

# Please Help Us to Correct the Record

## **Appendix F – Economic Case Study of Strawberries**

Dr. Richard Green, UC Davis, Economist

## **Appendix A – Draft Order Re: Nitrate Risk to Groundwater**

Dr. Michael Cahn, UC Cooperative Extension, Farm Advisor

Dr. Tim Hartz, UC Davis Dept Plant Sciences, Extension Specialist

## **Appendix A – Draft Order Re: Toxicity Risk to Surface Water**

Dr. Dan Legard, CSC Director of Research

Mr. Rick Tomlinson, CSC Director of Public Policy

# Strawberry Profile in Region 3

- 23,907 acres (5% of all irrigated acreage)
- 320 Family Farmers
- Average farm size of 75 acres
- Create 48,000 direct, on-farm jobs
- Generate \$1.4 billion in farm-gate value back to the local community
- Most organic strawberry farmers in the nation
- Highest yield in the world
  - Regulations that affect yield have a disproportionate impact by creating a double impact – cost to comply and cost of reduced yield.

# Appendix F – Strawberry Case Study: 3.2.1 Price Elasticity

## “since consumers will attempt to buy it no matter the price”

1. The USDA ERS Source Data Cited Does Not Exist.
2. Staff mis-understood the 1999 data.

*... the short run is the length of time that California consumers stay in strawberries but wholesalers shop for the cheapest suppliers. Since strawberries imported from Florida and/or Mexico are near-perfect substitutes for California strawberries, then in the short-run the own-price elasticity of demand for California strawberries would likely be large, ...*

*... in the long run the own-price elasticity of demand for strawberries would almost certainly be large as consumers adjust to changes in relative prices and have time to change habits and industrial users have time to change formulations. In the long run California producers of strawberries would face increased competition not only from imported strawberries but other fruits.*

*It is therefore my opinion that, given the price elasticity of demand for strawberries is almost surely elastic in both the short and long run for the theoretical and empirical economic reasons stated above, any production cost increases would cause prices of California strawberries to increase and subsequently result in a decrease in the expenditures for strawberries. This would be harmful to the California strawberry industry and to California as a whole through lost employment and taxes.”*

**- Richard Green, Professor, U.C. Davis**

# Strawberry Profile Continued

## Strawberries are low risk for C & D water toxicity:

- 5% of irrigated acreage
- Drip irrigation
- Less than 1% of Chlorpyrifos and Diazinon use in Monterey County
- Extensive research program

## Strawberries are low risk to leach nitrate to groundwater:

- Dr. Tim Hartz & Dr. Michael Cahn new research on fertilizer use, crop uptake, and irrigation efficiency
- 10 – 14 month crop cycle

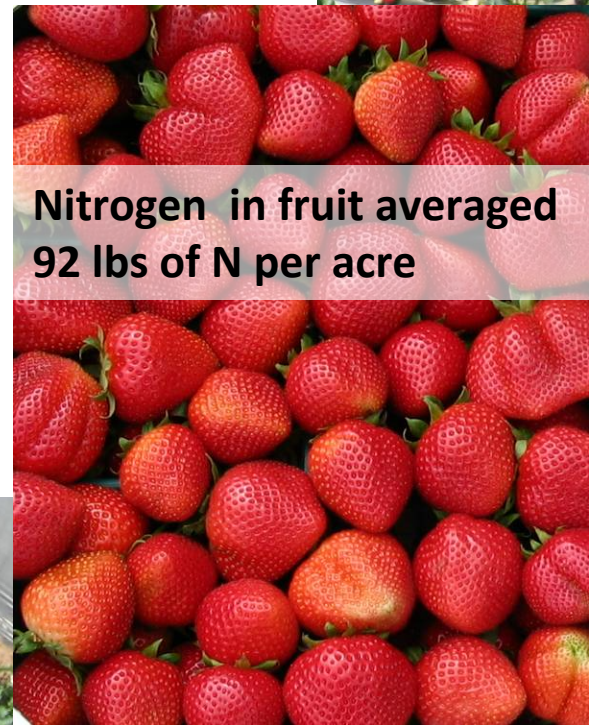
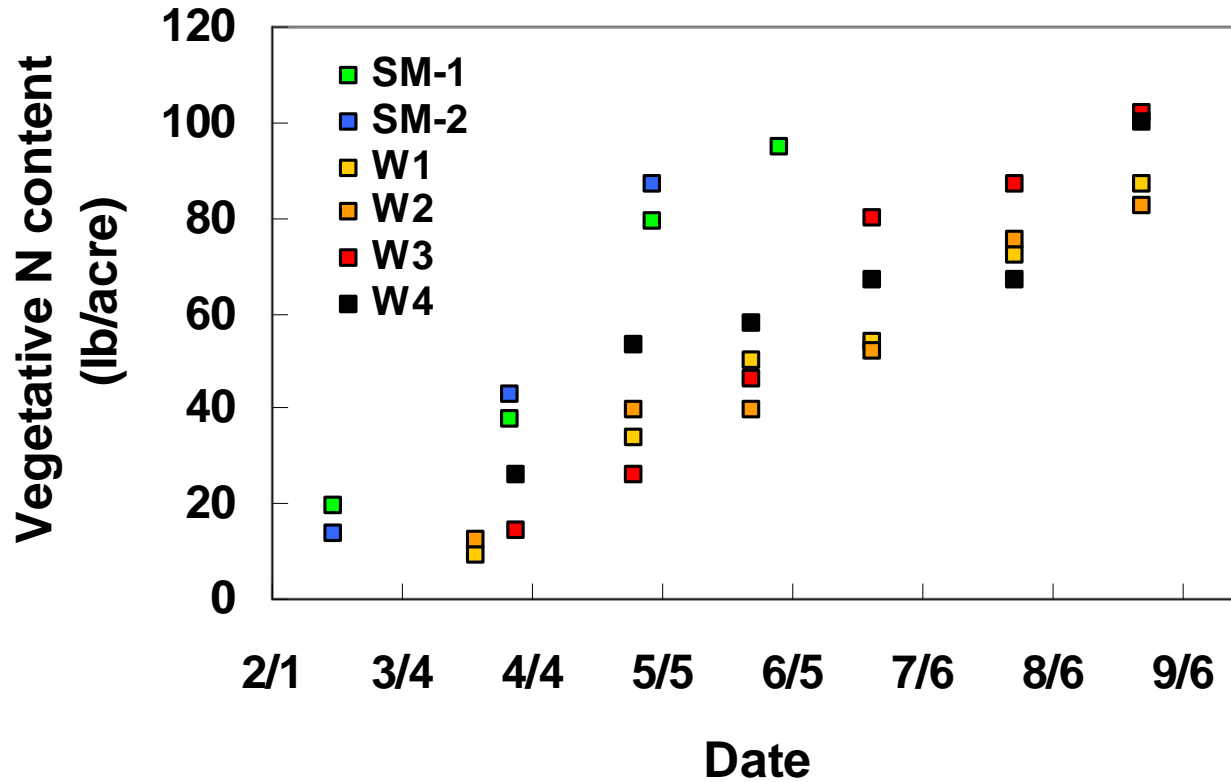
# Determination of nutrient uptake by strawberry

- monthly whole plant samples

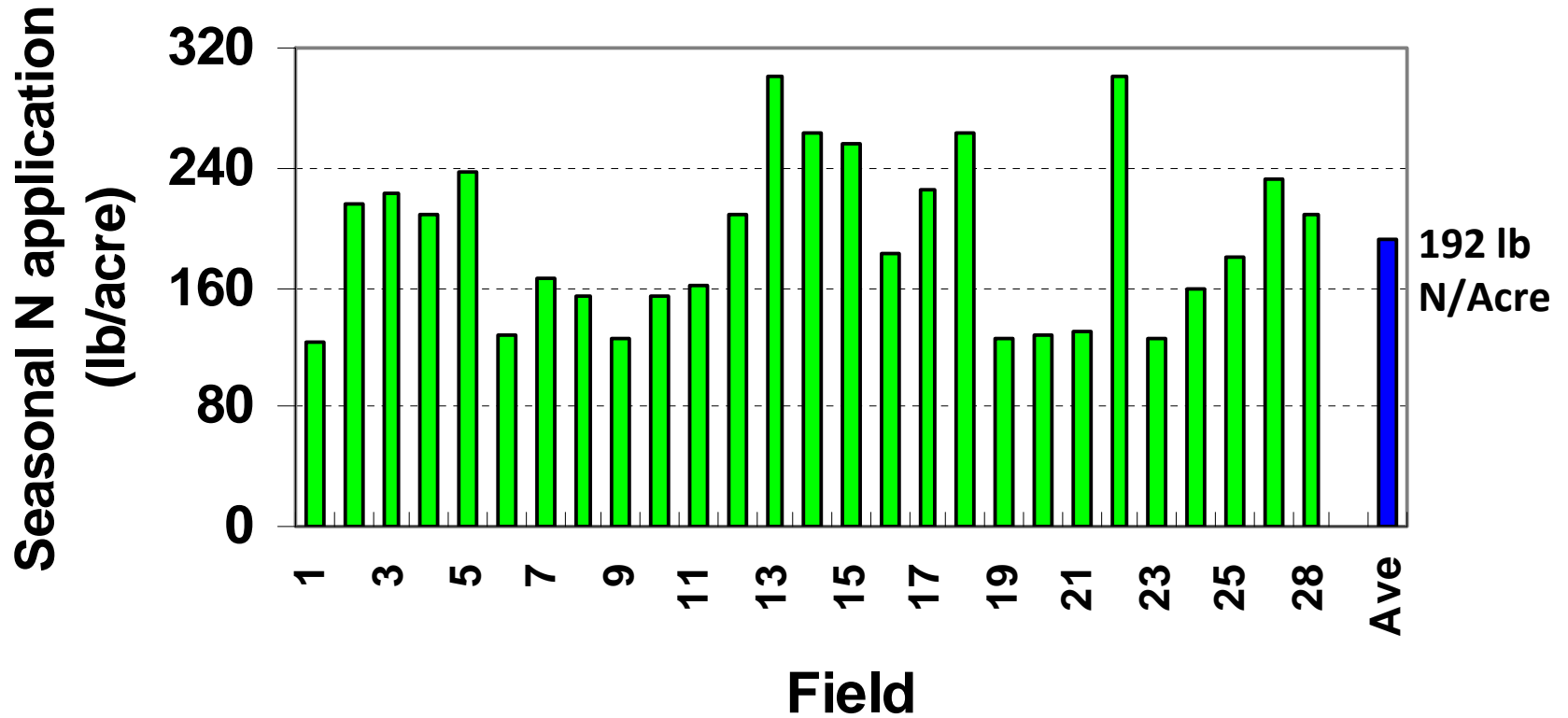


- plant and fruit measured separately

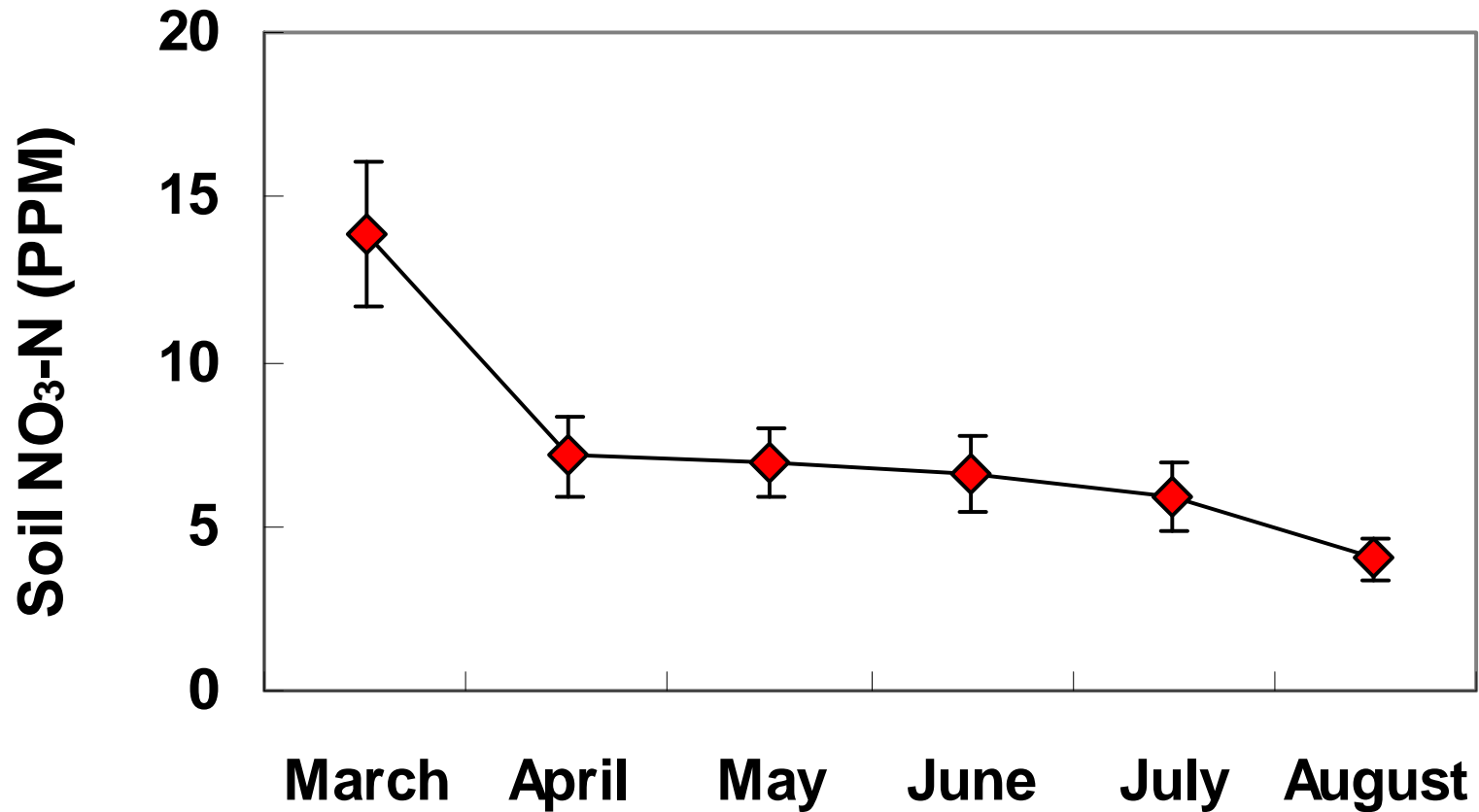
# Average seasonal nitrogen uptake of strawberries: 200 lb N/acre



# Average rate of N fertilizer applied to strawberries is currently below the 1.2 ratio

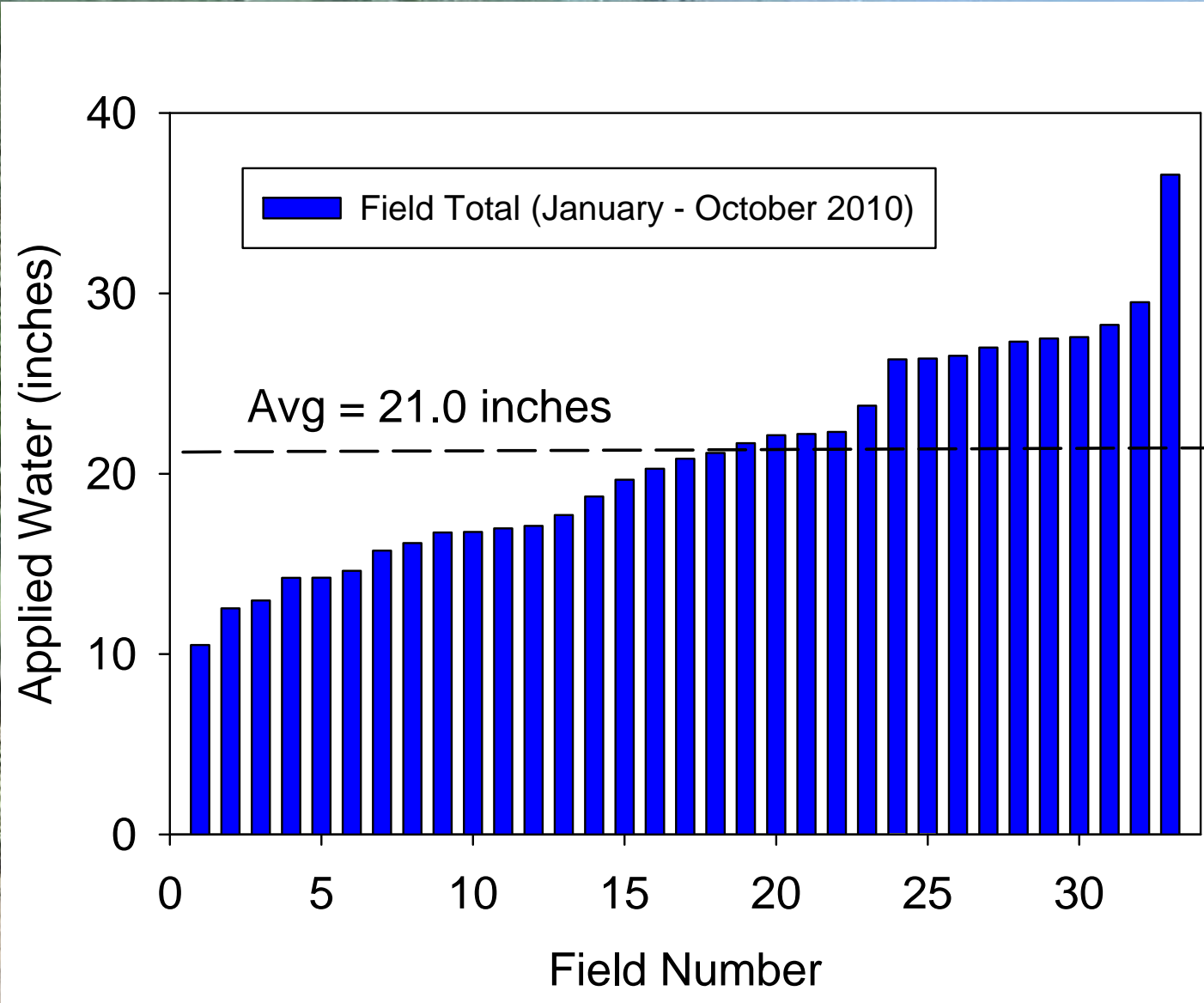


# Average soil nitrate-N levels were < 10 ppm during the production season

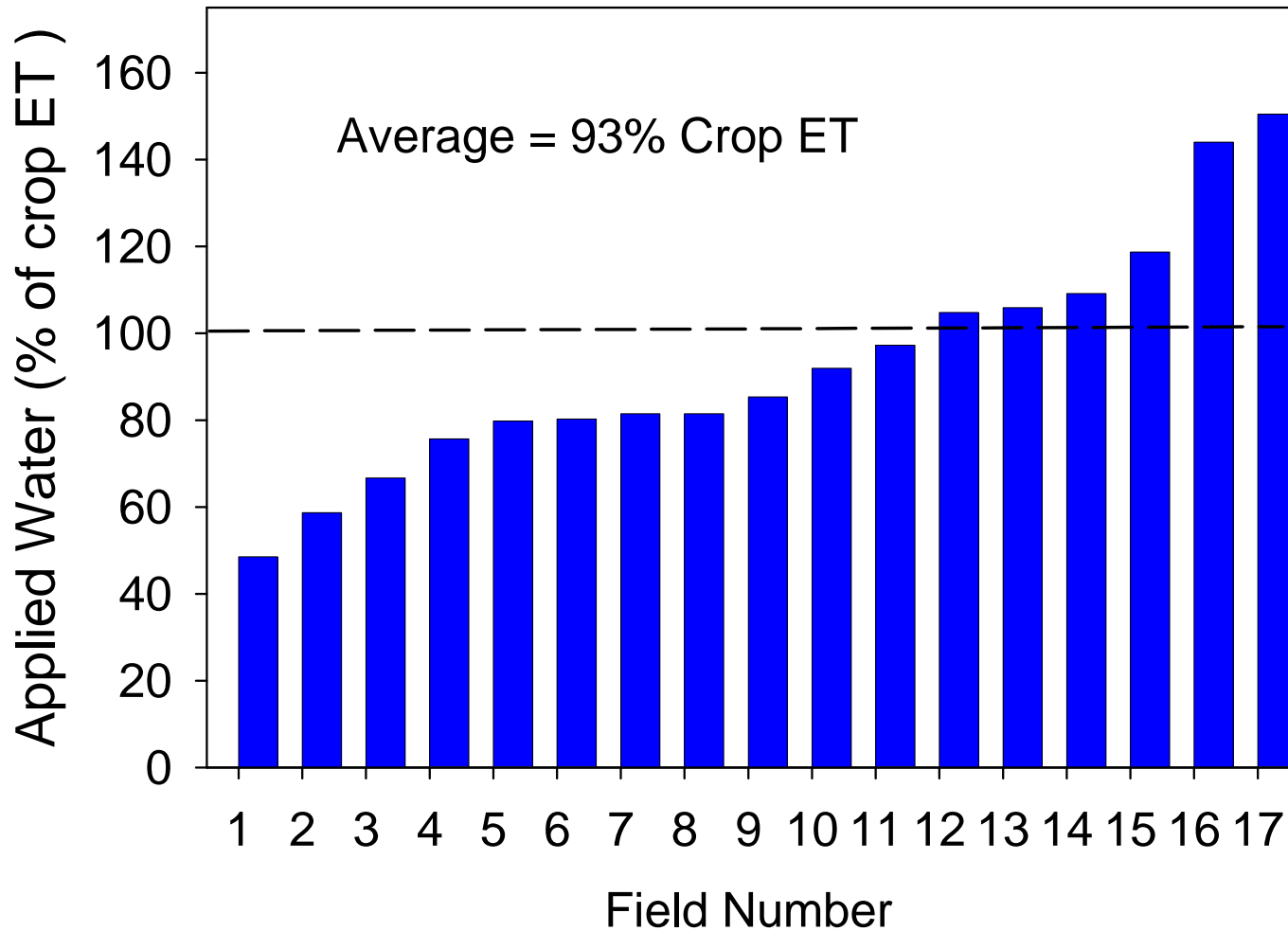




# Average seasonal applied water was 21 inches



# Average amount of water applied to the crop was below crop ET requirement



# Project Summary

1. Nitrogen uptake of strawberries and applied fertilizer N were in balance on a majority of fields
2. Average soil nitrate levels were  $< 10$  ppm nitrate-N during the production season
3. Applied water volumes were in balance with crop ET requirements
4. Results indicated that a majority of strawberry acres are currently managed in a manner that minimizes nitrate leaching

# Strawberries are Low Risk to Nitrate in Groundwater

**These results support the following changes to the draft order:**

Appendix A (Draft Order): Attachment A, P. 13, Par 51

Delete “strawberry”. Add: “Supplemental research indicates that strawberries are not a among the greatest risk for nitrate loading to groundwater.”

Appendix A (Draft Order): Attachment A, P. 48, Par 10

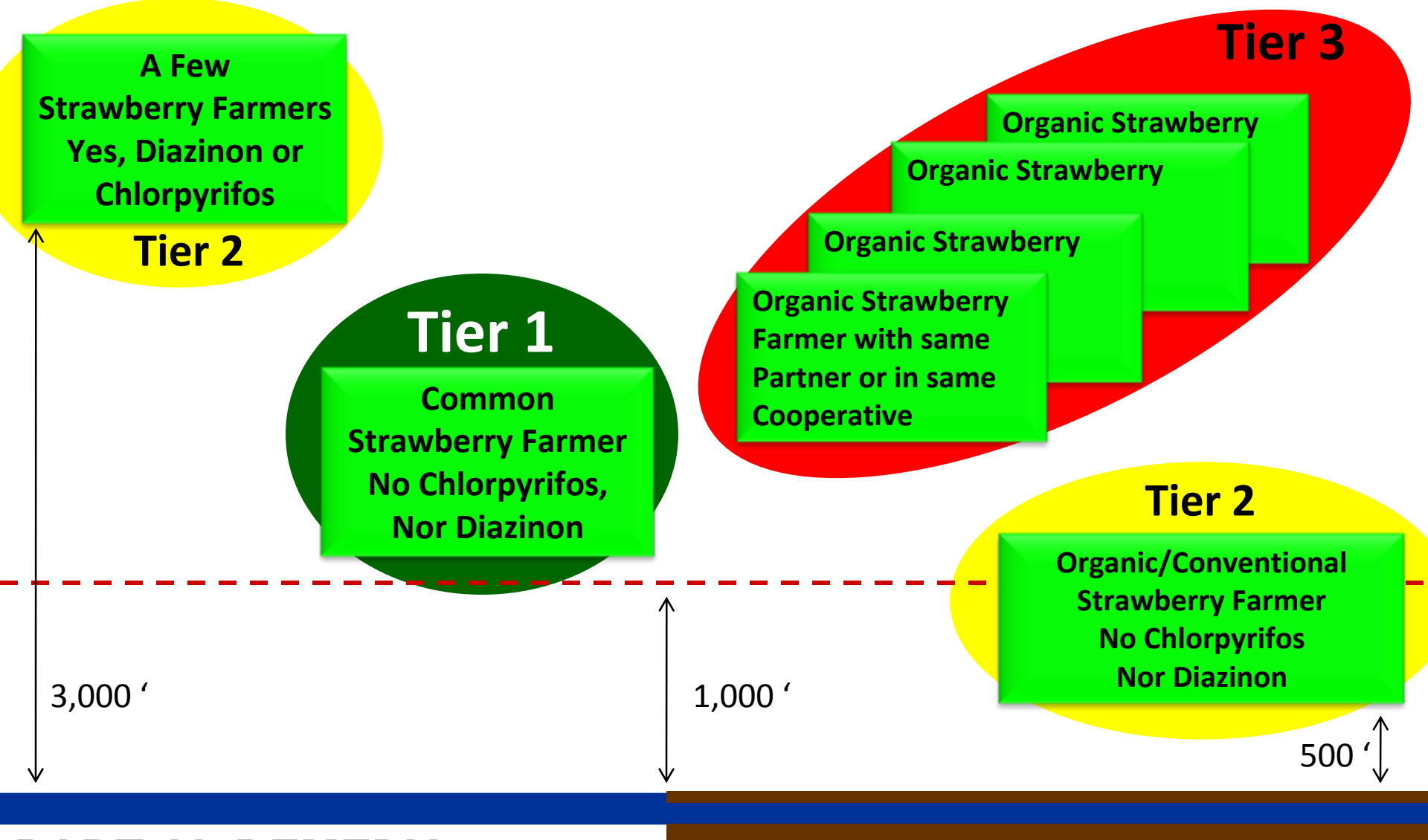
Delete “strawberry”. Add: “Supplemental research indicates that strawberries are not a high potential to discharge nitrogen to groundwater.”

# Tiering Criteria Are Inconsistent with Stated Priorities

Draft Order # 7: “This order prioritizes conditions to address pesticides that are known sources of toxicity...specifically chlorpyrifos and diazinon toxicity.”

Attachment A # 73: “The lower Salinas and Santa Maria areas have more overall water column invertebrate toxicity than other parts of the Central Coast Region, with much of the toxicity explained by elevated diazinon and chlorpyrifos concentrations (CCAMP, 2010a, CCWQP, 2008a; CCWQP, 2009; Hunt et al., 2003, Anderson, et al. 2003; Anderson et al., 2006a). Some agricultural drains have shown toxicity nearly every time the drains are sampled (CCAMP, 2010a).”

By comparison, strawberries account for less than 1% of chlorpyrifos and diazinon use, yet Tiering Criteria would place a significant percentage of strawberry farms into Tier 2 and it appears that staff expects some strawberry farms to be in Tier 3 (e.g. Draft Order, Pages 26-27, Paragraph 78 b includes milestones for strawberry farms in Tier 3)



**PARTIAL REMEDY**

1. Delete the term "Operation" and replace with "landowner or farm"
2. Delete Tiering Criteria 1b "Operation is located more than 1,000' from..."
3. Delete Tiering Criteria 2a & 2b; Could move Tier 3 down to Tier 2

# REQUESTED CORRECTIONS ARE AN IMPROVEMENT, A MORE COMPLETE REMEDY IS THE COALITION APPROACH

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- Delete “strawberry”. Add: “Supplemental research indicates that strawberries are not a among the greatest risk for nitrate loading to groundwater.”

Appendix A (Draft Order): Attachment A, P. 48, Par 10

- Delete “strawberry”. Add: “Supplemental research indicates that strawberries are not a high potential to discharge nitrogen to groundwater.”

Appendix A (Draft Order): Attachment A, P. 52, Par 43

- Delete “operation” and corresponding definition.
- Throughout the order, replace “operation” with “landowner or operator”

Appendix A (Draft Order), P 13, Par 14 “Tier 1”

- Delete 1b, “Operation is located more than 1,000 feet from a surface waterbody...”

Appendix A (Draft Order), P 14, Par 15 “Tier 2”

- Delete 2a, “Discharger applies...” and 2b, “Operation is located within 1,000 feet...”
- Replace with 3b, “Discharger applies...and operation discharges to...a water body listed for toxicity or pesticides...” (This would also delete criteria 3b from Tier 3.)

Appendix A (Draft Order), P 13, Par 12

- Delete entire paragraph.