OF. UNEM -13.2022

Cuiabá/MT - August 5th 2022

To Cheryl Laskowski
Transportation Branch Chief
California Air Resources Board
1001 I ST Sacramento, CA 95814:

Subject: Provide comments in response to Public Workshop to Discuss Potential Future Changes to the LCFS Program, suggesting some specific topics to be evaluated by CARB:

LCFS Rulemaking Input- ILUC models and Renewable Biomass

Dear Ms. Laskowski:

The Brazilian National Corn Ethanol Union ("UNEM") appreciates the opportunity to provide these comments in response to Public Workshop to Discuss Potential Future Changes to the LCFS Program.

UNEM is a nonprofit association governed by private law at national level that aims to promote the monitoring and the best interest of the Brazilian industry of corn and other cereals ethanol since 2017. UNEM has its headquarters in Cuiabá, State of Mato Grosso in Brazil, which is a pioneering State on the advanced development of ethanol and co-products production. UNEM's membership includes important Brazilian corn ethanol producers like FS, Inpasa, ALD Bioenergia and Neomille (Cerradinho Bio).

We take the opportunity to request CARB's attention to three (3) topics that should be addressed in the rulemaking to enable the continued development of the second crop ethanol industry in a manner that achieves GHG reduction goals:

1) Indirect land use change for sequential cropping
2) Definition of default specific values for crops produced under this system.
3) The use of renewable biomass as process fuel

We concur with the need of rigorous assessments of new pathways and admire the leading position that CARB has taken on the issue, particularly since the LCFS program was launched.

The GHG Benefits of Second Crop Corn

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Brazilian corn ethanol producers have grown their market share within Brazil and seek to increase exports. An important target is to be eligible to participate in the European and North American markets. Through engagement with CARB and its LCFS program, we see great opportunities to contribute to California's and the global community's short and long-term GHG and fossil fuel reduction objectives. To this end, we use unique feedstock (second crop maize) that does not require additional land and developed processes based on renewable energy and an increasingly circular and sustainable economy.

Land use change is a complex and essential topic to address regarding the optimal method to use biofuels to slow down and ultimately reverse climate change. Although food and biofuels are viewed by some as competing uses of land resources, we have developed new technologies that can resolve these concerns. Land use analysis must be revisited to consider and recognize the benefits to food and fuel of using the same land for multiple harvests. Research and on-the ground observation indicate that double cropping maize after soybeans substantially improves the yields and economics of existing agricultural lands. This agricultural technology has evolved significantly last decade. It is now robust and deserving of CARB's attention and analysis.

Science-based evidence indicates that second crop maize can improve soil health and increase the yields of the first crop. In systems where corn ethanol is co-produced with DDG, new sources of protein are produced for the food system and can lead to negative iLUC. These promising technologies and practices deserve fair treatment along with biofuels produced from carinata and camelina.

Negative iLUC values for second crops have already been recognized in scientific literature and by respected entities that establish requirements and guidelines for low carbon fuels. In 2020, the GHG benefits of second crop corn ethanol in Brazil were documented as having negative iLUC in a scientific assessment published by Nature Sustainability [1]. This paper was based on the Brazilian Land Use Model (BLUM), which is a reduced version of FAPRI model used in the RFS2 (Renewable Fuel Standard) regulation. On March 2021, ICAO recognized a similar case of secondary crop (carinata) as having negative iLUC under the CORSIA Default Life Cycle values[2] . This assessment is a converging

[1] https://doi.org/10.1038/s41893-019-0456-2

[2] https://www.icao.int/environmental-protection/CORSIA/Documents/ICAO%20document%2006%20-%20Default%20Life%20Cycle%20Emissions%20-%20March%202021.pdf

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result of improved versions of the GTAP model (used in LCFS) and GLOBIOM (reference for several policies in the EU).

Although the simulation of second crop cases is possible in the iLUC models, the current LCFS regulation does not recognize the GHG benefits of multi-cropping compared to single cropping. This is a deficiency in CARB's current model that should be addressed in this rulemaking.

Having said that we respectfully request that CARB address these important issues:

1) Indirect land use change for sequential cropping
2) Definition of default specific values for crops produced under this system.

We are fully available to provide data, analysis, and engagement on these issues. Please advise regarding any requested data or evidence, or any other support that CARB may need to better analyze these issues.

Renewable biomass

Aligned with the CARB objectives highlighted in the LCFS Workshop held on July 7th 2021, Brazilian corn ethanol producers produces an extremely Low-CI ethanol and is focused on demonstrating how our technical innovations can contribute to the LCFS. **As an important component of this LCFS rulemaking, UNEM would like to advocate for the recognition of using renewable biomass as process fuel.**

One key issue is the use of renewable biomass for thermal and electric energy. Renewable biomass provides thermal and electrical energy for the industry, without any fossil fuel usage in the production process. This is highly beneficial to produce low carbon fuel as the approach reduces processing emissions due to the biogenic nature of the carbon burned in the energy generating boilers. Such an approach is consistent with Governor Newsom's recent letter to Chair Randolph establishing a goal of no further development of natural gas power plants.

While other corn ethanol producers utilize fossil natural gas or even coal, we are showing the potential of using renewable biomass (such as planted eucalyptus and other energy crops) or wood residues for process energy. CARB's recognition of the benefits of utilizing renewable biomass to generate process

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energy as part of a Low-CI ethanol production process is extremely important and will motivate other market participants to move away from fossil sources.

Agricultural residues are treated as carbon neutral so wood residues should be treated similarly. The woody biomass that is cultivated for energy purpose is recognized by IPCC[3] as neutral because the carbon that is released during combustion has previously been sequestered from the atmosphere in the growing process. We must emphasize that the biomass sources used by Brazilian corn ethanol producers are fast growing species. The global decarbonization plan recently published by IEA emphasizes that biomass necessarily plays an important role in the energy transition.[4] This IEA finding highlights the importance of CARB analyzing the various types of biomass as process energy for LCFS pathways and determining the parameters of Low-CI renewable biomass.

Due to importance of this issue, we take this opportunity to request CARB's attention to the study and recognition of the role of renewable biomass as a source of Low-CI process energy.

Please count on UNEM for providing data and evidence, or any other support that CARB may need to pursuit the listed topics.

Respectfully,

National Union of Corn Ethanol

Guilherme Linares Nolasco

Chief Executive Officer

[3] 2006, IPCC Guidelines for National Greenhouse Gas Inventories (Section 1.2 of Volume 1).
[4] IEA Net Zero by 2050, A Roadmap for the Global Energy Sector

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