

BIODIVERSITY LOSS TO PRODUCE PALM OIL IS HIGHER THAN OTHER VEGETABLE OILS, ISN'T TRUE?

By
PASPI-Monitor

RESUME

The rapid expansion of oil palm plantations in the last 20 years is often accused of having had an impact on biodiversity loss. This issue has also become one of the arguments to justify the protection of the international trade in palm oil, giving rise to the movement/campaign of "No Palm Oil" or "Palm Oil-Free". Does this point of view or movement/campaign have a rational argument? Studies by Beyer et al. (2020) and Beyer & Rademacher (2021) show a comparison of biodiversity loss globally between vegetable oils by comparing land cover biodiversity between after and before conversion to vegetable oil crops by measuring the indicator Species Richness Loss (SRL) per liter of oil produced as a measure of biodiversity loss. The study revealed that the SRL of palm oil is the lowest. This means that the biodiversity loss from palm oil production is the lowest compared to other vegetable oils. The movement/campaign "No Palm Oil" or "Palm Oil Free" triggers a higher biodiversity loss globally. Reducing the consumption of palm oil, which is then substituted by increasing the consumption of other vegetable oils, is the same as increasing biodiversity loss globally.

INTRODUCTION

Top-4 vegetable oil in the world, namely soybean oil, rapeseed oil, sunflower seed oil, and palm oil, account for 85-90 percent of the world's total vegetable oil production. Based on 2020 data, the world's soybean plantations cover 127 million hectares, rapeseed plantations cover 35.5 million hectares, sunflower plantations cover 27.3 million hectares, and oil palm plantations cover 24 million hectares (USDA, 2021).

Land-use change from the prior area of vegetable oil plants also changes in biodiversity. Therefore, changes in biodiversity in the process of land-use change in the global ecosystems are commonplace.

The rapid expansion of oil palm plantations in the last 20 years is often accused of having had an impact on biodiversity loss (Fitzherbert et al., 2008; Koh and Wilcove, 2008; Vijay et al., 2016; Qaim et al., 2020). The issue of linking oil palm plantations with biodiversity loss has become one of the arguments justifying the protection of the international palm oil trade.

It is interesting to discuss allegations about the impact of biodiversity loss on oil palm plantations, which globally are the smallest in size (area) compared to the areas of other vegetable oils such as sunflower seed oil, rapeseed oil, and soybean oil. Is the biodiversity loss in oil palm plantations higher than in soybean, rapeseed, or sunflower plantations?

The issue of biodiversity loss is not just an accusation, but has also become an anti-palm movement: "No Palm Oil" or "Palm Oil Free." The developed doctrine is that stopping palm oil consumption internationally will stop biodiversity loss. Does this point of view have a rational argument that can make biodiversity loss decrease?

This article will discuss the two important questions raised above, related to the comparison of biodiversity loss in palm

oil compared to soybean oil, rapeseed oil, and sunflower oil.

COMPARISON OF BIODIVERSITY LOSS AMONG VEGETABLE OILS

Oil palm plantations are developed in the tropical zone, which is the zone of the earth's surface that is rich in sunlight and water. In contrast to other major vegetable oil crops (soybean oil, rapeseed oil, sunflower seed oil), which are relatively small in size and are classified as annual or seasonal plants, oil palm is a perennial plant that has a relatively large size, grows relatively fast, and has a canopy cover of close to 100 percent.

Oil palm plants grown with minimum tillage, minimum weeds, and haven't ratooned will grow and produce for one long cycle (life span) of 25–30 years. In addition to the main product in the form of oil, palm oil also produces a large amount of biomass.

Based on USDA data (2021), in 2020, palm oil productivity reached around 4.4 tons per hectare. Meanwhile, soybean oil productivity only reached 0.47 tons per hectare, rapeseed oil productivity reached 0.78 tons per hectare, and sunflower seed oil productivity reached 0.7 tons per hectare.

With these characteristics, oil palm plantations should theoretically support the growth of biodiversity, except for large mammals. During land clearing or planting, some of the biodiversity (fauna) will briefly migrate to nearby locations, but after some time, it will return to oil palm plantations.

Beyer et al. (2020) and Beyer & Rademacher (2021) conducted a study on the comparative biodiversity loss globally between vegetable oils by comparing land cover biodiversity between after and before conversion to vegetable oil crops. The study measures the indicators of the footprint of Species Richness Loss (SRL) per liter of oil produced as a measure of biodiversity loss (Figure 1).

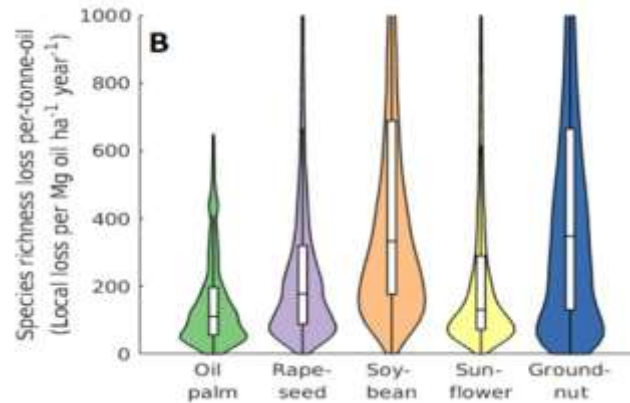


Figure 1. Comparison of Species Richness Loss Between Vegetable Oils (Beyer *et al.*, 2020).

The results of the study used the SRL of palm oil as a comparison and revealed that the SRL of soybean oil was 284 percent above the SRL of palm oil, the SRL of rapeseed oil was 79 percent above the SRL of palm oil, and the SRL of sunflower seed oil was 44 percent above the SRL of palm oil. This means that, with SRL as an indicator of biodiversity loss, it shows that palm oil is the vegetable oil with the lowest biodiversity loss. Meanwhile, the vegetable oil with the greatest biodiversity loss is soybean oil.

The interesting thing about this study is that it also shows that the SRL of each of the world's main producing countries of vegetable oil is different (Beyer and Rademacher, 2021). For palm oil producers, the SRL in Indonesia, Malaysia, and Thailand is lower than the SRL in Nigeria. For soybean oil, the SRL of Brazil and Argentina is much higher than the SRL in the United States and India. Meanwhile, for rapeseed oil, the SRL was the lowest in Canada and Germany, while the SRL was the highest in India and Australia. For sunflower seed oil, the SRL is lowest in France and the United States. Then, followed by Russia, Ukraine, and China.

THE CAMPAIGN OF "NO PALM OIL" CAUSES LOSS OF BIODIVERSITY

The study by Beyer *et al.* (2020) found that for every liter of vegetable oil, palm oil has the lowest biodiversity loss compared to other major vegetable oil sources. This shows that if biodiversity loss is the most important consideration in the production and consumption of vegetable oil in the world,

then palm oil will be the best choice for the global community.

This study should also correct the negative perceptions of the European Union community towards palm oil, which is associated with biodiversity loss (Salleh, 2021). Likewise, the NGO movement or campaign of "No Palm Oil" or "Palm Oil Free" also tends to be contradictory. Ban or reduce palm oil consumption by shifting global public consumption towards other vegetable oils, which leads to biodiversity loss. This is misleading and detrimental to society as a whole.

This study is also in line with the IUCN study (2018), which states that palm oil is the most efficient vegetable oil crop in land use compared to other vegetable oil crops, which require nine times as much land to produce the same volume of oil. Replacing palm oil with other vegetable oils will lead to greater exploitation of land and threaten biodiversity.

What needs to be an international movement is to encourage increased productivity of all the world's main vegetable oils. The results of a study by Beyer and Rademacher (2021) reveal that if the productivity of the world's main vegetable oils is increased closer to its potential (theoretical) productivity, it can reduce the biodiversity loss in the production of these vegetable oils.

Increased productivity will reduce palm oil's SRL by 24 percent and place it with the lowest SRL score compared to other vegetable oil SRLs. Meanwhile, the SRL for soybean oil decreased by 23 percent, the SRL for rapeseed oil decreased by 35 percent and

the SRL for sunflower seed oil decreased by 37 percent. With the increase in productivity, the variation in SRL for each producing country of vegetable oil will be smaller.

CONCLUSION

Based on the indicator Species Richness Loss (SRL), palm oil is the vegetable oil with the lowest biodiversity loss compared to other vegetable oils. This shows that palm oil is more sustainable. Meanwhile, the vegetable oil with the highest biodiversity loss is soybean oil.

The campaign "No Palm Oil" or "Palm Oil Free" actually causes a higher biodiversity loss globally. Reducing the consumption of palm oil, which is then substituted by increasing the consumption of other vegetable oils, is the same as increasing biodiversity loss globally.

The study also suggests that increasing the productivity of the world's main vegetable oils can reduce the burden of biodiversity loss for each unit of vegetable oil consumed. Therefore, increasing productivity needs to be a global movement, including preserving biodiversity or reducing the level of biodiversity loss.

REFERENCES

- [IUCN] International Union for Conservation of Nature. 2018. Kelapa Sawit dan Keanakeragaman Hayati. Swiss
- Beyer RM, AP Durán, TT Rademacher, P Martin, C Tayleur, SE Brooks, D Coomes, PF Donald, FJ Sanderson. 2020. *The Environmental Impacts Of Palm Oil And Its Alternatives*. <https://www.researchgate.net/publication/339308039>
- Beyer R, Rademacher T. 2021. Species Richness and Carbon Footprints of Vegetable Oils: Can High Yields Outweigh Palm Oil's Environmental Impact? *Sustainability*. 13: 1813. <https://doi.org/10.3390/su13041813>.
- Danielsen F, Beukema H, Burgess ND, Parish F, Brühl CA, Donald PF, Murdiyarso D, Phalan, B, Reijnders L, Struebig, M. 2009. Biofuel Plantations on Forested Lands: Double Jeopardy for Biodiversity and Climate. *Conserv Biol*. 23: 348–358.
- Fitzherbert EB, Struebig MJ, Morel A, Danielsen F, A Brühl, Donald PF, Phalan B. 2008. How Will Oil Palm Expansion Affect Biodiversity? *Trends Ecol*. 23:538–545.
- Foster WA, Snaddon JL, Turner EC, Fayle TM, Cockerill TD, Ellwood MDF, Broad GR, Chung AYC, Eggleton P, Khen CV. 2011. Establishing The Evidence Base For Maintaining Biodiversity And Ecosystem Function In The Oil Palm Landscapes Of South East Asia. *Philos. Trans. R. Soc. B: Biol. Sci*. 366: 3277–3291.
- Koh LP, Wilcove DS. 2008. Is Oil Palm Agriculture Really Destroying Tropical Biodiversity? *Conserv. Lett*. 1: 60–64.
- Qaim M, KT Sibhatu, H. Siregar, I Grass. 2020. Environmental, Economic, and Social Consequences of the Oil Palm Boom. *Annu. Rev. Resour. Econ*. 12:321–44.
- Savilaakso S, Garcia C, Garcia-Ulloa J, Ghazoul J, Groom M, Guariguata MR, Laumonier Y, Nasi, R, Petrokofsky G, Snaddon J. 2014. Systematic Review Of Effects On Biodiversity From Oil Palm Production. *Environ. Evid*. 3: 1–21.
- USDA [United States of Department Agricultural]. 2021. Oilseed: World and Market Trade 2020 [internet]. Tersedia pada: <https://www.fas.usda.gov/data/oilseed-s-world-markets-and-trade>

Vijay V, Pimm LS, Jenkins CN, Smith SJ. 2016. The Impacts of Oil Palm on Recent Deforestation and Biodiversity Loss. *Plos One*. 1-19.

Economic Aspects. *IOP Conf. Series: Earth and Environmental Science*

Yasinta T, M Karuniasa. 2021. Palm Oil-Based Biofuels And Sustainability In Indonesia: Assess Social, Environmental And

