Nitrogen Management for Organic Strawberry Production

Update

Mark Gaskell, Farm Advisor
UC Cooperative Extension- San Luis Obispo
Overview

• Nitrogen is critical limiting factor

• Certified organic N more costly, uncertain

• N mineralization determines nitrate availability

• Different materials with varying availability

• Field management also critical
  - nitrate moves with water
Welcome to the National Organic Program

What is organic?
Organic production is a system that is managed in accordance with the Organic Foods Production Act (OFPA) of 1990 (PDF) and regulations in Title 7, Part 205 of the Code of Federal Regulations to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. The National Organic Program (NOP) develops, implements, and administers national production, handling, and labeling standards.

Accreditation and Certification

Compliance and Enforcement

Consumers
Welcome to NOP-AQSS ("Access")

What is NOP-AQSS? – Answers to Questions on [NOP] Standards by NOP Staff

Using the list below, select a topic related to your question(s).

When NOP modifies a response or issues new guidance concerning the NOP regulations, an alert will be posted in NOP News.

Please select a topic:

- Accreditation
- Certification
- Crops
- Handling/Processing
- Labeling
- Livestock

Additional Information
- List of USDA Accredited Certifying Agents
- NOP Document Control Master List
- National List of Allowed and Prohibited Substances
- Organic Feedgrain Producers and Handlers
- Organic Seed

Media Help

To view PDF files you must have Adobe Acrobat Reader installed on your computer.

http://www.ams.usda.gov/AMSv1.0/nop
Welcome to the Organic Materials Review Institute

Founded in 1997, the Organic Materials Review Institute (OMRI) provides organic certifiers, growers, manufacturers, and suppliers an independent review of products intended for use in certified organic production, handling, and processing. OMRI is a 501(c)3 nonprofit organization. When companies apply, OMRI reviews their products against the National Organic Standards. Acceptable products are OMRI Listed® and appear on the OMRI Products List. OMRI also provides subscribers and certifiers guidance on the acceptability of various material inputs in general under the National Organic Program.

How Can We Help You?

Find Products
OMRI® Listed products undergo a rigorous review to ensure that they comply with USDA organic standards. The online list of products is updated regularly to contain the most current information. Search our Products List to find products or subscribe for advanced features.

Get Listed
The OMRI review service verifies your credibility and allows customers to confidently choose your product for organic production. Application forms are available for download when you submit your application kit order. Apply to become OMRI listed!

Become a partner
OMRI was founded by organic certifiers and continues to serve certifiers and their clients with crucial information to ensure organic integrity. The OMRI Certifier Subscription provides you access to our materials review expertise and many advanced online features. Subscribe today as a certifier.

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News

OMRI is Hiring for Two Review Program Positions
(7:8, 2010) Our growing list of products means a growing staff. OMRI is seeking to fill two key positions on our team. Please see the... Read More

OMRI Welcomes Our New Executive Director
(7:6, 2010) We, the OMRI Board of Directors, are excited to share with you this important news as a supplement to our recently released... Read More

NOP Allowance of Green Waste
(April 23, 2010) OMRI has previously announced that three composts had been prohibited by

http://www.omri.org/
Mineralization of Pre-plant Applied Compost

Rate of N Mineralization or absorption vs. Time (Weeks)

Time

Rate of N Mineralization or absorption
Mineralization of Pre-plant Applied Compost

Rate of N Mineralization or absorption

Week

Plant N Demand

Time

0  2  4  6  8  10  12  14  16  18  20

Mineralization of Pre-plant Applied Compost
Mineralization of Pre-plant Applied Compost

Southern Districts

Northern Districts

Rate of N Mineralization or absorption

Time

Week

Periodic injections needed – weekly?

Plant N Demand

Week 0 2 4 6 8 10 12 14 16 18 20
<table>
<thead>
<tr>
<th>Name</th>
<th>description</th>
<th>label N %</th>
<th>actual % total N</th>
<th>% Mineral N by lab analysis of original material</th>
<th>% N in solution or particulate matter small enough to pass through a media filter</th>
<th>%N possibly lost in filtration in drip system</th>
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<tbody>
<tr>
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<td>fish</td>
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<td>5.1</td>
<td>70.0</td>
<td>4.5</td>
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<td>2.6</td>
<td>12.4</td>
<td>2.0</td>
<td>0.6</td>
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<tr>
<td>Phytamin 801</td>
<td>guano, fish</td>
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<td>6.0</td>
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<td>5.5</td>
<td>0.5</td>
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<tr>
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<td>5</td>
<td>5.4</td>
<td>26.0</td>
<td>4.8</td>
<td>0.6</td>
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<tr>
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<td>guano, fish</td>
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<td>3.5</td>
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<td>3.1</td>
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<td>3.5</td>
<td>1.5</td>
<td>0.3</td>
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<tr>
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Source - Tim Hartz, UC-Davis
### Total N availability at:

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<tr>
<th>Santa Maria Sand</th>
<th>Name</th>
<th>15 °C week 1</th>
<th>15 °C week 2</th>
<th>15 °C week 4</th>
<th>25 °C week 1</th>
<th>25 °C week 2</th>
<th>25 °C week 4</th>
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<tr>
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<td>87</td>
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<td>91</td>
<td>93</td>
<td>93</td>
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</tr>
<tr>
<td></td>
<td>Mega Green</td>
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<td>73</td>
<td>76</td>
<td>76</td>
<td>76</td>
<td>84</td>
</tr>
<tr>
<td><strong>MEAN</strong></td>
<td></td>
<td><strong>70.5</strong></td>
<td><strong>77.7</strong></td>
<td><strong>80.9</strong></td>
<td><strong>80.5</strong></td>
<td><strong>83.0</strong></td>
<td><strong>86.9</strong></td>
</tr>
</tbody>
</table>

Some materials relatively high in available N in greenhouse

Source- Tim Hartz, UC-Davis
Residual Soil Nitrate-N (ppm)

Sample Date (2007/8)

- True Organic
- Neptunes Harvest
- Phytamin 434
Soil Residual Nitrate-N (ppm)

Sample Date (2007 / 2008)

- 6.8 kg N /week
- 13.6 kg N / week
- 20.4 kg N /week
N uptake rate VS Timing of N availability

- Total N uptake important
- Strawberries? Early vegetative development?
- Sets stage for plant branch number, size
- Can have big effect on yield
Soil Residual Nitrate-N (ppm)

Sample Date (2007 / 2008)

6.8 kg N / week
13.6 kg N / week
20.4 kg N / week
Weekly Soil Nitrate-N following varying rates of preplant and weekly injected organic N
Weekly Soil Nitrate-N following varying rates of preplant and weekly injected organic N
Are we applying N early enough and managing injections to assure N is available?
Summary

• N fertilization is challenging in organic production
• Low OM soils more difficult and costly
• Materials vary in cost, N availability
• Mineralization determines nitrate availability
• Lower N compared to conventional
  - management can be critical
  - interaction with water management?
Acknowledgements

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• USDA – Section 2501 Program