

CLIMATE ACTION TEAM

Agriculture Working Group

Near-Term Implementation Plan

Strategy 3: Research on GHG Emissions from Nitrogen Fertilizer

CAT Working Group Overview: This working group is focused on the mitigation and adaptation efforts related to California's agricultural sector.

Working Group Agencies: State Agencies (Departments, Boards, Offices, etc.) participating in this group include: California Water Resources Control Board, California Department of Food and Agriculture, Department of Pesticide Regulation, Air Resources Board, Department of Toxic Substances Control, Department of Water Resources, California Energy Commission, and CPUC.

Measure / Strategy

- A) Description: To improve California's current GHG inventory, ARB, CEC, and CDFA are developing research to better understand nitrous oxide (N₂O) emissions from agricultural ecosystems under California specific conditions. Data may be used to develop California specific baseline emissions and improved fertilizer management practices.

ARBs GHG inventory for 2004 estimates that N₂O contributed roughly 15.6 MMTCO₂E, or 2.8 percent of California's total GHG emissions. Agricultural soil was the largest source of N₂O, accounting for approximately 8.1 MMTCO₂E or 50 percent of the State's total N₂O emissions. It is estimated that approximately 4.9 MMTCO₂E of N₂O emissions from agricultural soil results from the application of organic and synthetic fertilizers.

There is uncertainty about how much N₂O is emitted from agricultural soils under California specific conditions for the wide range of commodities and farming practices in the State. Current methods estimate that, on average, approximately 50 percent of the nitrogen fertilizer applied in the field is lost to the transport pathways of volatilization, leaching, and runoff.

CDFA has committed to funding a \$150,000 research project on baseline agricultural nitrous oxide emissions. CDFA has secured additional funding commitments from fertilizer industry to fund staff work to coordinate nitrous oxide research, conduct literature review on the current nitrous oxide baseline for agriculture, and to eventually establish recommended best management practices to reduce nitrous oxide emissions. This research compliments and will fill in missing gaps in more than a decade worth of fertilizer research. CDFA, through industry fees, has researched and developed management practices to increase fertilizer use efficiencies during this timeframe.

- B) Agencies Involved: ARB , CDFA, CEC,
C) Scoping Plan/Adaptation Plan Reference: AB 32 "Early Action Item"
D) Metrics:

- E) Crosscutting Issues: This effort will intersect with efforts underway by the Land-Use, Bio-diversity, and Water Energy subgroups.
- F) Tasks and Deliverables:

Task 1:

- 1. Description:
- 2. Deliverables:
- 3. Agency Roles:
- 4. Timeline:

G) SUMMARY TABLE:

Deliverable	Agencies	Deadline
Workshops	CDFA, CBFA	Ongoing