

# 1 of 3 GHG from Agricultural sector worldwide



<sup>(1)</sup>Richards et al. (2015)

In Colombia, this figure is of almost 1 of 2 GHG.

## Atmospheric composition measurement for monetizing mitigation technologies in oil palm industry

### MRV of emissions and removals



One of the challenges in increasing the application of LMT is the measurement, reporting and verification (MRV) of agriculture's emission to GHG emissions<sup>(4)</sup>, and of the removals associated to LMT efforts.

As emissions and efforts take place at the **farm and product** level, MRV should be at such level.

MRV help to monetize LMT efforts and, therefore, to increase chances to achieve Paris Agreement' goals <sup>(5)</sup>.

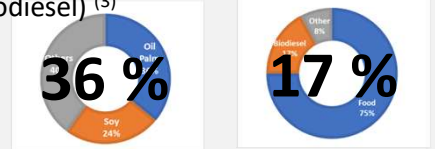
Technical Standards, TS; Calibration and Measurement Capabilities, CMC; Accredited labs, AL; key elements in a QI to attend MRV challenges. QI ensure confidence for the monetization of LMT efforts.

■ Problem ■ Discussion ■ Opportunity

### Emissions

Solutions to emissions need to be found also in the agricultural sector: Land-based Mitigation Technologies, LMT <sup>(2)</sup>.

Perennial crops, such Oil Palm, can capture GHG (CO<sub>2</sub>) in roots, trunk and other parts at long term, and it have shown interest to implement LMT. Oil Palm crop is the largest source of fats and oils (36%)<sup>(3)</sup>, efficient in using land and wáter and its fruits are used to substitute fossil fuels (17% world production to Biodiesel) <sup>(3)</sup>



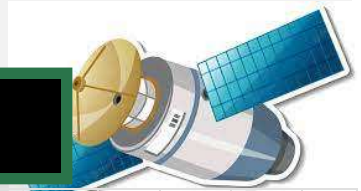
MRV at the farm and product level involves Physical measures:

1. Temperature
2. Humidity
3. Mass
4. Time and lenght

And atmospheric gases composition

5. Carbon Dioxide
6. Methane
7. Nitrous oxide
8. Ozone

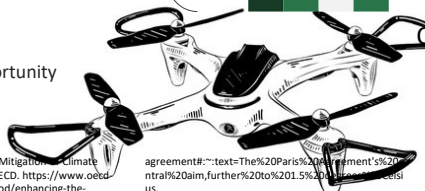
### The Quality Infrastructure, QI



Chemical Analyte	APMET	APMP	Coomet	Euramet	SIM
CMC by Chemical Analyte and Regional Metrology Organization <sup>(4)</sup>					
Carbon Dioxide	10	72	42	72	16
Methane	6	171	118	100	18
Nitrous oxide	0	8	2	5	2
Ozone	2	32	122	135	11

TS and CMC are growing worldwide, but still lack of focus on how MRV take place in agriculture, particularly in the Oil Palm crop, a crop with high interest and potential for implementing LMT.

Opportunities in the use of satellite and drones data (images, infrared and laser), Eddy covariance stations and microbiological soil análisis that need to standardization, traceability and accredited labs.



#### Sources of information

<sup>(1)</sup> Richards MB, Wollenberg E, Buglion-Gluck S (2015) Agriculture's contributions to national emissions. CCAFS info brief. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), Copenhagen

<sup>(2)</sup> Landmarc Project (2021). www.landmarc2020.eu

<sup>(3)</sup> Oil World Annual (2020). Reported in Fedepalma

<sup>(4)</sup> OECD. 2019. Enhancing the Mitigation of Climate Change Through Agriculture. OECD. [https://www.oecd-ilibrary.org/agriculture-and-food/enhancing-the-mitigation-of-climate-change-through-agriculture\\_e9a793226-en](https://www.oecd-ilibrary.org/agriculture-and-food/enhancing-the-mitigation-of-climate-change-through-agriculture_e9a793226-en) (January 19, 2022).

<sup>(5)</sup> UNFCCC (2020) <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/key-aspects-of-the-paris-agreement#:~:text=The%20Paris%20Agreement's%20neutral%20aim,further%20to%201.5%20degrees%20Celsius>

<sup>(6)</sup> BIPM. Accessed 2022,08,27.

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[www.landmarc2020.eu](http://www.landmarc2020.eu)  
[eacristanchop@gmail.com](mailto:eacristanchop@gmail.com)  
 (+57)310 609 3534

**Landmarc Project**