

Issue 6

August 2014

# Mountain Spirit

Mountain Trail, a quarterly e-newsletter

[www.mountainspirit.org.np](http://www.mountainspirit.org.np)



Photo by LTama

Ghale Gaun, one of the popular places for homestay in Lamjung district

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Dear members, partners and well-wishers,  
Greetings from Mountain Spirit!

It is our great pleasure to share the 6<sup>th</sup> issue of Mountain Trail, Mountain Spirit's quarterly e-newsletter. This issue includes updates on Mountain Spirit's activities from the past three months and new articles from our members. We would like to thank Dr.Lhakpa Norbu Sherpa, Mr. Ang Rita Sherpa, Dr. Pasang Yangjee Sherpa, Ms. Laxmi Gurung, Mr. Ang Tenjing Sherpa and Ms. Sangita Lama for their contributions to this issue. We are also thankful to Ms. Jemima Diki Sherpa for providing editing support. We will be publishing the next issue of Mountain Trail as a print version in September 2014 and request that all our members contribute by sending in articles and news items by end of August.

We have some good news to share: recently five of our members - Ms. Chhing Lamu Sherpa (founding president and current advisor), Mr. Gopal Lama (former member), Dr. Pasang Yangjee Sherpa (general member), Mr. Gelu Sherpa (general member) and Ms. Chhoti Sherpa (associate member) – have all entered married life. We take this opportunity to congratulate each of them and express our best wishes for many happy years ahead.

Lhakpa Tenji Lama (Sherpa)  
General Secretary/Executive Director

# Mountain Spirit's Activities

## Eco-Walk Program 2014

On the occasion of World Environment Day, Mountain Spirit organized this year's Eco-Walk to Namo Buddha on 21 June 2014. Mountain Spirit has been organizing annual eco-walks since 2007. 85 participants including MS members, friends and well wishers took part in the event. The program began after a 1.5-hour drive from Kathmandu to Sangkhupati via Panauti. After breakfast and a briefing by MS Executive Director Mr. Lhakpa Tenji Lama (Sherpa), the group made the easy and comfortable 1.5-hour hike from Sangkhupati to Namo Buddha.



At Namo Buddha Acharya Karma Rinzin Lama, Secretary of Thrangu Tashi Yangtse Monastery in the main hall of the monastery gave the Mountain Spirit participants a spiritual talk explaining the story of Namo Buddha pilgrimage site. Following this, in an introduction program near the Namo Buddha temple Mr. Lhakpa Tenji Lama (Sherpa), Executive Director of Mountain Spirit, welcomed the participants with a brief introduction of Mountain Spirit and its activities. MS advisor Dr. Lhakpa Norbu Sherpa then delivered a talk on

link between sacred sites and environmental conservation, followed by WWF Nepal's Director Dr. Ghana Gurung's remarks on the slogan of World Environment Day and MS advisor Ms. Chhing Lamu Sherpa's talk on the role of youth in environmental conservation. Concluding the program, MS President Mr. Nima Lama Hyolmo thanked everyone for their cooperation in making the program a success. Due to heavy rainfall, planned group game activities and rubbish collection was not possible.

## **18<sup>th</sup> Annual General Meeting**

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Mountain Spirit's 18<sup>th</sup> Annual General Meeting (AGM) is scheduled to be held on 30 August 2014 in Kathmandu, as decided by a meeting of the 13<sup>th</sup> executive committee. The current executive committee's two-year term will finish this August and the upcoming AGM will include the election of a new committee for the 2014 – 2016 term. The AGM will approve a progress report by the general secretary, a financial report by the treasurer and the proposed plan for next year. New membership applications and the promotion of associate members to general members will also be reviewed and approved during the AGM. Mountain Spirit requests that all members attend this important event.

## **Participatory Workshop of Mountaineering Workers**

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Mountain Spirit is hosting a "Participatory Workshop on Roles, Responsibilities and Rights of Mountaineering Workers" in Kathmandu

on the 29<sup>th</sup> of August 2014 in collaboration with the Sherpa Adventure Gear, the Nepal National Mountaineering Guides Association (NNMGA), the Nepal Mountaineering Instructors Association (NMIA), and Khumjung School Alumni Association (KSAA). Recently a workshop organizing committee was formed under the leadership of Dr. Lhakpa Norbu Sherpa, advisor to MS and President of KSAA.

The workshop aims to provide a forum for discussion for those who work as guides and other expedition support staff, particularly on Mt. Everest. It will be held in a well planned, expertly moderated manner with a focus on participatory methods of engagement. The workshop participants will mainly focus on issues of safety, compensation, wage systems, cultural impact, welfare and support etc. The majority of the participants will be mountain guides from the various mountain areas that supply the most labour for mountaineering. Outcomes of the discussion will be shared widely with other industry stakeholders and the media.

## Education, Health and Ecotourism Project in Udayapur

Mountain Spirit is implementing an “Education, Health and Ecotourism Project” in Nametar Village Development Committee of Udayapur district in the eastern region of Nepal. The project started in April 2014 and will continue until March 2018. Mountain Spirit Deutschland, a partner organisation of Mountain Spirit Nepal, is providing financial support for this project. Activities include a scholarship program for students of seven schools in Nametar; teacher training; basic health and sanitation training; education material and first aid kit support; environmental awareness; homestay and ecotourism development training and exposure visits. Mountain Spirit is coordinating with local school management committees and concerned district-level organizations for the effective implementation of the project. Mountain Spirit Secretary Ms. Tuka Cheki Sherpa is the Project Coordinator and will be overseeing the project activities. Ms. Tuka Cheki Sherpa and Mr. Wolfgang Henzler, President of Mountain Spirit Deutschland visited the project sites in May 2014 and conducted one-day interaction program with local schools and people.

## Members' Exposure Visit

A team of eleven members from Mountain Spirit visited Ghale Gaun in Lamjung from 25<sup>th</sup> to 27<sup>th</sup> April 2014. The main objective of this trip was to give members an opportunity to explore and interact with other mountain communities. Ghale Gaun is located 205 km northwest of Kathmandu, and the majority of the 115 households are of the Gurung (Ghale) ethnic group. The village has



become a popular example of successful homestay tourism in Nepal.

The group included MS members Mr. Ang Rita Sherpa, Mr. Ang Phinjo Sherpa, Mr. Lhakpa Tenji Lama (Sherpa), Mr. Sonam Dorjee Sherpa, Ms. Yangji Doma Sherpa, Ms. Chhoti Sherpa, Ms. Sangita Lama, Ms. Indira Lama along with non-MS members Mr. Pasang Sherpa, Mr. Pema Sherpa and Mr. Dinesh Tamang. They greatly enjoyed exploring Ghale Gaun, experiencing the hospitality of the Gurung homestays, and watching a Gurung cultural program performed by local elders and the women's group.

## Earth Corps Volunteer Program 2014

Mountain Spirit member Mr. Rinzin Phunjok Lama from Humla recently joined the six-month Earth Corps Volunteer Program in Seattle, USA, which brings together young environmental leaders from many countries to learn about the fundamentals of environmental services, community building and leadership. Four MS members (Ms. Kanchhi Maya Sherpa, Ms. Tuka Cheki Sherpa, Mr. Tshering Lama and Ms. Mingma Sherpa) have also had the opportunity to participate in this program in the past.



## Buddhist Sacred Sites and Protection of the Environment

藏文： དེ་བའི་གནས་དེ་ནང་ནྜོན་ସྐྱེ་ଶ୍ରୀକୃଷ୍ଣା

*Lhakpa Norbu Sherpa, Ph.D.*

All major religions of the world have sacred sites. The central focus of sacredness may be cultural objects (temples, monasteries etc); natural features (mountains, valleys, lakes, rivers, caves, forest and trees); or a combination of both. The article attempts to explore the linkages between Buddhist natural sacred sites and conservation of the environment.

Buddhist practice and environmental conservation complement each other in many ways. At the center of this symbiosis is the principle **compassion** བ୍ରଦ୍ଦିତ୍ତ to all **sentient beings** ଜୀବନୀକାଙ୍କସମାପନ. The concepts of interdependent origination and evolutionary theory and ecology also have much in common. This is probably why the **dharma** ଧର୍ମ is defined as “the law of nature”.

It was the development of suitable environmental conditions that made life possible on earth. The quality of the environment will continue to influence the quality of life as well as its existence in future. Today, trees are commonly considered as symbol of a healthy environment. Planting trees and protecting forests have become common environmental conservation activities around the world. In Buddhism, trees have an important place in that **Sakyamuni Buddha** සාක්යමුනි බූද්ධයා was born; gained **enlightenment** පර්‍යාප්තිය and passed away under a tree. The philosophy of **Buddhism** බූද්ධිමාධ්‍යම therefore bloomed from under a **Bodhi tree** බොධිජ්‍යා. Trees are also a sources of food, fiber, fuel, and shelter for people; habitats for

wildlife; and home for myriad of supernatural beings. Many Buddhist sacred natural sites are associated with a grove of trees or forests because they support living and non-living beings.

Sacred sites also have associated sacred histories. The history of Namo Buddha නම්බුද්ධී was explained to us by a resident

Acharya from the Thrangu Tashi Yangtse Monastery. An ancient prince Mahasatva gave his own blood and flesh to a starving tigress and her five cubs, and saved their lives at this locality. The essence of the story is that compassion and spirit of *dana* (giving) to others beings is important. Unfortunately, the species that prince Mahasatva help save with his life is at the brink of extinction today. Tigers are being hunted and killed by poachers and traders for their body parts against all Buddhist codes of ethics (*silas*). The Namo Buddha is a physical reminder of the importance of altruistic love and compassion to other beings. Let us hope that it will touch the hearts and minds of future generations and inspire them to treat other life forms with respect.

At the Thrangu Tashi Yangtse Monastery, we observed 16 exquisitely painted images on the inner walls of the great hall. They were the great Masters of the Kagyu lineage. Among them was a popular figure in the history of Buddhism, great sage **Jetsun Milarepa** བྱତୁ རେସ མିଲାରେପା (1123-1040) who was born, lived and

passed away in the Himalayan valleys at the headwaters of Rasuwa, Bhote Koshi and Tama Koshi. In his youth, Mila practiced black magic and caused much harm and **suffering** རྒྱତ୍ୟନ୍ତ୍ଯ ཡୁଷ୍ମାନ୍ ལୁହୁଁ to others. Later, he regretted his wrong doing with deep remorse and practiced

Buddhism with such devotion that he gained enlightenment in one lifetime. While meditating in remote Himalayan caves, Mila developed a close affinity with wild animals and birds. He never hunted them for food. Instead, he survived purely on diet of boiled nettles. To the other hunters, Milarepa pleaded “*Snow, rock and clay mountains are my hermitages. Snow, glacial rivers are my drinking water. Deer, gazelle, and blue sheep are my livestock. Lynx, wild dog and wolf are my guards. Langur, monkey and brown bear are my playmates. Thrush, snow cock and griffon are my garden birds. If this appeal to you, please join me*” (Adapted from the Hundred Thousand Songs of Milarepa).

This is a perfect example of how Buddhist practitioners contribute to protection of wildlife and their habitats. The valleys where Milarepa lived and roamed are also considered as **beyul** བྱྱླ, sacred hidden

valleys of Padamasambhava. Beyuls are some of the largest sacred spaces capable of accommodating diversity of species and ecosystems processes. What makes the sacred sites more peaceful, harmonious and environment friendly is the stronger determination with which the people who live in and around sacred observe Buddha's doctrine and discipline. The central doctrine

that **Buddha** බ්‍රහ්ම තුන් taught was **The Four Noble Truths** අත්‍යවාසික්‍රියාත්මක තුන් These noble

truths did not dawn on Buddha suddenly and miraculously. He followed rigorous methods comparable to modern scientific methods to make the discovery. Therefore, Gautama Buddha was a philosopher and a scientist. However, there is a fundamental difference between modern day scientist and Buddha in terms of approach. Buddha meditated, purified his mind and searched within to discover the truths whereas modern researchers observe, count, measure things externally with minds that are not as perfect and unbiased. Buddha's research scheme can be presented as follows:

1. **Statement of problem:** *In the cyclic existence (samsara) of birth, maturity, old age and death; humanity encounters much suffering (dukkha).*
2. **Research questions:** *How the human sufferings can be eliminated?*
3. **Research methods:** *Insight meditation, mental purification, and inward observation with equanimity.*
4. **Discovery:** *The Four Noble Truths*

I. Suffering	II. The causes of suffering	III. The cessation of causes of suffering	IV. The way which leads to cessation of suffering
<p>Suffering means to be in contact with that for which one feels <b>aversion</b> ප්‍රේෂණ and to be separated from that for which one feels <b>attraction</b> ප්‍රාශ්චා.</p>			<p>Eight-fold path: අභ්‍යාස්ත්‍ර      1.Right view යද්‍යාපිශ්චා      2.Right intention යද්‍යාපිශ්චා      3.Right speech යද්‍යාපිශ්ච      4.Right action යද්‍යාපිශ්චා      5.Right livelihood යද්‍යාපිශ්ච      6.Right effort යද්‍යාපිශ්ච      7.Right mindfulness යද්‍යාපිශ්ච      8.Right concentration යද්‍යාපිශ්ච</p>

Adapted from Buddhism: Its doctrines & methods (Alexandra David-Neel 1977)



Namo Buddha

The Four Noble Truths provide a useful way of understanding causes and consequences of modern environmental problems and ways to address them. Environmental degradation such as desertification, climate change, and loss of species diversity inevitably lead to poverty, hunger, conflict, illness, and death which are all forms of suffering. Erratic and unpredictable weather patterns are one of the consequences of climate change. This means not raining when we need the rain; raining too much and causing floods and landslides we don't want which cause misery. Scientists have proven beyond doubt that excessive discharge of carbon dioxide into the atmosphere and resultant shift in global climate is the cause of myriad of sources of sufferings mentioned above.

Much of the carbon discharge into the atmosphere is said to have taken place since industrialization and mechanization of the developed world. The developing world is following the same path with the hope of achieving material wellbeing. Buddhist karmic law suggests that any **action** ພະ that harms other sentient beings negatively impacts the quality of one's own future lives. Therefore, negative actions should be avoided.

More importantly, polluting industries and their industrial scale production of goods are driven by consumerism, commercialization, greed and desires. According to second noble truth, there is a cause and effect relation between **desires** ຢັ້ງ actions, sensation and

more desires. The main cause of continuation of this cyclic reaction is **ignorance** ພະຍາຍ. It is

the ignorance that causes some people to kill and steal other species. It is ignorance that causes people to become climate skeptics and continue to pollute the atmosphere. It is the ignorance that causes people to pollute their own land and water to the detriment of their own health and health of the others. Therefore, eliminating ignorance stops the vicious circle of desire, actions, sensation which leads to the arising of more desires for and attachment to unlimited materialism, consumerism, ego, and greed.

Beyond certain level, material wealth does not contribute to mental peace or happiness. Instead, excesses cause more grief, conflict, environmental destruction and sufferings to others. Buddha therefore prescribed The "Noble Eight-Fold Path" ພະຊາຍວິວະນຸກ to guide one's action, speech and thoughts towards a more balanced, environmentally sound, peaceful, and compassionate way of life. The sacred natural sites are not only act as physical refuges for species and ecosystems but inspire people to follow the path of liberation.

*This article is based on a talk I gave at the Mountain Spirit's Eco-Walk Program at Namo Buddha in July 2014. Although, linking Buddhism and environmental conservation is important to strengthen both, the subject matter is complex and difficult to do justice in a short article. Constructive comments and suggestions from readers would be greatly appreciated - Author.*

*(The author is a current advisor of Mountain Spirit)*

## No More Research but Action in the Imja Valley of Upper Khumbu Region of Sagarmatha National Park and Buffer Zone

Ang Rita Sherpa

### Introduction

The effects of climate change, one of the globe's most challenging issues, is especially evident at the top of the world, around Mount Everest and the great peaks of the Himalayas. Sagarmatha National Park is an area of exceptional natural beauty, dominated by Everest, the highest peak in the world at 8,848m. Several rare species, such as the snow leopard and the red panda, are found in the park, and the United Nations Educational Scientific and Cultural Organization (UNESCO) designated the park as a World Heritage Site in 1979.

In the past few decades, global climate change has had a disproportionate impact on high mountain environments. The effects of climate change are more pronounced at higher elevations environments because of the fragile nature of mountain ecosystems (Khadka 2007). Global warming is known to have significant impact on high altitude plants and animal species including their migration, breeding and development pattern. Snow, glaciers and permafrost are especially sensitive to changes atmospheric conditions because of their proximity to melting conditions.

In particular, unprecedented rates of glacial retreat noted by high altitude mountain communities are causing concern. Impact on Himalayan glaciers has become some of the most visible evidence of global warming on high altitude landscapes, and has important implications on various aspects including freshwater flow, agriculture, biodiversity

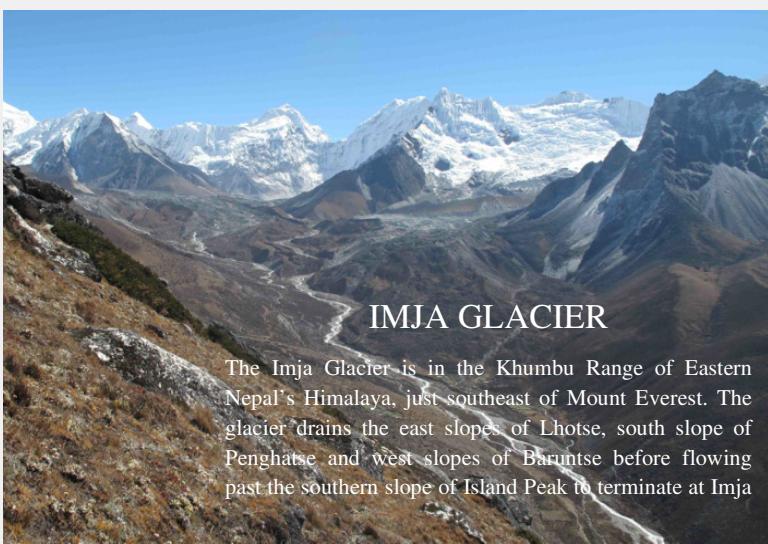
and health (DHM, 2004). Seventy-five percent of the world's fresh water is stored in glaciers, but scientists predict climate change will cause some of the world's largest glaciers to melt dramatically in the coming decades.

In the last two decades, the glaciers in the Khumbu region, particularly the Imja glacier, have provided a unique opportunity to study climate change and its potentially dangerous effects, including glacial lake outburst flooding (GLOF). Nepali and foreign scientists alike have reported that glaciers across the Himalayas are shrinking, leaving behind massive glacial lakes with the potential to bursts, threatening the 1.45 billion people living in the great basins of the Himalayan Rivers.

There are approximately 2,323 glacial lakes in Nepal, 20 of which have the potential for catastrophic outburst flooding. Satellite imagery records show that five glacial lake outbursts occurred in Nepal from 1977-1998. Among them is the Imja Lake (Tsho) in the Khumbu region. This lake is the headwater of the Imja River and is fed by Imja Glacier. Located at an altitude of 5,000m, this lake did not exist before the 1950s. Surveys carried out in 1992 shows that the lake was 1.3 km long and 0.5 km wide, with an average depth was 47 m. A survey carried out in 2002 showed that the lake had expanded to an area of 0.86 km, a 28% increase since 1992.

The growth of Imja Tsho is representative of changes throughout the Himalayas reflected in a series of 40 photographs by Dr. Alton Byers, replicating work done 50 years earlier by Swiss Geographers. The series of pictures tell a story not only about the dramatic reductions in glacial ice in the Himalayas, but also the effects of climate change on the people who live there.

The Sherpa who live in Shomare, Dingboche and Chukung, below the much publicized Imja glacier lake (known locally as Imja Tsho), are particularly concerned about the possibility of a GLOF, which could destroy approximately 30 houses and 30.32 km of the main trail that exists below this glacier.



The Imja Glacier is in the Khumbu Range of Eastern Nepal's Himalaya, just southeast of Mount Everest. The glacier drains the east slopes of Lhotse, south slope of Penghatse and west slopes of Baruntse before flowing past the southern slope of Island Peak to terminate at Imja



## IMJA LAKE

Imja Tsho formed after 1960 due to glacier retreat and is continuing to expand today. The lake is of concern since the moraine that dams it is not stable. It can melt down and erode slowly or it can lose height more quickly resulting in a glacier dammed lake outburst. The level of the lake has been relatively constant in recent years, but is monitored to forecast this potential hazard.

According to Sonam Yishi Sherpa of Friendship Lodge and the former chairman of Khumbu Alpine Conservation Council, recalls the 1985 GLOF from Dig Tsho which rushed through the mountain village of Thame with little warning, destroying more than 30 houses, 14 bridges, farmlands, a hydro electricity project, and bridges connecting the only major walking paths.

Dozens of people were killed and financial losses were estimated at USD 4million. The loss of grain and livestock had a great impact on the farming communities who faced food shortages that year. There is also much concern over the other symptoms of climate change in the area, including: warming temperatures, irregular rainfall, long drought periods, decreased snow fall, earlier fruiting, and more frequent landslides.

Climate change is likely to have a major impact on indigenous, resource-dependent peoples such as the Sherpa. According to Sherpa women in Dingboche, women, particularly those who do not benefit from tourism and those still engaged as farmers and herders in the region will be affected. They said they are amongst the most vulnerable to climate change, because they tend to have access to fewer income-earning opportunities.

Global warming mitigation has become perhaps the most complicated set issues facing world leaders. As the director general of ICIMOD, Dr. Andreas Schild, explains, "The train has already left the station regarding the glaciers. They are

melting fast and everyone knows it. Now, what we must do is prepare for the consequences...we want to build up a system of early warning of risks from glacial lake outbursts. We want to discuss and prepare measures to strengthen the resilience and adaptation of people to climate change. This means livelihoods, conservation of biodiversity, and maintenance of the landscape as a global heritage. Conservation and management of water has the highest priority."

In the Khumbu, people are suspicious of the proposal for an early warning system. They are aware of the failure of similar systems in the Rolwaling valley and have heard the rumor that the Japanese had set up this early warning systems and now showing directly in Japan by charging USD 50 per person.

From the perspective of the Sherpa and the members of the Khumbu Alpine Conservation Council, too much money has been spent on national and regional workshops and the publication of reports. Many scientists have come to do research on the glacial retreat and lake formation in the Imja valley. The Sherpas of this region feel that the scientists have misused the research for their personal gain rather than the national and regional gain.

They made their reputations on findings on a possible GLOF in Imja, without providing solutions on the ground, and have not been



## CHUKUNG

Chukung is the name of a valley located over the southern region of Mt Everest among the Himalayan ridges. The Chukung valley is placed over the slopes of the Nuptse and Lhotse peak.

responsible in the reporting of findings, preferring alarmist reports to measured responses focused on action-based planning.

They wish no more scientists in the area for further non-applied research of the lake, but instead that research on practical mitigation options begin immediately; they wish to drain the water from Imja lake outlet and use it to generate micro-hydro power. By developing hydro power from the water outlet from the glacial lake, and through the conservation and restoration of mountain watersheds we can counter many of the impacts of warming trends, by creating cooler environments, saving biodiversity, protecting fragile alpine ecosystems and protecting water supplies. The Sherpa of this region know that long-term adaptation to climate change requires a considerable investment of capital, in an environment where there are already constraints on resources and a lack of access to technology.

The Sherpas are grateful to the Nepalese scientists, explorers, students who have shown great concern about Imja Lake. This includes the 4th December 2009 Nepali cabinet meeting at Kalapathar, in the foothills of Mt. Everest, the intent of which, to draw the world's attention on global warming in the area, has been taken positively by locals. The Sherpas of this region are grateful to The Mountain Institute who not only undertaken the research of the glacial lakes including the Imja, but also has initiated a implemented series of community consultation to address issues of climate change and adaptation in the Khumbu region of Sagarmatha National Park and Buffer Zone.

The Sherpa are hoping scientists from other nations will also devote their skills to devising concrete and practical solutions for the mitigation

of potential glacial outbursts from Imja Lake, as well as the other effects of climate change threatening the ecosystems and communities in the Himalaya.

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*(The author is a founding member of Mountain Spirit and currently a Senior Program Manager of The Mountain Institute)*

## Investing in Youths to Connect Communities

Pasang Yangjee Sherpa, Ph.D.

In my ongoing collaborative problem solving project I study how existing gap between local communities and researcher communities can be mitigated and how the two communities can collaborate to understand and adapt to the effects of climate change. In this article, I share my experience working with Sherwi Yondhen Tshokpa, a students' group that was formed and is led by students themselves providing support to each other. The connections of SYT members with their villages, their abilities to understand and communicate local issues and their academic trainings position them as capable members to bridge the gap between local communities and researcher communities. This article discusses the collaboration that occurred between January and June of 2014, beginning with curious exchanges including scepticism about climate change.

In early January, I met with Sherwi Yondhen Tshokpa members to discuss climate change and its effects on the residents of Khumbu and Pharak. We started our discussion by asking what we think climate change is. To this, they responded:

Dawa: "I don't believe in climate change. I think global warming is real but climate change seems like a phrase that is for others to use to do something [they want]."

Mingma: "Isn't climate change a problem of the developed and developing countries?"

Lhakpa: "Since most of the pollution is made by developed countries, what can someone like us do to mitigate the problem [of climate change]?"



*Picture 1: Kami Dorjee, Ang Cheechee and Nawang Thapke (from left to right)*

These responses then led to the next question of what we need to do and can do.

Lhakpa: "I think we can seek information and learn. Then share our knowledge with others. This is something we can all do...if we want to raise climate change awareness among our people we have to run a long-term campaign. It cannot be short-term programs. That will not work."

Dawa: "Before bringing programs, we should first be clear about what the problem really is. Then, we need to bring knowledge to the local people in practical ways. Our methods need to be different from past climate change activities."

After spending few moments talking about the need to be clear on what kind of knowledge or information we are seeking, our discussion then continued with assessments of previous institutional climate change activities conducted in Khumbu and Pharak.

Lhakpa: "Just by bringing one or two speakers and speaking for an hour or two about climate change is not going to make any difference. Especially if the speakers are using different languages and non-local terms, it will do nothing."

Dawa: "It has to be in local language. If someone comes and talks in scientific language, it will mean nothing to the people because it will not be understandable."

Mingma: "When any program is made or if someone or an institution goes into the community and continue to remind people about what is wrong or what is terrible and ask them to change their ways, of course people are going to be upset...If we need to bring programs to locals, you have to first [build rapport]. Then only you need to tell them what the problem is. But you also need to offer them an alternative option instead of just telling them what they shouldn't do. Even worse, people should not be reminded of the same problem over and over again."

This meeting revealed that SYT members are aware of local needs and conditions, engaged in their community and curious about institutional climate change narratives that directly impact them and their villages. In this meeting, SYT members also agreed that they were not aware of or had not paid attention to many local environmental changes and scientific findings about climate change impacts. The major causes were, as they described, the lack of interest and effort to learn about such issues among themselves, and the lack of resources and guidance available to them. The SYT members identified immediate solutions to these challenges—an e-library along with trainings and guidance from community leaders.

In 2013, SYT was able to collect hundreds of donated books from individuals and institutions including ICIMOD and NTB. In May of 2014, Tshering Namgyal Sherpa from Khumbu was selected after an application process for a librarian scholarship. As the recipient of this scholarship, he is currently in-charge of the day-to-day management of the library.

Similarly, three research assistantships were created this year to provide exposure to basic research methods and learning opportunity to SYT members. These assistantships were also designed as an opportunity to inspire and encourage youths to engage in local issues.

Ngawang Thapke Sherpa, Ang Cheechee Sherpa and Kami Dorjee Sherpa from Pharak were selected as research assistants in May. They received informal trainings to refine and develop research questions before leaving for Pharak, where they gathered data for analysis. Ngawang Thapke examined waste management practices in Pharak, Ang Cheechee explored agricultural practices and challenges, and Kami Dorjee assessed the use of energy efficient stoves in Lukla.

Ngawang Thapke in his report highlights the works of Sagarmatha Pollution Control Committee and local committees and clubs that are working together to better manage wastes in the region. He also shows the continual need for better waste management as tourism industry continues to grow. Ang Cheechee recorded that people were concerned about a new disease on roots of local crops in her village. The cause for this disease is unknown but local speculations include



*Picture 2: Crop disease described by local farmers*

deficiency in seeds and soil. It was also recorded that the disease spread gradually from one village to another starting from Monzo.

Kami Dorjee discussed the potential of energy efficient stoves in Lukla where the range of effectiveness is still being experimented in few homes. In Lukla, higher electricity consumption and regulated firewood collection necessitates finding energy efficient stoves.

Since the project is still ongoing, a complete assessment of our collaboration is yet to be conducted. However, the activities so far show that local communities are already aware of, are concerned by and can offer practical local solutions to larger problems like climate change, but materializing any solution will require sustained and persistent support, whether it comes from within their communities or outside.

The *Small Grants for Collaborative Problem Solving* awarded by the Anthropology and Environment Society, a section of the American Anthropological Association, and the Association of Nepal and Himalayan Studies' *Senior Fellowship* supported the activities described in this article.

*(The author is a general member of Mountain Spirit)*



## Exploring Links between Tourism and Agriculture in Sustainable Development: A Case Study of Kagbeni VDC, Mustang, Nepal

*Laxmi Gurung*

### Introduction

Tourism is widely recognised as one of the world's largest industries, and as increasingly important revenue streams for developing economies such as Nepal, where trekking forms the core of the nature-based tourism sector. With perhaps as much as one-third of trekking costs spent on food, creating linkages between tourism and agriculture holds great potential as a mechanism for sustainable development in rural areas, particularly at the local level.

Nepal is a landlocked country and agriculture contributes about 36 percent to the nation's GDP (MOAC,2011). Notwithstanding the dominance of agriculture, Nepal also has immense tourism potential, with its outstanding natural beauty, diverse climate, unprecedented topography and biodiversity. And its cooler climate, is a major pull factor that draws thousands of tourists from all over the world in the region (HMG,2008). Since 1962, the number of tourists arriving in Nepal has risen from , 6,179 to 736,215 (MoCTCA, 2011).

To date, however, the effectiveness of these efforts has not been studied. The purpose of this research, therefore, was to explore sustainable rural development in Nepal by focusing on the linkages between tourism and agriculture using the case study of Kagbeni VDC, a remote mountain village in the Mustang region at the northern end of the Annapurna Conservation Area (ACA).

### Framework

The study is underpinned by two conceptual frames: the concept of sustainable development (Brundtland report, 1987); and the Agriculture- Tourism Market Linkage Model (Bowen, 1991). The latter, in particular, is useful in providing a framework for how tourism and agriculture link together and proposes a wide spectrum such as strong, ambiguous and weak linkages between these sectors.

### Methods

This study examined how livelihoods in Kagbeni VDC have been affected by the introduction of tourism since 1950, and in

what ways tourism development has been linked to agriculture. Thirty unstructured (qualitative) interviews were conducted with national, district and local level stakeholders in order to capture the living history of changes between 1950 and 2011.

## **Results and Discussion**

Based on the literature, three types of possible linkages have been observed, across the five below-mentioned tourism development stages in Kagbeni VDC.

### *Period I: Isolated (1950-1962)*

Tourism in Mustang during this period was limited. The few trekkers who travelled through Kagbeni to Upper Mustang mainly did so by contracting with commercial tour groups in Kathmandu. The tour group provided all the necessary equipment and food supplies, and porters typically carried everything. In addition, the tourists stayed in camping sites and rarely ventured into the village. This precluded any type of meaningful interaction which limited not only the development of tourism but also any opportunity of linking it with agriculture. Hence agriculture and tourism were completely disjointed and the linkage was weak.

### *Period II: Connectivity (1963-1975)*

In 1962, construction of an airport in Jomsom, connected the people of Kagbeni with the outside world. Although the Nepalese government attempted to improve local agricultural production by setting up a nursery farm in Marpha in 1966, no government attempt was made to initiate tourism development. Moreover, because road access was not established to the district, outside communication remained limited. Hence, tourists and the locals also remained socially distance and the linkage during this period was still weak.

### *Period III: Development (1976-1992)*

Between 1976 and 1992, the flow of tourists in Mustang started to increased, largely through

the development of physical infrastructure, many of them trekked through Kagbeni on their way to Upper Mustang. Increasingly single and small groups of trekkers began staying in tea houses. The first real linkage between agriculture and tourism began through the increasing use of local foods to feed tourists with both sectors just beginning to realise the potential of links. The link during this period was tentatively developing but was still weak.

### *Period IV: Integrated Management (1993-2006)*

Increasing promotion of the ACA circuit, emphasising the physical beauty and cultural heritage of Mustang, aroused the curiosity of tourists from all over the world. Although linking the two industries was a new concept to the local people, they quickly came to realise the benefits. For example, increasing the use of locally produced foods, rather than importing food from outside the district, significantly decreased costs to lodge owners while at the same time generated revenue for farmers. In addition, because of the remoteness of Kagbeni, food transportation via mule train for tourists was expensive for the trekking companies and they welcomed the opportunity to purchase any available local produce. Consequently, to meet the increased demands from tourism for local foods, farmers started to cultivate land that had been barren for many years or was not being farmed due to earlier emigration and local people learnt that the interests of both sectors could be served. The links can be described as ambiguous because during early part, the linkage was weak but later much stronger bonds developed between the two industries.

### *Period V: Contemporary (2007-2011)*

Aided by extensive government promotion of tourism through the ACA programme and coupled with completion of a road from Pokhara-Jomsom-Kagbeni in 2006, tourism has become increasingly popular for trekking

and pilgrimages. Tourist groups have shifted from camping out to sleeping and eating in the local lodges and tea houses. Also, most trekking companies prefer to purchase local food as much as possible. This encourages farmers to produce more and lodge owners to continue to experiment with new recipes using local foods that are appealing to the tastes of tourists. During this period the links between the two sectors became a reality, now a strong bond exists between tourism and agriculture in Kagbeni.

## Conclusion

The central argument presented in this study is that, because of the positive interaction between tourists and local villagers, and aided by Government of Nepal inputs, tourism and agriculture in Kagbeni have become strongly linked. Today, of the 216 households in VDC, about 60 households benefit directly from tourism while many of the others benefit indirectly through various activities. The process of arriving at this stage has been long, marked by trial and error, and characterised

by mutual learning involving both tourists and the locals. In exploring how Kagbeni VDC in Nepal has benefited from the evolving links between agriculture and tourism, the study demonstrates that, under the right conditions and given sufficient time, these two sectors can establish strong, mutually beneficial linkages and become a cornerstone in sustainable development at the village level.

## Acknowledgment

I would like to acknowledge Mingma Norbu Sherpa Memorial Scholarship and its committee members for providing me scholarship to study in Lincoln University, New Zealand. My special thank to Professor David Simmons and Dr. Stephen Espiner for their guidance in formulating my ideas and thoughts in shaping this thesis. My hearty gratitude to my American parents (Dr. Noel and Linda) and my family members for their constant support.

*(The author is an associate member of  
Mountain Spirit)*

## जलवायु परिवर्तन

### संगीता लामा

#### मौसम, जलवायु र जलवायु परिवर्तन

धान रोप्ने बेलामा पानी परेन। पाकेको धान काट्ने बेलामा पानी परयो। हिमालमा हिउँ पर्न छाडयो। हिउँ पनि तिब्र गतिमा परिग्लियो। चाँदी जस्तै चम्कने हिमाल काला टाकुरा मात्र देखिन थाले। हिमतालहरु फुट्न थाले। पहाडमा पहिरो र तराईमा बाढी तथा डुवानको समस्या बढ्यो। पहाडमा तुवालोले हिमाल खुल छाडे। मधेशमा हिउँदै घामको दर्शनसम्म पाउन छाडियो। शीतलहरले सयौं मानिस मरे। लेकिंतर पनि लामखुट्टे फैलन थाले। दुई-तिन महिना पहिल्यै काफल पाक्यो। चैतमा फुल्ने लालिगुराँस माघ महिनामै फुल्यो। हिउँ पर्ने ठाउँमा गर्मी ठाउँका अन्न, फलफुल र तरकारी खेती हुन थाले। वेशीमा वस्ने चराचुरुङ्गी तथा जीवजन्तु लेकिंतर देखिन थाल्यो।

यस्तै परिवर्तनहरु हामै जीवनमा देखिन थालेका छन्। हेदाहिउँ छिउँ तथा वर्षाका दिनहरु बदलिन थालेका छन्। गर्मीका दिनहरुमा वृद्धि भएको छ। अघि अघि गर्मी महसुश नगरिएका ठाउँमा हपहपी गर्मी हुन थालेको छ। लामो समयदेखि जलवायुका सूचकहरु (हावा, पानी तथा तापक्रम) मा आएको भिन्नताले जल र वायुको चक्रमा पनि परिवर्तन ल्याएको छ। मौसम विज्ञहरुले जल र वायुमा आएको यो परिवर्तनलाई नै जलवायु परिवर्तन भनेका छन्।

#### जलवायु परिवर्तनको कारण

जलवायु परिवर्तन एक प्राकृतिक प्रक्रिया भएतापनि मानवीय क्रियाकलापहरुका कारण केही दशक यता पृथ्वीको जलवायु असामान्य र तिब्र किसिमले हुँदै गएको छ। यसरी जलवायु परिवर्तन हुनुमा मानव सिर्जित हरितगृह र्याँसको मात्रा वायुमण्डलमा बढ्दै जानु हो।

#### मौसम:

मौसम भनेको क्षणीक वा छोटो अवधीको हावापानीको अवस्था हो। दैनिक रूपमा हामीले महसुश गर्दै आएको तापक्रम, वर्षा र हावाको वहावको अवस्थालाई मौसम भनिन्छ। मौसम निरन्तर परिवर्तन भइरहन्छ। जस्तै: विहान देखि बेलुकीसम्म दिनको मौसम एकनास हुँदैन्। विहान चिसो हुने, दिउँसो घाम लाग्ने, घाम लाग्दा लाग्दै बदली भई पानी पर्ने र हावा चल्ने आदि।

#### जलवायु:

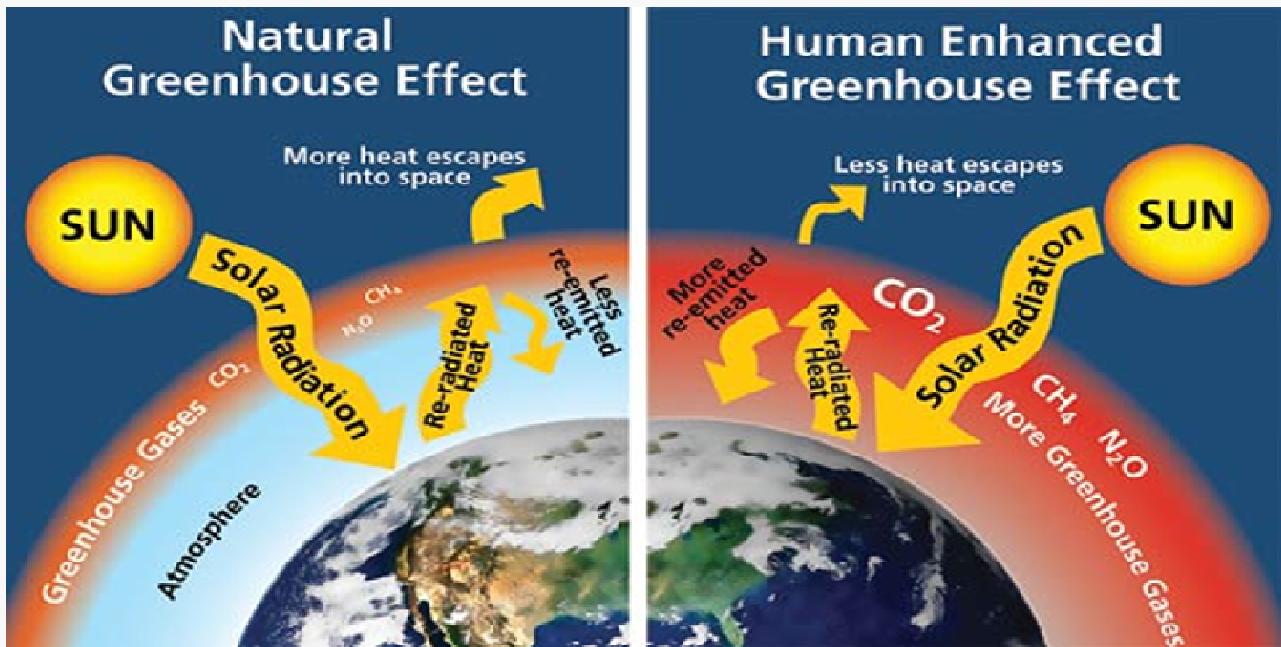
मौसमको लामो समय (लगभग ३० वर्ष) को औषधत अवस्थालाई जलवायु भनिन्छ। जलवायुका सूचकहरु सामान्यतया स्थिर नै रहन्छन्। जस्तै: असार साउनमा वर्षा हुनु, पूष माघमा जाडो कम हुनु, चैत वैशाखमा सुख्खा हुनु।

#### जलवायु परिवर्तन:

कुनै निश्चित ठाउँको लामो समय अवधि (लगभग ३० वर्ष) मा तापक्रम, वर्षा र हावाको अवस्थामा भएको परिवर्तनलाई जलवायु परिवर्तन भनिन्छ। यसमा तापक्रम, वायुको वहाव, पानी पर्ने, हिउँ पर्ने आदि कुरामा आएका परिवर्तनहरु पर्दछन्। जस्तै: तीस वर्ष अगाडि माघ महिनामा हुने जाडो र हाल हुने जाडोको तुलना वा तीस वर्ष अगाडि हिउँदमा पर्ने पानी र अहिले पर्ने पानीको तुलना गर्दा देखिने परिवर्तन नै जलवायु परिवर्तनको संकेत हो।

हरितगृह र्याँस	हरितगृह र्याँसका स्रोतहरु
(१) कार्बनडाइअक्साइड	(१) उर्जा उत्पादन (थर्मलप्लान्ट) २६%
(२) मिथेन	(२) उद्योग कलकारखाना १९ %
(३) नाइट्रस अक्साइड	(३) वन विनास तथा क्षीरकरण १७%
(४) हाइड्रोफ्लोरो कार्बन	(४) कृषि १४%
(५) परफ्लोरोकार्बन	(५) यातायात १३%
(६) सल्फर हेक्जाफ्लोरोइड	(६) आवाशीय तथा व्यवसायिक भवन ८%
(७) प्रदुषित फोहोर पानी विसर्जन	(७) ३%

(Source: www.epa.org)



चित्रः हरितगृह प्रभाव

विभिन्न किसिमका मानवीय क्रियाकलापहरुले गर्दा हरितगृह ग्याँसको मात्रा वायुमण्डलमा दिनानुदिन बढ्दै गइरहेको छ । ताप वायुमण्डल पार गरेर पृथ्वीमा आइपुग्छ । पृथ्वीमा आएको तापको केही भाग जमीन, वोटिविरुवा तथा समुन्द्रले सोसेर लिन्छ र केही भाग फर्केर वायुमण्डल तिरै जान्छ । यसरी फर्किएको ताप कम शक्तिशाली हुने भएकोले वायुमण्डलमा भएको हरितगृह ग्याँसमा ठक्कर खाई निश्चित भाग वायुमण्डलमा रहन्छ र वायुमण्डल तात्दछ । जसलाई हरितगृह प्रभाव भनिन्छ । हरितगृह ग्याँस कम भएको अवस्थामा फर्किएको ताप शक्तिको धेरै भाग वायुमण्डल वाहिर जान्यो भने हरितगृह ग्याँसको मात्रामा वृद्धि भएको अवस्थामा धेरै भाग तापशक्ति वायुमण्डलले नै शोसेर राख्दछ जसले गर्दा वायुमण्डल तथा पृथ्वीको तापक्रममा वृद्धि हुँदै जान्छ ।

त्यसैले वायुमण्डलमा हरितगृह ग्याँस जतिजति बढ्दै जान्छ, त्यति नै अनुपातमा हरितगृह प्रभाव बढ्दै गई वायुमण्डल थप तात्दै जान्छ । तातेको वायुमण्डलले हावालाई तताउँछ । हावा तातेपछि यसको बहावको

गति, चाप र दिशामा असन्तुलन आउँछ जसले पानी तथा हिउँ पर्ने तरिका, प्रकृति तथा मात्रालाई प्रभावित पार्दछ जसले मौसममा जटिलता र अनिश्चितता ल्याउँछ ।

(लेखक माउन्टेन स्प्रिटका साधारण सदस्य हुनुहुन्छ । हाल उहाँ नेपाल आदिवासी जनजाति महासंघ जलबायु परिवर्तन र रेड साफेदारी कार्यक्रम गोल्फुटार, काठमाडौंमा कार्यरत हुनुहुन्छ ।)

## कन्य च्याउ उत्पादन प्रविधि एक भलक

### आड तेन्जीड शेषा

च्याउ एक प्रकारको दुसीबाट तयार हुन्छ । यो बनस्पती अन्तर्गत परेपनि हरितकण रहित बनस्पति हो । अन्य बोटविरुवाहरु जस्तै च्याउको पनि विभिन्न जात/उपजातहरु हुन्छन् । ती जातहरु मध्ये तराईमा असोज कर्तिक देखि फागुन महिना सम्म र पहाड तथा मध्यपहाडमा बाहै महिना उत्पादन गर्न सकिने ओस्ट्रीयटा जातको कन्य च्याउ हो । अन्य वालीको जस्तो च्याउको बीउ तयार हुदैन । कृतिम तरिकाले बिउ उत्पादन गर्नु पर्ने हुन्छ । जंगली च्याउहरु भने छिपीय पछि जमिनमै कुहिन्छ र स - साना जीवाणुको रूपमा सङेगलेका चिजहरु तथा काठहरुमा त्यसको रेशाहरु टाँसिएर रहन्छ र पछि उपयुक्त तापक्रम तथा वातावरण पाए पछि पुनः बढ्दि भएर च्याउको रूप लिन्छ । मानिसहरुले नचिनेर खाने गर्दा मृत्यु हुने गर्दछ । तर कन्य च्याउ (पराले) वैज्ञानिक प्रविधिद्वारा शुद्ध बीउको छनोट गरिने हुनाले कुनै शंका गर्नु पर्दैन ।

#### महत्व :

अन्य तरकारी जस्तै हरितकण नभएपनि मानव शरिरको लागि पौष्टिक आहाराको साथै औषधीको रूपमा पनि उपभोग गर्न सकिन्छ । यो तरकारी (च्याउ) मा चिल्लोको मात्रा कम पाईन्छ । च्याउमा मोटोपन बढाउने स्टार्च हुदैन र चिनी रोगी (Diabetic) व्यक्तिलाई पनि अति उपयोगी मानिन्छ । रेशा (Fiber) बढी हुने भएकोले र पोटासियम र सोडियम तत्व पाउने हुनाले ग्याप्टिक र कव्जियतका विरामीहरुलाई पनि औषधीको काम गर्दछ । मानव शरिरको रगतमा भएको कोलस्ट्रोललाई घटाउने गुण भएको हुँदा कोलस्ट्रोल बढी भएका र मुटु रोगी तथा रक्तचाप सम्बन्धिको रोगीहरुलाई अत्यन्तै उपयोगी मानिन्छ । च्याउ खेती आर्थिक दृष्टिकोणले पनि महत्वपूर्ण मानिन्छ । कम आय भएका तथा जग्गा जमिन नभएकाले पनि एउटा सानो कोठामा कम लागतमा खेती गर्न सकिन्छ । बजारमा पनि च्याउको माग दिन प्रतिदिन बढी रहे को पाइन्छ । बित्रिन न भएका च्याउलाई सुकाएर सुकुटीको रूपमा बढी मूत्यमा बिक्रि गर्न सकिन्छ अथवा अचार बनाएर पनि बिक्रि गर्न सकिन्छ ।

#### कन्य च्याउको विशेषता:

- अन्य वालीको जस्तो बीउको दाना नभई गहुङ्को दानाबाट उमारिएको दुसी हो ।
- च्याउ खेती गर्दा रसायनिक मलको प्रयोग गर्नु नपर्ने ।
- अन्य खेतीलाई जस्तो जग्गा धेरै नचाहिने ।



- एक पटक लगाई सकेपछि धेरै जनशक्तिको आवश्यकता नपर्ने ।
- पोकामा बीउ लगाए पछि २०/२२ दिन सम्म धेरै हेरचाह गर्नु नपर्ने ।
- च्याउ मासु नखानेहरुको लागि पनि उपयुक्त हुने ।
- औषधीको रूपमा पनि प्रयोग हुने ।
- बजारमा बिक्री नभए २०/२५°C तापक्रम भएको कोठामा ३/४ दिन सम्म राख्न सकिने
- च्याउ टिपेको ४/५ दिन सम्म रहन सक्छ । बिक्री नभए सुकाएर सुकुटीको रूपमा बिक्री गर्न सकिने ।
- घरेलु अचार बनाएर बिक्री गर्न सकिने ।
- उत्पादन खर्च कम लाग्ने ।
- च्याउको तरकारी जुनसुकै भोग भतेरमा मिल्ने तथा बुढा देखि बच्चा सम्मलाई उपयुक्त हुने ।

#### उत्पादन गर्दा आवश्यक सामग्रीहरु :

- शुद्ध बीउको व्यवस्था
- कोठाको व्यवस्था
- सुकेको पराल व्यवस्था
- प्लाप्टिक थैलो १२ X १८ इन्चको ।
- पराल बफाउने ड्रम वा ठुलो भाडो ।
- पराल बफ्याउने दाउरा ।
- रुवा र स्प्रिट ।
- पोका भुण्ड्याउने मसिनो नाइलन डोरी ।
- पोका भुण्ड्याउनको घरालोको लागि मोटो बाँस ।
- पोका बाँझे सुतली आवश्यकता अनुसार ।
- पराल काट्ने हाँसिया ।
- चुना (क्यालसियम कार्बोनेट)
- पानी स्प्रे गर्ने मसिनो फोहोरा भएको स्प्रे /टडी ।
- कोठामा भएको दुसीको व्याक्टेरियाहरुको निर्मूल गर्ने फर्मलिन झोल ।

## उत्पादन प्रविधिहरू:

निम्न विधिहरूलाई आधार मानी खेती गर्नाले ९० प्रतिशत सफल भएको छ । च्याउ खेतीको लागि सबै भन्दा उत्तम धानको पराल हो । अन्य मकैको खोष्टा, गहुङ्को छवाली तथा तोरीको डाँठ आदिबाट पनि उत्पादन गर्न सकिन्छ ।

१. च्याउ उत्पादन ठाउ कोठा उपयुक्त हुनु पर्दछ ।
२. पराललाई २.५ इन्चको टुक्रा पार्ने र ३/४ घन्टा पानीमा भिजाउने ।

३. उक्त भिजाएको पराललाई ३/४ पटक सफा पानीले पखाल्ने ।

४. कोठा नभए बाहिर खाली जमिनमा पनि विशेष प्रकारले गोठ बनाई खेती गर्न सकिन्छ ।

५. परालमा भएका विभिन्न रोगका जीवाणुहरू मार्न पराललाई ३० मिनेट देखि १ घण्टा सम्म बफाउने तथा तताउने र बफाउनु अघि १०० के.जी. परालमा २ केजी चुनाको दरले मिलाउने ।

६. उक्त बफाएको पराललाई सफा प्लाष्टिक वा मान्द्रोमा से लाउन दिने उक्त सेलाएको पराललाई मुझी पार्दा पानी चुहिने हुनुहुन्न ।

७. उक्त बफाएको पराललाई सफा प्लाष्टिकको थैलोमा गुन्द्रुक खादे जसरी अन्दाज ४ इन्च पराल राख्ने र त्यस माथी च्याउको विउ चारैतिर छर्ने तर बीउ छर्न अगाडि हात सफा गरि स्प्रिटले रुवा भिजाई हातलाई मजाले मालिस गर्ने पूऱ: पराल ४ इन्च राख्ने बीउ छर्दै जाने र अन्त्यमा झोलाको मुख सुतलीले बाँधिदिने ।

८. बाँधिएको पोकालाई घोप्टो पारी माला उनेभै भुन्द्याउने वा इटामा टक्क कराउने ।

९. उक्त बीउ लगाएको परालको पोकालाई २०/२२ दिन सम्म अध्यारो कोठामा राख्ने । कोठाको तापकम २०/२५ °C हुनु उपयुक्त हुन्छ । तापकम २० भन्दा तल भएमा दुसी आउन केही दिन ढिलो हुन्छ ।

१०. परालको पोकामा चारैतिर सेतो दुसी आए पछि ब्लेडले ठाडो तरिकाले झोलालाई चिर्ने र हटाईदिने ।

११. च्याउ फलन थाले पछि सामान्य उज्ज्यालो भए राम्रो हुन्छ ।

१२. च्याउलाई चिस्यानको आवश्यकता पर्ने हुनाले ओसिलो पार्न कोठाको चारै तिर सफा पानी स्प्रे गर्ने आवश्यक परे परालको पोकामा पनि दिनको २/३ पटक स्प्रे गर्ने ।

१३. च्याउ टिप्पा भुप्पा भुप्पै टिप्पा राम्रो हुन्छ । तर भुप्पामा स-साना भुराहरू धेरै भए सफा सानो कैचीले ठुला-ठुला काटी टिप्पे ।

१४. पराल बफ्याउने सम्बन्धमा व्यावसायीक खेती गर्ने व्यक्तिले ठुला(ठुला मट्टितेलको ड्रमको व्यवस्था गर्नु पर्दछ । उक्त ड्रमको एकापटि वा बिर्को पटिको भाग

पुरै खुल्ला पार्ने । अब ड्रमको फेदमा भित्र ३ खुटे ओदान वा इटा राख्ने र ओदान/इटा नड्ब्बने गरी पानी राख्ने त्यसमाथी तारजाली बिछाउने र पखालेको पराल लगाएर ड्रमको मुख प्लाष्टिकले ढाक्ने र ड्रमको मुख डोरीले बाँधिदिने ३० मिनेट देखि १ घण्टा उमालेपछि उक्त पराल भिक्केर सफा प्लाष्टिक वा मान्द्रोमा सेलाउन दिने र माथी बताए भै झोलामा भर्ने ।

## समस्या तथा समाधानका उपायहरू:

जति सरल तरिकाले च्याउको खेती गरिन्छ यतिकै समस्याहरू पनि आउन सक्छ ।

### १) हरियो दुसी :

हरियो दुसी एक किसिमको रोग हो । रोग लागेको ठाउमा हरियो स्पोर्सहरू देखा पर्दछ । जसलाई ट्राइको-डर्म स्पोर्स (Trichoderma Spores) भनिन्छ । यो दुसीले च्याउको दुसीसंग प्रतिस्पर्धा गर्ने हुनाले च्याउको दुसीलाई बढन दिदैन । हरियो दुसीको रोग र सुलसुले को सम्बन्ध नजिक हुने हुनाले च्याउको विउ छरेको परालको पोकामा सुलसुलेको प्रकोप पनि वढन सक्दछ । साथै यो हरियो दुसी रोग विशेष गरि अमिलोपन् भएको ठाँउमा हुर्क्ने हुनाले Ph Value ६ भन्दा तल भए बढी देखा पर्दछ । त्यस कारण Ph Value ७.० पुर्याउन चुनाको प्रयोग गर्नु पर्दछ । तापकमको तलमाथी पर्दा पनि यो रोगको वृद्धि हुने हुनाले च्याउ उत्पादन कोठाको तापकम २०/२५ °C सम्म मिलाउनु पर्दछ ।

### २) सुलसुले:

च्याउमा लाग्ने सुलसुले धेरै प्रकारका हुन्छन् । के ही सुलसुले च्याउको रेसा वा हरियो दुसीको रेसामा बाँच्दछ भने केही कुखुरा आदिबाट सर्दछ । सुलसुलेबाट बच्न को ठाँउ सधै सफा राख्नु पर्दछ । पुराना च्याउका पोकाहरू हटाएर पर्मालिन झोल १ लिटर पानीमा २५ml को दरले घोली स्प्रे गर्ने । च्याउमा भुसुना भिंगा तथा मुसाले पनि दुख दिने गर्दछ । त्यस कारण च्याउ खेती गर्ने व्यक्तिले मुख्य सरसफाइमा ध्यान दिनुपर्दछ । त्यसै गरी पराल नकुहिएको सफा र राम्रो निर्मलीकरण गर्ने । आवश्यक परे सम्बन्धित प्रविधिकहरूसंग सरसल्लाह लिने आदि गर्नुपर्दछ ।

(लेखक माउन्टेन स्प्रिटिका साधारण सदस्य हुनुहुन्छ । हाल उहाँ हाँसपोस-१, हलगडा, सुनसरीमा सगरमाथा च्याउको बीज घरको प्रोपाइटर हुनुहुन्छ ।)

Mountain Spirit is a non-government and non-profit organization that was registered in 1996 under the laws of Nepal. The organization consists of a group of like-minded people from different mountain communities. The organization aims to improve livelihoods, protect the environments and conserve mountain cultures through capacity building, empowerment, awareness, and sustainable development initiatives with participation of local mountain communities.

This organization has focused its work on issues related to health, education, eco-tourism, gender sensitization, social mobilization, participatory planning, conflict resolution, social empowerment and institutional capacity strengthening in various mountain regions of Nepal. The strength of this organization lies in its members; in total, Mountain Spirit has more than hundred members representing 16 different mountain districts of Nepal.



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