HOW DO DAIRY COWS AFFECT CLIMATE CHANGE?

Climate change is driven by greenhouse gases in the atmosphere. These gases include:

- **CO₂** Carbon Dioxide
- **CH₄** Methane
- **N₂O** Nitrous Oxide

Cows are one source of these greenhouse gases.

- **Respiration**
  - Cows breathe out carbon dioxide

- **Enteric Fermentation**
  - Breakdown of feed in the cow’s rumen produces methane

- **Waste**
  - Breakdown and recycling of waste produces methane and nitrous oxide

In one year, a typical dairy cow produces approximately **1.4 times the greenhouse gas** emitted by an average American car.

DAIRY COWS are connected to CLIMATE CHANGE

Measurements of CO₂ and CH₄ are taken each time a cow is milked by the robot. This allows researchers to study how different feed types, stocking rates, and other factors affect greenhouse gas emissions from cows. Cows fitted with GPS collars can also reveal how climate variability affects foraging behavior. This research could point the way to more efficient and sustainable dairy farms.

KELLOGG FARM AND PASTURE DAIRY CENTER
RESEARCH FOR A SUSTAINABLE FUTURE

WHAT CAN WE DO?
REDUCE OUR FOOTPRINT.

Use more efficient feed types to reduce emissions from enteric fermentation.

Cows produce less CH₄ per unit of milk when they consume feed types with low fiber content. For example, adding legumes like alfalfa and clover to a cow’s diet may help to reduce CH₄ emissions from enteric fermentation.

Manage manure to reduce emissions from waste.

Strategies to reduce emissions from waste include removing waste from the barn regularly with a manure scraper (left), using covered waste storage systems, and using manure as fertilizer more efficiently.

HOW DOES CLIMATE CHANGE AFFECT DAIRY COWS?

Dairy cows are sensitive to heat. If the temperature and relative humidity are too high, cows may experience **heat stress**.

Heat stress may cause:
- Reduced feed intake
- Decreased milk yield
- Impaired reproduction

Production losses from heat stress cost the dairy industry close to **$900 million per year**. As temperatures rise and summer heat waves become more frequent, heat stress will become an even greater concern for dairy farmers.

WHAT CAN WE DO?
ADAPT TO OUR CHANGING CLIMATE.

Prevent heat stress by keeping cows cool!

Implementing these strategies can help reduce production losses associated with heat stress.