

Greenhouse Gas Emissions

2030 Goal

U.S. corn farmers are committed to reducing greenhouse gas emissions per bushel by 13 percent from 2020 to 2030.

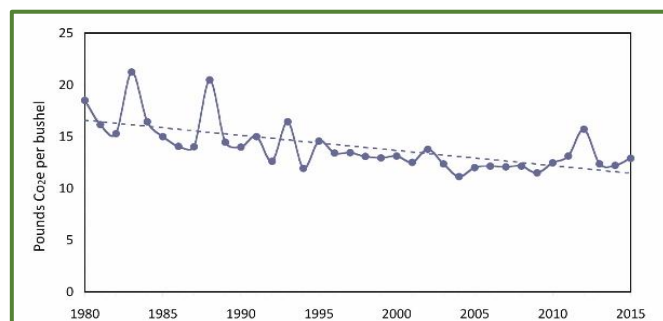
Background

In corn production GHG emissions measure the release of emissions from the combustion of fossil fuels and gaseous losses from synthetic and organic fertilizer. GHG emissions are directly related to energy and fertilizer use. As such, all the factors associated with energy use, including the relatively high costs of manufacturing nitrogen fertilizer, will impact GHG emissions.

Thanks to technologies that reduced trips over the field and the use of biofuels, among other practices, farmers have already reduced their GHG emissions by 31% from 1980 – 2015. Improving the efficient use of nitrogen fertilizer will be an important factor in reaching the goal by 2030. Advances in the 4Rs – the right rate, right source, right time, and right place – related to fertilizer use will lead to gains in this area.

Improvements from 1980 - 2015

As cited in the 2016 Field to Market National Indicators Report, over the 36 years from 1980 – 2015, corn for grain improved resource efficiency with a per bushel reduction in greenhouse gas emissions of 31%.



Greenhouse Gas Emissions for corn for grain.

Greenhouse gas emissions are closely tied to energy use and shows a similar trend over time. Greenhouse gas emissions per bushel decreased over the study period, from approximately 18.5 pounds CO₂e per bushel in 1980 to approximately 12.9 pounds CO₂e per bushel in 2015. However, as with energy use and irrigation water use indicators, the 2012 drought year has been followed by a leveling off rather than a resumption of the downward trend.

Sustainability Outcomes

GHG emissions globally from all human activity are leading to changes in the Earth's climate system; these changes are already observed and will continue at an unknown degree if the concentration of long-lived GHG in the atmosphere continues to increase. Agriculture will need to adapt to these changes in climate and weather patterns and can also be part of the solution in reducing GHG emissions through climate-smart agriculture practices. Agriculture contributed 7.7% of total national GHG emissions in 2015; approximately 60% of this total came from crop cultivation. These estimates do not include energy use on farms, which is accounted for in other sectors in the U.S. inventory report. In addition to practices that will reduce overall GHG output, such as increasing the efficiency of nitrogen fertilizer use,

conservation agriculture practices can contribute to reducing the overall U.S. net emissions by storing, or sequestering, carbon in soils. Improving soil carbon is also a key strategy for enhancing soil health, which can also enhance the land's resilience to extreme weather events.

Getting to Goal

A normal trend yield would be expected to reduce GHG emissions from corn production by 10%. A 13% reduction will require increased adoption of technologies and practices to improve nitrogen use efficiency, such as data modeling efforts, split nitrogen applications, and late-season applications. NCGA's GHG goal is closely linked to the energy use goal and reaching both goals will require increased farmer adoption of technologies that improve nitrogen use efficiency.

Alignment with UNSDGs



Progress made on the NCGA environmental sustainability goals will support multiple United Nations Sustainable Development Goals (SDGs). The 17 SDGs and 169 targets established by the UN in October 2015 "stimulate action over the next 15 years in areas of critical importance for humanity and the planet." These 2030 goals are interrelated, and actions taken specifically towards one goal or target may also address another area of concern.

The NCGA Greenhouse Gas Emissions Environmental Sustainability Goal is most closely aligned with the following SDG and target:



UNSDG 13: Climate Action

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Prepared for NCGA in part by Strategic Conservation Solutions, LLC (May 2021) – Information obtained from:

- Field to Market: The Alliance for Sustainable Agriculture, 2016. Environmental and Socioeconomic Indicators for Measuring Outcomes of On Farm Agricultural Production in the United States (Third Edition). ISBN: 978-0-692-81902-9.
- integrated Financial Analytics & Research (iFAR), LLP, January 2021. *Sustainability Goals for NCGA* Trendline Report.
- NCGA "Corn Sustainability Report," 2021.
- United Nations, 21 October 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development*.