Forum Agribisnis (*Agribusiness Forum*)
Vol. 16 No. 1, Maret 2026; halaman 157-163

ISSN 2252-5491, E-ISSN 2656-4599
DOI: https://doi.org/10.29244/fagb.16.1.157-163

COMPETITIVENESS OF INDONESIAN CRUDE PALM OIL EXPORTS IN THE ASEAN MARKET

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(Accepted 26 February 2026 / Revised 13 March 2026 / Approved 19 March 2026)

ABSTRACT

Crude Palm Oil (CPO) is one of Indonesia's leading export commodities and plays an important role in international trade, particularly in the ASEAN region. However, intense competition among major exporting countries and fluctuations in global market conditions require Indonesia to continuously maintain and strengthen the competitiveness of its CPO exports. This study aims to analyze the competitiveness of Indonesia's crude palm oil (CPO) exports using comparative and competitive approaches. The data used is secondary data for the period 2014-2024 taken from UN Comtrade and BPS with the HS code 151110. The research methods used are Revealed Comparative Advantage (RCA) and Export Competitiveness Index (ECI). The results of the analysis show that Indonesia's RCA CPO value is consistently well above one, which means that Indonesia has a very strong comparative advantage over major competitors such as Malaysia and Thailand. However, the results of the ECI analysis show fluctuations, where some periods have increased and others have decreased, especially in 2021 which showed a significant decrease. This study shows that Indonesia maintains a strong position in the CPO export trade in the ASEAN region despite changes in the market in certain years. Therefore, increasing productivity, production efficiency, and strengthening export strategies are important steps to maintain and enhance the competitiveness of Indonesian CPO in the ASEAN market.

Keywords: *ASEAN market, competitiveness, CPO, ECI, RCA*

INTRODUCTION

International trade is one of the main activities in encouraging a country's economic growth through increasing foreign exchange, expanding markets, and optimizing the use of domestic resources (Hotma, 2024). For developing countries such as Indonesia, exports of superior commodities have a strategic role in strengthening the economic position in the global market. One of the sectors that contributes significantly to national export performance is the plantation sector, especially palm oil commodities that produce Crude Palm Oil (CPO). This commodity not only acts as the main source of foreign exchange, but also supports the national economy through labor absorption and development of production center areas (Susanto, 2020).

Indonesia is widely recognized as one of the biggest countries in the world that produces and sells palm oil. The large volume of palm oil production in Indonesia shows that there is enormous potential to meet demand in the international market.

Table 1. Indonesian Plantation Commodity Production 2022-2024 (Ton)

Commodities	2022	2023	2024
Oil Palm	51.794.263	52.087.006	52.518.781
Rubber	2.717.081	2.240.826	2.262.088
Coffee	774.961	758.725	807.578
Cacao	650.612	632.117	632.702
Sugarcane	2.405.907	2.271.009	2.465.514
Tea	124.661	116.506	124.961
Tobacco	221.925	286.510	353.386

Source : BPS, 2026

Although it has advantages in terms of resource availability and production capacity, Indonesia's CPO export performance in recent years has shown fluctuating dynamics. The value and volume of CPO exports do not always increase consistently, even in certain periods showing a downward trend. This condition is influenced by various factors, including international price fluctuations, increased competition with other

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producing countries such as Malaysia and Thailand, and changes in trade policies both domestically and in export destination countries (Sulistiawati, 2023).

Within the Southeast Asian region, Indonesia faces strong competition from other palm oil producing countries, particularly Malaysia and Thailand. Malaysia has long been Indonesia's main competitor in global palm oil trade, while Thailand has also shown increasing production and export capacity in recent years. The ASEAN region itself has become one of the world's major CPO production centers, where Indonesia and Malaysia together dominate global palm oil supply (Purwono et al., 2022).

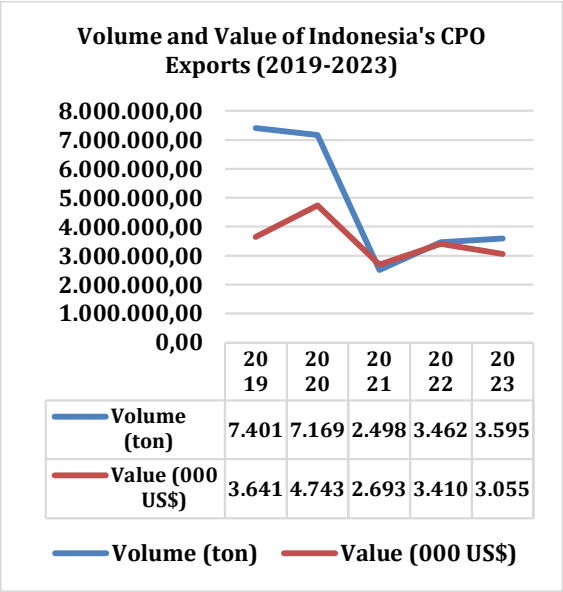

Figure 1. Development of Indonesia's CPO Export Volume and Value in 2019 - 2023
Source : Comtrade, 2026

Indonesia's CPO export challenges are increasingly complex due to pressure from within and outside the country. Domestic policies such as export tariffs affect price competitiveness, while destination countries tighten rules on sustainability and environmental issues. This condition makes the sustainability of CPO exports very sensitive to changes in global policies and markets (Azida *et al*., 2023). The role of the Government is important in shaping competitiveness through policies and regulations that affect the conditions of the business environment, so that competitiveness can be utilized efficiently and have an impact on export performance and orientation (Harya *et al*., 2023). In the midst of increasingly fierce competition, Indonesia cannot only rely on production volume, but must also strengthen competitiveness as an indicator of its ability to survive and maintain market share from pressure from competing countries (Biky & Hermawan, 2025). The increasing competition among producing countries in ASEAN highlights the importance of analyzing export competitiveness to understand Indonesia's position in the regional palm oil market. Export competitiveness reflects a country's ability to maintain and expand its market share amid increasingly intense international trade competition (Firmansyah et al., 2017).

Conceptually, export competitiveness is seen from two sides: comparative and competitive advantage. Comparative advantage is related to relative efficiency in producing and exporting, while competitive advantage assesses the ability to maintain or improve performance dynamically in the global market (Patone *et al*., 2020). In the context of CPO exports, comparative advantage analysis is important to find out whether Indonesia still has a relatively superior position compared to major competitor countries. On the other hand, a competitive advantage analysis is needed to assess whether Indonesia's CPO export performance is able to show a stable or increasing trend in the international market (Aprilia, 2023; Harya *et al*., 2025).

Although many studies have examined the competitiveness of Indonesian CPO exports using RCA or other indicators, most of them focus primarily on measuring comparative advantage. Few studies analyze the dynamic relationship between comparative advantage and competitive export performance simultaneously. In some cases, a country may have a high RCA value but still experience fluctuations in export competitiveness. Furthermore, studies that specifically analyze Indonesia's CPO export competitiveness within the ASEAN market using both RCA and ECI approaches remain limited. This indicates a research gap in explaining how Indonesia's comparative advantage contributes to the dynamics of CPO export competitiveness in the ASEAN market.

Considering these conditions, examining the competitiveness of Indonesia's crude palm oil

exports within the ASEAN market becomes highly relevant. This research aims to evaluate the performance of Indonesia's CPO exports by analyzing both comparative advantage and competitive advantage through the application of the RCA and ECI indicators. The findings of this research are expected to provide a clearer insight into Indonesia's position within the ASEAN palm oil trade and serve as a reference for developing strategies to strengthen the competitiveness of Indonesia's major export commodities.

RESEARCH METHODS

This study uses a descriptive quantitative approach that aims to analyze the competitiveness of Indonesia's Crude Palm Oil (CPO) exports in the ASEAN market based on statistically measurable indicators. The analysis is based on secondary time-series data sourced from trusted institutions, including UN Comtrade and BPS. The variables analyzed include the export value of CPO from Indonesia, Malaysia, and Thailand, as well as the total global CPO export with HS code 151110 during the period 2014-2024. Competitiveness is measured by comparing Indonesia's export performance with global CPO export performance.

REVEALED COMPARATIVE ADVANTAGE (RCA)

Revealed Comparative Advantage is a method used to show how competitive a country is by looking at how much of a product it exports compared to how much other countries export of the same product (Safriadi et al., 2024). RCA is systematically defined as follows:

$$RCA = \frac{Xij\ /\ Xtj}{Wij/Wtj}$$

Description :
RCA = Revealed Comparative Advantage
Xij = Export value of Indonesia's CPO (US$/ton)
Xit = Total export value of all commodities from Indonesia (US$/ton)
Wj = Value of CPO exports from all over the world (US$/ton)
Wt = total export value of all commodities from around the world

If the RCA value exceeds one (>1), it indicates that a country possesses a comparative advantage above the global average, which reflects a strong level of competitiveness for that commodity. In contrast, if the RCA value is below one (<1), it means that the country's comparative advantage is lower than the global average, resulting in weaker competitiveness of the commodity. A higher RCA value signifies a greater level of competitiveness and a stronger comparative advantage held by the country (Harya *et al*., 2018).

EXPORT COMPETITIVENESS INDEX (ECI)

The Export Competitiveness Index (ECI) is applied to evaluate the degree of competitive advantage of a country's export commodities. The ECI value reflects the extent to which the competitiveness of a commodity has increased or decreased over time, thereby illustrating its development within international market competition (Zuhdi & Rambe, 2021). ECI is systematically defined as follows:

$$ECI = \frac{\left(\frac{Xki}{Xwt}\right)t}{\left(\frac{Xki}{Xw}\right)t-1}$$

Description:
ECI = Export Competitiveness Index
Xki = Value of CPO exports by Indonesia (US$/ton)
Xw = World export value of CPO (US$/ ton)
t = running period
t-1 = previous period

If the ECI value is greater than one (> 1), it indicates that CPO experiences an expansion in market share, reflecting strong competitiveness. On the other hand, when the ECI value is lower than one (<1), it signifies that CPO undergoes a reduction in market share, which indicates weak competitiveness. The ECI value can also be understood as a comparison between the growth rate of a specific commodity in a country and the average growth rate of the same commodity in the global market. Therefore, a country is expected to maintain an ECI value above one to sustain its competitiveness and preserve its position in the global market (Sitepu *et al*., 2024).

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RESULTS AND DISCUSSION

COMPARATIVE ADVANTAGE ANALYSIS

The analysis of comparative advantage was conducted using RCA method. The RCA value is applied to evaluate and compare the comparative advantage of Indonesian CPO with that of major CPO exporting countries in the global market (Nurwansyah et al., 2024). The following is a table of the results of the development and explanation of the value of RCA CPO Indonesia. Malaysia, and Thailand in 2014 to 2024:

Table 2. The Value of RCA of Indonesian CPO Exports 2014-2024

Year	Revealed Comparative Advantages (RCA)		
	Indonesia	Malaysia	Thailand
2014	46,6	28,5	1,1
2015	52,7	27,7	6,5
2016	49,1	26,5	0,1
2017	55	17	1,3
2018	49,6	19,4	1,5
2019	55,8	20,8	1,1
2020	50,9	21,9	0,8
2021	22,4	31,9	4,5
2022	21,7	23,8	7,5
2023	27,4	22,4	5,9
2024	25,3	24,8	6

Source: Comtrade, 2026 (processed)

The RCA values of Indonesia's CPO exports 2014-2024 were consistently above one (>1), which means that Indonesia consistently has a comparative advantage in the international market. The RCA Index is indeed widely used to assess trade competitiveness based on the export performance of a commodity. In the 2014-2019 period, Indonesia's RCA value was very high and relatively stable in the range of 46.6 – 55.8, reflecting Indonesia's strong position as a CPO exporter. This condition is supported by the large size of plantation land, large production capacity, and relatively efficient production costs, in line with Utsaha *et al*., (2022) who argued that the strong position of Indonesia's CPO industry is mainly attributed to its natural resource availability and the broad production scale of the national palm oil sector.

However, the RCA value had fallen sharply in 2021 (22.4) and 2022 (21.7) due to trade policy factors, market conditions, and global demand dynamics, although it still showed superiority because the value was still > 1. This is in line with Pratama *et al*., (2024) who show that changes in global policies and markets can affect RCA even though comparative advantages remain. In 2023-2024, the RCA value increased again, indicating a recovery in competitiveness, and in general Indonesia is able to maintain RCA above one consistently. This is in line with the study by Anggit *et al*., (2012) who said that despite the annual variation, Indonesia still maintains the RCA value above one consistently.

When compared with other ASEAN palm oil producing countries such as Malaysia and Thailand, Indonesia's RCA value was generally higher during most of the observed period. This indicates that Indonesia has a stronger export specialization in CPO compared to its regional competitors. However, Malaysia briefly surpassed Indonesia in 2021, indicating that competition in the ASEAN palm oil trade remains dynamic. Meanwhile, Thailand recorded relatively lower RCA values compared to both Indonesia and Malaysia.

Based on the analysis, Indonesia's CPO exports showed a consistently high level of comparative advantage throughout the 2014-2024 period. Despite fluctuations due to domestic policies and global market dynamics, Indonesia as the world's main CPO exporter is maintained. Therefore, it is important to maintain the stability and sustainability of export policies so that these advantages can be maintained.

COMPETITIVE ADVANTAGE ANALYSIS

Competitive advantage is analyzed using ECI which measures the changes in CPO export competitiveness over time based on export performance in the global market (Wijaya & Simamora, 2024). Table 2 presents the development of RCA values for Indonesia, Malaysia, and Thailand from 2014 to 2024.

Table 3. ECI Value of Indonesia's CPO Exports 2014-2024

Export Competitiveness Index Indonesia		
Year	**ECI**	**Competitiveness Status**
2014	0,881217409	Downward
2015	1,108064025	Increase
2016	0,923829209	Downward
2017	1,185926423	Increase
2018	0,874689595	Downward
2019	1,078933417	Increase
2020	0,952165311	Downward
2021	0,494374517	Downward
2022	1,095608958	Increase
2023	1,166768132	Increase
2024	0,944696622	Downward

Source: Comtrade, 2026 (processed)

Based on table 3 above, the value of Indonesia's Export Competitiveness Index (ECI) for the period 2014-2024 shows fluctuation, with values alternating above and below the number one in certain years, thus reflecting the dynamic competitiveness of exports. In 2014, the ECI was at 0.88 which indicates a weakening of competitiveness, then increased in 2015 to 1.11 which indicates an improvement in export performance. The 2016-2019 period again showed an up-and-down pattern, which confirms that Indonesia's CPO competitiveness is greatly influenced by global market conditions the finding is in line with Utsaha *et al*., (2022) who stated that the competitiveness of Indonesia's CPO exports is dynamic and sensitive to changes in the international market.

In the 2020-2021 period, Indonesia's CPO ECI value was again below one, with the largest decline occurring in 2021 at 0.49 which shows a significant weakening of competitiveness due to global trade disruptions and policy influences. This is in line with research (Nurcahyani & Salqaura, 2023) which states that changes in global market policies have a direct impact on the movement of ECI values. In 2022-2023, competitiveness improved again because the ECI was above one, but dropped again in 2024 to 0.94. This shows that although Indonesia's CPO has a comparative advantage, its competitive competitiveness is not stable and is very sensitive to international market dynamics, as emphasized in Khalish, (2023) who states that fluctuations in the value of ECI reflect the sensitivity of export competitiveness to changes in international markets.

The ECI analysis show that although Indonesia's CPO has an important role in the international market, its competitiveness level is still heavily influenced by global conditions and domestic policies. Therefore, sustainable efforts and strategies are needed so that Indonesia's CPO export competitiveness can be maintained and more stable in the future.

LINKAGE BETWEEN COMPARATIVE AND COMPETITIVE ADVANTAGE

The results show that the Revealed Comparative Advantage (RCA) of Indonesia's crude palm oil (CPO) exports during the 2014-2024 period consistently remained above one, indicating a strong comparative advantage in international trade. Meanwhile, the Export Competitiveness Index (ECI) shows a fluctuating pattern, with values alternating above and below one in several periods. This difference in pattern indicates that although of export competitiveness over time does not always show a consistent upward trend.

Thus, the findings indicate that a high comparative advantage is not always accompanied by stable competitive advantage. The RCA value reflects the degree of specialization and the relative position of a commodity in a country's export structure, while the ECI value describes changes in export competitiveness in maintaining market share over time. Therefore, the difference between these two indicators illustrates that although Indonesia holds a strong position in CPO trade the dynamics of export performance may vary across periods.

POLICY IMPLICATIONS

To strengthen the competitiveness of Indonesia's Crude Palm Oil exports, the government needs to improve productivity and production efficiency through concrete measures such as accelerating palm oil replanting programs promoting the adoption of modern cultivation technologies, and improving logistics and transportation infrastructure that support export distribution. These efforts are important to ensure that the strong comparative advantage reflected in

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the high RCA value can be translated into more stable and sustainable export performance. In addition, policies aimed at improving supply chain efficiency and stabilizing export-related costs are necessary to reduce fluctuations in competitiveness, as indicated by the ECI.

In addition, Indonesia needs to strengthen its export strategy in the ASEAN market to maintain and expand its position in regional CPO trade. By enhancing export performance and maintaining competitiveness within the ASEAN region, Indonesia can better sustain its market share and reinforce its role as one of the main CPO exporters in the region.

CONCLUSIONS AND SUGGESTIONS

CONCLUSIONS

1. The findings of the RCA analysis indicated a figure greater than one (>1), which indicates that Indonesia's CPO exports possess a clear strong comparative
2. The findings of the ECI results indicate that the competitive strength of Indonesia's CPO exports has varied, indicating that Indonesia's position within the ASEAN market remains unstable.

SUGGESTIONS

1. The government and agribusiness actors need to improve productivity and production efficiency to strengthen Indonesia's CPO export competitiveness. In addition, strengthening export strategies in the ASEAN market is necessary to maintain and increase Indonesia's market share in regional CPO trade.

REFERENCES

Anggit, R. Y. A. ., Suyastiri, N. M. Y. ., & Suprihanti, A. (2012). Analisis Daya Saing Crude Palm Oil (CPO) Indonesia di Pasar Internasional. *Jurnal Sosial Ekonomi Pertanian Dan Agribisnis (SEPA)*, *9*(1), 125–133. https://doi.org/10.20961/sepa.v9i1.48813.

Aprilia, C. (2023). Kekuatan Pembangunan Ekonomi Mengubah Makna Ekonomi Komparatif Menjadi Kekuatan Ekonomi Kompetitif. *Jurnal Ilmiah Multidisiplin*, *2*(2), 108–113. https://pdfs.semanticscholar.org/663b/d0c17eb77f0e88f96cdf647d53ca4e716aae.pdf.

Azida, S., Yamin, M., & Riswani. (2023). Analisis Daya Saing Crude Palm Oil (CPO) Indonesia Di Pasar Internasional. *AGRICA: Journal of Sustainable Dryland Agriculture*, *16*(1), 84–94. https://e-journal4.uniflor.ac.id/index.php/Agr/article/4download/2732/1802.

Biky, M. A., & Hermawan, A. (2025). Analisis Daya Saing dan Faktor-Faktor Yang Mempengaruhi Kakao Indonesia di Pasar Global. *AGROTEKSOS*, *35*(1), 1–14. https://agroteksos.unram.ac.id/index.php/Agroteksos/article/view/1283.

BPS. (2026). *Indonesian Plantation Statistics 2024*. Badan Pusat Statistik. https://www.bps.go.id/id/statistics-table/2/MjU2NiMy/produksi-tanaman-perkebunan-menurut-provinsi-dan-jenis-tanaman.html.

Comtrade, U. (2026). *United Nations Commodity Trade Statistics*. Data Trade. https://comtradeplus.un.org/TradeFlow.

Firmansyah, Widodo, W., Karsinah, & Oktavilia, S. (2017). Export Performance and Competitiveness of Indonesian Food Commodities. *Journal of Economics and Policy*, *10*(2), 289–301. https://scispace.com/pdf/export-performance-and-competitiveness-of-indonesian-food-ubfqlqlepp.pdf.

Harya, G. I., Fauzi, A., Hanani, N., Asmara, R., Muhaimin, A. W., Herjanto, H., & Budwitjaksono, G. S. (2025). Analysis of the relationship among technical efficiency, competitive strategy, and export performance in the cocoa agroindustry in Indonesia. *Journal of International Food & Agribusiness Marketing*, *37*(3), 540–557. https://doi.org/10.1080/08974438.2024.2369310.

Harya, G. I., Hanani, N., Asmara, R., & Muhaimin, W. (2023). *Dynamic capabilities for leading industries : proof of export commitment of chocolate products*. *29*(4), 579–589. https://www.cabidigitallibrary.org/doi/pdf/10.5555/20230358712.

Harya, G. I., Indah, P. N., Sudiyarto, Widayanti, S., & Pratiwi, L. F. L. (2018). *Competitiveness and Development Perspective of Processed Cocoa Industries in East Java*. 1. https://doi.org/10.1063/1.5061855.

Hotma, P. (2024). Analisis Komoditas Ekspor Crude Palm Oil dengan Pendekatan Gravity Model : 2001-2020. *Educationist: Journal of Educational and Cultural Studies*, *3*(1), 112–117. https://jurnal.litnuspublisher.com/index.php/jecs/article/view/224.

Khalish, F. (2023). Keunggulan Komparatif dan Kompetitif Komoditas Rempah Indonesia di Pasar Uni Emirat Arab. *Jurnal Multidisiplin Indonesia*, *2*(8), 2256–2276. https://jmi.rivierapublishing.id/index.php/rp/article/view/441.

Nurcahyani, M., & Salqaura, S. S. (2023). Analisis Kinerja Ekspor Minya Atsiri Indonesia di Pasar Internasional. *Jurnal Agrifo*, *8*(1), 51–57. https://ojs.unimal.ac.id/agrifo/article/view/11771.

Nurwansyah, A., Nuraini, C., & Apriyani, D. (2024). Daya Saing Ekspor Lemak Kakao Indonesia di Pasar Internasional. *Forum Agribisnis*, *14*(1), 50–58. https://doi.org/10.29244/fagb.14.1.50-58.

Patone, C. D., Kumaat, R., & Mandeij, D. (2020). Analisis Daya Saing Ekspor Sawit Indonesia Ke Negara Tujuan Ekspor Tiongkok dan India. *Jurnal Berkala Ilmiah Efisiensi*, *20*(3), 22–32. https://ejournal.unsrat.ac.id/index.php/jbie/article/download/30423/29316.

Pratama, K. P. M. P., Sukmawati, C. P., & Abidin, A. Z. (2024). Global Dominance in Crude Palm Oil (CPO): Strategic Factors Shaping Indonesia's Competitive Edge-A Panel Data Approach. *Buletin Ilmiah Litbang Perdagangan*, *18*(2), 141–158. https://ejournal.brin.go.id/bilp/article/view/7205.

Purwono, R., Sugiharti, L., Handoyo, R. D., & Esquivias, M. A. (2022). Trade Liberalization and Comparative Advantage: Evidence from Indonesia and Asian Trade Partners. *Economies*, *10*(4), 80. https://www.mdpi.com/2227-7099/10/4/80.

Safriadi, A., Suharno, & Adhi, A. K. (2024). Daya Saing Kacang Mete Indonesia di Pasar Negara Tujuan Ekspor. *Forum Agribisnis*, *14*(2), 60–72. https://journal.ipb.ac.id/index.php/fagb/article/view/54314.

Sitepu, R. K.-K., Tambunan, G. G., Damanik, D. Y., Tarigan, E. E. B., Salsabila, R. F., & Stis, M. D. (2024). Daya Saing Ekspor Lada Indonesia ke Vietnam, Amerika Serikat dan India. *Jurnal GICI: Jurnal Keuangan Dan Bisnis*, *16*(1), 11–18. https://journal.stiegici.ac.id/index.php/jurnal-gici/article/view/230.

Sulistiawati, P. (2023). Analisis Pengaruh Konsumsi Domestik, Nilai Tukar Rupiah, dan Harga CPO Internasional Terhadap Volume Ekspor Minyak Kelapa Sawit di Indonesia. *Jurnal Ilmu Ekonomi*, *07*(04), 570–582. https://ejournal.umm.ac.id/index.php/jie/article/view/28132.

Susanto, D. A. (2020). Daya Saing Ekspor Produk CPO Indonesia dan Potensi Hilirisasi diolah Menjadi Biodiesel. *Jurnal Perspektif Bea Dan Cukai*, *4*(2), 64–76. https://doi.org/10.31092/jpbc.v4i2.952.

Utsaha, A., Suharno, & Utami, A. D. (2022). Perbandingan Daya Saing Crude Palm Oil (CPO) Antara Indonesia dan Malaysia di Pasar Internasional. *Jurnal Penelitian Kelapa Sawit*, *30*(2), 95–108. https://doi.org/10.22302/iopri.jur.jpks.v30i2.177.

Wijaya, T. Y. E., & Simamora, L. (2024). Analisis Daya Saing Ekspor Biji Kakao Indonesia di Pasar Internasional. *Jurnal Ekonomi Pertanian Dan Agribisnis (JEPA)*, *8*(4), 1428–1443. https://jepa.ub.ac.id/index.php/jepa/article/view/ub.jepa.2024.008.04.16.

Zuhdi, F., & Rambe, K. R. (2021). Daya Saing Ekspor Cengkeh Indonesia di Pasar Global. *SEPA: Jurnal Sosial Ekonomi Pertanian Dan Agribisnis*, *17*(2), 165–173. https://jurnal.uns.ac.id/sepa/article/view/43784.