

Thanamir – The apple village of Nagaland: A promising beacon of rural prosperity

Apple cultivation in Thanamir, a picturesque village in the foothills of Nagaland, is both unusual and inspiring. Traditionally, apples are associated with cooler Himalayan regions such as Kashmir or Himachal Pradesh, where altitude and climate naturally favour the crop. In contrast, growing apples in Nagaland once seemed improbable. However, the residents of Thanamir discovered that their village's unique microclimate, marked by cooler temperatures due to elevation, fertile soils and mist-laden mornings, was favourable, making it a suitable apple-growing niche. The story of Thanamir apples is not merely about fruit cultivation; it is a narrative of community initiative, resilience and rural transformation. What began with a few experimental saplings gradually became a collective effort, as farmers recognised the potential of their environment and worked together to develop orchards. Looking ahead, an integrated networking approach involving research institutes and non-governmental organisations can play a crucial role in strengthening apple cultivation in the region.

Keywords: Apple genotypes, Challenges, Nutrient composition, Prospects

NESTLED in the remote hills of North-eastern India, Thanamir village in Nagaland's Kiphire district has gained recognition for its success in apple cultivation. What began as a small initiative has grown into a symbol of resilience and ingenuity, showing how innovation and perseverance can transform a rural community as the 'Apple Village of Nagaland' and has reshaped the local economy, diversified agriculture and instilled pride among villagers. Situated in the foothills of Mount Saramati at an altitude about 2,071 meters above mean sea level, near the India-Myanmar border, the village enjoys a unique climate. The village's cool temperatures between 2 °C and 20 °C, moderate rainfall of about 19 inches annually and well drained soils provide ideal conditions for temperate horticulture producing the distinctive Saramati or Thanamir apple that has become a regional emblem. To build on this progress, Department of Horticulture, Government of Nagaland has distributed more than 10,000 apple graft to the farmers since 2009–10 and their performance and yields accounts to 57.31 tonnes of apples annually from Thanamir. The growing importance of apple farming was celebrated with the first 'Apple Festival' on 29 September 2010, initiated by Tangit Longkumer. Today, the orchards surrounding the village stand as a testament to agricultural innovation and community determination, making the village one of Northeast India's most inspiring horticultural success stories.

The origin of apple cultivation and the apple village of Nagaland: The origin of apple cultivation in Thanamir village, dates back to 1975 when village guard (Lance

Niak) T. Ningtsemong first encountered apples at the Penkim army outpost. Preserving the seeds given to him by the quarter master, he planted them experimentally in his backyard, three of the four germinated successfully. By 1977, the saplings were transplanted into his kitchen garden and after years of careful nurturing, they flowered in 1984. In 1985, the trees bore fruit with distinct taste, shape and colour, confirming the region's suitability for apple cultivation. Ningtsemong also discovered that apple plants could be propagated through root cuttings, which facilitated wider distribution of saplings, encouraged by this success, villagers expanded orchards across the slopes, transforming the local landscape and economy.

Agricultural practices: Apple cultivation in the village follows systematic orchard management supported by a sound understanding of horticultural practices. The production is largely based on organic methods, with zero use of synthetic fertilisers or chemical pesticides and orchard tasks typically include clearing forested areas, levelling the ground, digging pits, planting nursery crops, weeding and harvesting. This organic approach not only reflects the community's ecological ethics but also aligns with the growing market demand for sustainably produced fruits. Propagation is primarily carried out through seeds and root cuttings, with saplings generally planted during the early spring months of March-April at a spacing of 5 × 5 meters. The plants start flowering from the 1st week of March till 1st week of May and are ready for harvest from the month of July to late September depending on different cultivars.



Orchard view



View of apple fruiting plant



Glimpse of different apple genotypes grown in Thanamir, Nagaland

the area.

Economically, apple cultivation provides a significant seasonal source of income for the villagers, with a benefit-cost ratio of 1.95 indicating that apple-based farming is profitable in Thanamir. Apples are sold both as fresh fruits and as value added products such as dried slices and juice, marketed in nearby towns, neighbouring states and directly to visitors. This diversification has reduced dependence on traditional shifting cultivation (Jhum), and offers a more stable and sustainable livelihood option for the uphill farmers.

Challenges faced by apple farmers: While the village climate supports apple cultivation but despite its resounding success, apple cultivation in Thanamir still faces a mix of logistical, technical and environmental challenges. Some of them are discussed here:

- **Transportation and Infrastructure:** One of the major challenges faced by Thanamir's apple growers is poor infrastructure, particularly inadequate road connectivity. The villagers struggle with costly and time consuming transport of apples to district centers and state markets, often leading to postharvest losses as fruit spoils before reaching buyers. The absence of cold storage and processing facilities further compounds the issue, forcing farmers to sell produce quickly, often before full maturity at lower prices, rather than storing, processing or marketing strategically for better returns.
- **Market access and marketing channels:** Growers face significant market access challenges, as their organically grown produce is available only in relatively small quantities and reaching larger markets outside Nagaland remains difficult. In the absence of marketing cooperatives and proper branding or packaging facilities, Thanamir farmers often sell to middlemen at low prices, reducing profit margins and limiting competitiveness.
- **Technical knowledge and training gaps:** Since apple cultivation in the village began as a community driven experiment, many scientific orchard management practices have not yet been fully adopted. Farmers often lack formal training in essential techniques such as pruning, resulting in overgrown canopies with dense, tangled branches that restrict sunlight and air circulation, leading to poor tree health and low quality fruit. Key practices such as grafting, soil and nutrient management and integrated pest management (IPM) remain underutilised.
- **Environmental and climatic constraints:** Thanamir's high altitude climate favours apple cultivation, but farmers face growing environmental challenges. Rising temperatures, erratic rainfall and persistent humidity encourage fungal diseases, reducing orchard health and yields. Climate change adds uncertainty, as apples are highly sensitive to temperature fluctuations, making production unstable. Soil erosion from

Nutritional composition of Thanamir apples: Most of the apples grown are traditional local varieties and the fruits vary in shape, size (round, conical, oblong, ovate) and fruit surface colour (ruby red, purple red, yellowish green) but are appreciated for their unique crisp texture, balanced sweetness and a subtle tartness that makes them refreshing and versatile which are ideal for eating fresh, juicing or drying.

Cultural and economic impact of apple farming: Apple cultivation has become a defining socio-economic and cultural feature of Thanamir village; beyond its agricultural importance, it symbolises resilience, adaptation and collective progress. Most households maintain apple trees in homesteads or orchards, making the fruit central to the village's identity and the fruits are commonly offered to visitors as fresh juice or dried slices, reflecting traditions of hospitality. The orchards, set against Mount Saramati, enhance both the aesthetic and ecological character of

Physical and nutritional content range of the different apple genotypes of Thanamir apple

Physico-chemical attributes	Range
Fruit weight (g)	82.60 – 207.3
Fruit length (cm)	5.46 – 7.76
Fruit diameter (cm)	6.20 – 8.40
Fruit firmness (kg/cm ²)	6.90 – 10.20
Fruit juice (ml/100gm)	37.33 – 54.33
Total soluble solutes (°Brix)	9.53 – 12.90
Total sugar (%)	5.32 – 7.43
Reducing sugar (%)	3.36 – 4.20
Titrateable acidity (%)	0.33 – 0.77
Vitamin C (mg/100gm)	5.65 – 12.57
Crude fiber (%)	3.13 – 5.25
Crude protein (%)	5.40 – 8.69

steep terrains and limited irrigation further weakens sustainability. Orchards are also prone to pests like woolly apple aphids, stem borers and leaf miners, along with diseases such as apple scab, powdery mildew and fire blight. Managed mainly through organic methods, these pressures reduce tree vigour, fruit quality and longterm productivity.

Future prospects: Thanamir's apple cultivation holds strong promise, especially as production is organic by default, with farmers relying on traditional practices that preserve soil health and biodiversity. This natural advantage positions the apples well for premium organic markets and support from government schemes such as the Mission for Integrated Development of Horticulture (MIDH) and the Rashtriya Krishi Vikas Yojana (RKVY) can further strengthen the sector by providing improved saplings, modern techniques, training and infrastructure such as cold storage, packaging and processing units. These measures would enhance productivity, reduce postharvest losses and help establish Thanamir apples as a recognised regional brand.

Expanding cultivation of apples neighbouring villages would also create a wider apple belt, while agro-tourism linked to the scenic orchards and Mount Saramati could diversify income and reinforce cultural identity. In addition, generating valueadded and processed products can help transforming largely perishable, high volume

harvests into low volume, high value exports such as dried slices, juice or specialty apple products that would improve profitability and market reach. Together with its organic strength, government support, extension works, diversification and product innovation will offer a sustainable pathway for Thanamir's apple farming to grow into a regional specialty with wider recognition.

SUMMARY

Nagaland, identified as a hub for organic farming, offers limitless potential for niche horticulture and Thanamir's apples embody this promise. With orchards expanding, better techniques adopted and stronger marketing channels built, production and income can rise. Valueadded processing can transform perishable harvests into high value products and Thanamir apples can stand as a promising beacon of rural prosperity, thrive as a premium organic product and cultural emblem when cultivation is farmer driven, research supported and linked with tourism, while ecological care ensures sustainability and longterm prosperity.

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SUSTAINABLE DEVELOPMENT GOALS RELATED TO FRUITS AND VEGETABLES



SDGs 2 3

Health benefits of fruit and vegetables

Harness the goodness

Fruit and vegetables have multiple health benefits. They strengthen the immune system, combat malnutrition and help prevent non-communicable diseases.



SDGs 2 3

Diversified diet and a healthy lifestyle

Live by it, a diverse diet

Adequate amounts of fruit and vegetables should be consumed daily as part of a diversified and healthy diet.



SDGs 2 8 12 13 14 15

Food loss and waste

Respect food from farm to table

Fruit and vegetables are worth more than their price. Maintaining their quality and assuring their safety across the supply chain, from production to consumption, reduces losses and waste and increases their availability for consumption.



SDGs 1 2 3 4 5 8 11 12 15

Highlighting the role of family farmers

Growing prosperity

Cultivating fruit and vegetables contributes to a better quality of life for family farmers and their communities. It generates income, creates livelihoods, improves food security and nutrition, and enhances resilience through sustainably managed local resources and increased agrobiodiversity.





efficiency and productivity within fruit and vegetable supply chains to reduce loss and waste.

SDGs 1 2 12 15

Sustainable value chains

Foster sustainability

Sustainable and inclusive value chains can help increase production, and help to enhance the availability, safety, affordability and equitable access to fruit and vegetables to foster economic, social, and environmental sustainability.

Source: *Fruit and vegetables – your dietary essentials, FAO background paper, FAO, Rome*







