



One Country One Priority Product • Case Study Series

Highlights

Indonesia: upgrading bulk cocoa into fine cocoa

In the Asia-Pacific region, Indonesia is the top producer of cocoa, but Indonesian farmers are reluctant to ferment cocoa beans due to the marginal price premium from unfermented beans and a rush to earn cash. High demand exists for properly fermented cocoa beans, while research on fermentation techniques is being conducted.

Key issue: poor quality of cocoa beans due to no fermentation in Indonesia

Cocoa farmers in Indonesia generally sell unfermented cocoa beans. A survey conducted in Central Sulawesi in 2017 indicated that more than 50 percent of cocoa farmers do not ferment their beans, and that the negligible price premium for fermented beans is the most dominant factor supporting this (Effendy *et al.*, 2019). As of 2020, according to the International Cocoa Organization (ICCO), only ten percent of cocoa beans exported from Indonesia are considered as “fine” or “flavour” cocoa beans.

Solution: offering price premium for properly fermented cocoa beans and extending training to cocoa farmers

To change the status quo, the Government has set quality standards for cocoa beans, and chocolate makers are providing training to cocoa farmers and purchasing fermented beans at higher prices. In addition, research on fermentation techniques is being conducted.

Background

Indonesia is the third largest cocoa producer in the world, producing 728 046 tonnes in 2021 (FAO, 2023). World production of cocoa has been trending higher for several decades, but, in Indonesia, it peaked in 2010 at 844 626 tonnes, and since then, it has been declining, along with the total planting area.

Low yield is a major challenge related to cocoa bean production in Indonesia. This can be attributed to lack of knowledge

and skills in production management, limited access to finance to replace ageing trees and purchase farm inputs, using local seeds that are susceptible to diseases, applying limited input and practising poor farm management, such as pruning and pest control (Rabobank, 2022; cited in Ariningsih, 2020).

Such unfavourable practices also lead to the production of low-quality cocoa beans, aggravated further by farmers’ reluctance to ferment beans as part of post-harvest handling. The reasons for that include their need for instant cash income,¹ the low price premium between fermented and unfermented beans, and limited access to fermentation facilities (Ariningsih, 2020; Rahardjo *et al.*, 2022). Because of the low quality of the beans, farmers cannot sell their cocoa beans at a high price. This, in turn, undermines the motivation and incentives to grow and supply properly cultivated and fermented beans.

Implementation

To exploit the full potential of cocoa production in Indonesia, the following initiatives are being taken:

(1) Setting quality standards: The National Standardization Agency (BSN) of Indonesia has established quality standards for cocoa beans: SNI 2323: 2008. The standards include general requirements, such as moisture content and foreign matters, and special requirements, such as maximum content of infected beans and germinated beans.

In 2012, the Ministry of Agriculture issued guidelines for post-harvest handling of cocoa. It also issued a regulation in 2014 on quality requirements and marketing of cocoa beans, which requires farmers, farmer groups or federations to ferment beans before supplying them to the processors or exporters. However, full implementation of the guidelines has been delayed.

(2) Providing training and purchasing fermented beans at higher prices: The local farmer cooperative in Jembrana regency in Bali is a successful example of improving condi-

©Stockphoto.com



- Indonesia is the third largest cocoa producer in the world, but it has not exploited its potential as a producer of high-quality cocoa beans. The majority of cocoa farmers in Indonesia do not ferment their cocoa beans, which results in low-quality beans that command a low price.
- To improve the situation, the Government has set quality standards for cocoa beans and developed post-harvest handling guidelines for cocoa. Farmer cooperatives and chocolate makers are working together, with support of non-governmental organizations (NGOs), to transfer knowledge and skills to farmers about proper farm management and fermentation, and are setting premium prices for fermented beans that meet the quality requirements. Research on fermentation techniques for cocoa beans also is being conducted to explore appropriate means to improve the quality of the product and reduce fermentation time.
- Good practices are being identified, resulting in premium prices for properly produced cocoa beans and increased income for the cocoa farmers who produce them.

¹ The natural fermentation process takes five to seven days.

tions for cocoa farmers (Box 1). It is connected to bean-to-bar chocolate makers, including a local certified organic chocolate company, who are keen to promote sustainable development. The beans in Jembrana have become a benchmark of fine cocoa development in Indonesia.

Another “farm-to-bar” chocolate maker, which was established in 2013, has partnered with an international NGO to train 1 000 farmers for proper cocoa farming and processing techniques (Kraakoa, 2023). This has enabled the farmers to produce fermented beans in sufficient quality for the company to purchase them at a premium price.

(3) Conducting research on fermentation techniques: There are two fermentation techniques: spontaneous and inoculation (i.e. adding starter). When farmers ferment their beans, they generally use spontaneous fermentation, as it is easier and inexpensive. However, this technique tends to result in fermented beans of unstable quality (cited in Ariningsih, 2020).

Research on fermentation techniques for cocoa beans have been conducted in many countries, including Indonesia, and led by universities and research institutions. Rahardjo *et al.* (2022) also has extracted effective fermentation techniques to improve the quality of the beans and reduce fermentation time. Among them are (1) addition of inoculum; (2) pH and temperature control to activate intracellular enzyme; (3) addition

of external enzymes during fermentation; and (4) pulp reduction.

Impact

Applying an optimal fermentation technique properly may take some patience, but it can be rewarding for farmers, if they are linked to the buyers who value the quality of the cocoa beans. Farmers can possibly command a price for high-quality fermented beans up to three times the market prices of unfermented beans (Christy and Fu, 2020).

As an example, in 2019, it was reported that a craft chocolate maker purchased fermented beans from farmers in Lampung province in Sumatra at USD 3 per kg, and as high as USD 4.2 per kg, while the international market price was just above USD 2, (Boudreau *et al.*, 2019; ICCO, 2023). The members of the Cooperative described in Box 1 have doubled their income by diligently working on their cocoa trees, allowing them to send their children to school and reducing unemployment rates in the areas where they reside.

The quality of Indonesian cocoa is gradually gaining international recognition. For example, a cocoa farmer from East Java received the gold awards in the Cacao of Excellence competition in 2021, and three producers in different regions have been selected among the best 50 high-quality cocoa in 2023.

Key resources

- **Ariningsih, E.** 2020. Efforts in improving Indonesian cocoa bean quality. FFTC Agricultural Policy Platform. [Cited on 20 September 2023]. <https://ap.fttc.org.tw/article/2573>
- **Boudreau, J., Calonzo, A., Raghu, A. & Listiyorini, E.** 2019. These Asian chocolatiers are spicing up the global sweets scene. *The Jakarta Post*, 27 March 2019. [Cited 20 September 2023]. <https://www.thejakartapost.com/life/2019/03/27/asian-chocolatiers-marou-faiseurs-krakakoa-chocolate-concierge-theo-and-philoh.html>
- **Christy, R. & Fu, L.** 2020. *Innovative Institutions to Accelerate Agroindustry Development in Asia*. Tokyo, Asian Productivity Organization.
- **Effendy, E., Antara, M., Rauf, R.A., Tangkesalu, D., Christoporos, C., Pratama, M.F., Basir-Cyio, M., Mahfudz, M.A. & Muhandi, M.** 2019. The decision of farmers do fermentation to increase the quality of cocoa beans in Central Sulawesi Indonesia. *International Journal of Supply Chain Management*, 8(3): 790–794.
- **FAO.** 2023. Crops and livestock products. In: *FAOSTAT*. Rome. [Cited 21 September 2023]. <https://www.fao.org/faostat/en/#data/QCL>
- **ICCO (International Cocoa Organization).** 2023. Daily cocoa prices. In *Statistics*. Abidjan. [Cited 22 September 2023]. <https://www.icco.org/statistics/>
- **Krakakoa.** 2023. *Our impact*. Jakarta. [Cited 22 September 2023]. <https://krakakoa.com/pages/our-impact>
- **Rabobank.** 2022. Cocoa fundamentals outlook for Asia: supply and demand. Presentation for CAA International Cocoa Conference, 1 September 2022. Singapore. [Cited 20 September 2023]. <https://cocoaasia.org/dir/wp-content/uploads/2022/09/Plenary-2-Cocoa-Fundamentals-Outlook-For-Asia-Supply-Demand.pdf>
- **Rahardjo, Y.P., Rahardja, S., Samsudin, Saidah, Dalapati, A., Amalia, A.F., Purwaningsih, H. & Syamsu, K.** 2022. A literature review on cocoa fermentation techniques to shorten fermentation time. *IOP Conference Series: Earth and Environmental Science*, 974. <https://doi.org/10.1088/1755-1315/974/1/012111>

For more information:

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

Contact:

Regional Office for Asia and the Pacific
Email: FAO-RAP@fao.org
Website: www.fao.org/asiapacific
X: @FAOAsiaPacific
Food and Agriculture Organization of the United Nations
Bangkok, Thailand

Box 1. A case of successful fermented bean development in Bali

Kerta Semaya Samaniya Cooperative in Bali province produces fermented cocoa beans, which benefits its member farmers and chocolate makers in Indonesia and elsewhere. Supported by a NGO and the local government since 2011, the Cooperative is promoting well-controlled cocoa bean production and fermentation.

The Cooperative consists of 609 members in 38 farmer groups that cultivate 619 hectares of cocoa farms. All of the farmer groups are UTZ certified,² and 16 of them also have attained organic certification by international bodies. Such certifications bring advantages to the Cooperative in attracting conscious users globally. The members apply good agricultural practices in the field, and the Cooperative operates a centralized system for fermenting and drying the beans, which has improved the consistency of the beans and enabled the tracking of problems in the bean production.

A chocolate maker in Tabanan regency in Bali is a major, reliable customer. It manufactures single-origin chocolate bars by using the organic cocoa beans of the Cooperative. Having a stable buyer which values the quality of beans and the social development of the farmers encourages the member farmers to maintain their cocoa trees properly.

The Cooperative has become a role model for other cocoa producers in Indonesia. After having received further training on such topics as sustainability, climate-smart practices, financial literacy and business skills, the Cooperative is imparting its knowledge and experiences with other cocoa cooperatives across the country.

Source: Ariningsih (2020) Efforts in improving Indonesian cocoa bean quality. FFTC Agricultural Policy Platform. [Cited on 20 September 2023]. <https://ap.fttc.org.tw/article/2573>; and Rainforest Alliance. 2022. Heart, soul, and chocolate: meet Bali's champion for cocoa policy reform, 28 September 2022. New York. [Cited 22 September 2023]. <https://www.rainforest-alliance.org/in-the-field/heart-soul-and-chocolate-meet-balis-champion-for-cocoa-policy-reform/>.

² It is a certification programme to promote more sustainable farming and better opportunities for farmers, their families and the planet. More information is available at <https://www.rainforest-alliance.org/utz/>.

