Building an appetite for 37 neglected plants in the Kenyan Highlands

New research provides community insights to track agrobiodiversity and its relevance for nutritional and climate resilience

Impact story series

No more neglected: *Top: An intercropping farm with staple and neglected species. Left: Value-added products made from loquat fruit trees and stinging nettle. Right: A diversified and nutritious food plate with neglected and staple ingredients including 'kachumbari' salad with tomato and onions, a heap of mashed potato ('mukimo') with stinging nettle powder, a mix of neglected green leafy vegetables, loquat fruit jam, and cowpeas stew.* ***Illustration:*** *Radhika Gupta*

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Introduction

Current agroecology strategies in Kenya are centred around sustainable production, but tend to miss a key piece of the puzzle: Why is it that people choose to eat certain foods in the first place? New research has identified 37 plant species in the Central Highlands of Kenya that are potentially climate resilient and nutritious, yet neglected by producers and consumers, as well as policies, businesses, and research for varying reasons. Assimilating these plants into daily diets and advancing further research is critical, as only 6% of the Kenyan population consumes enough fruits and vegetables, due to limited access to diverse and affordable foods. In addition, the country's reliance on rainfed agriculture together with climate change exacerbates food insecurity.

This research illustrates how neglected species, and more broadly agrobiodiversity, can be monitored beyond data points but as multiple factors that affect food choices of people on the ground, and how these choices can be influenced to protect food systems from future shocks.

Neglected and Underutilised Species (NUS)

Drawing on academic definitions (1,2), the study defines NUS as native or naturalised edible plant species - including cultivated varieties, semi-domesticated plants, or wild species - possibly having potential for supporting nutritional security, but remaining largely overlooked by researchers, businesses, and consumers.

To identify these species, the study used a participatory approach involving interviews with consumers and farmers in rural areas across the study region. Participants were asked: "Which plants did you use to consume or cultivate before that you no longer use, or use less frequently?" The initial list generated from these interviews was further refined through follow-up focus group discussions.

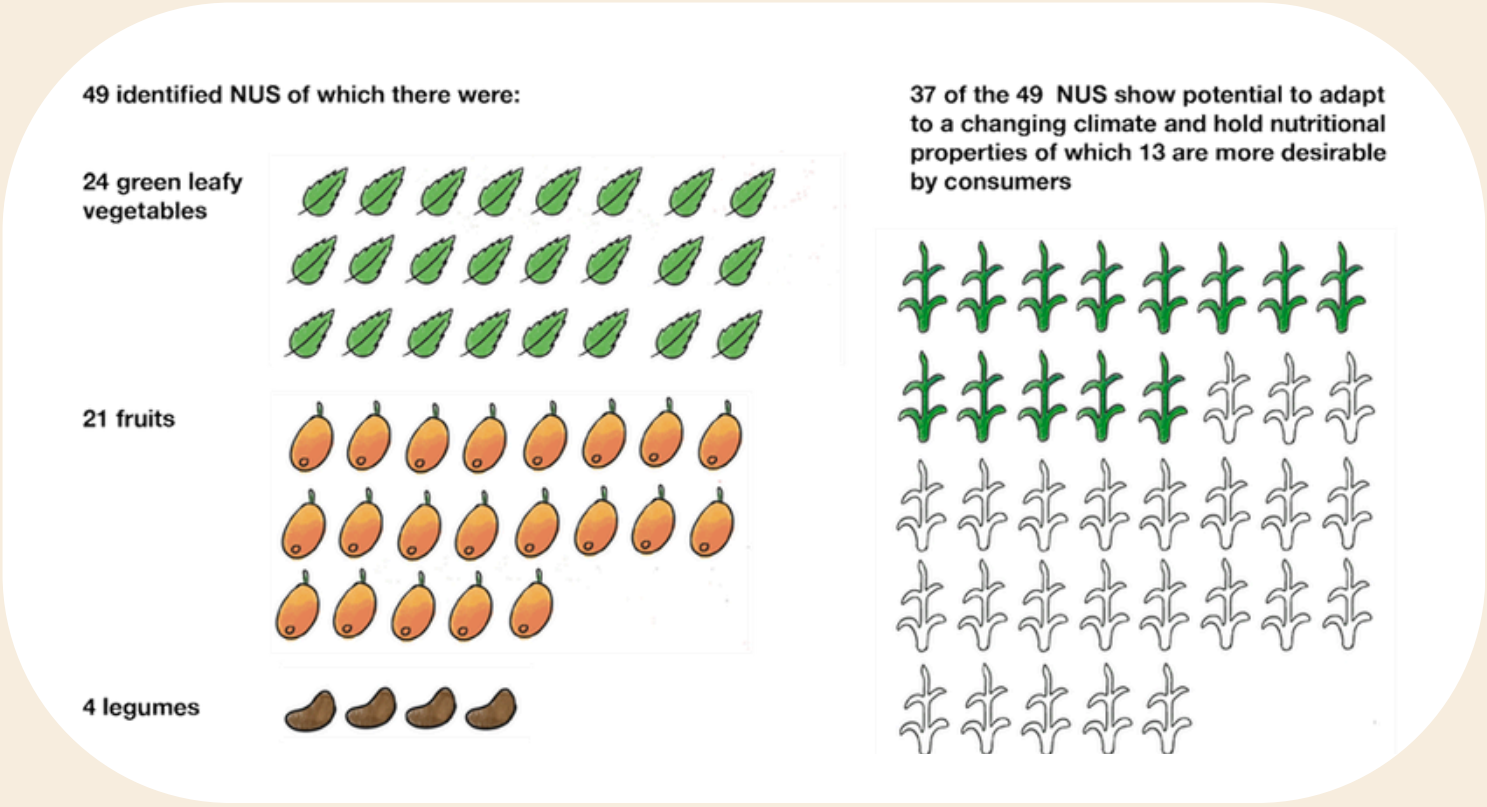
Understanding the Kenyan highlanders' food choices

Among many solutions to combat climate change and malnutrition is the growing recognition of the role of neglected and underutilized species (NUS). Despite ongoing efforts to revive NUS in Kenya, little is known about their role in the central highlands, which is an important food-producing region, now threatened by climate change.

The research, carried out by Silvia Martinez from Wageningen University, took place in the west and north of Mount Kenya - specifically in Laikipia, Meru, and Nyandarua counties. "I don't see myself as the main character in the scientific process. By actively engaging with community members and incorporating their perspectives, the study not only respects local knowledge but also strengthens its relevance for practical application," said Martinez. The central goal of the participatory approach was to understand why some plants, especially legumes, fruits, and leafy greens, are currently preferred or disliked, and what barriers limit their consumption. The study provides clear pathways for mobilizing policy support, raising community awareness, and driving action to value NUS while enhancing local agrobiodiversity.

Out of 49 NUS identified, 37 showed strong potential for providing nutrition, climate adaptation, or both. All plants displayed high abilities for soil moisture retention, erosion control, biodiversity enhancement, and wildlife habitat connectivity. Notably, many plants, such as cowpeas and lablab beans displayed notable drought resistance and adaptability to diverse environments. Fruit trees, such as loquat, showed significant potential for agroforestry systems, and demonstrated high resilience to extreme weather conditions while protecting the land against wind. Legumes and leafy greens also proved valuable for intercropping. Legumes enhanced soil fertility, while green leafy vegetables, such as amaranth leaves, were especially rich in essential vitamins and minerals.

Still, only 13 of these promising plants were seen as desirable by consumers, such as nightshade leaves (managu), amaranth (terere), and cowpea leaves. This indicates a gap between what is beneficial for nature or human health, and what people are eating or willing to eat.



Infographic on plants researched. Illustration: Radhika Gupta

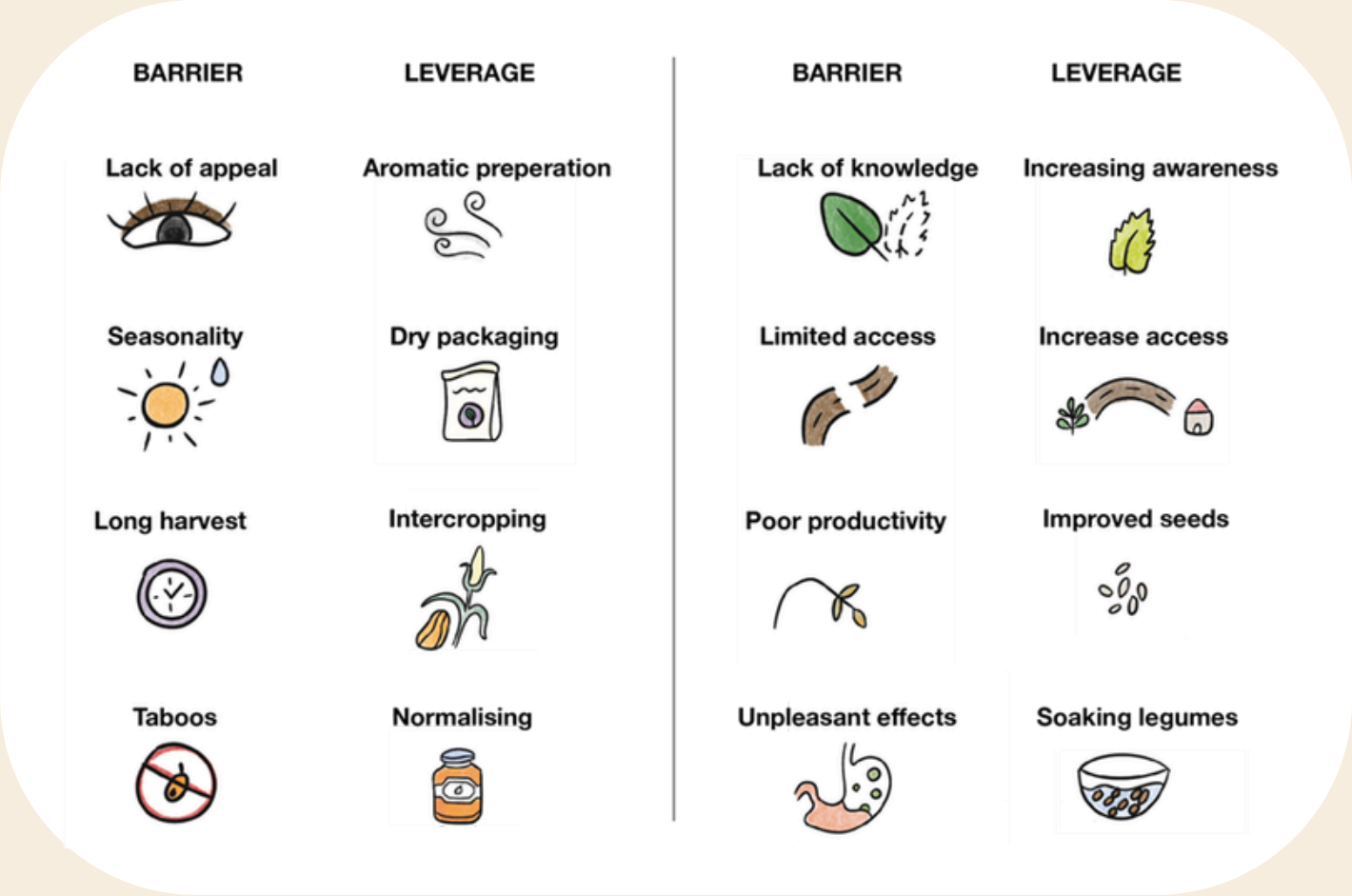
The factors for desirability varied from taste preferences, social acceptance, to cultural relevance or availability of the plants.

Overall, there was excitement around NUS, mainly green leafy vegetables, which held medicinal values, which herbal doctors had encouraged them to eat. But some plants, such as gallant soldier (mung'ei), and African dogmustard (togotia), were merely perceived as animal food, according to Martinez. Several fruits, such as prickly pear and Abyssinian gooseberry, were seen as children's food, along with being difficult to gain access to. These findings can be used as leverage points to build an appetite around the 37 neglected plants to integrate them into daily diets and existing meals, as well as help shape production. "Farmers grow what they know will be eaten, sold, or accepted. If populations face nutritional deficiencies, they can include the nutrient-packed plants, and if a region faces water shortages and is dry, people can pick the climate adaptive plants for growing," said Martinez.

Building an appetite

To make these underutilized and neglected plants more appealing and widely used, Martinez proposes various strategies grounded in community-identified barriers and opportunities, alongside insights from recent research on integrating NUS into food systems. For plants already familiar and appreciated by communities, efforts should focus on increasing availability through improved seeds, farmer training, and agroecological practices like intercropping and integrated pest management. Demonstration plots, participatory breeding, and stronger links to markets and cooperatives can further support farmers and make cultivation more attractive and viable. Additionally, serving NUS ingredients in restaurants can create steady demand and help normalize their presence in everyday diets. The goal is not to replace staple foods, but to complement them by expanding dietary options without disrupting existing market systems.

For plants that are less desired, the path forward involves raising awareness about their nutritional and medicinal benefits and preparing value-added forms such as flours, powders, or fruit jams. Building early familiarity through school meal programs and engaging local influencers who are trusted community figures can help shift perceptions and increase acceptance. These efforts, especially when combined with intergenerational knowledge sharing and reviving traditional and forgotten recipes, can help close the



Barriers to NUS desirability, and solutions proposed based on community insights and latest research. Illustration: Radhika Gupta

gap between what's nutritious and climate-resilient and what people are actually eating. The Alliance of Bioversity-CIAT is leading the way as an inspiring champion of these strategies by engaging communities in dialogues and interventions that promote more diversified production and consumption, through transformational agrobiodiversity and multifunctional landscape projects (1, 2, 3, 4, 5).

When the findings were shared back with communities using tribe-specific names and relatable examples, participants expressed newfound interest in these plants, especially once they understood their nutritional benefits. Martinez also ensured that the local names corresponded with scientific names, to make the communities realise that their own approach to these foods can be informed and scientific, and that they are already applying these in their everyday lives. "Making science accessible in this way helped build trust and a sense of co-ownership," said Martinez.

Who should care and why?

The research calls on NGOs, policy-makers, educators, local entrepreneurs, and storytellers to amplify these findings and include them in broader food systems transformation narratives to influence consumers, policy and businesses.

Dependence on a small number of mainstream crops makes communities more vulnerable to drought, pests, and price swings. In contrast, promoting the NUS, especially ones already suited to local conditions and cultural preferences "can make them powerful tools for building food sovereignty, with the potential of giving full ownership of the interventions to the communities," said Martinez.

The next step is advocating for these 37 ignored and invisible plants and propagating the results from this study in strategic ways to attract funding for follow-up research and

scaling up implementation of solutions. Efforts must also centre on women, who often shape household diets, and explore how preparing or selling these plants can offer economic benefits, making adoption more attractive.

At the global level, promotion of NUS has already been embedded in policy frameworks (e.g. Target 4 of the Kunming-Montreal Global Biodiversity Framework) and international agreements. Martinez's study makes a strong case for why such crops should be tracked, valued, and included in food transformation planning, both for the global research agenda and country- or company-level commitment to agrobiodiversity.

At the ground level, Martinez is hopeful because: "We're surfing a good wave and there's a fertile environment for how action-based research works with the communities rather than 'for' them, using participatory bottom-up approaches and combining Indigenous knowledge." At the same time, Martinez cautions that care must be taken to ensure this does not become a new empty trend and to instead find meaningful ways to work with communities.

More about the study

This research was performed as part of an MSc thesis at Wageningen University & Research, funded by the One Planet Fellowship and African Women for Agricultural Research and Development (AWARD). It was carried out in partnership with the Central Highlands Ecoregion Foodscape (CHEF) programme by The Nature Conservancy (TNC); Centre for Training and Integrated Research in Arid and semi-arid land Development (CETRAD), and Dedan Kimathi University of Technology.

The main researchers include Silvia Martinez (WUR student, glocolearning), Roseline Remans (glocolearning, Alliance Bioversity-CIAT), and Corné van Dooren (WUR, WWF). Field research assistants were Cynthia Gachara and Charles Muriuki.

This story is part of an illustrated series linked to the Agrobiodiversity Index, designed to make the multifunctional benefits of agrobiodiversity more tangible and highlight its vast potential.
The story was written by Radhika Gupta, in collaboration with Silvia Martinez, Roseline Remans, Natalia Estrada Carmona, and Sarah Jones.

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