



BIOTRADE CASE STUDIES: CINNAMON IN VIETNAM

This case study is one in a series exploring how biotrade (often taken to be the trade in products certified as organic) can become aligned with the principles of BioTrade as elaborated by UNCTAD. UNCTAD defines BioTrade as being when a product or service sourced from biodiversity is commercialized and traded in a way that respects people and nature. It further defines seven BioTrade principles; the first four of these are indicated in the text box, together with brief comment on the example of cinnamon in Vietnam. Companies supported under the Regional Biotrade Project phase II (RBTII) are encouraged to work towards fulfilling the BioTrade principles, although they may not yet have reached them.


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This case study begins with a brief background on Vietnamese cinnamon and its history of cultivation, followed by a discussion of the way in which the first four BioTrade principles are being addressed (the other three BioTrade principles are: legal compliance, respect for actors' rights, and right to use and access natural resources). Recommendations for next steps are then provided. The findings are based on field interviews conducted with producers in Yen Bai and Lao Cai provinces; discussions with staff of the RBTII project, CRED, UEBT, provincial forest departments, specialists at the Center for Nature Conservation and Development (CCD), and representatives of the companies Son Ha and Ned Spice. In addition, relevant literature was reviewed, including UEBT documentation on the development of the BAPs¹.

The first four BioTrade principles of UNCTAD	Cinnamon cultivation in Vietnam and the engagement of the RBTII Project
<p>1. Conservation of biodiversity</p>	<p>Whilst cinnamon is an indigenous species in Vietnam, it is now widely cultivated, often as a monoculture. Extensive, dense plantations of cinnamon do not support biodiversity. This is especially the case if they were established by clearing natural forest - something that is now illegal and certainly not supported by RBTII. Rather, the project works with companies, government authorities and other stakeholders to promote sustainable production, including measures to promote biodiversity.</p>
<p>2. Sustainable use of biodiversity</p>	<p>Companies collaborating with RBTII are encouraged to work with organic producers, to support mixed planting where possible, and to establish a Biodiversity Action Plan that sets out concrete ways to improve biodiversity. This includes reduced plantation density, the setting of sustainable harvesting levels and measures to promote indigenous flora and fauna, adopting a landscape approach as far as possible.</p>
<p>3. Fair and equitable sharing of benefits</p>	<p>Most of the companies collaborating with RBTII operate through producer groups, all members of which have agreed to production standards linked to principles 1 and 2. The producers receive a premium for their product; often an additional contribution is made to the community/group in cash or kind.</p>
<p>4. Socio-economic sustainability</p>	<p>The establishment of producer groups rather than individuals is already a step towards socio-economic sustainability, but important is multi-stakeholder engagement. RBTII encourages transparent collaboration between all stakeholders in the cinnamon sector - producers, small and larger scale processors, export companies and relevant government agencies including local administrations and forest departments.</p>

BACKGROUND

“I was born in 1974, and when I was small, we knew real hunger. Many people did. We grew paddy and some upland rice, but it wasn’t enough. At that time there was natural forest all around the village, in which lived wild pig, deer and migrating birds. There was not so much contact with the outside [world]. Cinnamon has changed our lives. We started growing it in the 1990s, and now there are cinnamon plantations everywhere. There is no more hunger, and we have nice houses and a road connecting us to the market. Most of us have motorbikes; within the village there are even 20 cars. We grow paddy rice for our own consumption, plus cassava and maize to feed to our pigs and poultry – and whenever we need money, we just go to the cinnamon plantation and fell a tree. But the natural forest has gone.”

Triệu A Sơn, cinnamon farmer (Dao ethnic group), Nậm Đét commune, Bắc Hà district, Lào Cai province.

The type of remark made by Triệu A Sơn is typical amongst cinnamon-growing communities. As a supplier of certified organic cinnamon to Son Ha company, he has the additional benefit of premium prices. Cinnamon cultivation has been a major success in terms of poverty reduction - radically raising living standards in communities such as his over the past 30 years. Some communities, especially of the Dao ethnic group, date their cultivation of cinnamon trees further back, for up to five generations. Whilst cinnamon



production is especially associated with the Dao and Hmong, other groups - including people of the majority Kinh who originate from lowland areas - are also increasingly engaged in the sector.

The heart of Vietnamese cinnamon production lies in the hilly areas of the North, where the tree thrives at an altitude of 300 – 800m above sea level. The two provinces of Yen Bai and Lao Cai have the greatest coverage - over 80,000ha of Yen Bai and 53,000ha of Lao Cai province being under cinnamon plantations. More minor production areas are Than Hoah, Quang Nam and Quang Ngai provinces. Since the early 2000s there has been a marked increase in production, fueled by strong international market demand. Vietnam has become a major exporter of cinnamon worldwide, with export volumes officially totaling some USD 274 million in 2021ⁱⁱ and growing annually. A significant part of this demand is from China, where cinnamon is valued as a natural ingredient of many traditional medicines. In this case, it is the level (concentration) of the compound cinnamaldehyde that is important; quality standards linked to producer welfare or nature are not usually required.

High demand has led to an intensification of production. Much of Vietnamese cinnamon is now produced from dense monoculture plantations in which agro-chemicals are sometimes used. For example, evidence was seen of herbicide application as part of land preparation for plantations; this is not permitted in certified plantations. There are also increasing fears of contamination from heavy metals, especially lead, mercury, cadmium, and arsenic – as traces of these metals having been found in some cinnamon exports.ⁱⁱⁱ Part of this contamination is due to natural occurrence in the soil, but a more significant source

appears to be pollution from mines and industries operating close to plantations (especially in Lao Cai province). Cinnamon can be harvested after 10-15 years, with trees being felled according to financial needs. Generally, by 30 years all trees are harvested, and a new rotation is begun.

Against this background, RBTII is working with producers and companies that seek to engage in cinnamon trade that is environmentally, socially, and economically responsible.

CONSERVATION OF BIODIVERSITY

Cinnamon is not a single species of tree. Botanically, it belongs to the genus *Cinnamomum* which is part of the laurel (*Lauraceae*) family. There are many species of *Cinnamomum* although only a few have commercial value. The most important difference is between the cinnamon that is indigenous to Sri Lanka, and that indigenous to China and Vietnam. Sri Lankan cinnamon (*C. verum*) has a mild, sweet flavor and soft bark whilst the bark of Chinese cinnamon (*C. cassia*) is harder and has a spicier flavor.^{iv}

Early trade in Vietnamese cinnamon was sourced from trees growing naturally in forested areas. As the opportunity to make good money became increasingly clear, so did the expanse and intensity of cultivation. This gradation can be seen to some extent in different parts of the country. “Wild harvesting” is now relatively uncommon, although it is reported to occur in Cao Bang province^v. Mixed plots that include some planted cinnamon trees can be found in Than Hoah province. Around the nature reserve of Nà Hâu (Yen Bai province), cinnamon is cultivated as part of a mixed production system including crops and large livestock. In the main cinnamon cultivation areas, however, there is now an almost total monoculture. This was explained by one producer (a member of the Dao ethnic group) in the text box:

“According to my grandfather, it was my great-great grandfather who started collecting cinnamon saplings from the forest and cultivating them. Gradually we planted more and more. Twenty years ago, we still kept livestock and used their dung as compost. But the population has grown and the cinnamon [cultivation area] has expanded, so now there is no grazing land and no livestock. In the past, there were many species of animals and birds living in the forest, but now everything is cinnamon, and that species diversity has gone.” La Tài Quan, Mo Vang commune, Văn Yên district, Yen Bai province.



The loss of species diversity is a very significant concern. Clearly in the past, natural forest was removed to plant cinnamon – something that is now illegal. The Forest Law 2017 states that natural forest cannot be converted to other uses (other than in exceptional cases of national interest). Moreover, the sole focus on cinnamon means that there is now no agro-diversity, and a shortage of organic compost. An immediate issue is that compost is needed for raising healthy cinnamon seedlings in nurseries; more importantly in the longer term, if cinnamon plantations are replanted for several rotations, there will be an inevitable decline in soil fertility due to the lack of organic matter being returned to the soil. Linked to this will be a decline in soil bacteria, fauna, and all related populations. Pests are likely to multiply. Farmers

are often aware of the environmental and economic dangers of focusing solely on cinnamon cultivation; however, no other crop can compete. The bark of both the main trunk and branches fetches a good price; oil is distilled from the leaves; and the wood serves as timber and fuel. Every part of the tree has a value; to ask farmers to change their practices, a clear incentive is needed. Until recently, the companies with which RBTII collaborates have focused on promoting organic production. However, a more active approach to biodiversity conservation is needed that includes soil health – working towards a sustainable landscape approach. The elaboration and implementation of Biodiversity Action Plans, BAPs, as outlined in the next section, is intended to address this.

SUSTAINABLE USE OF BIODIVERSITY

“We are aware of biodiversity issues, but we don’t have enough land to plant species other than cinnamon – this will not bring us any income. We just follow the standards necessary to get the premium price.”

Lê Thi Hînes (aged 48), Viên Sơn commune, Văn Yên district, Yên Bái province.

Companies collaborating with RBTII support organic production, and work with bodies such as the UEBT and local value chain advisors to ensure certification and compliance. This focuses on banning the use of agro-chemicals in cinnamon nurseries and plantations and promoting the responsible disposal of waste containers from agro-chemicals used on lowland crops such as paddy. Cinnamon plantations directly bordering fields are generally not certified due to the risk of contamination – but the companies have not asked farmers to desist altogether from agro-chemical use.

Biodiversity Action Plans (BAPs), as conceived by UEBT, go a step further from organic production in recognizing the threat of intensified production and identifying concrete measures to improve biodiversity. RBTII partner companies are all either in the process of elaborating a BAP or have recently defined such a plan (see text box). In some cases, the BAPs are developed by independent consultants without UEBT involvement but for certification purposes they are thoroughly reviewed by UEBT together with the company concerned before being approved. Five companies are currently working with UEBT on BAPs. Once a BAP has been defined for an initial three-year period, the implementation of the actions set out in it is required to maintain compliance with UEBT standards and ensure certification over time. According to UEBT, certification will be withdrawn if the steps are not fulfilled^{vi}.

The four steps in defining a BAP

Baseline assessment – assessing the biodiversity in the area and identifying priority conservation activities

Definition of goals and targets – setting the expected achievements per identified priority

Definition of actions and workplan – defining implementation steps and the timeframe to achieve the set targets/goals

Definition of the monitoring system – setting appropriate indicators to monitor progress.

Biodiversity can only be truly improved by switching from a system of extensive monoculture to a mosaic landscape of forests, fields and plantations that provides a habitat for a variety of plant and animal species. Whilst this could and should be considered a long-term goal, UEBT argues that in the short term it is necessary to focus on realistic actions.



Key actions already identified in the first BAPs include:

- Awareness-raising amongst farmers on the importance of biodiversity, and various trainings on cinnamon cultivation, soil conservation, watershed management and related aspects.
- Maintaining a cinnamon-free area along river and stream sides for medicinal plants.
- Improving the management of surface and ground-water resources to ensure no contamination by agro-chemicals (sound waste management).
- Reducing cinnamon planting density from the current 15,000 - 20,000 trees/ha to 8,000 - 10,000 trees/ha in a few demonstration areas.
- Rather than completely removing undergrowth around young trees, preserving it as a ground cover for small animals and insects and only weeding the immediate vicinity of the tree.
- Removing invasive, exotic plant species, especially *Lantana camara*.
- Trialling the planting of a leguminous cover around newly planted saplings in model farms.
- Establishing a buffer area between fields and plantations, planted with timber trees (preferably indigenous).
- Promoting crop rotations.

Some of these actions are easier to implement than others. For example, the protection of stream-sides for medicinal plants may be quite readily accepted. By contrast, crop rotations and reductions in planting densities are likely to meet with farmer resistance as they would lead to a drop in household incomes, at least in the short term.

“It is such a pity that cinnamon has taken over everywhere and there is no room for other plants. [To find medicinal plants] I must go to the protected forest far away, where other people also come. I have tried to grow some of the plants but with limited success; there are some plants that cannot be cultivated. If the land along stream-sides was set aside for medicinal plants, that would help.”

Lý Thị Sinh, Traditional medicine practitioner, Viên Sơn commune, Văn Yên district, Yên Bái province.

FAIR AND EQUITABLE SHARING OF BENEFITS

RBTH encourages companies to work through organized producer groups, as this gives the producers a better chance to negotiate fair prices and other collective benefits. For companies there is also an advantage. Negotiations with a group are less time-consuming than with individuals; and group pressure generally ensures better adherence to quality standards than might otherwise occur. Companies therefore pay both a weight-based premium to each participating household and contribute to broader community development, either in cash or kind. For example, in the case of Son Ha, and in response to community requests, the company has variously paid for a water reservoir, waste collection unit, school materials, a first aid kit, and other assorted matters.

“When the farmers are organized, they can negotiate for a better price. In the past they organized themselves into two groups but now there are 17 groups, each with three or four members. These days they have a better understanding of the market price and can bargain with the traders.”

Trần Tuấn Anh, Commune Head, Mỏ Vàng commune, Văn Yên district, Yên Bái province.



However, there is one important issue that requires follow-up. This is access to certification for poorer households that have limited amounts of land. Whilst it is easier – and thus cheaper – for companies to organize the certification of larger plots, poorer households should also have the chance to benefit from premium prices. Indeed, this should be part of the logic of organizing producer groups.

“For households owning only a small amount of land it is difficult to be part of the Son Ha group [of 43 households], as normally a household should own at least 5ha cinnamon to comply with the standards. For monitoring the standards, it is easier for companies to cover a larger plot of land than many small ones.” Bañ Phúc Hin, Head of Viên Sỏn commune, Văn Yên district, Yên Bái province.

SOCIO-ECONOMIC SUSTAINABILITY

The concept of socio-economic sustainability covers a wide variety of aspects. On the social side, it includes organized, representative producer organisations that are well linked with traders and processing companies – all actors having the skills and knowledge to function effectively. On the economic side, it includes strong, reliable production and demand; good access to markets and/or processing facilities, and access to market information for informed decision-making. In addition, strategies, policies and legislation on the part of the authorities need to be favourable. Socio-economic sustainability cannot be ensured by any single actor in the value chain; it requires good coordination between them. A key activity of RBTII is to act as a facilitator between the various stakeholders to ensure good linkages and fair conditions for rural producers.

“We heard about the concept of Biotrade in a training given recently by NedSpice, but in fact it’s not new to us. Some 10 years back some Dutch people came here, stayed in our home, and spoke of the same thing – of biodiversity and the importance of the ecosystem and of product quality. They took some samples and came and went a few times, but then we heard that the transportation costs were too high. The company requested that drying should be conducted in the village, but we had no facilities to do this to the required standard. Then local traders came offering good money and we opted to sell to them instead. Some 30 or so come every year.” Dang Van Khé, Village Head, Mỏ Vàng commune, Văn Yên district, Yên Bái province.





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NEXT STEPS

This section draws on the recommendations of conservation specialists Nguyen Manh Ha and Nguyen Van Truong of CCD^{vii} as well as discussions with the author of the Vinasamex BAP, Thi Thu Huong and with relevant government officials. Their professional observations of cinnamon plantations in Yen Bai and Lao Cai confirm what was stated by local people themselves: that biodiversity is very poor, with a general absence of native flora and fauna. There is little evidence in plantations of even previously common birds, small mammals such as rodents, or small reptiles such as lizards and snakes.

RBTII strongly supports the measures already put forward in the BAPs established in collaboration with UEFT and companies. Nevertheless, the activities required over three years for the current BAPs are somewhat cautious; RBTII encourages more ambitious actions and the establishment of participatory monitoring targets that go beyond what is currently foreseen.

Training and awareness raising in cinnamon-growing communities about the importance of biodiversity is emphasized in all the BAPs and is indeed crucial. Nevertheless, training needs to lead to concrete actions such as those detailed below. Whilst the BAPs focus on farmer training, it is also recommended to work with local schools. Engaging children in observing and recording species in their locality, building on local knowledge, would help embed awareness in the community. The emphasis should be on a healthy local ecosystem – not on global biodiversity.

Agro-chemical use in areas producing organic cinnamon should be discouraged more strongly, as contamination of soil and groundwater is highly likely. This is in part because the level of application is often excessive and very difficult to control; furthermore, due to informal cross-border sales, there is a risk of chemicals being used that are not on the list of those approved by the Vietnamese government. Ensuring the disposal of containers used on other crops is thus not enough. RBTII seeks to encourage companies and government authorities (local communes, the Forest Department) to push for a full ban within cinnamon-growing landscapes.

Inclusive farmer engagement: Promoting biodiversity at a landscape level can only be achieved if most farmers agree to sustainable practices and are included in the certification (the ideal being that all farmers

are part of the scheme). RBTII especially supports the enhancement of small farmer's livelihoods and is therefore promoting certification opportunities for all.

Nurseries: Diversity in cinnamon germplasm would help reduce the risk of catastrophic pest or disease attack. RBTII therefore supports the sourcing of seedlings only from nurseries using reliable seed of mixed parent trees (at least 25). Such nurseries should also, of course, practice organic cultivation – including manual methods of pest control and composting.

Ecosystem-friendly methods of plantation establishment and maintenance need to be more systematically supported. Especially, wider spacing of saplings and maintenance of ground cover to provide a habitat for small animals and invertebrates should be required for bio-certified plantations. RBTII therefore recommends the setting of a clear target of no more than 10,000 seedlings/ha for all new plantations from now onwards. Green mulching and (if possible) compost application would help to improve soil health and are thus desirable.

Water bodies deserve particularly close attention as an important habitat. RBTII therefore supports not only leaving stream-sides free of cinnamon planting, but also promoting small ponds and/or reservoirs within the landscape. This also requires a numerical target of length (km) of streamside protected, and numbers of ponds created.

Monitoring of changes in biodiversity - not only of measures taken to promote it – should be incorporated into BAPs. Whilst a thorough monitoring of species occurrence is complex and time-consuming, record-keeping on indicator species provides a helpful proxy and should not be too difficult given the current paucity of fauna. RBTII supports the incorporation of such monitoring into BAPs, involving community members in the process to ensure ownership. Potential indicator species together with selection criteria are provided in the text box. All these species would normally be common in the cinnamon growing areas; that they are now rare is a stark reflection of the current situation.

Potential indicator species of improved biodiversity in intensive cinnamon plantations

Species selection criteria:

- Indigenous
- Prey on other wildlife or feed on natural seed
- Live in both bushland/grassland and in cinnamon plantations
- Are relatively easy to notice and readily identified by local people

Species fitting the above criteria:

- Javan mongoose (*Herpestes javanicus*)
- Red junglefowl (*Gallus gallus*)
- Lesser coucal (*Centropus bengalensis*)
- Oriental magpie-robin (*Copsychus saularis*)
- Long-tailed sun skink (*Eutropis longicaudata*)

In conclusion, there is an urgent need for working model farms that demonstrate how cinnamon incorporated into a mixed, organic agroforestry system can be profitable at the same time as being sustainable and promoting biodiversity. This should be clearly distinguished from current practice in the main cinnamon growing areas of Vietnam. Possibly the best place to introduce such models would be in parts of the country that are not yet given over to monocultures, and where farmers are open to trying new cultivation methods. Here there could be scope for developing a truly sustainable landscape approach, in line with the position of the Swiss State Secretariat for Economic Affairs, SECO^{xi}.

Endnotes

ⁱ UEBT Union for Ethical Bioproducts June 2022. Cinnamon in Lao Cai and Yen Bai in the Northern Region of Vietnam: a case study

ⁱⁱ Ministry of Agriculture and Rural Development of Vietnam; [There are still many challenges for the development of Vietnam's cinnamon industry.](#)

ⁱⁱⁱ Dung, T *et al*, 2022. Final Report Research to determine the causes of lead (Pb), cadmium (Cd), arsenic (As), and mercury (Hg) residues in Vietnamese cinnamon/cassia products and management and mitigation solutions. Supported by the American Spice Trade Association, As for Equality, GREAT, Australian Aid, The Sustainable Trade Initiative and CRED.

^{iv} Some botanists identify a separate Vietnamese cinnamon, *C. loureiroi* although it seems likely that most, if not all, of the cinnamon grown in Vietnamese plantations is *C. cassia*. The diversity of its germplasm is uncertain, as there is little regulation of seed quality. Further information can be found in: Turner, Sarah, Derks, Annuska and Rousseau, Jean-François (eds). 2022. Fragrant Frontiers Global Spice Entanglements from the Sino-Vietnamese Uplands. NIAS - Nordic Institute of Asian Studies Topics in Asian Studies, no. 75. NIAS Press ISBN 978-87-7694-728-6 open access PDF.

^v Lutz Toennis, Cha-Do, personal communication (January 2023)

^{vi} Rik Kutsch Lojenga and Simona D'Amico, UEBT, personal communication (January 2023)

^{vii} Ha, Nguyen Manh and Truong, Nguyen Van. 2022. Quick assessment of biodiversity and environmental issue in the cinnamon plantation at 4 selected communes in Yen Bai, Lao Cai provinces. Internal report to RBTII.

^{xi} SECO's Engagement in Sustainable Landscape Approaches: Beyond a Single Crop Focus. Position Paper, January 2023. <https://lnkd.in/e5EthST5>

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