WISIONS of sustainability

Factsheet Series:
Sustainability Solutions for Mountain People and Landscapes

Strengthening value chains of non-timber forest products In Nepal – the example of Dhatelo oil

Prinsepia utilis Royale plant with seeds (Photo: RECOFTC Nepal, 2024)

Introduction

Harvesting non-timber forest products (NTFPs) has long been vital to the livelihoods of rural communities in Nepal, particularly in the high hills and Himalayan regions. For these communities, NTFPs have the potential to contribute to their economic incomes alongside agriculture, which is the primary economic activity. However, poor road infrastructure, insufficient storage facilities and limited access to local markets make it challenging to generate income from NTFPs.

The condition of the forests from which NTFPs are directly harvested is worsening due to accelerating climate change and natural disasters. Untimely rainfall and floods threaten forests near rivers, while farmland faces the risk of floods and landslides. Changing weather patterns disrupt traditional farming practices, and unsustainable harvesting further endangers NTFP resources.

Therefore, it is important to find measures that link agriculture, forests and NTFPs at landscape level to support people's livelihoods in mountainous areas.

This factsheet introduces the potential to strengthen the value chains of non-timber forest products in order to generate higher incomes and mitigate the effects of climate change in mountainous regions considering the specific case of Prinsepia utilis. It discusses the implementation of the solution, socio-economic impacts, scaling-up potential, and lessons learned.

The solution

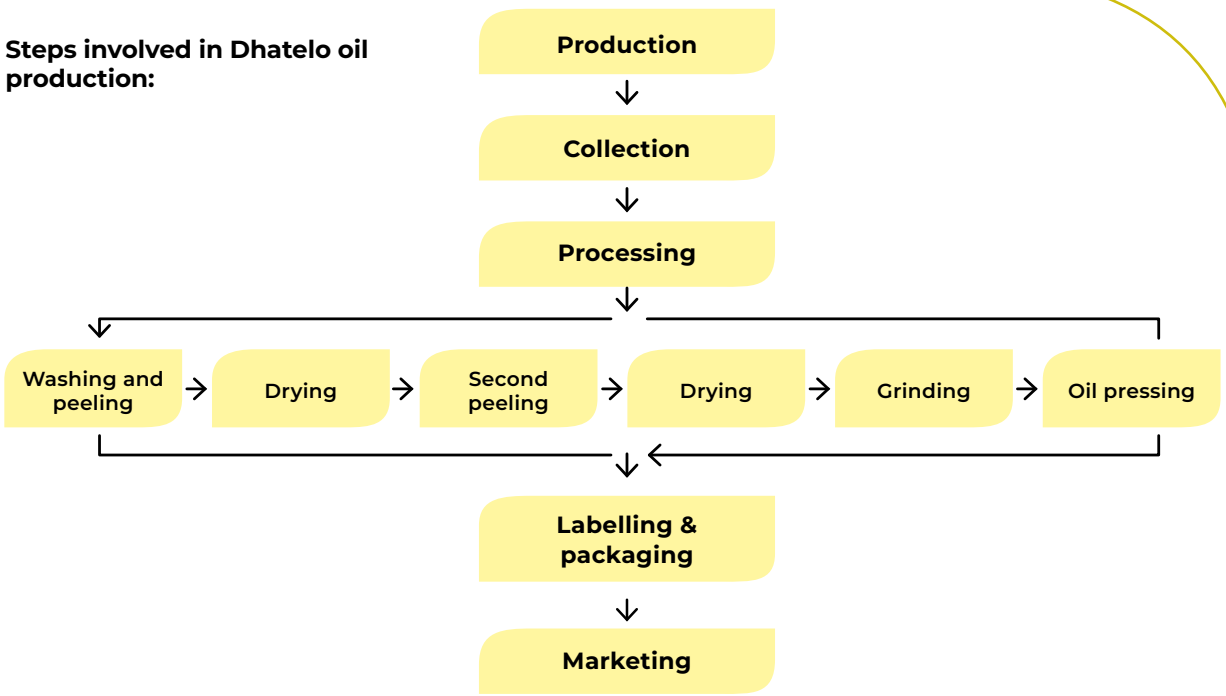
Harvesting NTFPs has always played an important role in the livelihoods of rural communities in Nepal, be it for their own consumption, for example as food or for medicinal use, or to produce goods that can be sold at local markets, for example essential oils. There are many different NTFPs with more than 160 species already in commercial use in Nepal, and trade in these was found to be the second most important source of cash income at household level in Nepal[1].

One such marketable NTFP in the mountainous region of Jumla is Prinsepia utilis, locally known as Dhatelo. It is a deciduous shrub native to Nepal that can grow up to three metres tall at altitudes of 1800 to 3000 metres. The plant usually grows in areas exposed to direct sunlight and on dry hills near rivers or water sources and is widely found in Jumla.

Oil can be extracted from the ripe seeds of the plant. The oil can be used for cooking, but nowadays it is mostly used for traditional medicinal purposes and in religious contexts in Nepal.

Along with the potential economic benefit from oil extraction, the Dhatelo plant also has good anti-erosion and soil conservation qualities (see also: Slope stabilisation and flood prevention through bioengineering practices in mountain areas in Nepal). It can be planted as a living fence near riverbanks on agricultural land to prevent scouring along the riverbank due to high water levels and floods, especially during the monsoon season. This protects agricultural land next to rivers, reducing losses due to natural disasters which will become more frequent as the impacts of climate change increase.

Steps involved in Dhatelo oil production:



The value chain of Dhatelo oil in Jumla can be described as follows:

1. **Production:** The first step is the production of raw materials. The potential to produce raw materials is immense, especially in rural, mountainous areas in Nepal.
2. **Collection:** Collecting Dhatelo seeds is challenging due to the thorny bushes and uneven ripening. Farmers traditionally use their bare hands, sticks, and sickles. Using suitable tools can increase efficiency and profitability, making the process safer and more sustainable.
3. **Processing:** After collection, the seeds are cleaned, peeled, dried, and then ground before being pressed to produce oil. A lack of grinding and pressing technologies can lead to quality issues, as there is no dedicated machine for extracting Dhatelo oil in Jumla, resulting in contamination from other seeds.
4. **Labelling and packaging:** The pressed oil is labelled and packaged as per market standards maintaining the quality and is ready to be supplied to the market.
5. **Marketing:** The commercial production of Dhatelo oil in Jumla has not yet started. However, in recent years, some brokers have emerged connecting oil producers in Jumla with buyers in Kathmandu, giving them access to the international market. This clearly shows that the product has marketing potential internationally. However, support is required to promote this product and give it international exposure.

Management of the solution

The potential value added by Dhatelo oil is significant. In the current market, a litre of Dhatelo oil sells for $3-$6, which is a substantial increase compared to the minimal price of $0.40-$0.80 people in Jumla currently receive for their oil[2]. 1-2.5 kg of fruit can be collected from each plant. It is estimated that about 15-20% of the oil can be extracted from fully ripe, dried seeds[3]. However, in Jumla a few farmers participate in the value chain by collecting seeds and selling the ready-to-press raw material to brokers with connections to exporters. This current process does not fully benefit the local people. This can be improved by strengthening participation by local communities at every step along the value chain. For instance, in the production stage there is already great potential to improve forest management practices in order to ensure that the seeds are produced in sustainable, managed community forests, which is a quality that is increasingly required by the market segments offering the highest price. Moreover, additional Dhatelo plantations should be sown on fallow and unproductive agricultural land for cultivation. Harvesting the seeds is not only exhausting but also involves a high risk of injury because the plants are very thorny. Thus, improved management of the bushes and the collection methods should be part of any initiative to improve participation by local communities.

An important step in the value addition process is the processing of the seeds. In the case of Jumla, establishing local enterprises with the capacity to process seeds up to the production of a clean, high quality oil can significatively enhance the economic benefits and flows into the local community. For instance, a dedicated oil press enterprise would allow the local community to trade a higher-value product. This enterprise could also be established based on a cooperative model to organise seed collection, set rates for raw materials, and connect to urban markets. Cooperatives also offer added benefits, distributing profits as dividends and increasing community ownership. In addition to this, it is important to increase the bargaining power of the local enterprise within the existing commercialisation channels, for instance by establishing contacts and relationships with relevant actors along the value chain and enhancing the marketing capacities of local enterprises.

Production of Dhatelo oil in Jumla
(Photo: Winrock, 2024)

Agriculture land close to the river in the Municipality of Guthichaur, close to the Dolchagad MHP.
(Photo: Winrock, 2023)

Socio-economic and sustainability impacts

Cultivating and harvesting NTFPs, especially Dhatelo, can generate additional income for rural communities in Nepal's mountainous regions which rely on subsistence agriculture. Establishing enterprises to process these raw materials, for example pressing Dhatelo fruit into oil, can create employment opportunities. This in turn can reduce outward migration, whereby men leave for urban or overseas jobs, leaving women with most of the care and agricultural work. Well-paid jobs along the NTFP value chain could help to address this issue.

The enterprises processing raw materials can also drive the productive use of energy in the communities, as processing requires a reliable source of electricity. This can strengthen local micro hydropower (MHP) systems by generating higher regular demand for electricity. This in turn can improve the economic performance of community-based MHP systems[4].

Sustainable management of Dhatelo bushes and the processing of the fruit into oil has the potential to contribute to improving the livelihoods of rural communities in Jumla by providing an additional source of income while at the same time mitigating effects of climate change and protecting agricultural land.

Scaling-up potential

To establish Dhatelo oil enterprises in local or national markets, intensive promotion highlighting its benefits over existing products is essential. Given its considerable value in the medicine and cosmetics industries, the primary focus should be on industrial-scale supply rather than direct consumer sales. Establishing market linkages with international cosmetic industries is crucial, and they require guaranteed oil quality and consistent supply. For international trade, certain certifications are mandatory, thus emphasizing the importance of maintaining high quality standards from production onwards. In addition to this, participating in international trade fairs is vital to promoting the product on a broader scale.

The potential to expand the market for Dhatelo oil lies in its unique chemical components, which are beneficial for treating rheumatic and skin diseases[5]. It can also be used in skin and hair care products[6]. Despite challenges such as the unfavourable policy environment for forest product income generation, the global market and countries such as France and China in particular recognise the cost-effectiveness and efficacy of Dhatelo oil extracts compared to more expensive alternatives. If producers can ensure international buyers of the product's quality and sustainable production methods, there is significant potential for enterprises to expand on an international scale.

Key takeaways

The key takeaways from the assessment phase of the Innovation Lab Nepal were as follows:

- Dhatelo oil offers interesting potential to expand the income sources of mountain communities in Jumla.
- Establishing local enterprises with the capacity to add more value to the Dhatelo oil seeds is crucial for increasing the economic flows into the local com munities.
- Dedicated equipment for Dhatelo oil production should be acquired to ensure that local enterprises can com mercialise a product of high quality.
- The cooperative model for managing such local ente-rprises could improve participation and ownership by local families. However, establishing such cooperatives from the ground up can be challenging and time-consuming.
- Promotion strategies are essential to make consumers in Nepal aware of the medicinal, cultural, and culinary benefits of this indigenous NFTP.
- For the international market, Dhatelo oil can be an attractive option for the cosmetics industry due to its cost-effectiveness compared to other expensive extracts and essential oils. Therefore, strategic marketing would be needed to explore and expand these commercialisation alternatives.

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This factsheet is part of the series "Sustainability Solutions for Mountain People and Landscapes," developed within the WISIONS Innovation Lab Nepal. The aim is to promote an integrated approach to strengthening the livelihoods of people living in mountain communities. Each factsheet provides information on specific sustainability solutions in the fields of energy and landscape management that have shown promising potential for improving the livelihoods of mountain people but have a low level of adoption in Nepal and other mountain regions. The information is tailored to the specific context of Nepal's mountain landscapes and offers practical insights and guidance for scaling up the application of these solutions. Additionally, it presents an integrated approach that begins with an understanding of the opportunities and challenges faced by mountain communities, enabling the systematic deployment of synergies between solutions from the energy and landscape sectors.

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