

University of California

Nitrogen Management Training

for Certified Crop Advisers

MODULE 6

Nitrogen Management Tools and Resources

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University of California
Agriculture and Natural Resources



Nitrogen Management Resources

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Nutrient Management of Specific Crops



FREP Database

<http://www.cdffa.ca.gov/is/frep/>

Go here for:

- Up-to-date California crop research
- Database searchable by crop, county and research date

The Fertilizer Research and Education Program (FREP) funds and coordinates research to advance the environmentally safe and agronomically sound use and handling of fertilizer materials. Since 1990, FREP has funded research on many of California's important and environmentally sensitive cropping systems. This database aims to make the wealth of information contained in FREP research projects readily available, easily understandable, and convenient for growers to implement.

Please enter search criteria:

Keyword(s)	<input type="text"/>
Type of Crop	<input type="text" value="View All"/>
County	<input type="text" value="View All"/>
Date Range	<input type="text" value="View All"/>
<input type="button" value="Search"/>	

Fertilization Guidelines for Major CA Crops

<http://apps.cdfa.ca.gov/frep/docs/guidelines.html>

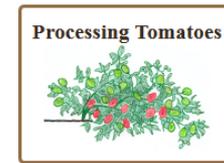
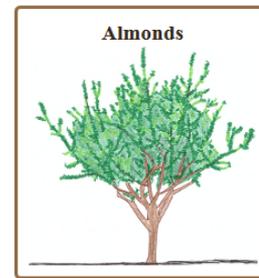
Go here for:

- Application rates & times
- Fertilizer placement
- Fertilizer type
- Deficiencies
- Tissue Analysis

Fertilization Guidelines for Major Crops Grown in California

These guidelines are based on research results from studies carried out in California and elsewhere. For an optimal fertilization program, site-specific information on soil type, climate and crop management need also to be take in into account.

After choosing a crop from the list below, detailed information can be accessed by moving the mouse over any shape with the symbol ⓘ.



Soil and Plant Tissue Sampling

- [Soil Test Sampling Instructions](#)
- [Sampling for Soil Nitrate Determination](#)
- [Soil Sampling in Orchards](#)
- [Plant Tissue Sampling](#)

Vegetable Research and Information Center

Go here for:

- Information about nutrient management, irrigation, and fertilization in CA vegetables

organized by crop

http://vric.ucdavis.edu/main/veg_info.htm

- Calendar of educational events and new research projects

<http://vric.ucdavis.edu/index.htm>

Vegetable information

Information by CROP

- Allium
- Artichoke
- Asparagus
- Beans
- Beet
- Broccoli
- Cabbage
- Cantaloupe
- Carrot
- Cauliflower
- Celery
- Cilantro
- Corn
- Cucumber
- Eggplant
- Garlic
- Lettuce
- Melon
- Okra
- Onion
- Pea
- Pepper, bell & Chile
- Potato
- Pumpkin

Information by TOPIC

- Biotechnology
- Compost
- Conservation tillage
- Cover cropping
- Diseases (see Pests)
- Fertilization and chemical analyses
- Food safety
- Greenhouse and hydroponic
- Insects (see Pests)
- Irrigation
- Mulching and plasticiculture
- Nematodes (see Pests)
- Organic production
- Pests - diseases, insects, nematodes, weeds
- Production cost
- Soil
- Transplanting
- Weeds (see Pests)

In this Section

- ↳ Home
- ↳ About VRIC
- ↳ Calendar
- ↳ Continuing education
- ↳ Events
- ↳ FAQs
- ↳ Newsletters and blogs
- ↳ Resources
- ↳ Vegetable information
- ↳ Virtual tour

Items of Special Interest

- ↳ ANR catalog
- ↳ Backyard Orchard
- ↳ Food Safety
- ↳ Good Agricultural Practices
- ↳ Home gardening
- ↳ Postharvest

VRIC Members Only

Search ANR & California Agriculture magazine only

Custom Search Search

Search VRIC:

CropManage

<https://ucanr.edu/cropmanage/login/>



CROPMANAGE
Help and User Instructions for Irrigation and N management tool

CropManage Overview: A web application for managing water and nitrogen fertilizer in lettuce

Author: Michael D Cahn Published on: October 15, 2012

Cool season vegetable production requires significant inputs of water and nitrogen (N) fertilizer to maximize yield and quality. Proposed changes in water quality regulations on the Central Coast and higher fertilizer prices in recent years have prompted grower interest in increasing efficiency of nitrogen fertilizer use in lettuce. By improving water management and matching nitrogen applications to the uptake pattern of the crop, growers could potentially reduce fertilizer use and address water quality concerns.

Two tools available, the quick nitrate soil test and weather-based irrigation scheduling, have been shown to help lettuce producers better manage water and fertilizer nitrogen. Trials we conducted in commercial fields have demonstrated that soil nitrate concentrations greater than 20 ppm NO₃-

SEARCH: Enter Search Terms

SUBSCRIBE: Enter e-mail Address

RECENT POSTS:

- Using CropManage to Determine an Irrigation Schedule
- Hands-on Workshop for CropManage on May 1st, 2014
- Entering a new fertilizer record and calculating a fertilizer N rate for a planting
- Entering a new soil nitrate test value for a planting
- Upcoming Irrigation and Nutrient Management Meetings

Go here for:

- Irrigation and N management of coastal vegetables and berries
- Sharing data between users of a single farm operation

Fruit and Nut Research and Information

<http://fruitsandnuts.ucdavis.edu/>

Go here for:

- Information on biology, fertilization and management of fruit and nut crops
- Links to literature searchable by crop

Fruit & Nut Information

Your click on any of the fruits and nuts from the following list will access information in these areas: General Education, Specific articles in production economics and management, and links to centers, programs, and organizations. For up-to-date statistics on US and World production, see: USDA [NASS](#) and United Nations [FAOSTAT](#).

[Temperate Crops](#) | [Subtropical & Tropical Crops](#)

Temperate Fruit & Nut Crops



Orchards and Grapevines

Go here for:

Links to information on grapevine nutrition, with attention to Boron, Phosphorous, and Zinc.

http://cecentralsierra.ucanr.edu/Agriculture/Viticulture/Grapevine_nutrition/

Grapevine Nutrition



Petiole sampling at bloom helps determine vine nutritional needs. Sample the leaf petioles opposite flower clusters.

Grape Nutritional Deficiency Images courtesy of Pete Christensen

Click on an image for a closer view and to scroll through the pictures.



B def Merlot leaves

University of California
UC Integrated Viticulture

- Home
- UC Researchers
- Viticultural Information
- Videotaped Seminars and Events
- UC Publications
- Current UC Viticulture Research
- Resources
- Hilgardia
- Editors
- Links
- Please support the UC Integrated Viticulture Website

ABOUT UC INTEGRATED VITICULTURE ONLINE



Viticulture is the art and science of growing grapes. Every detail matters and a great deal of attention has been paid to growing conditions, the differences between grape varieties, and protecting the plants from pests and diseases. Here, you will find publications, video seminars, and useful links on relevant topics from research by the University of California.

Go here for:

Links to recent and ongoing UC viticulture research and educational events

<http://iv.ucdavis.edu/>

Almond Resources

Go here for:

A model that calculates site-specific Almond N requirement and timing for optimum yield.

<http://fruitsandnuts.ucdavis.edu/almond/models/>

Almond Model for Calculating Nitrogen Demand

[Weather-Related Models](#) > [Nitrogen Prediction Models for Almond & Pistachio](#)

Nitrogen Fertilization Recommendation for Almond

P.H. Brown, Q. Zhang, S. Muhammad and S. Saa, Department of Plant Sciences, University of California, Davis; Max Stevenson, UC-SAREP program; R.C. Rosecrance, College of Agriculture, California State University, Chico

This model calculates the N requirement for Almond production based upon the yield history, current conditions and previous N applications. Calculations of N fertilizer requirement are based upon a 70% efficiency of N use which is attainable with well timed and managed N applications. This model can be used to calculate both timing and rate of fertilizer application required to maintain optimum yield. Site specific information is required for accurate projection of N requirement hence this model should be applied to each distinct management unit (block or field).

The data used in this model was derived from exhaustive tree-N budget determinations and input from Max Stevenson, BIOS staff Scientist at the Community Alliance with Family Farmers (www.caff.org)

Go here for:

Instructions for leaf sampling and predicting N and K status

[http://fruitsandnuts.ucdavis.edu/Weather_Services/Nitrogen Prediction Models for Almond and Pistachio/](http://fruitsandnuts.ucdavis.edu/Weather_Services/Nitrogen_Prediction_Models_for_Almond_and_Pistachio/)

Nitrogen Prediction Models for Almond and Pistachio

These models are based on research conducted through *Advanced Sensing and Management Technologies to Optimize resource Use in Deciduous Tree Crops*, a 4-year, multi-state project with goals to optimize resource use in deciduous tree crops. For project details, including investigative team, methodology and support, see [project link](#).

N & K Prediction Model for Pistachio

- 1) [Guidelines for Pistachio Early-Season Sampling and In-Season Nitrogen Application Maximizes Productivity, Minimizes Loss](#) (pdf). By Muhammad Ismail Siddiqui & Patrick Brown
- 2) Estimate pistachio tree demand: [Pistachio Model for Calculating Nitrogen Demand](#)
- 3) Interpret early season pistachio leaf samples

Field Soil Properties

SoilWeb

<http://casoilresource.lawr.ucdavis.edu/soilweb/>

Go here for:

- Soil survey areas and mapped soil properties
- Interactive GPS features

The screenshot displays the California Soil Resource Lab website. At the top, there is a navigation menu with links for Home, Links, Online Soil Survey, People, Projects, Software, and Site Map. Below the menu, the text reads "SoilWeb: An Online Soil Survey Browser" and "Our online soil survey can be used to access USDA-NCSS detailed soil survey data (SSURGO) for most of the United States. Please choose an interface to SoilWeb:". Two interface options are shown in separate boxes:

- SoilWeb:** "Explore mapped soil survey areas using an interactive Google map and view detailed information about map units and their components. This app runs in your web browser and is compatible with desktop computers, tablets, and smartphones." The interface shows a map of Davis, CA, with a sidebar listing map units such as "Sycamore silty clay", "Alameda", "Sycamore", "Web", and "Arroyo".
- SoilWeb Earth:** "Soil survey data are delivered dynamically in a KML file, allowing you to view mapped areas in a 3-D display. You must have Google Earth or some other means of viewing KML files installed on your desktop computer, tablet, or smartphone." The interface shows a 3D view of the same area with a vertical soil profile legend.

NRCS Web Soil Survey

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>



Go here for:

- Global and local soil maps
- Guide to soil maps by topic area

Irrigation Management

UC Cooperative Extension Irrigation Management

<http://ucanr.edu/sites/irrmgm/>

Go here for:

- Introduction to irrigation management

SKIP TO CONTENT SITE MAP Q

UC CE University of California Cooperative Extension
Irrigation Management

Home
UC Drought Management Web Site
Microirrigation System Maintenance Web site
PowerPoint Presentations
Narrated PowerPoint Presentations
Subsurface drip germination work
Chemigation Safety Drawings
Free Publications Available for Download
Handbooks Available for Purchase
Larry Schwankl Faculty page

Lawrence J. Schwankl, CE Irrigation Specialist

Contents

- [Narrated PowerPoint Presentations](#)
Dairy Irrigation Water Management Series
- [PowerPoint Presentations](#)
Various Irrigation Management Topics
- [Chemigation Safety Drawings](#)
- [Free Publications Available for Download](#)
- [Handbooks Available for Purchase](#)
- [Microirrigation System Maintenance Web site](#)
- [UC Drought Management Web site](#)
- [Subsurface Drip Germination Study](#)

Photos

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WATERIGHT

<http://www.wateright.org/>

Go here for:

- How to get started with irrigation scheduling
- Irrigation scheduling planning tools
- Water and energy management



Risk of Nitrate Leaching

Nitrate Groundwater Pollution Hazard Index

http://ciwr.ucanr.edu/Tools/Nitrogen_Hazard_Index/

Go here for:

- Estimate of a field's nitrate pollution risk
- N management suggestions



The screenshot shows the website for the University of California Agriculture and Natural Resources, specifically the California Institute for Water Resources. The page is titled "Nitrate Groundwater Pollution Hazard Index". The header includes the university logo, the text "University of California Agriculture and Natural Resources | California Institute for Water Resources", and the tagline "Developing research-based solutions to water-related challenges". There is a search bar and navigation links for "SKIP TO CONTENT" and "SITE MAP".

The main content area is titled "Nitrate Groundwater Pollution Hazard Index" and includes a "SHARE" and "PRINT" button. The text describes the index: "The [Nitrate Groundwater Pollution Hazard Index](#) was developed to provide information to farmers interested in voluntary management practices that reduce nitrogen contamination potential in groundwater." A blue button labeled "Find Your Index Number" is present.

Background:
The index works with an overlay of soil, crop, and irrigation information. Based on the three components, an overall potential hazard number is assigned and management practices are suggested where necessary. If you don't know what soil type you have, try this online [soil survey](#) with detailed soil survey data for much of California, Arizona, and Nevada.

More information:

- [Hazard Index Concept \(background information & process\)](#) (pdf, 54kb)
- [Supporting Evidence for the Nitrate Groundwater Pollution Hazard Index Concept](#) (pdf, 49kb)
- [Concentration versus Mass Flow](#) (pdf, 61kb)
- [Irrigation Principles](#) (pdf, 49kb)
- [Dynamics of Nitrogen Availability and Uptake](#) (pdf, 124kb)
- [Basic Factors Affecting N Transport through Soils](#) (pdf, 107kb)
- [Interpretation of Nitrate Groundwater Pollution Hazard Index Number](#) (pdf, 42kb)

The left sidebar contains a navigation menu with the following items: Home, About the Institute, Programs, Research and Outreach Projects, Tools and Resources (with a sub-menu for "Nitrate Groundwater Pollution Hazard Index", "ENVIRO-GRO", and "California's Academic Water Programs"), Publications, Keep in Touch, and QUICK LINKS (with sub-links for "Drought resources", "Nitrogen Hazard Index", "Rosenberg Forum", and "Follow us on Twitter").

N Removed with Harvested Crops

IPNI Crop Nutrient Removal Calculator

<https://www.ipni.net/app/calculator/home>

Go here for:

- N, P, K harvest removal estimates of field crops
- Multilingual crop nutrient calculator



Crops

- ☆ Alfalfa (DM)
- ☆ Almonds, with shell
- ☆ Alsike clover (DM)
- ☆ Apples
- ☆ Bahiagrass
- ☆ Barley grain
- ☆ Barley straw
- ☆ Barley straw per unit of grain yield
- ☆ Beans, dry

NRCS Crop Nutrient Tool

<http://plants.usda.gov/npk/main>

The screenshot shows the NRCS Crop Nutrient Tool website. At the top, there is a header with the USDA logo and the text "United States Department of Agriculture Natural Resources Conservation Service" on the left, and the NRCS logo on the right. Below the header is a banner for the "PLANTS Database" featuring various plant images. A navigation menu includes links for Home, About PLANTS, Team, Partners, What's New, NPDT, Help, and Contact Us. The main content area is titled "Nutrient Content of Crops" and contains a search section on the left with a "Name Search" box and a "Go" button. The search section also includes links for "Scientific Name", "Slate Search", "Advanced Search", and "Search Help". Below the search section is a "PLANTS Topics" sidebar with expandable categories like "Alternative Crops", "Characteristics", "Classification", "Cover Crops", "Culturally Significant", "Distribution Update", "Documentation", "Fact Sheets & Plant Guides", and "Introduced, Invasive, and Native Plants". The main content area includes a "Select Crops" section with links for "About the Crop Nutrient Tool", "Nutrient Data Sources", and "Download Crop Nutrient Database". Below this is a description: "A tool for calculating the approximate amount of nitrogen, phosphorus, and potassium that is removed by the harvest of agricultural crops." The tool is divided into two main sections: "Step 1" and "OR...". "Step 1" is titled "Select the crop type(s) in which you are interested. At least one selection must be made:" and includes a list of crop types with radio buttons: "Cereal and Oil Crops", "Forage Crops", "Fiber and Miscellaneous Crops", "Tree and Fruit Crops", and "Vegetable Crops". The "OR..." section is titled "Enter the full or partial name of a crop (i.e. 'corn'). All crops from any crop type will be displayed on the following page. The search will be performed so that any crop name containing the string entered will be retrieved." and includes a text input box.

Go here for:

- Elemental N, P, K harvest removal estimates of field crops
- Explanation of how removal calculations are made

Manure Management

Manure Management for CCAs

<http://manuremanagement.ucdavis.edu/>

Go here for:

- Technical information on dairy manure nutrient management
- Goals for CCAs serving CA dairy farmers



The screenshot shows the homepage of the University of California Manure Management for California Certified Crop Advisers website. The header includes the University of California logo, the site title, and navigation links for 'SKIP TO CONTENT', 'SITE MAP', and a search box. A left sidebar contains a menu with 'Home', 'Mission', 'Resources', 'Contact Us', and 'Links'. The main content area features a 'Welcome' message, a brief description of the site's purpose, contact information for Dr. Stu Pettygrove, and a photograph of a manure storage pond with two ducks. The footer contains the Division of Agriculture and Natural Resources logo and copyright information.

University of California
Manure Management for California Certified Crop Advisers

SKIP TO CONTENT SITE MAP 

Home
Mission
Resources
Contact Us
Links

PRINT 

Welcome

This site contains technical information on dairy manure nutrient management intended to help Certified Crop Advisers who are serving dairy farmers in the Central Valley of California.

Contact:

Dr. Stu Pettygrove, Cooperative Extension Soils Specialist
University of California
Department of Land, Air & Water Resources
One Shields Avenue
Davis, CA 95616

Email: gspettygrove@ucdavis.edu



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Accessibility | Get PDF Reader | Get Flash Player | Site Information

Manure Nutrient Management

<http://manure.ucdavis.edu/>



The screenshot shows the homepage of the University of California Manure Nutrient Management website. The header includes the University of California logo and the site title "Manure Nutrient Management". Navigation links for "SKIP TO CONTENT" and "SITE MAP" are present, along with a search bar. A left sidebar lists various resources: Home, Designing Dairies for Nutrient Management, Measuring Liquid Manure Nutrients, Applying Target Rates of Lagoon Water Nitrogen, Recordkeeping for Nutrient Management, Nutrient Management Spreadsheets, News, Comments, and About This Site. The main content area features a "Welcome" message, a "PRINT" button, and a large photograph of a manure lagoon at sunset. Below the photo, there is introductory text about the site's purpose and links to "Designing Dairies for Nutrient Management" and "Measuring Liquid Manure Nutrients".

Go here for:

- Help quantifying nutrients in manure sources
- Nutrient recordkeeping
- Application targeting calculator and design ideas

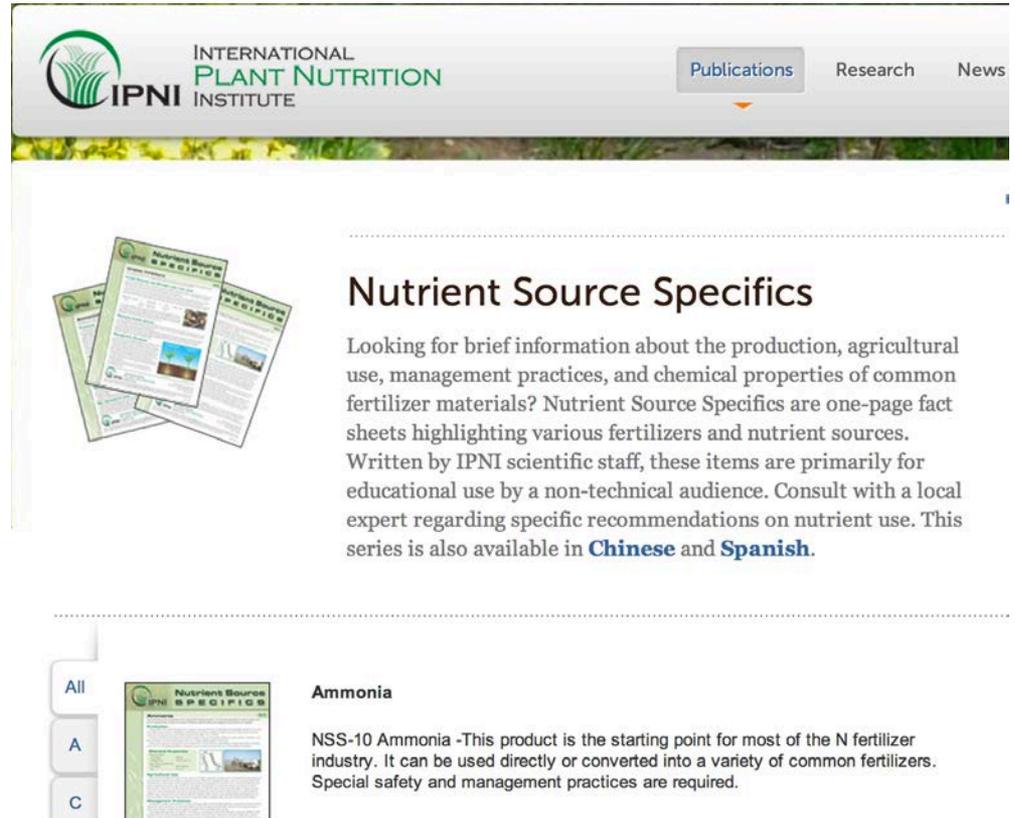
Fertilizer Sources and Transformations

Nutrient Source Specifics

<http://www.ipni.net/specifics-en>

Go here for:

- Background about properties and use of fertilizers
- Chinese and Spanish language series



The screenshot shows the IPNI website header with the logo and navigation links for Publications, Research, and News. Below the header, there is a section titled 'Nutrient Source Specifics' with a description of the fact sheets. A sub-section for 'Ammonia' is also visible, featuring a thumbnail of a fact sheet and a brief description.

INTERNATIONAL PLANT NUTRITION INSTITUTE

Publications Research News

Nutrient Source Specifics

Looking for brief information about the production, agricultural use, management practices, and chemical properties of common fertilizer materials? Nutrient Source Specifics are one-page fact sheets highlighting various fertilizers and nutrient sources. Written by IPNI scientific staff, these items are primarily for educational use by a non-technical audience. Consult with a local expert regarding specific recommendations on nutrient use. This series is also available in **Chinese** and **Spanish**.

Ammonia

NSS-10 Ammonia -This product is the starting point for most of the N fertilizer industry. It can be used directly or converted into a variety of common fertilizers. Special safety and management practices are required.

Nitrogen Notes

<http://www.ipni.net/nitrogennotes>



Nitrogen Notes

A basic understanding of the reactions of nitrogen in soils provides a solid foundation for making wise nutrient stewardship decisions. This series of fact sheets, written by IPNI staff, covers the major nitrogen fertilizer transformations that occur in crop production.

Go here for:

- Information on N fertilizer transformations
- Management suggestions to prevent leaching

Cover Crops

Cover Crop Guides

SAREP Cover crops Go here for:

Cover Crops

- [Annual Fescue](#)
- [Annual Ryegrass](#)
- [Barley](#)
- [Barrel Medic](#)
- [Bell Bean](#)
- [Berseem Clover](#)
- [Birdsfoot Trefoil](#)
- [Black Medic](#)
- [Buckwheat](#)
- [Burr Medic](#)
- [Canola / Rape](#)
- [Cereal Rye](#)

- Descriptions of 40 cover crops including management practices, climate and soil requirements, and uses

<http://www.sarep.ucdavis.edu/database/covercrops>

Go here for:

- Guidelines for when and how to use common cover crops

http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull_national/landuse/crops/?cid=stelprdb1077238



Cover Crop Information

<http://smallfarms.oregonstate.edu/node/54>

Go here for:

- Calculator comparing nutrient values of cover crops, organic and synthetic fertilizers, and compost.



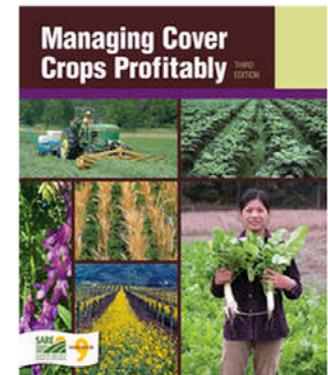
<http://www.sare.org/Learning-Center/Books>
[Managing-Cover-Crops-Profitably-3rd-Edition](#)

Go here for:

- A book explaining how to integrate cover cropping into a farming operation.

Managing Cover Crops Profitably, 3rd Edition

Managing Cover Crops Profitably explores how and why cover crops work, and provides all the information needed to build cover crops into any farming operation. Along with detailed management information on the most commonly used species—including grasses, grains, brassicas and mustards, and legumes—*Managing Cover Crops Profitably* offers chapters on the role of cover crops in broader topics such as crop rotations, pests and conservation tillage. It also has appendices on seed suppliers and regional experts.



[Download Product](#)

Additional Resources

California Agriculture

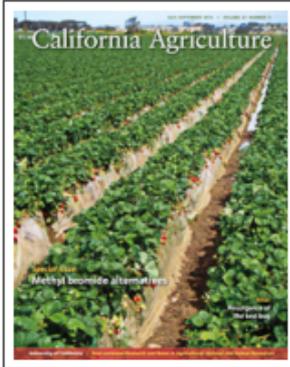
<http://californiaagriculture.ucanr.org/>

Research, reviews,
and news in peer-
reviewed journal
format



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[CALIFORNIA AGRICULTURE HOME](#) > [VOLUME 67](#) > NUMBER 3



California Agriculture, JULY-SEPTEMBER 2013
Volume 67, Number 3
Special issue: Methyl bromide alternatives

Peer-reviewed Research Articles

Managing the almond and stone fruit replant disease complex with less soil fumigant
by Greg T. Browne, Bruce D. Lampinen, Brent A. Holtz, David A. Doll, Shrinivasa K. Upadhyaya, Leigh S. Schmidt, Ravindra G. Bhat, Vasu Udampetaikul, Robert W. Coates, Bradley D. Hanson, Karen M. Klonsky, Suduan Gao, Dong Wang, Matt Gillis, James S. Gerik, R. Scott Johnson
pp128-138, DOI#10.3733/ca.v067n03p128
Summary | Expanded Abstract | HTML w/Links | PDF

Cover PDF Download

UC Agriculture and Natural Resources Academic Directory

<http://ucanr.edu/Find People/Academic Directory/>

The screenshot shows the top navigation bar of the UC Agriculture and Natural Resources website. The header includes the University of California logo and the text "University of California Agriculture and Natural Resources". Below the header is a yellow navigation menu with links for Home, About us, Publications, Offices, 4-H, Food, Farm, Garden, Family, Environment, People, Jobs, and Español. A sidebar on the left contains a list of links: Home, Calendar, Accessibility, Diversity Matters, Development services, News, Jobs, County offices, and Statewide programs. The main content area is titled "Academic Directory" and features a search interface with the following options:

- Browse by last name**: A list of letters from A to Z for filtering.
- Filter by Appointment**: Links for [Academic Coordinator](#), [AES](#), [Specialist](#), and [Advisor](#).
- Filter by Commodity**: A link for [Show Commodities](#).

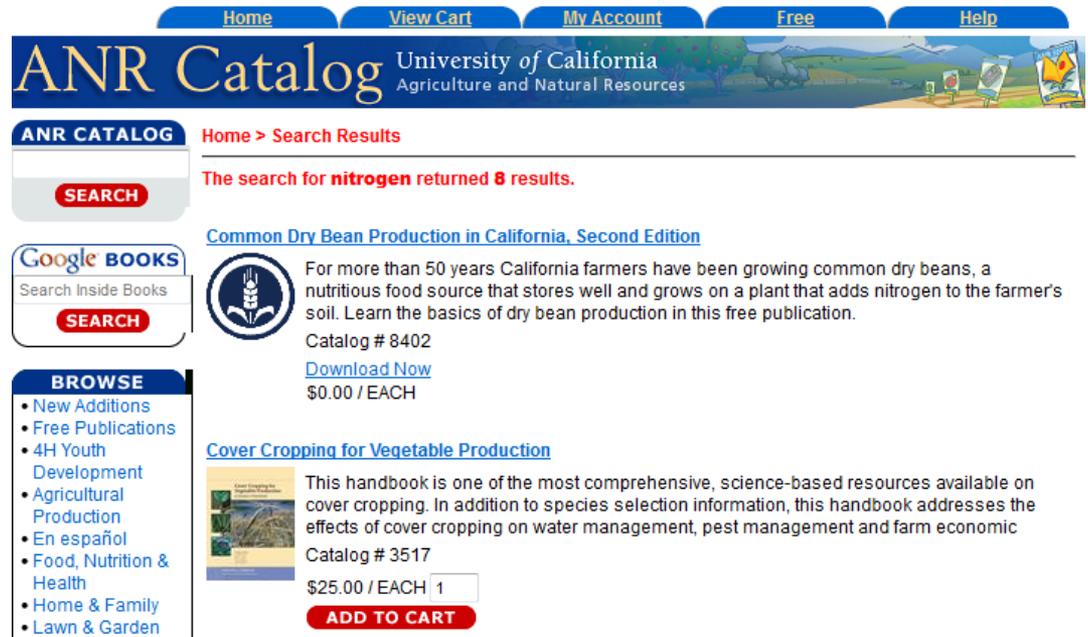
There are also "SHARE" and "PRINT" icons in the top right corner of the main content area.

Contact information for UC experts. The directory can be filtered by commodity and appointment (e.g. Farm Advisors).

Agriculture and Natural Resources Catalog

<http://anrcatalog.ucdavis.edu/default.aspx>

Publications on
agriculture,
natural resources,
and nutrition
from UC ANR.



The screenshot shows the ANR Catalog website interface. At the top, there are navigation links: Home, View Cart, My Account, Free, and Help. The main header features the text "ANR Catalog University of California Agriculture and Natural Resources" with a background image of a farm. Below the header, a search bar contains the text "ANR CATALOG" and a "SEARCH" button. To the right of the search bar, it says "Home > Search Results" and "The search for **nitrogen** returned **8** results." Below the search bar, there is a "Google BOOKS" section with a "SEARCH" button. To the right of the search bar, there is a "BROWSE" section with a list of categories: New Additions, Free Publications, 4H Youth Development, Agricultural Production, En español, Food, Nutrition & Health, Home & Family, and Lawn & Garden. The main content area displays two search results. The first result is "Common Dry Bean Production in California, Second Edition" with a description: "For more than 50 years California farmers have been growing common dry beans, a nutritious food source that stores well and grows on a plant that adds nitrogen to the farmer's soil. Learn the basics of dry bean production in this free publication." It includes the catalog number "8402", a "Download Now" link, and the price "\$0.00 / EACH". The second result is "Cover Cropping for Vegetable Production" with a description: "This handbook is one of the most comprehensive, science-based resources available on cover cropping. In addition to species selection information, this handbook addresses the effects of cover cropping on water management, pest management and farm economic." It includes the catalog number "3517", a price of "\$25.00 / EACH", a quantity of "1", and an "ADD TO CART" button.

Home > Search Results

The search for **nitrogen** returned **8** results.

ANR CATALOG SEARCH

Google BOOKS Search Inside Books SEARCH

BROWSE

- New Additions
- Free Publications
- 4H Youth Development
- Agricultural Production
- En español
- Food, Nutrition & Health
- Home & Family
- Lawn & Garden

Common Dry Bean Production in California, Second Edition

For more than 50 years California farmers have been growing common dry beans, a nutritious food source that stores well and grows on a plant that adds nitrogen to the farmer's soil. Learn the basics of dry bean production in this free publication.

Catalog # 8402
[Download Now](#)
\$0.00 / EACH

Cover Cropping for Vegetable Production

This handbook is one of the most comprehensive, science-based resources available on cover cropping. In addition to species selection information, this handbook addresses the effects of cover cropping on water management, pest management and farm economic.

Catalog # 3517
\$25.00 / EACH 1
ADD TO CART

IPNI Publications

<http://ppi-store.stores.yahoo.net/>

Print information about fertilizers, with a special focus on the 4Rs

INTERNATIONAL PLANT NUTRITION INSTITUTE



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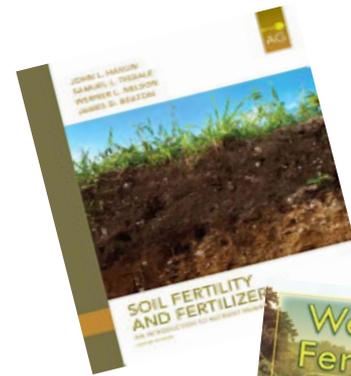
Manuals on *rice*, *oil palm*, and *soil fertility* are listed.



[The Right Way to Grow Wheat](#) [4R Nutrient Stewardship](#)

Books

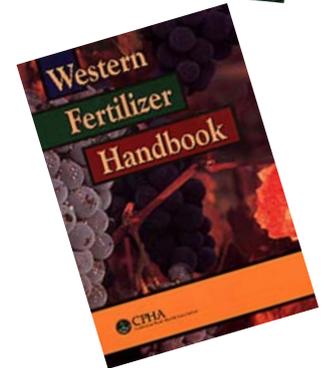
Soil Fertility and Fertilizers, 8th ed. 2013
Havlin et al.



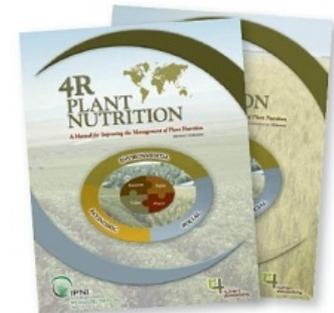
Western Fertilizer Handbook, 9th ed. 2002
Western Plant Health Association



Western Fertilizer Handbook: Horticulture,
3rd ed. 2012
Pier and Barlow



4R Plant Nutrition Manual, 1st ed. 2012
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