

THE "NO PALM OIL" CAMPAIGN IS LEADING TO BIGGER SOIL/WATER POLLUTION IN THE WORLD

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RESUME

Because of the use of fertilizers and pesticides, global agricultural activities have the potential to emit pollutants/emissions into the water, and soil. Included in the production of the three main vegetable oils are palm oil, soybean oil and rapeseed oil. The difference in the level of productivity and production technology between them causes the pollutants produced to experience differences. The characteristics of oil palm as a tropical vegetable oil crop, a perennial plant with a production cycle of 25 years, large size and high oil productivity, which result in the use of fewer inputs (fertilizers and pesticides) to produce one ton of palm oil more efficiently than soybeans and rapeseeds. The implication is that the soil/water pollutants generated by palm oil production are also the fewest compared to the two vegetable oil plants. Based on these facts, to minimize pollutants/emissions from water and soil, the global community should choose palm oil as a vegetable oil crop with zero pollutants/zero waste. On the other hand, the reality is that there is a massive "No Palm Oil" or "Palm Oil Free" campaign or movement and policies in importing countries that aim to reduce or "phase out" palm oil in global market. This means that to meet global vegetable oil demand, it only relies on the production of soybean oil, rapeseed oil or other vegetable oils. This has the potential to significantly increase fertilizer and pesticide pollutants/emissions resulting from global vegetable oil production processes. On the other hand, increasing global use of palm oil will reduce global pollutants and emissions from the use of fertilizers and pesticides produced by the global vegetable oil industry. Therefore, various forms of negative campaigns and policies that attack palm oil are very contrary to achieving SDG-14 and SDG-15 because they threaten the sustainability of life in the world's terrestrial and aquatic areas.

INTRODUCTION

Two of the 17 Sustainable Development Goals (SDGs), namely SDG-14 (Life Below Water) and SDG-15 (Life on Land), concern the preservation of ecosystem life both on land and in water. All activities of the global community must protect the terrestrial and aquatic environment for the sake of preserving life.

One of the serious problems facing the terrestrial and aquatic environment is pollution from both community activities and the economic development sector. Increasing the production of global agricultural/plantation commodities by intensification through the use of production inputs such as fertilizers and pesticides is unavoidable. So, fertilizer and pesticide residues from global agricultural and plantation activities have become one of the pollution threats to soil and water.

In this context, the global community needs to be wiser in choosing and promoting production technologies or processes that minimize pollution or residues in the environment. For example, in producing vegetable oil, the global community needs to choose vegetable oil that is more efficient in the use of production inputs so as to prevent soil and water pollution.

According to the FAO (Elbehri et al., 2013), fertilizer and pesticide residues from world palm oil are lower than other vegetable oil crops. Based on the principle of minimizing pollution, palm oil should be endorsed as a global vegetable oil. However, what is happening in the European Union is contrary to empirical facts. The campaign for labeling "No Palm Oil" or "Palm Oil Free" is growing in the European Union. This actually makes the global community further away from alternative uses of vegetable oils that are low in pollutants. In the long term, contradictory phenomena like this make them use vegetable oil plants that are high in pollutants.

This article will discuss the comparison of fertilizer and pesticide residues between palm oil, soybean oil, and rapeseed oil. Then it was continued with a discussion related to the losses of the global community with the campaign "No Palm Oil" or "Palm Oil Free"

which actually increased soil and water pollution globally.

SOIL/WATER POLLUTION IN THE PRODUCTION OF MAIN VEGETABLE OILS

Three main vegetable oils in the world, namely palm oil, soybean oil, and rapeseed oil, have different characteristics. Oil palm are tropical vegetable oil plants that are classified as perennial plants with a production cycle of 25 year, alarge size, and high oil productivity. Meanwhile, soybean and rapeseed are generally subtropical crops, seasonal crops, and the level of oil productivity is relatively low compared to palm oil.

Data from the USDA (2021) and Oil World (2020) show that there has been a significant growth in the area of the three main vegetable oil crops in the world in the last 20 years. Soybean areas increased from 75.5 million hectares to 127 million hectares between 2000 and 2020. The same thing happened with the increase in the area of rapeseed plantations from 24.7 million hectares to 35.5 million hectares. Oil palm plantations also experienced an increase, but the growth was lower than the soybean and rapeseed areas, from 10 million hectares to 24 million hectares.

Meanwhile, world vegetable oil production data for 2020 (USDA, 2021) shows the production volume of the three vegetable oils are soybean oil of 58.7 million tons, rapeseed oil of 27.3 million tons, and palm oil of 83.5 million tons. So the oil productivity per hectare for each of these vegetable oil plants is palm oil (CPO+CPKO) reaching 4.3 tons per hectare, meanwhile the productivity of rapeseed and soybean is only 0.7 tons per hectare and 0.45 tons per hectare.

In the process of producing vegetable oil, the three plants use the same production inputs, namely Nitrogen (N), Phosphorus (P_2O_5), and pesticides. However, to produce each ton of vegetable oil, the use of fertilizers and pesticides among the three vegetable oil crops is relatively different.

In general, for every ton of vegetable oil produced in soybean production technology, more N and P (fertilizer intensive) are used

than rapeseed and oil palm plants. When compared to producing one ton of palm oil, the production technology of rapeseed plants to produce one ton of oil uses more fertilizer. So overall, soybean and rapeseed plants use fertilizer more intensively than oil palm. In other words, palm oil is the most economical or efficient vegetable oil crop in the use of fertilizer production inputs.

Fertilizers and pesticides applied are also not all absorbed by plants. Some is wasted as emissions of pollutants that contaminate soil and water so that it has the potential risk of disturbing the life of soil and water biota. Based on FAO data (Elbehri *et al.*, 2013), residues of nitrogen (N), phosphorus (P₂O₅), and pesticides on the three vegetable oil crops are presented in Table 1.

Table 1. Volume of Pollutant Produced by One Ton of Vegetable Oil

Soil-Water Pollution Indicators	Palm Oil	Soybean Oil	Rapeseed Oil
N (kg/ton of oil)	5	32	10
Phosphorus P ₂ O ₅ (kg/ton oil)	2	23	13
Pesticide/Herbicide (kg/ton oil)	0.4	23	9

Source: FAO, 1996

Pollutants as fertilizer and pesticide residues produced by one ton of soybean oil are the highest compared to the pollutants produced by one ton of rapeseed oil or palm oil palm. Even among the three, oil palm is the lowest vegetable oil crop that produces pollutants from the use of fertilizers and pesticides. This fact shows that palm oil is a vegetable oil that pollutes water and soil the least.

For the achievement of SDG-14 and SDG-15 in world vegetable oil production, ideally (the first best condition) is to choose vegetable oil plants with zero pollutants. Unfortunately, on Earth, the process of producing vegetable oil with zero pollutants from fertilizers and pesticides is almost does not exist. So, the best choice for vegetable oil plants is a production process that can minimize pollutants from the use of fertilizers and pesticides. With these criteria, palm oil is a realistic choice internationally. The argument is that the palm oil production process uses fewer pesticides and fertilizers so that there are fewer emissions or residues than soybean oil and rapeseed oil.

If the quality of the environment both on land and water is an important concern to the global community and is part of the SDGs that must be achieved internationally, then they should be brave enough to take the decision to choose palm oil as an alternative to vegetable oil that can minimize pollutants resulting from the use of fertilizers and

pesticides. This choice is also an important part of SDG-12 (Responsible Consumption and Production), which chooses the consumption and production of vegetable oils that produce the fewest pollutants.

POLLUTION RESULTING FROM THE CAMPAIGN "NO PALM OIL"

At least in the last twenty years, the campaign against palm oil, "No Palm Oil", has led a very intensive NGO network going on in different countries. Various social, economic, health and environmental issues are accused of palm oil, so its image is damaged in the global market. Not just a negative campaign against, but also a campaign not to use palm oil. Forcing the label "Palm Oil Free" on the packaging of various palm oil-based products produced by the food industry, cosmetic industry and even the animal feed industry is a systematic way used by NGOs to stop the use of palm oil (PASPI, 2015; Kumar *et al.*, 2015).

The campaign to stop the consumption of palm oil has also spread to the European Union's policy plan that links the issue of deforestation with the consumption of palm oil in there. The European Union Commission in the RED II/ILUC policy also has a plan to implement a phase-out palm oil policy through renewable energy (RED-EU) no later than 2030 (European Commission,

2019). If the European Union or the global community really decides to support the "No Palm Oil" or "Palm Oil Free"

campaign/movement, the global soil and water pollution will increase significantly (Table 2).

Table 2. Impact of the "No Palm Oil" Campaign on Soil/Water Pollution Caused by Production of Vegetable Oils

Description	Palm Oil	Soybean Oil	Rapeseed Oil	Total
Pollutants With Palm Oil (million tons)				
Production	83.70	58.70	27.30	169.70
N	0.42	1.88	0.27	2.57
Phosphorus P ₂ O ₅	0.17	1.35	0.35	1.87
Pesticides/Herbicides	0.03	1.35	0.25	1.63
Sub total	0.62	4.58	0.87	6.07
Pollutants Without Palm Oil (million tons)				
Production	-	100.55	69.15	169.70
N	-	3.22	0.69	3.91
Phosphorus P ₂ O ₅	-	2.31	0.90	3.21
Pesticides/herbicides	-	2.31	0.62	2.94
Sub total	-	7.84	2.21	10.06

The production volumes of the main vegetable oils in 2020 are around 83.5 million tons of palm oil, 58.7 million tons of soybean oil and 27.3 million tons of rapeseed oil. With this production, it is estimated that the pollutants from their production are nitrogen (N) fertilizers at 2.5 million tons, phosphorus (P₂O₅) at 1.8 million tons, and pesticides at 1.6 million tons.

If the "No Palm Oil" scenario occurs, soybean oil production must increase to 100.6 million tons and rapeseed oil also needs to be increased to 69.2 million tons in order to cover the global vegetable oil losses due to palm oil's stopping production. With the production of soybean oil and rapeseed oil, nitrogen pollution increased to 3.9 million tons, an increase of 56 percent. Meanwhile, phosphorus pollution rose by 71 percent to 3.2 million tons. Pesticide pollutants increased by 81 percent to 2.9 million tons.

Efforts to eliminate palm oil from the global market, such as the "No Palm Oil" movement/campaign, "Palm Oil Free" labeling, or the RED II – EU plan related to "phasing out palm oil," will result in a significant increase in pollutants such as nitrogen, phosphorus, and pesticides. Increase in emissions or pollutants occurs in soybean and rapeseed oil-producing countries. The increase in pollutants and emissions will also threaten the lives of both terrestrial and aquatic species.

In other words, a negative/black campaign for palm oil anywhere and in any form means a campaign to increase emissions/pollutant residues of nitrogen, phosphorus, and pesticides. This also means that the campaign has the potential to threaten terrestrial and aquatic life.

CONCLUSION

The productivity and production technology of the three main vegetable oils, namely palm oil, soybean oil and rapeseed oil, are different, so the residues of fertilizers and pesticides produced by them are also different. The indicator of the concentration of fertilizer and pesticide residues for each ton of oil produced shows that palm oil is the vegetable oil with lowest residue/pollutant resulting from the use of fertilizers and pesticides. Then, followed by rapeseed oil and soybean oil.

Reduction or elimination (phase-out) of palm oil in the global vegetable oil market will significantly increase fertilizer and pesticide pollutants/emissions resulting from global vegetable oil production processes. On the other hand, increasing use of palm oil will reduce global pollutants and emissions from the use of fertilizers and pesticides produced by the global vegetable oil industry. Therefore, various forms of negative campaigns and policies that attack palm oil are very contrary to achieving SDG-14 and SDG-15 because they threaten the sustainability of life in the world's terrestrial and aquatic areas.

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