



Overview of Irrigation and Nutrient Management Requirements

Jodi Switzer
Water Program Director
August 21, 2025



Irrigated Lands Regulatory Program History

1st Conditional Waiver term (2005 – 2010)

2nd Conditional Waiver term (2010 – 2016)

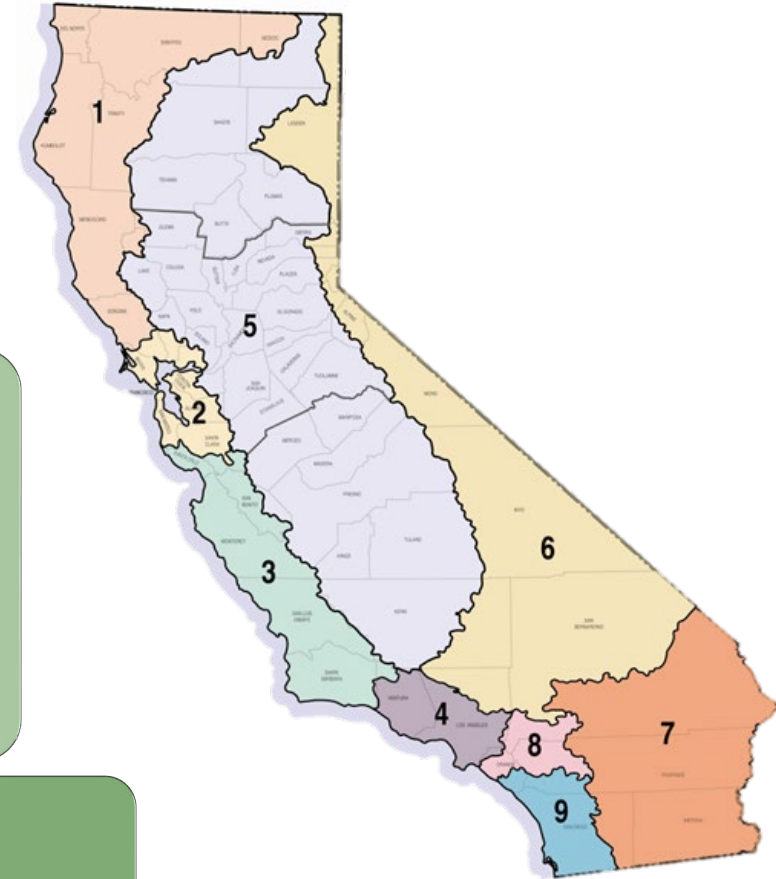
- Incorporated TMDLs

3rd Conditional Waiver term (2016-2021, extended through Sept. 2023)

- Increased focus on groundwater
- Source investigation studies for increasing trends
- Compliance dates for TMDLs
- Nitrogen Management Plan requirements for certain subwatersheds

Ag Order/WDR (Sept. 28, 2023)

- TMDL-driven requirements as deadlines come due
- State-wide precedential nitrogen management tracking and reporting



What are the “Precedential Requirements”?

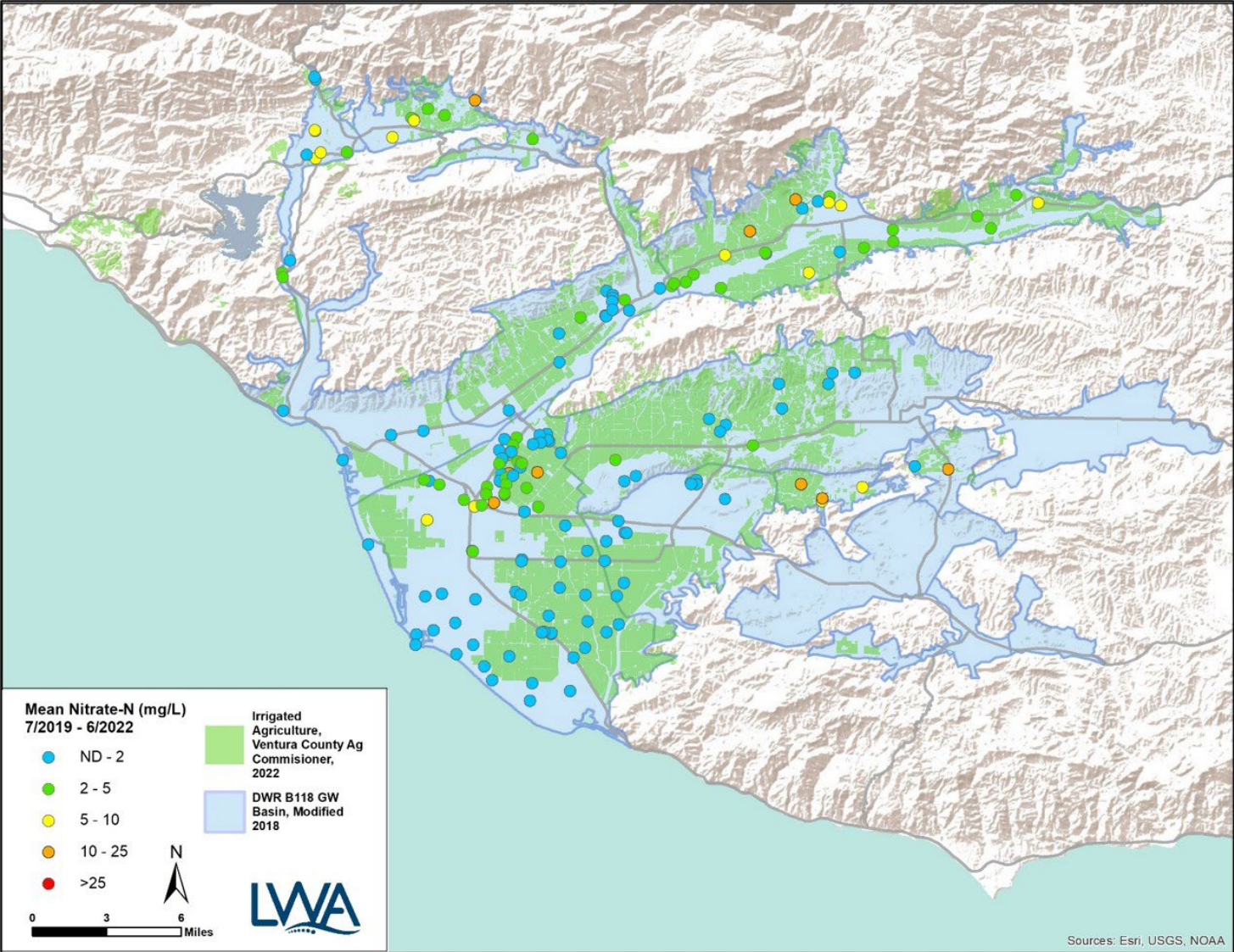
- East San Joaquin WDR adopted by State Water Resources Control Board (2018)
- Precedential for all Irrigated Lands programs in California
- Focus on addressing nitrogen in surface and groundwater through comprehensive irrigation and nutrient management program
 - Groundwater quality trend monitoring
 - Irrigation and Nutrient Management Plan (INMP) development
 - Irrigation and Nutrient Management Report (INMR) submittal
 - On-farm drinking well sampling
 - Groundwater protective formulas, values, and targets



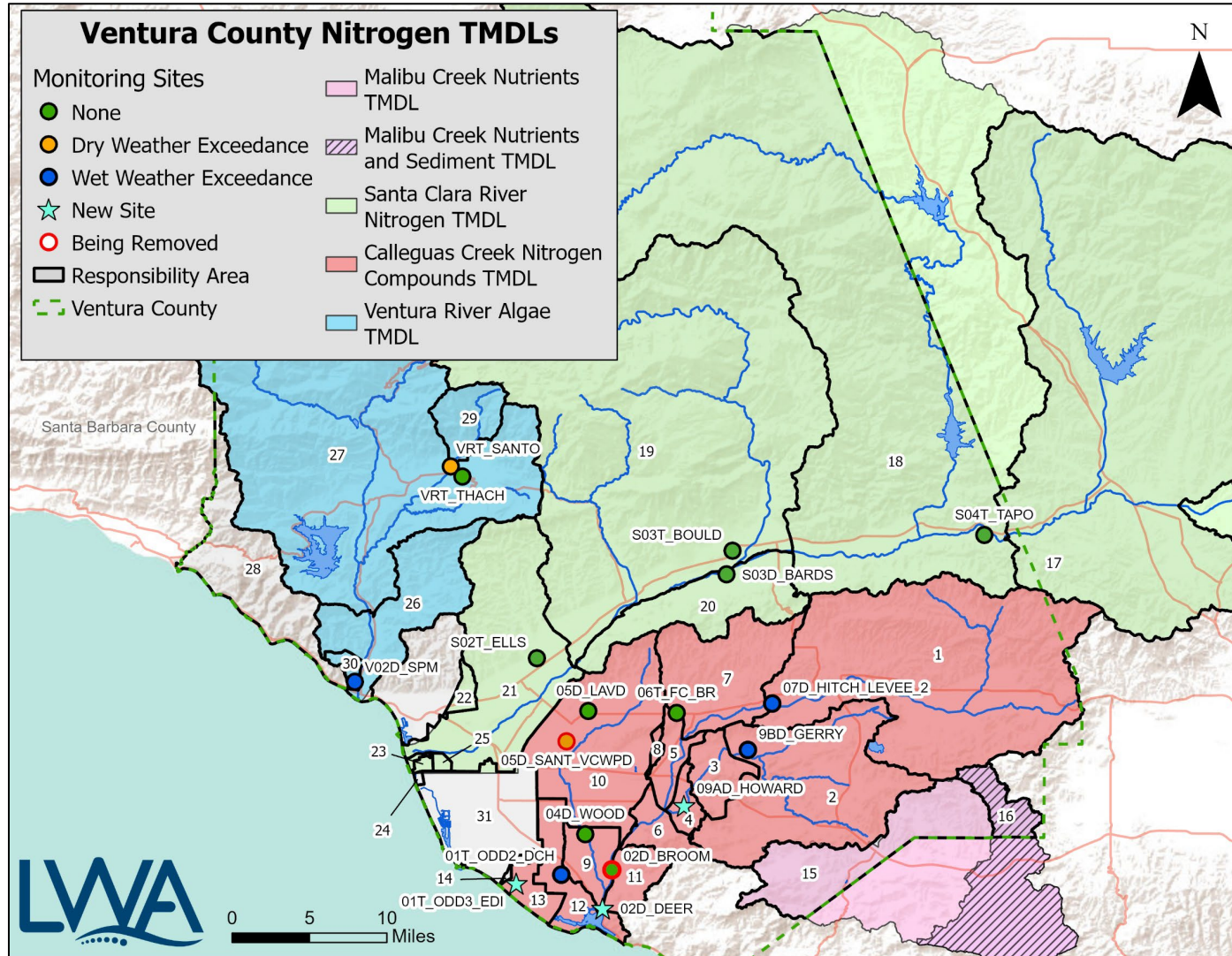


Nitrogen Contamination

Nitrate in Groundwater



Nitrate in Surface Water



Ventura River Algae TMDL

- Compliance date was June 28, 2019
- Load Allocation (LA) for: Nitrate-N + Nitrite-N (Wet Weather) and Total N and P (Dry Weather)

Santa Clara River Nitrogen TMDL

- Compliance date was March 23, 2004
- LA for: Ammonia-N + Nitrate-N + Nitrite-N (10 mg/L)

Calleguas Creek Watershed Nitrogen TMDL


- Compliance date July 16, 2010
- Load Allocation (LA) for: Nitrate-N + Nitrite-N (9 mg/L)




INMP: The Plan

Key Requirements and Process

INMP: The Plan (Overview)

- INMP = Irrigation and Nutrient Management Plan
- Annual **on-farm** planning document – not submitted to VCAILG
- Developed per **Management Unit**
 - Pre-season - Anticipates crop irrigation and nutrient needs
 - Post-season – Records actual application and harvest yield
- Must be certified:
 1. Self certified by grower attending CDFA-approved training workshop and passing exam 
 2. Self- Certified by grower that plan adheres to site-specific recommendations from NRCS Technical Service Providers
 3. Certified by Crop Advisor (CCA) certified by the American Society of Agronomy
- Initial plans are due **March 1, 2025**, and annually thereafter
 - Crops planted before March 1, 2025 → exempt
 - Anything planted after March 1, 2025 → needs an INMP

Slide 8



INMP CERTIFICATION

The person signing this INMP certifies, under penalty of law, that the INMP was prepared under their direction and supervision, that the information and data reported is to the best of his/her knowledge and belief, true, accurate, and complete, and that they are aware that there are penalties for knowingly submitting false information. The qualified professional signing the INMP may rely on the information and data provided by the Discharger and is not required to independently verify the information and data.

The person signing the INMP below further certifies that they used sound irrigation and nutrient management planning practices to develop irrigation and nutrient application recommendations and that the recommendations are informed by applicable training for meeting the crop's agronomic needs while minimizing nitrogen loss to surface water and groundwater. Where the person signing the INMP is not the Member, he/she is not responsible for any damages, loss, or liability arising from subsequent implementation of the INMP by the Member in a manner that is inconsistent with the INMP's recommendations for nitrogen application. **This certification does not create any liability for claims for environmental violations.**

Certification:

- Certified by Certified Crop Adviser or NRCS Technical Service Provider
- Self-Certified by Member who has completed the CDFA training program
- Self-Certified by Member who follows NRCS site-specific recommendations (documentation required)
- Certification not required (Member operating on ≤10 acres)

I, _____, certify this INMP in accordance with the statement above

_____ (Signature) _____ (Date)

If the certifier is not the Member, the Member additionally agrees as follows:

I, _____, Member, have provided information and data to the certifier above that is, to the best of my knowledge and belief, true, accurate, and complete, that I understand that the certifier may rely on the information and data provided by me and is not required to independently verify the information and data, and that I further understand that the certifier is not responsible for any damages, loss, or liability arising from subsequent implementation of the INMP by me in a manner that is inconsistent with the INMP's recommendations for nitrogen application. I further understand that the certification does not create any liability for claims for environmental violations.

_____ (Signature) _____ (Date)

INMP Worksheet
Version 4 (February 10, 2025)

Page 4 of 4

Defining Your Management Unit



1. Same Crop
(Standard Crop Type List) →

2. Same Age

3. Same Management Practices
(irrigation & nutrient inputs)

4. Contiguous Land

One INMP per Management Unit

INMP Standard Crop Type List
Version 1.3 (Aug 15, 2025)

Crop*	INMP Development Period	Yield Reporting Units	N Coefficient	N Coefficient Source	
Fruit and Nuts					
Acorn Plums	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	none		
Avocado	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	4.4	Ag Order 4.0 Approved Coefficient ¹	
Blackberry	Substrate Primocane	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	4.45	tableton of fruits
	Substrate Floricane	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	4.46	tableton of fruits
	In-Ground	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	4.46	tableton of fruits
Blueberries	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	1.56	tableton of fruits	
Cherry/ginger	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	none	Geissler Report ¹	
Lemons	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	3.45	tableton of fruits	
Mandarin & Tangerine	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	4.31	tableton of fruits	
	Navel	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	3.61	tableton of fruits
	Valencia	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	4.66	tableton of fruits
Raspberries	Substrate Primocane	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	3.00	tableton
	Substrate Floricane	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	3.00	tableton
	In-Ground	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	3.00	tableton
Citrusberries	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.9	tableton	
Vegetables					
Artichokes	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	7.64	tableton	
Asparagus	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	11.6	tableton	
Beans	Green Snap	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	6.78	tableton of fresh weight
	Lima	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	6.1	tableton
Beets	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none	Geissler Report ¹ Ag Order 4.0 Approved Coefficient ²	
Broccoli (not otherwise listed)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none	Geissler Report ¹	
Broccoli	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	9.04	tableton	
Brussels Sprouts	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	12.56	tableton	
Cabbage	Cabbage (Fresh Market - Red)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	4.02	tableton
	Cabbage (Fresh Market - Green)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	4.42	tableton
Carrots	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.9	tableton of fresh weight	
Carrot/pepper	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	5.05	tableton	
Celery	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.12	tableton	
Corn	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	9.26	tableton	
Cucumbers	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.92	tableton	
Cyphripate	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none	Geissler Report ¹	
Endive	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	6.88	tableton	
Kale	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	10.96	tableton	
Kohlrabi	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none	Geissler Report ¹	
Leafy	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	4.67	tableton	
Lettsuce (Baby)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	6.76	tableton	
Lettsuce (leaf)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.66	tableton	
Lettsuce (Lett)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	4.14	tableton	
Lettsuce (Roman)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	3.00	tableton	
Melons (Spring melon/seed)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	8.1	tableton	
Onions (Dry yellow)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	3.28	tableton	
Onions	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	6.76	tableton	
Peas	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	9.44	tableton	
Peppers (Bell & Chili)	Bell Pepper	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	3.88	tableton
	Chili	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	7.36	tableton of fresh weight
Pumpkin	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	4.66	tableton	
Squash	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	4.95	tableton	
Squash	Squash (dry)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	7.42	tableton
	Squash (wet)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	5.60	tableton
Tomatoes	Tomatoes, fresh market	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.61	tableton of fresh weight
	Tomatoes, processing	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	2.92	tableton of fresh weight
Turms	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none	Geissler Report ¹	
Other Crops					
Animal Feed	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none		
Cut Flowers	Calendar Year (perennial crop)	bunches	none		
Crop Sales Operations with crop diversity over 0.5 (1 crop for every 2 acres)	Calendar Year (perennial crop)	sales	none		
Mushrooms	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	none		
Nursery Stock	Horticulture	Number of Pots	none		
	Fruit and Vegetable Transplants	Units	none		
Pasture (irrigated)	Calendar Year (perennial crop)	harvest weight (tons or lbs.)	none		
Research Operations with crop diversity over 0.5	Calendar Year (perennial crop)	Ts (By Determined)	none		
Soil and Compost	Calendar Year (perennial crop)	ts, feet	none		
Specialty Fruit Non-Orchard (not listed)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none		
Specialty Vegetables (not listed)	Crop Cycle (annual crop)	harvest weight (tons or lbs.)	none		

Notes:
* If a crop (or grow) is not accounted for on the list, please contact VONL@UCANR.org for more information.

Reference Sources:
¹ Geissler, "Nitrogen concentrations in harvested plant parts - Update 02/20/24" (http://geissler.ucdavis.edu/Geissler_Report_UC_2024_02_20.pdf)
² COFA FRES Project (2021) "Assessment of Nitrogen Content of the Harvested Portion of Specialty Crops to Estimate Crop Nitrogen Removal and Improve Nitrogen Management in Crops" Richard Smith, Michael Cain - University of California Cooperative Extension, Monterey County
³ Ag Order 4.0 Approved Coefficient
⁴ Harz, Cain, Botsch, and Biscoe "Efficient Nitrogen Fertilizer and Irrigation Management in California Strawberry Production"

Deadlines and Crop Type Differences

Deadline to develop initial INMP

Perennial Crops



March 1, 2025
annually thereafter

Annual Crops



- Develop INMP for the **calendar year**
 - Update annually by March 1st.
- 1st INMP(s) should cover 2025 calendar year.
- Develop INMP for **each crop that will be established in that year:**
 - By March 1, develop INMP for crops anticipated to be planted.
 - If uncertain, develop INMP before planting each crop.
- 1st INMP(s) should cover crops established between March 1 – December 31, 2025




INMR: The Report

Key Requirements and Process

INMR – The Report

- INMR = Irrigation and Nutrient Management Report
- Carries over summary info from the INMP(s):
 - Total N applied per management unit
 - Harvest yield (to be used to calculate N removal)
 - Irrigation and nutrient management practice questions
- Due **March 1, 2026**, and annually thereafter
- Submitted to VCAILG, anonymized, then submitted to Regional Board
- Non-reporters will be noted in VCAILG Annual Monitoring Report
- Data to be used to information development of Groundwater Protection Formulas, Values, and Targets
- Identification of outliers



IRRIGATION AND NUTRIENT MANAGEMENT REPORT (INMR)

Refer to your INMP Worksheet(s) for information to complete the INMR for each Management Unit (MU) ID. Duplicate pages if additional lines are needed.

GENERAL INFORMATION										
VCAILG ID #:		Form Completed By:			Crop Year:		Submittal Date:			
OUTLIER NOTIFICATION RECEIPT	ALTERNATIVE REPORTING	INMP CERTIFICATION METHOD								
Were any of the below listed Management Units identified as a statistical outlier by the Coalition last year? <input type="checkbox"/> Yes <input type="checkbox"/> No	Does the Member meet the alternative reporting qualifications for "A" only reporting? <i>Refer to "A" Only Reporting Qualifications listed in INMP Worksheet Instructions.</i> <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Certified by Certified Crop Adviser or NRCS Technical Service Provider <input type="checkbox"/> Self-Certified by Member who has completed the CDFA training program <input type="checkbox"/> Self-Certified by Member who follows NRCS site-specific recommendations (documentation required) <input type="checkbox"/> Certification not required (Member's total farming operation consist of ≤10 acres and has never been identified as an outlier)								
IRRIGATION AND NUTRIENT MANAGEMENT REPORT										
Complete the table below for each Management Unit (MU) for this membership. All values should be on a per acre basis.										
MU ID	Crop	Crop Age	Total Irrigated Acres	Total N Applied Lbs/acre				Yield	Prod. Unit	Yield Info*
				N in Irrigation Water (lbs/acre) <small>INMP Box 10b</small>	Organic Amendments (lbs/acre) <small>INMP Box 9b</small>	Dry/Liquid Fertilizers (lbs/acre) <small>INMP Box 7b</small>	Foliar Fertilizers (lbs/acre) <small>INMP Box 8b</small>			
Refer to MU and Parcel Inventory		Perennial only (years)	(acres)	N in Irrigation Water (lbs/acre) <small>INMP Box 10b</small>	Organic Amendments (lbs/acre) <small>INMP Box 9b</small>	Dry/Liquid Fertilizers (lbs/acre) <small>INMP Box 7b</small>	Foliar Fertilizers (lbs/acre) <small>INMP Box 8b</small>	Harvested Yield (lbs/acre or tons/acre) <small>INMP Box 13b</small>	(lbs or tons) <small>INMP Box 4</small>	

* Use this column to provide information about yield i.e. nonbearing; crop not harvested, etc.

INMR
Version 1 (December 28, 2023)
Page 2 of 3

Reporting Periods and Deadlines

Deadline to submit initial INMR

March 1, 2026

annually thereafter

Perennial Crops



- Covers: **Previous calendar year** (Jan - Dec)
- 1st INMR will cover calendar year 2025

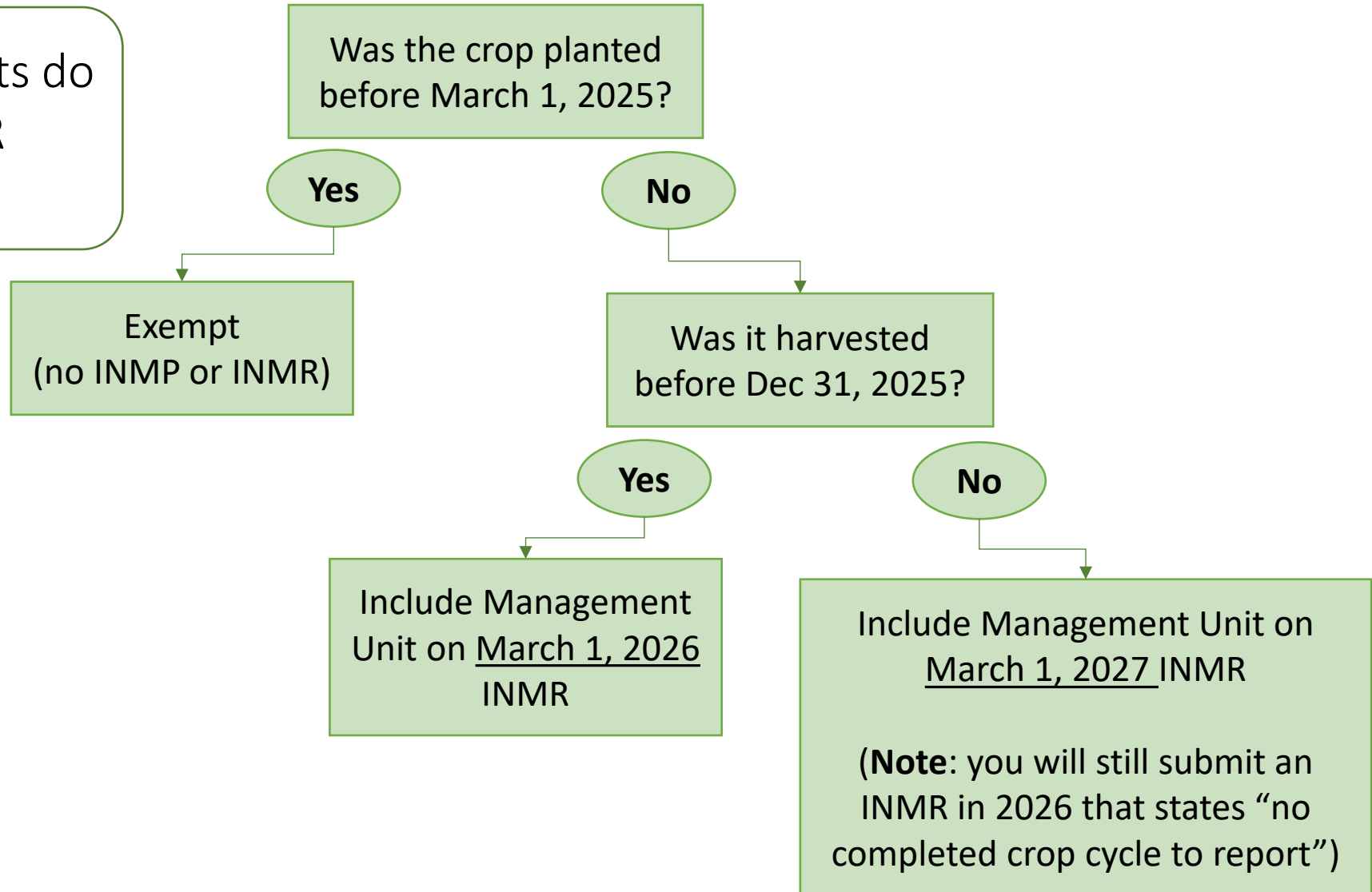
Annual Crops



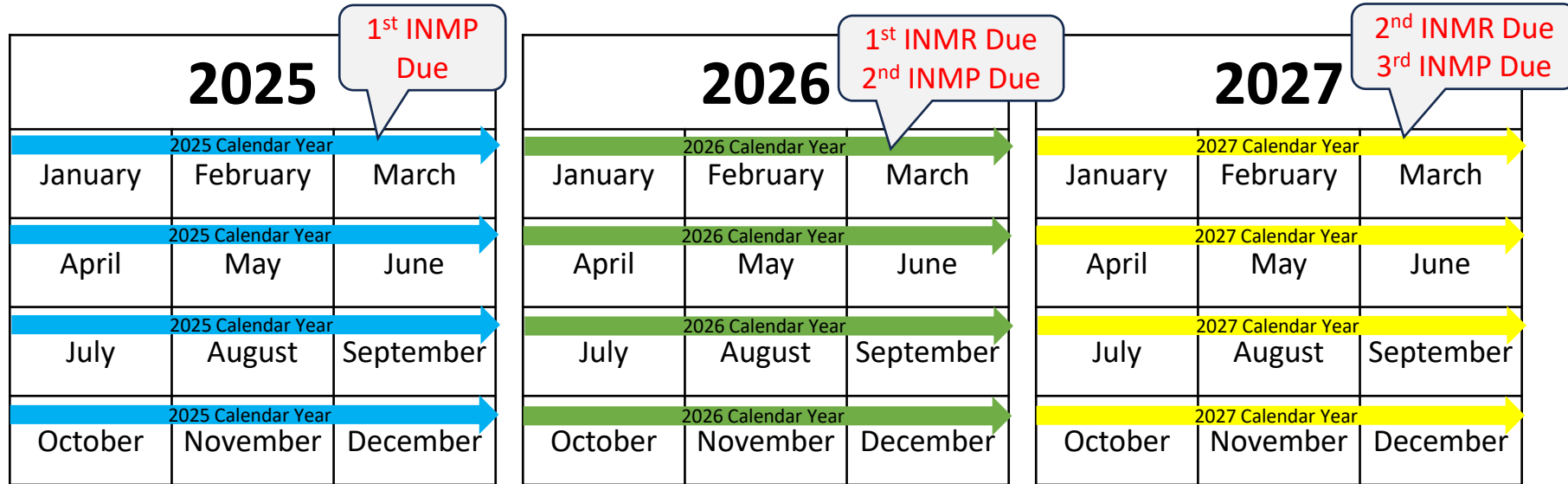
- Covers all crops that **completed harvest** in **previous calendar year**.
- 1st INMR will cover crops established **and** harvested between March 1 and December 31, 2025.

1st Year Reporting for Annual Crops (Due March 1, 2026)

Which Management Units do I include on my 1st INMR (Due March 1, 2026)?

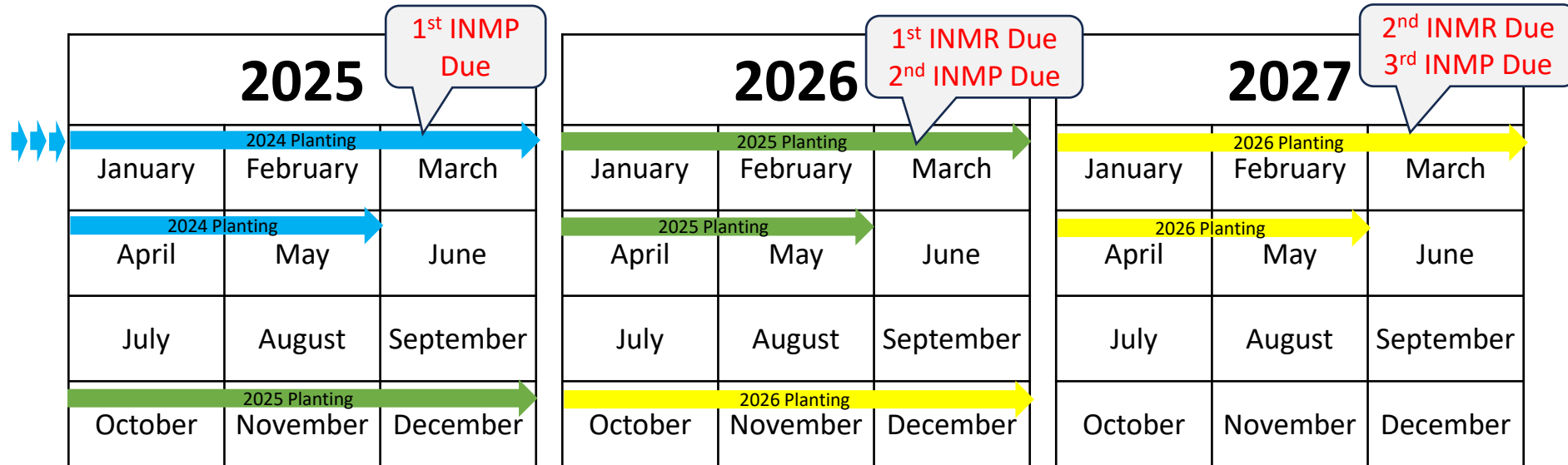


1st Year Reporting – Perennial Crop



- By March 1, 2025 – Develop INMP for 2025 calendar year
- By March 1, 2026 – Submit INMR for 2025 calendar year
- By March 1, 2027 – Submit INMR for 2026 calendar year

1st Year Reporting - Strawberries



- By March 1, 2025 – Develop INMP for 2025 planting
- By March 1, 2026 – Submit INMR with no completed crop cycle
- By March 1, 2027 – Submit INMR for Oct. 2025 strawberry planting

1st Year Reporting - Cilantro

2025			2026			2027		
January	February	March	January	February	March	January	February	March
April	May	June	April	May	June	April	May	June
July	August	September	July	August	September	July	August	September
October	November	December	October	November	December	October	November	December

Callouts:

- 2025: 1st INMP Due (March)
- 2026: 1st INMR Due, 2nd INMP Due (March)
- 2027: 2nd INMR Due, 3rd INMP Due (March)

Planting periods:

- 2025 Planting: April to May
- 2026 Planting: April to May
- 2027 Planting: April to May




- By March 1, 2025 – Develop INMP for 2025 planting
- By March 1, 2026 – Submit INMR for 2025 harvest
- By March 1, 2027 – Submit INMR for 2026 harvest



INMR Submittal

INMR Submittal



Clearwater
By VCAILG

Reporting access early 2026 – Due by March 1, 2026

Online

Office hours and call support available for those that need assistance

Information from the INMP Worksheet that transfers to the INMR is marked with an *



Statistical Outliers

Purpose of Identifying Outliers

Identifying and notifying outliers – an early indicator that excess nitrogen is being applied

Follow-up education - helps growers implement improved practices

Step 1: Data Submitted



IRRIGATION AND NUTRIENT MANAGEMENT REPORT (INMR)

Refer to your INMP Worksheet(s) for information to complete the INMR for each Management Unit (MU) ID. Duplicate pages if additional lines are needed.

GENERAL INFORMATION

VCAILG ID #: _____ Form Completed By: _____ Crop Year: _____ Submittal Date: _____

OUTLIER NOTIFICATION RECEIPT	ALTERNATIVE REPORTING	INMP CERTIFICATION METHOD
<p>Were any of the below listed Management Units identified as a statistical outlier by the Coalition last year?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Does the Member meet the alternative reporting qualifications for "A" only reporting?</p> <p><i>Refer to "A" Only Reporting Qualifications listed in INMP Worksheet Instructions.</i></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p><input type="checkbox"/> Certified by Certified Crop Adviser or NRCS Technical Service Provider</p> <p><input type="checkbox"/> Self-Certified by Member who has completed the CDFA training program</p> <p><input type="checkbox"/> Self-Certified by Member who follows NRCS site-specific recommendations (documentation required)</p> <p><input type="checkbox"/> Certification not required (Member's total farming operation consist of ≤10 acres and has never been identified as an outlier)</p>

IRRIGATION AND NUTRIENT MANAGEMENT REPORT

Complete the table below for each Management Unit (MU) for this membership. **All values should be on a per acre basis.**

MU ID	Crop	Crop Age	Total Irrigated Acres	Total N Applied Lbs/acre				Yield	Prod. Unit	Yield Info*
				N in Irrigation Water (lbs/acre) INMP Box 10b	Organic Amendments (lbs/acre) INMP Box 9b	Dry/Liquid Fertilizers (lbs/acre) INMP Box 7b	Foliar Fertilizers (lbs/acre) INMP Box 8b			
Refer to MU and Parcel Inventory		Perennial only (years)	(acres)					Harvested Yield (lbs/acre or tons/acre) INMP Box 13b	(lbs or tons) INMP Box 4	

* Use this column to provide information about yield i.e. nonbearing; crop not harvested, etc.

Step 2: A/R Ratio and A-R Difference Calculated

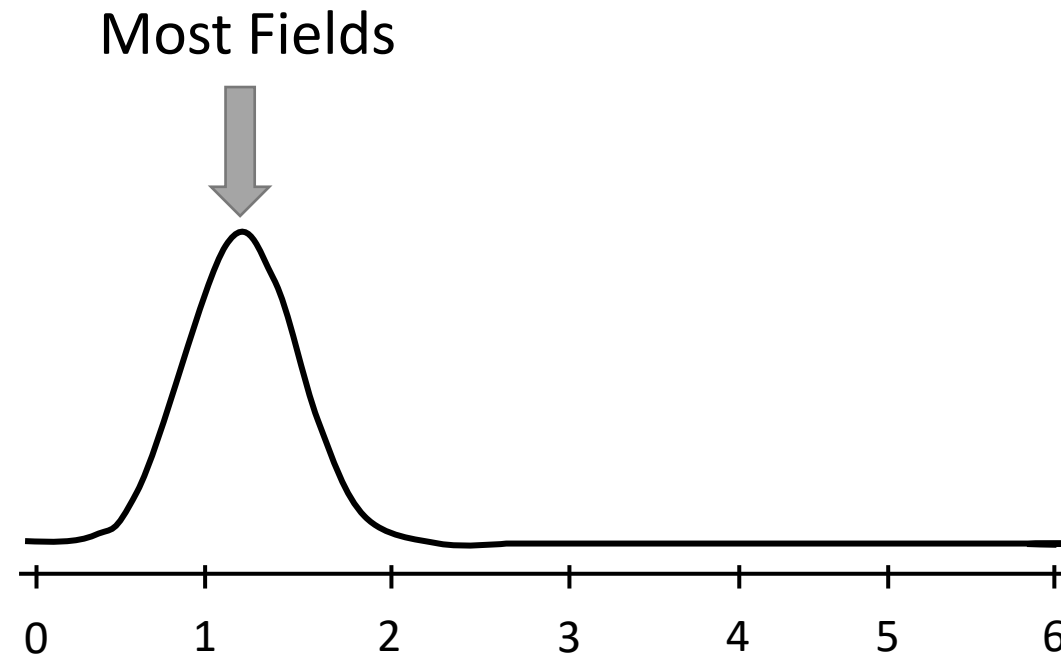
Applied (A)

- Fertilizer
- Organic Amendments
- Irrigation Water

Removed (R)

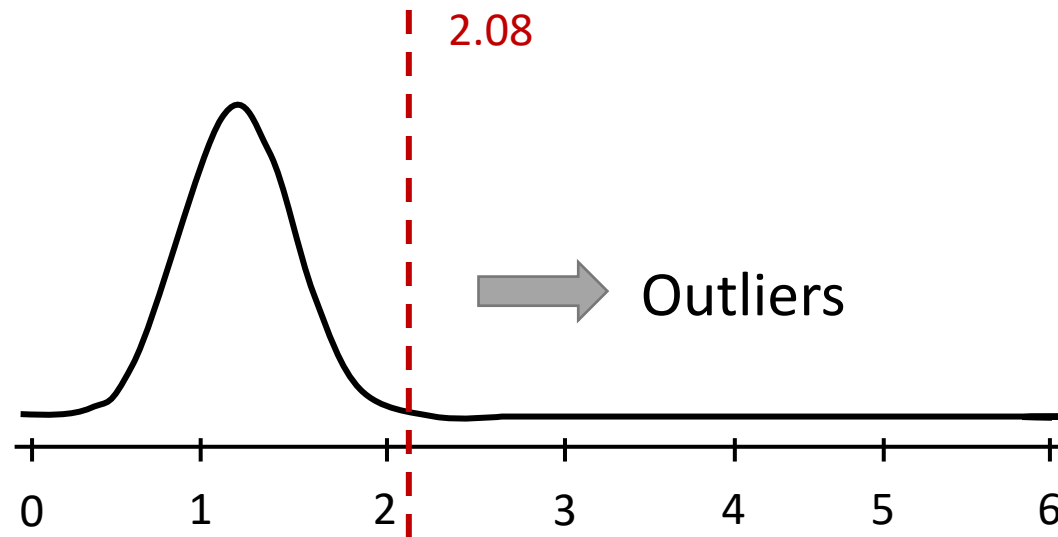
- Harvested Material
- Removal Coefficient

Step 3: Data Compared Across VCAILG



Range of A/R or A-R Values for Each Crop

Step 4: Outlier Threshold



A/R or A-R Values above the Threshold are Outliers

Reasons for High Values

Nitrogen Applications Greater than Crop Demand

Inefficient Application of Nitrogen or Irrigation Water

Reduced Yields or Crop
Failure

Reporting Errors

Step 5: Notification

Acala-Upland Cotton - Lint - All						
Field Information	Total N Applied (A) pounds/acre	Crop Yield (Y) pounds/acre	Nitrogen Removed (R) pounds/acre	1 Year Percentile Rank	1 Yr A/R Ratio 1 or 3 Year	1 Yr A/R Stats
Field 111 (99.3 ac.) Outlier	180.10	1,540.00	95.50	81.60% 1.89 A/R	1.89 1 Yr A/R	
Field 5871 (152 ac.)	180.00	2,000.00	124.00	7.90% 1.45 A/R	1.45 1 Yr A/R	
Field 5873 (75.8 ac.)	181.00	1,890.00	117.20	44.70% 1.54 A/R	1.54 1 Yr A/R	

Example: Kern River Watershed Coalition Authority

Outlier Requirements

Indicate “previously identified as outlier” on INMR

Attend focused education meetings

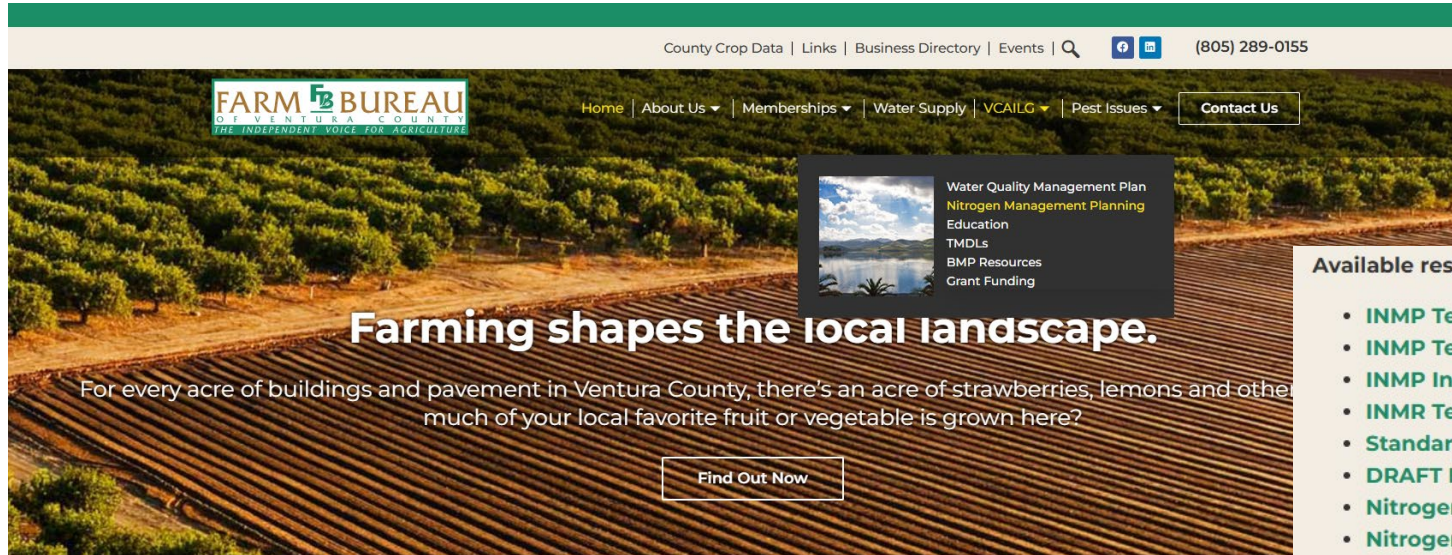
Cannot claim INMP certification exemption (for those previously exempt due to operating <10 acres)

Others, as required by Regional Water Board



Resources and What's Next

INMP Resources



Available resources for the development of certified plans are listed below.

- [INMP Template](#) (PDF version)
- [INMP Template](#) (excel version)
- [INMP Instructions](#)
- [INMR Template](#)
- [Standard Crop Type List](#)
- [DRAFT N Removal Coefficient List](#)
- [Nitrogen Demand Avocados](#)
- [Nitrogen Demand Citrus](#)
- [Geisseler_Report](#)
- [INMP Training Presentation \(January 29 and 30, 2025\)](#)
- [INMP Self-Certification Training Workbook](#)
- [CCA List](#)

¡Nuevo!

Recursos en Español Ahora Disponibles

- [Plantilla de INMP](#)
- [Instrucciones de INMP](#)
- [Plantilla de INMR](#)
- [Presentación de Capacitación sobre INMP](#)
- [Cuaderno de Capacitación para la Autocertificación de INMP](#)
- [Folleto Resumen de los Requisitos de la Orden Agrícola](#)

INMP Program Development – What's Next?

- Continued work with Regional Board staff to clarify requirements and develop guidance
- Ongoing Updated INMP Self-Certification Trainings
 - Late 2025/Early 2026
 - CDFA FREP online self-certification training – now available!
- Build tools and resources to assist growers with INMP/INMR
- Development of Clearwater INMR module and report submittal training workshops and videos in late 2025



Clearwater
By VCAILG



VENTURA COUNTY
Agricultural Irrigated Lands Group



Questions?

Jodi@farmbureauvc.com

(805) 289-0155

www.farmbureauvc.com