can be achieved by the vermicomposting process and organic farming. Moreover, the question of livelihood of people from the hills can be resolved permanently by the production of vermicompost at large scale.

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Neha Rajwar (*rajwar.neha@gmail.com*)
Satpal Singh Bisht and **Vinay Singh**
Department of Zoology, Kumaun University, Nainital-263002, Uttarakhand

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Wild edible plants: Nutritional benefit and livelihood option for women in central Himachal Pradesh

In Himalayan regions wide range of wild edible plants are used by the locals as a source of food, medicine, nutrition and for various cultural purposes (Aryal *et al.*, 2018). Potential of these wild edibles plants as source of income and livelihood in the rural settings are acknowledged by the researchers all across the globe (Dutta, 2012). Wild edible plants can be collected from the habitats such as forest, barren lands, roadsides, near agricultural fields, wastelands, etc. For some of the indigenous communities' wild edibles are the integral part of their day to day life and culture. In the central parts of Himachal Pradesh, variety of habitats provides a luxuriant growth of different edible plants. The rural communities living in these areas are dependent on number of wild and semi wild plant species which contributes to their food security, nutrition and also offers aneconomic opportunity. The region is the emporium of species like *Allium humile, Allium stracheyi, Aegle marmelos, Amaranthus spinosus, Carissa spinarum, Diplazium esculentum, Elaeagnus conferta, Murrayakoenigii, Punicagranatum, Phyllanthus emblica, Tamarindusindica, Berberis aristata, Chenopodium album, Juglans regia, Rubusbiflorus, Rhododendron arboreum, Viburnum cotinifolium, Ribesglaciale, Polygonatumverticillatum, Syzygiumcuminiand, Thymus linearis*, etc. These wild edible plants having medicinal values are also the chief source of nutrients such asprotein, carbohydrates, fats, vitamins, minerals, etc.

In recent times, Covid-19 pandemic generally a public health crisis causing a huge devastation on thesocialandeconomicfactorofthehumanbeingallovertheworld.The pandemic also increased the use of various wild plant as essential healthcare and human wellbeing(Timoshyna *et al.,* 2020).In central parts of Himachal Pradesh, people having small landholdings are dependent on various wild and semi wild produces for their day to day nutritional needs and livelihoods. Women in the region uses various wild edibles in their diet for various nutritional benefits. Sometimes they sell the produce to nearby market in the price range of Rs. 30 to 150 according to the produce. This give them a small monetary gain for short time period. Value addition of these wild edibles can be beneficial option for them which will give them a good market return.For example; lingdi (*Diplazium esculentum*) is sold at Rs 50 per kg as fresh produce while its pickle can be sold upto Rs. 1000 per kgs. The fern is known to have high antioxidant properties, vitamins and fatty acids. Due to the lack of awareness on processing of these resources most of the produce get wasted at the source.The value addition process not only increase it price but also ensures the availability of the produce throughout the year with livelihood generation to the women. For sustainable livelihood of women, wild edibles should be harvested sustainably from its natural habitat. Good value addition process and proper marketing linkages with local, state and national agencies will also be helpful in the development of women enterprise in the region.

Fig.1. *Rhododendron arboreum, Juglans regia, Myricaesculanta*

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Pooja Kumari and **Sarla Shashni** (*sarla.shashni@yahoo.co.in*)
G. B. Pant National Institute of Himalayan Environment
Himachal Regional Center, Mohal-Kullu Himachal Pradesh

A Journey of Self-Reliant

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Sumit Bhosle was an urbanite that turned into a farmer in due course of time. Somebody who spent the first 28 years of his life in a city like Mumbai and now enjoying the perks of much better and a simpler lifestyle in a village since the last 6 years. The region where they live is called Konkan. The bio-diversity and the way of life over here is very inspiring. The abundance of nature in their surroundings and the inherent simplicity is what inspires them to be self-sustainable in whatever capacity they can. He is based in a village named Talavade, in the state of Maharashtra, India and he is very close to Goa. He is fortunate enough to have a farmland of around 14 acres. He grows paddy, legumes, leafy vegetables, indigenous veggies and local exotic fruits like mangoes and jamun.

Nature always works in a beautiful symbiotic manner. There is a healthy relation between what our friends in the farm eat and what we consume. We grow food for our farm animals and for us. One thing that we follow here is that we don't burn anything. All the bio-matter that is generated in the farm, leaves, twigs, crop residue, fodder wastage, everything is composted and put back in the soil. With all the animals in the farm we have a rich source of manure, which we use for fertilization and pest management.Fortunately in the rural area where we live people know the importance of indigenous varieties. So we source all our seeds from the local area itself. Only this year we have started to share seeds and saplings of some of our produce with fellow aspiring farmers.

There is no hurdle as such when it comes to farming. If there is a problem to do with the changing climate pattern, we think planning is the solution to it. But the undercurrent of commercialization/ mass production of each and everything is what bothers me. We all need to understand that as we grow big in population the real answer lies in micro management of things. Looking at everything with an industrial scale will only increase the problem in that magnitude. The biggest reward is the satisfaction of creation. One puts a lot of efforts in farming and when you reap the harvest, the sense of fulfillment is simply outstanding. There is so much that nature has to offer us, and that too literally at no cost. Only if we know how much to take and what to take. Try to understand this balance and it will be a better place for everybody."

Fig.1. some pictures captured by us during farming activities

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Manoj Singh Bisht, Assistant Professor and Hem Chandra Bhatt, Faculty of Commerce Department of Commerce, G. P. G. C. Gopeshwar, Uttarakhand

भारत के उप–हिमालय (शिवालिक) क्षेत्र में आजीविका के प्रमुख अवसर

भारत के उत्तर–पश्चिमी भाग में, शिवालिक तलहटी में 3.33 लाख हेक्टेयर का क्षेत्रफल, जिसमें उत्तराखंड, हिमाचल प्रदेश, जम्मू–कश्मीर, हरियाणा और पंजाब राज्य शामिल हैं। पारंपरिक कृषि और वन संसाधन आधारित निर्वाह इस दूरदराज के क्षेत्र का प्राथमिक व्यवसाय बना हुआ है। पंजाब के शिवालिक, जिसे स्थानीय रूप से कंडी क्षेत्र के नाम से जाना जाता है, को देश के सबसे नाजुक और कमजोर कृषि पारिस्थितिकी तंत्र में से एक माना जाता है। तलहटी पानी की कमी, मिट्टी का कटाव और बाढ़ आदि की गंभीर समस्या से जूझ रहा हैं। नहर नेटवर्क के माध्यम से बाढ़ और सिंचाई जल की आपूर्ति को नियंत्रित करने के लिए इस क्षेत्र में कई छोटे जलाशयों का निर्माण किया गया है। कंडी क्षेत्र विकास (KAD) प्रशासन, जल संसाधन विभाग, पंजाब सरकार मुख्य रूप से बाढ़ के क्षीण होने और कंडी क्षेत्र को सिंचाई सुविधाएं प्रदान करने के लिए इस क्षेत्र के विकास के लिए जिम्मेदार है, जिसके अलावा इस क्षेत्र मे पहले से ही पूर्ण नहर बांधों की मरम्मत, रखरखाव और संचालन का काम भी कर रही है। कुल 71,621 हेक्टेयर भूमि को कंडी नहर और कम बांधों (low dam) की कमान के तहत लाया जाना प्रस्तावित है, जिसमें से 35,640 हेक्टेयर (50 प्रतिशत) पहले ही नहरों और कम बांध के नेटवर्क की कमान के तहत लाया जा चुका है। पंजाब के कंडी इलाके मे ज्यादातर एग्री कल्चर लैंड बरनीयानी बारिश पर निर्भर है। रबी और खरीफ फसलों के लिए पानी की जरूरत पूरी नही हो सकती क्योंकि ज्यादातर बारिश ढाई महीने में ही होती है। राज्य की 4500 किलोग्राम हेक्टेयर के मुकाबले इस क्षेत्र में औसत कृषि उपज केवल 700 किलोग्राम हेक्टेयर रही है। इसके अलावा कंडी क्षेत्र बहुत तरंगित और उप पहाड़ी होने के नाते, चोस (बेवम) नामक कई छोटी और बड़ी मौसमी धाराओं से तय होता है और चित्ता कर्षक बाढ़ से ग्रस्त होता है। इस वर्षा जल का लगभग 40 प्रतिशत बाढ़ में बर्बाद हो जाता है, जिससे फसलों और गांव की आबादी को काफी नुकसान होता है। इस महामारी के समय, मछलीपालन, कृषि जैसे सब्जियां स्थानीय आजीविका का प्रमुख विकल्प हैं। इस क्षेत्र मे पर्यटन भी एक बहुत अच्छा आजीविका विकल्प है लेकिन महामारी के कारण यह बुरी तरह प्रभावित है, क्योंकि उस समय दुनिया के अधिकांश हिस्सों में पर्यटन कड़ाई से प्रतिबंधित है। इस क्षेत्र में अन्य प्राकृतिक संसाधन से आधारित विकल्प लकड़ी और कुछ अन्य वन संसाधन उनके दैनिक उपयोग के लिए उपलब्ध हैं। ये संसाधन बहुत सीमित हैं। वर्तमान संकट ने इस क्षेत्र में रहने वाले लोगों के सामान्य जीवन को बुरी तरह प्रभावित किया है। यहाँ आज तक कोई आपात योजना या आजीविका का कोई अन्य विकल्प उपलब्ध नहीं है। महीनों से लाकडाउन के बीच आज की स्थिति मे होटल और छोटे खाद्य आधारित कारोबार भी फलदायी नहीं हैं। इसलिए सभी बातों को ध्यान में रखते हुए हम स्पष्ट रूप से कह सकते हैं कि इस तरह की स्थितियां मनुष्य की सीमाओं को दर्शाती हैं। हमें अपने प्राकृति का सम्मान करना चाहिए क्योंकि यह हमेशा कई मायनों में हमारी सेवा करता है और स्थानीय आजीविका के विकल्पों और संसाधनों के साथ इस तरह की सबसे बुरी परिस्थितियों का सामना करने के लिए तैयार रहने के लिए खुद को तैयार करना चाहिए।

संदर्भ

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कोरोना काल में आजीविका के साधन

..... मधुमक्खी पालन एक उभरता व्यवसाय

आज पूरा विश्व कोविड–19 वायरस की महामारी से जूझ रहा है। इस वायरस ने पूरी दुनिया की अर्थव्यवस्था को धराशायी कर दिया है। भारत की अर्थव्यस्था भी इससे पूरी तरह चरमरा गयी है। हजारों की संख्या में फैक्ट्रीयां, कल–कारखाने, कार्यालय बंद हो चुके हैं, जिससे आज देश की करोड़ों जनता के सामने आजीविका की समस्या आन पड़ी है। कार्यालय, फैक्ट्रियां इत्यादि के बंद होने से लोग अपने–अपने घरों, गांवों को वापस आ चुके हैं। कमोवेश यही स्थिति पर्वतीय राज्यों की भी है। पर्वतीय राज्यों में भरपूर प्राकृतिक संसाधन(जल, जंगल व जमीन) तो हैं लेकिन उनका सही उपयोग न होने के कारण यहां रोजगार की कमी है अतः इन प्राकृतिक संसाधनों का सही उपयोग कर हम आजीविका अर्जन कर सकते हैं। इस संसाधनों के जरिये यदि समंवित खेती की जाय तो इस कोरोना काल में भी बिना मुश्किलों के अपने परिवार को सुचारूरूप से चलाया जा सकता है। समंवित खेती सभी संसाधनों (जल, जंगल व जमीन) के उपयोग से की जा सकती है। उसकी एक इकाई मौन पालन भी है। इस कार्य को सभी लोग आसानी से कर सकते हैं। इसमें ज्यादा मेहनत, भूमि व तकनीकी की आवश्यकता नहीं होती है। इसके लिए थोड़ी बहुत तकनीकी जानकारी, समय–समय पर देख–रेख होना ही पर्याप्त होता है। पर्वतीय क्षेत्रों में एपिस सेराना इंडिका मधुमक्खी पायी जाती है। इसे भारतीय मौन भी कहते हैं। मधुमक्खीपालन का कार्य प्राचीन काल से ही किया जाता रहा है। मधुमक्खियों से प्राप्त शहद का उपयोग अनेक प्रकार की औषधि के रूप में किया जाता है। संस्कृत में इसे अमृत पेय के रूप में जाना जाता है। मधुमक्खी पालन का उत्तम समय फरवरी–मार्च व सितम्बर–अक्टूबर का होता है। मधुमक्खी पालन के कई प्रत्यक्ष व अप्रत्यक्ष लाभ होते हैं। प्रत्यक्ष लाभ में किसान को उत्पाद प्राप्त होते हैं और मधुमक्खियों द्वारा किये गये परागण से फसल उत्पादन बढ़ जाता है जिससे अप्रत्यक्ष रूप से किसानों को मौद्रिक लाभ होता है।

मधुमक्खियों से प्राप्त उत्पादः

शहद– मधुमक्खियों द्वारा प्राप्त शहद औषधि का काम करती है। शहद बनाने के लिए मधुमक्खियां फूलों का रस लाती है जिससे वे शहद का निर्माण करती है। इण्डिका मक्खी वर्ष में 5–10 किग्रा0 शहद उत्पादन करती है, जिसका बाजार में मूल्य रू0 600–1000 प्रति किग्रा0 है।

मोम– मधुमक्खियों से शहद के बाद दूसरा उपयोगी पदार्थ मोम प्राप्त होता है जिसमें मधुमक्खियां अपने छत्ते बनाती है। शुद्ध मोम का उपयोग प्रसाधन की अनेक सामग्रियों में होता है जिसकी बाजार में बहुत अधिक मांग है।

पराग– मधुमक्खियां फूलों के पुंकेसर के छोटे–छोटे कणों को इकट्ठा करती हैं जो पराग कहलाते है, जिसे एकत्रित करके बाजार तक पहुँचाया जा सकता है।

रॉयल जैली– यह जैली कमेरी मधुमक्खियों के ग्रंथि में पाया जाता है। यह जैली सबसे पौष्टिक पदार्थ है। इसे कमेरी मक्खियों द्वारा लार्वा अवस्था की मक्खियों के पोषण हेतु दिया जाता है। इसे कमेरी लार्वा में आंशिक व रानी लार्वा में पूर्ण रूप से खिलाया जाता है, जिससे रानी मक्खी का जीवन कमेरी मक्खी से अधिक होती है।

मौन विष– यह विष हृदय की मांशपेशियों को सक्रिय करने, गठिया, वात, कैंसर जैसे रोगों के निदान हेतु दवा बनाने में उपयोग किया जाता है जिसको एकत्र कर बाजार में बेचा जा सकता है।

प्रोपोलिस– यह गोद युक्त पदार्थ होता है जो कमेरी मक्खियों द्वारा निकाला जाता है। वे इसका उपयोग फ्रेमों को जोड़ने के लिए करती हैं। जिसकी बाजार में मांग है तथा यह मॉउथ वॉश बनाने में भी उपयोग होता है। मधुमक्खी पालन के लिए किसान हेतु आवश्यक है कि वे मधुमक्खी पालन के लिए आवश्यक सामग्री को ध्यान में रखें।

सामग्री– मौन गृह, मौमी पेटिका, मौन छत्ताधार, लोहे का स्तंभ, मौन पकड़ने का थैला,बी वैल, दस्ताने, भोजन देने का बर्तन, क्वीन गार्ड, स्मौकर, चींटी रोधक प्यालियां, हाईव टूल

वर्तमान समय में यदि किसान मधुमक्खी पालन करता है तो वह प्रत्यक्ष रूप से आजीविका अर्जन तो कर ही सकता है, साथ ही उसकी खेती से कई गुना फसल को बढ़ाकर अपनी आजीविका का संवर्द्धन कर सकते हैं।



दीप्ति भोजक, सतीश चन्द्र आर्या,
हर्षित पंत, आर.सी. सुन्दरियाल
गो.ब.पं. रा.हि.प.संस्थान कोसी-कटारमल, अल्मोड़ा, उत्तराखण्ड

COVID-19 and Livelihood Options in Himalayas

The virus has affected us all. The economic, physical, mental and emotional toll of covid-19 may vary in degree, but the experience of it has been similar across the world. In the Himalayan region, a climate change hotspot, residents have been especially hard hit by the pandemic because mountain communities have limited livelihood options, inherited vulnerabilities resulting from inaccessibility, and high dependency on plains and cross-border trade for sustenance. Many people in the mountains go to Dubai,Pune and Australia, even Delhi and Mumbai, for job opportunities. Now, because of the lockdown, many have returned home. This has made things more difficult for village people who were already depend on family's one person income.(www.livemint.com)

Due to Covid-19 effect people are move to self employment like Kumaoni aipan is a famous art of Himalayan region but people are forget this tradition because of other readymate items but this pendemic changed this trends. First time this rakhi festival Aipan design Rakhi was come in the market and this rakhi shows the bigest interchange.He learned how to live in a new way with a new thought. Aipan rakhi is a new livelihood way for Himalayan people's.

The one hand, due to Covid-19, people are migerate towards the village, on the other hand there is a big change in the Himalayan and this change is only due to the migration of people. "Is it a change or just a compulsion or attachment of people towards their village" Due to migration, farming started again in the wastelands of the village, who left their fields saying that it would not make our life possible and went towards big cities, they all came back today whose houses were empty, today their whole family is together because of this covid-19."The livlihood of the Himalayan region was the farming that everyone had forgotten, but this pandemonium has done everything as it was before"so farming is a good option for Himalyan region.

Returning from cities have taken a new initiative "Seed Bomb" to save the ravaged agriculture that was destroyed due to wild life in the mountains. Which can be linked to employment. To make this beige bomb, we knead the soil and cow dung like flour.After that, make small balls and putweather friendly seeds in them.Both short and long term seeds can be used in seed bombs.Under the Himalayan eco herb Agro Institute, very young people are associated with this campaig. (www.khabrii.com).Which have become the means of livelihood of the people, who are fulfilling their needs by staying in their own villages. "Covid -19, which is a very big problem, for the whole world, people on one side have made this problem a new opportunity. By living at home on their own livelihood, they have created a new path by self-employment"

Fig. 1. Rakhi with Aipan Art

Fig. 2. Seed Bum (local people making seed bum)

Reference

www.livemint.com, www.khabrii.com

Manisha pandey (*manishapandey614@gmail.com*)
Lalkaun, Haldwani,
Nainital, Uttarakhand

COVID-19: A Multifaceted Disaster

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The remote location and difficult terrains of Himalayas had already slipped the regions from mainstream development planning for years and decades. Himalayas are home to approximate 300 million people and has been trending for past few decades due to the impact of climate change on its flora and fauna. The region is super water reservoir which serves millions of population of south Asia. The region is been overcoming many challenges through years in terms of physical setting, cultural discrimination, and backwardness in economy.

The nationwide lockdown was announced from 25th March which has severely affected the livelihood and lives of many small and marginal laborers and farmers across the country. The Hilly regions couldn't ignore the impact of the pandemic for long, the migrants started arriving in the region the number of infected cases has been increasing since then.

Agriculture and Tourism forms the mainstay of the economy of this region. The onset of summers is a time of economic growth for the region with the arrival of tourists but a complete shutdown of the movement during the lockdown not only held back the economy but also encountered many people losing their jobs because of no earning in the hospitality industry. Uttarakhand alone received a total of 29,602,820 tourists in the year 2015, it is one of the fastest growing sector in Himalayan region (Niti Ayog, 2018).

Table1: District wise numbers of return migrants (till 21st June)

S. No.	District Name	Number of return migrants
1	Almora	43784
2	Nainital	9650
3	Pithoragarh	5451
4	Champawat	15097
5	Bageshwar	1925
6	Udham Singh Nagar	21958
7	Pauri	60440
8	Chamoli	5877
9	Dehradun	2254
10	Haridwar	3136
11	Uttarkashi	19405
12	Tehri	19242
13	Rudraprayag	7656
Total		**215875**

Source: Rural Development and Migration Commission (Uttarakhand)

The employment opportunities are very limited in the Himalayan region, people out migrate in search of good employment opportunities, services and accessibility. Many people have been returning to their villages because they have lost their jobs. Their entire families depended on their incomes which now seems uncertain and a big misfortune. Uttarakhand, a Himalayan state witnessed a reverse migration of 215857 people (Negi, 2020). The impact of covid19 was seen on job loss immediately. The long term impact includes inequality and lower economic growth.

This pandemic led to the closing of all the educational institutions towards the beginning of March which resulted in the online classes and examinations. This came as a good option for not lacking behind in academic session but at the same time became a problem for the students of remote villages in mountains, where people still do not have access to smart phones and internet services. This is a serious issue to be addressed.

The onset of monsoon is a period of multiple hazards in Himalayan region which includes Landslides, flash floods and Cloud bursts. In the times of pandemic when the entire resources and disaster forces are dealing with covid19, these hazards may put additional pressure on the resources and man power. The country has already dealt with Amphan and Nisarg in eastern and western coast respectively in the months of May-June. On the other hand the locust attack also took a heavy toll of agricultural crops.

Fear, worry and stress are the conditions identified by W.H.O. as the outcome of covid-19 pandemic. Covid-19 got the world to a standstill during the lockdown phase and brought a psychological distress amongst a lot of people. People expressing their state of anxiety and depression over social media are also very common. The loss of loved ones due to covid-19 is a major reason of stress. The mental condition improves over time but despite their terrible nature and impacts, emergencies and disasters have always proved to be an opportunity to build sustainable mental health.

Covid-19 continues to spread around the world and the world has to learn to live with the presence of virus in many ways. The impact of this virus is going to be everlasting. This pandemic is not new to the world, but the concept of global village of interconnectivity and interdependencies makes massive aftermath. Following are the suggestions that can reduce the impact the pandemic:

- Skill mapping of the people who lost their jobs due to the pandemic would help in providing them work as per their skills. The government has been emphasizing on becoming self-reliant, the small scale enterprises needs to be in the policies.
- Tourism industry can be revived by paying complete attention to the security and hygiene of their customers, which is possible by awareness and training of people related to this sector.
- The opening up of "Mohalla pathshalas" for the children in the remote villages with low internet connectivity and absence of smart phones and computers.
- Practicing Yoga and meditation has proved to be a very powerful routine to overcome any sort of depression.
- Preparedness for any disaster can reduce anxiety, loss and the impact.

Source: timesnownews.com/india/article/news-headlines-for march-17-2021

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Kirtika Bora (*kritikabora0891@gmail.com*), **GBPNIHE, Kosi- Katarmal, Almora**

Impact of COVID-19 (corona virus) Pandemic on Himalayan Communities and Coping Strategies

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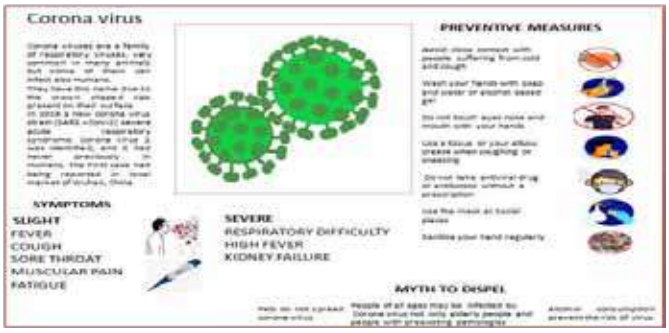
For the first time in history, the future of the human species is undergoing uncertainty. Human society has so far injured the earth. If this situation persists, then the human species and its culture will surely become extinct from this creation. Unfortunately, this year a virus named corona virus or COVID-19 has been introduced in India that has never been seen before. Corona virus (COV) belongs to a family of viruses whose infection can cause problems ranging from cold to breathlessness. The virus infection started in December 2019 in Wuhan, China. According to WHO, fever, cough, shortness of breath are its symptoms. So far no vaccine has been made to stop the virus from spreading. As a result of this infection, problems like fever, cold, and shortness of breath, runny nose and sore throat arise. This virus spreads from one person to another. The virus basically spread in the local inhabitants of urban areas where population density is high. After few months the virus starts spreading in mountain regions of the different countries.

Since the mountain economy depends a lot; on tourism, the pandemic had a devastating impact on mountain peoples who depended on income from the hospitality industry. The ICIMOD policy paper says that the collapse of agriculture and tourism have made mountain people highly vulnerable to a slide into chronic poverty. The Covid-19 pandemic has also exposed the risk of the spread of zoonotic diseases spreading across national boundaries because of an increase in smuggling of illegal wildlife. With poverty driving more people and countries to destructive resource extraction and the degradation of nature – all were exacerbating the changes already happening due to the climate crisis.This, potentially, led to their reverse migration back to villages in various Hindu Kush Himalayan countries, including India, Nepal, and Pakistan, during the lockdown. On the one hand, this may have exacerbated the extent of the outbreak, and on the other, it may now exert pressure on the limited resources available back in their villages. The virus and the lockdowns imposed in various HKH countries have distressed lives and livelihoods.



Impact on Himalayan communities- The Himalayan region has its inimitable ingenuity in the world. It is one of the global biodiversity hotspot and is very rich in terms of its natural resources such as water, land and forests. These natural resources are directly or indirectly the sources of livelihood for its population.It supports a large number of ecosystems including rich flora and fauna across its diverse habitats.

Negative- The virus has economic, physical, mental and emotional effects on us. In the Himalayan region, inhabitants have been especially hit by the pandemic because mountain communities have limited livelihood options. Kerbing of transport, the return of migrants, and the impact on earning sources has been quite severe during the lockdown period. Many people from the mountains have gone to metro cities for job opportunities. Now, because of the lockdown, many have returned home. This has made things more difficult for women who were already looking after their agricultural land, family and daily household chores. Now, it is even harder to live with limited resources. Water has always been a struggle in the mountains. The government wants you to wash your hands regularly but that's not possible here because there are no great water services.

Positive- Beside negative impact of pandemic on Himalayan region there was also positive role in the environment which clean air and low pollution levels because of the lockdown.Also during this lockdown, Ganga River's water has been cleaned up to 50 per cent. The mountain people need the safety net from the government. They need jobs and some sort of pecuniary help. Governments are putting in a lot of investments but they too need to focus on issues around sustainability and green growth in Himalayan regions. The indigenous communities too need focused and consistent help. The main aim should be green recovery. Tourism is a fantastic opportunity for mountain people but it has to be more sustainable and this lockdown has banned all the opportunities and ways towards it. There's a lot of interest in sustainable entrepreneurship, with youth being very active. The government needs to find a way to encourage and support them more. As citizens of the country, it is our duty to protect this earth by conserving our natural resources. I think the young people do have the voice and are coming forward to bring a change towards increase income and socio-economic status of hill people.

Livelihood options to cope up with pandemic- Himalayan people are directly depending on forest and agricultural ecosystem to generate their economy for better livelihood. They are various options for the peoples to start their own business in small scale to cope up with this pandemic.

Farming- Here lies the key for providing better livelihood opportunities to the agricultural land-holding rural populace of Himalayan region. As, it provides more land for horticulture, floriculture and agriculture. State government can think of determining minimum support price for different vegetables and fruits for the purchase to be used in public sector processing units. Only thing required to be done is the framing and promulgation of rules by state government, empowering village panchayats to use local resources as per 73rd constitutional amendment.

Tourism- Adventure tourism can also be a good opportunity in Himalaya viz; trekking, paragliding, zip lining, canoeing and kayaking, cable car ride, bungee jumping, elephant safaris, camping and river rafting. This shall give extra fillip to employment opportunities. Likewise people also open Home-stay and other tourist attraction places to increase their livelihood.

Preparing products from Forest resources- The Himalayan people also opportunities to use forest resources and prepare traditional crafts, agricultural tools, brooms, ropes, pickles etc. and also collect Non Timber Forest Products (NTFPs) and make juice and squashes finally sell to local market.

Other activities- For all the construction activities of region, bricks are procured from outside in hilly areas. However, plenty of sand and gravel

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Medha Durgapal (medhadurgapal@gmail.com),
Deep Chandra Tiwari
GBPNIHE , Kosi- Katarmal , Almora Uttarakhand

COVID-19 Impact & Livelihoods in Remote Pithoragarh District, Uttarakhand, India

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The Covid-19 pandemic & its responses has posed an exclusive challenge in sector of livelihood and economies, and impacted to a large population, high poverty, high dependence on exports, services, tourism, transport, settlements etc. The mountain peoples are also facing the additional challenges due to limited options of livelihood and high dependency on the Tarai-plains for food supply and other purposes. In hilly areas of Uttarakhand state, the disturbances in food supply due to transportation problems and issues of remoteness. The prices have increased for wheat, vegetables, and other crops, and the consumers are paying more. The local job/employments such as hotels, restaurants, sweet shops, and tea shops are already depressing due to lockdown. The lockdown has choked off almost all economic and livelihood activities in the state.

Uttarakhand state, which is well known for tourisms destination, religious -pilgrim are badly disrupted by Covid-19 lockdown. Another most importance livelihood sector animal husbandry (Goat-meat, poultry) is also affected. The poultry farmers have been badly hit due to miss-information, particularly on social media, that the chickens are carriers of Covid-19. The interruption on livelihood, food systems, local employments has been brought into sharp focus by the COVID-19 pandemic, so it is important that, we learn from the current crisis to be better prepared for the next time.

With this the current issue, the (Covid-19 lockdown) impact survey was attempted in remote villages of Dharchula block, Pithoragarh district of Uttarakhand. The district is the easternmost and very remote district of the state. The district is located in (30°00'N; 80°20'E) and has an area of 7,110 km2, with population of 4,83,439 (as of 2011). The altitude range is almost covered at 450m to 7434m asl. The district boundaries connected in northern part is Tibet plateau and eastern part of Nepal. The district is famous for tourist place, the Hindu pilgrimage route for Mount Kailash-Lake Manasarovar passes through this district via Lipulekh Pass in the greater Himalayas. During the surveyed, tried to address, all livelihood sectors such as agriculture, animal husbandry, tourisms, horticulture, skill development, livelihood based small/medium manufacturing other natural resource & also cover environment, wildlife conflict impact in livelihood in the villages. During the survey, more than 50 respondents were interviewed. The survey was done into both ways (i). field visit and (ii). telephonic conversation with local community.

As resulting the survey, it was observed that, the less impact in sector agriculture & horticulture in the remote villages of the district, because of the village's people/community totally depends on their available natural source. So might be reason the less impact on this sector. Only the transport, tourisms, animal husbandry, daily supplies (goods & services such as medical facilities) & local movement of people was highly affected. Although, the Government has supported to the local village peoples, but it was not sufficient said by respondents. The daily worker, laborer's, local tour operators, tourist (porter & guides) has also affected by Covid-19 lockdown.

In wildlife/ environment sector, the sighting of wild animal was increased in nearby village's during the time of Covid-19 (lockdown) in district.

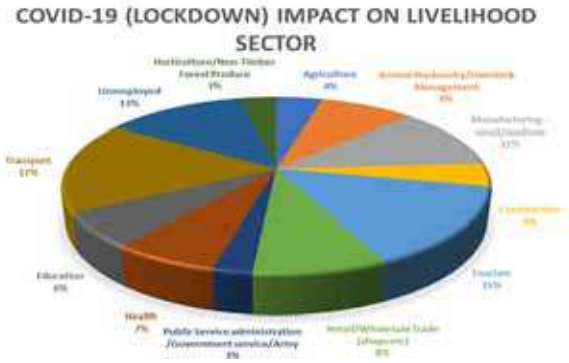
Fig. 1. Impact on livelihood of local daily workers in the villages of Pithoragarh district

Fig. 2. An old lady almost 78 year's old, was going in market for medicine and goods for daily uses, she told that, she has been come to walked approx. 5.0 km from her home, because of no availability of transport facilities (during the COVID 19 lockdown)

Overall, the Covid-19 has impact on remote villages mainly in (i). Accessibility of market for daily uses (goods & services) (ii). loss of employment opportunities, (iv). Reduced of tourist flow in (main season time) (v). No sale of produce/ products in livelihoods incomes. The details of Covid-19 impact on livelihood is shown in graph.

Key Recommendation /suggestion

- The government should need to keep proper supply chains & well function in remote village areas.
- Small poultry and dairy farmers need more targeted to help, as their pandemic-related input supply and market-access problems should solved urgent.
- Farmers and agricultural workers should be included in the government's assist package.
- Revival strategy must focus on providing immediate relief to the tourism and animal husbandry sector and ensure income sustenance.
- Govt. should need to provide various skill development trainings/programmes or small business module for local youths.



Bhaskar Chandra Joshi (*Bhaskar20.alm@gmail.com*)
Pithoragarh, Uttarakhand

Boosting Apple Production in Uttarakhand as a Livelihood Option During COVID-19 Pandemic

Himalayas or *'the abode of snow'*, is massive mountain range that extends over 2,500 km between Nanga Parbat (8,126 m), in the west and Namcha Barwa (7,755 m), in the east. Broad divisions of this mountain range are Siwaliks, lesser Himalaya, greater Himalaya and trans-Himalaya, that extends continuous all over its length, separated by major geological fault lines. Predominantly a hilly State, Uttarakhand is located in the foothills of Indian Himalayan Region and lies between 28°43' N and 31°27' N- latitudes and 77°34' E and 81°02' E- longitudes. The state's maximum dimensions reach about 301 km and 255 km toward East-West and North-South directions respectively, covering an area of 53,483 km^2 and elevation that ranges from 210 to 7817m. Covid-19 virulence spread was earlier declared as a public health emergency and later a pandemic by WHO- World Health Organization. Currently, the spread of this novel virus no sooner struck in more than 190 countries. Amid this pandemic, lockdown was declared in most countries, and no sooner it ended, display of reverse-migration of masses was observed in Uttarakhand. According to state government's Rural Development and Migration Commission's (RDMC) report, as part of reverse migration, a total of 59,360 people have returned back to 10 hill districts, namely, Almora district (9,303), Bageshwar (1,541), Chamoli (3,214), Champawat (5,707), Nainital (4,771), Pauri (12,039), Pithoragarh (5,035), Rudraprayag (4,247, Tehri (8,782), and Uttarkashi (4,721). Presently, about 70% of these migrants have declined to stay back, however, many have shown interest in contributing to States economy. Sharad Singh Negi, vice-chairperson of RDMC and finance secretary and the Chief Minister Trivendra Singh Rawat, also the chair of the RDMC, has motivated migrant workers to stay back for state's economic revival.The economy of Uttarakhand is predominantly rural and highly dependent on climate-sensitive sectors such as agri-horticultural and livestock sectors. This continues to be the backbone as more than 70% of population is depends on this sector for livelihood and food security. Almost all hilly districts of the State cultivate Apples. However, Uttarkashi and Almora, districts accounts for more than 50% of the state apple production. Nanital, Dehrahun, Chamoli, Pauri, Pithoragarh and Tehri are other prominent apple growing regions. Uttarkashi district reports the highest area and production of apples in the State contributing about one-third of the State production and area under apple cultivation. In 2015-16, apple production in the Uttarkashi district alone was recorded approximately 19.5 thousand metric-tons from an area of about 9000 hectares. Apple varieties grafted to bear fruits after 3-5 years after plantation and averagely continues to bear fruits for 25 years, depending upon the agro-climatic conditions and variety. Most importantly, apples from Uttarakhandhave acomparative price advantage over Himanchal Pradesh and Jammu Kashmir, as supply to market commences from July, about a month in advance,that continues till October, 2020 due to late harvesting. Annual average increase in area for apple cultivation in Uttarakhand is expected about 1000 ha/year, however, increase in production levels are subjected with adaptation and implementation of superior technical interventions by cultivating communities during up-coming years. Modernization of farming techniques along with introduction of high and even ultra-high-density cultivation practices that utilizes highly precocious rootstocks on to which various imported and most value-realized varieties can be grafted, can certainly increase area and production. At present, infrastructure for post-harvest facilities such as pre-cooling, storage, centres for collection, grading, sorting, washing and pack houses, etc., are not well established. Such an infrastructure for providing all these facilities have become essential for preventing quality loss due to variations in temperature, decline in moisture etc. Such farming interventions will not only reduce wastage and ensure proper price realization but also will generate an industry for processing the harvest and consequently employment for many semi-skilled workers, particularly women and unemployed youth facing crisis of livelihood during and beyond this pandemic.

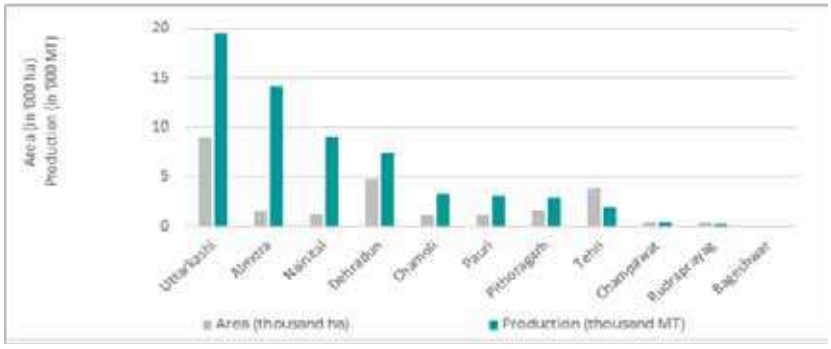


Fig. 1. Source: State Department of Horticulture, Government of Uttarakhand

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Lokesh Kumar Tripathi and **Tapan Kumar Nailwal**
Department of Biotechnology, Sir J C Bose Technical Campus Bhimtal, Kumaun University Nainital

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