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  - 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

![Graph showing the growth of CA Organic Strawberry Sales from 2000 to 2005. The sales increased significantly from 9.7 million dollars in 2000 to 31.2 million dollars in 2004, after which there was a decline to 25.1 million dollars in 2005.](Image)
Strawberry Nitrogen Fertilization from Organic Sources

Mark Gaskell, Farm Advisor
University of California Small Farm Program
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
Nitrogen and organic strawberry production

- 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.
Week

Warmer temperatures

Cooler temperatures

Crop N demand

Transplant

Crop Nitrogen Uptake

Time

1 2 3 4 5 6 7 8 9 10
Nitrogen in organic systems

- Compost and green manure have traditionally been the backbone 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.
Pre-plant organic material mineralization

Prepare beds. apply plastic, drip tape
arrival of plants from nursery

Rate of N Mineralization vs Time (Week)

Compost incorporation

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Time
Rate of N Mineralization and Nitrogen Uptake

- Pre-plant organic material mineralization
- Southern Districts
- Crop N demand
- Northern Districts

Time

0 1 2 3 4 5 6 7 8 9 10

Week
Pre-plant organic material mineralization

Southern Districts

Crop N demand

Northern Districts

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

Rate of N Mineralization and Nitrogen Uptake

Time

Week

0 1 2 3 4 5 6 7 8 9 10
Certified Organic Fertilizers
When does N come available?

180 lb N / acre

Residual Soil Nitrate-N (ppm)

Date / Week

Compost
PellChick
Fishmeal
Phytamin
LiqFish
Feather
GranGuano

May 14

= N applied
Evaluate organic sources of N in certified organic production environment.
2008 - Organic strawberry field trials
Manzanita Farms - Santa Maria

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

- 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 wt and %N (x5).
- Total and marketable fruit yield, size.
Little influence from preplant N application affects soil N.
Soil N depends on recurring N Application
Bigger plants with higher N
Strawberry shoot number at varying weekly N application rate
March 14, 2008

![Graph showing the relationship between N Rate (lb/week) and Shoot/Plant for different T Comp levels. The graph includes lines for 0, 2.5 T Comp, and 5 T Comp, with increasing shoot number as N rate increases.]
Higher early yield at higher N rates but compost role unclear
Compost not important larger fruit with higher N
Summary

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.
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