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Mr. Richard Corey
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Ms. Rajinder Sahota
Industrial Services Division Chief

Mr. Arpit Soni
Manager, Alternative Fuels Section

California Air Resources Board
1001 I Street
Sacramento, CA 95814

November 5, 2020

Request to Integrate On-Farm Feedstock Practice Efficiencies into California's Low Carbon Fuel Standard

Dear Mr. Corey, Ms. Sahota and Mr. Soni:

Syngenta appreciates the opportunity to provide these comments on potential updates to the California Low Carbon Fuel Standard (LCFS) regulations and in support of the proposal presented by Farmers' Business Network (FBN) and POET urging the California Air Resources Board (CARB) to incentivize and facilitate identity preserved low carbon grain.¹ Syngenta has nine years of commercial experience and data demonstrating measurable on-farm efficiencies achieved by growing our Enogen grain.

We urge CARB to update the LCFS regulations to provide for carbon intensity feedstock variability that provides for demonstrable reductions from on-farm practice efficiencies in the growth of feedstocks, like Enogen[®] corn, which are used in the production of renewable fuels flowing into the California transportation fuels market. Doing so would most accurately capture the entire lifecycle of renewable fuels in California and significantly hasten achievement of California's carbon reduction goals pursuant to SB 32 and AB 197.

I. Introduction

Syngenta is one of the world's leading agriculture companies. Since 2013, we have been dedicated to improving sustainability in agriculture, including designing and promoting innovative agriculture systems that incentivize and lead to measurable reductions in GHG emissions through our Good Growth Plan.² One of these important systems involves the Syngenta Enogen

¹ Farmers' Business Network, *Identity Preserved Low Carbon Grain by Gradable*, presentation to the California Air Resources Board, Oct. 15, 2020, available at https://ww2.arb.ca.gov/sites/default/files/2020-10/101520presentation_fbn-poet.pdf.

² Syngenta, *The Good Growth Plan*, available at <https://www.syngenta.com/sustainability/good-growth-plan>.



corn, our associated investments in grower and ethanol plant relationships, and data tracking and reporting technology for identity preserved grain. This system enables the company to precisely track Enogen seeds from growth through ethanol production and distribution.

Through this investment in advanced crop technology—and the growers and ethanol plants that use Enogen corn—we are able to report that currently 19 U.S. ethanol plants use Enogen grain, which is now grown by nearly 3,000 U.S. corn growers that have enjoyed premiums paid to them from growing and selling Enogen corn. Further, Enogen corn is used by U.S. ethanol plants to contribute over 1.78 billion gallons of ethanol to the U.S. transportation fuel market each year. Millions of these ethanol gallons do and can be expected to continue to flow into the California transportation fuel market.

Corn that contains Enogen enzyme technology has an alpha amylase enzyme embedded in the locally grown grain. This benefits ethanol plants by reducing or eliminating the need for the plants to purchase or use a separate, additional enzyme in the ethanol production process. Moreover, Enogen corn significantly reduces viscosity in corn mash, leading to unprecedented levels of solids loading. This effect directly contributes to increased throughput and yield, as well as significant cost and energy savings resulting in reduced carbon emissions in the ethanol production process.³

American farmers are the original conservationists, stewarding their natural resources for the next season and future generations. Under our new Good Growth Plan, Syngenta is accelerating innovation on products and processes that support climate resiliency and help keep farmers productive, profitable, and sustainable.⁴

We support FBN and POET's proposal for including on-farm practices under the LCFS. We urge CARB to work to revise and finalize a rule that will recognize and help incentivize grower level investments to make efficiencies in their farming practices that do and can lead to even greater, faster carbon intensity reductions. CARB now assigns up to 30 carbon intensity points for farming practices. As explained in this letter, we urge CARB to allow for corn feedstock CI variability, thus helping to facilitate broader adoption of improved corn farming practices that can lower the carbon intensity footprint of the ethanol feedstock.

II. Lifecycle Analysis under the LCFS Should Start with the Seed

At Syngenta, we often say, "it starts with the seed." The same should be true under the LCFS to most accurately evaluate the full lifecycle of renewable fuels in the California market made from biomass, including corn. Innovation and technology at the grower level have come so far since the original implementation of the LCFS in California. Because of this progress, the LCFS should be amended as soon as possible to assign different carbon intensity scores to corn based on variable farming practices. This change would ensure that the CI scores capture the carbon intensity impact of the corn in the most precise way possible so that the LCFS would be better designed to incentivize and provide for demonstrable carbon reductions throughout the entire lifecycle of the renewable fuel produced by that feedstock.

³ See Sean Dudley, *How Syngenta is Turning Data into Insight*, The Technology Record, Dec. 27, 2017, available at <https://www.technologyrecord.com/Article/how-syngenta-is-turning-data-into-insight-61675>.

⁴ See *supra* note 2.



This is an example where industry has answered the calls from U.S. and global climate policies, including the LCFS and the federal Renewable Fuel Standard, and now the regulations should be updated to reflect that progress and drive decarbonization even further. The LCFS can and should provide for incentives to encourage even more investment and demonstrable carbon intensity reductions at the grower level.⁵ Every day that CARB continues to assign a default CI score to all corn used to produce ethanol only based on its location, the agency is missing an important opportunity to recognize current, and achieve significantly greater, carbon reductions in the renewable fuels coming into California to more effectively and efficiently meet the goals and timeline of the LCFS. Improved efficiencies in grower practices, and associated carbon intensity reductions, can and should be tracked from the time the corn seed is planted in the ground.

III. CI Scores for Feedstocks Should be Assigned Based on Factors that Prove Carbon Intensity Reductions Achieved through Efficient Grower Practices

The Syngenta Enogen corn technology illustrates the efficiencies possible in farming practices, which should be properly recognized and incentivized under the LCFS so that the policy leads to the most accurately evaluated and recognized carbon intensity scores for renewable fuels approved for credits under the program.

A. Full Identity Preservation Can be Achieved Throughout the Lifecycle of Corn Used to Make Ethanol

The Syngenta technology used with Enogen production demonstrates that we can track Enogen corn from the time the grower receives the Enogen corn seeds, through the growth and harvesting process, to the time the corn is transported to the ethanol plants that use it. Throughout the process, Enogen corn is grown and stored separate from any other corn, which enables our growers to preserve its identity throughout the tracking and reporting process. It is precisely because of this full identity preservation that we can determine the various efficiencies associated with growing Enogen corn. This data helps enable growers to make fast, data driven growing practice decisions that lead to efficiencies, greater yields and land preservation and restoration.⁶

In addition, Syngenta recently issued its 2019 Good Growth Plan Report detailing the efficiencies we have helped small farmers achieve across the globe. Multiple data points were tracked and measured, including nitrogen, phosphorus and greenhouse gas emissions.⁷ This work provides an additional example of industry's potential capability to create, measure and report efficiencies achieved throughout the ethanol production process, beginning with the growth of the corn feedstock.

⁵ See McKinsey & Company, *Reducing Agriculture Emissions Through Improved Farming Practices*, at 27, May 6, 2020, available at <https://www.mckinsey.com/~media/McKinsey/Industries/Agriculture/Our%20Insights/Reducing%20agriculture%20emissions%20through%20improved%20farming%20practices/Agriculture-and-climate-change.pdf>, (discussing potential for and significance of adoption of improved farming practices to reduce agriculture emissions).

⁶ Syngenta, *Whole Farm Management System, AgriEdge*, available at <https://www.syngenta-us.com/agriedge>.

⁷ Syngenta, *The Good Growth Plan 2019 Progress Report*, available at https://www.syngenta.com/sites/syngenta/files/sustainability/reporting-sustainability/Syngenta_GGP-PR19_Eng_Final.pdf.



B. Corn Farmers Can Share in the Value of the Energy and Carbon Intensity Efficiencies by Growing Enogen Corn Used for Ethanol

Existing ethanol pathways under the LCFS detail the significant energy and carbon intensity savings that ethanol plants achieve by incorporating Enogen corn in their ethanol production processes. For instance, each year, U.S. ethanol production facilities that use Enogen corn together save approximately 26,840 acre/feet of water.⁸

Syngenta has been tracking and evaluating resource and other efficiencies achieved by farmers growing Enogen corn for over 6 years. With Enogen's proven identity preservation stewardship program followed throughout the production process, Syngenta could demonstrate the energy, water and greenhouse gas emissions reductions growers are able to achieve by growing Enogen grain for ethanol.

IV. CARB Should Adopt the Most Recently Updated Argonne Feedstock Calculator to Most Accurately Evaluate and Capture Carbon Intensity Scores for Feedstocks, Including Corn

CARB should adopt and begin using the most up-to-date model used to audit the energy and environmental effects of transportation fuels, including ethanol, recently issued by the U.S. Department of Energy's Argonne National Laboratory (Argonne). This update to the Greenhouse Gas and Regulated Emissions and Energy Use in Transportation (GREET 2020) importantly includes a new Feedstock Carbon Intensity Calculator to measure corn yields, fertilizer use, as well as an estimate rate table to measure soil carbon sequestration.⁹

As our discussion on the Syngenta identity preservation stewardship program illustrates above, the technology and capability exist today, right now, for growers to capture the data to measure the variables captured in Argonne's most updated model. CARB should adopt this new model as soon as possible to ensure that the agency is most accurately measuring the carbon intensity of the lifecycle of renewable fuel production, starting with the seed. Taking this action would reward immense investments already made by some in the industry to enable this level of accurate carbon intensity reduction analysis and reporting, while serving as a key policy driver for others in industry to make similar investments that will result in those capabilities, along with greater carbon intensity savings that will help California meet the goals of the LCFS.

V. Conclusion

We support the proposal presented by FBN and POET urging CARB to develop and include under the LCFS a credit program designed to incentivize growers to make investments necessary to achieve, measure and report greater carbon intensity reductions through conservation farming practices. However, through our nine years of commercial experience with Enogen corn and our identity preservation stewardship program, and the growers who use it every day, we believe that the proposed program as presented can be strengthened. Accordingly, we urge CARB to make the following changes to the LCFS regulations as soon as

⁸ Based on internal Syngenta proprietary data.

⁹ U.S. Department of Energy, Argonne National Laboratory, *Feedstock Carbon Intensity Calculator (FD-CIC)*, Oct. 2, 2020, available at https://greet.es.anl.gov/tool_fd_cic

possible: (1) incorporate farming practice measures in LCFS lifecycle analysis (i.e. unlock CA-GREET); (2) ensure pathways that allow for CI feedstock variability that reflect the level of the agency's confidence in the accuracy of the carbon intensity reductions associated with those farming practices (i.e., in accordance with the completeness of feedstock identity preservation throughout its lifecycle); (3) adopt Argonne's most up-to-date model update to the GREET model, which now includes a critical Feedstock Carbon Intensity Calculator. These changes could help reduce the carbon intensity of ethanol in California by upwards of 20 points!¹⁰

The Syngenta experience is that policies and best industry practices can be designed to create a win for all parties involved in the feedstock CI measurement process, starting with the growers. Enogen corn and the Syngenta digital technology tracking system are examples of innovative products and analysis capabilities possible with the right drivers. Our technology illustrates the level of detail that growers can track and report, which can provide data showing the carbon intensity improvements associated with growing Enogen corn for ethanol production. Farmers that improve on-farm practices and realize on-farm efficiencies through the production of Enogen corn can contribute to reductions in carbon intensity scores given to ethanol.

We urge CARB to integrate on-farm practices into the LCFS regulations to provide the strongest policy driver possible to capture existing, and incentivize additional, carbon intensity savings achieved in the full lifecycle of producing renewable fuels going into California. Doing so will provide the programmatic structure needed to maximize carbon intensity savings from improved farm practices used in the production of biofuels feedstocks and will help California achieve its LCFS goals in the most effective and efficient way possible.

Thank you for considering these comments. Please do not hesitate to contact me with any questions and for more information. My team would like to serve as a resource to CARB staff as they work to update current LCFS regulations to incorporate carbon emissions reduction data farm practices.

Sincerely,



Chris Cook
Head, Enogen at Syngenta

¹⁰ From internal Syngenta analysis using GREET 3.0.