

CARBON INTENSITY CALCULATOR ACRONYMS

bu: Bushel

- A measure of grain yield. A bushel of corn weighs 56 pounds at 15.5% moisture. A bushel of soybeans weighs 60 pounds at 13% moisture.

btu: British Thermal Unit

- The British thermal unit is a unit of heat; it is defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. In the context of the carbon intensity calculator, the term refers to energy use and energy production in ethanol facilities.

CaCO₃: Calcium Carbonate

- Calcium carbonate is a calcium salt. It is applied to acidic soils to increase pH. If soil pH is acidic, some crop nutrients are tied up in soil and unavailable to crops, so a calcium carbonate product such as lime may be applied from time to time.

CO₂: Carbon Dioxide

- Carbon dioxide (CO₂) is the most common and important heat-trapping (greenhouse) gas, which is released through human activities such as burning fossil fuels and deforestation, as well as natural processes such as respiration and volcanic eruptions.

CI: Carbon Intensity

- The amount of CO₂ (equivalent) GHGs by weight (grams) emitted during feedstock and fuel production, per unit of energy (Megajoules) produced. In the context of clean fuel or low carbon fuel policy, the term refers to the overall greenhouse gas emissions of various transportation fuels, with lower carbon intensity fuels being better for the environment.

DAP: Diammonium phosphate. DAP contains 18% Nitrogen and 46% P₂O₅

Diammonium phosphate is the world's most widely used phosphorus fertilizer. It is 18% Nitrogen and 46% Phosphorus. Its relatively high nutrient content and excellent physical properties make it an economical choice to provide these essential nutrients to crops.

DGS: Distillers Grains

- Distillers grains are a co-product of the ethanol production process and a high-protein, nutrient-packed, low-cost alternative feed ingredient produced in large quantities by the dry-grind fuel ethanol industry. About 17 pounds of DGS are returned to the food supply for every 56-pound bushel of corn used in ethanol production.

EEF: Enhanced Efficiency Fertilizer

- Enhanced efficiency fertilizer is a term for new formulations that control fertilizer release or alter fertilizer/soil reactions that lead to nutrient losses. The mechanisms or products include fertilizer additives, physical barriers, or different chemical formulations.

4R: Nitrogen Fertilizer Management

- A nitrogen fertilizer/nutrient management program farmers use to keep fertilizer products on and in the field versus running off. The 4Rs stand for “right” source of fertilizer, “right” rate of application, “right” time of application, and “right” place of application.

g: gram

- A metric unit of mass equal to one thousandth of a kilogram or 1 millionth of a metric ton. Carbon intensity is most commonly expressed in grams of carbon dioxide equivalent GHG emissions per megajoule of energy production. For example, the carbon intensity of average ethanol is around 52 grams per megajoule compared to an average 100-gram per megajoule carbon intensity for gasoline.

gal: gallon

- A unit of liquid capacity equal to 3.79 liters.

GHG: Greenhouse Gas

- A greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. By increasing the heat in the atmosphere, greenhouse gases are responsible for the greenhouse effect, which ultimately leads to global warming. The three most common and impactful GHGs are carbon dioxide, nitrous oxide, and methane. Nitrous oxide has a global warming potential that is 265 times the weight of carbon dioxide, and methane has a global warming potential of 25 times carbon dioxide.

kWh: kilowatt-hour

- The kilowatt-hour is a unit of energy equal to 1 kilowatt of power sustained for one hour and is commonly used as a measure of electrical energy. One kWh contains 3,412 Btus of electrical energy.

K₂O: Potassium oxide

- Potassium oxide is an ionic compound of potassium and oxygen. It is 60% Potassium and is widely used in the agricultural industry as an essential crop nutrient.

LPG: Liquefied petroleum gas

- LPG is used as farming equipment fuel and in agricultural processes like watering, harvesting, crop drying, weed flaming and pest control, temperature control, and produce processing. It is also used in poultry raising, waste incineration, and distillation. LPG is thus a cost-efficient fuel that helps in the development and sustainability of the agriculture sector.

MAP: Monoammonium phosphate

- Monoammonium phosphate (11% Nitrogen and 52% Phosphorus) is a widely used source of phosphorus and nitrogen. It is made of two constituents common in the fertilizer industry and contains the most phosphorus of any common solid fertilizer.

Mfg: Manufacturing

- The making of a product on a large scale. In the context of the carbon intensity calculator, the term refers to the making of fertilizers, herbicides, insecticides, and other products used in crop production.

MJ: Megajoule

- A unit of work or energy equal to one million joules. It is also equivalent to 948 Btus.

N: Nitrogen

- A colorless, odorless, tasteless gas that is the most plentiful element in Earth's atmosphere, is a constituent of all living matter, and is used to stimulate or support crop production. Grain Protein is approximately 16% Nitrogen by weight. Scientists say that the Haber Bosch process, which captures and concentrates nitrogen from our atmosphere into ammonia (NH_3), is directly responsible for the protein nutrition of 25% of our planet's population.

NH_3 : Ammonia

- Ammonia is 82% nitrogen by weight and is the base feedstock for almost all other forms of nitrogen fertilizer such as Urea, Urea Ammonium Nitrate, Ammonium Sulfate and Nitrate Nitrogen. About 80% of the ammonia produced by industry is used in agriculture as fertilizer. Ammonia is also used as a refrigerant gas, for purification of water supplies, and in the manufacture of plastics, explosives, textiles, pesticides, dyes, and other chemicals.

N_2O : Nitrous Oxide

- Being the third most important long-lived greenhouse gas, nitrous oxide substantially contributes to global warming. The largest source of N_2O is from Nitrogen Fertilizers used for crop production.