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Indigenous Fruit and Vegetable Systems in Northern Vietnam: Market Opportunities for Livelihoods and Nutrition

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Ky The Hoang^{1,2}, Thinh Nhu Le³, Deborah Nabuuma⁴, Cornelis Swaans⁵, and Andrea Ghione⁶

1 Bioversity International, Hanoi, Vietnam

2 Agriculture, Food Systems and Bioeconomy Research Centre, Ryan Institute, University of Galway, Galway, Ireland

3 Fruit and Vegetable Research Institute (FAVRI)

4 Bioversity International, Penang, Malaysia

5 International Center for Tropical Agriculture (CIAT), Ha Noi, Vietnam

6 Bioversity International, Nairobi, Kenya



Key messages

- Local and indigenous fruits and vegetables are high-value assets for livelihoods, nutrition, cultural identity, and agrobiodiversity, but their potential remains largely underutilised.
- Market demand for indigenous products is rising, driven by tourism and consumer preference for distinctive local foods. Restaurants, homestays, and tourists value indigenous fruits and vegetables for their unique taste, cultural identity, and perceived health benefits, creating opportunities for price premiums.
- Production systems rely heavily on traditional knowledge but face growing risks. Limited technical support, declining seed quality, weak conservation practices, and climate variability threaten productivity, genetic diversity, and long-term sustainability.
- Weak value chain organization constrains growth: Informal trading arrangements, lack of collective action, limited post-harvest handling, and lack of certification restrict access to higher-value and more stable markets.
- Several products stand out as high-potential entry points for scaling up: H'Mong mustard, H'Mong cucumber, *Múi* tomato, *Hôi* and *Tròn* mangoes in Mai Son, and H'Mong mustard, Tả Van plum, local pumpkin in Sa Pa show strong prospects for commercial development and agro-ecotourism integration.
- Agro-ecotourism offers a powerful lever for value addition: Linking indigenous crops with farm-to-table experiences, cultural food narratives, and on-farm tourism can increase visibility, stabilize demand, and diversify household incomes.
- A coordinated approach is essential to unlock potential: Investing in seed systems, agroecological practices, collective production units, certification, branding, and digital marketing can strengthen resilience, conserve biodiversity, and integrate indigenous fruits and vegetables into evolving food systems.

Indigenous fruits & vegetables: Unlocking potential in Northern Vietnam

Cultural value, growing markets & tourism demand

Mai Son



Hôi mango



Tròn mango



H'Mong cucumber



Thom wax gourd



Múi tomato



H'Mong mustard

Sa Pa



Peach



Tà Van Plum



Pumpkin



H'Mong cucumber



Nép sponge gourd



H'Mong mustard

Key constraints



Limited technical support,
declining seed quality



Irregular product supply
and inconsistent quality



Weak value chain
organization

Strategic opportunities & way forward



Collective models
(Crops, ethnicity, commerce)



Standards and branding
(VietGAP, OCOP, trademarks)



Integrate demand
(with experiential tourism)

Introduction

Son La and Lao Cai are mountainous provinces in Northwest Vietnam and are renowned for their rich cultural and ecological diversity. These provinces are home to diverse ethnic groups such as the Dao, H'mong, and Thai that play a vital role in preserving indigenous knowledge and sustaining traditional farming systems [1, 2]. Mai Son district (Son La) covers approximately 1,410 km² with a population of around 169,000 people. It is characterised by a tropical monsoon climate, and 49,000 ha of cultivated land [3]. In contrast, Sa Pa town (Lao Cai) spans approximately 685 km² with about 72,000 residents. Sa Pa has a cool subtropical highland climate suitable for agricultural production [4].

Fruits and vegetables are key agricultural products in Son La and Lao Cai, with extensive cultivated areas and a substantial contribution to household income. According to data from the Department of Agriculture, in 2024, Son La had a larger fruit-growing area and output of 84 thousand hectares and over 450 thousand tons, compared to vegetables at 14 thousand hectares and nearly 196 thousand tons. Meanwhile, in Lao Cai production reports indicate a larger cultivated area and output of vegetables of 12.3 thousand hectares and 180 thousand tons while fruits were at 2,654 hectares and 10.5 thousand tons [3, 4]. Many fruit and vegetable varieties serve as flagship products, offering high economic value while supplying essential vitamins and micronutrients that enhance household dietary quality and nutrition and health outcomes.

Local and indigenous fruit and vegetable varieties hold unique cultural and culinary value. They are closely tied to traditional farming practices and have strong potential as niche products for tourism and premium markets. However, the production of local and indigenous varieties face several challenges, including small and declining production areas, changes in land use and

farming systems, replacement by improved or introduced crop varieties, and limited market development. These constraints increase the risk of biodiversity loss and limit livelihood opportunities for farming households, particularly women, who play a central role in conserving and producing local and indigenous plant, including fruits and vegetables. Therefore, strengthening the sustainable production and use of local and indigenous fruit and vegetable, supported by targeted research, development and conservation efforts, is essential to fully realize their economic, nutritional, and cultural value and to ensure their meaningful integration into an evolving food system.

This brief summarises key findings from a scoping study examining production systems, value chains, business models, and market opportunities for selected local and indigenous fruits and vegetables. The study aimed to identify products with strong potential for both commercial development and agro-ecotourism integration. The study used a mixed-methods approach that combined a targeted review of secondary data, key informant interviews, and focus group discussions with a broad range of value-chain actors, including producers (46), collectors (06), processors (10), retailers (13), local authorities (02) and tourism-related enterprises (09) engaged in local and indigenous fruit and vegetable systems in Mai Son district and Sa Pa town¹. In each site, six commodities were selected through a rigorous participatory process based on economic importance, cultural relevance, social value, and their potential for expanded production and market linkage. This approach ensured a targeted assessment of local and indigenous crops that represent local agrobiodiversity while offering meaningful opportunities to enhance livelihoods and support sustainable value chain development.

1. This report references 'Mai Son district', 'Sa Pa town', and 'former communes' based on the boundaries that existed at the time of study (2024); future planning for local and indigenous fruits and vegetables will need to align with the new administrative structures effective from 1 July 2025.

Mai Son (Son La Province)

Production system

The study in Mai Son district was conducted in three communes including Muong Bon, Co Noi, and Chieng Chan². The study focused on six key commodities, comprising two mango varieties (*Hôi* and *Tròn*), and four vegetables: H'Mong mustard, H'Mong cucumber, *Múi* tomato, and *Thơm* wax gourd (vegetables). Among these, *Hôi* and *Tròn* mangoes are produced at relatively large scales, have commercial value chains, and generate significant income for local households.

Their production primarily relies on long-established, experience-based cultivation practices, informed by traditional ecological knowledge and they are adapted to local conditions. Across the three communes, the production of most commodities remains small-scale, fragmented, with limited investment, particularly for the vegetables. Despite the cultural and nutritional importance of these foods, the production systems face several constraints (Table 1). Although indigenous crops are traditionally managed using local knowledge, such practices are largely informal and experience-based, with limited adaptation to improved breeding, crop management, and post-harvest handling needed to meet current market and quality standards. Changes in farming systems, land use and climate change further exacerbates production instability. Inadequate production planning leads to fluctuating yields and inconsistent product quality and size, while limited conservation efforts heighten the risk of losing valuable genetic resources, impacting seed access. The products are mainly consumed within households, with producers lacking experience in

commercial marketing. Given that most of the products currently do not meet safe-production standards such as VietGAP³ and Participatory Guarantee System (PGS) or One Commune One Product (OCOP) certification, market access is restricted, reducing income potential. Nevertheless, several commodities show strong potential for scale-up. For example, H'Mong mustard is increasingly produced using VietGAP-aligned practices driven by high market demand. Farmers expressed interest in increasing the cultivation areas of *Hôi* and *Tròn* mangoes to replace newer mango varieties that are perceived to be of poorer quality. Similarly, H'Mong cucumber and *Múi* tomato are easy to grow, have good yield, and align well with current market demand.

Furthermore, demand for local and indigenous produce is projected to rise two to three times in the next five years, fuelled by tourism growth and expanding restaurant and hotel services. The six products in this study hold strong market appeal due to their uniqueness, quality, and cultural identity. Key opportunities include shifting toward safe production standards, integrating sales with farm-based tourism activities and online marketing channels, and leveraging provincial interest in upgrading indigenous produce such as *Hôi* mango, *Múi* tomato, H'Mong cucumber, and H'Mong mustard into 3- or 4-star OCOP products. Therefore, forming collective production units and strengthening farmer capacity in production and marketing will be essential to realize this potential.

Table 1. Production characteristics of selected local and indigenous fruits and vegetables in Mai Son.

	Scale of production	Production practices ^a	Who farmers sell to	Challenges related to production	Other important information
<i>Hôi</i> mango	Min: 5,000 m ² /hh Max: 30,000 m ² /hh District total: 100 ha (with <i>Tròn</i> mango); 45 ha in Dom village.	Traditional and personal experience-based production. Harvest: June–July	Collectors in the production area. Sold in the field and gathering points.	Yields are unstable across years. Lack of uniformity in fruit quality and size. Unattractive color (grey, brown/dark fruit).	Main place grown: Dom village, Hat Lot town. Consumers appreciate the product. Highly valued for its nutritional benefits.

2. According to the administrative restructuring in 2025, Muong Bon commune was merged with Chieng Mung and Muong Bang communes to form a new commune named Chieng Mung; Co Noi commune was merged with other communes (Hat Lat township & Hat Lot commune) and consolidated into Mai Son commune; and Chieng Chan was merged with Chieng Sung commune and is now Chieng Sung commune.

3. VietGAP: Vietnamese Good Agricultural Practices, Vietnam's national standard for safe, quality, and sustainable farming.

	Scale of production	Production practices ^a	Who farmers sell to	Challenges related to production	Other important information
Tròn mango	Min: 5,000 m ² /hh Max: 30,000 m ² /hh District total: 100 ha (with <i>Hôi</i> mango)	Traditional and personal experience production. Harvest: June–July	Collectors in the production area. Sold in the field and gathering points.	Yield is unstable across years. Lack of uniformity in fruit quality and size. Unattractive color (grey, brown/dark fruit).	Main place grown: Dom village, Hat Lot town. Originally from Yen Chau (introduced 1997), but locals' value and accept it as an indigenous tree. Low flesh ratio/ small fruit size makes restaurant processing inefficient.
H'Mong mustard	Min: 1,100 m ² /hh Max: 5,000 m ² /hh District total: 20 ha Largest production scale among vegetables. Produced twice a year at the household level.	Traditional and personal experience production. Van Phuc safe vegetable cooperative uses VietGAP process guidance. Multiple crop cycles possible per year, harvested 30 days after sowing.	Collectors in the production area. Sold in the field and gathering points. Collectors in Van Phuc cooperative. Sold regularly to restaurants.	Annual yield is unstable across years. Lack of uniformity in quality. Lack of clear household production plans.	Main place grown: Co Noi commune. Highly valued for production, nutrition, trade, and tourism potential. Price is always higher than similar products. Commonly consumed on holidays/events.
H'Mong cucumber	Min: 1,000 m ² /hh Max: 10,000 m ² /hh District total: 7–10 ha	Traditional and personal experience-based production. Previously 1 crop cycle per year; now can grow 2 cycles due to high demand. Harvest: July–Oct.	Collectors in the production area. At the roadside to retailers and consumers. ^b	Yield is unstable across years. Lack of uniformity in quality and fruits. Lack of clear household production plan.	Main place grown: Co Noi commune. Restaurants may not accept it easily due to high water content and thick, fleshy texture.
Thơm wax gourd	Min: 100 m ² /hh Max: 300 m ² /hh District total: 5–7 ha	Traditional and personal experience-based production. Usually grown sporadically in-home gardens. Planting: Mar–Apr Harvest: Aug–Oct	Collectors in the production area. At the roadside to retailers and consumers. ^b	Low yield; price is higher than new squash varieties, but economic efficiency is low.	Main place grown: Co Noi commune. Highly appreciated by consumers over 45 years old. Young consumers dislike the dish's appearance compared to new varieties. Advantage: has a long shelf life. Difficult and time-consuming preparation (harder peel, requires accompanying ingredients like ribs/ bones).
Múi tomato	Min: 2,000 m ² /hh Max: 5,000 m ² /hh District total: 15–20 ha	Traditional and personal experience-based production. Planting: Sept–Oct Harvest: Dec–Jan (normal); grown all year in greenhouses.	Collectors in the production area. At the roadside to retailers and consumers. ^b	Highly appreciated but limited development due to poor transportability. Yield is unstable; lack of uniformity in quality.	Main place grown: Co Noi commune. <i>Múi</i> tomato is regarded as a high-quality variety due to its floury texture, sweetness, and ease of cultivation, making it particularly valued by restaurants.

a. Planting and harvesting season reflect the general production context and practices observed.

b. As roadside sellers, since 2020, they also conduct online sales, connecting with retailers and consumers through Facebook and Zalo.

Box 1. Bridging tradition, markets, and tourism: The transformative potential of Muong Bon agricultural cooperative

Muong Bon agricultural tourism cooperative, established in 2019 in Mai Son district, has 22 members and represents an emerging institutional model that integrates agricultural production with experiential tourism. Operating on a diversified 13-hectare land base that combines crop cultivation, livestock, aquaculture, and designated areas for visitor engagement, the cooperative relies primarily on its network of 11 member restaurants as internal consumption outlets. Besides conventional vegetables, indigenous production mainly includes H'Mong mustard and *Thom* wax gourd, grown in small quantities for restaurant supply. The cooperative is making efforts to apply safe production practices to leafy vegetables in line with VietGAP- standards. Members previously replaced indigenous mango varieties (such as *Hôi* and *Tròn*) with improved types, because indigenous mangoes have low canopies, while improved varieties bear large, attractive fruits. However, they now intend to reintroduce selected indigenous mangoes due to their superior quality and reduced pest susceptibility. Market engagement remains largely inward-focused, with internal consumption through the restaurant network accounting for approximately half of vegetable use in summer and a smaller share in winter, while only about 20% of indigenous fruits are consumed internally and the remainder sold to collectors and retailers for transport to other provinces. The cooperative has yet to establish formal linkages with external cooperatives, constraining its market integration. Additionally, regulatory restrictions preventing the construction of bungalows on agricultural land limit its capacity to expand tourism-related services. Despite these constraints, Muong Bon is regarded as a critical collective production unit with the potential to support Mai Son's transition from experience-based cultivation toward safer, standardised production systems and to contribute to future OCOF certification and market stabilisation for indigenous products.

From the farm to the market

Indigenous fruits such as *Hôi* mango and *Tròn* mango play an important commercial role in Mai Son due to their production scale and contribution to household income. However, they are mainly sold at the farm gates or local aggregation points through informal, verbal agreements. In addition, they lack labelling, branding, and certification, so their access to wider and more competitive markets remains limited despite growing demand. Similarly, local and indigenous vegetables including H'Mong mustard, H'Mong cucumber, *Thom* wax gourd, and *Múi* tomato are traded through collectors or wholesalers, also without written contracts. Restaurants with lodging services use local and indigenous vegetables more frequently, but the 10–15% price premium reduces uptake among standard restaurants.

Across both fruit and vegetable systems, production remains constrained by unstable yields, inconsistent product size and quality, and limited capacity to meet market standards (Table 2). Weak market linkages persist because of informal contracting and the absence of advance investment from buyers. Post-harvest issues,

including discoloration in mangoes and damage to soft-skinned vegetables, further reduce competitiveness. Lack of collective production units restricts farmers' access to technical support and market-oriented skills. Except for H'Mong mustard, none of the other products are currently produced according to safe-production standards or OCOF certification, limiting their competitiveness in higher-value markets. Some products face specific constraints; for example, *Múi* tomato has high market value but poor transportability due to its thin skin and high-water content.

Despite these constraints, market prospects for the local and indigenous fruits and vegetables in Mai Son are highly promising. Their unique flavour profiles, cultural value, and local identity allow them to capture premium prices, particularly among consumers seeking distinctive regional products. Growing interest in agro-tourism offers opportunities to integrate local and indigenous crops into farm-to-table experiences, food-based cultural activities, and on-farm visitor engagement. Digital sales platforms are expanding, enabling producers to reach broader markets through simple online channels. For example,



FGD with homestay owners and produce collectors, Tả Van commune.
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H'Mong cucumber has recently shown potential through digital sale channels such as Facebook and Zalo.

In addition, district and provincial policies promoting agricultural diversification and OCOP development create favourable conditions for upgrading production. Furthermore, strengthening branding through basic marketing tools such as labels, logos, and product storytelling can significantly enhance visibility. Among the commodities, the *Hôi* mango and *Tròn* mango could benefit most from Vietnam's free trade agreements, with

potential access to China, Japan, and Europe markets. To fully harness these opportunities, it will be essential to first address the current gaps in production protocols and seed quality. Developing standardized production protocols, ensuring access to reliable seed sources, strengthening collective action, improving capacity in safe production practices (VietGAP/PGS), and enhancing farmers' marketing skills and post-harvest handling will be essential for elevating Mai Son's local and indigenous fruits and vegetables in the marketplace.

Table 2. Market aspects for selected local and indigenous fruits and vegetables in Mai Son.

	Characteristics	Actors	Output market	Volumes	Challenges	Opportunities
<i>Hôi</i> mango	Popular with collectors, used in restaurants offering accommodation, either in salads or purchased as gifts. Packaged, but no certification labels or information are attached.	Collectors: from outside Mai Son district (Hanoi, the Mekong Delta, Central provinces) and local. Retailers: permanent market traders, producers.	Output market: Hanoi, the Mekong Delta, and Central provinces. Local markets and roadside sales along the highway to retailers and consumers.	Collectors: trade in large volumes, usually tons at a time. Indigenous fruits account for 3–15% of annual traded volume. Retailers: approximately 100–300 kg/day.	Lack of uniformity in fruit quality and size. Unattractive colour (grey, brown/dark fruit). Collectors do not have investment plans or offer advance payment before purchase.	Demand for fruit is increasing. Indigenous mangoes are more popular with consumers than others (e.g., Taiwan mango, Thai mango). Collectors seek reliable supply, stable fruit quality, and attractive colours. Retailers plan to coordinate with farmers for promotion. Cooperatives seek support in branding as OCOP products. Strong potential to integrate agro-ecotourism by transforming mango farms into experiential tourism destinations.
<i>Tròn</i> mango	Packaged, but no certification labels or information are attached.	Collectors: from outside areas (Hanoi, the Mekong Delta, Central provinces) and local collectors. Retailers: permanent traders at markets, producers.	Output market: Hanoi, the Mekong Delta, and Central provinces. Local market and along the highway to retailers and consumers.	Collectors: trade in large volumes, usually tons at a time. Indigenous fruits account for 3–15% of annual traded volume. Retailers: 100–300 kg/day (depending on the time).	Lack of uniformity in fruit quality and size. Unattractive colour (grey, brown/dark fruit). Collectors do not have an investment plan or advance payment before purchase.	Demand for fruit, including indigenous mangoes, is increasing. Collectors seek reliable supply, stable fruit quality, and attractive colours. Opportunity to strengthen cooperation with cooperatives and enterprises to ensure stable and reliable market outlets for local products.

	Characteristics	Actors	Output market	Volumes	Challenges	Opportunities
H'Mong mustard	<p>Has economic significance and widely favoured by tourists.</p> <p>Packaged, but no certification labels or information are attached.</p>	<p>Collectors: local collectors, collectors in Van Phuc Cooperative.</p> <p>Retailers: permanent traders at markets, producers.</p>	<p>Output market: Northern and Central provinces, Van Phuc Cooperative.</p> <p>Local market and along the highway to retailers and consumers.</p>	<p>Collectors: trade in large volumes (e.g. tons). Retailers: 5–200 kg/day. H'Mong 20–25% of total vegetable volume.</p>	<p>Lack of uniformity in quality and size.</p>	<p>The principal indigenous vegetables sold, demand is increasing.</p> <p>Collectors can make advance payments to producers (depending on the relationship).</p> <p>Yields of 250–300 million VND per hectare can be achieved under commercial production and collective production.^a</p>
H'Mong cucumber	<p>Economically promising but less popular than other cucumber varieties.</p> <p>Packaged, but no certification labels or information are attached.</p>	<p>Collectors: local collectors.</p> <p>Retailers: permanent traders at markets, producers.</p>	<p>Output market: Northern and Central provinces.</p> <p>Local market and along the highway to retailers and consumers.</p>	<p>Collectors: trade in large volumes (e.g. tons). Retailers: 5–200 kg/day.</p>	<p>Lack of uniformity in quality and size.</p>	<p>Demand for vegetables is increasing.</p> <p>Collectors seek improved quality, especially taste, and establishment of production plans.</p> <p>Has a market as part of the unique ingredients for salads and appetizers in restaurants and homestays.</p>
Thơm wax gourd	<p>Increasing value over the last two years as it can be preserved for longer periods.</p> <p>Packaged, but no certification labels or information are attached.</p>	<p>Collectors: local collectors.</p> <p>Retailers: permanent traders at markets, producers.</p>	<p>Output market: Northern and Central provinces.</p> <p>Local market and along the highway to retailers and consumers.</p>	<p>Collectors: trade in large volumes (e.g. tons). Retailers: 5–200 kg/day.</p>	<p>Lack of uniformity in quality and size.</p> <p>Low economic efficiency.</p>	<p>Demand for vegetables is increasing. Popular with consumers. Advance from the collectors' payment is possible.</p> <p>Retailers seek more stable and organised production, improved product quality (especially taste), and greater opportunities to sell online to loyal customers.</p>
Múi tomato	<p>Packaged, but no certification labels or information are attached.</p>	<p>Collectors: local collectors.</p> <p>Retailers: permanent traders at markets, producers selling along the highway.</p>	<p>Output market: Northern and Central provinces.</p> <p>Selling points: at gardens and gathering points; online (new form since 2020); at the market and along the national highway.</p>	<p>Collectors: counted by tons/ time. Retailers: 5–200 kg/day.</p>	<p>Lack of uniformity in quality and size.</p> <p>Limited market development due to poor transportability.</p>	<p>Demand for vegetables is increasing. Popular with consumers.</p> <p>Retailers seek a more stable and coordinated production plan and improvements in vegetable quality, especially taste consistency.</p>

a. Through its partnership with the DOVECO processing facility, Van Phuc Cooperative receives input support and secures a guaranteed market for H'Mong mustard.



Nếp sponge gourd, Sa Pa.

Box 2. Showcasing local heritage: How indigenous produce enhances tourist dining experience in Mai Son

Restaurants in Muong Bon and Hat Lot township show increasing interest in incorporating indigenous fruits and vegetables into their menus, although usage patterns differ between accommodation-based restaurants and standard establishments. Restaurants with lodging services tend to use these products more frequently, particularly *Hôi* mango, H'Mong mustard and *Thơm* wax gourd, often responding to specific customer requests. By contrast, standard restaurants mainly use H'Mong mustard during the peak harvest season, as it is considered the most suitable vegetable in terms of quality, nutrition, and market potential. Most restaurants source ingredients locally from nearby producers or wholesalers, and others, such as members of the Muong Bon agricultural tourism cooperative, supplement their supply through own production. However, all transactions rely on verbal commitments rather than written contracts. Because indigenous fruits and vegetables are usually priced 10–15% higher than conventional products, purchasing patterns differ with tourists and guests staying in accommodation-based restaurants generally willing to pay the higher prices, whereas standard restaurants, which must carefully manage ingredient costs, tend to be more cautious and use these products less regularly. Certain products, such as *Thơm* wax gourd, are used less often because they require time-consuming preparation and costly complementary ingredients. Nevertheless, restaurants plan to expand their use of indigenous foods (such as *Tròn*, *Hôi* mangos, H'Mong mustard, H'Mong cucumber) to differentiate their services and promote local specialties, recognizing their strong potential for gift purchases and agricultural tourism. To maximise this opportunity, restaurants and producers need to collaborate to ensure consistent supply and use of safe, high quality indigenous products, supporting reliable menu offerings and enhancing the guest experience.

Sa Pa (Lao Cai Province)

Production system

The study was conducted in two communes, in former Ngu Chi Son and Tả Van commune in Sa Pa town⁴, and focused on six local and indigenous fruits and vegetables, including H'Mong mustard, H'Mong cucumber, pumpkin, Nếp sponge gourd, mountain peach and Tả Van plum.

Production of the local and indigenous fruit and vegetables is mainly small-scale and fragmented, relying on the local and traditional knowledge of smallholder farmers to maintain cultivation practices and species conservation (Table 3). In Tả Van, the vegetables are cultivated primarily in home gardens (20–50 m²/hh) for household consumption, while Ngu Chi Son households grow larger areas of vegetables (50–1,000 m²) intercropped with maize for the market. Vegetable seed sources include farmer saved seeds, seed exchange with neighbours, and market purchases. In Ngu Chi Son, surveyed households had received training in vegetable seed selection and storage while the Tả Van farmers relied entirely on local practices and continue to face inconsistent seed quality and frequent losses due to moisture and rodents. The local plum and mountain peach trees are planted in home gardens or on hilly land for multiple purposes such as land protection, ornamentation, and small-scale fruit sales. Regarding cultivation practices, households seldom apply fertilizers or pesticides, and fruit trees are often left to grow naturally, without pruning. Limited management and investment have led to a decline in varietal quality, including reduced fruit quality, yields, and damage rates, such that only a small portion of harvests are available for the market. The

peak harvests of indigenous fruits and vegetables in June and July align with the tourist season, providing favourable market opportunities. Yet the overall supply is irregular due to the small-scale production and low investment in crop management.

However, Sa Pa demonstrates strong potential to expand local and indigenous fruit and vegetable production, driven by rising tourist demand for culturally distinctive and locally sourced foods such as H'Mong mustard and Tả Van plum. These products are highly popular among visitors for both culinary experiences and gift purchases, creating opportunities for premium pricing and broader market development. Local government policies further reinforce this potential by promoting agriculture linked with biodiversity conservation, upgrading OCOP products, and supporting experiential tourism. Farmers, homestay operators, and local authorities recognize the value of indigenous fruits and vegetables for production, nutrition, and agro-ecotourism; for example, through the regular use of H'Mong mustard in tourist meals, the popularity of Tả Van plum as a gift product, and the inclusion of these crops in agro-tourism activities. Expanding safe-production practices, including VietGAP-standards, can enhance product quality and competitiveness. Strengthening linkages with homestays and agro-ecotourism models can also provide more stable demand, diversify household incomes, and contribute to the revitalization of local and indigenous fruits and vegetables.

Table 3. Production characteristics of selected indigenous fruits and vegetables in Sa Pa.

	Scale of production	Production practices	Who farmers sell to	Challenges related to production	Other important information ^a
Mountain peach	Household scale: 2–50 trees. Ngu Chi Son (2023): nearly 40 ha. Tả Van (2023): approximately 5 ha.	Traditional and personal experience-based production. Minimal investment and management. Low fertilizer or pesticide use. Harvest season: June and July.	Consumers (51%) Retailers (31%) Collectors (15%)	Trees have degenerated and show age-related decline, resulting in low productivity; affected by pests and diseases. Fruit quality is low (sour, small fruit); high damage rate; unattractive appearance. Inadequate management leading to mould and fruit damage.	Grown 20–30 years ago. Main places: Ngu Chi Son and Tả Van communes.

a. Reference to taking refers to ranking by producers during the focus group discussions.

4. According to the administrative restructuring 2025, Tả Van commune was merged with Hoang Lien and Muong Hoa communes and retains the name Tả Van; Ngu Chi Son commune remains unchanged in both boundaries and name.

	Scale of production	Production practices	Who farmers sell to	Challenges related to production	Other important information ^a
Tả Van plum	Household scale: 2–50 trees. Ngu Chi Son (2023): roughly 53 ha. Tả Van (2023): approximately 23 ha. Area tends to decrease.	Traditional and personal experience-based production. Minimal investment and management. Low fertilizer or pesticide use. Harvest season: June and July.	Consumers (53%) Retailers (18%) Collectors (25%)	Trees have degenerated; low productivity; old trees; affected by pests and diseases. Fruit quality is low (sour, small fruit); high damage rate; unattractive appearance. Lack of investment and management.	Tả Van plum grown over 60 years ago. Popular gift item for tourists.
H'Mong mustard	Grown by all smallholders. Area: 20–1,000 m ² /hh. Estimated >100 ha total in 2024.	Traditional and personal experience-based production. Ngu Chi Son: manure and fertilizer use (NPK/Nitrogen). Tả Van: low to no fertilizer use and pesticides rarely used.	Consumers (39%) Retailers (20%) Collectors (1%) Also sold products to Mai Anh Cooperative.	Inadequate uniformity and quality.	Highest-ranked vegetable for development potential. Tourists favour its unique flavour, sweetness, softness, and freshness.
Local pumpkin	Sa Pa is home to around 10 indigenous pumpkin varieties. Cultivated by majority of smallholders (90–100%). Cultivation areas vary from 20 to 1,000 m ² /hh.	Traditional and personal experience-based production. Use manure/NPK/Nitrogen (Ngu Chi Son) and little/no fertilizer (Tả Van). Rarely use pesticides. Seeds saved from ripe pumpkins.	Collectors (50%) Consumers (20%) Retailers (15%)	Inadequate uniformity and quality.	Great potential and highly ranked. Widely used in local recipes.
H'Mong cucumber	Grown by most households (95–100%). Area: 20–1000 m ² /hh.	Traditional and personal experience-based production. Rarely use pesticides. Seeds are matured on the plant, harvested and hung in the kitchen for storage. Harvest: July to October.	Consumers (37%) Retailers (23%) Collectors (23%)	Inconsistent product size and quality. Inadequate seed quality and seed handling and storage leading to loss.	Great potential and highly ranked.
Nếp sponge gourd	Grown mainly in Tả Van commune (80–90% of households). Area: 20–50 m ² /hh.	Traditional and personal experience-based production. Rarely use pesticides. Seeds are left on the plat until the outer shell dries, then hung in the kitchen for storage. Harvest: July to October.	Consumers (80%) Retailers (20%)	Inadequate uniformity and quality. Inadequate seed quality and seed handling and storage leading to loss.	Highly ranked in Tả Van commune.

NPK: Nitrogen, Phosphorus, and K potassium fertilizer.

hh: household.

a. Reference to taking refers to ranking by producers during the focus group discussions.



Mountain peach, Sa Pa.
© Hoang The Ky.

From the farm to the market

The market for indigenous fruits and vegetables in Sa Pa exhibits several strong and positive characteristics (Table 4). Products are traded through multiple channels, including direct sales to consumers, retailers, collectors, and cooperatives, which helps stabilise market access. Among indigenous fruits, Tả Van plums record relatively high daily trading volumes. Restaurants and homestays play a particularly important role, as they either self-produce or directly source a large share of local peaches and Tả Van plums. For indigenous vegetables, H'Mong cucumber shows the highest daily trading volume. Cooperative involvement is most evident for H'Mong mustard, which accounts for approximately 30% of winter sales at the Mai Anh Cooperative, contributing to more reliable supply volumes and expanded market reach. In addition, local pumpkin varieties have stable trading volumes with increasing participation from retail outlets, highlighting the broader potential for indigenous vegetables to expand within local and tourism-related markets.

However, markets for indigenous fruits and vegetables are constrained by several structural and quality-related limitations. Fruit competitiveness is reduced by the small size, sour taste, and high physical damage rates, while vegetables suffer from inconsistent quality and irregular supply. Weak vertical linkages between producers and buyers (collectors, restaurants, and homestays), together with limited horizontal coordination among farmers, restrict information flow and the ability to consistently

meet market demand. As a result, sales to restaurants and homestays remain limited, particularly where quality standards, prices, and volumes cannot be reliably assured. These challenges are further compounded by limited post-harvest handling, storage capacity, and market-oriented skills among producers, which together hinder access to higher-value markets.

Despite these constraints, Sa Pa's rapidly expanding tourism sector, which receives more than three million visitors annually, generates strong and increasing demand for safe, high-quality, and culturally distinctive local products, particularly during peak tourist seasons. This creates clear market opportunities for indigenous vegetables such as H'Mong mustard, which are valued by restaurants, homestays, and tourists for their freshness, flavour, and cultural identity. In addition, government policies on biodiversity conservation, OCOP development, and experiential tourism provide a favourable environment for market expansion. Future growth can be strengthened by improving cooperative organisation, enhancing production skills, and ensuring access to quality seeds. Strengthening post-harvest handling and storage, together with advancing branding and certification, will further support product quality and market trust. In addition, linking agricultural products more closely with tourism experiences can help expand market opportunities. Taken together, these efforts provide a clear pathway for increasing the value and visibility of indigenous fruits and vegetables in Sa Pa.

Table 4. Market aspects for selected indigenous fruits and vegetables in Sa Pa.

Product	Characteristics	Challenges	Opportunities ^a
Mountain peach	Producers supply retailers (31%), collectors (15%), and consumers (3%). Restaurants/homestays produce 78% of their supply.	Low quality (sour, small fruit).	Market demand: Sa Pa is a tourist city that welcomes over 3 million visitors annually, creating huge market potential. Policy: The Provincial People's Committee aims to maintain and expand 689 more hectares of peach and plum trees in four districts and towns, including Sa Pa, and establish tourism-linked traceability.
Tả Van plum	Producers supply consumers (4%), retailers (18%), and collectors (25%). Restaurants/homestays produce 63% of their supply. Daily trade volume is approximately 42 kg/day (highest fruit volume traded daily among selected fruits).	High rate of damage and unattractive appearance.	Market demand: Large consumption volume during peak tourist season (June, July), often bought as gifts. Policy: Strong policy support for developing temperate fruit varieties like Tả Van plum.

a. Reference to taking refers to ranking by producers during the focus group discussions

Product	Characteristics	Challenges	Opportunities ^a
H'Mong mustard	Producers supply consumers (39%), retailers (20%), and collectors (1%). Sold through cooperatives (e.g., Mai Anh). Indigenous vegetables (including H'Mong mustard) account for approximately 30% of Mai Anh Cooperative's sales from Dec–Feb. Daily trade volume is 28 kg/day.	Low uniformity and quality. Weak linkages between producers and between producers and traders. Producers lack market orientation.	Market demand: Highest-ranked vegetable for development potential. Most popular local vegetable among tourists, favoured for its unique flavour, sweetness, softness, and freshness. Policy: Provincial policies promote the standardization of safe production processes (VietGAP and organic standards) to improve quality and market trust. Opportunities to strengthen cooperative-based marketing and formal value chain linkages, and to support OCOP branding and leverage tourism to increase value and market demand.
Local pumpkin	Producers supply collectors (50%), retailers (15%), and consumers (12%). Daily trade volume approximately 19 kg/day.	Producers lack market orientation and have weak, informal relationships with actors such as restaurants and homestays, with no consistent purchasing arrangements in place.	Market demand: Daily trade volume is stable. It is highly appreciated by local people for its development potential and is widely incorporated into local culinary practices.
H'Mong cucumber	Producers supply consumers (37%), retailers (23%), and collectors (23%). Highest daily trade volume among selected vegetables (approximately 58 kg/day).	Limited and inconsistent supply. Sales through restaurants remain limited.	Market demand: Daily trade volume is stable. Great potential for development. Policy: Listed as one of the vegetables prioritised in plans for safe and production plans (No. 124/KH-UBND).
Nếp sponge gourd	Mostly for household use (80%). Retailers (20%).	Sales through restaurants remain limited.	Market demand: highest-ranked vegetable for development potential.

a. Reference to taking refers to ranking by producers during the focus group discussions.

Box 3. Evolving organisational structures in indigenous agriculture: Insights from Ngu Chi Son producer group and Mai Anh cooperative

The **Ngu Chi Son safe vegetable production**, established in 2020 in Ngu Chi Son commune, has 26 members, predominantly Dao women from Can Ho A and Can Ho B villages. Members manage approximately 1,000 m² of H'Mong mustard, 4,000 m² of H'Mong cucumber, 3,000 m² of local pumpkin, and around 5,000 m² of indigenous fruit trees (plum and peach). They jointly procure seeds and fertilizers and operate a nursery for vegetable seedling production, building on capacities developed through project-supported training [5]. While a plan for seedling production and marketing has been developed, the group has not yet established coordinated production schedules or collective marketing arrangements for indigenous fruits and vegetables, and most sales continue to be conducted individually by members.

The **Mai Anh agricultural cooperative**, founded in 2012 in Sa Pa commune with 5 Kinh members, operates as a larger commercial entity. The group cultivates indigenous vegetables such as H'Mong mustard, flowering kohlrabi, and Xòe cabbage, and maintains regular connections with market actors in cities including Hanoi, Bac Ninh, Ha Nam, Thai Binh, Yen Bai, and Lao Cai. Approximately 30% of its vegetable sales in peak harvest season are indigenous products. The cooperative demonstrates the commercial viability of Sa Pa's indigenous produce by linking farmers to external markets, though it still relies on multiple farmers to maintain steady supply that meets the demand, reflecting some fragmentation at the production level.

Box 4. Self-sufficiency and cultural promotion: How homestays advance indigenous produce in Sa Pa

In Sa Pa, homestays in Ngu Chi Son and Tả Van communes play a significant role in stimulating demand for indigenous fruits and vegetables. They meet a substantial share of their needs through own-production and sourcing directly from local farmers, thereby strengthening short supply chains. By prioritizing local sources, homestays, farm stays, and restaurants support smallholder livelihoods, promote cultural food heritage, and reduce transport costs. These establishments also serve as important channels for showcasing product origins and traditional and sustainable production practices, helping elevate the market value of local agricultural products. Such producer–buyer linkages contribute to community development, environmental sustainability, and the advancement of a high-quality, cultural or locality-based cuisine.

Best way forward

Across both Sa Pa town and Mai Son district there are opportunities to enhance the market potential of indigenous fruits and vegetables that can be leveraged through integrated strategies that focus on organizational development, technical capacity building, and market-oriented interventions.

Strengthen agroecological farming systems and agrobiodiversity:

- Improving seed selection, harvesting, and storage practices, and promoting community-based seed management to conserve indigenous genetic resources.
- Integrating low input, agroecological cultivation methods to enhance sustainability and product quality.
- Providing training on safe production standards, including VietGAP and PGS, to improve consistency and compliance with market requirements.

Apply circular economy principles to improve production efficiency and resilience:

- Developing cultivation and postharvest management protocols that incorporate traditional knowledge, and providing practical capacity strengthening to improve productivity, post-harvest handling, and product quality.

- Strengthening collective production units to overcome small-scale, fragmented household production, enabling more reliable supply and reduce production and marketing risks.
- Strengthening market opportunities by linking producers with homestays, restaurants, cooperatives, and local market hubs.

Expand market opportunities through targeted value chain development:

- Promoting certification and collective trademarks such as OCOP and group branding for high-potential products like H'Mong mustard and Tả Van plum to improve credibility and access to premium markets.
- Agro-ecotourism can serve as a complementary market channel, enabling indigenous products to be showcased through homestays, restaurants, and on-farm experiences, thereby increasing visibility and diversifying income for local producers.
- Investing in branding and marketing tools (labels, logos, product narratives) and strengthening digital marketing capacities to expand access to online and urban markets.



Dao farmers with local pumpkins, Ngu Chi Son commune.
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Tả Van plum in Tả Van commune.
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H'Mong cucumber in Hat Lot town, Mai Son. © Hoang The Ky.

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Contacts

Deborah Nabuuma

✉ d.nabuuma@cgiar.org


Cornelis Swaans

✉ c.swaans@cgiar.org



Hôi mango, Mai Sơn.
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Van Phuc cooperative harvesting H'Mong mustard, Mai Son.  Luong Van Lam.

