Certification eligibility is defined by a worldwide consensus within the CORSIA program, the Road Map defined by ICAO, with a target of 0 net emissions by 2050 for the international aviation industry

Gremca and Daabon Group are committed with the sustainability and low carbon emission of palm oil production

GREMCA
AGRICULTURA Y ENERGÍA SOSTENIBLE

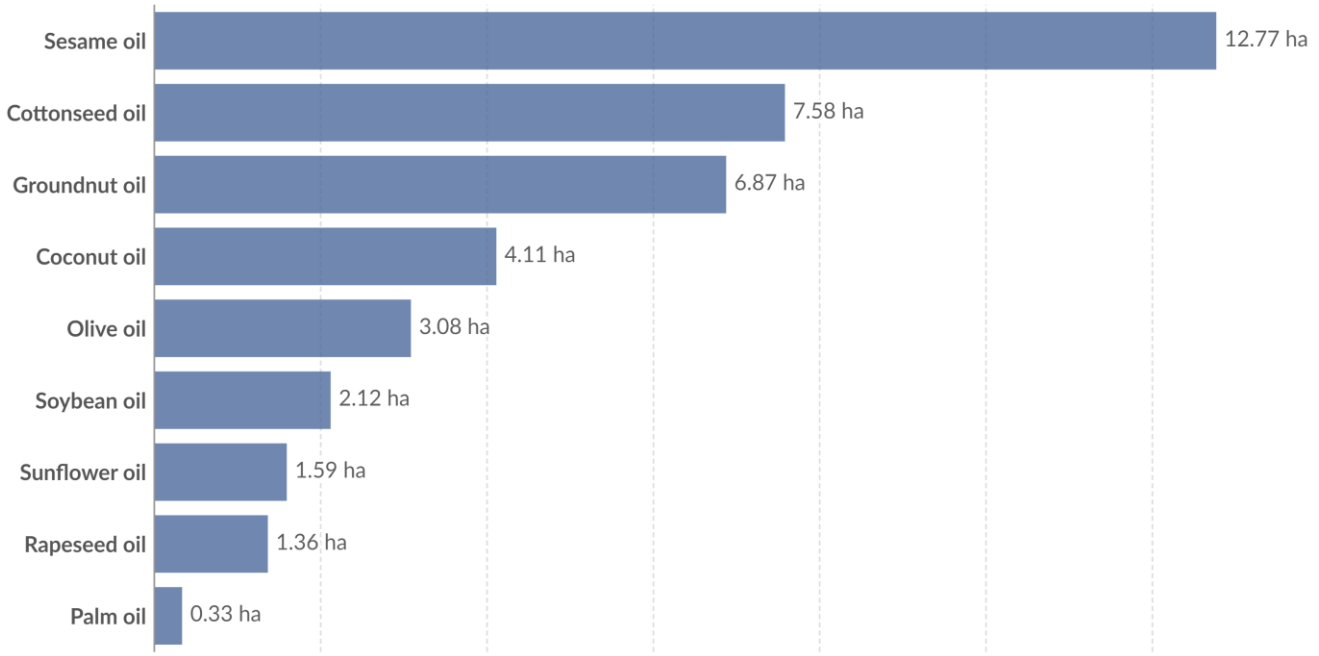
DAABON

The oil palm is the most efficient oilseed crop in terms of land use.

Area of land needed to produce one tonne of vegetable oil, World, 2021

Our World in Data

This metric is the inverse of oil yields. It represents the amount of land needed to grow a given crop to produce one tonne of vegetable oil.



Data source: Food and Agriculture Organization of the United Nations (2023) OurWorldinData.org/crop-yields | CC BY

Note: Based on oil production and area harvested data. Maximum yields can vary depending on the ratio of oil production to co-products (e.g. what fraction of soybeans or coconuts are used for oil production).

Oil palm has an oil production per hectare 6.4 times higher than soybean, 4.8 times higher than sunflower and 4.1 times higher than canola.

The challenge: Compliance of the crude palm oil produced by GREMCA with the ISCC-CORSIA standard.

SAF production is feedstock agnostic.

There are not good or bad feedstocks but sustainable or not sustainable feedstocks

Carbon reduction themes	1.Greenhouse Gases (GHG) 2.Carbon Stock
Environmental , social and economic themes	3.GHG reduction permanence 4.Water 5.Soil 6.Air 7.Conservation 8.Waste and Chemicals 9.Seismic and vibrational impacts (only for LCAF)
	10. Human and labor rigths 11.Land use rights and land use 12.Water use rights 13.Local and social development 14.Food security

Colombia defined a country strategy 20 years ago to commit to biofuels with mandatory blends. This prepared GREMCA and The Daabon Group for the challenge of achieving the first CPO certification for SAF production, in April 2024

GREMCA
AGRICULTURA Y ENERGÍA SOSTENIBLE

DAABON

GREMCA: The path to certification

Carbon reduction (1-3)

The group signed the climate pledge to decarbonize by 2040

GREMCA reduces up to 80% of all production emissions

1. Green House Gases/Reduction Permanence:
    a. By capturing and converting all possible methane into energy GREMCA produces 1,5 MW
    b. By fertigation (50% of used land) and biomass reincorporation we reduce more than 20% the use of chemical fertilizers
    c. Through our own biomass we produce our steam requirements
    d. Our solar installations produce 3 MW

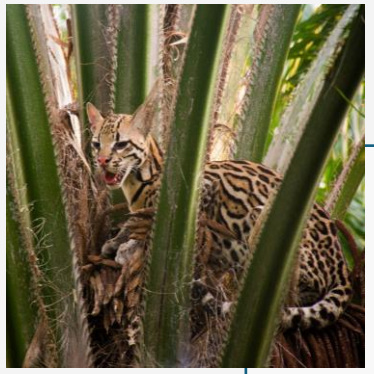
2. Carbon Stock/GHG reduction permanence
    a. The group has invested in a 50,000-ton per year biomass pelletization plant. A high-quality biochar produce with over 78% fixed carbon will start in 2025/26

GREMCA AGRICULTURA Y ENERGÍA SOSTENIBLE

DAABON

GREMCA: The path to certification

Enviromental issues/Non-Deforestation (3-8)



- In 2012 GREMCA and the daabon group achieved EPA compliance

- All our production polygons are public and within EUDR compliance with continuous and automated drone and satellite-based control and GFW for land use change. We monitor over **30,000** hectares

- First ISCC EUDR add on in progress

- 50% of our areas use fertigation and are fully automated saving more than 70% of normal water use and 20% in chemical fertilizers

- Land rehabilitation by reincorporating all biomass
  -Each cycle we reincorporate all the biomass in excess of 300 tons per hectare
  -We incorporate 30,000 tons of compost yearly

GREMCA: The path to certification

Social/Legal compliance (10-11)

- Workers, since the 90´s, are significant shareholders and have a permanent seat in the board- as well as the labor union
- Non child labor with modern enforceable laws and above average legal wages
- Certified small growers account for 15% of planted land of the mill
- Proven legal land use rights
- Compliance with all water use permits + efficient use of water resources
- Social responsibility with a 90-students school
- Gremca is the first in the world to receive FSS certification

GREMCA: The path to certification

The ILUC value in GREMCA is ZERO

The yield increase methodology has an associated ILUC value of cero as we increase productivity of palm oil per hectare

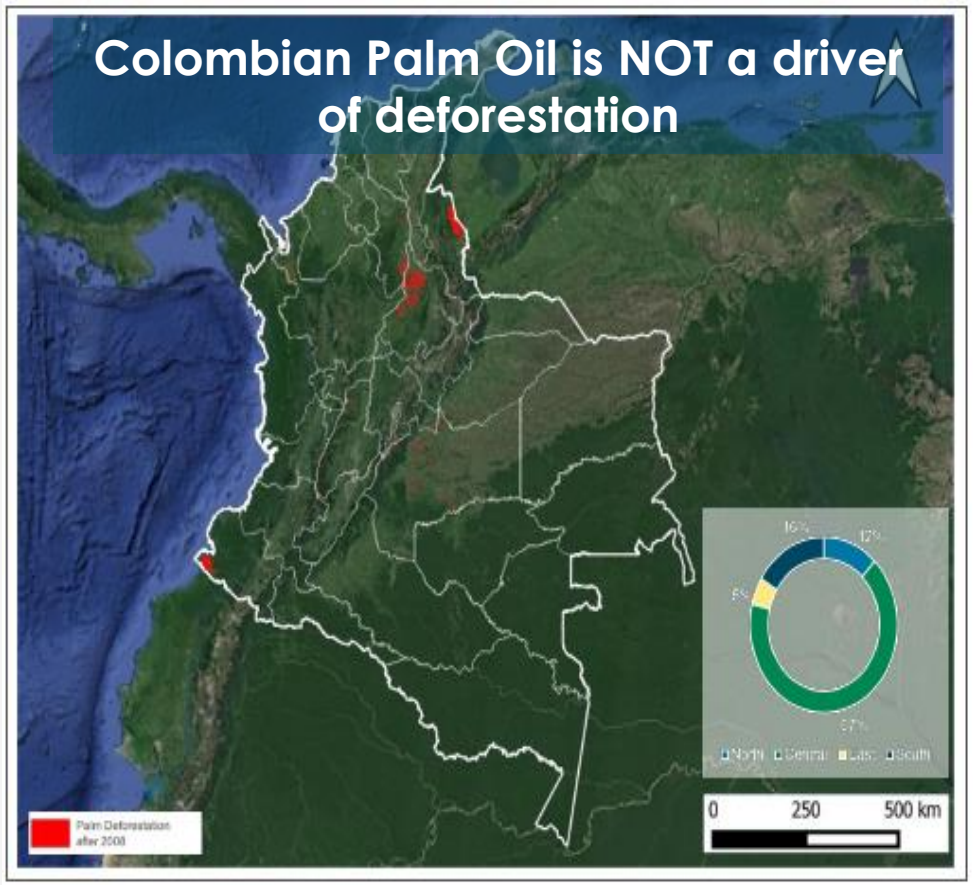
In GREMCA we have invested heavily in the best agricultural practices and hybrid and clone varieties to foster productivity

These measures are gradually increasing our yield from a range of 3 to 4 tons to a range of 8 to 10 tons of crude palm oil per hectare

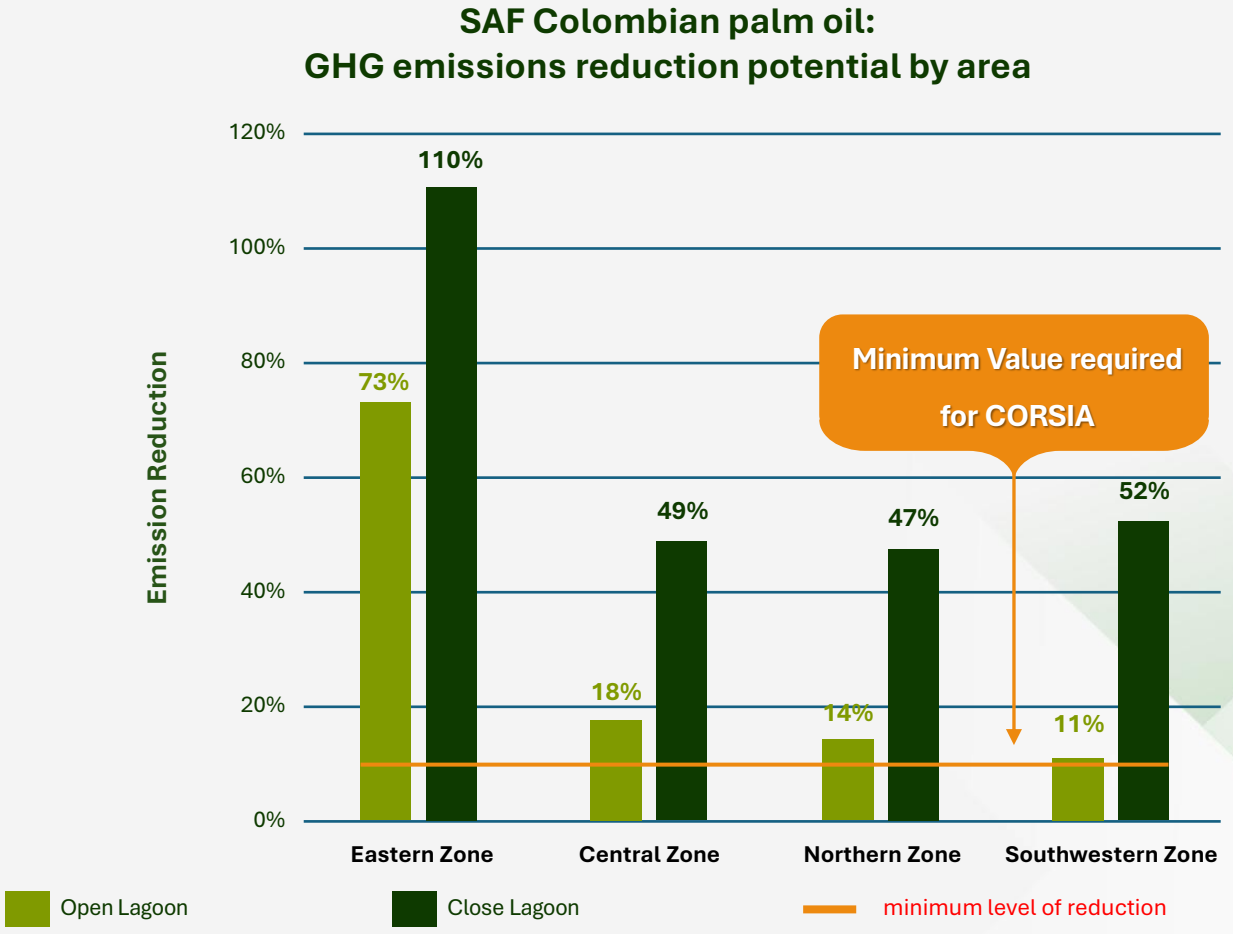
As a result, GREMCA has recently achieved the first worldwide certification and plans to incorporate, with the group, 100,000 tons in the next ten years- with an associated ILUC value of zero, in compliance with EUDR and EPA parameters, with low carbon intensity of production, and even negative (given its biochar potential)-.

GREMCA
AGRICULTURA Y ENERGÍA SOSTENIBLE
DAABON

GREMCA is but one example of the Colombian palm oil sector's commitment to sustainable, low-carbon production within a country strategy



Palm-related deforestation: 198 km^2 (0.03 %)



Fuente: World Bank.Life Cycle Analysis on the Production Chain of SAF and Renewable Diesel from Oil Palm and its Crop Residues in the Orinoquía Region and Colombia (English). Washington, D. C.: World Bank Group, in process of publication.

GREMCA AGRICULTURA Y ENERGÍA SOSTENIBLE

DAABON

CONTROLUNION

ISCC CERTIFIED CORSIA

Certificate

according to the
Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)
As developed by the International Civil Aviation Organization (ICAO)

Certificate Number: ISCC-CORSIA-Cert-DE105-84313901

Control Union Certifications Germany GmbH
Bornitzstr. 73-75, D-10365 Berlin, Germany
certifies that

GREMCA AGRICULTURA Y ENERGIA SOSTENIBLE S.A.
Camino a Ecopetrol - Km 12 - 201010 El Copey, Cesar,
COLOMBIA

complies with the requirements of CORSIA and the certification system
ISCC CORSIA
(International Sustainability and Carbon Certification)
which is approved by the ICAO Council.

Place of the audit
(if different from the legal address of the system user as stated above; only applicable for paper traders):

n.a.

This certificate is valid from 15.04.2024 to 14.04.2025.

The site of the system user is certified as:

First Gathering Point
Oil mill

Berlin, 15.04.2024
Place and date of issue

Stamp, Signature of issuing party

The issuing Certification Body is responsible for the accuracy of this document.
Version / Date: 1 (no adjustments) / 15.04.2024

Page 1 of 2

Its certification is a first fundamental step within a country strategy so that **Colombia** can become an efficient, **sustainable and sizable certifiable crop-based feedstock producer for SAF.**

Gremca and Daabon with the other board members of the biofuels and palm federations have encouraged the recent studies from the world bank, through ASCENT, with Ricardo, ISCC and the MIT study commissioned by Latam and Airbus and are supporting Colombia´s official petition to CAEP to assign Colombia with an independent ILUC value and a core LCA value.

The studies show that Colombia has the potential to **incorporate** to the SAF feedstock markets, up to **600,000 tons of certified CPO** without disrupting its internal food and other uses, and could **incorporate more than 10 million through to 2050** without loosing its status as a multi-cropping country.

The strengthening of CAEP's and certification bodies capabilities to incorporate new feedstock potentials is essential for the objective

“No Country Left Behind”

GREMCA
AGRICULTURA Y ENERGÍA SOSTENIBLE

DAABON

References

1. BID - Ministerio de Minas y Energía. (2012). *Evaluación del ciclo de vida de la cadena de producción de biocombustibles en Colombia*.
2. Fedepalma. (2013). *Síntesis del Proyecto GEF - Conservación de la Biodiversidad en las zonas de cultivos de palma*. Fedepalma.
3. Fedepalma. (2020). *The Oil Palm Agribusiness in Colombia*.
4. Geraldes Castanheira, É., & Freire, F. (2017). *Environmental life cycle assessment of biodiesel produced with palm oil from Colombia*. The International Journal of Life Cycle Assessment.
5. Ramirez-Contreras, N. E., Fontanilla-Díaz, C. A., Pardo, L. E., Delgado, T., Munar-Florez, D., Wicke, B., . . . Faaij, A. P. (2022). *Integral analysis of environmental and economic performance of combined agricultural intensification & bioenergy production in the Orinoquia region*. Elsevier.
6. Ramirez-Contreras, N. E., Munar-Florez, D. A., Garcia-Nuñez, J. A., Mosquera-Montoya, M., & Faaij, A. P. (2020). *The GHG emissions and economic performance of the Colombian palm oil sector; current status and long-term perspectives*. Elsevier.
7. Ramirez-Contreras, N. E.-F.-N.-M. (2020). The GHG emissions and economic performance of the Colombian palm oil sector; current status and long-term perspectives. *Journal of Cleaner Production*, 258.
8. Vijay, V., Pimm, S. L., Jenkins, C. N., & Smith, S. J. (2016). *The Impacts of Oil Palm on Recent Deforestation and Biodiversity Loss*. Plos One.
9. Zah, R., Gmünder, S., Gauch, M., Mira, D., Toro, C., & Arango, C. (2012). Evaluación del ciclo de vida de la cadena de producción de biocombustibles en Colombia. Banco Interamericano de Desarrollo (BID) - Ministerio de Minas y Energía.
10. World Bank.Life Cycle Analysis on the Production Chain of SAF and Renewable Diesel from Oil Palm and its Crop Residues in the Orinoquía Region and Colombia (English). Washington, D. C.: World Bank Group, in process of publication.
11. Report funded by the US Federal Aviation Administration (FAA) Office of Environment and Energy through ASCENT, the FAA Center of Excellence for Alternative Jet Fuels and the Environment, project 93 through FAA Award Number 13-C-AJFE-WaSU-037 under the supervision of Prem Lobo
12. Decarbonizing aviation in Latin America in a sustainable way; Sergey Paltsev, Massachusetts Institute of Technology
13. ISCC Project – Life Cycle Assessment of Palm-based SAF and RD Production in Colombia,24th January 2024