



A Pemban farmer holds flowering clove buds. The buds are harvested green and dried for export. Photo: Zach Melanson, CFI

## Zanzibar's spice forests: Restoring the Spice Islands

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***“On the east coast of Tanzania, agroforestry farmers in the Zanzibar Archipelago are regenerating the region’s spice economy while improving their economic and environmental resilience.”***

### Introduction

Spice farming has long been an integral part of the Zanzibari peoples’ culture, history and economy. But in the past few decades, the region’s role in the global spice trade has declined rapidly, along with the diversity and resilience of its once thriving forests and fertile soils.

Since 2015, Community Forests International (CFI) and Community Forests Pemba (CFP) have been working in Zanzibar to re-establish diverse agroforest ecosystems called spice forests. Spice forests provide a number of benefits. First, they provide an economic incentive for farmers to make the transition from monoculture farming to more ecologically sustainable agroforestry systems. Second, they offer an important opportunity to increase women’s equality in the agricultural sector and beyond. Third, these diverse agroforests have the potential to restore a resilient spice-farming economy across the islands, benefitting farmers and the wider community and re-establishing Zanzibar as a leader in the ecologically and socially sustainable spice trade.

## A brief history

A thousand years ago, spice plants were brought to the islands of Zanzibar. As the global market grew, so did spice production across the islands, increasing the country's economic importance and making it a leader in the highly competitive global spice trade. Zanzibar became and continues to be known as the Spice Islands.

Since the 1950s, however, the expansion of global spice production, a decline in market prices, and increasing local demands for land have caused a sharp decline in spice farming. To compound the challenges facing Zanzibari spice farmers, the primary governmental organization exporting Zanzibari spices was dissolved in the early 2000s, leaving spice farming to the private sector. Tourism has become Zanzibar's primary economic priority, leaving the spice and agricultural sectors behind. Smallholder farmers on the island of Pemba have been the hardest hit. This trend, coupled with the pressures of a rapidly growing population, is driving farmers to expand annual cropping into hilly areas previously reserved for spice trees.

Cloves, more than any other spice, highlight this rise and fall. From the 1850s to as recently as the 1960s, Zanzibar was the world's largest clove producer, exporting 6,000 metric tonnes annually (Nayar 2009). However, in recent decades, persistent government interference and a government monopoly have meant low prices paid to farmers for cloves, resulting in a decline in the trade. Although Zanzibari cloves are still considered to yield the highest-quality oil, flavour and aroma, the number of clove trees on the islands is less than half what it was in the late 1950s, and production of the spice has dropped to less than 10% of the global market.

## A living spice culture

For spice farmers, the decline in the spice market necessitated a change in their farming practices. In most cases, this meant converting their farms to grow monocrop staples such as cassava, primarily for self-consumption or to sell in local markets. These monoculture farms are less resilient to the changing climate, environmental risks and market changes, leaving farmers and their families vulnerable. Zanzibari farmers also face other constraints, including a history of poor soil conservation, irrigation and drainage practices, many of which are unlikely to improve in the absence of specialized agricultural extension services.

For over a decade, CFP has been working with farmers across the islands to restore their landscapes, their livelihoods, and Zanzibar's place in the global spice trade. To date, CFP has supported small-scale farmers to establish more than 89 hectares (ha) of thriving spice forests across Zanzibar, providing both ecological and economic benefits. Although Zanzibar's place in world clove production has decreased, traditional spice knowledge is still very much alive among the region's farmers and the islands' culture. Pemba Island supports the cultivation of an exceptionally diverse array of crops, originating both from the African continent and from more distant regions, including India, Indonesia and the Mediterranean. It's not uncommon to find more than a dozen varieties of fresh spices in a Zanzibari market, including cardamom, black pepper, vanilla, ginger, turmeric, coriander, lemongrass and cinnamon. By revitalizing their agricultural strategies and producing organic spices for the rapidly growing global market, Zanzibari spice farmers are supporting climate resilience and solutions, creative enterprise opportunities, and strong livelihoods.

## Growing thriving agro-ecosystems

The concepts of agroforestry are rooted in local and Indigenous cultures from around the world, and the spice forests in Zanzibar are in many ways simply restoring these practices and positioning their benefits for a global market. In Zanzibar, the spice forest model draws specific inspiration and knowledge from the experienced Chagga homegardens ("banana forests") farmers of Kilimanjaro, in mainland Tanzania. This centuries-old system combines agriculture, forestry and animal husbandry so effectively that it sustains one of the highest population densities in rural Africa (FAO 2014). With inspiration and shared knowledge from the Tanzanian mainland, combined with their own longstanding knowledge and culture of spice production, Zanzibari farmers are growing productive spice-based agroforests.

By definition, agroforestry is based on the concept of mutually beneficial relationships between annual crops and tree species, creating a diversified farming ecosystem. The spice forests in Zanzibar include a mix of 16 main timber, fruit and nurse tree species combined with seven high-value spices, including vanilla, cinnamon, black pepper, cardamom, turmeric and cloves — and farmers often grow additional vegetable crops as well. This polyculture model promotes structural and ecological diversity that provides a multitude of natural habitats for insects, birds and animals, and regenerates a healthy soil ecosystem.

The potential of agroforestry for carbon change mitigation is well recognized, and increasing attention is being given to agroforestry as a “natural” climate solution. Tropical agroforestry systems, such as Zanzibar’s spice forests, act as enhanced carbon stores, sequestering sizeable quantities of carbon each year (Albrecht and Kandji 2003).

Moreover, the spice forests offer tangible benefits to farmers, including increased crop yields, diversified income streams, and improved household nutrition. By cultivating a range of crops within the same plot, farmers are reducing the need for additional land — a key benefit on small island states such as Zanzibar, where fertile lands are limited. The crop diversity enhances farmers’ adaptation and resilience to the increasing risks of climate change, including unpredictable rainfall, drought, floods and soil erosion. In 2019, 72% of agroforestry farmers indicated that their land fertility had increased after converting their annual agricultural plot to agroforestry (CFP 2019).

Beyond spices, these agroforests provide farmers and their communities with a resilient source of food, energy (over 90% of the energy consumed in Tanzania is biomass), and income security while restoring ecological function to the landscape.

### Saidi’s story

Saidi Khalifa is a farmer on Pemba Island who exemplifies this land restoration. When he first met CFP, Saidi was monocropping the island’s most common crop, cassava (*mahogo* in Swahili). His fields were becoming less productive each year, likely due to the depleting nutrients in the soil. However, with one-on-one training, some initial trees from the community-run nurseries, and a lot of work in the fields, Saidi transformed his 3.7-ha, low-value cassava farm into a food and spice forest system.

He is now growing bananas, pineapples, turmeric, black pepper, corn, jackfruit, mango, coconut, casuarina, teak, pumpkin, sugarcane, and much more. Saidi has completely changed his landscape by changing how he farms. Following CFP’s advice, he has built a simple but effective trench irrigation system to improve water management, and is restoring the health of his soil by planting a mix of permanent fruit and spice tree crops on his farm.

By replacing monoculture agricultural landscapes with polyculture spice forests, small-scale farmers such as Saidi are improving their economic prospects while building resilience to climate change and supporting global efforts to mitigate the effects of climate change. These spice forests serve as a model for sustainable agriculture, demonstrating the potential of farming practices that



Saidi Khalifa, an agroforestry farmer from Wingwi Mapofu, Pemba Island, with several new vanilla cuttings distributed by CFP.  
Photo: Zach Melanson, CFI



**Bimajo Masoud Juma stands proudly with a flourishing vanilla vine in her small but thriving spice forest. Bimajo is now sharing her knowledge with other women in her community, supporting their spice farming efforts. Photo: Zach Melanson, CFI**

produce food and income while also providing ecological benefits and enhancing climate resilience.

### Expanding women's opportunities

Across Zanzibar, women bear the responsibility for providing food, water and energy for households in rural areas and are more dependent on natural resources than men are. What's more, women face multiple barriers to participating in the agriculture and trade sectors. Historically, men have dominated these sectors, and women's rights to land ownership have been limited. As a result, most women who farm in Pemba do so on land that they do not own or have any customary rights to. This lack of land tenure makes it challenging for them to invest in long-term production systems such as spice and tree crops, which are too high risk. Gender inequality and the associated lack of women's economic agency impede both women's rights to independence and the region's wider prosperity.

Yet women in Zanzibar often cultivate gardens and have a wealth of knowledge on agricultural best practices, including the importance of crop diversity. Over the years, CFP has helped share and refine this knowledge with hundreds of women, delivering hands-on training to help them increase and diversify their yields while increasing their income and economic independence through capacity-building support for enterprise and business development. For many women, this is their first

independently earned income — in fact, 98% of women participating in agroforestry training indicated that they had control over the income they made from farming, a rate much higher than the 13% national average. What's more, over 65% of women have increased their annual income (CFP 2022).

### Step into Bimajo's forest

Bimajo Masoud Juma is an inspiring agroforestry farmer and community leader from Pemba Island. Since 2017 she has been working with CFP to help grow her own thriving spice forest and inspire others in her community. Like many women in Zanzibar, Bimajo had relied on her husband to support their family financially. After separating from her husband, Bimajo was struggling to find a source of reliable income for herself and her children. Unlike many women, Bimajo was fortunate in having access to a small plot of land left to her by her father. Through vegetable farming, she was able to earn a little bit of money, and slowly but surely invest in her land. Soon after starting, she decided to enrol in CFP's agricultural training programme.

With the skills she learned, Bimajo transformed her small plot of land from a monoculture yam farm into a diverse spice forest, full of vanilla, cardamom, black pepper, cinnamon, cloves and more. In 2023, Bimajo has harvested almost 2 kilograms of vanilla pods to sell — and is selling vanilla vines to aspiring spice farmers as an

additional small source of income, and also to encourage other women to practise spice farming. Bimajo is intercropping fruit and vegetable crops with her spices, allowing her family to eat a nutritious diet while providing them with an additional source of income. Women like Bimajo are forging new opportunities for themselves and their communities, shifting the culture and conversation for increased women’s representation and gender equity across Zanzibar and beyond.

### Restoring resilient livelihoods

The production of fruits, vegetables and high-value spice crops — including cloves, vanilla and cinnamon — increases farmers’ adaptability and resilience to market fluctuations, all while providing a more steady and diversified source of income throughout the year. Although agroforestry systems may have lower yields for individual crops, the total system yields are often much higher, contributing to greater food security and resilience (Niether et al. 2020). In a 2019 survey of farmers in Zanzibar, over 95% of newly trained agroforestry farmers reported increased total yields on their lands after converting their plots to agroforests (CFP 2019). In 2022, a survey of participants showed increases between 40% for established spices such as cardamom, cinnamon and black pepper and 100% for new crops such as ginger and vanilla (CFP 2022).

These increases in yields also improve farmers’ incomes. In the 2022 survey, 74% of new agroforestry farmers reported higher incomes (CFP 2022). CFP is working alongside farmers to create stronger cooperative models, allowing farmers to sell directly to markets and eliminating the cost and risk of working with resellers. In 2018, for example, farmers reported receiving between TZS 300,000 and 400,000 (Tanzanian shillings; EUR 114–151) for 1 kilogram of dried vanilla. Agroforestry farmers working with CFP have sold vanilla directly to international buyers at TZS 900,000 (EUR 341) per kilogram, a large increase in farmers’ direct income.

### Meet Kibano Omar Kibano

Kibano is a spice farmer from Mtambwe Kaskazini village in Pemba. For years, Kibano struggled to make ends meet, earning only TZS 150,000 (EUR 57) per month as a subsistence farmer. But everything changed when he turned to spice farming, cultivating vanilla, black pepper and cinnamon. After receiving extensive agroforestry training and support, he improved the quality and quantity of his spices.

“I’ve worked with CFP for two years, and I can say with confidence that the quality and quantity of my spices are much better now,” Kibano said. “I’ve increased the number of my vanilla plants from 200 to 570, my black pepper plants from 7 to 15, and I now have 50 cinnamon and 15 cardamom plants.”



Agroforest spice farmer, Kibano Omar Kibano next to a newly planted vanilla cutting supplied by CFP. This vine will start to produce high-quality beans in about three years. Photo: Zach Melanson, CFI



**A spice forest farmer holds a handful of nutmeg in various stages of being dried. The red and orange outer veins are removed and ground into mace, while the nutmeg is typically sold whole. Photo: Zach Melanson, CFI**

As a result of the growth in his crops, Kibano's monthly income has increased to TZS 200,000 (EUR 78) per month. He can now provide his family with three solid meals a day and send his eldest child to secondary school. His next goal is to invest further in spice farming by producing seedlings to sell. His long-term objective is to earn TZS 6 million (EUR 2,160) per year and send his children to university, by investing more in his spice farming. Kibano is now a teacher and role model for others in his community, and his farm has become a learning hub for aspiring agroforestry farmers.

### **Bridging the market**

With a steady local demand for spices and their relatively high value compared to other farm products, there is a constant economic incentive for farmers to produce spice crops. But to unlock the full potential of agroforestry for economic and ecosystem benefits, farmers are looking to connect to more profitable international markets.

The global organic spice market was valued at over USD 38 billion in 2018, and the market is expected to surpass USD 40 billion by 2024 (The Exchange 2022). The variety of spices grown using sustainable and organic agroforestry practices is well-positioned to thrive in this expanding market. A market analysis conducted for Zanzibar spices identified several quickly growing market opportunities for spice forests. These include ecotourism,

and natural and equitable consumer markets in the food, cosmetic and household sectors. Moreover, several trends point to an increasing future demand, including expanding global tastes for international and multiethnic foods; growing awareness of the health benefits of spices; and increasing populations of Hispanic and Asian backgrounds in major markets such as the United States and Europe.

CFP and CFI continue to build connections between small-scale farmers and export markets in order to ensure the long-term viability and economic success of spice production. On one side, assisting in the creation of farmer-owned and -operated cooperatives and associations helps build sales and marketing capacity. These collectives allow farmers to access new and bigger markets and to hold equitable decision-making power at the trade table.

At the same time, efforts are also being made to establish reliable and equitable trade opportunities for farmers through a network of regional and international export partners. These range from farmer representation at national trade shows to partnering with global buyers such as Lush Cosmetics for organic vanilla. In the past two years alone, more than 2,000 agroforestry spice farmers have connected with local and international markets.

Importantly, brands and individual consumers are becoming more aware of environmental and social impacts, resulting in a growing global demand for ethically and sustainably produced products. As this demand grows, so do the economic opportunities and potential for agroforestry spice farmers.

### Towards a resilient future

A number of challenges remain to ensure the scalability of agroforestry across the Zanzibar islands and beyond. These include the changing climate and prolonged rainy season, as well as limited access to affordable financing and to technologies and extension services that support the transition to agroforestry systems. CFI and CFP are working in tandem with other local and international partners to overcome a number of these challenges, including creating connections to financial institutions and government bodies for increased support and establishing in-field learning hubs for farmers to share agroforestry best practices, experience and knowledge.

The spice forest project has the potential to be replicated in agricultural communities across the globe and adapted to local contexts and environments. In fact, the expansion of the spice forest model to Tanzania's mainland is already being planned. The regeneration of spice forests in Zanzibar demonstrates how agroforestry can improve economic stability for vulnerable farming communities while restoring ecosystems for long-term climate resilience. More than a decade of experience working to establish and grow spice forests has also demonstrated the need for greater structural support, to allow farmers the growth and stability to thrive. Together, CFP and CFI have developed a number of key recommendations for agroforestry professionals:

- Communities are more likely to engage in and uphold sustainable farming and land-use practices when provided with a shared framework and agreements to identify roles and responsibilities and hold all stakeholders accountable.
- The best outcomes for increasing gender equality through agroforestry projects will come from women practitioners. This is because women experts further catalyze empowerment and act as role models for local women. All practitioners

must be well-versed in gender-based approaches and local culture and help women navigate any challenges within the family or community.

- Including loans or community finance programmes alongside agricultural extension support will improve long-term yields and sustainability.
- Lead farmers can be indispensable resources in their communities and provide important peer-to-peer solidarity and knowledge sharing. Their model farms can act as local hubs for training and distributing material. By establishing learning hubs in the communities, agricultural training opportunities are more likely to reflect local needs, knowledge and environment.

Through agroforestry, Zanzibar's spice farmers and their communities are growing far more than just spices. In the face of numerous structural, climate and market challenges, these farmers are regenerating the region's spice economy while improving their economic and environmental resilience — one spice tree at a time.

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