

Corn Sustainability Assurance Protocol (CSAP)

and

Greenhouse Gas (GHG) emissions associated to corn production and use

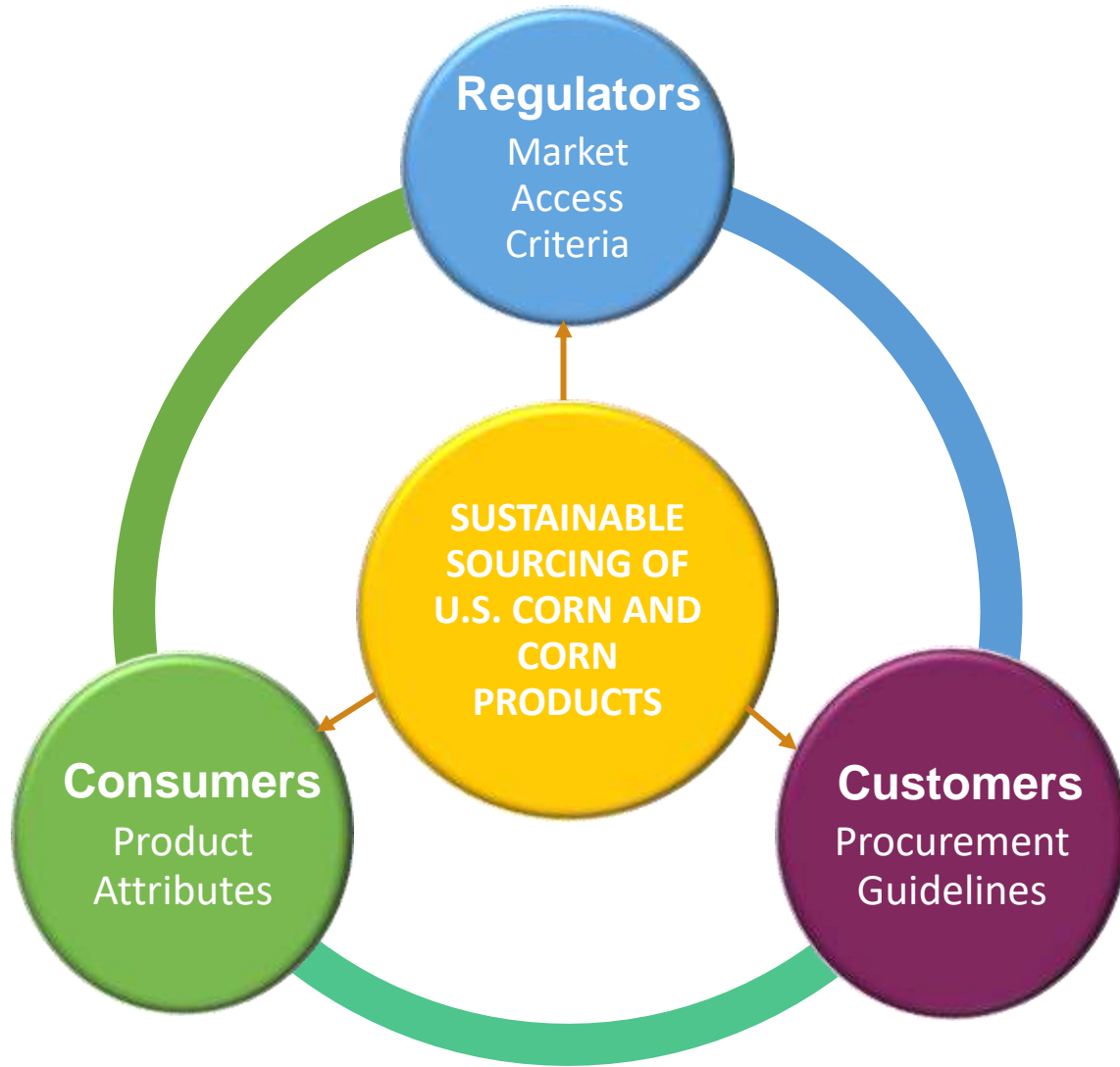


**U.S. GRAINS
COUNCIL**

September 11, 2023



Corn Sustainability Assurance Protocol (CSAP) and the Sustainable Corn Exports Platform (SCE)



The U.S. Grain Council set to the task of developing the tools to address the needs of international supply chain stakeholders interested in the sustainability of U.S. corn and associated products

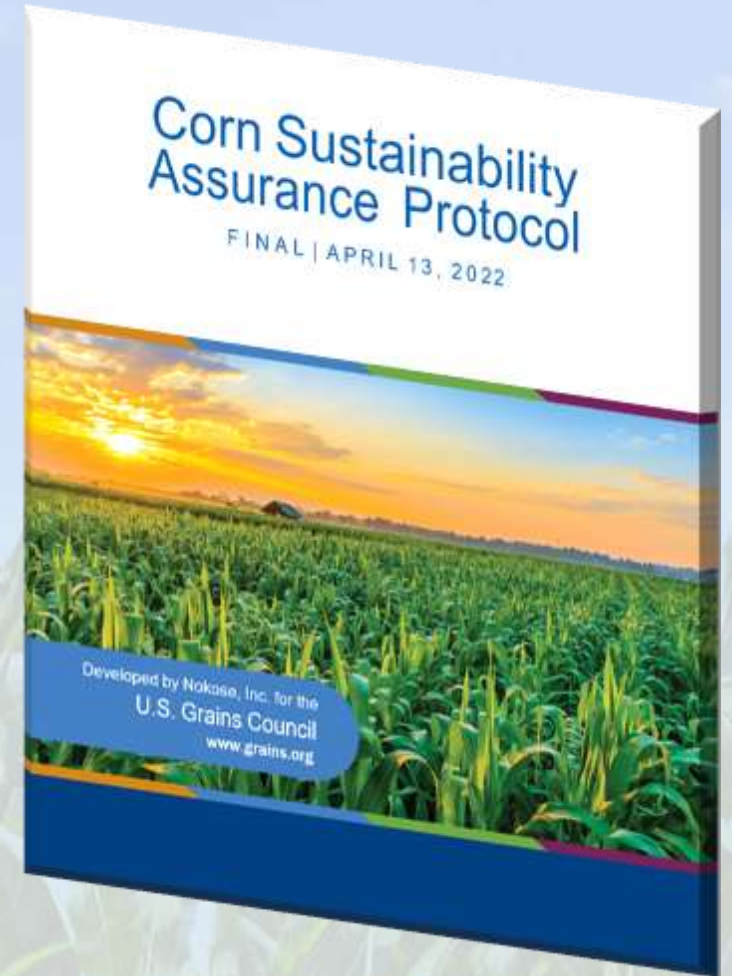


Corn Sustainability Assurance Protocol

Baseline resource focused on export markets

It establishes the first line of reference for U.S. exporters and international importers/users of the supply chains of corn and its co-products.

It helps stakeholders to better understand the production practices and regulatory framework for growing corn in the United States.



Corn production impact categories



ENVIRONMENTAL

SOCIAL

#1



Greenhouse gas emissions, fossil fuel use and air quality

#2



Water quality and quantity

#3



Soil health and productivity

#4



Land use, sensitive habitats and biodiversity

#5



Crop Health and agricultural best management practices

#6



Agrochemical and nutrient management

#7



Waste and pollution

#8



Working conditions and labor relations

#9



Worker and public safety

#10



Community relations

#11



Continuous improvement



Document with a 3-level structure



#6

Agrochemical
and nutrient
management

Continued reductions in
agricultural sediment,
phosphorus, nitrogen and
pesticide loads on U.S.
waterways

#4

Land use,
sensitive
habitats and
biodiversity

U.S. corn is **not produced on
wetlands or on peatland**

U.S. corn is **not produced in
designated protected areas**



Conceptual framework to make CSAP operational



U.S. sustainable corn volumes

>90% of farmers report Conservation Compliance to USDA

Producers self-audit for
Soil Health
+
Land Use (wetlands)



Sustainable Volumes =
Harvested acres under Conservation Compliance x MY Yield



Minimum verification threshold

USDA/NRCS conduct annual Conservation Compliance reviews/audits



Over ~1 Million hectares of farmland reviewed each year



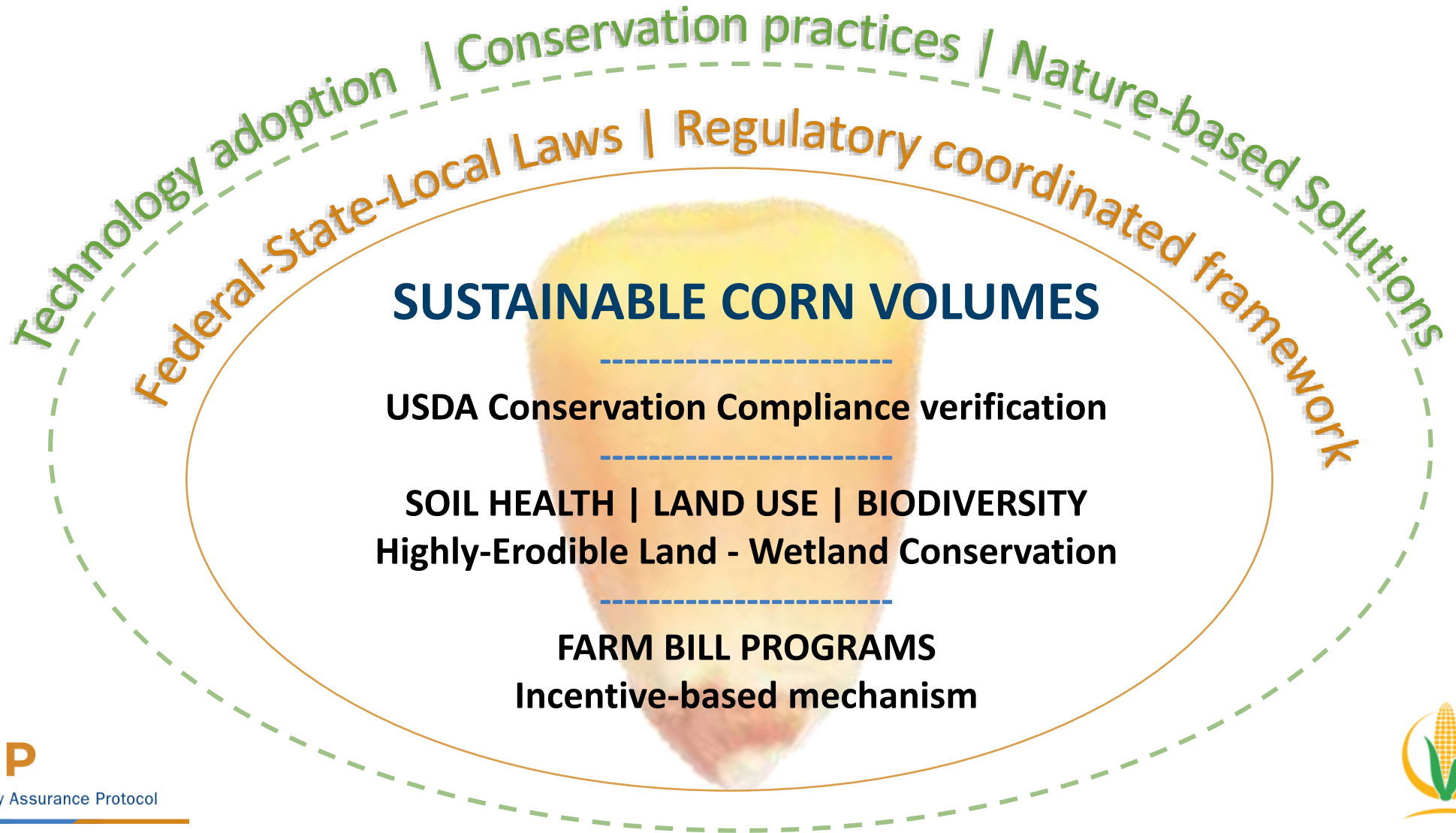
Mass-balance sourcing

Bookkeeping segregation aligns with corn supply chain logistics



CSAP in a kernel

It compiles and articulates the multi-layered sustainability compliance and best practices framework that already exists in U.S. corn production





An operations-oriented web platform

It makes the CSAP operational, allowing users to issue and receive shipment-specific Records of Sustainability for corn and various other associated products at no cost to any of the parties.





Operation of the Sustainable Corn Exports platform and issuance of Records of Sustainability



Volume of sustainable corn for the marketing year

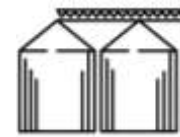
U.S.-based Exporter



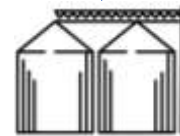
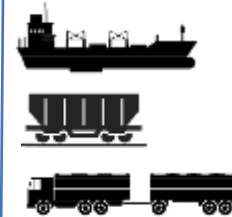
Corn



Sub and co-products



Registry in SCE | Annual export allocation | Issuance of ROS



ROS transfer to importer

International Importer

Can transfer or sub-allocate

Registry in SCE

ROS request

Supply chain users



Animal Nutrition Companies

Ingredient Processors

Meat processors and producers

Food and Beverage Companies

Food retailers



Restaurants

Shipment-specific Record of Sustainability



Records of Sustainability are issued at no cost to participating parties.

An ROS can be issued for:

-  Yellow corn
-  White corn
-  Corn gluten meal
-  Corn gluten feed
-  DDGS
-  High protein DDGS
-  Corn fermented protein

RECORD OF SUSTAINABILITY



MARKETING YEAR	2022 - 2023	VESSEL/CARRIER NAME/SHIPMENT IDENTIFIER	YM UNIFORMITY
SHIPMENT DATE	JANUARY 14, 2023	DESTINATION COUNTRY	TAIWAN
PRODUCT	YELLOW CORN	DESTINATION	KAOHSIUNG
SHIPMENT WEIGHT (METRIC TONS)	435.22	PORT OF EXPORT/SHIPMENT LOCATION	LOS ANGELES, CA
EXPORTER COMPANY	THE DELONG CO., INC.	IMPORTER COMPANY	TAIWAN COMMODITY PURCHASING GROUP
ROS NUMBER	1.Y		

SCE has validated that the volumes of U.S. corn associated to this shipment are part of the total allocation of sustainable U.S. corn volumes for the Marketing Year in reference, as defined by the U.S. Grains Council in the Corn Sustainability Assurance Protocol (CSAP), using a mass balance accounting approach.


Cary Sifferath, **SCE President**
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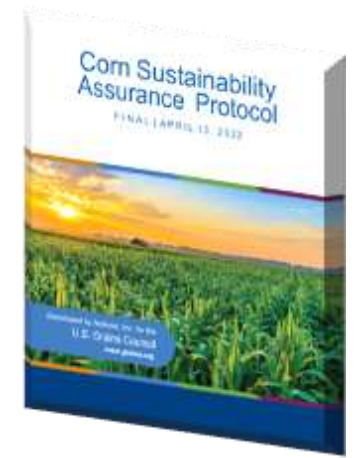




Greenhouse Gas (GHG) emissions associated to corn production and use

U.S. Corn GHG emissions: CSAP, Chapter 1

**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

U.S. Corn GHG emissions: CSAP, Chapter 1

1 GREENHOUSE GAS EMISSIONS, FOSSIL FUEL USE, AIR QUALITY

Producers

Strive to adopt best management practices to reduce GHG Emissions.

comply with the Clean Air Act and its amendments to protect and enhance air resources to promote public health and welfare.

adopt Precision Farming Techniques as appropriate utilizing Global Positioning System (GPS) and other advanced technologies to optimize fossil fuel use and fertilizer application.

support the development of non-fossil fuel ethanol. Each year, roughly 30 percent of U.S. field corn goes into fuel ethanol.

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

use USDA-NRCS tools and resources to plan and implement energy-efficient practices.

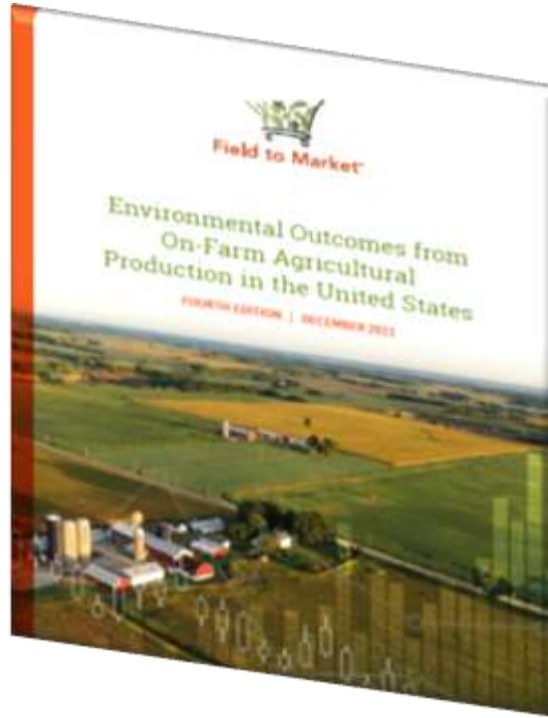
are encouraged to participate in USDA surveys and to use Greenhouse Gas (GHG) emissions tracking tools such as Field to Market's Fieldprint Calculator, in order to measure and monitor sources of on-farm emissions.

U.S. Corn GHG emissions | FtM: measurement framework

Field to Market: The Alliance for Sustainable Agriculture™

FIELD TO MARKET GOALS STATEMENT

The organization and its members are committed to supporting **resilient ecosystems** and **farmer economic vitality** as fundamental components of **agricultural sustainability**.



Greenhouse Gases

Reducing greenhouse gas emissions from U.S. cropland per unit of output, and sustained contribution to reducing the overall greenhouse gas emissions from agricultural landscapes.

Science-based approach

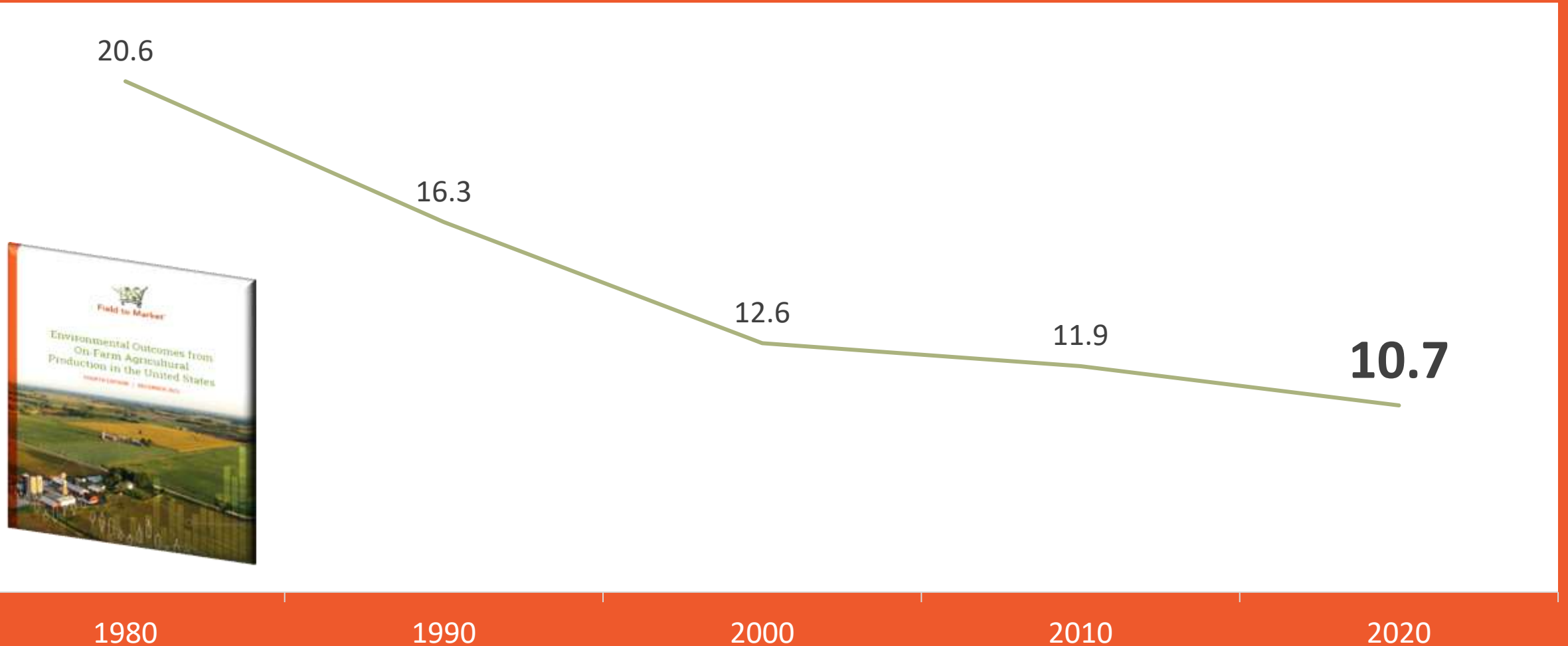
to **improve environmental production performance**

Goal

“To meet the challenge of producing enough **food, feed, fiber and fuel** for a rapidly growing population while **conserving** natural resources and **improving** the ability of future generations to meet their own needs”

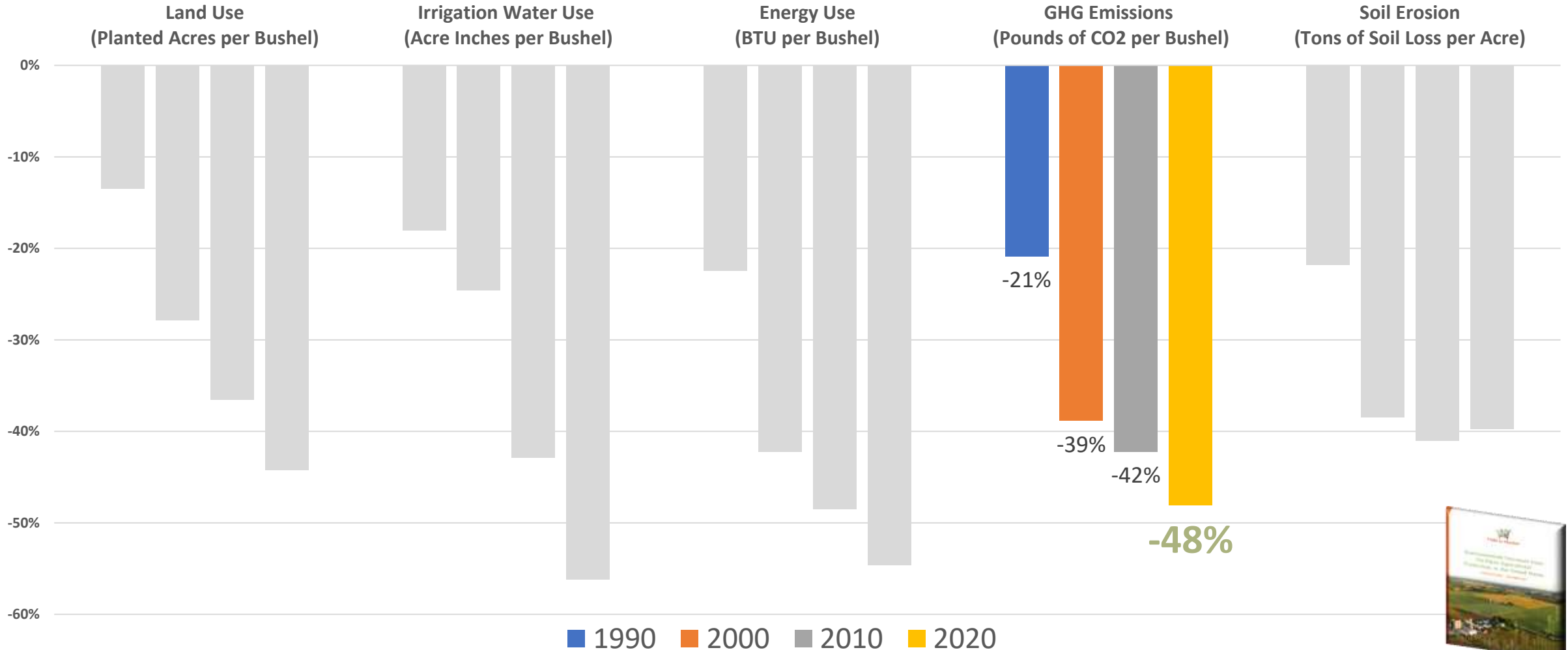
U.S. Corn GHG emissions | FtM: Multi-decade positive trend

U.S. Corn for Grain Greenhouse Gas Emissions
Pounds of CO₂e per Bushel



U.S. Corn GHG emissions | FtM: Multi-decade positive trend

Field to Market Summary of Indicators for Corn Grain:
%Change vs 1980

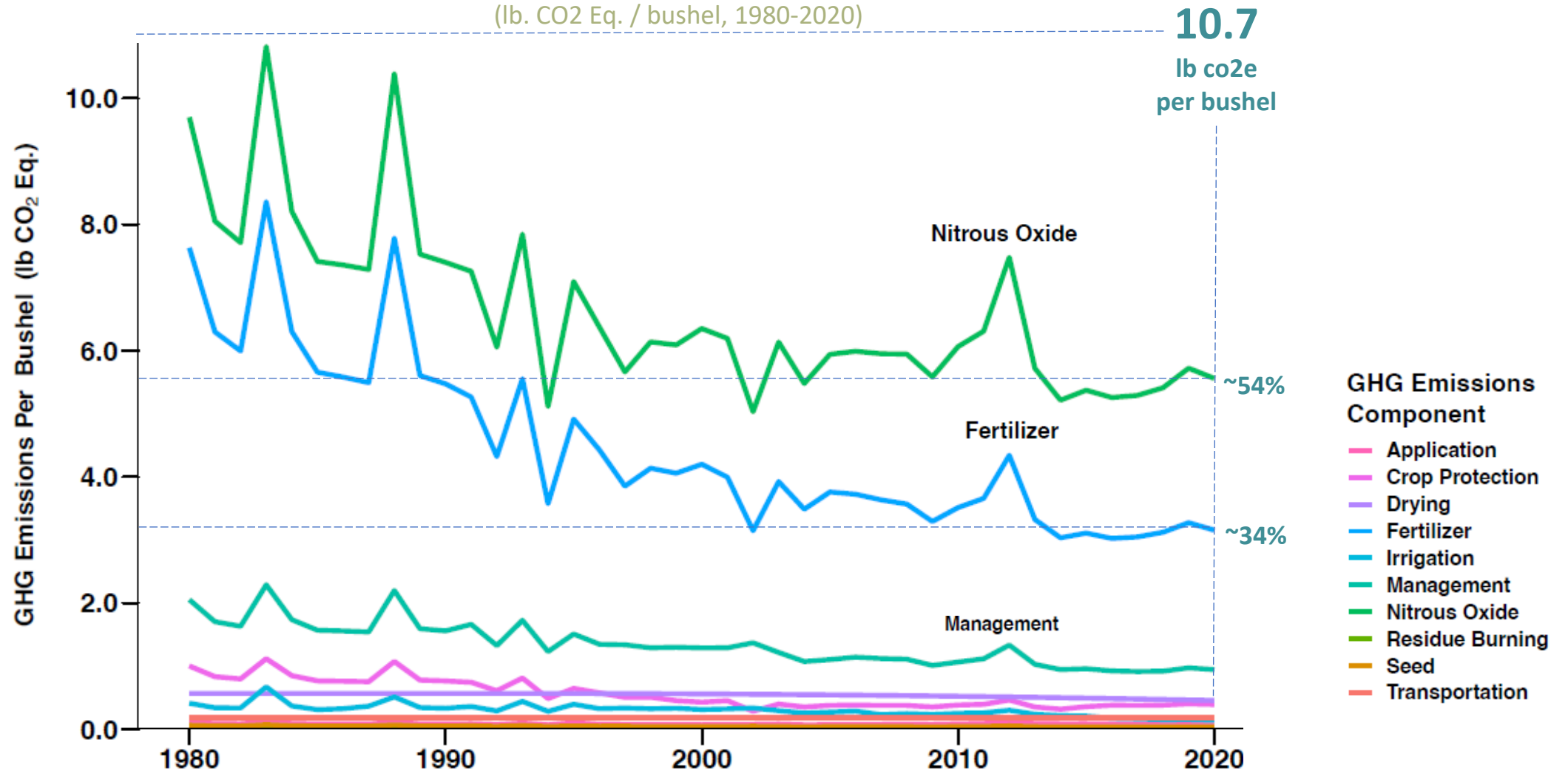


U.S. Corn GHG emissions | FtM: emissions components

Fertilizer application and emissions of nitrous oxide are the most relevant GHG components associated to corn for grain production

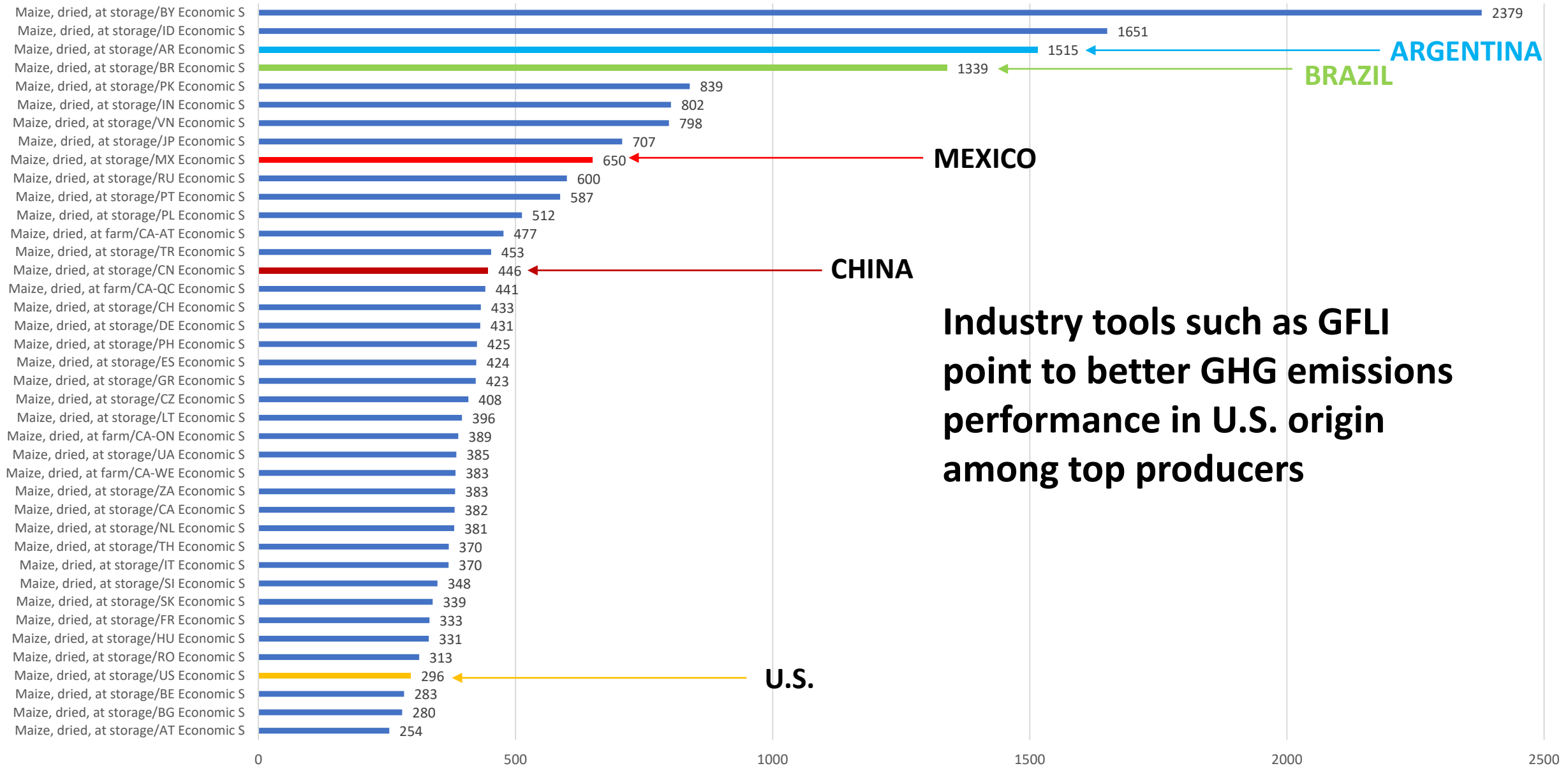
GHG emission efficiency for corn grain by component

(lb. CO₂ Eq. / bushel, 1980-2020)



U.S. Corn GHG emissions: Other GHG emissions benchmarks

Global warming - Including LUC & Peat (kg CO2 eq / ton product)

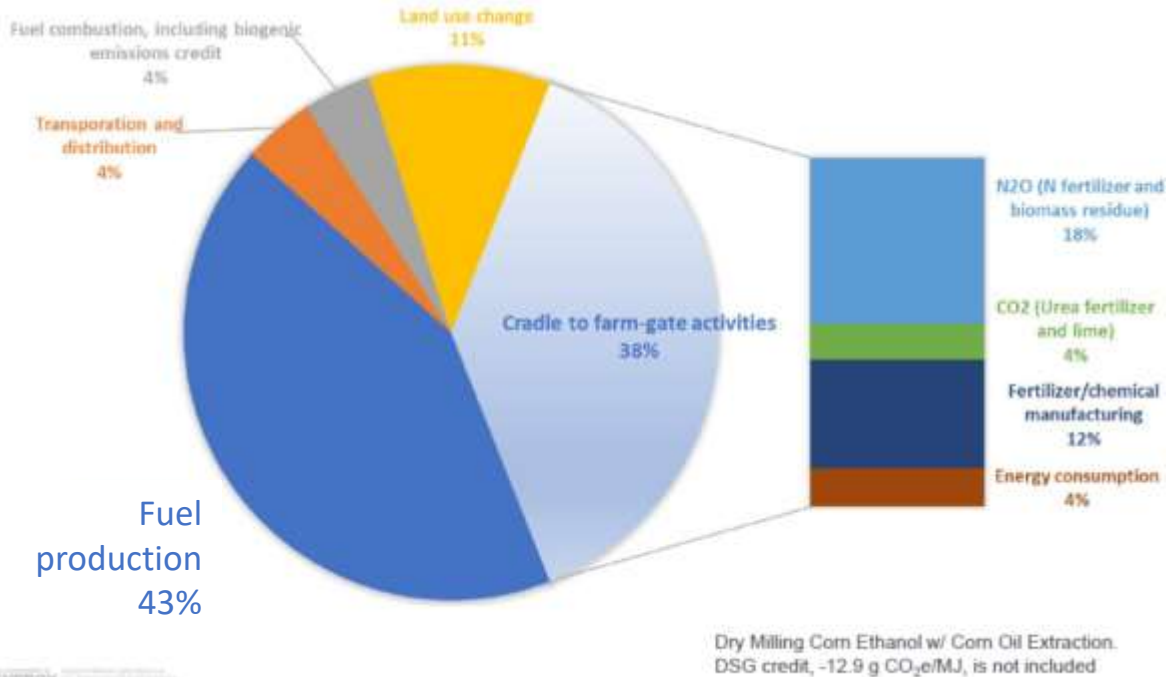


Industry tools such as GFLI point to better GHG emissions performance in U.S. origin among top producers

Source: Chart USGC, Data GFLI, <https://globalfeedca.org/gfli-database/>

U.S. Corn GHG emissions: Other GHG emissions benchmarks

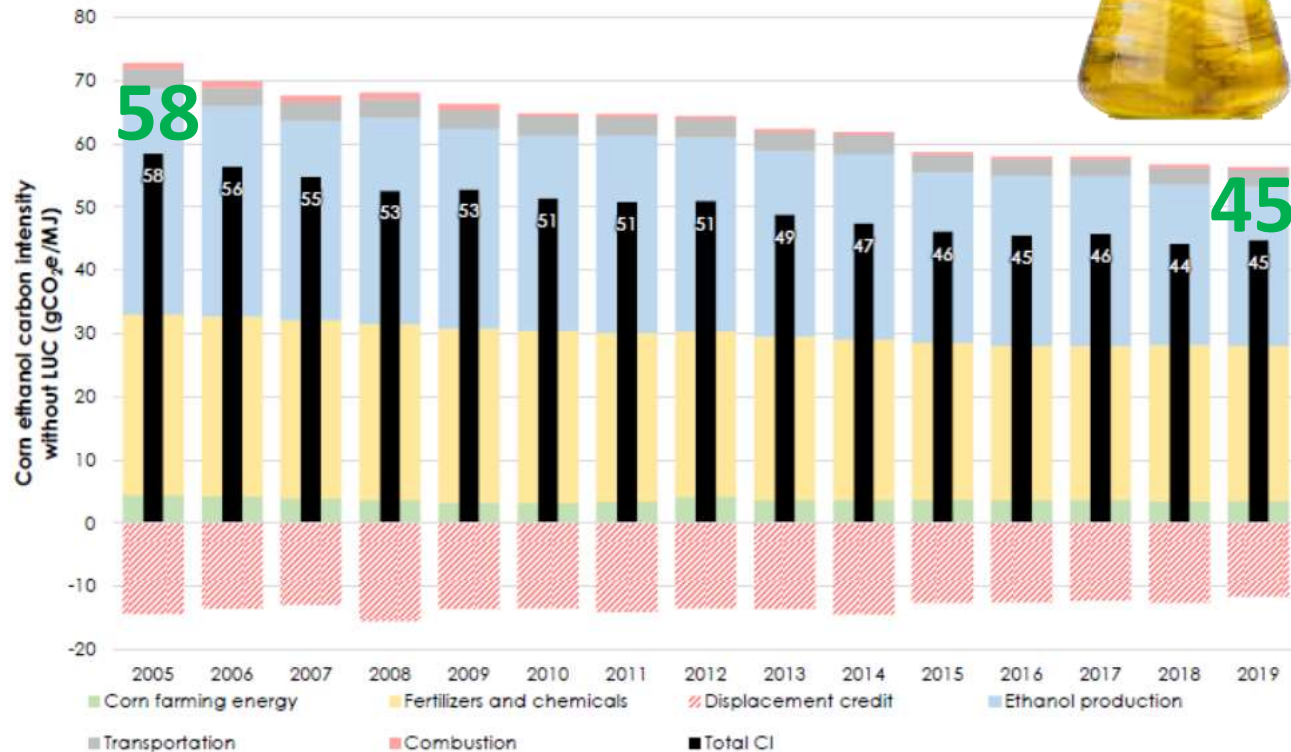
Ethanol Carbon Intensity measurement | Evidence of improvements in corn farming practices and increased ethanol production efficiencies. Result: better feed and biofuels.



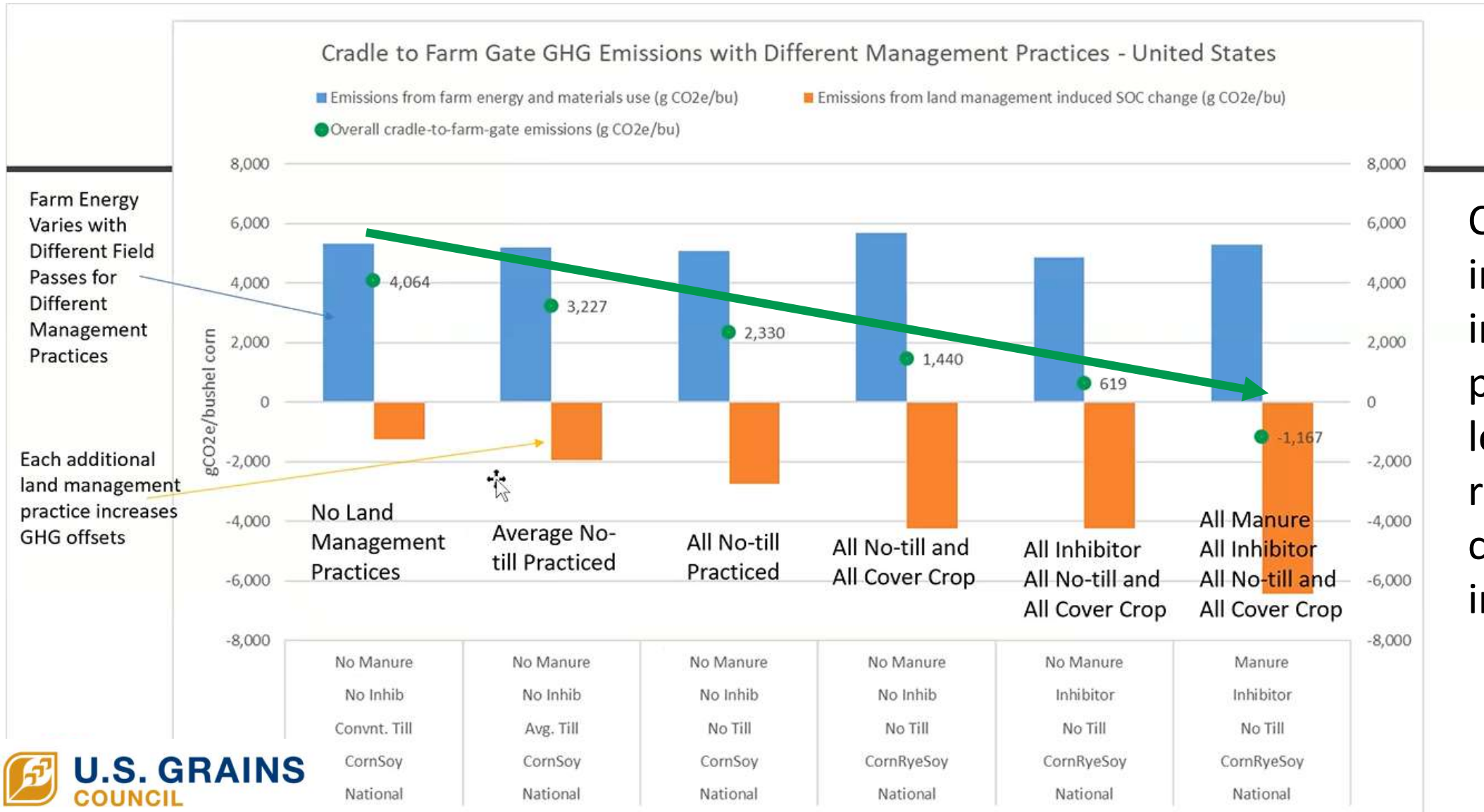
DDGS as a co-product reduces CI

Reduction of 22.4% in U.S. corn ethanol carbon intensity from 2005 through 2019

54% less GHG emissions compared with gasoline.



U.S. Corn GHG emissions: Potential for carbon neutrality



Continuous improvement in production practices could lead to reduced carbon intensity

We invite you to visit www.sustainablecornexports.org
to learn more about the
Corn Sustainability Assurance Protocol- CSAP
and to register
on our **Sustainable Corn Exports** platform
to obtain from your suppliers
Records of Sustainability
for your shipments of U.S. origin corn,
sub-products and co-products

