

# Corn Sustainability Assurance Protocol

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Version 1.1



U.S. Grains Council  
[www.grains.org](http://www.grains.org)

## INTRODUCTION AND OVERVIEW

The Corn Sustainability Assurance Protocol is a farmer-led initiative developed by the U.S. Grains Council (USGC), an organization that develops export markets for U.S. barley, corn, sorghum and related products including distiller's dried grains with solubles (DDGS) and ethanol. This member-driven organization supports free and fair trade worldwide through programs in more than 50 countries and the European Union.

The Council believes exports are vital to global economic development and to U.S. agriculture's profitability.<sup>1</sup> As the export market developer for U.S. corn producers, the USGC works very closely with the National Corn Growers Association (NCGA), representing the interests of the more than 300,000 corn producers across the U.S.<sup>2</sup>



U.S. corn production is based on a national system of sustainability and conservation laws and regulations, combined with careful implementation of best production practices by the nation's corn farms. In addition, most U.S. corn producers participate in USDA programs wherein eligibility hinges on following its Conservation Compliance provisions.

USGC and NCGA are both actively engaged in creating a continuous improvement process for all U.S. agriculture within the framework of Field to Market: The Alliance for Sustainable Agriculture™.<sup>3</sup> Organized in 2006, Field to Market is the world's largest multi-stakeholder alliance for row crop agriculture sustainability, with more than 165 members representing grower organizations, agribusinesses, university and public sector partners, brands and retailers, and civil society organizations.

Within Field to Market, a set of sustainability indicators for agriculture focused on environmental outcomes were developed in 2009, and later complemented by process-based standards that define goal setting, benchmark development, and other steps for U.S. agriculture to meet those goals.<sup>4</sup> The principles of continuous improvement in corn production are reflected in this work and were adopted as a framework, in alignment with Field to Market's programs and approach.

## INSIGHTS INTO U.S. CORN SUSTAINABILITY TRENDS



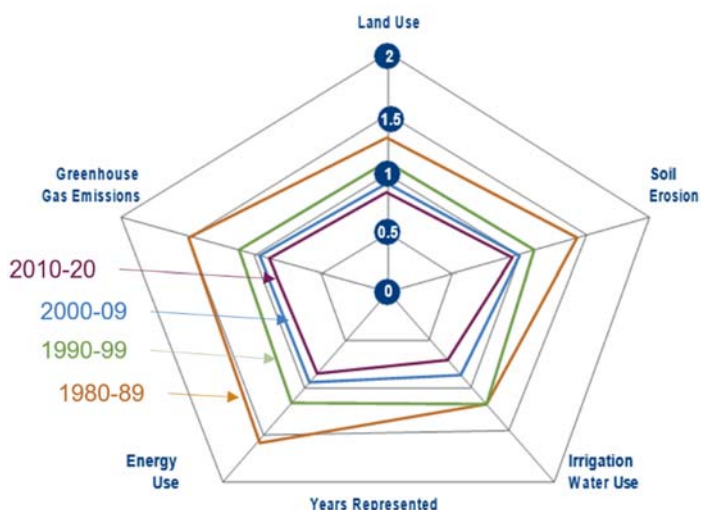
Corn producers are among farmers who most readily adopt new technologies, and the language in the CSAP reflects their willingness to embrace new production practices. Many U.S. corn producers are already engaged in continuous improvement through participation in: Natural Resource Conservation Service's (NRCS) programs, regional projects to address local concerns through Soil and Water Conservation

Districts, initiatives by state-level grower associations, Field to Market Continuous Improvement Accelerator projects, and other programs to advance knowledge and adoption of sustainability practices.

Field to Market’s most recent National Indicator Report (2021) provides a retrospective analysis of the improvements of corn producers across five Key Performance Indicators (KPIs) over a span of four decades. Results for each KPI are indexed to performance for the years 1998-2002 and reported as ten-year averages, which provide trends and important evidence of continuous improvement.<sup>5</sup> More detailed information about performance across various impact categories can be found through Life Cycle Assessments (LCA), Conservation Compliance assessment inspections and other relevant industry sources.

- 1) reduced greenhouse gas (GHG) emissions  
Indicator: pounds CO2 per bushel.....-48%  
*NCGA 2030 Goal: Reduce GHG Emissions by 13%*
- 2) improved energy use efficiency  
Indicator: BTU per bushel..... -55%  
*NCGA 2030 Goal: Increase energy use efficiency by 13%*
- 3) improved irrigation efficiencies, leading to per bushel declines in irrigation water use  
Indicator: acre inches per bushel.....-56%  
*NCGA 2030 Goal: increase irrigation water use efficiency by 15%*
- 4) reduced soil loss per acre  
Indicator: tons of soil loss per acre.....-40%  
*NCGA 2030 Goal: Reduce soil erosion by 13%*
- 5) decreased the amount of land required to produce a bushel of corn  
Indicator: planted acres per bushel.....-44%  
*NCGA 2030 Goal: Reduce land use impact by 12%*

Source: ‘Field to Market National Indicators Report’, 2021



<sup>1</sup>Note: FtM measured reductions are for 1980-2020 period. NCGA’s 2030 reduction goals are set using 2020 baseline.

## THE CORN SUSTAINABILITY ASSURANCE PROTOCOL

The U.S. Corn Sustainability Assurance Protocol describes the regulations, processes and management practices that ensure sustainable corn production. This Sustainability Protocol is one part of the overall U.S. corn producer sustainability program, which is tracked by a national measurement system of environmental outcomes by producers through the National Indicators Report written by Field to Market: The Alliance for Sustainable Agriculture™.<sup>6</sup>

The U.S. Corn Sustainability Assurance Protocol (CSAP) offers international corn buyers and export markets insights into U.S. corn production sustainability practices and outlines U.S. state and federal laws that provide assurances that these practices are being implemented, where required, throughout the country.

The CSAP is organized into eleven impact categories that benchmark the sustainability standards used for other crops. These categories align with the eight critical environmental outcomes that Field to Market calculates as indicators of sustainable agriculture in the 2021 National Indicators Report: biodiversity, energy use, greenhouse gas emissions, irrigation water use, land use, soil carbon, soil conservation and water quality.<sup>7</sup>

The CSAP Impact categories are:

Table 1: Impact Categories for U.S. Corn Sustainability Assurance Protocol (CSAP)	
Greenhouse Gas Emissions & Air Quality	Agrochemical & Nutrient Management
Water Quality & Quantity	Waste & Pollution
Soil Health & Productivity	Working Conditions & Labor Relations
Land Use, Sensitive Habitats and Biodiversity	Worker & Public Safety
Crop Health & Agricultural Best Management Practices	Community Relations
Continuous Improvement and Governance	

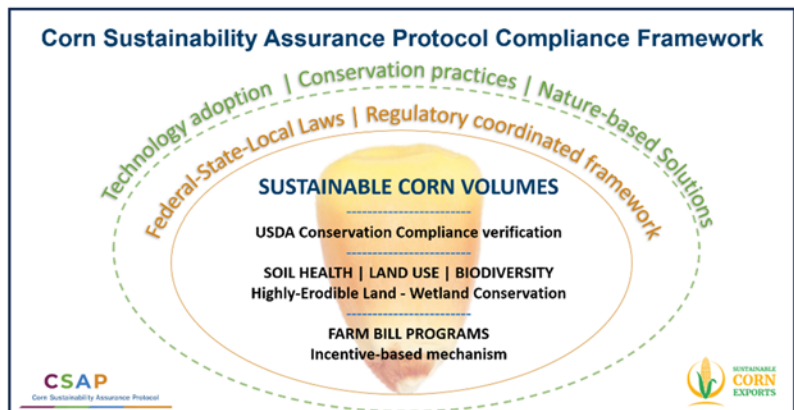
### CSAP: COMPLIANCE FRAMEWORK

The U.S. Corn Sustainability Assurance Protocol (CSAP) has been developed to provide insights to consumers of U.S. corn and corn products of the commitment of growers to continue to adopt strategies and technologies to improve the sustainability of agriculture. The CSAP outlines the prevailing and recommended practices for U.S. corn production, as well as the laws and regulations that govern the various impact categories described.

Operationally, under the CSAP the conservation compliance requirements set by USDA Farm Service Agency programs serve to define the CSAP’s minimum verification threshold. This requires producers to submit an annual internal audit of compliance with the Highly Erodible Land Conservation and Wetland Conservation provisions (Form AD1026) and makes them subject to on-farm verification/review. Under this framework, each marketing year a total allocation of U.S. sustainable corn volume is established to be used under a mass-balance sourcing approach<sup>i</sup>, which is determined by using 1) the number of qualified corn acres participating in U.S. Farm Service Agency programs in a given marketing year, and 2) the average yield per acre recorded for these acres in that period.

The mass-balance sourcing approach used under CSAP means that only the aggregate mass of corn and corn products meeting the minimum verification threshold will be eligible for sustainability allocation under the CSAP program. This process creates a motivation to increase the number of acres eligible for sustainability allocation of U.S. corn and corn products.

Verification of the internal audits submitted by producers is conducted by the USDA-Natural Resource Conservation Service (NRCS), which each year selects at random a group of producers with highly erodible land or wetlands for review, that can range from 1% to 5% of producers participating in its programs. Additionally, U.S. corn producers can adopt complimentary sustainability disclosure tools such as Field to Market’s Fieldprint Calculator.<sup>8</sup>



Please see the ‘Corn Sustainability Verification’ section on page 30, for more details.

<sup>i</sup> “Mass balance is a sourcing method that allows for certified and non-certified ingredients to become mixed during the shipping and manufacturing processes”; Rainforest Alliance, ‘What is Mass Balance Sourcing’, <https://bit.ly/3AW2uH5>

## IMPACT CATEGORIES & CONTINUOUS IMPROVEMENT GOALS

Although centered in the Midwest and Upper Midwestern States, corn can be grown in nearly every state and each year around 90 million acres (36 million hectares) of corn are planted in the U.S. Across this vast expanse, several factors come into play regarding how corn is grown, including types of soil, climate conditions, rainfall, topography, geology and even the type of equipment used for farming.

All these factors play into the day-to-day decisions that farmers make on their operations, which are different for each corn farm, and have different sustainability-related impacts. CSAP impact categories acknowledge this complexity and define general continuous improvement goals for corn producers to pursue.

The CSAP identifies key impact categories and develops continuous improvement goals that align with NCGA's sustainability commitments and Field to Market's measurement framework, where applicable, with the recognition that sustainable agricultural production is not the sole responsibility of the producer, but rather that corn producers are part of a system, and that they participate in multiple supply chains that reach end-consumers.

Furthermore, the CSAP acknowledges the global impact of agricultural production and the importance of common frameworks for understanding and discussing sustainability. The CSAP identifies the potential to link voluntary sustainability standards like the United Nations 17 Sustainability Development Goals (SDGs)<sup>9</sup>, which represent "a blueprint to achieve a better and more sustainable future for all by 2030".

The SDGs were developed as a call to action for all countries of the world to develop strategies to "improve health and education, reduce inequality, and spur economic growth" while addressing climate change and preserving oceans and forests. Appendix 1 shows that many of the CSAP Impact Categories and Compliance Criteria can be linked to key targets in the SDGs.

### Corn Sustainability Assurance Protocol Impact Categories



## I. Greenhouse Gas Emissions, Fossil Fuel Use & Air Quality

### Continuous Improvement Goals

- ✓ Continued improvement in energy use efficiency.
- ✓ Reduced emissions from U.S cropland per unit of output.
- ✓ Sustained contribution to reducing the overall greenhouse gas emissions from the agricultural landscape.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers strive to adopt best management practices to reduce GHG Emissions by:**
  - a. Reducing energy usage through conservation tillage methods as appropriate.
  - b. Optimizing nitrogen (N) and phosphorus (P) fertilizer use and application.
  - c. Monitoring and reducing fossil fuel use for management records and to increase enterprise viability.
    - i. The NRCS maintains four energy tools to increase awareness and help farmers identify energy reduction potential in their operations. The estimators can be used to estimate potential energy savings for irrigation, nitrogen fertilizer use, grain drying and tillage systems.<sup>10</sup> The NRCS also maintains energy conservation tools to help farmers estimate current energy usage and calculate energy and cost savings that could be achieved through the use of high efficiency equipment and energy conserving practices, and renewable energy tools to help farmers estimate energy production potential from solar panels, wind turbines and biogas.<sup>11</sup>
  - d. Utilizing renewable energy resources, when possible, to reduce fossil fuel use.
  - e. Prioritizing transportation methods such as barge and rail, when possible, to reduce GHG emissions and fossil fuel use.
- 2. Producers are required to comply with the Clean Air Act and its amendments to protect and enhance air resources to promote public health and welfare.<sup>12</sup>**
- 3. Producers adopt Precision Farming Techniques as appropriate utilizing Global Positioning System (GPS) and other advanced technologies to optimize fossil fuel use and fertilizer application.**
- 4. Producers support the development of non-fossil fuel ethanol. Each year, roughly 30 percent of U.S. field corn goes into fuel ethanol.**
- 5. Producers support ethanol production, job creation and economic vitality across the U.S. In 2019, the U.S. ethanol industry helped support nearly 349,000 direct and indirect jobs.**
- 6. Producers use USDA-NRCS tools and resources to plan and implement energy-efficient practices.<sup>13</sup> These include AgEnergy Management Plans (AgEMPS), which help to identify and prioritize energy conservation opportunities on a farm; and online tools such as the Energy Estimator, which allows farmers to estimate the energy use and costs of different farming activities, such as crop irrigation, tillage, nitrogen use, and animal housing.<sup>14</sup>**
- 7. Producers are encouraged to participate in USDA surveys and to use Greenhouse Gas (GHG) emissions tracking tools such as Field to Market's Fieldprint Calculator, in order to measure and monitor sources of on-farm emissions.**

## II. Water Quality & Quantity

### Continuous Improvement Goals

- ✓ Continued improvement in irrigation water use efficiency and conservation on U.S. cropland.
- ✓ Improved regional water quality through reduction in sediment, nutrient and pesticide loss from U.S. cropland.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are expected to protect the quality and supply of surface and ground water by utilizing best management practices, including development of nutrient management plans, and following local, state, and federal regulation to:**
  - a. Optimize irrigation and comply with all applicable water conservation efforts in their irrigation districts to ensure effective and equitable allocation of water resources.
  - b. Adopt appropriate conservation tillage methods to reduce water runoff and increase infiltration.
  - c. Implement best management practices to reduce phosphorus (P) and nitrogen (N) loss and transport.
    - i. Balance P and N inputs with outputs.
    - ii. Use proper application rates, methods and timing for P and N application, in line with the 4R Principles of nutrient management or other nutrient management methodologies.
    - iii. Use cover crops, terracing, strip cropping, contour farming, filter strips, conservation buffers and other management and structural conservation practices suited to the farm to minimize erosion runoff and P and N transport.
- 2. Producers are required to comply with Clean Water Act Law 40 parts 116–117 which regulate discharges of designated hazardous substances. Facilities must immediately notify the National Response Center and state agencies of any unauthorized discharge of reportable quantity of designated hazardous substance into navigable waters, the shorelines of navigable waters and contiguous zones. Discharge of harmful quantities of oil must also be reported immediately.<sup>15</sup>**
  - a. Watersheds with stream reaches with demonstrated water quality concerns are listed by each state government on the US EPA Clean Water Act 303(d) list.
  - b. State governments may require monitoring under Clean Water Act section 319 to ensure the implementation of best management practices and to determine how conservation measures affect water quality.
  - c. Producers comply with National Pollutant Discharge Elimination System (NPDES) requirements on discharges of biological pesticides, and chemical pesticides that leave a residue, into waters of the U.S.<sup>16</sup>
- 3. Producers are required to comply with Section 404 of the Clean Water Act regarding agricultural impacts on wetlands.<sup>17</sup>**
- 4. Producers are required to comply with Safe Drinking Water Act to protect public health**

by preventing contamination of surface and ground sources of drinking water.<sup>18</sup>

5. **Producers participate in and abide by applicable State statutes and regulatory systems that allocate water rights for agricultural activities, which vary across each State of the U.S.<sup>19</sup>**
6. **Producers identify and implement measures conducive to appropriate water stewardship in accordance with local farming conditions.**
  - a. Producers implement structural and nature-based solutions such as terraces, grass waterways, buffer strips, ponds, and lakes on their land as appropriate, and in accordance with regulations, to reduce soil erosion and runoff, and optimize water use for their crops.
  - b. Producers apply the harvesting of surplus rainwater and the recycling of greywater, where possible and appropriate.
  - c. Producers implement best practices in the management of field margins, boundaries, and watercourses to preserve wildlife habitats and reduce agrochemical impacts.
7. **Producers record and report their irrigation practices to USDA's National Agricultural Statistics Service (NASS) through the Irrigation and Water Management Survey<sup>20</sup>. Additionally, producers also abide by State-level irrigation reporting requirements, which vary in terms of thresholds, frequency and means of submission.**
8. **Producers voluntarily adopt on-farm best practices in water use, implement irrigation management plans where appropriate, and participate in federal government technical assistance programs that target increased efficiency in water use and irrigation<sup>21</sup>. These programs include research, monitoring and water consumption reporting; the implementation of best management practices in areas such as on-farm water conveyance, application methods, and irrigation scheduling; and the adoption of the appropriate irrigation equipment technology for each farm, which is adequately serviced and maintained.**





### III. Soil Health & Productivity

#### Continuous Improvement Goal

- ✓ Continued reduction in soil erosion on all U.S. croplands.

#### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are expected to utilize best management practices appropriate to their soils, topography and climate conditions to maintain or improve soil quality and soil carbon and to avoid erosion.**
  - a. Producers should adopt conservation practices like crop rotation, cover crops and nutrient management to improve soil health.
  - b. Producers should adopt conservation and no till methods suited for their land in order to increase soil health and organic matter, increase infiltration and moisture retention and reduce soil compaction and soil erosion.
  - c. Producers should implement a wide variety of conservation practices such as terraces, riparian buffers, strip cropping, contour farming, filter strips, waterways and other strategies to minimize soil erosion.
- 2. Producers shall monitor and maintain or improve soil health.**
  - a. The NRCS recommends soil testing every 3-5 years and more frequently if manure is applied or if attempting to make large nutrient or pH changes in the soil. Soil sampling is provided by most county extension offices and state university cooperative extension services as a free or low-cost service. Soil sampling data is generally maintained by the producer.
  - b. Precision Farming techniques utilizing Global Positioning System (GPS) help producers implement grid soil sampling.
- 3. Producers are required to comply with the Highly Erodible Land Conservation and Wetland Conservation Provision.<sup>22</sup>**
  - a. Highly erodible land is defined as soils that have an erodibility index of eight or more. The USDA will keep record of highly erodible land. Producers may obtain aerial imagery of their farms and a printout of their farm and tract records from the local USDA office administering their farm.
  - b. Producers will maintain compliance with highly erodible land regulations by creating and implementing a required conservation system plan.
  - c. Producers file Form AD-1026<sup>23</sup> with USDA Farm Service Agency certifying adherence to Highly Erodible Lands Conservation provisions.
  - d. Producers planning to make changes which could impact highly erodible land must notify USDA for appropriate technical determination.
- 4. Producers are required to comply with the USDA Sodsaver provisions<sup>24</sup> which helps protect native sod in Minnesota, Iowa, North Dakota, South Dakota, Montana and Nebraska.**

5. Producers are required to follow all local regulations pertaining to burning crop residue and leaving crop residue in place to provide desirable agronomic advantages including water storage and soil fertility.
6. Producers participate in Federal, State and industry initiatives to implement production practices that preserve and enhance soil health and permeability, reduce erosion, increase drought resistance, improve water quality, reduce nutrient loss, and lower input costs.
  - a. USDA funds research on soil health projects in partnership with academic institutions and producer associations, through programs such as the Agriculture and Food Research initiative and the Climate-Smart Partnerships program. Industry-led initiatives include partnerships such as Farmers for Soil Health.



## IV. Land Use, Sensitive Habitats & Biodiversity

### Continuous Improvement Goals

- ✓ Support of diverse species and ecosystems by conserving and enhancing habitats across U.S. agricultural landscapes.
- ✓ Improved productivity on U.S. croplands.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are expected to adopt conservation practices such as enhancing pollinator habitats, early successional habitat development, planting cover crops, vegetated buffer strips, ponds and riparian buffers to improve wildlife habitat.**
- 2. Producers should maintain or enhance and protect on-farm biodiversity through the preservation of native vegetation, where possible.**
- 3. Producers are encouraged to participate in conservation programs that provide incentive for the preservation of native vegetation and to adjust management practices to benefit species biodiversity.**
- 4. Producers are required to comply with U.S. Endangered Species Act<sup>25</sup> to protect listed animal and plant species from extinction by preserving the ecosystems in which they survive.**
- 5. Producers are required to comply with Federal Migratory Bird Treaty for protection of shared migratory bird resources.**
- 6. Producers are required to comply with U.S. laws that prohibit altering the habitat of endangered or threatened species in such a way that disrupts essential behavioral patterns including but not limited to breeding, feeding, and sheltering.**
  - Producers follow guidance from Federal and State-level authorities to prevent illegal hunting, fishing or extraction of flora and fauna from their lands, including endangered species, in accordance with relevant legislation and customary laws.
- 7. Producers develop a Habitat Conservation Plan<sup>26</sup> if required as part of an application for private entities undertaking projects that might result in the destruction of an endangered or threatened species.**
- 8. U.S. Corn is not produced on highly biodiverse grassland (native grasslands).**
  - The USDA Conservation Reserve Program (CRP) Grasslands provides rental payments and cost-share assistance to enrolled producers to maintain and protect grassland, including rangeland and pastureland, with an emphasis on plant and animal biodiversity.
- 9. U.S. Corn is not produced on wetlands or on peatland.**
  - Producers are in compliance with U.S. Wetlands Conservation provisions, including the prohibition of production of an agricultural commodity on wetlands or peatland converted after December 23, 1985.<sup>27</sup>
    - Wetland is defined as an area that: has a predominance of hydric soils; is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of water tolerant vegetation typically adapted for life in saturated soil conditions.

- ii. USDA NRCS makes and keeps records of wetland determinations, which remain in effect as long as the land is used for agricultural purposes. Producers are provided with copies of this information from the local USDA office.
  - iii. Producers planning to make changes which could impact wetlands must notify USDA for a technical determination before proceeding.
  - iv. Producers file Form AD-1026<sup>28</sup> with USDA Farm Service Agency certifying adherence to Highly Erodible Lands Conservation and Wetland Conservation provisions.
- b. Producers are required to maintain compliance with wetland conservation regulations by not draining or converting wetlands.
  - c. Producers are required to follow applicable state laws that prohibit changing peatland without a regulated permit.
  - d. Producers are required to not plant on a converted wetland.
  - e. Producers do not convert a wetland to make possible production of agricultural commodity.
  - f. Producers are required to follow Section 404 of the Clean Water Act regarding agricultural impacts on wetlands.<sup>29</sup>
  - g. The USDA Farmable Wetlands Program provides rental payments to producers for restoring and establishing plant cover on wetlands and wetland buffer zones that were previously farmed.<sup>30</sup>
  - h. The NRCS Wetland Reserve Easement Program<sup>31</sup> enrolls cropland that was formerly wetlands and restores them to their natural wetland condition in either 30-year or permanent easements. To date, some 1.2 million hectares of cropland have been enrolled in the program and restored to wetlands.<sup>32</sup>

**10. Primary forest or continuously forested land will not be converted to land for future corn production.**

- a. Producers are required to follow U.S. laws regarding conversion of primary forests to other uses. Use or occupancy of national forest system land is prohibited without special-use authorization.<sup>33</sup>
- b. Producers are required to follow U.S. laws prohibiting the use, occupancy, or conversion of public lands in National Forests and Grasslands.
- c. The NRCS Healthy Forests Reserve Program provides owners with 10-year restoration agreements and 30-year or permanent easements for conservation actions intended to improve biological diversity, increase carbon sequestration or help threatened or endangered species.<sup>34</sup> Forestland that is part of a working farm or ranch can also be protected by permanent easements in the NRCS Agricultural Easement Program.<sup>35</sup>
- d. For more than 100 years, the amount of forested land in the United States has stayed relatively constant.<sup>36</sup>

**11. The aforementioned commitments to the conversion of primary forests or continuously forested land for future corn production, to the production of corn on wetlands or peatland, and to self-auditing under the highly-erodible lands and wetland conservation provisions, are applicable since January 2016.**

**12. U.S. Corn is not produced on designated protected areas.**

- a. Producers follow U.S. laws that prohibit the production of corn on land under federal protected status, land designated wilderness or research natural areas, protected land in national forests and grasslands, and land in the national landscape conservation system.
- b. Producers follow U.S. laws that prohibit production of corn on land protected by national park service.

**13. Producers participate in Federal programs that restore environmentally valuable or low productivity areas to natural habitat, as well as in Farm Bill conservation programs that help restore natural habitats, including:**

- a. the Conservation Reserve Program (CRP), in which temporary changes in land use or management are implemented to achieve environmental benefits; and
- b. the Healthy Forests Reserve Program (HFRP), in which landowners implement voluntary 10-year, 30-year or permanent land-restrictions for specific conservation actions that promote the recovery of endangered or threatened species, improve plant and animal biodiversity, and enhance carbon sequestration.



## V. Crop health & Agricultural Best Management Practices:

### Continuous Improvement Goals

- ✓ Continued adoption and access to sustainability-enhancing agricultural practices, technologies, and innovations to increase plant and crop health.
- ✓ Increased implementation of new and existing best agricultural management practices.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are encouraged to use best management practices to protect and improve the quality of plant stocks and crops.**
- 2. USDA's National Seed Storage Laboratory maintains the genetic diversity of crop seed stock important to agricultural production and works to develop and maintain unique germplasm.**
- 3. The Germplasm Enhancement Maize (GEM) program works to increase the genetic diversity and reduce the genetic vulnerability of commercial hybrids.**
- 4. U.S. Corn seed commerce complies with the Federal Seed Act<sup>37</sup> regarding fair trade and proper labeling.**
  - a) Producers are ensured by the Federal Seed Act that suppliers provide seed that is of high-quality quality, compliant with all applicable laws and regulations, and corresponding to their labels and marketing.
  - b) Producers work with their suppliers to ensure the availability of records, including any applied treatment, certified status or phytosanitary certificates, for local or imported seed, or propagation material.
- 5. Producers evaluate options and work with their seed providers to select the varieties that better adapt to their soil, climate, environmental, and socio-economic factors**
- 6. Producers are required to comply with Plant Protection Act<sup>38</sup> regulations regarding the import of plants and plant products.**
  - a) Producers support use of naturally occurring processes in developing plant/crop improvements for agricultural purposes within appropriate guidelines (e.g., enhanced ploidy, gene editing, RNA interference [RNAi], biologicals, etc.)
- 7. Producers' crops are grown under the federal government's coordinated framework for regulation of biotechnology, which is a coordinated, risk-based system to ensure that new biotechnology products are safe for the environment and human and animal health.<sup>39</sup>**
  - a) The USDA's Animal and Plant Health Inspection Service (APHIS)<sup>40</sup> is responsible for protecting agriculture from pests and diseases including regulatory oversight over products of modern biotechnology that could pose such a risk.
  - b) The Environmental Protection Agency through a registration process regulates the sale, distribution and use of pesticides in order to protect health and the environment, regardless of how the pesticide was made or its mode of action. This includes regulation of those pesticides that are produced by an organism through techniques of modern biotechnology.

- c) The Food and Drug Administration is responsible for ensuring the safety and proper labeling of all plant-derived food and feed, including those developed through genetic engineering.
- 8. Corn producers participate in trainings and apply best practices to ensure the safety and quality of their products.**
- a) USDA provides farmers, temporary, seasonal and migrant workers with training through entities such as the National Institute of Food and Agriculture (NIFA)<sup>41</sup>, to ensure that corn is grown safely; that scientific knowledge is applied to enhance stewardship of land, water and ecosystems; that food contamination is reduced; and that there is an appropriate use of water and chemicals (herbicides, pesticides, fertilizers) for crops. Corn farmers also participate in NIFA farm safety training programs, which are provided in collaboration with Cooperative Extension Service programs that train workers in appropriate field practices and equipment use and maintenance.
  - b) The National Institute for Occupational Safety and Health (NIOSH) conducts programs that promote farm safety, illness, and injury prevention<sup>42</sup>, while the Occupational Safety and Health Administration (OSHA) provides standards and guidelines for addressing emergency preparedness, accidents, and hazards for farm workers<sup>43</sup>.
  - c) EPA provides guidance and documentation on regulations, programs and certifications related to agricultural operations by farm activity, including crop production; farm facilities, fuel, and equipment; chemical handling; air emissions; hazardous substances and waste releases.<sup>44</sup>
- 9. Producers ensure that their land is suitable for current and planned farming activities, in accordance with existing Federal and State laws and regulations.**
- a) Producers participating in FSA programs comply with land use reporting requirements.
  - b) Producers have access to and use NRCS's Web Soil Survey, in order to understand the inherent characteristics of the native soil types at a specific location and improve land-use and management decisions.
- 10. Producers avoid the deliberate introduction, cultivation, and use of known invasive species.**
- a) Producers abide by National Resource Conservation Service (NRCS) and Farm Service Administration (FSA) regulations and guidance regarding invasive species and participate in related technical assistance programs.
  - b) Producers follow Animal and Plant Health Inspection Service (APHIS) regulations and guidance to prevent the introduction of invasive species into the United States.



## VI. Agrochemical & Nutrient Management

### Continuous Improvement Goal

- ✓ Continued reductions in sediment, phosphorus, nitrogen, and pesticide loads from agriculture in U.S. waterways.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are encouraged and incentivized to adopt a wide range of conservation practices such as conservation tillage, crop rotation, cover crops, buffers and nutrient management appropriate for their farms to reduce nutrient and pesticide/herbicide loss and runoff.**
- 2. Producers implement Precision Farming Techniques as appropriate utilizing Global Positioning System (GPS) and other advanced technologies like the following.**
  - a. Variable rate fertilizer and herbicide application
  - b. Field mapping for herbicide, pesticide, and fertilizer application
- 3. Producers are required to follow the U.S. Environmental Protection Agency (EPA) Worker Protection Standard for Agriculture Pesticides<sup>45</sup> meeting regulations for: pesticide safety training, notification of pesticide application, use of personal protective equipment, restricted-entry intervals after pesticide application, decontamination supplies and emergency medical assistance.**
- 4. Producers are required to follow Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)<sup>46</sup> maintaining compliance with agricultural chemical handling, storage, and application regulations.**
  - a. All pesticides are registered with EPA with proper labels and used in accordance with specifications including how and under what conditions chemicals can be applied.
  - b. Certification and training are required for pesticide applicators using restricted use pesticides.
  - c. Producers adhere to EPA regulations concerning rotation of chemical active ingredients.
  - d. Pesticides are classified for general or restricted use. Restricted category pesticides may be used only under the direct supervision of certified applicators, or under such other regulatory restrictions as the EPA administrator may require.
  - e. U.S. regulations provide penalties for violations of FIFRA regulations and violation of these instructions is equivalent to violating the law; consequences can include criminal prosecution, civil remedies for damages and loss of license.
  - f. FIFRA provides states the authority to regulate the sale or use of any federally registered pesticides in that state.
  - g. Producers adhere to all federal regulations and guidelines on farm chemical application, including not applying WHO Class Ia, Ib, and II pesticides within 500 meters of populated areas or water bodies.
  - h. EPA is responsible for FIFRA legal compliance and monitoring, having the authority to regulate the registration, distribution, sale and use of pesticides, insecticides, herbicides, rodenticides, and antimicrobials. Enforcement of regulations pertaining to plant protection products and other chemicals is carried out by EPA's Office of Enforcement



and Compliance Assurance, through civil judicial actions and criminal actions. Application of Plant Protection Products must also be consistent with state and tribal laws and regulations, where states have primary authority for compliance monitoring and enforcement. Compliance activities range from off-site record reviews to on-site inspections, as well as assistance support to enhance compliance with the regulations promulgated under FIFRA.

- i. EPA works cooperatively with States lead regulatory agencies to enforce federal pesticide regulations and respond to potential complaints.
  - j. Producers procure plant protection products and other registered chemicals from establishments, dealers, or distributors legally authorized and licensed at the Federal and State levels.<sup>47</sup>
  - k. The United States Environmental Protection Agency (EPA) and each State's Department of Agriculture are responsible for regulating fertilizer products in the United States, including proper labeling and distribution.
  - l. Producers will follow recommended application methods in accordance with specific crop needs.
- 5. The U.S. is signatory to Rotterdam Convention of the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticide in International Trade enforcing a banned list of chemicals for producer use.**
  - 6. Producers comply with federal and state regulations, as well as with the obligations derived from subscribed international agreements, regarding the use and commercialization of nutrient and plant protection products.**
  - 7. Producers follow industry guidelines regarding proper application rates, methods, timing and record keeping for nutrient and protection products, in line with the 4R Principles of nutrient management (right source, right rate, right time, right place), or other nutrient management methodologies.**
  - 8. Producers are required to comply with the Toxic Substances Control Act<sup>48</sup> to regulate chemicals that pose an unreasonable risk to health or to the environment and to regulate these chemicals' distribution and use.**
  - 9. Producers are required to follow the Resource Conservation and Recovery Act which controls hazardous waste, non-hazardous solid waste and underground storage tanks.<sup>49</sup>**
  - 10. Producers are required to follow Safe Drinking Water Act regulations to protect public health by preventing contamination of surface and ground sources of drinking water.<sup>50</sup>**
  - 11. Producers perform regular maintenance, servicing and calibration of vehicles, machinery, and equipment to keep them operating in accordance with recommended guidelines to ensure safety and optimal performance and comply with local and federal regulations. Additionally, all motor vehicles, including over the road trucks, must be inspected every year by state certified inspectors.**
    - a. Producers follow OSHA standard 1928.58 for guarding farm field equipment, which stipulates that employers shall instruct every employee in the safe operation and servicing of all covered equipment with which he is or will be involved.<sup>51</sup>
  - 12. Producers recognize the value of Integrated Pest Management (IPM), support efforts to increase its effectiveness, and adopt it on their farms as appropriate.**

- a. Title 7, Chapter 6, Section 136r-1 of the Code of Federal Regulations, requires USDA to implement research, demonstration, and education programs to support adoption of IPM.<sup>52</sup>
- b. Producers work with USDA and other federal agencies by participating in trainings and adopting the best solutions for managing pests that combine biological, cultural, physical, and chemical tools, as appropriate to their farms and operations.

**13. Producers work with fertilizer retailers to appropriately understand and follow product labels and adhere to Federal and State regulations and guidance on storage, mixing and handling to prevent exposure and risk to people and the environment.**

- c. Producers follow EPA, OSHA and ATF guidance (EPA 550-F-15-001) on fertilizer safe storage, handling and management, as well as other OSHA regulations and industry guidelines.
- d. Producers follow FIFRA regulations regarding adherence to label directions and precautions for each pesticide they use, and comply with the Worker Protection Standard (WPS- U.S. Code of Federal Regulations Title 40, Chapter I Subchapter E Part 170), which establishes standards to reduce the risks of illness or injury resulting from workers' and handlers' occupational exposures to pesticides used in corn production, and also from the accidental exposure of workers and other persons to such pesticides.
  - i. Producers comply with sections § 170.240 and § 170.250, which regulate the adequate use and cleaning of personal protective equipment, decontamination, storage, and other procedures to minimize risk to people and the environment.<sup>53</sup>



## VII. Waste & Pollution

### Continuous Improvement Goals

- ✓ Continued efforts to minimize waste throughout the production, processing, and consumption process.
- ✓ Continued use of agricultural technologies to expand the uses for corn and make the use of corn products even more efficient.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

1. **Producers take measures to reduce and recycle waste and meet local regulations as related to waste recycling.**
2. **Producers are required to follow local regulations pertaining to burning crop residue.**
3. **Producers are required to comply with Clean Water Act Law 40 parts 116-117 which regulate discharges of designated hazardous substances. Facilities must immediately notify the National Response Center and state agencies of any unauthorized discharge of reportable quantity of designated hazardous substance into navigable waters, the shorelines of navigable waters and contiguous zones.**
4. **Discharge of harmful quantities of oil must also be reported immediately.**<sup>54</sup>
  - a. Watersheds with stream reaches with demonstrated water quality concerns are listed by each state government on the U.S. EPA Clean Water Act 303(d) list.
  - b. State governments may require monitoring under Clean Water Act section 319 to ensure the implementation of best management practices and to determine how conservation measures affect water quality.
  - c. Producers comply with National Pollutant Discharge Elimination System (NPDES) requirements on discharges of biological pesticides and chemical pesticides that leave a residue in waters of the U.S.<sup>55</sup>
5. **Producers comply with Title 40, Chapter I, Subchapter O, Part 503 of the Code of Federal Regulations<sup>56</sup>, which establishes the standards for the use or disposal of sewage sludge, including general requirements, management practices, and operational standards related to agricultural land.**
  - a. Producers comply with Section 405(a) of the Federal Water Pollution Control Act (Clean Water Act), which regulates sewage sludge disposal.
  - b. Corn producers abide by the Federal and State wastewater treatment authorities' dispositions regulating the use of discharge or untreated sewage, sludge or slurry onto land or watercourses.



## VIII. Working Conditions & Labor Relations

### Continuous Improvement Goals

- ✓ Improved worker economic and hiring protections, and improved labor productivity.
- ✓ Continued compliance with prevailing laws and regulations.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are required to follow the Fair Labor Standards Act<sup>57</sup> which prescribes standards for basic minimum wage and prohibits the employment of children under age 16 during school hours and in certain jobs deemed dangerous.**
- 2. Producers are required to comply with the Federal Equal Employment Opportunity Law<sup>58</sup> which provides the following protections:**
  - a. Prohibits employment discrimination based on race, color, religion, sex or national origin.
  - b. Protects men and women who perform substantially equal work in the same establishment from sex-based wage discrimination.
  - c. Protects individuals who are 40 years of age or older.
  - d. Prohibits employment discrimination against qualified individuals with disabilities.
  - e. Prohibits employment discrimination based on genetic information.
  - f. Prohibits employment discrimination based on sexual orientation and gender expression.
  - g. Provides guidelines on employee selection procedures.
- 3. Producers are required to comply with the Migrant and Seasonal Agricultural Worker Protection Act<sup>59</sup> which provides safeguards to migrant and seasonal agricultural workers.**
  - a. Section 524 stipulates that in general, it is unlawful for a person or other entity to hire, or to recruit or refer for a fee, any migrant or seasonal agricultural worker for any activity related to obtaining employment.<sup>60</sup>
  - b. Title 29, Subtitle B, Chapter V, Subchapter A, Section 500.51-g of the Code of Federal Regulations, stipulates the penalties applicable to Farm Labor Contractors for hiring, recruiting, or referring for a fee, for employment in the United States, any migrant or seasonal agricultural worker.<sup>61</sup>
  - c. In accordance with U.S. legislation, the Migrant and Seasonal Agricultural Worker Protection Act (Section 504), and in alignment with ILO conventions, agricultural workers are entitled to file a complaint with the Department of Labor's Wage and Hour Division, initiate a private legal action, and provide testimony or cooperate in an investigation or lawsuit, without facing any form of threats, termination, or discriminatory actions.
- 4. Producers are required to comply with the Abolition of Forced Labor Act<sup>62</sup> in that they do not make use of any type of forced or compulsory labor including:**
  - a. As a means of political coercion or education or as a punishment for holding or expressing political view or views opposed to the established political, social or economic system.
  - b. As a method of mobilizing and using labor for purposes of economic development

- c. As a means of labor discipline
  - d. As a punishment for having participated in strikes
  - e. As a means of racial, social, national, or religious discrimination
5. **Producers comply with Occupational Safety and Health Standards for Agriculture 1928.110 Subpart I, which stipulates the requirements regarding the availability of potable water and sanitation for field workers.**
  6. **Producers are required to comply with Victims of Trafficking and Violence Protection Act<sup>63</sup> providing protection and assistance for victims of trafficking regardless of immigration status.**
  7. **Producers recognize the Right of Association for workers, including the right to unionize or engage in collective bargaining in accordance with applicable federal and state laws.<sup>64</sup>**
    - a. Producers recognize the importance of ensuring that worker complaints are confidentially handled and investigated in a fair and transparent manner, abiding by relevant Federal and State regulations.
  8. **Producers are expected to actively support ongoing efforts to seek, recruit and promote women in leadership positions throughout state and national organizations.**
  9. **Producers abide by the provisions of the Fair Labor Standards Act (FLSA) for agricultural employment, which sets standards for minimum wage, overtime, recordkeeping, maximum hours worked, youth employment, and child labor to protect the educational opportunities of minors.**
  10. **Producers comply with all relevant federal and state labor legislation, as well as with international conventions and commitments in which the U.S. is a party to, guaranteeing that workers do not exceed the maximum number of maximum working hours per day, consecutive working days, and other applicable regulations in accordance with each type of farming operation.**



## IX. Worker & Public Safety

### Continuous Improvement Goals

- ✓ Improved worker, public safety, and well-being.
- ✓ Continued compliance with prevailing laws and regulations.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are required to comply with the U.S. Environmental Protection Agency (EPA) Worker Protection Standard for Agriculture Pesticides<sup>65</sup> meeting regulations for: pesticide safety training, notification of pesticide application, use of personal protective equipment, restricted-entry intervals after pesticide application, decontamination supplies and emergency medical assistance.**
  - a. An application exclusion zone of 100 feet horizontally from application equipment is required whether the pesticide is applied by air blast application, as a spray or fumigant, mist or fog. Applicators must suspend application if they are aware of any person in the application exclusion zone per regulation in Worker Protection Standard by EPA.
- 2. Producers are required to comply with Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)<sup>66</sup> maintaining compliance with agricultural chemical handling, storage and application regulations.**
- 3. Producers are required to comply with Occupational Health and Safety Act (OSHA)<sup>67</sup> to ensure safe and healthful working conditions including workplace violence guidelines. OSHA provides the following protections:**
  - a. Employees may request an OSHA inspection of the workplace.
  - b. Employees may use their rights under law without retaliation and discrimination.
  - c. Employees receive training, in a language they understand, about hazards, methods to prevent harm and the OSHA standards that apply to their workplace.
- 4. Employees can be terminated for noncompliance with OSHA safety regulations.**
  - a. Producers are required to follow federal and state regulations prohibiting assault and battery.
  - b. Producers are required to comply with the Clean Air Act and its amendments to protect and enhance air resources to promote public health and welfare.<sup>68</sup>
  - c. Producers are required to comply with the Resource Conservation and Recovery Act which controls hazardous waste, non-hazardous solid waste and underground storage tanks.<sup>69</sup>
  - d. Producers are required to comply with the Safe Drinking Water Act to protect public health by preventing contamination of surface and ground sources of drinking water.<sup>70</sup>
- 5. Producers follow regulations and implement best practices to guarantee farm employee safety and the handling of foreseeable emergency situations as appropriate for each type of farm.**
  - a. Producers comply with the Migrant and Seasonal Agricultural Worker Protection Act (MSAWP) provisions that require farm employers to have available the name and telephone number of the contact that shall be notified of a workers' injury or death.

- b. Producers recognize the importance of following OSHA guidance in reference to agricultural safety and emergency preparedness for farmworkers. This includes the development of an Emergency Action Plan (EAP) that ensures emergency response procedures are established for before, during and after an emergency.<sup>71</sup> Guidance for EAP includes developing emergency escape procedures and routes, procedures to account for workers, emergency communication equipment, workers' next-of-kin emergency phone numbers and contacts, needed supplies, and the location of primary and secondary areas to relocate farm assets and workers.
6. **Producers comply with the final rule of the Agricultural Worker Protection Standard that requires employers to post pesticide application information and a safety data sheet (SDS) for each pesticide used on the establishment (known together as pesticide application and hazard information) at a central location on the establishment (the “central display”). Employers must also maintain and make available to workers and handlers, their designated representatives, and treating medical personnel upon request, the pesticide application-specific information and the SDSs for pesticides used on the establishment for two years.**
    - a. Availability of this information will contribute to ensure that permanent, temporary and seasonal workers who may be vulnerable or whose immune systems may be compromised, use or refrain from handling plant protection products (PPPs) or hazardous substances in accordance with their conditions.
    - b. Producers must ensure that applicators are properly trained and, wherever necessary, certified to use restricted use pesticides and are using appropriate personal protective equipment.
    - c. In the United States, Federal law requires any person who applies or supervises the use of restricted use pesticides (RUPs) to be certified in accordance with EPA regulations and state, territorial and tribal laws. Pesticide applicators must know how to apply RUPs properly, effectively, and safely.<sup>72</sup>
  7. **Producers follow OSHA regulation standard 1910 Subpart J, which stipulates the requirements to ensure that permanent, temporary and seasonal workers and their families have access to clean, safe accommodation and sanitation.**<sup>73</sup>
  8. **Producers comply with Title 29, Subtitle B, Chapter XVII, Part 1928 of the Code of Federal Regulations, which stipulates the occupational safety and health standards for agriculture, which includes field sanitation requirements.**<sup>74</sup>
    - a. Producers comply with OSHA's Occupational Safety and Health Standard 1910 Subpart J, which includes provisions regarding the availability of adequate handwashing and bathing facilities.<sup>75</sup>
  9. **Producers comply with the Resource Conservation and Recovery Act (RCRA), which regulates the generation, transportation, treatment, storage, and disposal of hazardous waste, and requires farmers to follow the appropriate requirements for handling and disposing of it, as well as of non-hazardous solid waste such as agricultural plastics and packaging materials.**<sup>76</sup>
    - a. Producers comply with OSHA Standard 1910 Subpart H pertaining to Hazardous Materials, which stipulates requirements in terms of facilities, operations and procedures for proper storage, transportation and disposal of hazardous materials.<sup>77</sup>
  10. **Where required, producers comply with relevant Federal and State legislation regarding compensation of permanent, temporary and seasonal workers for work-related accidents or illnesses.**

**11. Producers support and work with temporary and seasonal workers to provide timely access to information and understanding of the availability of health insurance, as applicable.**





## X. Community Relations

### Continuous Improvement Goal

- ✓ Promoting and maintaining good relationships between corn producers and the communities.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are encouraged to have documentation of land ownership, leases or other legal agreements to utilize land for purpose of corn production.**
  - a. The Federal Land Policy Management Act protects public lands from exploitation without authorization or rental agreement.<sup>78</sup>
  - b. Land use contracts are governed by state statutory and U.S. common law. The U.S. court system is the mechanism for mediating land use disputes.
- 2. Producers have access to information about farmland protection and stewardship through the USDA Natural Resources Conservation Service (NRCS) and American Farmland Trust's Farmland Information Center,<sup>79</sup> which provides statistics, laws, organization links, literature and technical tools as well as state-specific resources.**
- 3. Additionally, the USDA NRCS provides funds to help purchase development rights to keep productive farmland in agricultural uses through the Agricultural Land Easement Program (ACEP),<sup>80</sup> and the American Farmland Trust<sup>81</sup> establishes programs and policy for protecting agricultural land through conservation easement programs, planned growth with agriculture in mind, as well as stewardship and conservation practices.**
  - a. The Emergency Planning and Community Right-to Know Act supports community awareness and response to hazardous substances used in society.<sup>82</sup>
  - b. USDA cooperative extension system office is a nationwide educational network that provides research-based information regarding standard agricultural practices.
  - c. The Environmental Protection Agency Water Data Tool "How's My Waterway"<sup>83</sup> provides information about potential watershed contamination.
  - d. Producers support the publishing and maintenance of publicly available information on the regulatory status of products developed with plant breeding innovations by all federal agencies charged with oversight responsibilities.
  - e. Producers support the development of local resource planning groups composed of agricultural landowners and producers, such as Soil and Water Conservation Districts to address local conservation and environmental issues.
  - f. Producers engage with local communities to ensure that communications of concerns, complaints or other grievances between community members and producers are understood and addressed in a collaborative manner.
- 4. Producers support via tax dollars, free public education for all children grades K-12.**
- 5. Producers support agricultural related education programs through the USDA cooperative extension system, a nationwide educational network that provides research-based information regarding agricultural practices.**
- 6. At the local level, producers support the 4-H youth education program<sup>84</sup> whose mission is to give ALL youth equal access to opportunity. 4-H provides young people with community, mentors, and learning opportunities to develop the skills they need to create positive change in their lives and communities, including a focus on STEM programs**

(Science, Technology, Engineering and Math), Healthy Living and Civic Engagement. 4-H membership now exceeds 6 million with some 50,000 volunteers.

7. Producers support the Future Farmers of America (FFA).<sup>85</sup> The FFA is the premier youth organization preparing members for leadership and careers in the science, business and technology of agriculture. Currently, there are 760,000 members in 8,739 local chapters in all 50 states and Puerto Rico.
8. The USDA Foreign Agriculture Service (FAS)<sup>86</sup> administers programs that help developing countries advance their agricultural systems and trade capacity. In partnership with the U.S. Agency for International Development, FAS administers U.S. food aid programs and education programs designed to reduce hunger and improve literacy, especially for girls. Programs include the Food for Progress Program, Local and Regional Food Aid Procurement Program, McGovern-Dole Food for Education Program and the Bill Emerson Humanitarian Trust.
9. The USDA Food and Nutrition Service administers federal nutrition assistance programs to reduce hunger in the U.S. by providing food and healthful diet and nutrition education to children and low-income people. Programs include WIC, Supplemental Nutrition Assistance Program, school meals and summer food service.
10. Producers generally support continued U.S. membership in the World Trade Organization (WTO) and support the authority of the WTO to arbitrate trade disputes and implement enforcement actions.



## XI. Continuous Improvement and Governance

### Continuous Improvement Goal

- ✓ Improved sustainability by continuing to adopt current best management practices and by adopting and supporting the development of new methods and technologies.

### BEST PRACTICES, REGULATIONS AND COMPLIANCE CRITERIA

- 1. Producers are encouraged and incentivized to utilize best management practices as appropriate for their soils, topography, climate and equipment to optimize yield, water use, agrochemical use, soil health and water quality and improve wildlife habitat.**
  - a. NRCS assesses conservation practice outcomes and administers several programs to incentivize improvements in soil erosion, soil health, carbon sequestration, wildlife habitat, wetland restoration, nutrient efficiency, water quality, irrigation efficiency, groundwater protection and reforestation.<sup>87</sup>
- 2. Producers are expected to continue to adopt and support the development of innovations that improve crop production.**
  - a. Genetics and Biotechnology: Advances have allowed producers to reduce tillage, pesticide usage, fuel consumption and GHG emissions per bushel while maintaining or improving yields.
  - b. Equipment: Innovations like improved no-till drills, air seeders and Y Drops for applying fertilizer in-season have improved efficiency by increasing the speed and accuracy of planting and harvesting.
  - c. Technology and Data: Precision agriculture technology, Global Positioning System (GPS), yield monitors and other technological improvements have improved management data and helped producers optimize costs and yields.
  - d. Weather Forecasting: More accurate weather forecasting and improved technology that provides access to forecast data in the field or remotely enables producers to improve decision making, reduce risk and more accurately provide what their crops need.
- 3. Producers are encouraged to continue to adopt and support the development of innovations that improve crop management, such as:**
  - a. The Cloud allows increased data storage, management, and remote access to improve crop management decisions.
  - b. Scalable sustainability software allows producers to model and compare different management options for their fields.
  - c. Blockchain technology enables precise tracking of where and how crops were managed.
  - d. Robotics systems can assist with labor management, post-harvest processing, supply chain logistics and equipment operation.
  - e. Satellite imagery allows producers to remotely monitor crops and make management decisions.
  - f. Improvements in Hyperspectral Imaging Spectroscopy (HIS) and the development of a Global Hyperspectral Imaging Spectral- library of Agricultural-Crops (GHISA)<sup>88</sup> will improve modeling, mapping and monitoring of agricultural crops globally.
  - g. Smart drainage systems, infield sensors, subsurface irrigation and on-farm irrigation storage and re-use allow for improved water management and irrigation.

- 4. Producers are expected to continue to adopt and support the development of innovations that improve the sustainable production of corn.**
  - a. Clean energy technologies, energy storage, energy efficiency and carbon dioxide capture measures are adopted as possible to reduce energy use and GHG emissions.
- 5. Continuous improvement is supported by a variety of regulated conservation programs and technology transfer systems, including:**
  - a. The Conservation Reserve Program to protect the most sensitive areas by providing financial assistance to set aside on a long- term basis for cropland vulnerable to soil erosion or critical to wildlife habitat (8.4 million hectares enrolled as of 2019).<sup>89</sup>
  - b. The Conservation Stewardship Program to reward producers for overall conservation performance across entire operations (18.2 million hectares enrolled as of 2021).<sup>90</sup>
  - c. The Environmental Quality Incentive Program to provide financial and technical assistance to increase environmental quality of farmland still in production (21 million hectares enrolled in 2017, 2018 and 2019).<sup>91</sup>
  - d. The Regional Conservation Partnership Program provides financial and technical assistance for locally identified projects funded by both federal and partnering entities (10 million hectares benefited through 375 local projects with over 3,000 partners at the end of 2019).<sup>92</sup>
  - e. The Conservation Effects Assessment Project quantifies the environmental effects of conservation practices and programs on the environment and develop the science base for managing the agricultural landscape for environmental quality.<sup>93</sup>
  - f. Landscape initiatives are used to accelerate the benefits of voluntary conservation programs, such as cleaner water and air, healthier soil and enhanced wildlife habitat. In 2022, NRCS operated 11 Landscape Initiatives across the U.S. for wildlife, water, ecosystems, pollinators and forestry.<sup>94</sup>
  - g. Producers engage in education, technology transfer and practice adoption through numerous informational mechanisms such as interactions with certified crop advisors, tours of discovery farms, university experimental field and research field days, farmer-to-farmer programs, tactical agriculture programs and participation in USDA, state and local conservation programs.
  - h. Field Office Technical Guides customized for local soil and conditions are available to enable better production and conservation measures by producers.<sup>95</sup>
- 6. Producers comply with Title 18, Section 201 of the U.S. Code of Federal Regulations, which makes it illegal to bribe a public official or witness, where bribery implies giving or receiving anything of value in exchange for an official act.<sup>96</sup> Furthermore, producers will abide by the Foreign Corrupt Practices Act (FCPA), which prohibits the payment of bribes to foreign officials to assist in obtaining or retaining business.**
- 7. Producers keep informed of changes to legislation and regulations relevant to their activities through various means.**
  - a. The U.S. Department of Agriculture (USDA) publishes official press releases of regulatory modifications and policies that are disseminated through media, websites, newsletters, and social media channels. USDA Farm Service Agency Service Centers<sup>97</sup> are located at over 4,500 locations across the U.S., providing farmers with access to information and staff advisory services at practically every agricultural county in America.

- b. Through the National Institute of Food and Agriculture (NIFA), USDA provides training to help corn farmers understand the implications of public policy on their operations.
  - c. U.S. regulators such as the Environmental Protection Agency (APHIS), the Food and Drug Administration (FDA) and the Animal and Plant Health Inspection Service (APHIS) also facilitate access to proposed, modified, or newly published regulations through press releases and communications on their official websites, newsletters, and social media channels.
  - d. Producers also have access to the U.S. Federal Register, which is the official journal of the United States Government, and provides legal notice of administrative rules, notices and Presidential documents in a comprehensive and uniform manner.
  - e. Through participation in national, state, and local corn grower associations and extension service programs, corn producers also receive information, training and analysis of new legislation and regulations.
- 8. The U.S. Internal Revenue Service (IRS) requires that producers follow specific record keeping rules for their farming activities, which include the maintenance of accurate documentation of inputs, expenses, earnings, deductions, profits, and assets for taxation purposes. The IRS Publication 225 (Farmer's Tax Guide) provides a detailed explanation of the federal tax laws that apply to farming and outlines the required recordkeeping system to adequately calculate profits, losses, and taxes due.<sup>98</sup>**
- 9. Producers negotiate their harvest using different types of contracts in which quality, price, volume, payment terms and conditions are addressed. Contract types include cash contracts, forward contracts, futures contracts, and options contracts.**
- 10. Producers continuously assess and incorporate new technologies to optimize crop yield and reduce their environmental impacts, as appropriate to their growing conditions, needs and operational and economic capabilities. These include the adoption of yield and soil maps, automated guidance systems, and the use of variable rate technologies that allow the optimization of seed rates, plant spacing, volumes of crop nutrients and plant protection products, as well as the reduction of fossil fuel consumption. Producers are also adopting Digital Agriculture information technologies, which contribute to keep track of inventory and optimize the use of assets, farm inputs, and activities, which support data-driven decision-making on farm operations.**



## CORN SUSTAINABILITY VERIFICATION

### Sustainable Corn Exports LLC

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With the purpose of responding to the interest expressed by corn buyers and export markets of better understanding the sustainability practices of U.S. corn production, the U.S. Grains Council constituted a standalone legal entity to operate a web platform associated to the Corn Sustainability Assurance Protocol (CSAP): Sustainable Corn Exports LLC.

This organization is responsible for:

- Annually determining the total amount of U.S. corn in compliance with the CSAP, based on the minimum verification threshold established for U.S. sustainable corn eligibility (i.e., participation in USDA Farm Service Agency programs, and the submission of the annual internal audit of compliance with the Highly Erodible Land Conservation and Wetland Conservation provisions- Form AD1026).
- Determining the total amount of U.S. corn eligible for allocation under CSAP by using the total number of qualified corn acres meeting the minimum sustainability verification threshold, and the national average yield per acre.
- Establishing and maintaining the website for interested and eligible corn buyers to register online and request a shipment-specific **record of sustainability (ROS)**, which validates product eligibility under the CSAP for each shipment of corn.
- Maintaining a recordkeeping system via an internet-accessible database (the Database), which will be used to verify that U.S. corn exported under the CSAP is compliant and recorded.

### Issuance of Record of Sustainability

- Shippers using the Database will establish and maintain a firm-specific record that will provide the necessary information for a uniquely identified record of sustainability (ROS) to accompany individual U.S. corn exports.
- For a shipper or exporter desiring to transport corn covered by a ROS, it must:
  - Register as a user of the Corn Sustainability Assurance Protocol.
  - Establish a Shipper-specific and secure record on the Database.
  - Document shipment-specific information on the Shipper-specific secure record.
  - The record created and maintained by the Shipper will include, at a minimum, the volume and date of shipment of corn from the U.S.; with the option for the Shipper to include additional information.
  - Agree to allow Sustainable Corn Exports LLC access to the volume and date of shipment of corn from the U.S.
- Each shipment of U.S. corn covered by this Protocol will be accompanied by a uniquely identified (numbered) shipment-specific document containing selected information from the shippers' record, and a Sustainable Corn Exports LLC validation of the mass balance accounting method chain of custody from a volume of protocol-compliant corn meeting the minimum sustainability verification threshold.
- Under the logic of a mass balance approach for the CSAP, the total volume of records of sustainability issued each year will never exceed the annual volume of Protocol-compliant corn entered into the Database.
- Sustainable Corn Exports LLC will use the volume and date of shipment of corn from the U.S.

to manage and provide necessary reporting on the Protocol. Sustainable Corn Exports will also maintain the website and an alternative/back-up system for document issuance and recordkeeping if the web-based system is not available.

- There is no cost to any of the parties for the use of the Sustainable Corn Exports web-platform or for the issuance and use of the respective Records of Sustainability.

## SUSTAINABILITY GOALS FOR U.S. CORN INDUSTRY: CONTINUOUS IMPROVEMENT

Corn farmers in the U.S. are the largest single sector of agriculture, with over 90 million acres planted annually. Small farm-scale improvements have major national impacts across environmental, social, and economic indicators of sustainability. The National Corn Growers Association (NCGA) is the largest grower representative group for these farmers. They are a grower-led organization that represents over 330,000 growers through state-affiliated organizations.

Commitments to sustainability from NCGA include founding membership in Field to Market: The Alliance for Sustainable Agriculture™, and support of sustainability initiatives in beef, poultry, pork and dairy sectors. Building on the work of Field to Market, and in collaboration with other cropping systems such as soybeans and cotton, in June 2021 NCGA released its first Corn Sustainability Report,<sup>99</sup> in which U.S. corn producers evaluated environmental performance over 5 sustainability impact categories and developed a set of performance goals for 2030 (below). These goals represent the potential for improvement in corn production with current rates of increase in the adoption of current technology.

Through the CSAP, USGC gives visibility to NCGA’s five environmental national efficiency goals to further enhance sustainable corn production, as well as to the Field to Market National Indicators Report, which is updated over a five-year cycle, peer-reviewed and serves as benchmark and assessment of performance.

**U.S. Corn Farmers Sustainability Statement**


U.S. Corn farmers are committed to continuous improvement in the production of corn, a versatile crop providing abundant high-quality food, feed, renewable energy, biobased products, and ecosystem services. As stewards of the land, we understand the responsibility we have for creating a more environmentally and economically sustainable world for future generations with transparency and through continued advances and efficiencies in land, water and energy use.

### NCGA'S GOALS


**BY 2030**

<p>INCREASE LAND USE EFFICIENCY BY</p> <h1 style="color: #00a651;">12%</h1>	<p>REDUCE SOIL EROSION BY</p> <h1 style="color: #00a651;">13%</h1>	<p>INCREASE IRRIGATION WATER USE EFFICIENCY BY</p> <h1 style="color: #00a651;">15%</h1>
<p>INCREASE ENERGY USE EFFICIENCY BY</p> <h1 style="color: #00a651;">13%</h1>	<p>REDUCE GHG EMISSIONS BY</p> <h1 style="color: #00a651;">13%</h1>	


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**Field to Market**  
The Alliance for Sustainable Agriculture



**Benchmarking**  
Corn farmer adoption of technology and improvements are measured through established sustainability metrics.



**Catalyzing**  
Farmers voluntarily join in initiatives within the supply chain to garner more information and meet specific sustainability needs of their customers.



**Enabling Claims**  
Through the field-print calculator, farmers submit individual information that is then aggregated into regional data for supply chain partners to use when measuring their sustainability imprint.

Source: National Corn Growers Association Sustainability Commitment and Goals, NCGA 2021 Sustainability Report, <https://bit.ly/3KxATAm>. Reduction commitments are set using a 2020 baseline.

## END NOTES

- <sup>1</sup> <https://grains.org/about/about-the-council/mission-and-values/>
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