Merced County:
Using soil NO3-N
white flies
Fusarium wilt race 3 (F3)
Nitrate leaching has been occurring for several decades.

2008 CA Water Resources Control Board prepares a report assessing nitrate contamination of groundwater.


Jan 2014: Nutrient management plan educational seminars by UCCE.
Addressing Nitrate in California’s Drinking Water
With a Focus on Tulare Lake Basin and Salinas Valley Groundwater
Report for the State Water Resources Control Board Report to the Legislature

California Nitrate Project
Implementation of Senate Bill 321
Center for Watershed Sciences
University of California, Davis
http://groundwaternitrate.ucdavis.edu

Prepared for the California State Water Resources Control Board

RECOMMENDATIONS ADDRESSING NITRATE IN GROUNDWATER
STATE WATER RESOURCES CONTROL BOARD REPORT TO THE LEGISLATURE

20 February 2013
Groundwater nitrate contamination grows in California farm areas

UC Davis researchers say the drinking water supplies of 250,000 people will continue to be threatened. Providing clean water would cost less than reducing the amount of nitrates reaching aquifers, they say.

March 14, 2012 | By Bettina Boxall, Los Angeles Times

California farm communities suffer tainted drinking water

Jeremy Miller | Jun 24, 2013 | From the print edition

The Human Costs of Nitrate-contaminated Drinking Water in the San Joaquin Valley

March 2011
Grinding along

Approved Nitrogen Management Plan (NMP) Template
The template is approved for all Central Valley Water Quality Coalitions (does not apply to the California Rice Commission)

- Nitrogen Management Plan Template (23 December 2014), 232 KB, PDF (PDF Info)

- The Central Valley Regional Water Quality Control Board is providing an opportunity for the public and other interested stakeholders to participate in the Nitrogen Management Plan (NMP) Technical Advisory Work Group. The Work Group is being convened by the Central Valley Water Quality Control Board to provide input and guidance on the development of the Nitrogen Management Plan.
CROP N BUDGETING

- Method 1: Typical grower rate. 200 lbs N/A
- Method 2: yield goal and fertilizer rate trials (UC recommendations). 160 - 220 lbs N/A
- Method 3: harvest removal. 3.5 lbs N per ton = 160 lbs/A
- Method 4: dairy WDR. 165% of harvest removal.
- Method 5: crop N uptake - N credits/adjustments
Furrow irrig: > 16 ppm NO3-N in upper 2 ft likely no response (FREP, 2001)
Tomato Nitrogen Uptake and Partitioning

Seasonal N Uptake

Nitrogen uptake curve of processing tomatoes grown in research plots at UC Davis and in commercial fields. Uptake was determined by harvesting the aboveground biomass at different times during the season (Hartz and Bottoms, 2009). Early in the season, N uptake was low. The period of low uptake is shorter with transplants compared to seeds. The N uptake remained relatively high until harvest.

Nitrogen Partitioning

Approximately 70% of the total aboveground N was in tomatoes, with the rest being in the vines (Hartz and Bottoms, 2009).

CROP N UPTAKE
Hartz and Bottoms, 2009
Sample soil 0 – 12” every 10 days during season 4-5 days before injecting N.

Apply if NO3-N < 16 ppm

Monitor leaf and petioles
Soil electrical conductivity around a buried drip line under high and low irrigation amounts.

In buried drip irrigation systems that have been in place for multiple years, potassium availability in the zone around the drip tape can drop considerably, and it is important to soil test this zone to get an accurate assessment of soil fertility.

Hanson and May, 2011. UC ANR pub 8447
Treatment 6 Leaf N

Leaf N %

Sample Date


N application

N application

N application
CTRI N Trial Yield

N Treatment, lbs/A

<table>
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<th>N Treatment</th>
<th>Yield (tons/A)</th>
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<tr>
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<td>275</td>
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K deficiency
halosulfuron herbicide
virus infection
BCTV “drizzle”
all season
Fusarium

Fusarium Wilt I, II, III
Fusarium Crown and Root Rot
Fusarium Foot Rot
Fusarium problems 2015

- largest number of farm calls for any reason, includes tomatoes, cotton, melons, sweetpotatoes
- Significant plant and stand losses
- Widespread throughout the county, including resistant cultivars
MOVEMENT OF *Fusarium OxySPORUM* VIA EQUIPMENT

Fusarium wilt, race 3

Gene Miyao, UC Farm Advisor
Mike Davis, Plant Pathologist, UC Davis