

## **Guardians of the green: Safeguarding Himalayan plant diversity in changing climates at a high-altitude botanical garden**

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The Himalayan ecosystem boasts a unique array of flora and fauna owing to its rapid changes in elevation, temperature, and rainfall over short distances. However, this diversity also renders the system vulnerable to climate change, as species struggle to adapt swiftly to rising temperatures and increased rainfall. The distinctive microbiome of this region adds another layer of complexity, making the regeneration of Himalayan plants outside their natural habitat challenging. At the Saryan Vigyan Foundation, we address this challenge by establishing a botanical garden situated approximately 3000 meters above sea level, near the treeline in Himachal Pradesh, India. This strategic location not only accommodates below-treeline plants but also provides an environment conducive to the growth of above-treeline species. In my talk I will highlight two critical dimensions of plant diversity conservation in this region: their significance as medicinal resources and their role as food sources for tribal communities. In the past year since conception, we have collaborated closely with community elders to identify, document, and propagate wild populations of both medicinal (10 species) and edible plants (10 species) in the gardens' confines. To identify potential genotypes, 3–4 individuals for each species were collected from at least 3 distinct populations across Kinnaur region, India. Germplasm of these species was also collected and stored in the form of seeds and herbarium specimens at the botanical garden. We found that habitat destruction because of modern agricultural practices and heavy exploitation of many of these plants negatively affect their wild populations. Finally, I will conclude by outlining our comprehensive plant conservation strategy at the botanical garden. Our approach encompasses preserving germplasm, carrying out ecological research, and awareness-raising initiatives such as training local students in research methodologies and conducting workshops to educate communities about the perils faced by plant diversity and their habitats.