

Climate Change & Agriculture

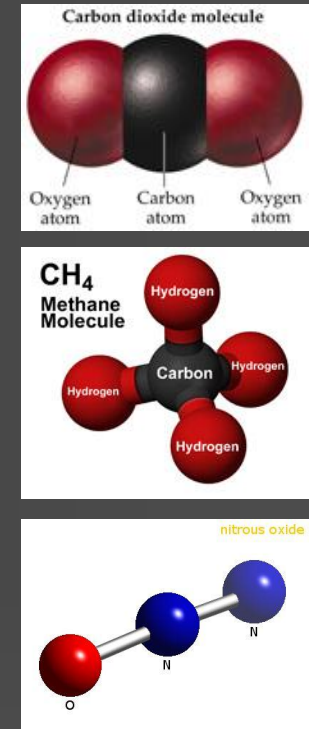
Jeanne Merrill
California Climate & Agriculture Network



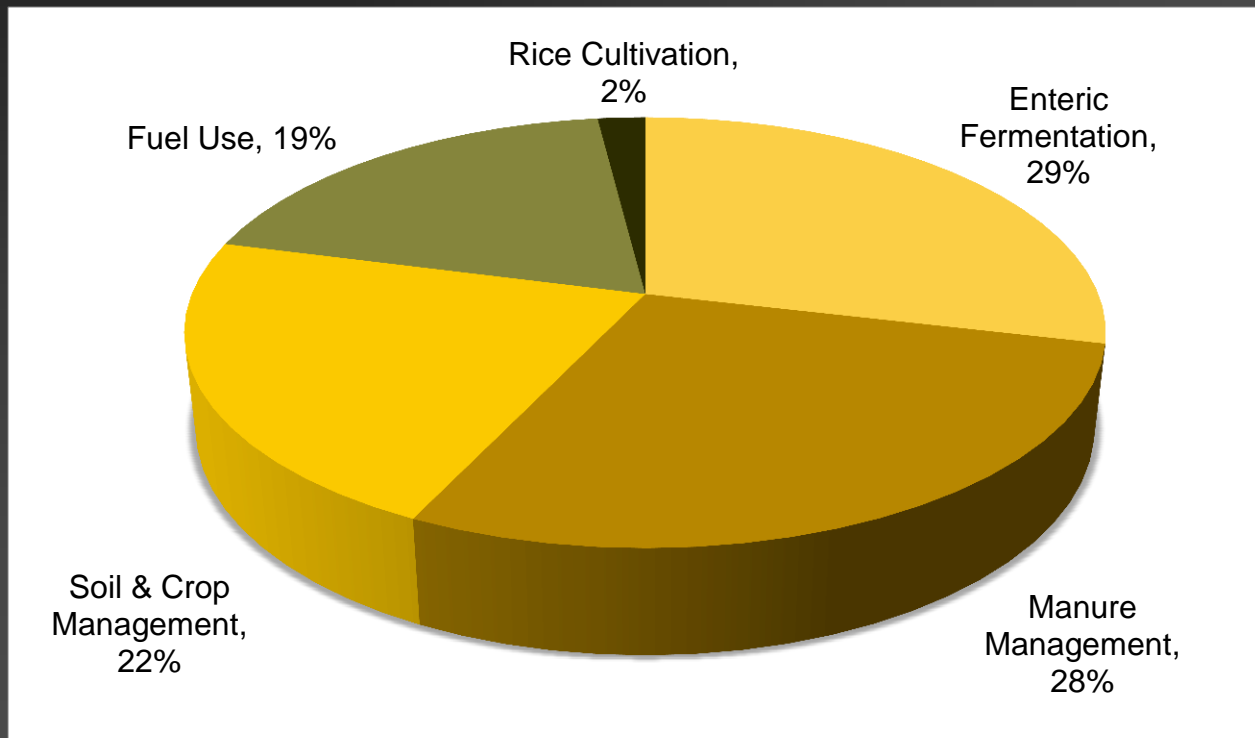
Greenhouse Gases

Climate change is caused by the release of these major greenhouse gases (GHGs) into the atmosphere:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)



CA Agriculture GHG Emissions

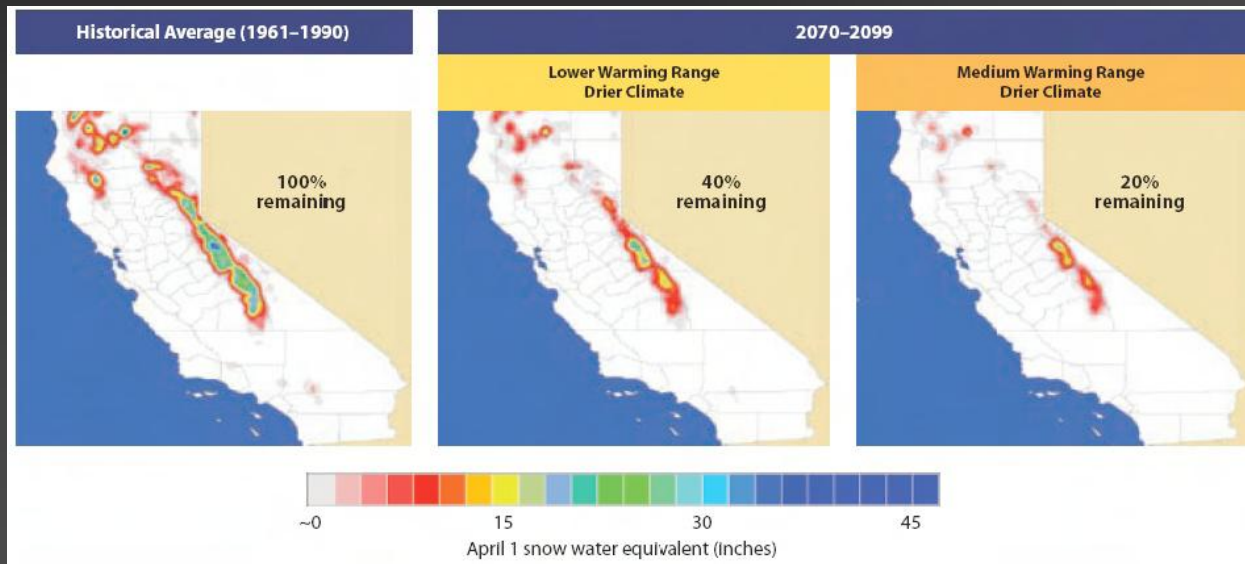


Source: California Air Resources Board

http://www.arb.ca.gov/app/ghg/2000_2006/ghg_sector_data.php

Climate Change Impacts

California Impact #1: Water



Source: California Adaptation Strategy Report. 2009. Page 80.

Other Impacts

- Yield reductions; shifting crop patterns
- Increased /shifting pest & disease pressures
- Reduced winter chill hours
- Erratic & extreme weather events
- Economic vulnerability



Stanford Study



- Looked at Napa & Santa Barbara
- By 2040, the amount of CA land where pinot noir & cabernet sauvignon can be grown could decrease by 20 to 50% if temperature increases by 2° F
- These premium varieties may migrate north
- May need to shift to varietals that can take 45 or more days at high heat and growing season averages of 71° F

Source: Stanford Report, June 30, 2011. Global warming could significantly alter the U.S. premium wine industry within 30 years, say Stanford scientists.

Adapting to a Changing Climate

- Alter agronomic practices (e.g., trellising for shade; shift varieties)
- Increase soil fertility and water-holding capacity
- Increase biodiversity
- On-farm water storage
- Minimize fossil-fuel based inputs



Contributing Climate Solutions



- Reduce GHGs & sequester carbon by increasing soil organic matter
 - Minimize/eliminate synthetic nitrogen
 - Cover cropping
 - Reduced tillage
 - Conserve energy & water
 - Perennial crops
 - Forests, hedgerows, riparian plantings
 - Produce renewable energy
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Supporting Agriculture to Face Climate Change

- California-specific research on adaptation & mitigation solutions
- Technical assistance
 - Coop Extension
 - NRCS
 - RCD
- On-farm conservation incentives & support for adaptation



Policy Tools



How can we make the necessary investments in California agriculture?

- AB 32 & cap-and-trade
- Remove barriers to on-farm renewable energy
- Farmland protection
- Develop a state-level on-farm conservation program

What is AB 32?

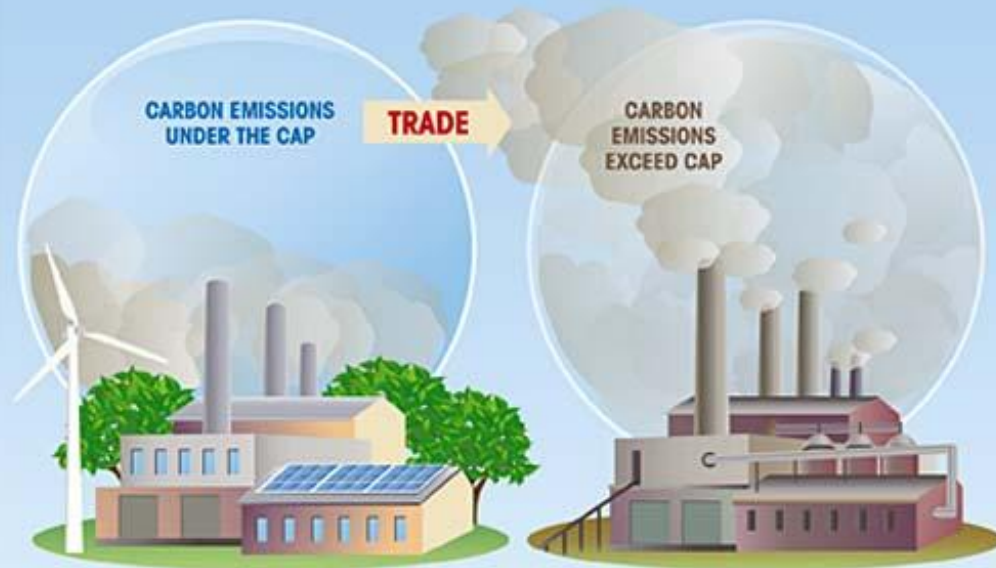
California Global Warming Solutions Act of 2006

- Goal: Reduce GHG emissions to 1990 levels by 2020
 - One of the strongest climate policies in the world
 - Package of many programs & rules
 - Agriculture is largely unregulated under AB 32
 - Includes a cap-and-trade program
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What is Cap-And-Trade?

Cap and Trade

THE CAP: The limit set by Congress on the amount of pollution that can be emitted by a company, which would reduce global warming and lead to creation of domestic manufacturing jobs in green technology.



THE TRADE: The sale of unused permits by companies that emit less to companies that can't meet their caps as quickly, which gives them incentives to implement new technology because it would be less expensive than the rising cost of paying for permits.

JULIE RIDGE

Cap-and-Trade & California Agriculture

Potential opportunities:

1. Sell carbon credits for farming practices that reduce GHGs and/or sequester carbon
 - Many questions need to be addressed
 - Protocols determining eligible practices are still being designed
 2. Support from allowance revenue accrued by the state for public benefit
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On-Farm Renewable Energy

Waste into Energy

SB 489: Renewable Energy Equity Act

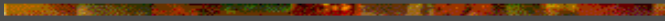


Get Involved with CalCAN



Goal: Remove barriers and incentivize farming practices that have climate & other environmental benefits.

To get involved:

- Sign up for our monthly newsletter
 - Support SB 489
 - Talk with us about joining the Farmer Climate Leaders network
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