

## Harnessing the hidden Himalayan treasures of West Sikkim

48<sup>th</sup> Shodhyatra | Feb 17-23, 2023

*Eco-innovations could be found around every turn of the winding mountainous paths on the 48<sup>th</sup> Shodhyatra from Hathidunga, Soreng district to Uttarey, Geyzing district in West Sikkim. At Radhu village, people welcomed each Shodhyatri with a small badge made of dried corn husk. They had also threaded red and green leaves of an aromatic medicinal plant into welcome garlands. Unprecedented participation from schoolchildren kept the energy levels high, as did the enthusiasm of organic farmers, women's SHGs, artisans, herbal healers, innovators, and elders. On-site volunteers mentored by Mr. Tshering Gyatso Lepcha of Lum village (Dzongu, North Sikkim), SRISTI, and the local GIAN office helped organize the yatra.*

The 48<sup>th</sup> Shodhyatra spanned twelve villages and 90 km through the aspirational districts Soreng and Geyzing (also known as Gyalshing) of West Sikkim. Little children, dressed in traditional *kho* (close-collared jackets) and Lepcha hats performed Nepalese folk dances to welcome the 45 *shodhyatris* on their first evening. Phur Shering Lepcha presented his painting where he had artfully captured the majestic Kanchenjunga range. This was followed by a taste of the delicious traditional spread prepared by women of four SHGs. *Yatris* set out for the fresh 100 percent organic terrace farms, cardamom plantations and bamboo groves. Their journey culminated almost 6,000 ft above sea level, as they walked with halting steps across Singshore Bridge.

The bamboo and wooden homes, made with mud and cow dung mortar, blend into the surroundings. Bishnu Chettri of Radhu village was inspired to capture a small part of the wilderness at her doorstep, and grafted a wild dust-pink orchid onto a tree stump near her home. Most homes were nestled within kitchen gardens, often dotted with colourful orchids. Traditional knowledge of making horticultural products is widely put to practice, as is traditional medicine.

### Versatility for Vitality

Shodhyatris felicitated herbal healers and holders of outstanding traditional knowledge who shared their remedies. Gajendra Sharma said that applying a paste of boiled *parijat* leaves

(*Nyctanthes arbor-tristis* Linn.)<sup>1</sup> would heal broken bones, while drinking it controls malaria. He recommended the milk of *shatmuli* (*Asparagus Racemosus* L.) for tonsil pain and blood pressure. Omnath Sharma administers fermented radishes to animals for fever, crushed lemon seeds for deworming, and a mustard cake for them to come into heat. Gopal Chettri applies algae to relieve burns<sup>2</sup>.

Parsing Ray applies a paste of *bhui champa* (*Kaempferia rotunda* L.), *barol*, *balo patti* (*Aeschynanthus sikkimensis* (C.B.Clarke) Stapf), *gurjagano* (*Stephania glabra* (Roxb.) Miers) and *lakhuri* (*Fraxinus floribunda* Wall.) to heal bones<sup>3</sup>. Senior healers Dilli Prasad Sharma and Jibanath Sharma brought samples of a wide variety of plants

believed to have health benefits. During discussions from village to village, *yatris* noted that children are especially knowledgeable about the local ecology. They could name numerous plants and cite their uses.

### Versed in Biodiversity

“Let’s make a green natural classroom on the school terrace,” said seven year-old Ashwini Mukhya. She is a student of Lower Karthok Primary school, where children are encouraged to plant and nurture a garden. The biodiversity competitions gave as much insight into traditional medicinal practices, as they did into the inquisitive minds of students. At Hathidunga, children knew that they use *ambak* (guava leaves) to treat stomach ailments, and orange leaves for colon and heart health. They also said that the *titteypatti* herb (*Artemisia vulgaris* L.)<sup>4</sup> helps control fever, coughs and bleeding. They have learnt that *shishnu*, or stinging nettle (*Urtica dioica* L.)<sup>5</sup> controls blood pressure.

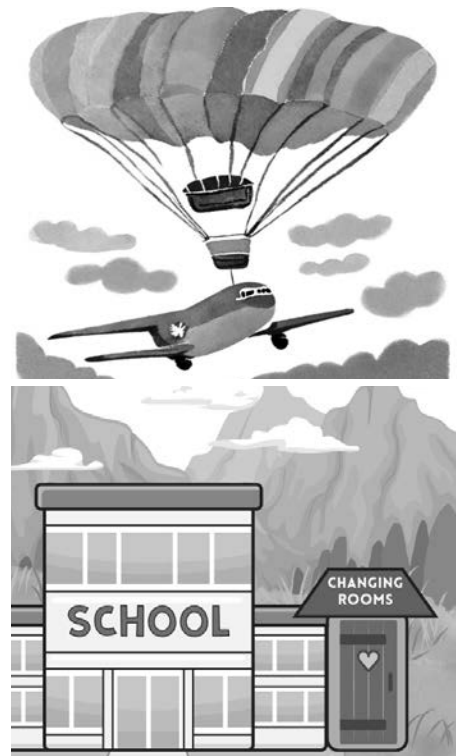
At Jeel village students also knew of *titteypatti*, but as an anti-diabetic. They told us that *shishnu*, apart from being used to treat diabetes, helps regulate hormones, and benefits the kidney and gallbladder. *Pakhan beth* (*Berginia ligulata* (Wall.) Engl.)<sup>6</sup> helps manage kidney and bladder stones as well as urinary disease. To share their knowledge, students posted large,

colourful chart papers with uses of a plant alongside a clipping of it.

Rekha Gurung of Begha school, Uttarey had filled an entire notebook with samples of medicinal plants, detailing their benefits and procedures for use. Among the 15 plants she had documented, were *kalo jhar* (*Ageratum conyzoides* L.)<sup>7</sup> to prevent tetanus in cuts made by a sharp weapon, and *buda okhati* (*Astilbe rivularis* Buch.-Ham. ex D. Don)<sup>8</sup> whose powdered roots remedy common colds and throat pain. Over two hundred students helped *yatris* understand local herbal medicines, and consequently, transmit that knowledge to other communities around the country. They participated with equal, if not more, enthusiasm in the idea competitions where they presented their most innovative solutions.

**“First doubt. Then inquire. Then discover.”**

Painted on a wall of Begha school, Uttarey, this quote aptly applied to many students, including Diksha Sharma. Seeking a better way to manage plastic waste, she envisioned a “Plastic and Innovations store”, where people could buy and sell daily-use products made of waste plastic and cloth, etc. Mishal Subba proposed floors with plaster made of straw shavings and sawdust to soften the fall when someone slips. Princha Limboo sketched her concept of a bowl-shaped candle stand which collects melted wax for a second use.



*Big ideas from students*

*Shodhyatris* were awed by the breadth of students’ imaginations. Seeing that orange seeds were always discarded, Sunong Lepcha thought to ask, “Why not extract oil from them?” Shojihn Lepcha proposed public benches with heat-trapping cushioning for winter months. Arjun Chettri would like to install dustbins, derived from mustard and bamboo, at busy marketplaces. Khushi Gurung proposed alcohol sensors on steering wheels, while Thupden Sherpa imagined a massive parachute on aeroplanes for emergency landings.

A few ideas sought to improve the lives of women and girls. Prayansh Sharma shared his design for a machine for making *selroti* (a Nepalese fried sweetbread from rice flour) to reduce women’s drudgery. Ashish Rai suggested that schools should provide dedicated changing rooms for menstruating girls. Kritika Pradhan, spurred by the need to get ready for school in time, conceptualized a wooden hair-braiding tool.



*The youngest are carrying forward knowledge of traditional herbal medicine*

Among technology-based innovations, Neeshum Limboo put forth the idea of glasses that recognize forged signatures. Both Biswajit Sarkar and Kunti Limboo suggested apps to help hospitals prepare for incoming patients. Anoop Subba thought of creating a remote-controlled robot grasscutter. Deepan Chettri proposed smart pens and smart dustbins, Shanti Chettri smart backpacks, and Ameesha Bisha a smart knife.

### Paying it forward

Shodhyatris were keen to continue meaningful engagement with these inventive young minds through sports, development work, and documentation. In a few villages, *yatris* found that schools had to carve out a mountain trail so students could reach. Accessibility worsens during monsoons when roads become slippery. This has caused high absenteeism in some villages, while in others students have braved these conditions to reach school. A suggestion was forwarded to state authorities to add rooms at schools for students to change into dry clothes.

Among other ideas, *yatris* discussed growing eco-tourism through village homestays, and organizing an evaluation of local plants with pharmacy students. On-site volunteers would be retrieving the Village Knowledge Registers

to share more children's ideas and traditional knowledge with the SRISTI team. The community was amenable to ideas of making a traditional seed bank, traditional plants first-aid kit, and local language storybooks of tales told by elders.

Bissu Hang Limboo (*see HB 33(3-4):26-27,2022*), a 25 year old serial innovator from Sambok, Geyzing, was among the *yatris*. His innovations have brought national attention to the creative potential of the state. He designed a vehicle sanitization bay, adopted by the Sikkim government at two major checkposts, to safeguard the state from COVID-19 cases. His innovative *selroti* machine, designed to prevent burns, has gained popularity in Sikkim, West Bengal, Nepal, and Bhutan. His other innovations include the Sena Broom, a corn roaster, security foot mat, milk-carrying tank, crocodile fork, handset fork, crossed-rakes tool and cardamom harvester.

Dharamveer Kambhoj (*see HB 20(1):10-12,2009; 32(1-22):12,2021; 34(1):7,2023*), a longtime Honey Bee collaborator, demonstrated his multipurpose food processing machine, using local ingredients to create foods and soap. He explained the many uses of his machine, and how it could especially benefit the numerous SHGs in the area.



*Bishu (right) who participated in the People's Festival of Innovation 2022, helped yatris scout innovations*

### A taste of Himalayan agriculture

About 4,300 feet above sea level, *tarul* (various tubers) bites, millet rotis, and earthy buckwheat and millet beer provided the Shodhyatris warmth as evening temperatures dipped. These specialties were prepared and presented by women of four SHGs at Hathidunga village on the first day. By interacting with four or five SHGs each day, *yatris* learnt a lot about the region's agricultural and culinary practices. The major crops are maize, wheat, barley, millets, cardamom, radish, tubers, and ginger. They grow many fruits, including oranges, pineapples, and jackfruit. Found in abundance, they also incorporate flowers, bamboo and honey in their food.

The Carnation SHG in Jeel had made a hearty and healthy *shishnu daal*. This was served with *rayu saag* (mustard greens), *bodmas* (soybean), and *makki* and *gehu ka dhiru* (boiled corn and wheat mash). The Kamal SHG at Central Martam brought dried khankpa (*Evodia fraxinifolia* (Hook.) Benth.)<sup>9</sup>.

In Nijgaon village, the Indrani, Srijani, Rose and Ajambari SHGs showcased fresh produce such as *iskus* (local squash), purple *ghar tarul* tubers, *longky* (yam), and various leafy greens. They had prepared *bungchhipa* (fried rice with flowers), fermented *simbal* (a kind of tuber), and jackfruit wine. They brought *gundruk* for *yatris* to sample. It



*Mid-day meal prepared at Radhu school*



is made by fermenting excess greens, like mustard, garlic and radish leaves for one or two days, and shredding them.

Besides *gundruk*, households practiced other forms of food preservation. Meat is dried on a rack suspended above *chulhas* (firewood stoves) within the enclosed kitchen space, helped by latent heat from daily cooking. Bamboo leaves are often used to store fermented soybeans, while the culm is ideal for fermenting wine and beer. At Radhu, *yatris* tried a pickle made by SHGs from *dalle chilli*, one of the hottest peppers in Northeast India, and *kinema* (beans fermented in a packed-leaf). At

Khandu, Lotus SHG presented their organic pickle made from *lhopsey* (a local fruit). Cubes of *Chhurpi* cheese made of yak milk may be fresh, but are often dried, hardened, and found strung at local shops.

Corn cobs and millet bunches are found drying outside most homes for food, and corn husks are dried to weave into mats, baskets and other crafts. Women weave clothes with fibers of jute, bamboo, and, interestingly, dried *shishnu* leaves.

### Traditional Farming

Farmers reported low incomes, and discussed the challenges after the state adopted a 100 percent organic



*Dharamveerbhai's machine efficiently peeling a large batch of ginger*

approach in 2016. Several farmers have been facing lower yields in crops such as orange, cardamom and ginger due to climate change. Even without the push from state machinery, a large section of society seems to prefer some traditional tools and practices for their daily needs. For instance, at Berthang village, Kharanand Sharma and his family demonstrated the bulky wooden *kotu* (manual sugarcane juicing machine). They invited Shodhyatris to sit down for juice and *katri gud* (jaggery), made sweeter by their care and effort.

To learn more about the region's traditional agricultural practices, *yatris* visited Gautam Farm at Berthang. Its proprietor, Mr. P.B. Gautam and his family have preserved over 21 native Nepalese seed varieties, and encourage people to retain a love for traditional foods. They grow and sell organic turmeric and coffee from their sprawling fields covered with a wide range of flowers and trees.

### A Creative Transformation

While tradition is valued, the community's hunger for innovation was evident from their enthusiastic response to Dharamveerbhai's multipurpose processing machine. He demonstrated how, with a little inventive thinking, one could take an ordinary crop like ginger and easily turn it into juice, candy and even soap! Later, he helped SHGs in Khandu use the machine to



*Mr. P.B. Gautam explaining his methods of preserving traditional seed varieties*



*Living architecture at Lumtshering Farm Homestay, Mangan*

create rhododendron jam. The goal was to demonstrate that inexpensive and widely available local raw materials could be used to produce high-value goods. Discussions at Namgaon yielded ideas such as collecting even waste like fallen oranges, and focusing on bulk-produced crops like ginger or turmeric for value-addition.

Noting that Sikkim's reliance on imports far exceeded its locally-produced and exported products, similar dialogues unfolded in numerous villages. These conversations revealed the community's positive outlook towards generating new products and enterprises. Already, the Sikkim office of GIAN is providing incubation and market support to these budding enterprises.

Such enterprises would augment farmer income, especially during low-yield seasons. Developing the grassroots innovations and enterprises ecosystem locally could empower women entrepreneurs to sell traditional crafts and food products to a wider market. SHGs may also benefit from expanding their product line by using affordable machinery like Dharamveerbhai's innovation. The most promising aspect of this initiative is the potential of the region's incredibly creative youth to take these enterprises to new heights with their innovative ideas and skills.

### Endnotes

1. *Parijat* is extensively used in Ayurveda for anemia, eye diseases, and for its antibacterial, anti-inflammatory and anthelmintic properties. (Hiremath et al., 2016)
2. Studies show good potential of algae such as *Chlorella*, *Haematococcus*, *Spirulina*, *Ankistrodesmus*, *Botryococcus* and *Scenedesmus* found in Northeast Indian states as medicine, biofuel, food and for other commodities (Medhi & Kalita, 2020)
3. For a comprehensive review of traditional medicinal plants of Sikkim please refer to Sherpa, Mathur & Das, 2015, and Panda & Misra, 2010.
4. *Titeypatti* is an invasive weed gaining prominence as a source for antimalarial artemisinin drugs. (Abiri et al., 2018).
5. Stinging nettle provides many vitamins and minerals, and is known to help with rheumatic conditions, urinary health, and for anti-allergenic properties (Grauso et al., 2020). In Sikkim, it finds use as food, medicine and fiber.
6. Besides kidney health, *pakhan beth* may benefit the heart, gut and liver, among others. (Gurav & Gurav, 2014).
7. *Ageratum*, native to South America, has also been used across Africa and Asia to treat pneumonia, wounds, ulcers, fevers, and asthma (Kamboj & Saluja, 2008).
8. *Astilbe rivularis* is used in treatments for various gastric conditions, headaches and hemorrhages, and uterine prolapse (Rajbhandari et al., 2010).
9. Though widely used in Himalayan medicine for indigestion and skin disease, *khankpa* was found to have limited efficacy against certain bacteria, though further studies may reveal antifungal potential (Sharma, 2013).