National Organic Program

Introduction to Organic Production and Certification

Tony Kleese
Organic Farm and Certification Consultant
The Basis for National Standards

- 1990 - Organic Foods Production Act - part of the 1990 Farm Bill.
- 1996 - NOSB completes recommendations.
- 1997 - USDA publishes first proposed rule
- March, 2000 – USDA’s 2nd proposed rule
- December, 2000 – USDA’s Final Rule
- October 21, 2002 – Final Rule implemented
- November, 2003 - Final Rule amended
Organic Production

“A production system that is managed to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.”
Who must be certified?

- All organic farmers and handlers who sell over $5,000/year of organic products.
- Retailers do not have to be certified.
- Handlers who use the word “organic” only on the ingredient panel do not have to be certified.
- Handlers, such as warehouses, that do not re-package organic products do not have to be certified.
What is Certified Organic?

- Application of Consistent Production and Handling Standards.
- Development of a Mandatory Organic System Plan, including proactive strategies to prevent problems.
- Use of only Approved Substances.
- Mandatory Verification Through Certification and On-Site Inspection.
Organic farmers, livestock producers or processors do not use chemical fertilizers, herbicides, insecticides, or sewage sludge.
Organic farmers do not use genetically engineered products - seeds, planting stock, insecticides, and inoculants.
Must not use arsenate treated lumber for new installations or replacement purposes in contact with crops, soil, or livestock.
Residue Analysis

• Residue levels must not exceed 5% of the United States Environmental Protection Agency’s tolerance level for the specific substance.

• No tolerance levels yet established for GMO contamination.
Buffer and beneficial habitat
NOP Basic Crop Requirements

• **Organic System Plan.**

• **Monitoring of management practices.**

• **Can have split operation but must have physical barriers to prevent commingling and contamination.**
• Land must have distinct, defined boundaries.

• Land must be free of prohibited materials for 3 years (36 months) prior to harvest.

• Must maintain or improve the physical, chemical, and biological condition of the soil and minimize soil erosion.

• Fertility management must not contaminate crops, soil, or water with plant nutrients, pathogenic organisms, heavy metals, or prohibited substances.
Balancing inflows and outflows

Use soil testing to establish baselines and monitor inputs and trends for minerals pH, P, K, Ca, Mg

Use a nutrient budget for evaluating organic matter and N inputs
Naturally mined minerals, - limestone, gypsum, black rock phosphate, etc. are allowed. All other fertility inputs must appear on the National List of Allowed and Prohibited Substances.
Use supplemental $N$ to balance the budget

- Total $N$ uptake
- $N$ credits
  - Crop residue $N$
  - Cover crop $N$
  - Compost/Manure $N$
  - Soil $N$
- Supplemental $N$
The Soil Food Web

Plants
- Shoots and roots
- Mycorrhizal fungi
- Saprophytic fungi

Organic Matter
- Waste, residue and metabolites from plants, animals and microbes.

Bacteria

Fungi
- Mycorrhizal fungi
- Saprophytic fungi

Nematodes
- Root-feeders
- Fungal- and bacterial-feeders

Arthropods
- Shredders
- Predators

Protozoa
- Amoebae, flagellates, and ciliates

Animals

Birds

First trophic level:
- Photosynthesizers

Second trophic level:
- Decomposers
- Mutualists
- Pathogens, parasites
- Root-feeders

Third trophic level:
- Shredders
- Predators
- Grazers

Fourth trophic level:
- Higher level predators

Fifth and higher trophic levels:
- Higher level predators
## Typical Numbers of Soil Organisms in Healthy Ecosystems

<table>
<thead>
<tr>
<th></th>
<th>Ag Land</th>
<th>Prairie</th>
<th>Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisms per gram (teaspoon) of soil</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacteria</td>
<td>100 mil. -1 bil.</td>
<td>100 mil. -1 bil.</td>
<td>100 mil. -1 bil.</td>
</tr>
<tr>
<td>Fungi</td>
<td>Several yards</td>
<td>10s – 100’s of yds</td>
<td>1-40 miles (in conifers)</td>
</tr>
<tr>
<td>Protozoa</td>
<td>1000’s</td>
<td>1000’s</td>
<td>100,000’s</td>
</tr>
<tr>
<td>Nematodes</td>
<td>10-20</td>
<td>10’s – 100’s</td>
<td>100’s</td>
</tr>
<tr>
<td>Arthropods</td>
<td>&lt; 100</td>
<td>500-2000</td>
<td>10,000-25,000</td>
</tr>
<tr>
<td>Earthworms</td>
<td>5-30</td>
<td>10-50</td>
<td>10-50 (0 in conifers)</td>
</tr>
</tbody>
</table>
Mineralization and Immobilization

Organisms consume other organisms and excrete inorganic wastes.

Organic nutrients are stored in soil organisms and organic matter.

Inorganic nutrients are usable by plants, and are mobile in soil.

Organisms take up and retain nutrients as they grow.
Must implement soil building crop rotations.
COMMON COVER CROPS

• **Cool Season**
  - rye, oats, wheat, field pea, hairy vetch, crimson clover

• **Warm Season**
  - buckwheat, sorghum-Sudangrass, Japanese millet
  - *cowpea, soybean*

• **Whole Season / Perennial**
  - clovers, alfalfa, mixed grass hay
Not all legumes are efficient N fixers!

**Efficient N fixation**
forage legumes, edamame
cowpeas, peanuts

**Inefficient N fixation**
snap beans
garden peas
lima beans
Cover crop being turned under in spring
Cowpeas on 9/15, sown 5/15
Japanese millet
Managing Cover Crops Profitably

MANAGING COVER CROPS

$20 postpaid to:

‘NE-SARE’
Hills Building
Carrigan Drive
Burlington VT 05405
Composted plant and animal materials are allowed. Uncomposted plant materials are allowed.

Raw manure must be applied at least 120 days prior to harvest of crops for human consumption which may have contact with the soil (or at least 90 days for crops which do not contact soil).
Using manures as a nutrient source

Most widely available in NC

<table>
<thead>
<tr>
<th>Manure Type</th>
<th>NH₄-N</th>
<th>Total N</th>
<th>P₂O₅</th>
<th>K₂O</th>
<th>Cu</th>
<th>Zn</th>
<th>lbs/ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broiler litter</td>
<td>11</td>
<td>72</td>
<td>78</td>
<td>46</td>
<td>0.45</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>Turkey litter</td>
<td>16</td>
<td>57</td>
<td>72</td>
<td>40</td>
<td>0.51</td>
<td>0.64</td>
<td></td>
</tr>
<tr>
<td>Stockpiled litter</td>
<td>8</td>
<td>36</td>
<td>80</td>
<td>34</td>
<td>0.27</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Swine manure</td>
<td>7</td>
<td>13</td>
<td>12</td>
<td>9</td>
<td>0.15</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>Dairy manure</td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>9</td>
<td>0.02</td>
<td>0.1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>lbs/acre-inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swine lagoon</td>
<td>111 136 53 133</td>
</tr>
</tbody>
</table>

Source: Hodges (1998)

The producer must not use burning as a means of disposal for crop residues, except that burning may be used to suppress the spread of disease or to stimulate seed germination.
NOP Seed Requirements

• Must use organic seeds, if they are commercially available.

• May use untreated seeds if organic seeds are not commercially available.

• Must not use fungicide treated or genetically engineered (excluded method) seeds.

www.savingourseed.org
Must use organic seedlings for annual transplants.

Perennial planting stock must be under organic management for one year prior to harvest as "certified organic".
Pest and Disease Management

Soil Health
Crop rotation
Sanitation
Plant variety selection
Mechanical/physical
Predators/parasites
Natural habitat development
Lures, traps and repellents
Non-synthetic biological, botanical or mineral inputs.
May only use non-synthetic biological, botanical, or mineral inputs or substances on the National List for pest, weed, or disease control when other practices are insufficient.

www.omri.org
Weed control

Crop rotation, field prep and mechanical cultivation, hand weeding, mulching with natural materials, flame weeding, grazing livestock, mowing
The Challenge
Maintaining residues while accomplishing tillage objectives
New crop planted directly into rolled cover crop
Combinations
Oats + peas; sudex + red clover; vetch + rye
Can use plastic mulch, provided that it is removed from the field at the end of the growing or harvest season.
Mandatory Record keeping must:

- Be adapted to the particular business that the certified operation is conducting;
- Be maintained for not less than 5 years beyond their creation;
- Be sufficient to demonstrate compliance with the Act and the regulations.
- Be accessible.
Records must fully disclose all activities and transactions of the certified operation in sufficient detail as to be readily understood and audited.
Steps in the Certification Process

- Pick a certifier
- Get the application
- Fill out the application
- Submit the application with applicable fees
- Certifier does first review and requests missing info
- Certifier assigns inspector
- Inspector conducts on farm inspection
- Inspector submits report to the certifier
- Certifier does second review
- Certificate issued
How to Pick a Certifier

- Location
- Price
- Turnaround Time
- Service Area/History/Activism
- End Product Issues
Certifiers Active in the Carolinas

Department of Plant Industry, Clemson University, Contact: Brad Stancil, 864-646-2140 E-mail: bstanci@clemson.edu, Website: http://dpi.clemson.edu/FSCSWEB/Organic/Organic.htm

Georgia Crop Improvement Association, Inc., Athens, GA, Contact: Terry Hollifield, 706-542-2351 E-mail: gacrop@bellsouth.net, Website: www.certifiedseed.org

International Certification Services, Medina, ND, Contact: Marlene Ells, 701-486-3578 E-mail: info@ics-intl.com Website: www.ics-intl.com

Oregon Tilth, Salem, OR, Contact: Kristy Korb, 503-566-3024, E-mail: krisy@tilth.org, Website: www.tilth.org

Quality Certification Services, Gainesville, FL, Contact: Ram Balasubramanian, 352-377-0133 E-mail: ram@qcsinfo.org, Website: www.qcsinfo.org
Organic Livestock Requirements

- **Organic Livestock Plan**
- **Record keeping**
- **Monitor management practices**
Slaughter animals must be managed organically from last third of gestation.
Poultry must be organic from second day after hatching.
Dairy animals must be fed and managed organically for 1 year prior to the production of organic milk.

Animals cannot be rotated between organic and non-organic production.
Feed must be 100% organic
Livestock Feed and Supplements

- FDA approved vitamin and mineral supplements are allowed – trace minerals
- DL-Methionine allowed until October 21, 2008.
- Milk replacers – no antibiotics, emergency use only, no rBST milk
Prohibited

- Plastic pellets for roughage
- Feed formulas containing urea or manure
- Animal slaughter by-products
Drugs, including growth hormones, cannot be used to promote growth.
Preventive Health Care Practices

- Selection of species – suitable to site-specific conditions and resistance to prevalent diseases and parasites.
- Must accommodate the natural behavior of the species.
- Must provide nutritional feed ration
Establish appropriate housing, pasture conditions and sanitation practices to minimize the occurrence and spread of diseases and parasites.
Parasiticides are prohibited for slaughter stock.

Ivermectin – emergency treatment only for breeder stock (prior to last third of gestation) and dairy stock (90 day withholding of milk).
Antibiotics are prohibited. The farmer must not withhold treatment in order to preserve an animal’s organic status.
All animals must have access to shade, shelter, exercise areas, fresh air and direct sunlight suitable to species, stage of production, climate and environment.
All animals must have access to outdoors.
Ruminants must have access to pasture.
Appropriate clean, dry bedding. If bedding is consumed, it must be organic.
Shelter must be designed to allow for natural maintenance, comfort behaviors, opportunity to exercise, and reduce potential for injury.
Shelters allow for temperature level, ventilation, and air circulation suitable for species.
Manure must be managed to prevent contamination of crops, water, and soil and recycle nutrients.
Any certified operation that makes a false statement or knowingly sells or labels a product as organic that is not produced in accordance with the Organic Foods Production Act of 1990 shall be subject to:

- Provisions of section 1001 of title 18, United States Code.
- Up to $10,000 fine per violation.
Information Resources

- NOP Web Site
  www.ams.usda.gov/nop

- National
  atrra.ncat.org ofrf.org omri.org ota.com
  rodaleinstitute.org

- State
  carolinafarmstewards.org www.cefs.ncsu.edu
  chatham.ces.ncsu.edu/growingsmallfarms
  albc-usa.org ncchoices.com
  easterncarolinaorganics.com
  organicgrains.ncsu.edu