

Commentary

No oil crop is inherently bad—But our thinking might be

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Public debates about vegetable oil are often driven more by myth than by fact, oversimplifying complex issues and vilifying or praising certain oils while overlooking the harms (or benefits) linked to others. A better-informed approach focuses not on the crop but on management practices, governance, and transparency.

Rethinking “good” and “bad” oil crops

The stakes are rising. Vegetable oils are among the fastest-growing agricultural commodities, reflecting rapid growth in global demand and consumption. Oil crops already occupy more than one-third of global cropland¹ and now face additional pressures from geopolitical shifts and policy measures such as tariffs. With area-based oil yields varying by more than an order of magnitude, crop and production choices matter.² For example, oil palm produces four to ten times more oil per hectare than most temperate oil crops and is profitable in contexts where few crops are,¹ which helps explain its rapid global expansion despite its environmental controversies.

Most public information around vegetable crops originates with the vested interests of producers, competitors, and campaigners—nuance and objectivity are scarce. A clear and objective understanding of oil crops and their impacts is crucial, but simplified narratives dominate public perceptions and politics.³ While some oils, such as palm oil, are frequently vilified, others, such as olive or coconut oil, are often considered benign,³ at least in the Global North. Despite the simplistic labels, outcomes are shaped by management practices and governance, not by the crops themselves.¹ Drawing on a recent broad-ranging review¹ led by the International Union for Conservation of

Nature (IUCN), we challenge dominant narratives and discuss how management practices, media framing, and governance structures shape these outcomes. We discuss future scenarios and policy recommendations, calling for greater transparency and a shift from crop-based to system-based impact assessments. A nuanced, evidence-based approach is urgently needed.

Outcomes are caused by practices, not crops

All oil crops can be associated with wasteful use of water; harmful use of fertilizers, herbicides, and pesticides; and the conversion and loss of natural ecosystems. Most are also associated with reported human rights abuses and exploitation.¹ These negative outcomes depend on local governance, market pressure, investment policies, and how well transparency along the value chains is enforced. For example, in the tropics, large-scale industrial soybean and maize production has driven Amazonian deforestation⁴ and has been associated with harmful exposure to pesticides,⁵ and coconut production has threatened areas of high species endemism.⁶ Temperate crops such as rapeseed have harmed pollinators, while industrial-scale olive has killed millions of roosting birds,⁷ replaced traditional agroforestry systems,⁸ and has the highest water footprint among oil crops.¹ In some source regions, sesame produc-

tion has been linked to severe human rights abuse.⁹

The outcomes for each crop vary with context. Consider oil palm: it is grown in diverse food systems, from traditional subsistence orchards in West Africa to industrial monocultures of thousands of hectares that feed into global trade.¹ The same plant has different impacts depending on the scale of operation, intensity of farming, and length and governance of the value chain. Industrial and smallholder oil palm plantations now cover an estimated 30 million hectares (Mha),^{10,11} and their often severe environmental consequences are well known. Traditional cultivation, however, has been largely overlooked in global statistics and studies and is rarely considered by policymakers despite its regional importance. A recent study estimated that 6.5 Mha of mostly subsistence-level oil palm in West and Central Africa (ca. 18% of the globally planted oil palm) was previously unmapped and overlooked in national and international statistics.¹⁰ The lack of such data reinforces biased perceptions centered on crops rather than practices.

The consequences of selective scrutiny

As consumers, how do we make informed purchases of products containing vegetable oil that align with our values when there is inadequate information on how these products were produced (Figure 1)?



Few commercial products volunteer much insight into their origin, let alone the social and environmental consequences of their production.¹² Some labels may attempt to reassure or influence us. For example, you may have noticed products boldly stating “contains no palm oil.” However, how much of this messaging reflects genuine sustainability concerns versus brand marketing or misinformation? Take, for example, the widely cited claim that “50% of consumer goods contain palm oil”. This assertion is often repeated but poorly substantiated (aside, possibly, in Norway), with recent analyses showing that 7.9% of products in three European and Australian supermarkets explicitly list palm oil as an ingredient, while soybean and maize feature more often.¹² Although concerns over palm oil’s role in deforestation have sparked regulatory responses and consumer boycotts, public discourse seldom reflects nuance—what replaces palm oil, and at what cost? When product claims are made, are they well justified, and do they result in the positive outcomes consumers seek?

Well-intentioned consumers struggle to make good choices in the absence of reliable information, much like buying a pot of “palm-oil-free” peanut butter that does not disclose what the palm oil was replaced by or how and where the peanuts were produced. In the same way, policymakers are often forced to navigate sustainability challenges using incomplete or selectively presented data. This underscores the need for transparency across the entire industry. Even with transparent supply chains, however, many consumers and policymakers struggle to interpret data due to their technical nature or fragmented presentation; after all, who can readily identify what commonly used oleochemicals such as ammonium lauryl sulfate, arachidyl glucoside, or behentrimonium chloride are or derive from? This leads to confusion, information overload, and a lack of actionable insights.



Figure 1. Caught between labels: The consumer’s dilemma

Given the confusing, distorted, and opaque information available to consumers, it is nearly impossible to make informed purchasing choices of vegetable oil containing products that align with one’s values. Credit: Abiyasa Abiguna.

Transparency requires looking beyond individual crops to apply the same level of scrutiny across the entire vegetable oil sector. After all, consumers rarely make choices in isolation. Perceptions are shaped by narratives, and these narratives often arise from uneven or selective attention to particular crops or issues. Cultural biases and media framing often focus attention on issues such as deforestation while downplaying less visible concerns, such as land rights or labor abuses.^{1,3} Furthermore, consumer perceptions of edible oils, such as olive oil and palm oil, are shaped by a range of factors, including taste preferences, cultural associations, health narratives, and environmental concerns. Olive oil is generally perceived positively, largely due to its history and connection with Mediterranean diets. In contrast, palm oil is often viewed negatively, especially in the Global North, where concerns about tropical deforestation and biodiversity loss dominate public discourse.³ Without a balanced, evidence-based assessment of all oil crops and their practices and impacts, consumers and policymakers risk making decisions based on narratives rather than facts.

Good or bad for whom? Exploring futures

Crops don’t destroy forests and other biodiverse habitats—people do. The real question isn’t which oils are good or bad, but who profits, who loses, and what rules shape the game. The IUCN review explored ten scenarios and their implications.¹ We here briefly discuss three that highlight the importance of governance, market access, and local agency in shaping outcomes.

Scenario 1: Monoculture as the only option: Industrial monocultures can yield 20–40% more than smallholder farms, lowering consumer prices and sparing land. But such efficiency comes at a cost: reduced biodiversity, displaced smallholder farmers, and greater vulnerability to pests and economic shocks. These outcomes jeopardize livelihoods, centralize power, erode local food cultures, and undermine the resilience of food systems.

Scenario 2: A world without trade barriers: Historically, the vegetable oil sector has benefited from low tariffs and trade liberalization. This resulting specialization has increased global supply and attracted foreign investment. However, it has also facilitated the concentration of market power among transnational agrifood corporations. As smaller producers are marginalized, environmental and labor protections are weakened, contributing to environmental degradation and land conflicts.

Scenario 3: Universal certification: Mandatory certification schemes have the potential to enhance environmental and social outcomes, particularly among large-scale producers who can absorb the costs. However, smallholders, who are responsible for over one-third of global food production,¹³ face significant barriers. Certification demands financial resources, infrastructure, and institutional support that are often lacking or prohibitively expensive. Without targeted support, certification may exacerbate existing inequalities rather than resolving them.

The “best” options depend on whose interests are considered and what is weighed. Future policies must grapple with complexity, trade-offs, and power imbalances if they are to deliver equitable and environmentally low-impact food systems.

From insights to action: A call for systemic change

Changing perceptions and decision-making

Narratives shape how people perceive and weigh choices and how policymakers respond. Public debate, donor agendas, and resulting policies are influenced by the same narratives that influence consumers. We need revised narratives that balance the nuanced and complex realities of vegetable oil production choices and value chains and emphasize evidence-informed decision-making. Making this shift requires partnerships with trusted media and influencers to reach diverse audiences with engaging, fact-based content. It also involves co-creating narratives with rural communities and farmers, not just corporate voices and government experts.

To work in practice, this means funding and supporting initiatives that reveal both the trade-offs and opportunities in vegetable oil systems. It also requires confronting biases and preconceptions and developing communication tools that help audiences understand and embrace the diversity of systems and their different implications. Collaborations with behavioral scientists, educators, and civil society organizations can help tailor messages to different cultural and political contexts, making complex issues more relatable and actionable.

Rather than labeling oils as good or bad, we need approaches that reveal performance on biodiversity, human rights, and land use—enabling decision-makers and consumers to engage with local outcomes rather than generalized slogans. Open datasets and participatory platforms can help individuals understand how oils are produced and assess their impacts more accurately. Emerging technologies, such as QR codes, can link product ingredients and practices to consumer values.

Turning transparency into accountability

Better information, transparency, and governance—though helpful and often

necessary—may not be sufficient to guarantee substantial improvements. Sustainability regulations frequently face opposition from those who benefit from opaque supply chains and asymmetrical market power.¹⁴ Agribusiness conglomerates and retailers often play a decisive role in whether transparency efforts are robustly enforced or diluted to protect existing models. This tension between regulatory oversight and commercial self-interest defines the limits of accountability for both policymakers and consumers.

Overcoming this resistance requires multi-pronged strategies.¹⁴ First, governments and multilateral institutions must close loopholes in transparency laws and introduce penalties for non-compliance, including for downstream actors such as retailers and financiers. Second, public procurement and trade policies can be leveraged to reward companies that meet high sustainability and traceability standards, thereby shifting incentives across the supply chain.¹⁵ Third, civil society and independent media must play watchdog roles, exposing misinformation and inconsistencies between claims and realities. Finally, smallholder representation in governance processes must be strengthened to ensure that regulatory frameworks reflect more than industrial interests.

Responsible sourcing and governance

Informed decisions should not rely solely on individuals. Regulatory and policy interventions are essential to enforce ethical production as the standard rather than the exception. Businesses and governments must also work together to remove barriers that make responsible choices more costly or inaccessible.

Governments, producers, and retailers must collectively ensure that good practices, transparency, and traceability become the norm. Although there will be costs, especially for smallholder producers, targeted support can enable them to adopt desirable practices and meet traceability requirements. Systemic change demands action, not assumptions—from governments, industries, and consumers alike.

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DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work, the authors used ChatGPT-4o to check the logical flow of the text and identify redundancies. After using this service, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

REFERENCES

1. Meijaard, E., Virah-Sawmy, M., Newing, H.S., Ingram, V., Holle, M.J.M., Pasmans, T., Omar, S., van den Hombergh, H., Unus, N., Fosch, A., et al. (2024). Exploring the future of vegetable oils. Oil crop implications - Fats, forests, forecasts, and futures (IUCN and SNSB). <https://doi.org/10.2305/KFJA1910>.
2. Chiriaco, M.V., Galli, N., Latella, M., and Rullii, M. C. (2025). Pressure on Global Forests: Implications of Raising Vegetable Oils Consumption Under the EAT-Lancet Diet. *Glob. Chang. Biol.* 31, e70077. <https://doi.org/10.1111/gcb.70077>.
3. Candellone, E., Aleta, A., Ferraz de Arruda, H., Meijaard, E., and Moreno, Y. (2024). Understanding the Vegetable Oil Debate and Its Implications for Sustainability through Social Media. *Commun. Earth Environ.* 5, 391. <https://doi.org/10.48550/arXiv.2308.07108>.
4. Song, X.-P., Hansen, M.C., Potapov, P., Adusei, B., Pickering, J., Adami, M., Lima, A., Zalles, V., Stehman, S.V., Di Bella, C.M., et al. (2021). Massive soybean expansion in South America since 2000 and implications for conservation. *Nat. Sustain.*, 784–792. <https://doi.org/10.1038/s41893-021-00729-z>.
5. El-Zaemey, S., Heyworth, J., and Fritschi, L. (2013). Noticing pesticide spray drift from agricultural pesticide application areas and breast cancer: a case-control study. *Aust. N. Z. J. Publ. Health* 37, 547–555. <https://doi.org/10.1111/1753-6405.12111>.

6. Meijaard, E., Abrams, J.F., Juffe-Bignoli, D., Voigt, M., and Sheil, D. (2020). Coconut oil, conservation and the conscientious consumer. *Curr. Biol.* 30, R757–R758. <https://doi.org/10.1016/j.cub.2020.05.059>.
7. da Silva, L.P., and Mata, V.A. (2019). Stop harvesting olives at night — it kills millions of songbirds. *Nature* 569, 192. <https://doi.org/10.1038/d41586-019-01456-4>.
8. Vidal, M. (2025). ‘An ecocide’: How olive oil giants are using a mega dam to take over Portugal’s growing region. EURONews. <https://www.euronews.com/green/2025/04/13/an-ecocide-how-olive-oil-giants-are-using-a-mega-dam-to-take-over-portugals-growing-region>.
9. Soliman, A. (2023). Fighting over ‘white gold’: Sesame in Ethiopia and Sudan. <https://www.chathamhouse.org/2023/04/fighting-over-white-gold-sesame-ethiopia-and-sudan>.
10. Descals, A., Sheil, D., Wich, S., Ozgis, M., and Meijaard, E. (2025). Extensive Unreported Non-Plantation Oil Palm in Africa. Preprints. <https://doi.org/10.20944/preprints202502.1589.v1>.
11. (2024). Food and Agriculture Organization Corporate Statistical Database (FAOSTAT). <https://www.fao.org/faostat/en/#data/QCL>.
12. Meijaard, E., Carlson, K., Sheil, D., Zaini, S., and Meijaaard, E. (2025). Does Palm Oil Really Rule the Supermarket? Preprint. <https://doi.org/10.20944/preprints202503.1060.v1>.
13. Ritchie, H. (2021). Smallholders produce one-third of the world’s food, less than half of what many headlines claim” Published online at OurWorldinData.org. Retrieved from: <https://ourworldindata.org/smallholder-food-production>.
14. Clapp, J. (2023). Concentration and crises: exploring the deep roots of vulnerability in the global industrial food system. *J. Peasant Stud.* 50, 1–25. <https://doi.org/10.1080/03066150.2022.2129013>.
15. Gardner, T.A., Benzie, M., Börner, J., Dawkins, E., Fick, S., Garrett, R., Godar, J., Grimard, A., Lake, S., Larsen, R.K., et al. (2019). Transparency and sustainability in global commodity supply chains. *World Dev.* 121, 163–177. <https://doi.org/10.1016/j.worlddev.2018.05.025>.