

Dairy and Action on Sustainability

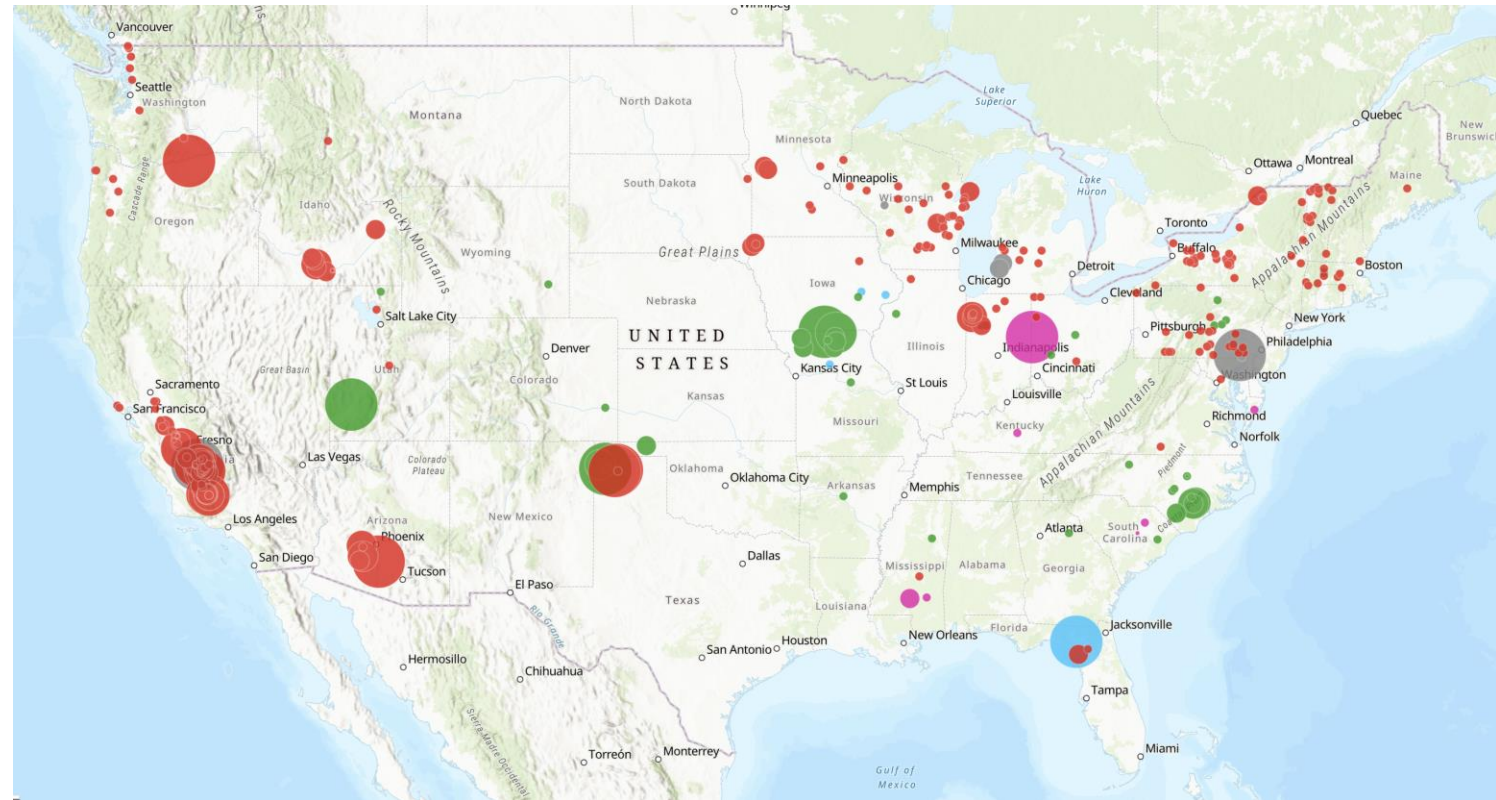
Corey Geiger, Lead Dairy Economist
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Agriculture will continue to innovate on energy

- 343 on-farm digesters
- Dairy leads all ag (red)
 - 78% of active digesters
 - Hogs a distant second - 14%
- Compressed natural gas (CNG) is most popular
 - CNG captures carbon credits in California - Low Carbon Fuel Standard Program
- 20% of U.S. dairy cows support methane digesters
 - At \$100/cow, 40 cents per cwt. added

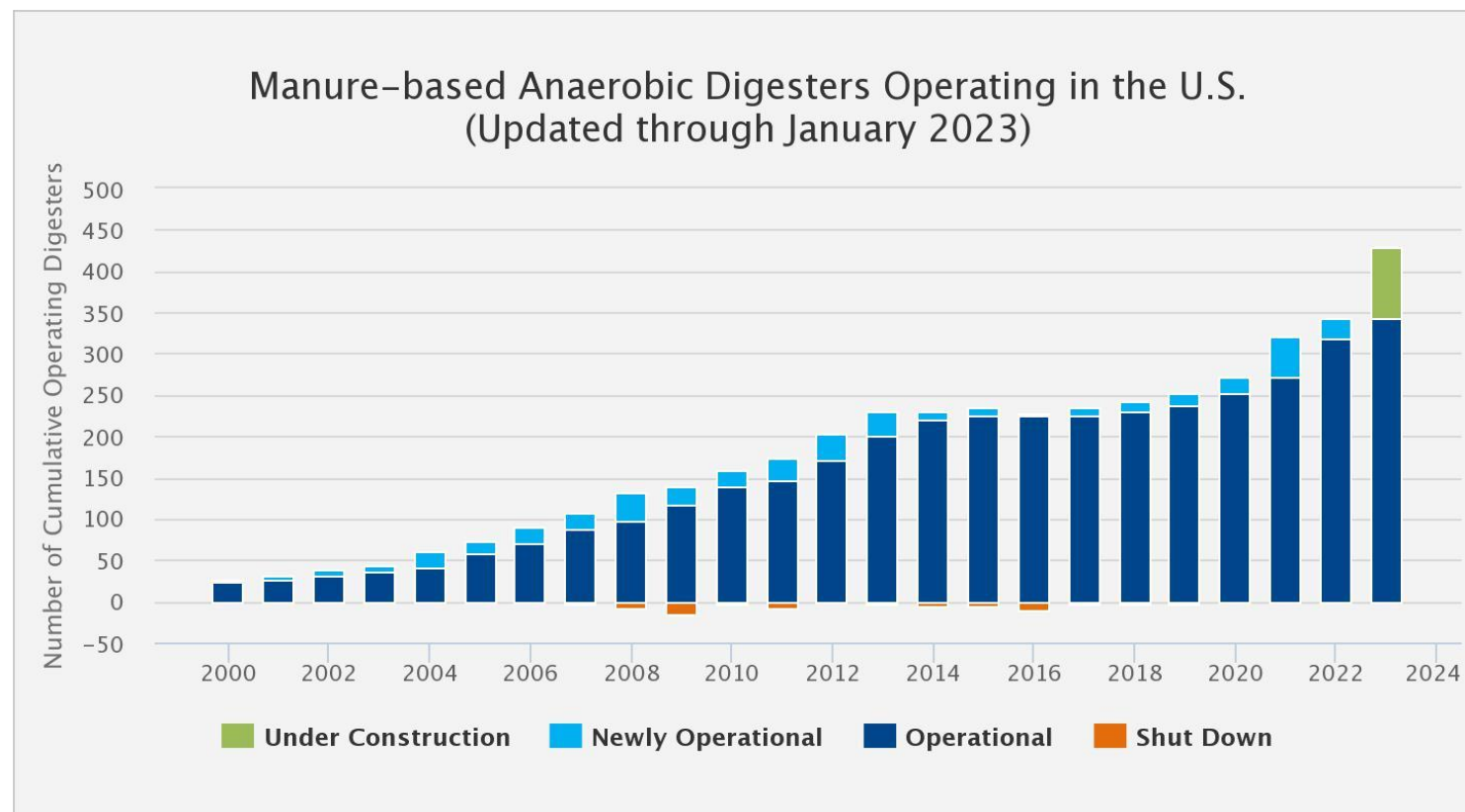
Dairy leads the green energy movement



Dairy poised to grow green footprint

- Green energy is core to California dairy farms
- California accounts for 18.5% of U.S. milk
- 343 U.S. digesters
 - 120 in California
 - 105 more under construction
- California's dairy digester program delivers 22% of state's GHG reduction

Dairy leads the green energy movement

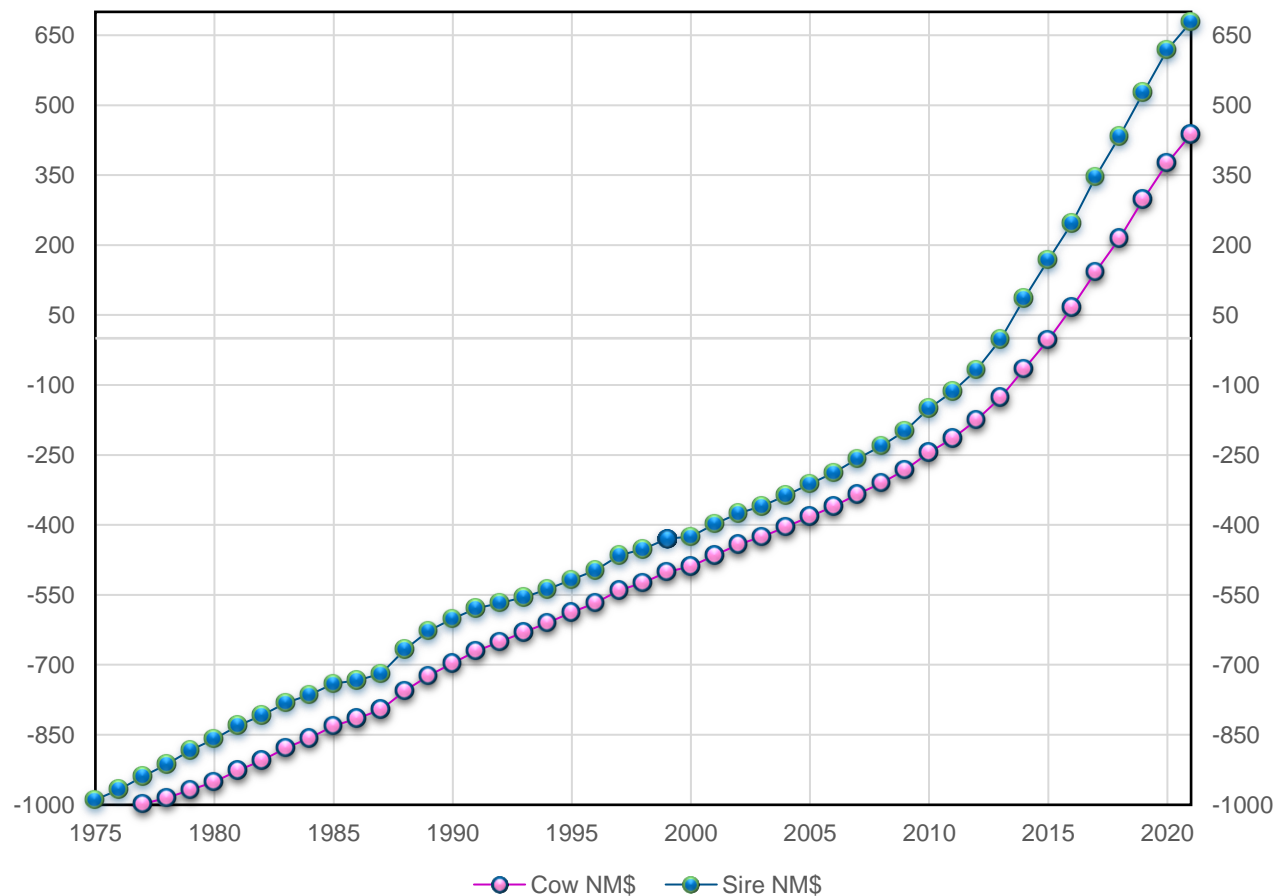


Genetics improve dairy's carbon footprint

An example:

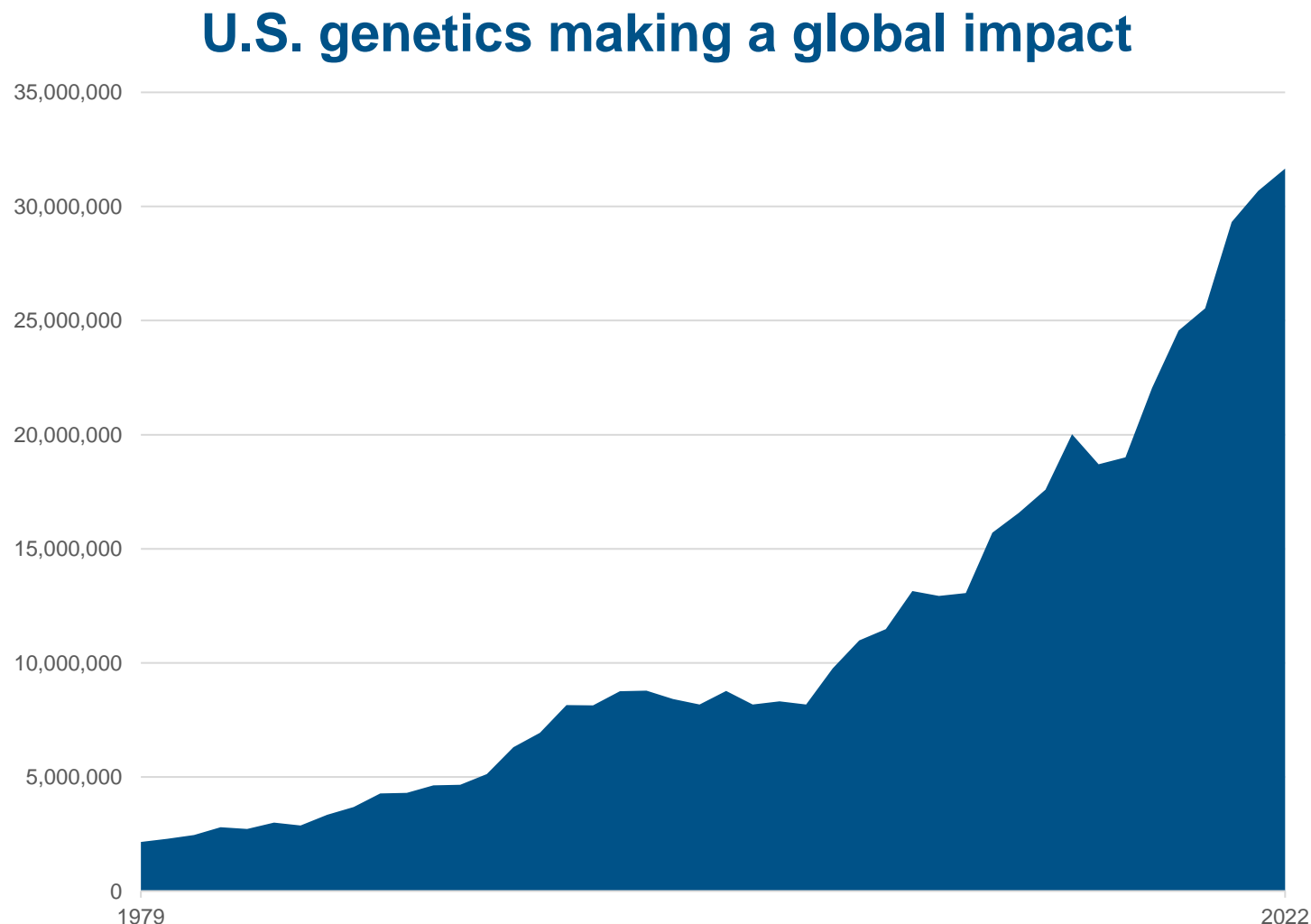
- Solar panels power:
 - Barns with 480 bulls
 - 72 lasers sexing semen running at 30,000 pulses per second, 24 hours a day
- Solar panels cannot compete with genetics for carbon reduction
 - 10-years of solar panels to have same impact from **1 month** of genetic gains on semen sold
- Genetic gains measured by more production, better health, longer cow life

Getting more with less



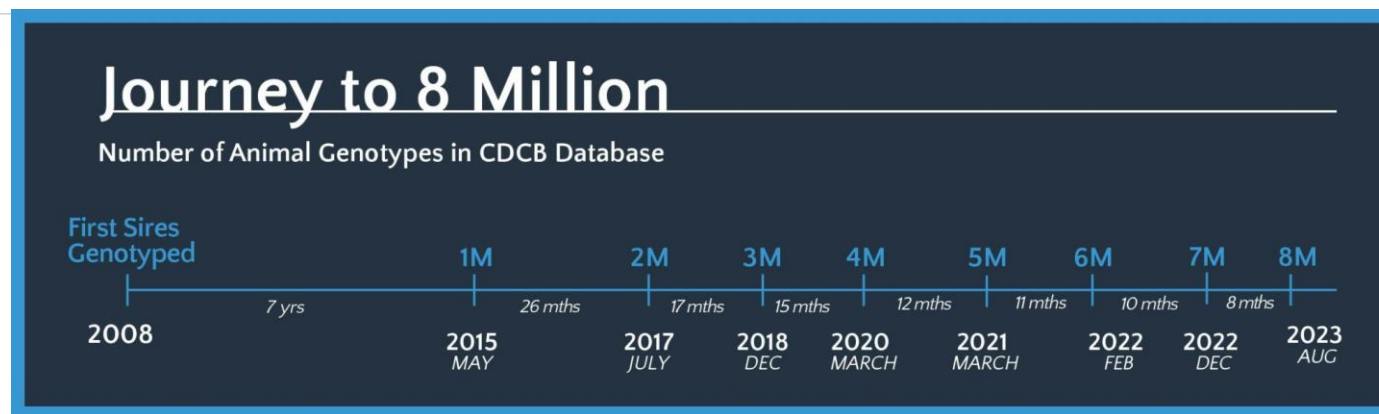
The global dairy community benefits from progress

- Dairy semen exports:
 - In 2010 – 13 million units
 - In 2016 – 19 million units
 - By 2022 – 31.5 million units
- Exports top domestic
 - 34% sold in the U.S.
 - 66% exported outside U.S.
- All producers, processors benefit from carbon footprint reductions

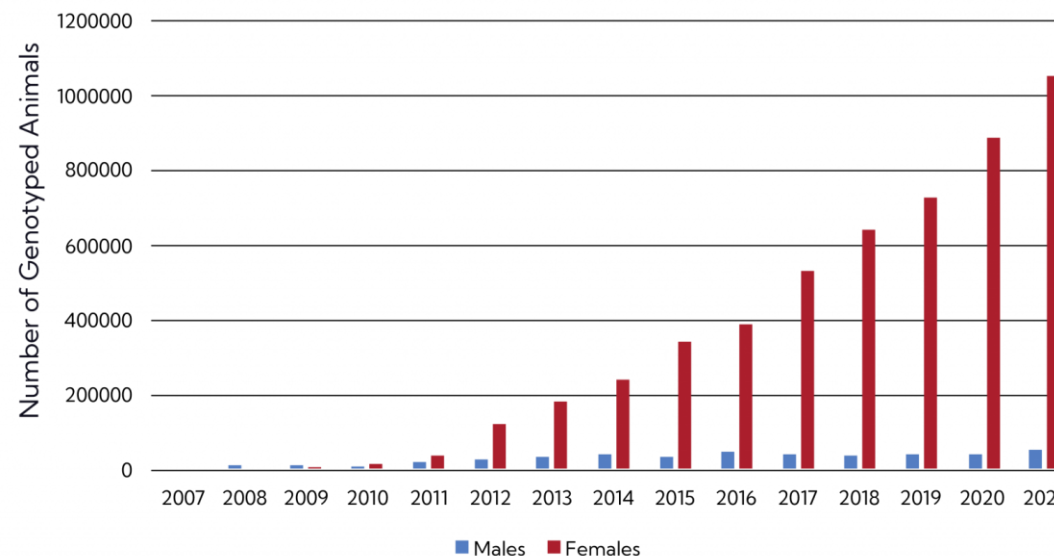


Genomics — study of DNA — driving progress

- The dairy cow is most studied animal
- 16% of U.S. dairy heifers have genomic tests
 - Revealing 70% of genetic ability as a cow while still a calf
- Data collection, accuracy drive predictions
- Genomic science has identified new traits
- Information fuels innovation



Genotypes Added Each Year to CDCB National Cooperator Database



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