Food and Agriculture Organization of the United Nations

One Country One Priority Product

One Country One Priority Product • Case Study Series

Geographical Indications Environment & Sustainability enables consumers to trace the origin of Baoshan arabica coffee

Coffee has become a major agricultural and export product of Baoshan city in Yunnan province, China, thanks to its unique dry-hot climate. The benefits of being a GI product have been augmented through traceability to its outstanding production environment involving the application of the innovative GIES methodology.

Key issue: Sustainable ecosystem monitoring and data dissemination systems for special agricultural products in the area were not in place.

As Baoshan arabica coffee is a GI product, its product specifications, link with the geographic area and production method are clearly defined. However, a system to monitor the ecosystem in the medium to long term was not in place and relevant information on the ecosystem was not easily available to consumers.

Solution: promote the conducting of a scientific assessment, monitor the geoecological characteristics and accessibility of information to consumers through Geographical Indications Environment & Sustainability

The GIES tool is used to collect, assess and disseminate geoecological data, with the aim to balance economic development associated with Baoshan arabica coffee with protection of the environment. The participation of local leadership and a wide range of stakeholders is required for a product to qualify as a GIES case, while the dataset compiled for the GIES classification is accessible to the general public, making it possible for consumers to trace the product back to its origin.

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Background

Coffee was introduced to Yunnan province in the late nineteenth century by French missionaries, but large-scale production of it only began in the province in 1952, in Lujiang town in Longyang district, Baoshan city, where Xinzhai village is located. Xinzhai village is a unique production site for good quality coffee because of the dry-hot climate of the Nujian Valley, despite being 25 degrees north latitude, off the coffee belt.

Xinzhai village is located between the Gaoligong Mountains and the Nujiang River and has a vertical gradient from 760 to 1 640 m. Coffee plantations account for 906 hectares, or 95 percent of the total arable land in the village (Nhean, 2023). Xinzhai is known as the number one coffee village in China; its per capita coffee farm is at 0.38 hectares. Catimor and Typica are the two arabica species grown in Xinzhai. The Baoshan arabica coffee was designated as a GI product in 2010, and is protected under the China-EU Agreement on Geographical Indications, which entered into force in March 2021.

Highlights

- Geographical Indications Environment & Sustainability (GIES) is an innovative tool, which uses open science to trace the geographical origin of a specific special agricultural product (SAP) by assessing and monitoring the quality of the local environment where the product is produced. An overview of GIES is available at https://www.fao.org/3/cc7506en/cc7506en.pdf
- Xinzhai village of Baoshan city in Yunnan province is renowned for being the number one coffee-producing village in China. The GIES case regarding Baoshan coffee in Xinzhai village was one of the best practices acknowledged at the launching forum of GIES in 2021. This case study presents how GIES has brought additional value to a geographical indication (GI) product, Baoshan arabica coffee, by enabling consumers to learn about the true characteristics of Baoshan arabica coffee that are assessed and consolidated by GIES.
- Under the framework of GIES, researchers scientifically assessed the data on the geoecological, product, socioeconomic and managerial characteristics of the coffee produced in Xinzhai village, and ensured that a sustainable monitoring system was in place.
- In addition to contributing to exports from China, Baoshan arabica coffee also supports the livelihood of more than 50 000 individuals and 15 000 households, generating more than RMB 4 billion (USD 558 million) in 2022.

Implementation

Scientific data assessment and monitoring, coupled with local leadership and the involvement of local cooperatives and related stakeholders, have laid the groundwork for making useful data available to consumers and benefiting local producers.

1 Special agricultural products are agricultural products with unique qualities and special characteristics associated with geographical locations, farming practices and cultural heritages.

(1) Scientific assessment and monitoring of the geoecological environment: The GIES tool is used to assess and monitor the environmental sustainability of the production area of coffee.

To build on existing data, the GIES tool consolidated a dataset for Baoshan arabica coffee that includes the following: (a) physical geographical data, such as the boundary of the case area, a digital elevation model, climate (monthly sunshine, temperature and precipitation), soil chemicals, the Normalized Difference Vegetation Index (NDVI) and land use; (b) coffee botany and green coffee bean chemistry; (c) coffee production in Yunnan; and (d) coffee history in Yunnan.

Meteorological data are essential to properly monitor the production. However, the traditional stations were located at a flat or low altitude only and the data did not represent the whole area, which has an elevation gap that exceeds 800 m. Accordingly, in 2018, a 24-hour observation system was installed in five locations that are between 760 and 1 640 m altitude to make the monitoring and assessments of the meteorological characteristics more accurate. In addition, NDVI images were produced from satellite data to reveal the state of the land cover and soil composition, and coffee quality from different altitudes were also measured.

Such data are useful for stakeholders to understand the environmental status of the target areas, which forms the foundation for consensus building and concerted actions. For example, NDVI data reaffirm the need for ecosystem protection of the wider areas. The higher mountain area beyond the coffee farms makes up the Gaoligong Mountain Nature Reserve, which has better vegetation now, and is not only an important ecological shelter for the coffee production areas, but also a valuable source of coffee pollinating insects.

In addition, the meteorological data in 2019–2020 reveal that the annual precipitation at Xinzhai village was 324–645 mm, which is far below the world norm of 1 200–2 200 mm. These data portend a water shortage problem in the near future.

(2) Government leadership and engagement of local stakeholders: A requirement of a GIES case is the involvement of industry and researchers along with a leading role for local government in encouraging investment and promotion. Specifically, the local government is implementing measures to support the Baoshan coffee industry. One such example is the establishment of an organic coffee demonstration park and a coffee auction centre in Xinzhai village.

Coffee enterprises in Xinzhai village have joined the "Longyang district agricultural product traceability system" and developed an independent coffee traceability system, and are applying the ISO22000 food safety management system.

Coffee tourism promotes the scenery of the Gaoligong Mountain Nature Reserve, multi-ethnic folk cultures, the process to produce coffee, including planting, picking and processing coffee beans, and tasting the local coffee. In addition, the "Baoshan Coffee Culture Festival" is organized for the general public. In 2019, Longyang district of Baoshan city was awarded the provincial model county of "One County One Industry" for coffee.

(3) Benefits to consumers and local producers: Sharing knowledge, data and intelligence promoted by GIES assists researchers, governments and enterprises in providing reliable information to consumers. Being a GIES case also makes scientific data available to consumers in one location, which, in turn, boosts consumer confidence.

The local population has adopted a "company + base + professional cooperatives + farmers" model, whereby farmers' skills and the quality of coffee are improved through training farmers and enterprises on coffee planting, management, harvesting and processing. This model also helps to reduce operation costs and market risk, and increase the income of coffee farmers.

These measures guarantee the quality and reputation of coffee that originates in Xinzhai village and are intended to secure a fair share of revenue for the professional cooperatives and their members.

Impact

According to Xinhua (2023), the coffee planting area in Longyang district in 2022 extended approximately 7 733 hectares from which 20 000 tonnes of coffee beans were produced. The coffee value chain actively engages more than 50 000 individuals and 15 000 households, generating more than RMB 4 billion (USD 558 million). The district has 80 coffee enterprises, including 32 leading enterprises which, in 2022, increased the total income of 23 071 rural households by RMB 244.96 million (USD 36 million) (Dang, 2023).

Xinzhai village itself produces 4 000 tonnes of coffee annually, generating an income that exceeds RMB 70 million (USD 9.9 million) and attracts 100 000 tourists annually (Nhean, 2023).

Key resources

- **Dang, Y. 2023.** 保山：深耕一粒咖啡豆做好增收大文章 [Baoshan: deep ploughing a grain of coffee beans, doing a good job of increasing income]. 26 October 2023. Beijing, China State Farms and Tropical Agriculture. [Cited 25 January 2024]. http://www.farmchina.org.cn/ShowArticles.php?url=Az9QNQ9vAjcDMgVlBz5UN1I8
- **Duan, R.T., Liu, Y.T., Fu, C.L., Hu, K., Yang, Y.H., Jia, H.S., Liu, C., Li, X.B. & Wang, Z.X.** 2021. GIES case dataset on Baoshan arabica coffee dry-hot valley in Xinzhai village, Yunnan province of China. *Journal of Global Change Data & Discovery,* 5(3): 261–274.
- **Nhean C.** 2023. Xinzhai coffee industry gets 5G thanks to CMY-Huawei tie-up. *Khmer Times,* 22 November 2023. Phnom Penh. [Cited 18 December 2023]. https://www.khmertimeskh.com/501395891/xinzhai-coffee-industry-gets-5g-thanks-to-cmy-huawei-tie-up/
- **Xinhua.** 2023. (Chengdu Universiade) Across China: Brewing gold: a cup of coffee's journey to FISU Games. Xinhua, 7 August 2023. Beijing. [Cited 18 December 2023]. https://english.news.cn/20230807/80cc8105862146cfbe5a314713f7d7b4/c.html

OCOP case studies on GIES good practice cases:

- China: Geographical Indications Environment & Sustainability – an innovative open science solution to trace the geographical origin of special agricultural products
- China: Geographical Indications Environment & Sustainability: wide application in diverse agroecological zones and special agricultural products in China
- Development of GI-protected Baoshan Arabica coffee in Xinzhai village, Baoshan city, Yunnan province of China
- Protection of crested ibis (Nipponia nippon) habitat with organic black rice in Caoba Village, Yang county, Shaanxi province of China

For more information:

Regional Knowledge Platform on One Country One Priority Product (OCOP) in Asia and the Pacific

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