U.S. Department of Agriculture
USDA-2024-0003

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U.S. Department of Agriculture
Internal Revenue Service
USDA-2024-0003
1400 Independence Ave SW, Washington, D.C. 20250

Re: Comments – Request for Information (USDA-2024-0003) on Procedures for Quantification, Reporting, and Verification of Greenhouse Gas Emissions Associated with the Production of Domestic Agricultural Commodities Used as Biofuel Feedstocks

To whom it may concern:

The National Corn Growers Association ("NCGA") appreciates the efforts of the U.S. Department of Agriculture ("USDA"), the U.S. Department of the Treasury ("Treasury"), and the Internal Revenue Service ("IRS") to create an opportunity for stakeholders to provide informed input on procedures for the quantification, reporting, and verification of the effect of climate-smart agricultural practices on the greenhouse gas ("GHG") net emissions estimates associated with the production of domestic agricultural commodities used as biofuel feedstocks. NCGA is an industry trade group that represents nearly 40,000 corn growers and the interests of more than 300,000 farmers. NCGA works with farmers, affiliated state associations, and checkoff organizations to help protect and advance corn growers' interests. NCGA represents stakeholders who are deeply interested in a program to administer the IRS Code 45Z Clean Fuel Production Tax Credit ("45Z Tax Credit"). In this comment letter, NCGA recommends practices and procedures that it believes will help the USDA and IRS create a successful program to account for climate-smart agricultural practices and administer the 45Z Tax Credit. NCGA highlights recordkeeping and verification standards that can be used to create a program like other successful verification programs. Further, NCGA outlines technologies that may be helpful in collecting data for this program. NCGA recommends traceability systems that will allow for the best accounting of feedstocks through the supply chain and pricing transparency. Finally, NCGA recommends procedures to prevent inaccurate or fraudulent claims from affecting the success of the program.

Qualifying Practices

(1) Which domestic biofuel feedstocks should USDA consider including in its analysis to quantify the GHG emissions associated with climate smart farming practices? USDA is considering corn, soybeans, sorghum, and spring canola as these are the dominant biofuel feedstock crops in the United States. USDA is also considering winter oilseed crops (brassica

carinata, camelina, pennycress, and winter canola). Are there other potential biofuel feedstocks, including crops, crop residues and biomaterials, that USDA should analyze?

USDA has identified the most critical crops to consider, with corn being the most important due to its production scale and geographic coverage in the United States ("US"). Further emphasis should be placed on residues and harvested "cover crop" biomass. While "climate-smart" is often referenced as reducing emissions or increasing storage of carbon in the soil, a vital component while doing so is the agricultural productivity (efficiency) of the system. Specifically, the Carbon Intensity ("CI") of a crop is defined as carbon dioxide equivalent ("CO2e") emissions per unit of production, indicating that reduced emissions (or storage) and the amount of output achieved can alter a crop's CI . Given that CI scores can be improved by lowering emissions or by increasing output without increasing inputs, we encourage USDA to adopt policies that help and support the use of biomass (crop residues and/or harvested cover crops) to create greater opportunities for growers to lower CI scores of corn and other grain commodities. Furthermore, valorizing these biomass materials opens possibilities for mechanisms beyond "climate-smart" policies to help support greater adoption or implementation of climate smart agricultural practices or systems.

(2) Which farming practices should USDA consider including in its analysis to quantify the GHG emissions outcomes for biofuel feedstocks? Practices that can reduce the greenhouse gas emissions associated with specific feedstocks and/or increase soil carbon sequestration may include, but are not limited to: conservation tillage, no-till, planting of cover crops, incorporation of buffer strips, and nitrogen management (*e.g.*, applying fertilizer in the right source, rate, place and time, including using enhanced efficiency fertilizers, biological fertilizers or amendments, or manure). Should practices (and crops) that reduce water consumption be considered, taking into account the energy needed to transport water for irrigation? Should the farming practices under consideration vary by feedstock and/or by location? If so, how and why?

USDA provides a list of practices it has considered. We concur with this list and suggest they be considered in the context of four metrics of the production system.

1. Energy use (fuels or electricity used for machinery passes or input) in the production system, including embodied energy in inputs (fertilizer, herbicides, seed, etc.).

2. Changes in management practices that alter carbon storage within the soil (changes in tillage, extended rotation including adding cover crops, stover or biomass removal, supply of manures or biochars).

3. Management practices impacting nitrous oxide ("N2O") emissions from the rotation (primarily the 4Rs) and nitrification inhibitors. Other practices that reduce emissions, including biomass harvest, cover crops, and improved drainage where data supports their use should also be included.

4. Crop and harvested residue yield in terms of materials that can be converted into biofuel feedstocks. All are necessary as a foundation for a CI score as the score should be defined as emissions (positive or negative) per unit of production.

If USDA's goal is to encourage sustainable fuels, tools must be developed to allow efficient calculation of the CI of the produced crop. Specifically, it is essential to recognize that many avenues are available for reducing the CI of different crops and that farmers should be allowed to explore and innovate in various means to lower CI. Farmers make critical decisions based on their farms and fields for their production practices and creating higher yields without increasing emissions (increased production efficiency) offers an essential improvement. Similarly, maintaining yields while adding practices that increase carbon retention in the soil, or reduce fuel use or N2O emissions provides another path for lowering CI score. USDA should not be making a statement about which approach is preferred but rewarding those who can reduce their CI score.

USDA should directly consider any management changes that lower the CI and net carbon emissions per unit of yield. Practices include lowering fuel consumption, energy use, or embodied energy in consumed materials, increasing carbon storage in the soil, reducing nitrous oxide emissions, or maintaining these levels while increasing yield. A scoring assessment tool is required to determine the quantitative effect. USDA should create guidance on estimating fuel and energy use in cropping systems and should rely on and encourage local land-grant universities to develop state-level best guidance in estimating.

Any practice that increases soil organic carbon content is lowering the crop's CI, so it is critical that the CI scoring system USDA advances be able to reflect the benefits of those practices. We must get beyond basic forms of conservation tillage and cover crops. Primary examples of such other CI lowering practices include diversified or conserving crop rotations, cover crops that are harvested for biomass, or the addition of organic amendments (manure and biochars).

USDA must consider practices that reduce N2O emissions. Primary practices are the 4Rs of fertilizer management, nitrification inhibitors, biomass harvest through impact on soil temperature and moisture dynamics, potentially cover crops through effects on soil temperature and moisture dynamics, and improved drainage that reduces conditions prone to denitrification.

It is also critical that the evaluative team within USDA clearly understand the benefits and production potential of irrigated production. Farmers utilize minimal energy to pump groundwater for irrigation. Moreover, producers continue to shift toward green energy sources including solar and electric year over year. According to USDA and the Farm and Ranch Irrigation Survey ("FARMS"), the number of pumps powered by diesel, propane or butane has significantly dropped, with those pumps being replaced by electrical sources. Emissions intensity calculated using the 2023 GREET Model ("GREET") consistently proves that the CI from irrigated corn production is at or lower than rainfed scenarios of similar management. This is due to consistently higher yields and greater input use efficiency.

Yield also plays a critical role in CI scoring, and practice implementation must include some metric that considers yield changes. Trendline yields have consistently increased in the US, typically without the need for modified management and often requiring lower fertilizer inputs per bushel. This results in decreasing the CI of the produced crop. USDA should think carefully about how to assess how increasing yields with time should be considered regarding CI scoring, and how to normalize the impacts of management changes relative to the level of improvement that would have otherwise been expected.

(3) For practices identified in question 2, how should these practices be defined? What parameters should USDA specify so that the GHG outcomes (as opposed to other environmental and economic benefits) resulting from the practices can be quantified, reported, and verified.

CI scoring in some form should be the preferred method when considering crops for bioenergy production rather than relying on an approved list of practices, as scoring integrates performance into a quantifiable metric instead of a yes/no evaluation. GREET is among the models NCGA is evaluating and we anticipate that we will have suggested modifications to GREET as it relates to corn production in the months to come. But as a matter of a framework and usefulness, GREET tracks energy inputs, emissions, and soil carbon storage tracking thereby providing the information needed to evaluate a quantitative index.

In general, any model used for this purpose, including GREET, would benefit from the use of local land grant Extension documents that identify typical fuel use for field operations. Using local land grant documentation allows for an understanding of differences in typical production practices and soil type, but efforts should be made to ensure regionally, the land grant estimates are of similar scale and magnitude for states engaged in similar crop production and practices.

One important concern is that input coefficients assumed in GREET should be carefully evaluated to ensure they are set appropriately for different cropping regions. For example, additional thought and consideration should be given to how Indirect Land Use Change ("iLUC", "LUC") is handled either within GREET or another model to be developed. Specifically, this value is outside the scope of the farm and has implicit assumptions about how new utilization pathways would alter crop prices and potentially lead to altering of the landscape. Such a process is necessarily complicated as prices and land use decisions are driven by a multitude of factors. It is unclear that differentiation of a product, such as low CI corn, would serve as a similar driver for LUC as baseline assumptions used in a field to fuel conversion platform, or if instead it would only lead more farms to pursue carbon-smart farming practices. In a carbon scoring system, a farm's previous land use history has a strong correlation to carbon levels within the soil profile and is associated with the CI score that would belong to grain grown on the converted farm. It is our perspective that CI scores should be driven by on-farm processes and management decisions within the farm's control as farms are seeking clarity in what they can do to participate.

Further with respect to LUC, it is absolutely essential that USDA report in its public datasets as its own standalone variable the number of acres converted annually from truly native grassland or prairie to annual or perennial crop production. This means that USDA should also report as a standalone variable the number of acres that move from managed perennial crop production, such as alfalfa or other forms of haylage or pasture, into annual crop production. This latter of the two variables is not the conversion of "native" grassland as it has always been understood and USDA's current reporting system inexplicably conflates the two as the same thing. Such conflation feeds into erroneous CI (and LUC intensity) estimates from corn production. This results in a major disincentive to growers pursuing the large conservation and climate smart benefits that would flow from incorporating perennial cover into their otherwise annual crop rotation program.

Also, a well-specified and calibrated model is needed to estimate the change in Soil Organic Carbon ("SOC"). The Century Model is the most widely used for this purpose today, but other models are possible provided they are well specified and validated.

The advantage of modelling to estimate these things is that models can produce sufficiently accurate results at far less cost relative to the labor intensive and otherwise expensive process of making on-farm physical measurements. While some hold these on-farm measurements as the ideal for validation of practices, the collection of robust data will in almost every case be terribly difficult and costly without adding much accuracy. All of this will lead to uncertainty and payment risk and would almost certainly limit participation by growers and slow the rate of participation by those that do.

Using models (again, well-specified, calibrated and validated) alleviates these concerns. By encouraging wide-spread and more rapid grower participation, use of models would be encouraging diversity in the portfolio of participating farms, meaning that the desired average performance of the growers' participating will be robust and resilient, able to handle year to year variation in weather and other shocks that can affect any single farm's performance even when all best practices are used.

Model quantification at a field-by-field level is challenging, and the overall process must be efficient enough that farms don't face a cost burden preventing farms of all sizes from participating. For this reason, inputs should focus on reasonably collectible farm data such as management descriptions including, cover cropping, biologicals, enhanced efficiency fertilizers, and seed, satellite and drone imagery, and other relevant and appropriate data.

If a farm would prefer to use farm-specific measurements, that should be allowed, but the burden of verification of performance costs would fall on the farm or project. In so doing, small farms have chances to participate by using the models' standard or default values that lower the entry costs and reduce administrative burdens, while those believing that their specific version of implementation offers superior performance have a mechanism of verification to demonstrate.

N2O emissions need to be estimated, as opposed to being measured farm by farm. While it is likely that the current Intergovernmental Panel on Climate Change (IPCC) methodologies will be the most practical to use initially, we note that the IPCC methods are almost exclusively driven solely by the nitrogen application rate, a highly imperfect indicator. Emissions factors need to be developed for other current and future practices like improved drainage, nitrification inhibitors, cover crops, and biomass harvest. All these things, under proper management, are understood to reduce N2O emissions.

(4) For practices identified in question 2, to what extent do variations in practice implementation affect the overall GHG benefits of the practice (e.g., the date at which cover crops are harvested or terminated)? What implementation strategies maximize the GHG benefits of these climate-smart agriculture practices?

There will be variations in practice implementation and performance of all practices. This question pushes the boundaries of unknown science. While science should continue seeking answers to these questions, the need to implement and act now makes handling these specifics impossible.

Currently, specific estimates for differences in carbon storage resulting from "early" or "late" cover crop termination are not available. USDA must develop an estimate for soil carbon storage from literature (or modeling) that estimates a typical case that all farms associated with that region will use. If a specific farm wants to argue the practice of "late" termination should be considered differently, the burden would be on that farm (potentially with the help of government studies or agencies) to evaluate how that practice changes carbon storage.

Question 4 asks which implementation strategies “maximize” the GHG benefits of these climate-smart agricultural practices. While this may already be USDA’s understanding, we think it critical to state clearly that “maximization” of GHG benefits in a cropping system also must reflect that the fundamental societal purpose for the cropping system is to produce crops – we want this cropping system to be efficiently productive and economically sustainable while also producing as many GHG benefits as possible. This dual objective is properly captured and reflected in the metric that considers the GHG benefits per unit of crop production (i.e. bushels). As we work to reduce agriculture’s CO2e emissions and sequester more CO2 in the soil, encouraging practices that do so while also focusing on increased per acre yield and food security is critical to long-term US agricultural success.

Farm-to-farm and field-to-field variation in practice performance is of scientific importance and relevance to study to improve modeling. Still, national policy should focus on the cumulative good being accomplished, despite this variation, by involving as many farms as possible in reducing carbon emissions. The average performance of these systems in aggregate is the most important outcome. While specific farms or fields are subject to variation both from year to year (due to annual weather variability) and to variation across geographies, this variation is taking place around a well-researched and grounded estimate of average CI performance when a practice is adopted by many farms or fields across geographies. Some farms will perform better than this average, others less than average. But the average is what matters. This creates greater confidence that we are securing CI performance that supports national goals, while recognizing that variability around this average is inevitable in farming systems. Other carbon smart programs, specifically the California Air Resources Board ("CARB") Low Carbon Fuel Standard ("LCFS") program for methane reduction, use this average practice performance approach across participating projects (in that case, for abated methane emissions). The LCFS program uses this approach because it significantly reduces the verification cost and burden on the project and provides a greater sense of revenue certainty on the part of project developers and participants and, thus, encourages more projects to be developed and realized, leading to higher overall performance in aggregate.

Quantification

(5) What scientific data, information, and analysis should USDA consider when quantifying the greenhouse gas emissions outcomes of climate-smart agricultural practices and conventional farming practices? What additional analysis should USDA prioritize to improve the accuracy and reliability of the GHG estimates? How should USDA account for uncertainty in scientific data? How should USDA analysis be updated over time?

USDA should strive to create an emission factor approach and dataset based on peer-reviewed literature and suggested models.

Fuel use for field operations should be estimated using standardized factors assigned to each field pass. These factors should be local and suggested by the land-grant institution with cross-referencing for regional similarity.

For soil organic carbon and soil carbon sequestration rates, the focus could be modeling to indicate how the implementation of different practices impact soil carbon and then generalize the results to tabulated lookup functions. If a farm chooses, they could perform farm specific modeling, but the administrative cost is passed to them. Farms choosing to use the generalized lookups would benefit from a lower administrative burden and, therefore, more available funds for practice implementation.

USDA should focus on creating long-term research sites based on regional climate-smart practices focused on nitrous oxide emissions and, where possible, validating soil carbon models.

USDA needs to make periodic reviews of the emission factors being used and the performance of any model to evaluate if the factors used are current, or if technological innovation (efficiency improvements) has made them outdated.

(6) Given the degree of geographic variability associated with each practice, on what geographic scale should USDA quantify the GHG net emissions of each practice (e.g., farm-level, county-level, state, regional, national)? What are the pros and cons of each scale? How should differences in local and regional conditions be addressed?

As noted above, farm-to-farm variability in the absolute magnitude of practice implementation can be high, and one method of dampening uncertainty is to have higher levels of implementation so that if some fields/farms underperform and others overperform their expected contribution, the average will tend towards the mean. If the "mean" value is correct, projects will cluster around this, creating the desired national goal. Such an approach has the added advantage of greater revenue certainty for each project, helping farms understand impacts and facilitating easier decision-making at specific farms. For practices influenced by soil type, getting to county-level information quickly may be a challenge; however, given the availability of practice information from the USDA Census of Ag, obtaining the relevant state-level information should be achievable and should be the focus of USDA.

Farms should be allowed the option of using farm-specific information if requested, but this would put the effort of modeling and background data collection onto that farm. In so doing, the administrative burden is minimized when farms use the standard values, ensuring that more funds are available for project implementation.

(7) How should USDA estimate the GHG emissions and soil carbon fluxes of baseline crop production?

The baseline should be set based on state or regional production practices. In using this approach, farms already implementing Climate-Smart practices could valorize them and avoid penalization as early adopters. Such a policy would also create a situation where early adopters are better rewarded for helping innovate the solutions and demonstrating their viability.

Setting such a system does not require a baseline to be adjusted. Still, the price or value of abated carbon should be adjusted as systems evolve to grow more carbon neutral (or unfavorable). Alternatively, the program could re-evaluate the baseline periodically (every decade to correspond with a Census of Ag) to assess what is not becoming "standard practice" and to set new baseline standards to encourage greater adoption of emerging technologies.

In either case, farmers would need to periodically (we suggest every ten years as a base case) perform modeling again or new lookup tables developed to estimate what soil carbon storage will be over the next decade given regional changes in practice. This is primarily of concern to carbon storage, where the stabilization level of the soil is finite based on the practices implemented. This correction is not necessary for practices where emissions (either from fuels or energy) or N2O emissions have decreased. Still, factors could, and should, be updated as new and better measurements become available.

(8) Where models can be used to quantify changes in greenhouse gas emissions and sinks associated with climate smart agricultural practices, which model(s) are most appropriate for quantifying the greenhouse gas effects of these practices? What are the tradeoffs of different modeling approaches for accurately representing carbon, methane, and nitrous oxide fluxes under climate smart agricultural practices?

At this time, a tool similar to the GREET Feedstock CI calculator ("FD-CIC") is best suited for this purpose. As noted above, we are engaged in a review of these tools and will share the results of that review with USDA later in 2024 or early 2025. The conceptual design and approach underpinning GREET is sound. That approach is designed to track energy inputs, N2O emissions, and carbon storage within the soil profile relative to yield. Tracking those variables is a sound basis for what should be measured and recorded within a greenhouse gas footprint tracking tool.

However, we believe that the coefficients used for different input energy use should be reviewed and an open dialog occurs on the appropriate coefficients. We suggest that land-grant universities be charged with providing tools to help estimate fuel use with different machinery passes through fields that are appropriate for local conditions to help determine fuel usage to which actual on-farm fuel use can be compared.

Similarly, additional conversation is needed around best practices for estimating soil carbon changes (with modeling) or N2O emissions and to the extent possible, USDA should seek to modify IPCC calculation methodologies to better indicate how each of the 4Rs (Rate, Timing, Placement, and Source) influence N2O emissions rather than a calculation that is almost exclusively rate based.

By doing so, USDA will cultivate a program that encourages furthering of the science and provide farmers with evidence-based feedback on how cover crops, improved drainage, residue harvest, and nitrification inhibitors influence the CI score of their farm and field.

Finally, open and direct dialog on how any estimate of carbon foot printing of crops handles indirect land use change needs to be addressed. In pathway determinations, this term has been related to the increasing demand for a crop due to the implementation of a bioenergy conversion platform. When assessing the carbon footprint of a crop however, there may be no change in overall demand for the product, but rather a pursuit of lower carbon footprint for the product and differentiation of the product being produced. Farmers seek clarity in carbon programs, and clarity is provided by the desired outcome, a CI score, being associated with variables within their control and based on their management decisions.

Nitrous oxide and methane emissions are best handled with emission factor approaches. Few mechanical models are available with sufficient accuracy to be more valuable than an emission factor approach that offers sufficient accuracy across regional scales.

Soil carbon modeling offers several possibilities, but Century modeling is among the most popular and well-studied.

(9) How should net greenhouse gas emissions, including soil carbon sequestration, be attributed among crops produced in a rotation, for example crops grown in rotation with one or multiple cover crops?

Total emissions (positive and negative over the rotation) must be determined over the rotation and then attributed to all harvested or saleable products produced, with net emissions (or savings) split among all salable materials based on an economic allocation. In so doing, overall system productivity is encouraged as a means of improving system performance (in line with promoting US food security), but also allowing the use of alternative cropping systems (such as extended rotations) as a mechanism to transfer climate-smart value to the higher value crops in the rotation.

(10) To what extent do interactions between practices either enhance or reduce the GHG emissions outcomes of each practice? Where multiple practices are implemented in combination, should the impacts of these practices be measured individually or collectively?

Practices can certainly have interactive effects, but in many instances while that is obvious, we may not have the science or measurement capability to parse out the effects. We encourage USDA to use the science as it evolves to answer these questions. If the science we have today knows what the cumulative effects of a set of practices are, but not their individual effects, then the practices must be adopted collectively and so measured. This can change over time as our science improves and we understand and can measure effects for the individual practices in the collective set. But for individual practices that can be easily measured today, like fuel use changes under different practices, then each practice should be assigned its own score, and their cumulative effects of multiple practices is simply the sum of those scores.

(11) How should the GHG emissions of nutrient management practices (e.g., applying fertilizer according to the "4Rs" of nutrient management—right place, right source, right time, and right rate; variable rate technology; enhanced efficiency fertilizer application; manure application) be quantified? What empirical data exist to inform the quantification? What factors should USDA consider when quantifying the GHG emissions outcomes of these practices?

Intergovernmental Panel on Climate Change ("IPCC") suggestions for these practices are primarily focused on N2O. The 4Rs generally are not reflected individually but rather are integrated into one variable, the application rate, for estimating changes in N2O emissions. One improvement certainly would be to also estimate the value of at least one other of the "Rs" – the right time. But there are several other potential practices that can reduce N2O emissions and these need to have factors developed and used. For example, reductions associated with picking weather years where the risk of fall application is similar to spring, using nitrification inhibitors, or potentially adding cover crops that allow a farm to have similar fertilizer use efficiency as a spring or in-season application.

Another practice that needs to be included with its own emissions factor is variable rate technology. The partial factor productivity (lb N/bu) under fixed application can be calculated for the county. If a farm can beat this rate by using a variable rate or other practices, they should be rewarded accordingly. An algorithm would be required, but if 1% of applied fertilizer is converted to N2O based on IPCC, a simple procedure could be used.

Specifically, if USDA wants a simple procedure, they should focus on developing a county-level partial factor productivity (lb N/bu) to which farms can compare their management strategy and pay based on being climate smart. Farmers would be rewarded for consistently being ahead of the average in their area.

(12) How should the GHG outcomes of soil management practices that can increase carbon sequestration or reduce carbon dioxide emissions (e.g., no-till, cover crops) be quantified? What empirical data exist to inform the quantification? Over what time scale should practices that sequester soil carbon be implemented to achieve measurable and durable GHG benefits?

Soil carbon sequestration must be estimated based on soil carbon models (i.e., Century). Soil carbon practices generally need long-term implementation for the change to have measurable impacts and should focus on 10- to 20-year implementations.

Reduction in GHG emissions (either from CO2 from energy or fossil fuels) or N2O emissions have immediate and lasting effects due to the long lifespans of these gases in the atmosphere.

(13) For practices that can increase soil carbon sequestration or reduce carbon dioxide emissions, how should the duration and any interruptions of practice (e.g., length of time practice is continued, whether the practice is put in place continually or with interruptions) be considered when assessing the effects on soil carbon sequestration?

CO2 emissions from the consumption of fuels or energy are emissions that either occurred or did not occur. If disrupted or stopped, the emissions are associated with the crop. For example, for irrigation energy savings in a continuous corn rotation, if the farm chooses to irrigate one year and not the next, the emission of that carbon would be tied to the crop when the energy was used.

This answer is more complicated in soil practices, and modeling is needed to evaluate the impact. For example, if a farm chooses to no-till but has an incident (poor planting season where significant compaction occurs) and then chooses to till, some of the stored carbon would be released.

Farms should be allowed operational flexibility if circumstances dictate in a particular year that they have to vary from the CI score-reducing practice. For example, if they are practicing no-till but find they must till in a particular year (for any number of weather or other circumstantial reasons that are unavoidable), they should be allowed to get the payment for the no-tilling in all of the other years (they would not be paid for the practice in the year it was not possible). Additional modeling would be needed to quantify impact of missing once or twice over ten years on soil carbon to help assess the reduced payment for the following year(s) because of slower carbon accumulation than otherwise was anticipated. It may in fact prove possible with certain management practices to “recover” or sequester more soil carbon in those other years to make up for that not sequestered in the tilled year. This is another example of the need for practicing continuous improvement in this programming as our science improves or evolves.

(14) How should the baseline rates of change in soil carbon and uncertainty around the greenhouse gas benefits of these practices be characterized? Does this uncertainty and variability depend on the type or longevity/permanence of the practice?

USDA should use the "mean" rate of change in soil carbon from existing literature to provide an estimate of change in soil carbon. Modeling efforts, such as with Century, could be used to provide lookup values for generalized conditions where appropriate. Developing standardized performance estimates would lower the cost of entry to the program. Farms that want to request higher levels of performance on their farm should be allowed to do so but would be required to do at their own costs the additional modeling and verification needed to show that higher level of performance.

While there will be uncertainty and variability in any practice's performance, farmers can better anticipate how the economics of adoption of a practice if they can count on a payment based on the mean or average performance expected from the use of that practice.

We think it is counterproductive relative to increasing CI performance to "de-rate" the value of a practice due to variability in its performance, as some registries have done. There is no need to de-rate based on performance variability, as use of the mean or average value will result in higher numbers of farmers participating and these high levels of implementation will result in overall performance that tends towards the mean.

Verification and Recordkeeping

(15) What records, documentation, and data are necessary to provide sufficient evidence to verify practice adoption and maintenance? What records are typically maintained, why, and by whom? Where possible, please be specific to recommended practices (e.g., refer to practices identified in question two).

NCGA recommends using the recordkeeping and data standards required by the USDA to verify climate-smart agriculture ("CSA") practice adoption and maintenance. Agricultural production requires a simple recordkeeping strategy to account for the burden to the farmer and the evolving adoption of innovative CSA across our industry. Unlike manufacturing of other goods, agricultural production faces constantly changing weather impacts, diseases or pests, nutrients, and other unpredictable variables. Rather than establishing new recordkeeping, documentation, and data requirements, NCGA recommends USDA utilize recordkeeping and data standards that already are tailored to the intricacies and uniqueness of agricultural production. For example, the Farm Service Agency ("FSA") provides simple recordkeeping and data standards familiar to farmers and agricultural producers that account for the dynamic variables impacting the agricultural industry.

NCGA believes feedstock farmers should self-certify, providing attestation of CSA practices through the same process of reporting under FSA policy. Under FSA policy, farmers participating in certain FSA programs must submit detailed annual reports on cropland use on their farms. Under this policy, farmers must report items such as planted acres, failed acres, crop summaries, intended use of crops, and more. NCGA recommends that USDA require farmers seeking to support producer claims for the 45Z Tax Credit to report data on the adoption and maintenance of CSA practices on a form similar to that used for reporting cropland information to the FSA, and submit that form to FSA annually with the cropland use report. Farmers can report on verified plantings and tillage pass data, receipts and invoices for cover crop, biologicals, enhanced efficiency fertilizers, and seed, satellite and drone imagery, and other relevant and appropriate data. Such a system would allow USDA and Treasury to create a system of deterrence by requiring auditable data, that is certified as true and correct under penalty of law.

To avoid duplication and inconsistencies between federal agency programs, the recordkeeping, documentation, and data requirements should align with Internal Revenue Code Sections 40B and 45Z. NCGA recommends that industry trade associations, including NCGA, are well suited to work with USDA, the U.S. Department of Energy ("DOE") and the U.S. Department of Treasury ("Treasury") to develop specific reporting standards that build upon known, efficient and consistent program administration. For example, NCGA could provide guidance for corn ethanol no-till practice implementation plans documenting crop rotation, tillage, cover crop info, and field operations to ensure program compliance. Additionally, management records for cover crop and enhanced efficiency nitrogen fertilizer, including field numbers, application location and dates, field operations and acreage data, harvest and yield information, mix and seeding rates, as well as additional documents such as seed and Enhanced Efficiency Nitrogen Fertilizer ("EENF") purchase records, nutrient budget, yield goal, N-P-K applications, FSA field maps and State Land Grant University references and recommendations, can be monitored by industry trade groups, such as NCGA.

In the alternative, NCGA would support the use of Certified Crop Advisors ("CCAs") and Technical Assistance Providers ("TAPs") to verify the adoption and maintenance of climate-smart farming practices. A CCA advises or consults with growers or farm managers/operators on agronomic practices. To be certified, CCAs must meet specific standards. A TAP could provide farmers with training programs to measure and verify CSA practices that reduce GHG emissions. Within these programs, providers can prepare reports and surveys necessary to measure, monitor, report and verify GHG emissions as well as improve the management and operation of the farms regarding GHG emissions. NCGA believes that this process should not be more burdensome on farmers than the certification processes that exist in other USDA programs. Through simple recordkeeping and data standards adapted from FSA policy, government oversight and deterrence, and aid from CCAs and TAPs, farmers will be more apt to readily adopt and maintain best climate-smart agricultural practices.

NCGA also supports robust privacy protection policies for program data and documentation. NCGA recommends that farm operations data and production records should be owned by the feedstock farmer and the use of any data must be controlled by the feedstock farmer. The USDA shall not release data unless in non-identifying, aggregated form.

(16) How can market participants leverage remote sensing and/or other emergent technologies as an option to verify practice adoption and maintenance?

Satellite technology may be used but current technologies/methodologies lack technical precision to serve as a primary source of data evidencing specific practices. For example, satellite imagery does not account for certain changes in cover crop depending on weather conditions. Further, a farmer could have planted cover crop in a specific area, but everchanging seasonal conditions impeded the cover crop's anticipated growing pattern. Satellite imagery will not show these changes and only account for a lack of cover crop. Therefore, based on the satellite imagery, farmers feedstock may not satisfy the emission factor thresholds in 45Z because a false satellite reading demonstrates the lack of cover crop. USDA Technical Service Providers ("TSPs") can assist farmers verify remote sensing data and compare it to "ground-truth" data. Further, farmers could provide receipts of cover crop see purchases and other evidence of planting.

While remote sensing has its utility, NCGA does not want USDA to require use of satellite and remote-sensing technology to verify practice adoption and maintenance because of the potential inaccuracies and significant cost. Requiring remote sensing technologies adds another step and complexity that may deter smaller-scale farmers from participating in the program. While other remote sensing technologies such as soil probes that allow reporting on the chemical and environmental conditions of soil, hold promise to improve the recordkeeping, data and documentation process in the future, these technologies may not be accessible or affordable currently for smaller farms. NCGA believes self-certification and reporting, consistent with current auditing practices of USDA, is the best way to ensure farmers are adopting and maintaining CSA practices.

(17) Are there existing reporting structures that can potentially be leveraged?

An industry-monitored self-reporting reporting structure may provide the highest quality and most efficient program administration for feedstock farmers. In partnership with third-party verifiers and certifiers, industry trade associations can provide technical assistance on centralized reporting standards. USDA can apply group reporting and report sampling to homogeneous groups of feedstock farmers to lower the administrative burden of reporting for each participant. USDA should utilize existing national reporting structures that feedstock farmers are already familiar with, such as form FSA-578 and those associated with NRCS programs, such as the Environmental Quality Incentives Program ("EQIP") or the Conservation Stewardship Program ("CSP").

The FSA-578 form is a crop acreage report that is filed annually with the FSA and used by producers to document all crops and intended uses. This could provide accurate and updated information on products grown with CSA practices as well as accounting GHG emissions based on each practice. EQIP provides technical and financial assistance to farmers to improve water and air quality, conserve ground and surface water, increase soil health, reduce soil erosion and sedimentation, improve wildlife habitat, and mitigate drought and weather volatility. Under this program, farmers create a conservation plan that could include CSA practices that USDA promotes and/or funds. Specifically, EQIP uses an On-Farm Energy Initiative to encourage farmers to make voluntary improvements to boost energy efficiency on their farms. TSPs complete an energy audit after a farmer has participated in this program and this audit can serve as a record of the effective adoption and maintenance of CSA practices.

Carbon Offsetting and Reduction Scheme for International Aviation ("CORSIA"), U.S. Environmental Protection Agencies Renewable Fuels Standards Program, and the CARB LCFS program may also have models for reporting structures but those would need to be simplified and adapted to U.S. national context.

We also encourage developing an online reporting system for use by farmers. Producers would input acreage data, anticipated yield, and designated practices being implemented. The estimated CI score would be calculated by either the farmer or a designed consultant and the appropriate information (potentially GREET inputs or a GREET adjacent tracing model) submitted. The farm would then adjust yield and the CI score based on actual yield at the time of harvest. Such a system could serve as a registry that could be used in book-and-claim systems.

(18) Should on-site audits be used to verify practice adoption and maintenance and if so, to what extent, and on what frequency?

NCGA recommends USDA not require on-site audits for feedstock farmers but recognizes the need for government oversight. NCGA recommends USDA perform random on-site audits like other USDA programs on a 2–3-year rotation. Although requiring on-site and in person audits on feedstock farms will impose an oversight role on USDA, NCGA agrees that government oversight will lower the chances of fraudulent behavior.

(19) If only a sample of farm/fields are audited on-site, what sampling methodology should be used to determine the sample of farms selected for an on-site audit, and how can the sampling methodology ensure that selected farms are representative across geographies, crops, and other factors?

If on-site audits of feedstock farms are required, NCGA recommends that using existing industry standards for audits/certifications should be replicated. USDA should work with industry trade associations such as NCGA to advise on how audit/verification requirements may impact farmer participation and how to improve processes/procedures. This industry experience will be critical to understanding of feedstock farms based on similar geography, crop type and field production practices to lower the administrative burden and costs of on-site audits.

(20) What system(s) should be used to trace feedstocks throughout biofuel feedstock supply chains (e.g., mass balance, book and claim, identity preservation, geolocation of fields where practices are adopted)?   What data do these tracking systems need to collect?   What are the pros and cons of these traceability systems?   How should this information be verified?

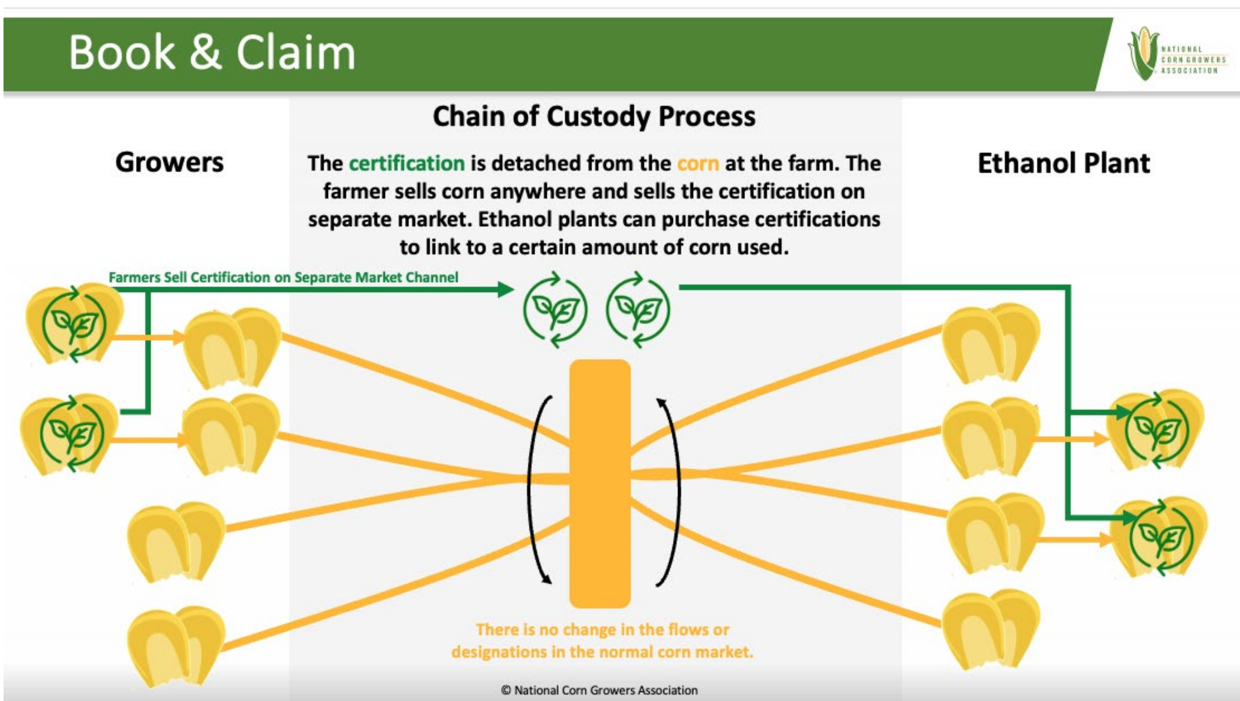
NCGA recommends using the book and claim ("B&C") traceability system (see Figure 1) that aligns with our policy for a transparent climate smart commodity market with clear price determination and market opportunity. This is the only chain of custody system that provides both clear price determination for the climate smart certification and equitable market opportunity for all corn farmers across the nation. Protecting the integrity of the commodity market for #2 yellow corn and avoiding unintended market consequences is also a top consideration.

This system allows more equitable market participation from farmers across the country rather than limiting participants to a supply shed area for an ethanol plant. In a B&C system, a producer makes a sustainability claim related to goods produced that are separated from the physical flow of the good. The producer "books" the emissions savings of the good they've produced, then a customer "claims" the emissions benefit of these goods for climate disclosures in another place (e.g., the clean fuel production facility).

A B&C approach can be structured to ensure GHG reductions are real and provides a transparent market channel for the CSA practice benefits and incentives to flow to the farmer as compared to a Mass Balance ("MB") approach.

NCGA suggests creating an industry-specific and self-regulated B&C traceability system. The CSA attributes may be given a CI score calculated the GREET Model – Feedstock Carbon Intensity Calculator ("FD-CIC") provided by Argonne National Laboratory. Numerous market complications arise if the CI Score stays attached to the corn including, but not limited to, differentiation in the feedstock commodity markets that could have negative price and demand consequences for the market for #2 yellow corn, regional disparities with unequitable opportunity to participate, and lack of price transparency for farmers.

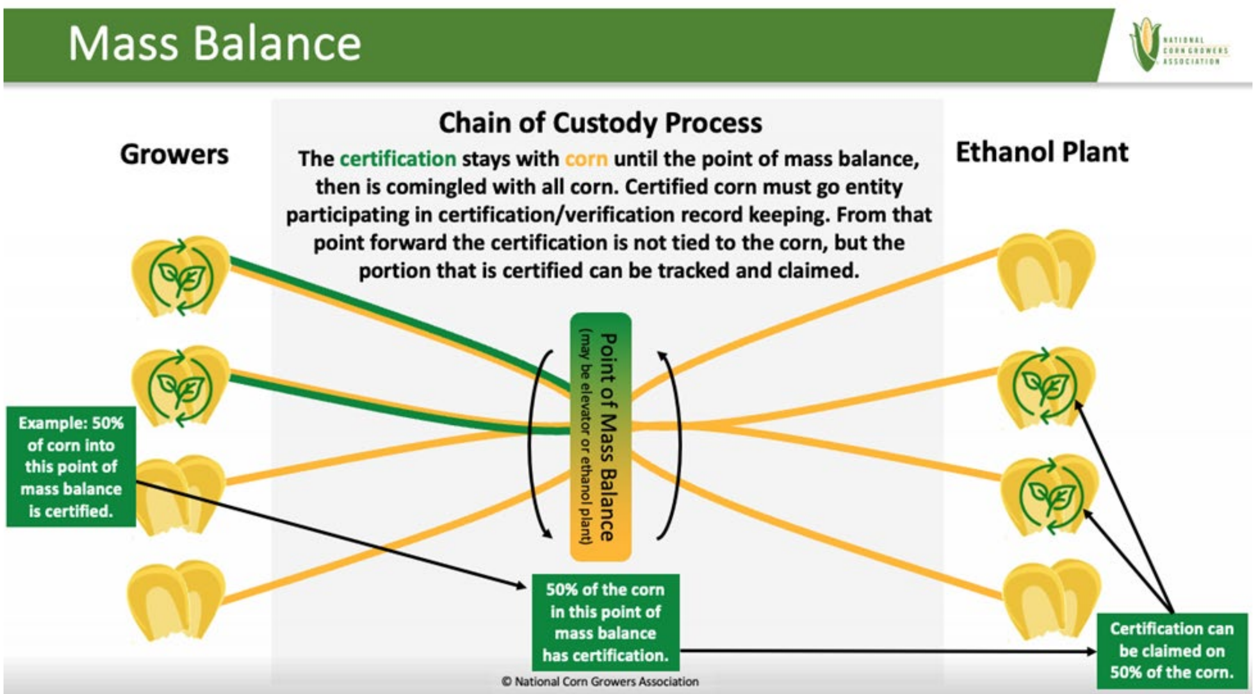
Figure 1



Addressing each of those complications, a B&C system would provide a means for separating the climate smart benefit from the from the physical commodity before the corn enters the supply chain, allowing the market for #2 yellow corn to function without change. A CI certificate representing the climate smart benefit for a specific number of bushels is then transferred through a market-based approach in a B&C system. For example, a project verifier may enter CI certificates into a created feedstock registry. The verifier would provide the CI of the feedstock and the amount available. The ”booked“ CI certificates could be purchased and ”claimed” once available in the registry.

Mass Balance (see Figure 2) is a complicated system requiring intensive tracking and identity preservation of grain until the point of MB. The unanswered question as to where the point of mass balance occurs is problematic. While the ethanol plant is the likely point of mass balance, managing the separate flows of feedstock that may go through multiple transportation routes and points of delivery before reaching an ethanol plant will be complicated and costly. Additionally, this system would likely change grain flows, with extended transportation potentially reversing any gains of GHG reductions of said grain. Added competition to areas where livestock markets co-exist with ethanol plants could lead to unintended consequences related to price and demand for corn. Furthermore, MB would limit the market participation for those farmers already doing CSA practices without access to a market for low CI corn.

Figure 2



We are opposed to use of other chain of custody models, specifically Identity Preservation and Segregation. These systems are not appropriate for large scale production or a subset of a commodity that does not have a physical difference.

It is critical that the system provides equitable opportunity for all corn growers to participate in this and future climate smart opportunities, protects the integrity of the corn market, and offers a transparent, open, and competitive marketplace.

Verifier Qualifications/Accreditation Requirements

(21) How could USDA best utilize independent third parties (i.e., unrelated party certifiers) to bolster verification of practice adoption and maintenance and/or supply chain traceability? What standards or processes should be in place to prevent conflicts of interest between verifiers and the entities they oversee?

NCGA recommends that independent verifiers and certifiers work with industry trade associations, such as NCGA, to create industry-specific, third-party verification and self-certification regimes. Feedstock farmers should be allowed to self-verify their climate-smart agricultural practices with the appropriate recordkeeping and documentation, such as satellite imagery, field management records and attestation forms. Industry trade groups can work with land-grant colleges and universities to provide a national standard for verification of practice adoption and provide an independent and systematic review and audit of such self-regulation regimes. Programs that can provide added technical assistance and verification capacity include expanded USDA TSPs, CCA programs, and the American Society of Agronomy ("ASA") Certified Professional Agronomist (CPAg) program. The USDA should require certification systems and verifiers to file conflict of interest statements and certify that they are not providing certifications or verifications for farms or supply chain operations they have ownership or other beneficial interests in.

(22) What qualifications should independent third-party verifiers of practice adoption and/or supply chain traceability possess?

All verifiers should meet specific qualification and accreditation requirements that include prescreening for education and professional experience and completion of required training, including specific to CSA and corn, ethanol alcohol to jet supply chains, and other CSA practices. These requirements may be based on existing certification standards such as those required for CCAs and TAPs. Farmers and industry trade groups can work to implement additional requirements related to the verification of emissions reductions activities. NCGA believes that the accreditation process for verifiers should be efficient and timely, providing "fast-track" accreditation for industry trade association-approved professionals, while still maintaining independence and the high standards and qualifications needed for successful program administration. Verifiers should be evaluated using a uniform set of minimum standards, regardless of where they are in the US. The verification program should also be funded appropriately to ensure compliance, consistency, and efficiency of the program execution.

(23) What independent third-party verification systems currently exist that may be relevant for use in the context of verifying climate-smart agricultural practices (as identified under questions 1 and 2) and/or biofuel supply chains?

NCGA is concerned with the limited independent third-party verification bodies that currently focus on the U.S. agriculture industry and biofuel technologies. International bodies such as the CORSIA-approved International Sustainability and Carbon Certification (ISCC) and the Roundtable on Sustainable Biomaterials (RSB) have provided global leadership around these issues but have limited capacity and focus in the US. CARB's LCFS program and EPA's RFS program provide models for verification. Efficient and effective program administration requires a robust and extensive network of third-party verifiers to perform the certification of climate-smart agricultural practices and biofuel supply chains.

NCGA recommends that USDA should work with industry trade associations, such as NCGA, ASA, National Institute of Food and Agriculture ("NIFA"), and land-grant colleges and universities, to develop systems and train verifiers on verification standards specific to corn ethanol to jet pathways. The program verification services should provide flexibility in allowing both currently existing international and state-based verification systems, as well as newly developed national verification programs to provide such services to support feedstock farmers and the biofuel supply chains.

The verification systems for voluntary carbon credit markets may also inform a proper third-party verification system for climate-smart agricultural practices. Carbon credit registries such as Verra, Gold Standard, Climate Action Reserve, and American Carbon Registry, create standards grounded in transparency and quantifiable emissions reductions. There is an independent process for accrediting "validation/verification bodies" or ("VVBs") Projects that create GHG emissions reductions can participate in the methodologies of these registries to generate carbon credits based on quantifiable emissions reductions. A key aspect of the voluntary carbon credit market is real, measurable GHG emissions reductions that have been independently verified and validated by certified third-party organizations. Once the projects have generated credits, these certified third-party organizations verify and validate the GHG emissions reductions that created these credits so that they can enter the voluntary carbon credit market.

This system of certifying third-party organizations can inform the certification of verifiers of climate-smart agricultural practices. This concept can be applied to the verification of climate-smart agricultural practices. USDA could create an accreditation standard, certified by the USDA and the Treasury Department. Following this standard, USDA could enter into agreements with organizations to create accreditation standards for VVBs to accurately verify climate-smart agricultural practices.

(24) How should oversight of verifiers be performed? What procedures should be in place if an independent third-party verifier fails to conform to verification and audit requirements, or otherwise conducts verification inappropriately?

NCGA acknowledges the vital role that trusted and independent third-party verifiers play in the program. The USDA should require audits of all verifiers through independent accreditation bodies. Verifiers should also be required to produce risk management plans to address risks of fraud and threats to the integrity of the verification system. A stakeholder-feedback reporting system should be put in place to communicate directly to the USDA and independent accreditation bodies any grievances or program violations. A feedstock farmer who had been certified by a verifier who becomes disqualified though no fault of the feedstock farmer should be given a grace period of two years to get re-certified by a qualified verifier.

As mentioned above, voluntary carbon market registries maintain validation/verification accreditation processes to ensure that the VVB is eligible. For example, Verra requires VVBs to sign an agreement with the registry as well as pay an annual VVB fee. This practice could be applied to oversight of verifiers of climate-smart agricultural practices. If an independent third-party verifier fails to conform to verification and audit requirements, the verifier's accreditation should be suspended or revoked. After this failure, another verifier should remedy the audit of the climate-smart agricultural practices to ensure they are truly accounted for.

(25) What procedures should be in place to prevent potential inaccurate or fraudulent claims regarding feedstock production practices or chain of custody claims, how should monitoring occur to identify such inaccurate claims, and what should the remedy be when such inaccurate claims are discovered?

NCGA believes registered biofuel producers are in the best position to maintain the appropriate supply chain records and documentation needed for verification and authentication by third-party certifiers. The feedstock farmer should not be liable for any intentional or inadvertent program violations of any other party in the supply chain which are outside the control of the feedstock farmer. This can be achieved through the creation of a registry by which farmers would submit their claims information for certification. Once the feedstock farmer provides the required documentation to the registry and is certified, all other parties in the supply chain, including the registered biofuel producers, should be able to rely solely on that certification for proof of program qualification. Auditing duplicate scale tickets, delivery tickets, settlement sheets throughout the supply chain should help prevent inaccurate or fraudulent claims. Any repeated inaccurate claims or intentionally fraudulent activities should lead to immediate de-registration or certification and suspension from the program. The USDA should provide a clear statute of limitations of three years on auditing and persecuting program violations.

Conclusion

NCGA respectfully submits these recommendations in response to the USDA's Request for Information on Procedures for Quantification, Reporting, and Verification of Greenhouse Gas Emissions Associated with the Production of Domestic Agricultural Commodities Used as Biofuel Feedstocks. NCGA recommends simple recordkeeping and data standards that are not burdensome on farmers. These should build upon relevant internationally and nationally verification and validation schemes to inform its verification process and ensure the integrity of the data and documentation support federal incentives for CSA practices. NCGA recommends USDA look to other USDA programs to inform the administration of the program. Finally, NCGA recommends certain procedures to deter and prevent inaccurate or fraudulent claims under the program.

We welcome the opportunity to discuss our comments and suggestions further. As such, please do not hesitate to reach out to Matt Ziegler at ziegler@ncga.com.

Sincerely,

Neil Caskey

CEO

National Corn Growers Association