

## *Acknowledgements:*

- *Speakers*

- *Dave Peck, Manzanita Farms - Santa Maria*

- *Cachuma Resource Conservation and NRCS*

- *UC Small Farm Program*

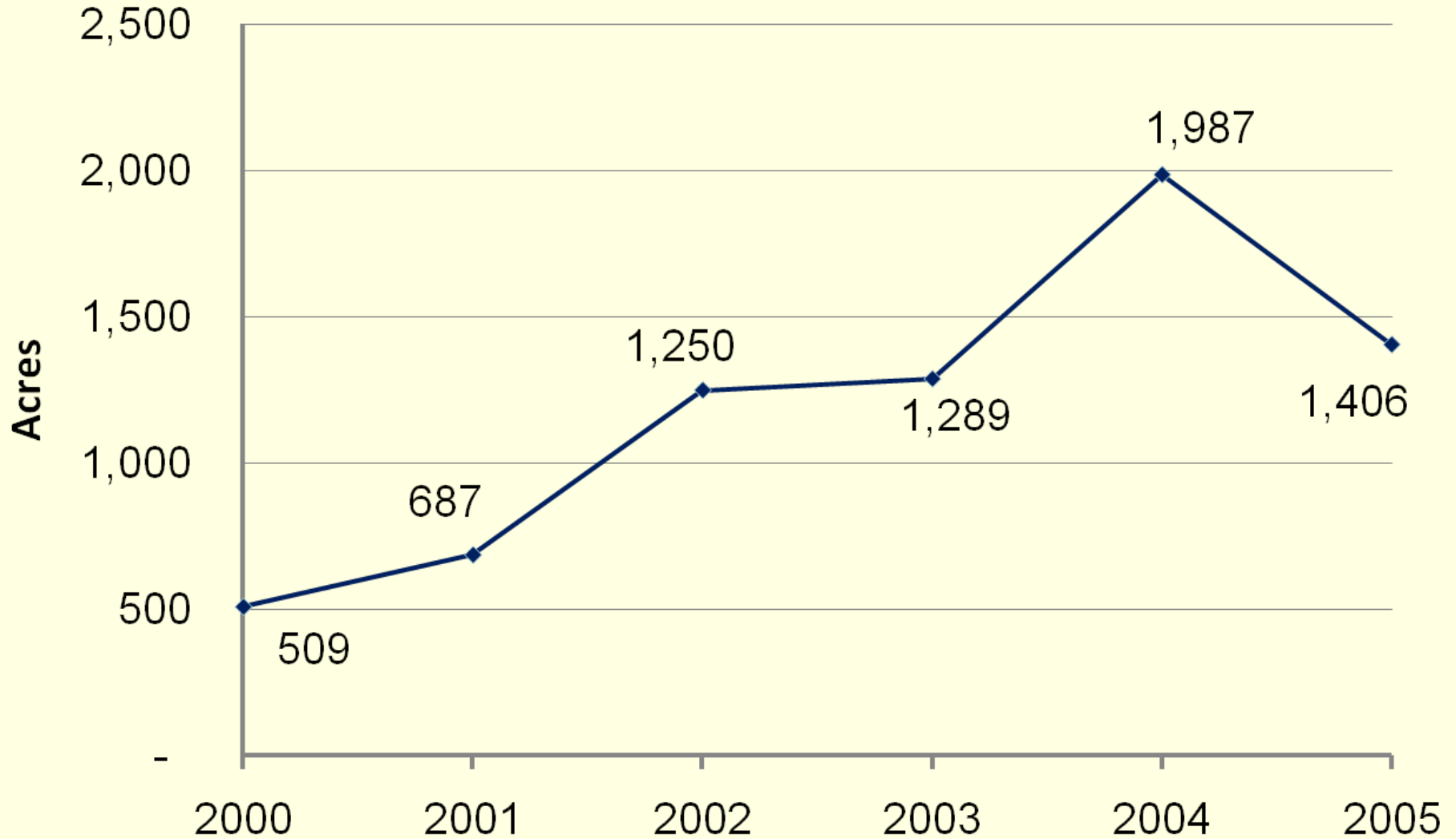
- *USDA 2501, USDA Risk Management Agency*

- *California Strawberry Commission*

- *????? Coffee etc Jeremy Briscoe Advan LLC*

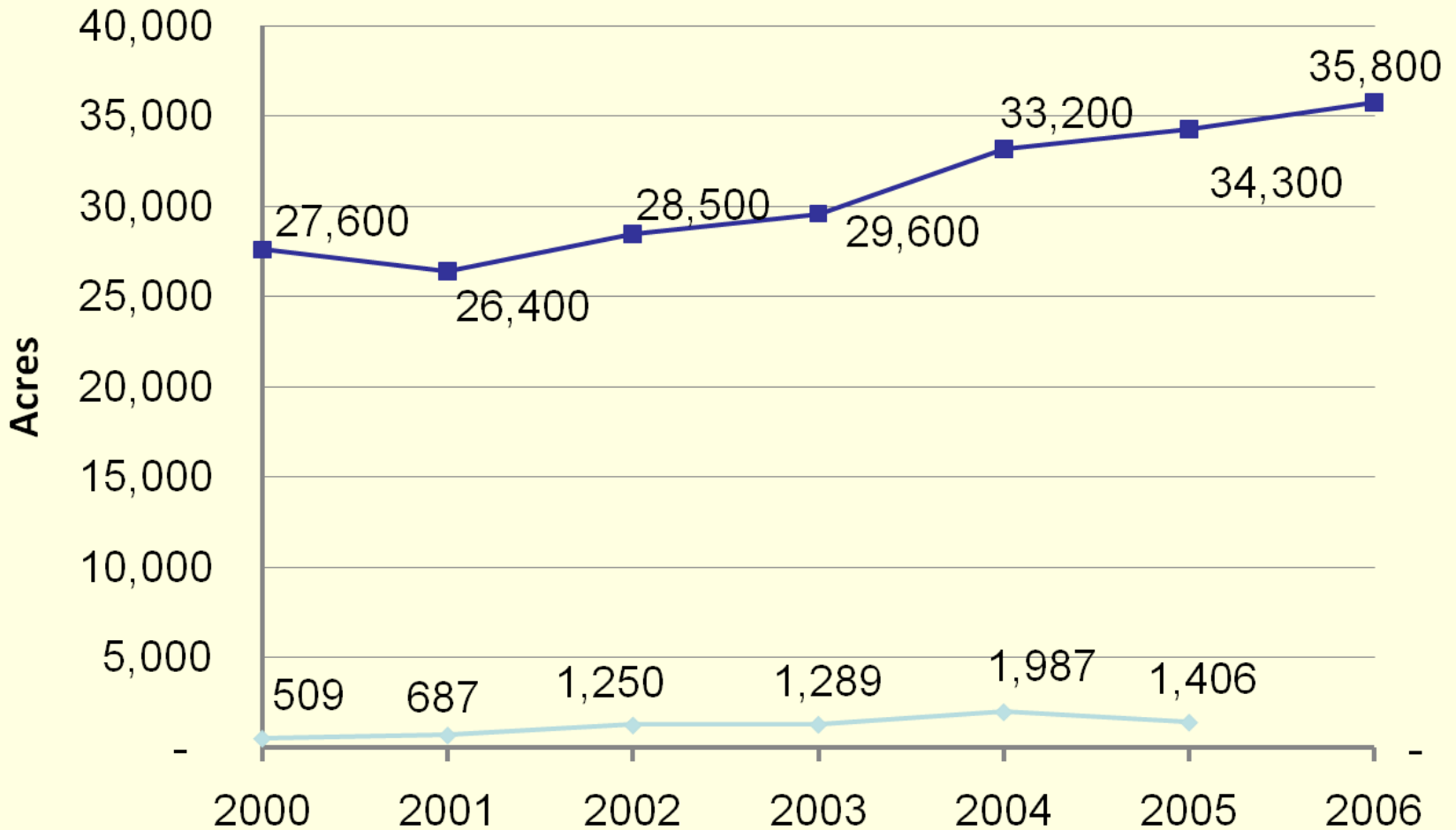
*Trilogy , Neemix - other botanicals*

## CA Organic Strawberry Acreage



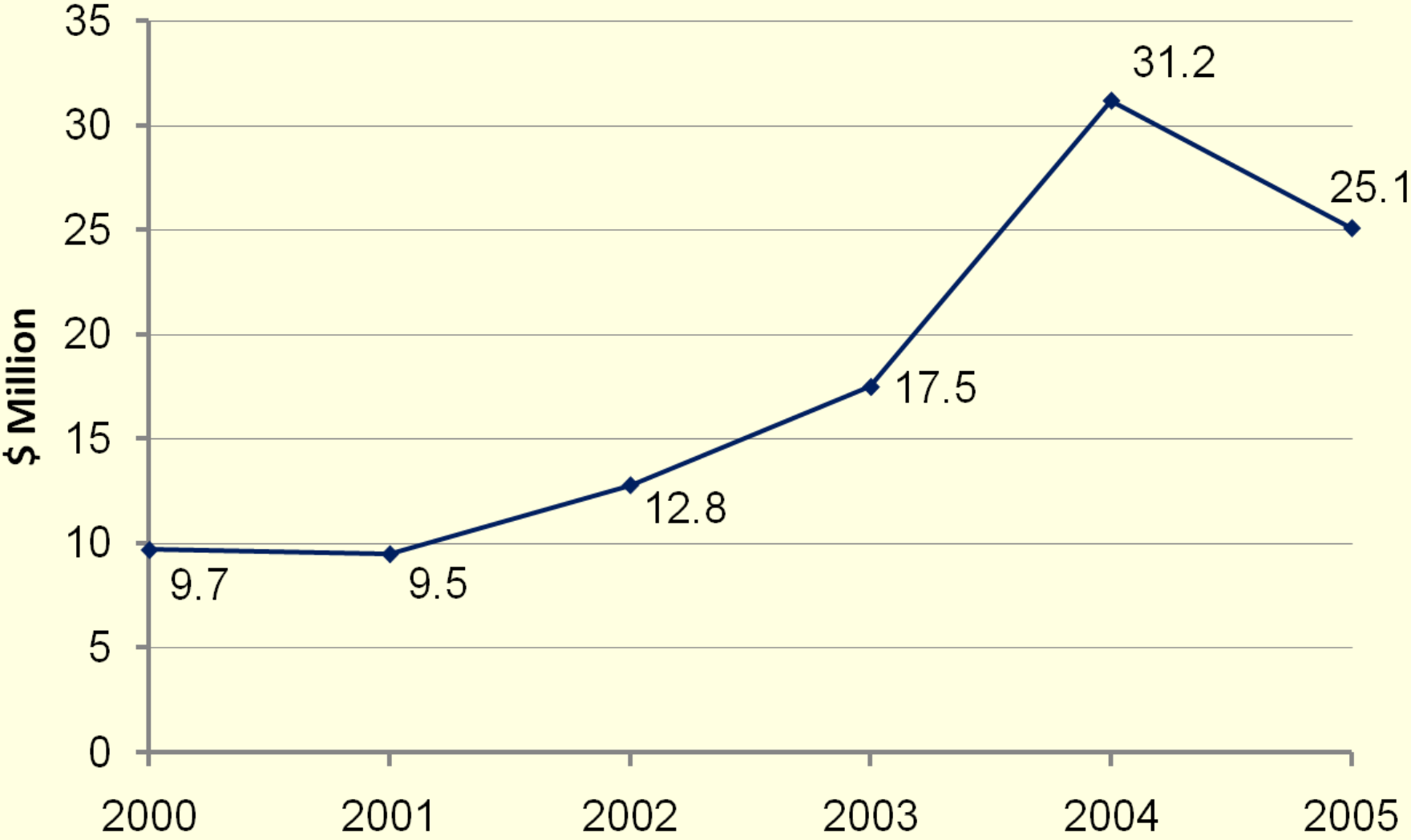
Source: K. Klonsky – CDFA registrations

## CA Strawberry Acreage



Source: K.Klonsky – CDFA registration

# CA Organic Strawberry Sales



Source: K. Klonsky – CDFA registrations



# *Strawberr y Nitrogen Fertilization from Organic Sources*

*Mark Gaskell, Farm Advisor  
University of California Small Farm Program*

## *Background and overview*

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- *Nitrogen fertilization one of most costly and critical cultural practices in organic production.*
- *Seeking ways to improve reliability, control responses, create uniformity of more soluble, uniform N sources.*
- *Environmental processes can have major effects on N availability.*
- *N materials are living, dynamic, materials  
- lack uniformity, require special handling, management.*
- *Little research-based information available to guide organic growers.*

# Principal California Strawberry Production Districts



35°

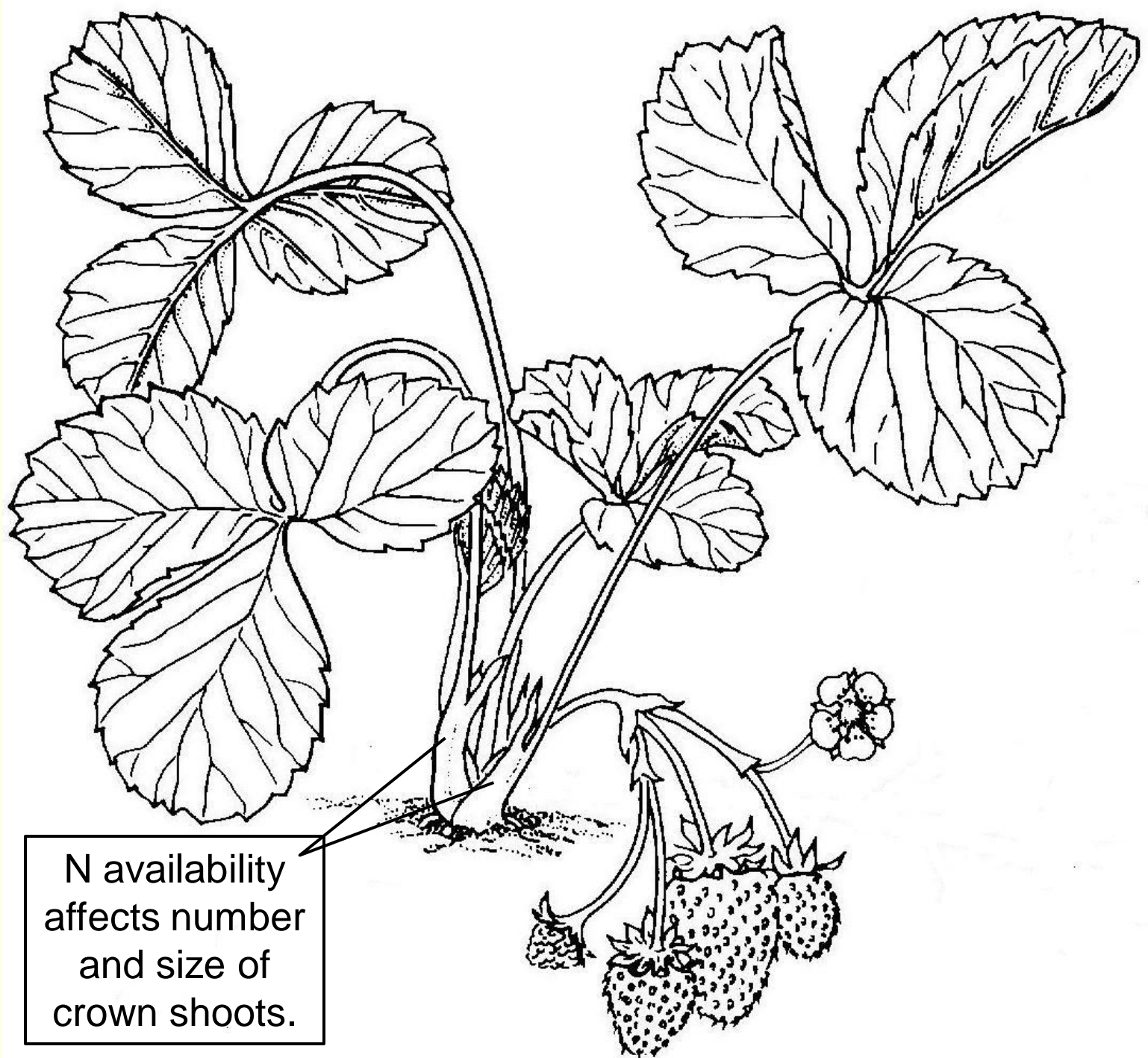
0 100 KM 100 Miles

© geology.com

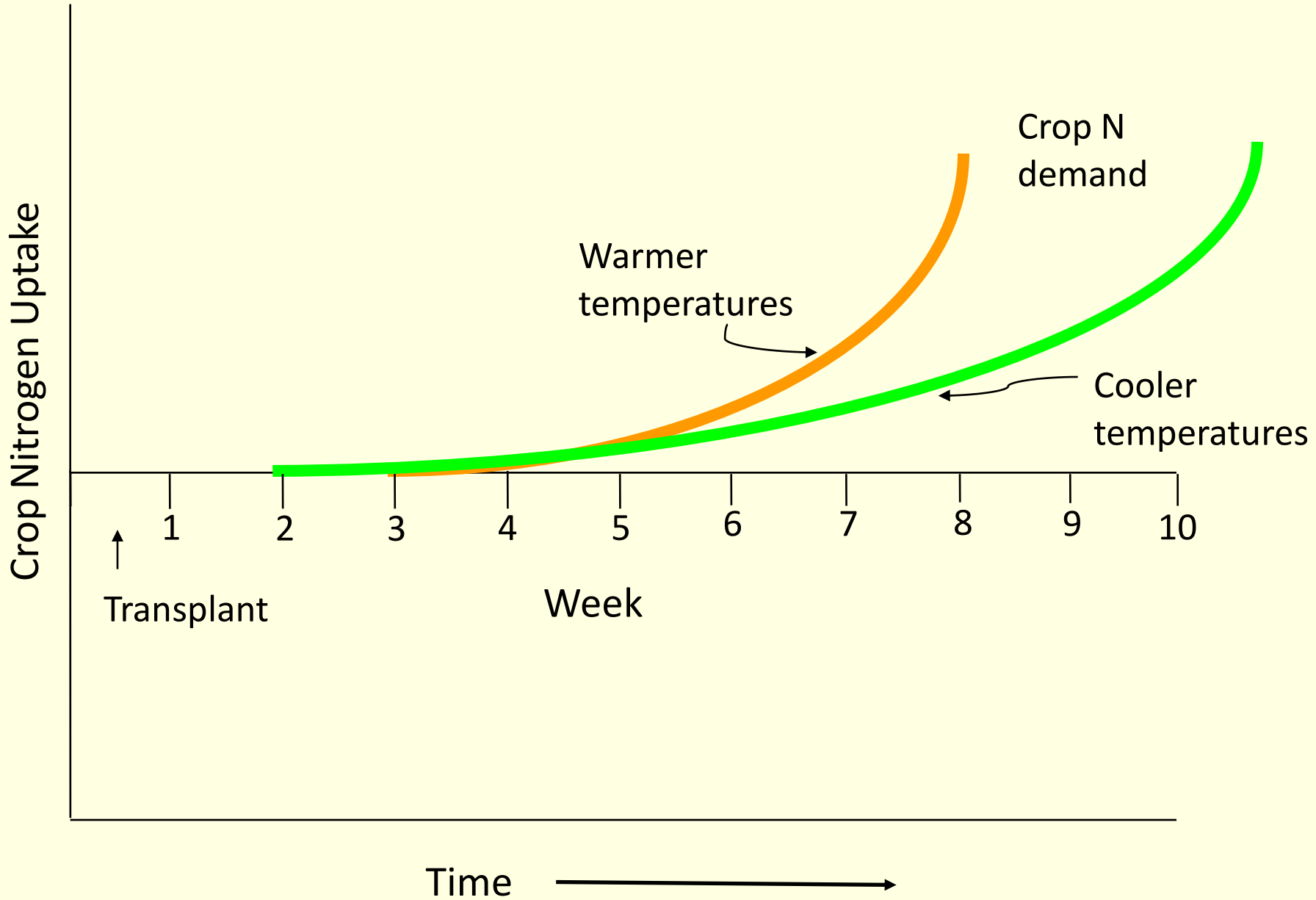
# *Nitrogen and organic strawberry production*

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- *Transplanted strawberries in California usually grown as an annual crop planted October - November and harvested January >> July*
  - *critical N needs in first 2-6 months*
  - *not un-like transplanted vegetable crop*
- *Organic N management generally is inefficient and costly.*
- *Timing of N availability is critical for strawberry yield and fruit quality*
- *Asynchrony of N availability has been documented for organic N systems.*



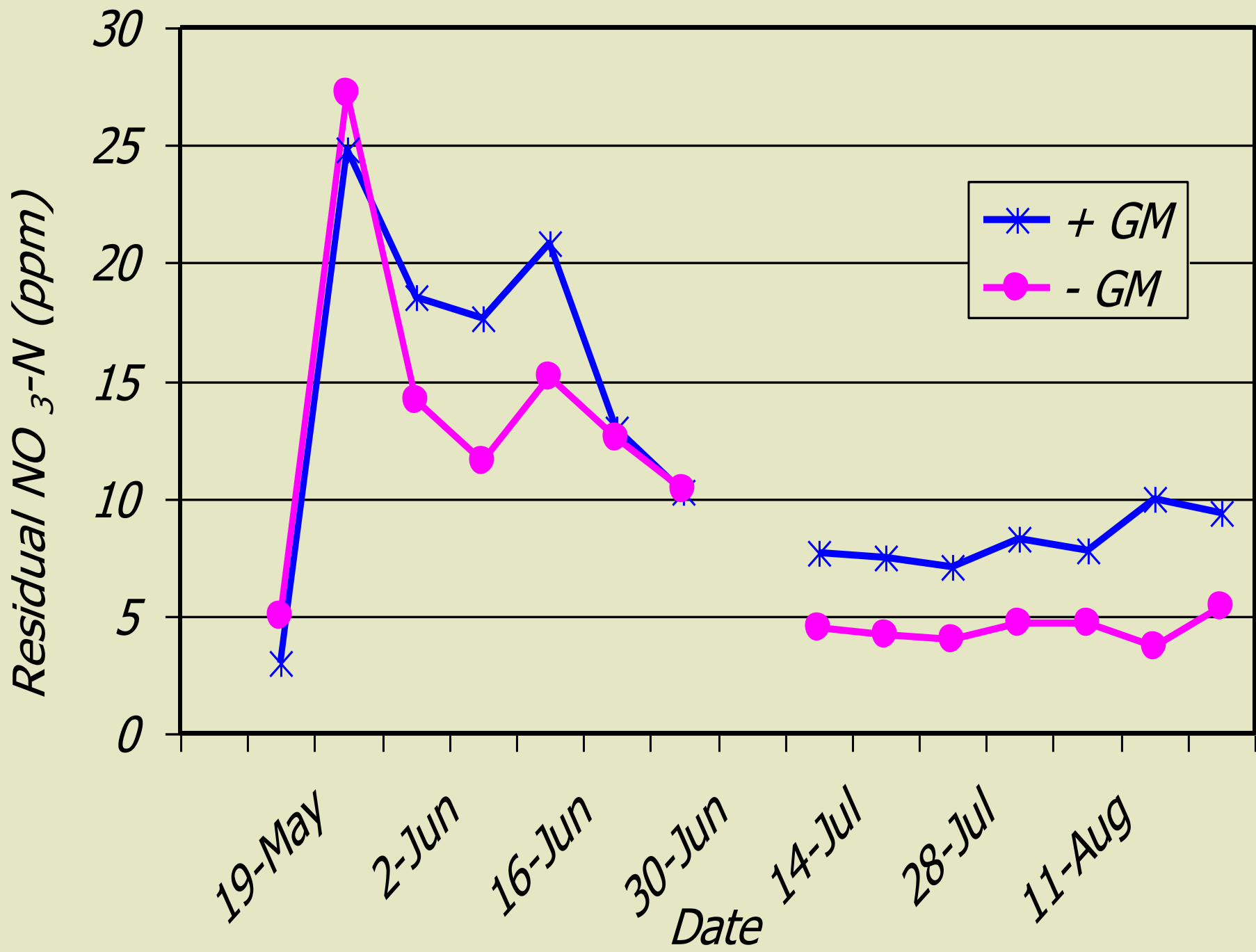
N availability affects number and size of crown shoots.

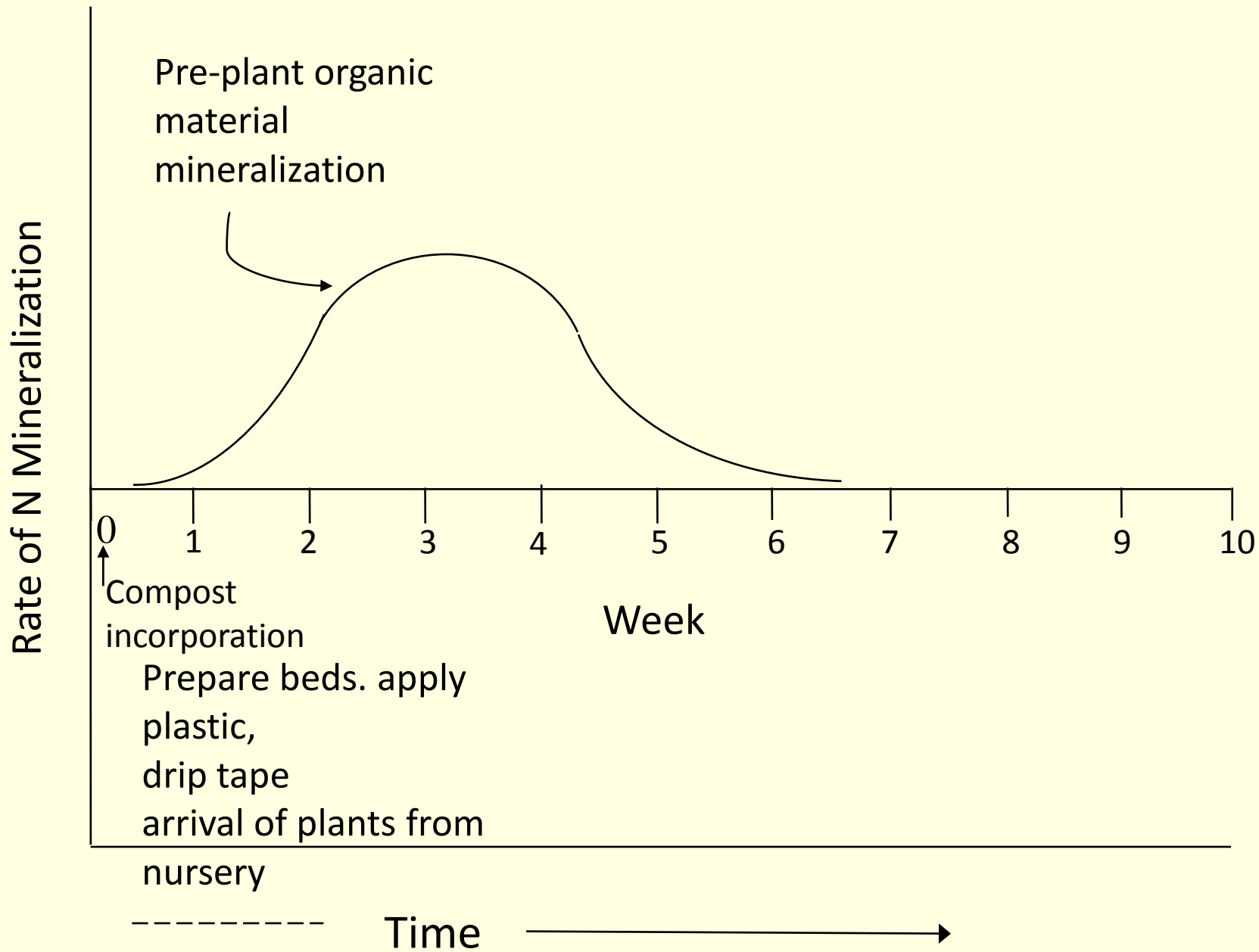


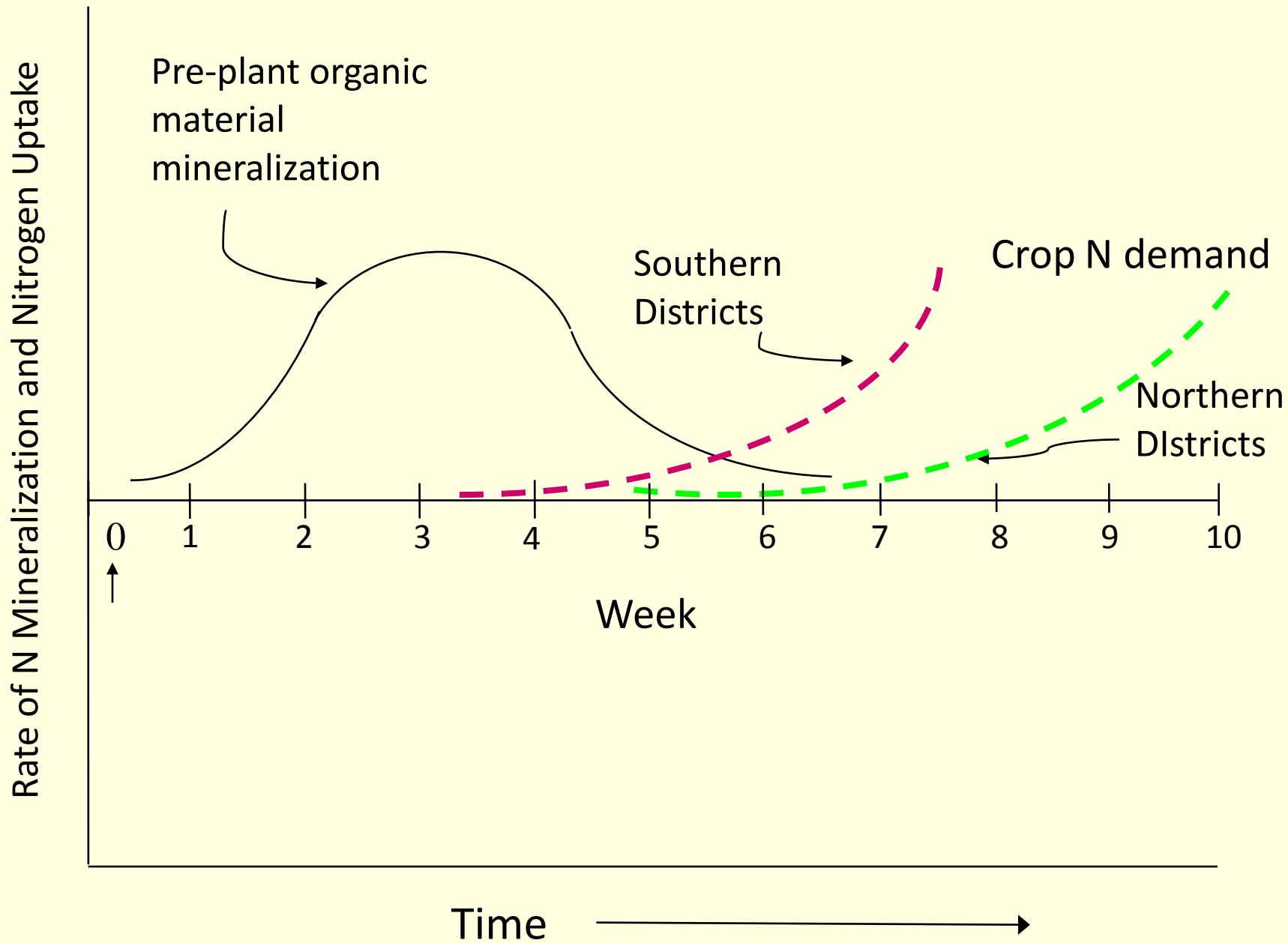
# *Nitrogen in organic systems*

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- *Compost and green manure have traditionally been the back bone of organic production systems.*
- *Preplant applied compost or incorporated green manure do not release appreciable N beyond 6-8 weeks.*
- *Matching N supply to strawberries during early development is critical to competitive yields and fruit size.*
- *Periodic N fertilization - liquid N injection - critical to organic production.*







Rate of N Mineralization and Nitrogen Uptake

Pre-plant organic material mineralization

Southern Districts

Crop N demand

Northern Districts

0

1

2

3

4

5

6

7

8

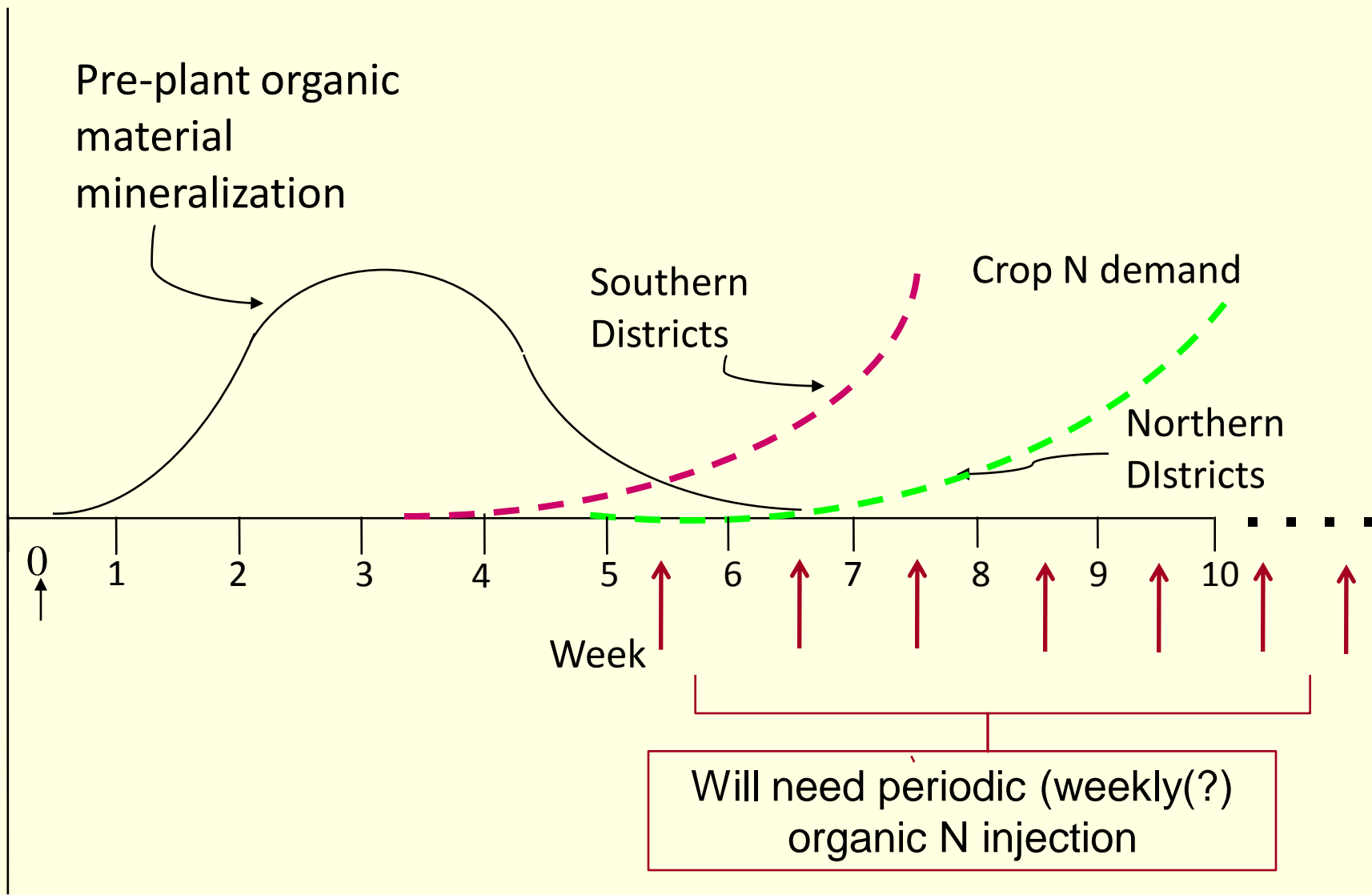
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10

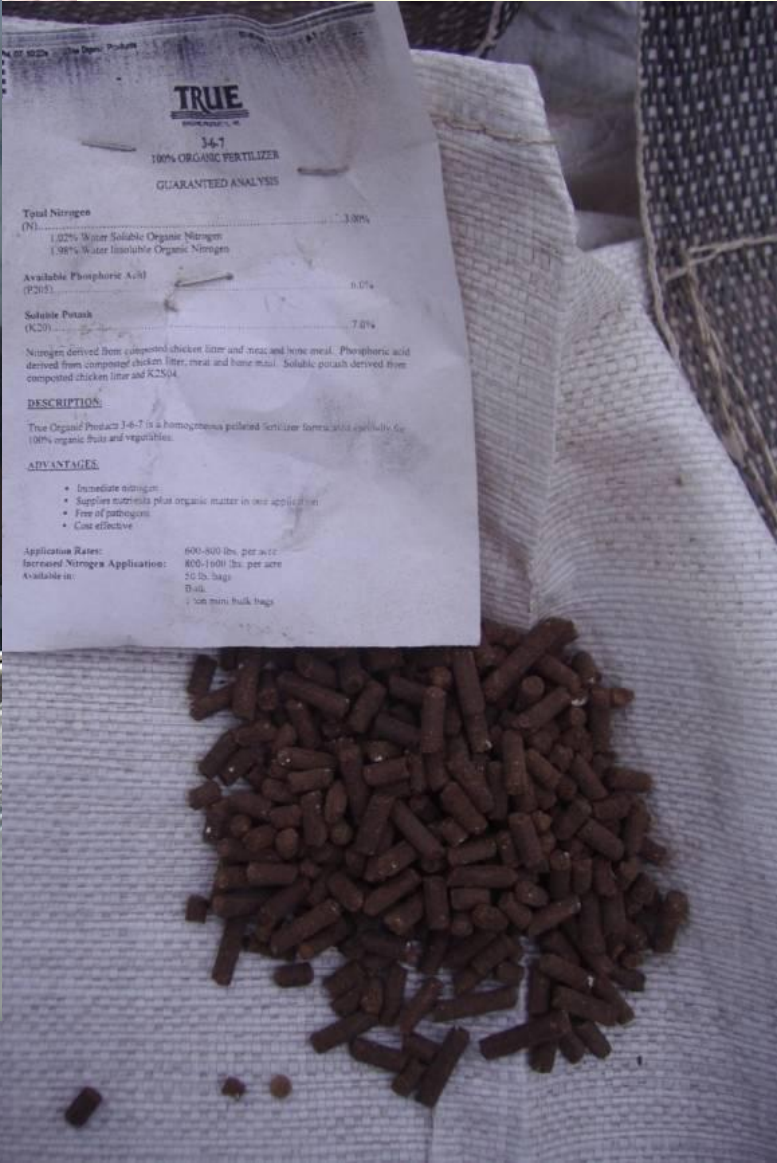
Week

Will need periodic (weekly(?)) organic N injection

Time



# Certified Organic Fertilizers



180 lb N / acre

When does N  
come available?

Residual Soil Nitrate-N (ppm)

100  
90  
80  
70  
60  
50  
40  
30  
20  
10  
0

May 14

3

5

7

9

11

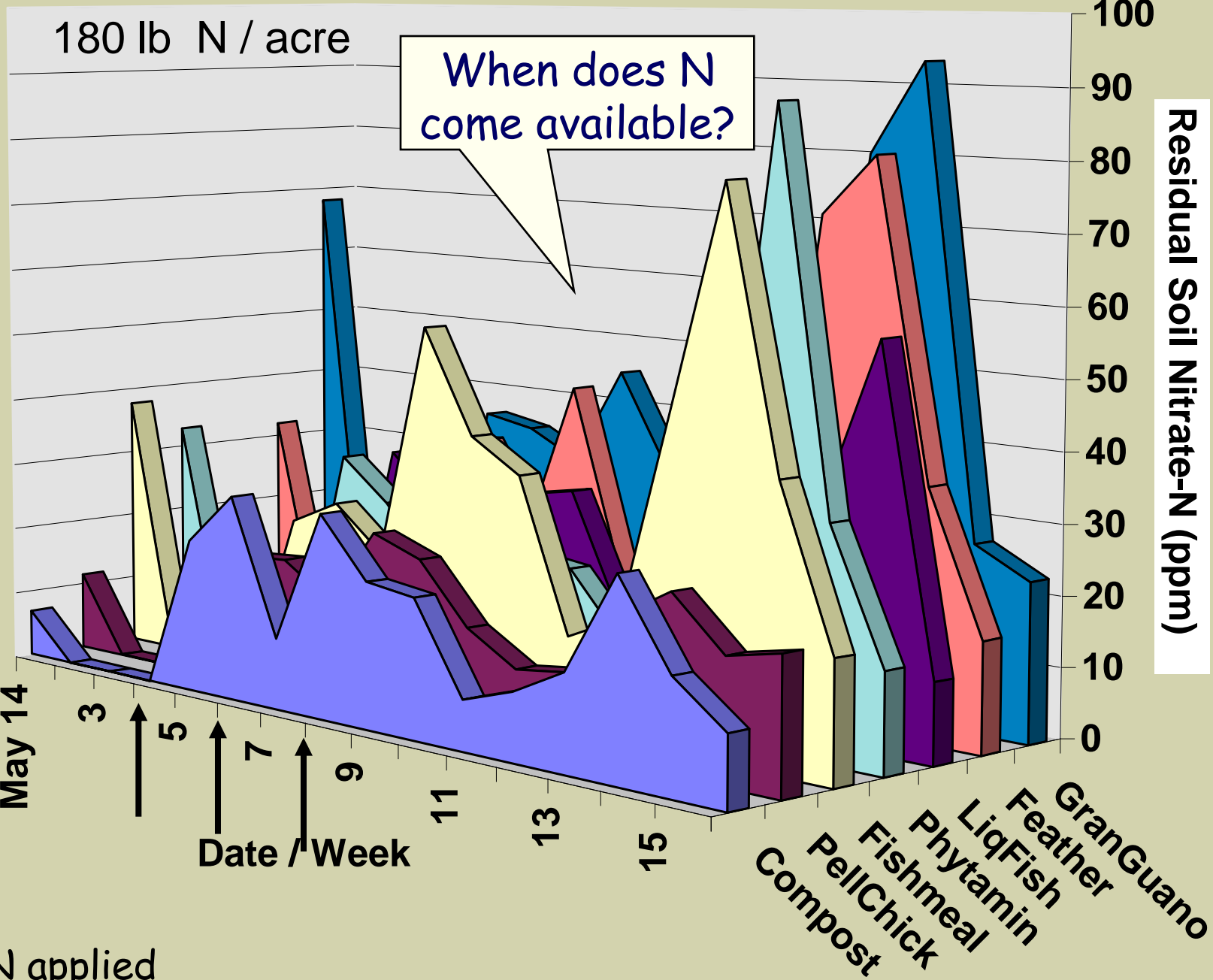
13

15

Date / Week

GranGuano  
Feather  
LiqFish  
Phytamin  
Fishmeal  
PellChick  
Compost

↑ = N applied





*Evaluate organic sources of N in in certified organic production environment.*



*2008 - Organic strawberry field trials  
Manzanita Farms - Santa Maria*

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*Matching N supply to strawberries during early development is critical to competitive yields and fruit size.*

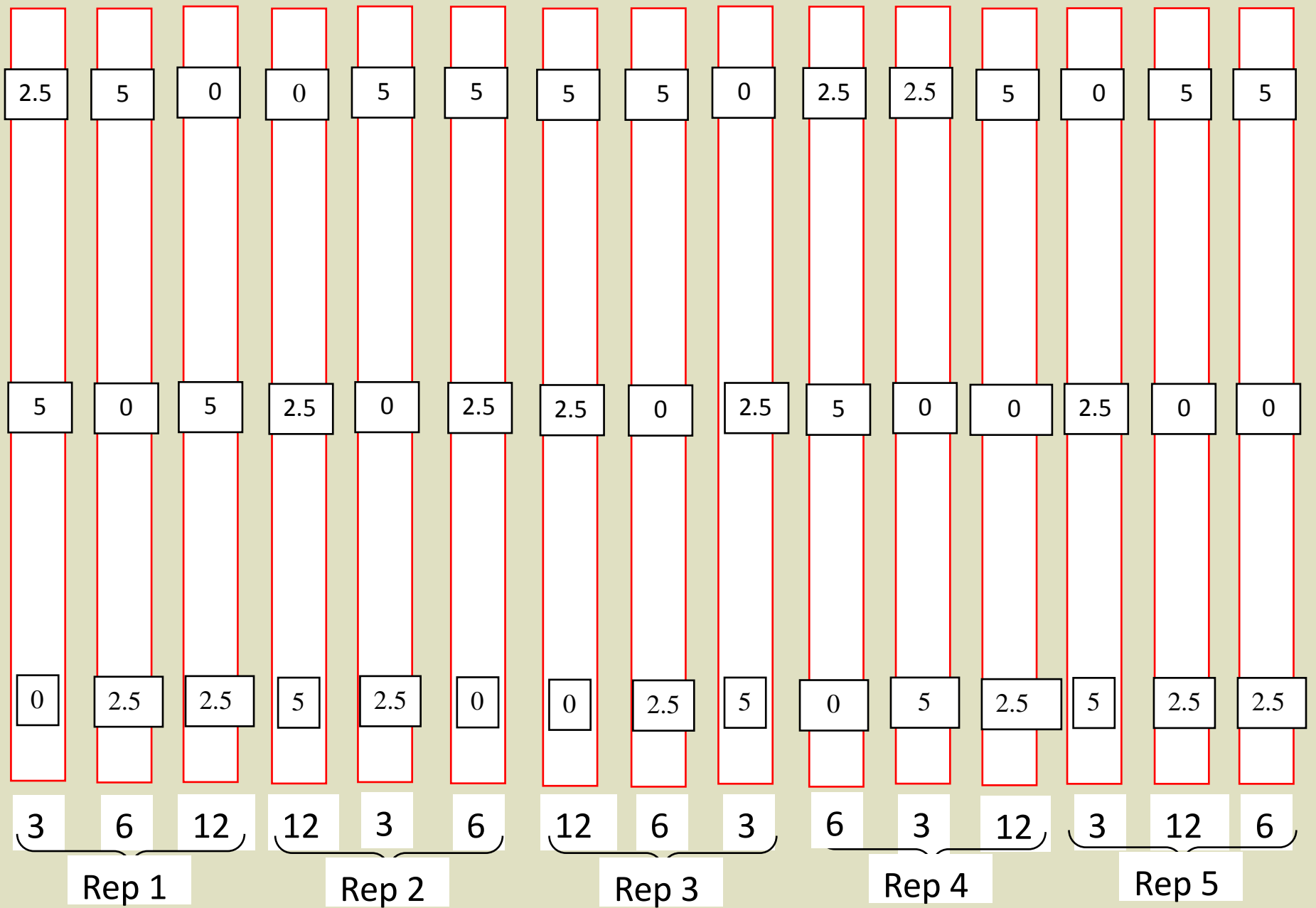
- *Albion variety'; 29,490 plant / ac.*
- *Different rates of N as liquid fish injection nested on top of 0, 2.5, or 5 ton per acre of preplant compost.*
- *Preplant organic 3-6-6 slotted to ALL plots.*
- *N rates are 3, 6, 12 lb N per acre per week  
- injection initiated Dec 20.*

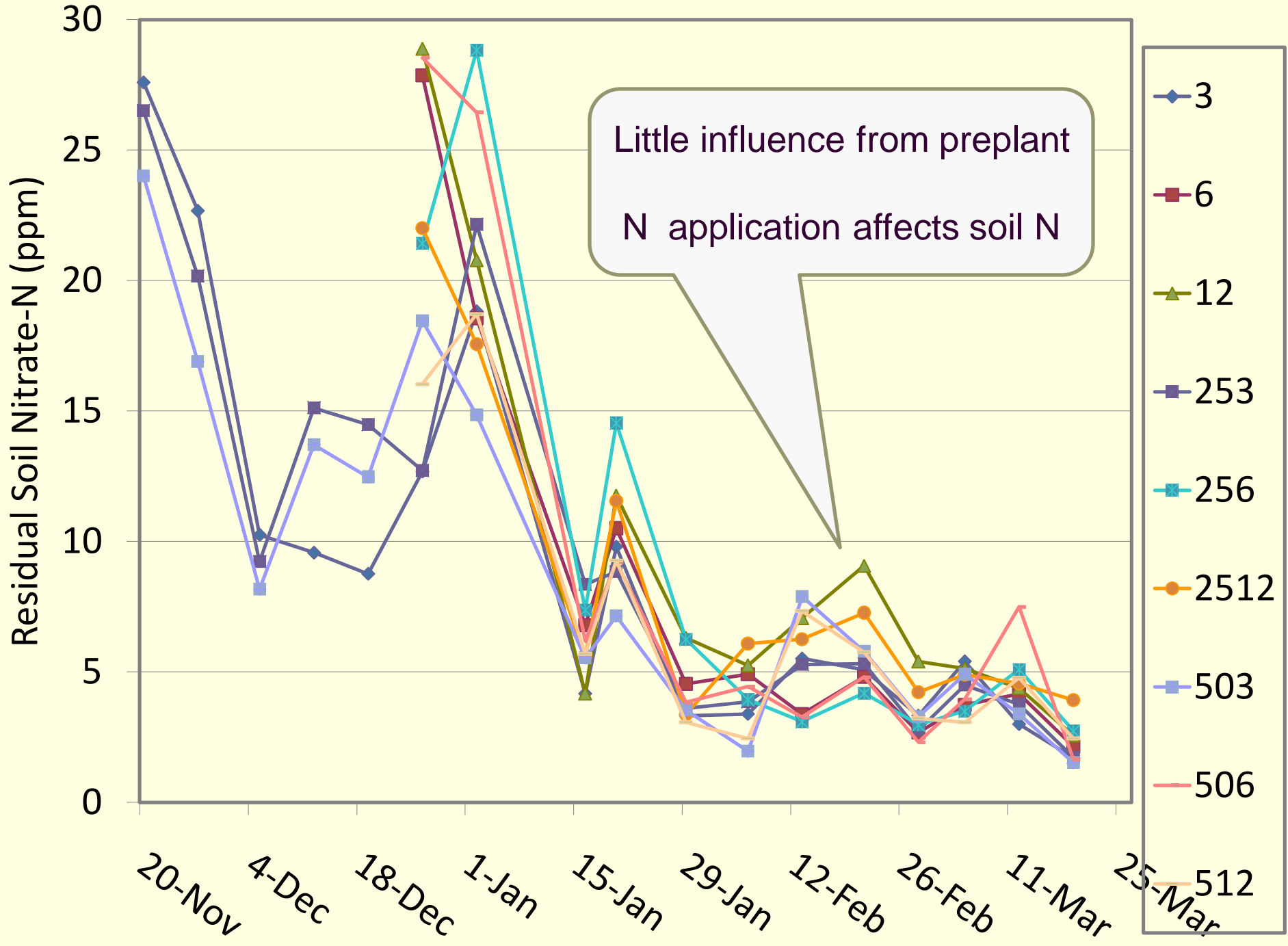
*2008 - Organic strawberry field trials  
Manzanita Farms - Santa Maria*

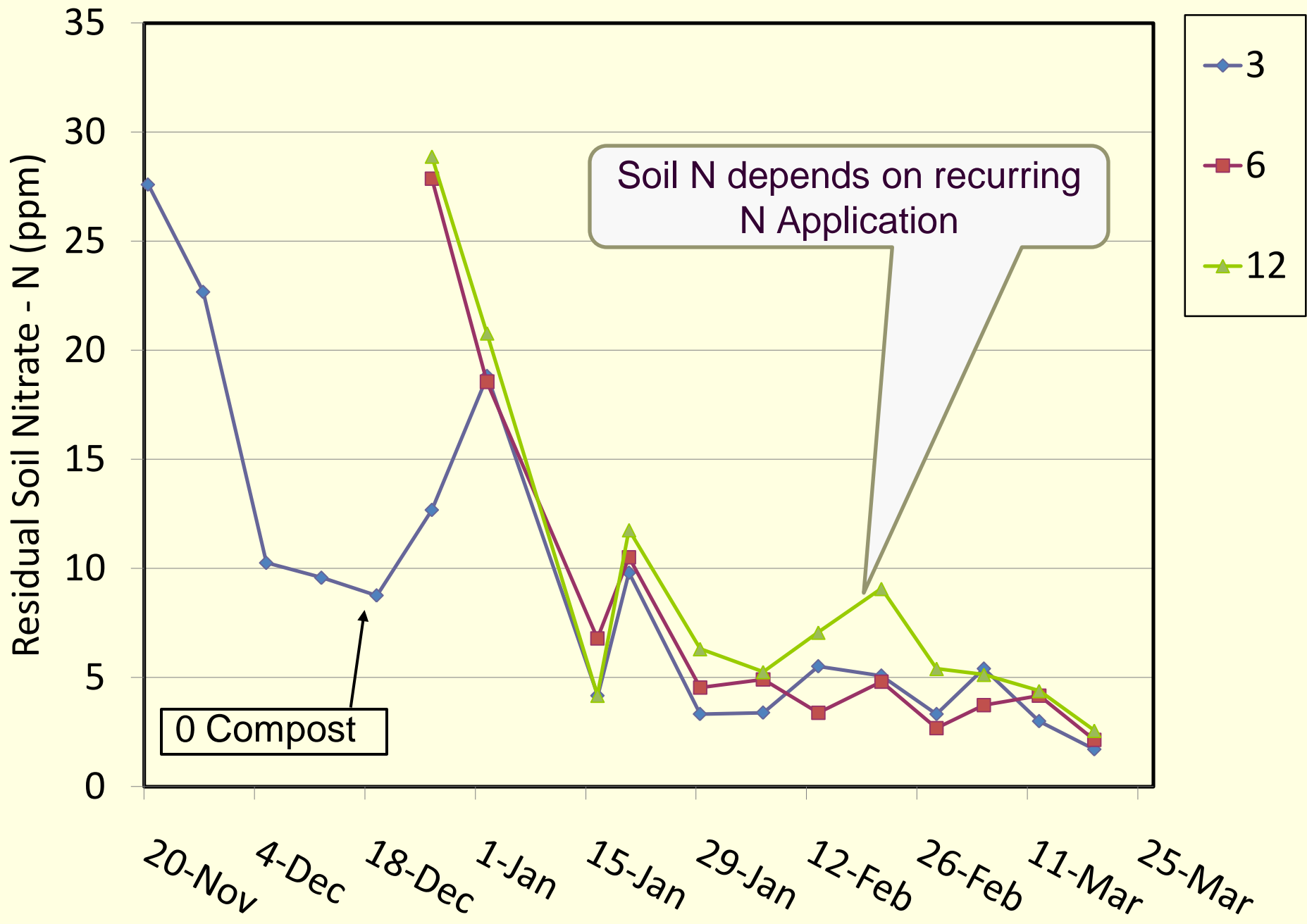
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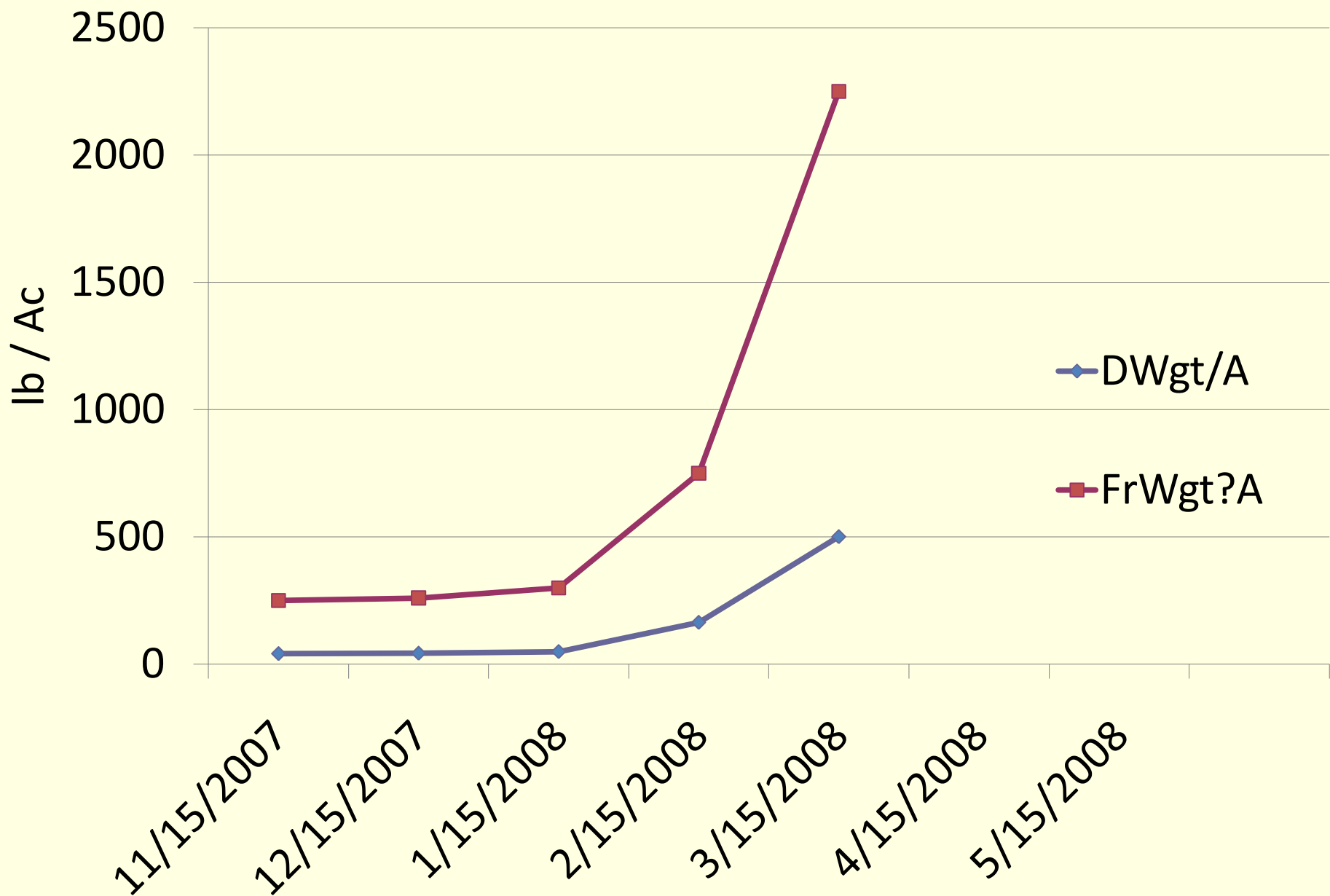
- *Periodic N fertilization - liquid N injection - critical to organic production.*
- *Plots 5 beds wide - center bed sampled .*
- *Weekly soil N - nitrate and ammonium.*
- *Whole plant wet and dry wgt and %N (x5).*
- *Total and marketable fruit yield, size.*





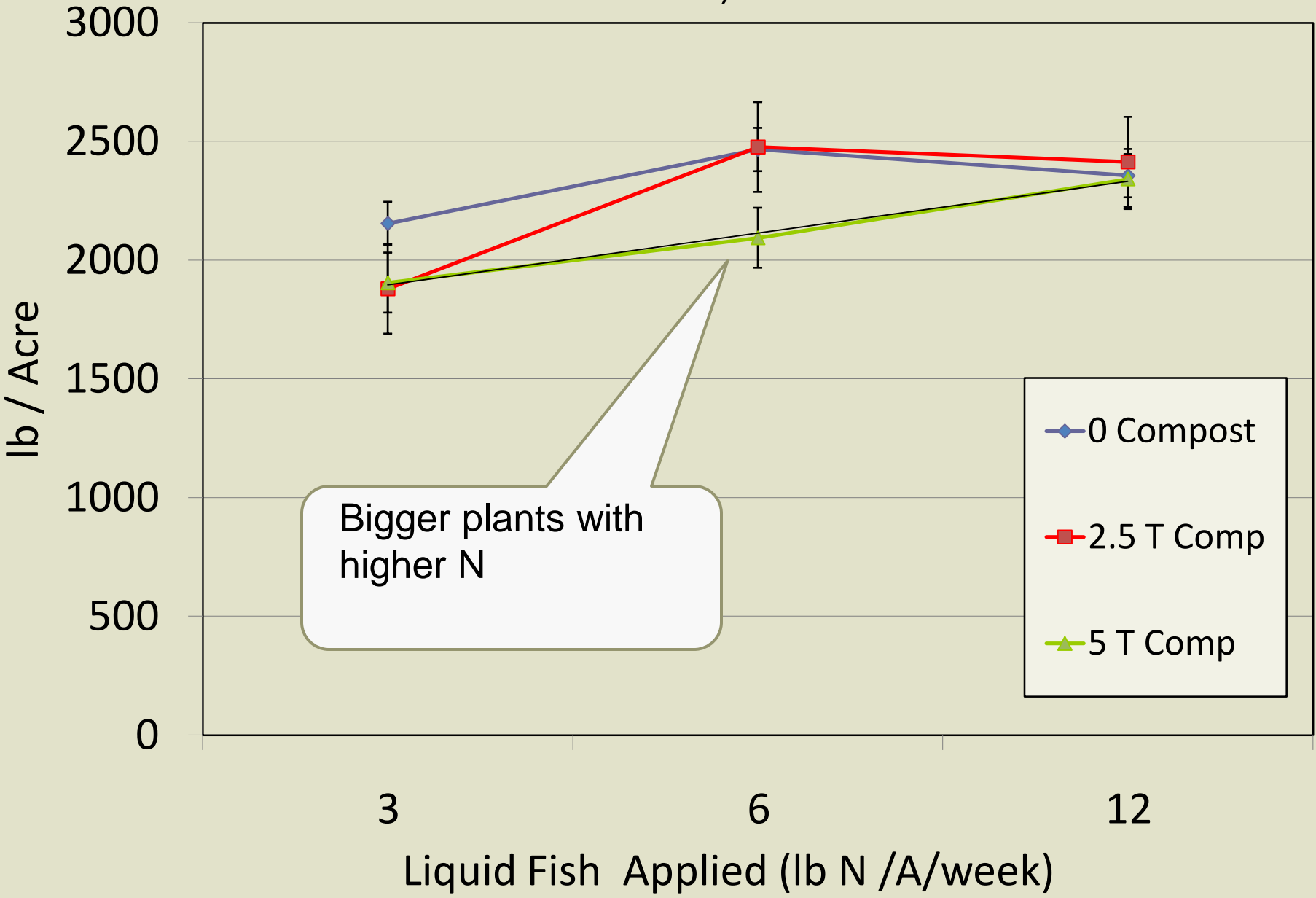






# Strawberry Whole Plant Fresh Weight

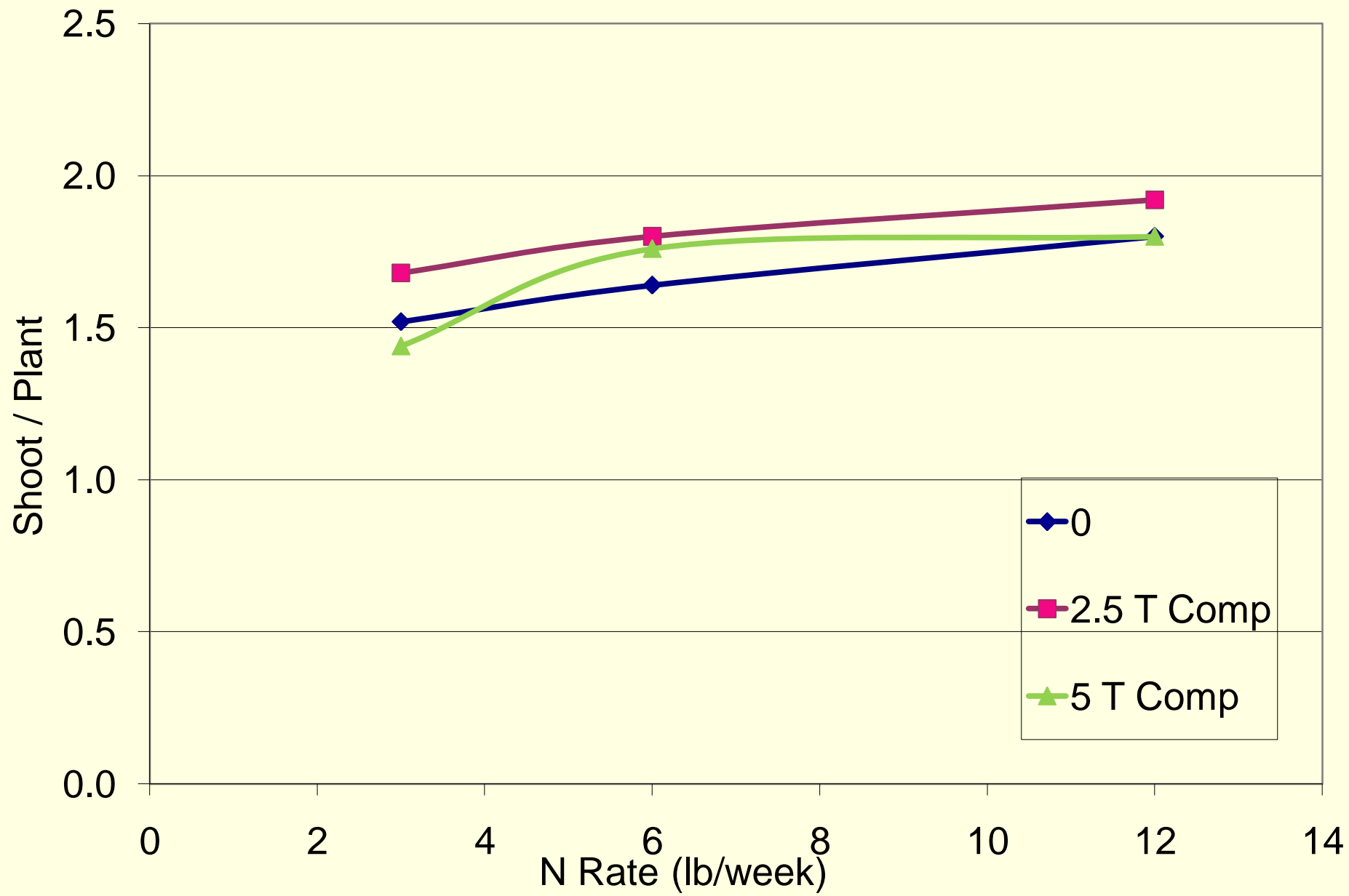
March 14, 2008



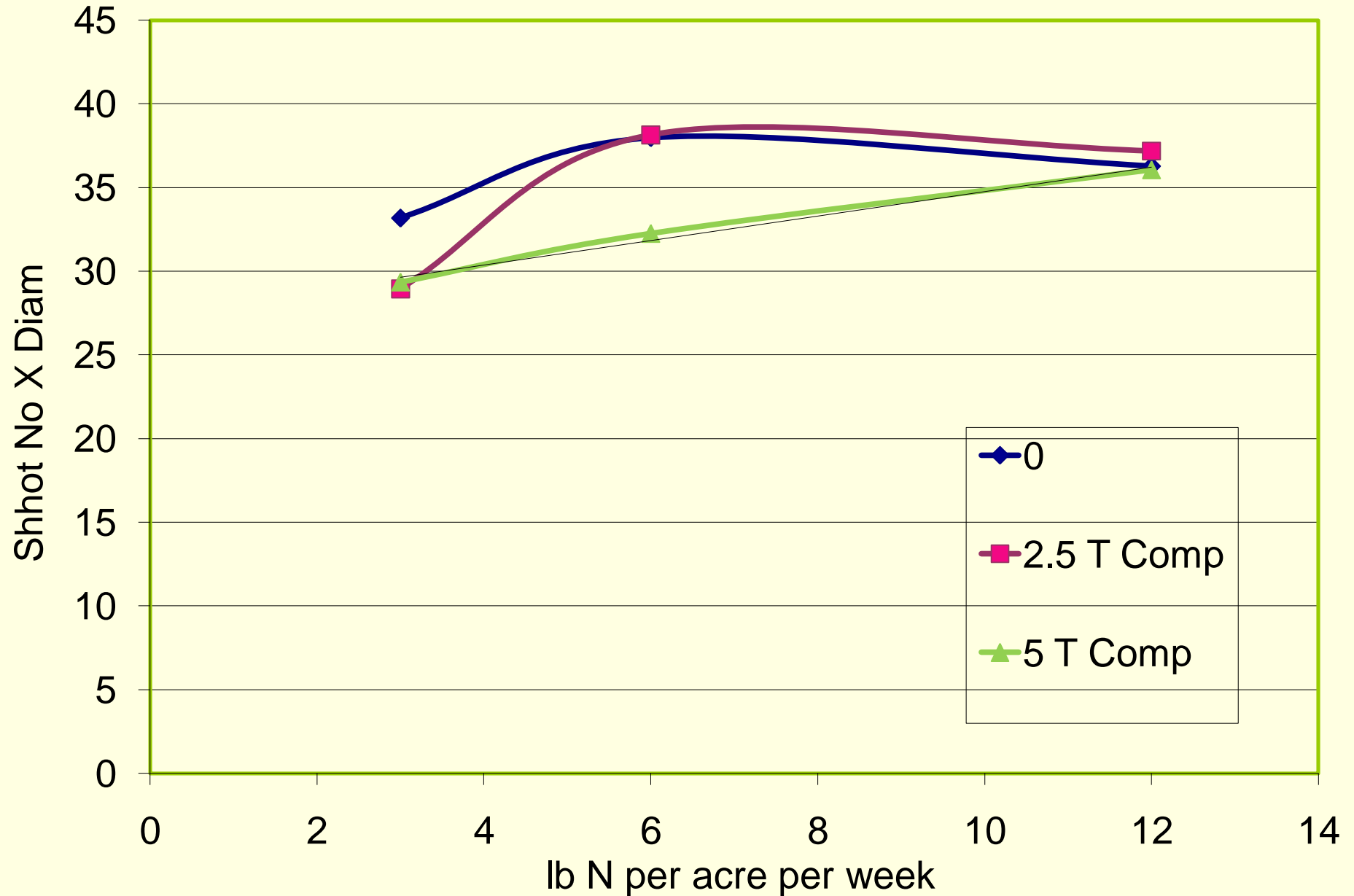
Bigger plants with higher N

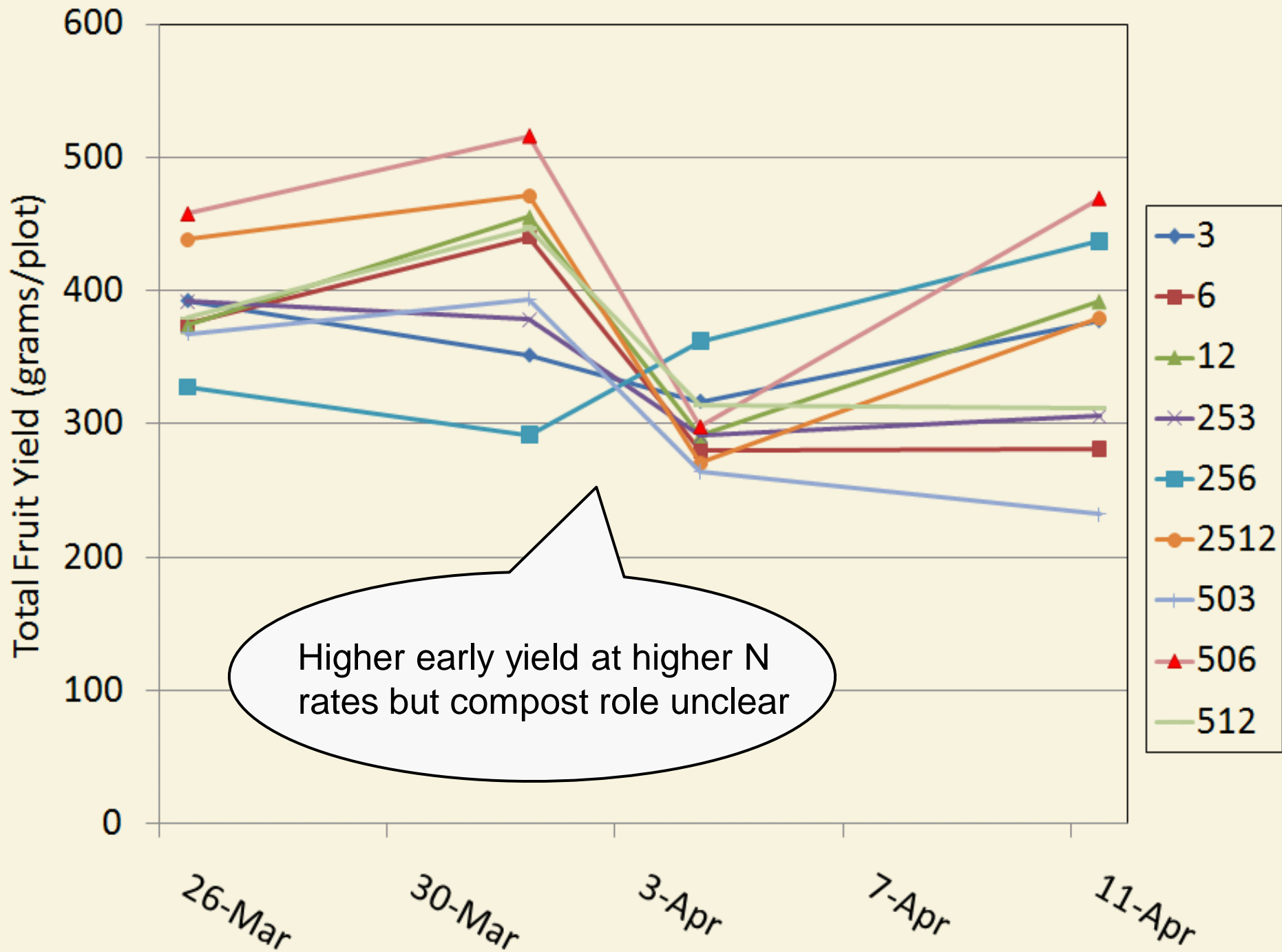
- 0 Compost
- 2.5 T Comp
- 5 T Comp

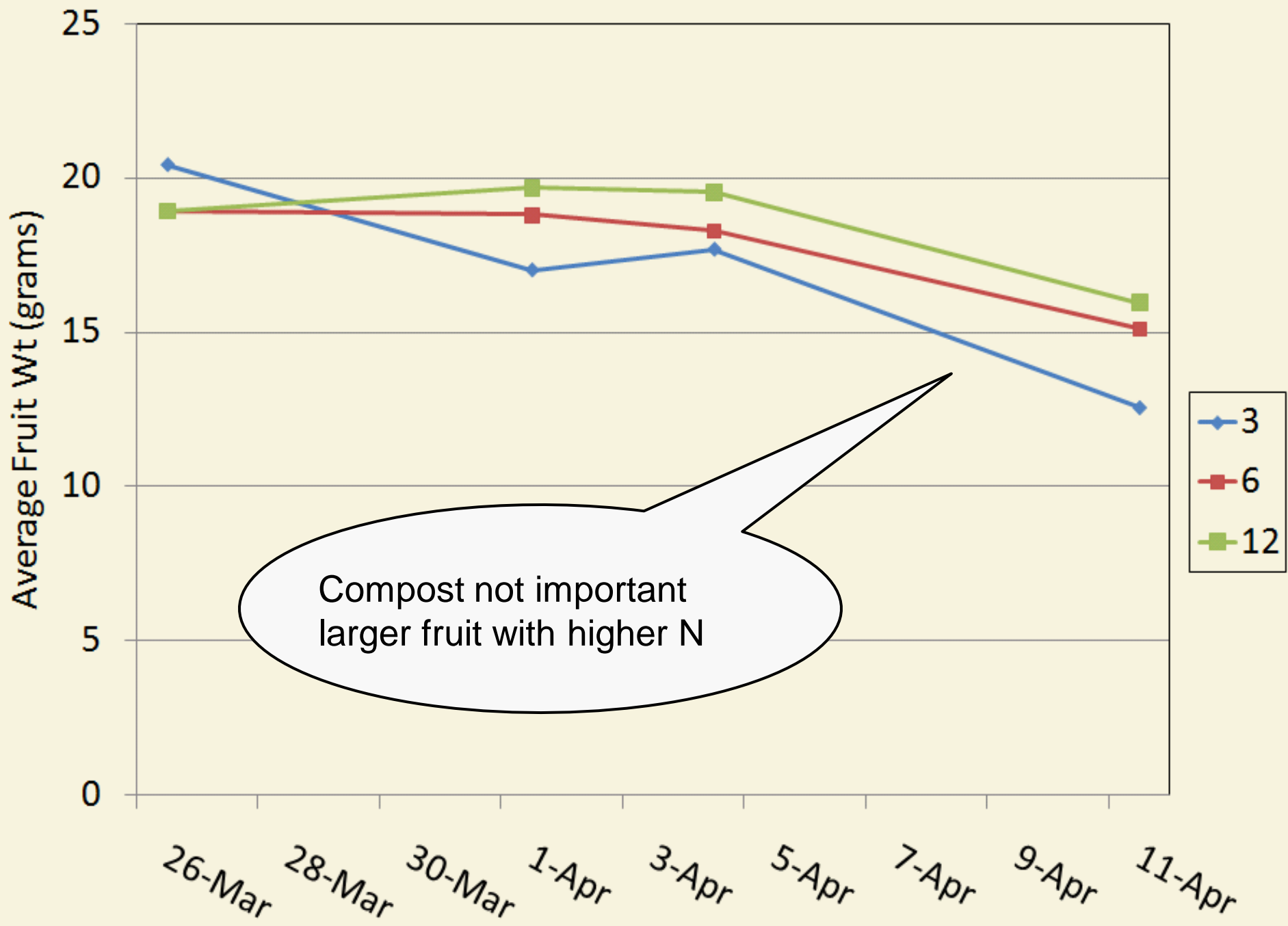
Strawberry shoot number at varying weekly N application rate  
March 14, 2008



Strawberry Shoot No X Diam Index  
March 14, 2008







Compost not important  
larger fruit with higher N

## *Summary*

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- *Still much to learn about liquid organic N and strawberry production*
  - *fertilizer material*
  - *variety*
  - *production area*
  - *transplant type, quality -etc.*
- *Different materials may be very different when injected regularly at smaller rates - more trials*
- *Can begin to settle on range of rates that are reasonable - to guide growers in near term.*



# *Strawberr y Nitrogen Fertilization from Organic Sources*

*Mark Gaskell, Farm Advisor  
University of California*