

Awareness around

PALM OIL

In Colombia



By Luca Heunks

Luca Heunks
Koningin Wilhelmina College
Culemborg, Gelderland, The Netherlands
Palm oil, Colombia
Palm oil production in Colombia

Palm oil in general

Why is palm oil used on a large scale?

There are several aspects that make it attractive for us to use palm oil. Compared to other types of oil, palm oil plants yield a lot of oil per hectare of land. This can be 4 to 10 times more oil than other oil crops. Palm oil is also nutritious. Its nutritional values are higher than those of other vegetable oils. Furthermore, the production costs are very low. This makes it more attractive for governments to produce palm oil on a large scale than to invest in other types of vegetable oils. Finally, palm oil has very special properties for a vegetable fat, which determine the structure of our products, among other things. I will go into more detail on this later.

The downsides of palm oil cultivation

An oil with low production costs, a high yield per hectare, a high nutritional value and special properties sounds attractive. However, there is a big downside to this story. The consequences of the palm oil plantations are enormous. Not only on the plantations, but also further in the production chain the consequences for our planet are unprecedented.

Large parts of the tropical rainforest are being cut down or burned down for the construction of palm oil plantations. Due to the loss of the tropical rainforest, the largest oxygen producer in the world will also be lost. The tropical rainforest normally absorbs a lot of CO₂, which is then converted into oxygen. This process is stopped when the rainforest is destroyed. This is not the only thing, when the rainforest is burned down a lot of CO₂ is released. So extra greenhouse gases are released into the air, while the forests that can convert this into oxygen disappear. Moreover, the burning of the tropical rainforest releases so many harmful gases at once that entire countries and cities are regularly covered by smog.

Furthermore, with the felling of the rainforest, biodiversity will decrease. This is a serious threat to our planet. Biodiversity is the variety of all life in an ecosystem. It is precisely this diversity of species that keeps the ecosystem in perfect balance. If this balance is disturbed, for example by the felling of the rainforest, the ecosystem will no longer function properly. This can cause problems for important biological processes. For example, CO₂ can no longer be absorbed by the trees, the temperature can no longer be regulated properly because the vegetation has been damaged and the natural habitat for animals disappeared. The reduction of biodiversity will also have major consequences in the long term. It is difficult to restore an ecosystem to its former state. Species that are extinct will never come back and it takes a very long time to build a new rainforest before it is back to the size it was before. In addition, the increase in greenhouse gases will make weather conditions more extreme, resulting in, for example, large forest fires and flooding.

Furthermore, the monoculture on the plantations is also bad for the ecosystem. A monoculture is a form of agriculture in which only one crop species is grown on a field. There are many nutrients in the soil. All these different nutrients are taken up in different amounts by different types of crops and then broken down by bacteria and released to the soil. When there is no crop diversity, the composition and amount of nutrients in the soil will therefore also change. This can have major consequences, because if not all nutrients are absorbed by the plants, the other nutrients can end up in the surrounding area where they can cause damage.

Finally, a major danger of monocultures is that they are very susceptible to pests. Once there is an infestation, all plants will suffer.

Properties of palm oil

There are three properties that make it a favorable type of oil to use for many products:

1. Palm oil is stable at high temperatures.
2. Palm oil can be used in a variety of foods as a carrier of flavors and aromas.
3. Due to the balanced fatty acid composition, palm oil can give foodstuffs a relatively firm structure, and ensure, for example, that a product is airy, crunchy, firm, or, on the contrary, spreadable, and creamy.

Because of these favorable properties, palm oil is used in many different types of products. From cookies and ice cream to margarines, chocolate, lipstick and in shampoo and cleaning products. At the same time, the special properties of palm oil make it difficult to replace it with another type of oil if the taste and structure must remain the same.

When looking at the fatty acid structure of palm oil, it appears that due to the absence of double bonds, palm oil contains a high amount of saturated fatty acids.

Consumption of saturated fat can increase the LDL cholesterol level in your blood. This LDL cholesterol quickly builds up in your blood vessels, causing them to narrow. As a result, it can lead to cardiovascular disease.

Colombia

Colombia has not always had a positive image. The country is known for crime and armed internal conflict. Currently, safety is still not optimal, but it has improved over the years. Since then, Colombia's economy has also improved. Oil is and will likely remain the most important export product. Currently, 14,000 people in Colombia work in the palm oil sector. Palm oil is therefore also a major source of income for many Colombians, despite the issues on the plantations.

A typical family

The composition of a family can differ greatly per country and culture. A Colombian family looks very different from that in the Netherlands. However, there are always exceptions. The family described below will therefore not apply to every family in Colombia, this is only intended to give an idea of common structures and cultures within Colombian families.

In Colombia, family plays a pivotal role. The mother is important, she takes care of the children and the household, often has a full-time job.

A Colombian mother is very willing to give to her family. However, she often expects something in return. For example, it is quite normal for children to do everything to keep their mother happy. Also, little privacy is the most normal thing in the world. It is quite normal in Colombia that you call your mother several times a day, especially as a son. It is also quite normal when your mother often comes by unannounced (even if the children are already adults) or when you go on holiday with the whole family.

The father generally has a much smaller role in the family. In many cases the father is not even in the picture, the mother is then alone with the children. If the father is in the picture, he is often the boss in the house. He earns the most money and can therefore decide what happens with the largest part of this money. As a result, Colombian women are often financially dependent on their husbands.

The role of children within a family can vary greatly. For example, it is already very different between boys and girls. Boys often take on a father role. Where the boys have many responsibilities, girls have much less. However, both generally leave home at a late age. Of course, this differs greatly per family, but it is not strange when a child lives with his parents until he is 30.

Life in the palm oil sector

Palm oil is produced not only on large plantations but also on small family businesses. This ensures a lot of economic growth locally, but there is a downside. The working conditions on the plantations are poor and the work is physically demanding. Worldwide, 3.5 million people work in the palm oil industry. The workers are often paid slightly more than the minimum wage in Colombia. They only get paid when they reach their daily quota. This daily quota has increased enormously in recent years, forcing the workers to do more and more work in the same amount of time. To make sure they get all this done, the rest of the family is often called in to help. Because the quotas are so high, the workers do everything they can to get the work done as quickly as possible. For example, some people who work with harmful substances should wear masks for their own safety, but this is so hot that they occasionally must take them off to get fresh air. However, this takes too much time, so people often choose not to wear masks or other protection. Ultimately, this leads to serious health problems. The other side is that the palm oil industry also offers many jobs and opportunities for Colombians.

Possible solutions

The biggest problem with palm oil is the enormous demand for it. To find a solution to the palm oil problem, it is, first of all, important to do something about this enormous demand for palm oil. That is why it is important to look for alternatives.

Polycultures

Currently, a combination of soya-bean oil, coconut oil, and sunflower seed oil is often used as a substitute for palm oil. This combination of oils has similar features to palm oil. It is not an ideal solution. Cultivating these three oils would require much more land for the same yield and therefore more tropical rainforest would have to be cut down. A better solution would be to apply a polyculture for palm oil cultivation. A polyculture is a field in which different types of crops grow next to each other. Palm oil is well-known for its high efficiency. The plants in this polyculture have a lower efficiency than that of the palm oil, but because of the effects of the surrounding plants, the yield of the palm oil plant will be increased. Ultimately, the effectiveness of the polyculture is even higher than that of the monoculture, with only the oil palm. In a monoculture, the yield of palm oil will decrease after several years because no nutrients are left in the soil. This will happen at a slower rate in a polyculture because there the nutrients in the soil remain in balance much better.

Also, in a polyculture less or no pesticides are needed. This means that the soil and water are less polluted. Furthermore, the risk of diseases and pests is much smaller. The crops in a polyculture are not genetically identical, which means that a disease is less likely to spread. A disease also spreads less quickly because one crop may be very vulnerable to a certain disease, but the other crop is not at all. The disease will then spread less easily.

In addition to crops for vegetable oils, a polyculture can also grow other crops to produce, for example, wood and bamboo. The crops that grow in this polyculture can grow in many more places in the world than oil palms. This ensures that tropical rainforests no longer must be cut down for the production of oil. This polyculture could be established in places where there are already large-scale palm oil plantations. Polycultures also increase the quality of the soil.

Polyculture has many advantages not only for the climate, but also for the workers. Palm oil production provides about 0.11 jobs per hectare. A polyculture provides an average of 10 jobs per hectare. Labor costs are higher as a result, but production remains profitable.

However, there is a disadvantage to a polyculture because the food prices here will increase somewhat, and the prices of these vegetable oils will be somewhat higher for the food producers.

The use of polycultures could therefore be a good solution to the palm oil problem in Colombia, but there are more.

To protect the rainforest, it is important to also look for alternatives to palm oil in areas where there is no tropical climate, such as in Europe. In Europe we could make more use of vegetable oils grown here, such as rape, sunflower and olive oil. However, these oils have slightly different properties than

palm oil, so further research would have to be done to see whether these oils could replace palm oil (if the texture of our products must remain the same).

Torwash

Minimizing the waste that is released during the production of palm oil and the extraction of the useful nutrients/energy is also being researched. The waste that is now left over from the production of palm oil ends up on the compost heap where it starts to heat up and sometimes catch fire itself. This leads to major problems. One method that has been developed to turn this waste into something useful is "Torwash". This method converts wet waste from residual palm oil waste into biofuel, biomaterials, electricity, gas, and water.

Factories where the palm oil is processed use a lot of electricity. With the implementation of Torwash, they could use the electricity that is released in the factory, so that the electricity costs will lower.

There is also a lack of freshwater in several areas in Colombia. Torwash also releases clean fresh water, which will reduce this shortage. TNO, the large company behind Torwash, is currently working on a demonstration installation in Colombia. Furthermore, TNO is now scaling up so that in the future they can process larger amounts of sludge at the same time.

Sustainable palm oil

Finally, there is also a quality mark for sustainable palm oil, "The roundtable Iof sustainable palm oil". However, the reliability of this quality mark is questioned because the requirements that are set are said to be too low and because the verification of the plantations is not done or is not done well enough. The idea of sustainable palm oil is nice, but in practice it is not realistic. As long as biodiversity disappears, the environment is polluted and human rights are violated, the label "sustainable" is not reliable.

Conclusion

The cultivation of palm oil is a serious problem, but there are solutions.

It would be most effective if all these possible solutions were combined. This would mean that each country uses more local oils. This would mean that fewer oils need to be imported worldwide, reducing the demand for one specific type of oil, namely palm oil. In addition, we can make more use of polycultures. We can invest in Torwash in places where oil palms are still being grown on a large scale. This allows us to use the waste that is generated in a new and useful way.

References

- <https://www.milieucentraal.nl/eten-en-drinken/tropische-producten/palmolie/>
- <https://www.youtube.com/watch?v=9XqXDzXWRXw>
- <https://www.health.belgium.be/nl/eutrofiering>
- <https://www.besabine.com/typisch-colombiaanse-familie-structuur/>
- <http://www.palmolie.info/dag-25-zijn-er-alternatieven-voor-palmolie/>
- https://www.agroberichtenbuitenland.nl/landeninformatie/colombia/achtergrond/circulair_sp4
- <https://www.tno.nl/nl/aandachtsgebieden/techtransfer/spin-offs/torwash-afvalslib-van-kostenpost-tot-inkomstenbron/>
- <http://www.palmolie.info/palmolie/duurzame-palmolie/>