



# CALIFORNIA NITROGEN ASSESSMENT

Agricultural Sustainability Institute at UC Davis  
UC Sustainable Agriculture Research and Education Program

## Project Summary

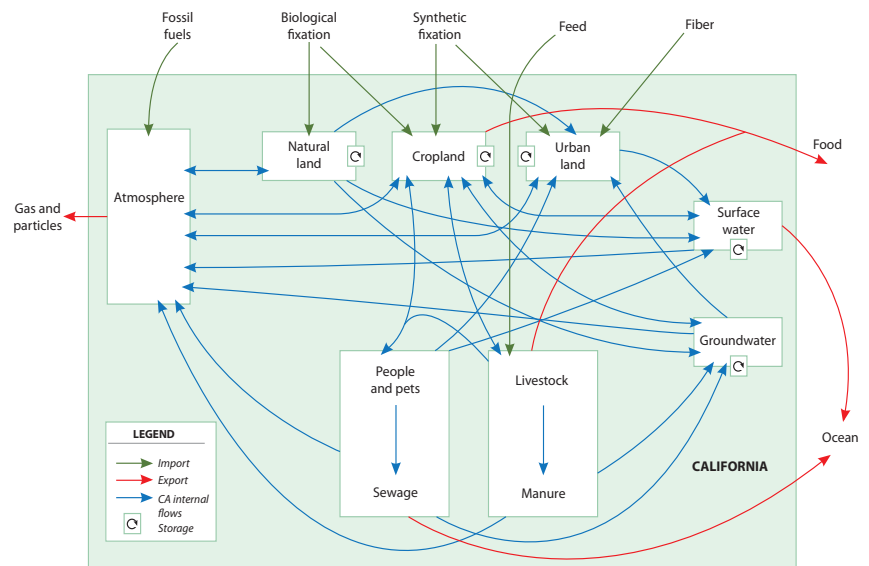
Nitrogen plays a critical role in the global food supply, but the tradeoffs of excess nitrogen application involve increased costs for farmers and negative consequences for the environment and human health. Despite increasing awareness of the importance of these tradeoffs, there is still a lack of cohesive knowledge that gives a big-picture view of California's nitrogen system. The California Nitrogen Assessment (CNA) is designed to fill this void.

**Our approach:** The CNA is a comprehensive effort to examine the existing knowledge on nitrogen science, policy, and practice in California. Our researchers have collected and synthesized a large body of data to analyze overall patterns and trends in nitrogen imports, exports, internal flows and storage throughout the state. This approach aims to move beyond “academic business as usual” to more effectively link science with action and to produce information that informs both policy and field-level practice.

**What is unique about the CNA:** Rather than generating new primary data, the CNA looks at existing knowledge to distinguish between what is well-known about nitrogen and that which is more speculative. A large amount of information already exists on agricultural-related nitrogen in California that has never been looked at as a whole. The CNA adds value by sorting, summarizing, synthesizing, analyzing, translating, and communicating this information.

### The CNA includes:

- Identification of underlying drivers (e.g., regulations, population growth) and direct drivers (e.g., fertilizer use, soil management and fuel combustion) that affect stocks and flows of nitrogen in California.
- Calculation of a mass balance to examine how nitrogen moves through California agroecosystems and the state as a whole (including agriculture, sewage, industry and transportation).
- Evaluation of the state of knowledge about nitrogen's impacts on ecosystem health and human wellbeing.
- A series of scenarios, or “plausible stories about the future,” which provide insights about nitrogen that will require attention over the next 20 years.
- A suite of practices and policy options and the potential effects each would have on agriculture, the environment and human health.
- Outreach materials that help the public understand the complex nature of the nitrogen cycle and help decision makers at the farm and public policy levels.



The CNA categorizes each of the nitrogen imports to, exports from, and internal flows in California to give a better understanding of the nitrogen footprint in the state.

### What defines an assessment?

- An assessment is a critical evaluation of information for purposes of guiding decisions on a complex, public issue.
- Stakeholders define the topics and set assessment questions.
- An assessment is not a research project, a review paper, or an advocacy piece.
- The process is as important as the results and outputs produced.
- Assessing what is not known and uncertainty in the data is as important as understanding what is known.
- Assessments are peer reviewed by both researchers and stakeholders.

[nitrogen.ucdavis.edu](http://nitrogen.ucdavis.edu)

With questions, contact Aubrey White, Communications and Outreach: [abwhite@ucdavis.edu](mailto:abwhite@ucdavis.edu), (530) 752-5299



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## Stakeholder Engagement and Review Process

### Stakeholder Engagement

A primary goal of the CNA is to develop information and products that are relevant to stakeholders' needs. Because of this, stakeholder engagement played a key part in directing research priorities of the assessment, and will help shape how we disseminate the assessment's results. We engaged with industry groups, policy makers, non-profit organizations, farm advisors, scientists, and government agencies to learn from a wide breadth of perspectives.

#### Key Activities include:

- From 2009-2011, used multiple avenues - stakeholder forums, farm visits, grower consultations, and industry field trips - to engage with more than 350 stakeholders across 50 organizations.
- Outreach events generated more than 100 nitrogen-related questions and provided data, practical examples, and management options to guide the assessment.
- Collaboration with stakeholders to create four 'scenarios' on the future of nitrogen management in California agriculture.
- A 30-member Stakeholder Advisory Committee provides feedback and acts as liaison between the CNA and members' constituencies.
- An eight-member multidisciplinary faculty workgroup on nitrogen science and agriculture conducts complementary research.

### Review Process

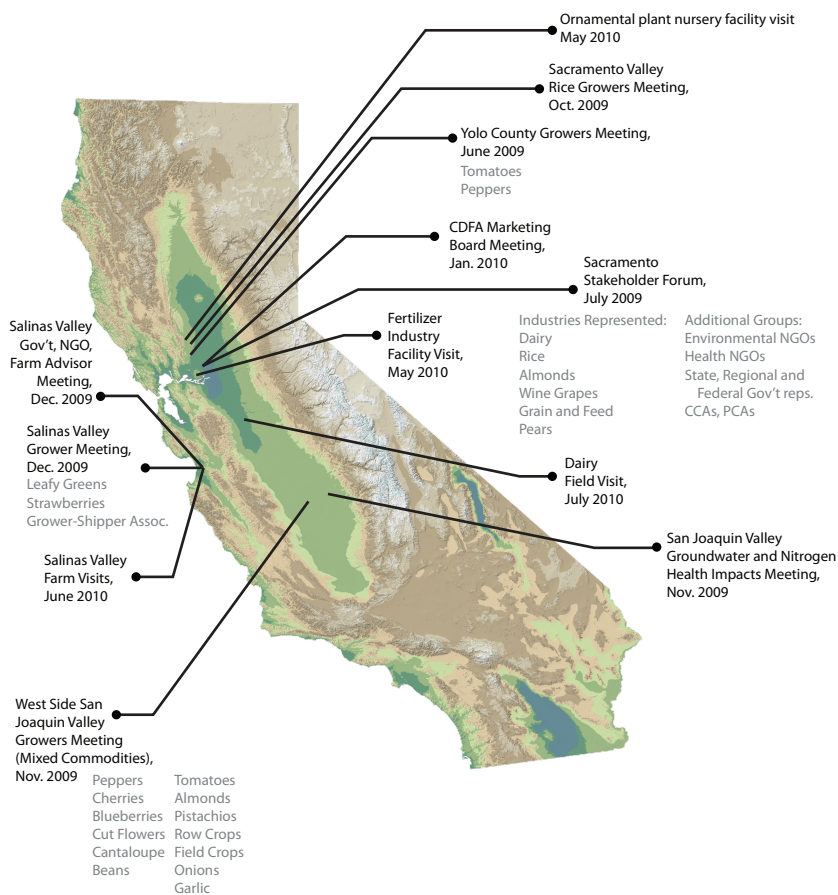
The CNA includes a rigorous review process to evaluate the comprehensiveness of the research, balance in presentation of evidence, and validity of the interpretations, providing a high level of credibility and legitimacy to the assessment's findings.

#### Key activities include:

- An eight-member Technical Advisory Committee provides scientific support and oversight for the project.
- Over 60 scientific experts provide peer review. Revised chapters are then reviewed by the Stakeholder Advisory Committee, followed by an open public review.
- A group of nine Review Editors ensure all comments receive appropriate attention and response from authors.

Major funding for the California Nitrogen Assessment is provided by a grant from the David and Lucile Packard Foundation. Work on the assessment began in January 2009, and will continue through fall of 2013. Our institutional partners are the University of California Agricultural Issues Center and the Kearney Foundation of Soil Science.

### CNA Meetings and Field Visits, 2009-2010



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