



TRANSITION TO ORGANIC COURSE

CHAPTER 6

CERTIFICATION

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CHAPTER 6

CERTIFICATION

INTRODUCTION

So far in this course, we've talked about the basic principles of organic farming systems, soil biology, crop rotations, and pest management. We've outlined organic livestock management requirements and discussed some of the many marketing strategies open to organic producers.

If you've been completing sections of your electronic Organic System Plan (e-OSP) along with each chapter, you've made significant progress toward formulating the management steps and assembling the information you'll need to get certified.

In this chapter, we'll discuss certification in more detail—from choosing a certifying agent, to filling out the forms, to having your farm inspected. We'll review organic regulations concerning materials and inputs, describe recordkeeping systems to facilitate the certification process, and underline the importance of maintaining organic integrity

from planting to post-harvest handling. We'll also talk briefly about certified organic processing rules.

At the end of this chapter, we'll invite you to complete the final sections of your e-OSP. Remember that you can make changes to sections you filled out earlier and print or download your work at any time. If you're planning on doing any value-added processing of farm products for the organic market, you may want to complete the electronic Organic Handling Plan as well.

LESSON 1: CERTIFICATION PROCESS

OVERVIEW

Completing this course will give you a big head start on the certification process, but you'll still have to follow the basic steps required of anyone seeking to produce and sell certified organic products:

1. Obtain and review application documents from one or more certifiers
2. Read the NOP Standards
3. Document land-use practices and create a farm map. Get soil and water tests, if needed.
4. Develop an Organic System Plan (including an Organic Livestock Plan and/or Organic Handling Plan if necessary)
5. Submit your complete application packet, including payment
6. Go through the initial inspection
7. Correct any non-compliances as requested by your certifier

CERTIFIED GROWTH

How many organic farms are there in the United States? The USDA Economic Research Service reported 8,493 certified operations in the United States in 2005. Data suggest there may be an equal or slightly greater number of non-certified organic operations, for a total of perhaps 20,000 organic farms nationwide.



If you haven't yet done so, now is a good time to read through the NOP Standards. You can access the full text of the Standards, along with the Organic Foods Production Act itself (with amendments), by visiting the [NOP webpage](#). To read or print the Standards, choose "View Regulatory Text Only"—this is the heart of the Standards as they relate to production and marketing. It comes to about 60 pages, including lists of approved and prohibited substances.

8. Renew your certification annually by updating your Organic System Plan, paying your fees, and getting re-inspected

In this lesson, we'll review key elements of the NOP Standards, consider the different factors that go into choosing a certification agent, and outline the organic farm inspection process. We'll suggest ways to make your first inspection go smoothly and discuss procedures for complaints and other issues within the certification regulation.

WHAT THE STANDARDS SAY

Let's review some key elements of certified organic production:

1. Organic producers must manage soil fertility through the use of rotations, cover crops, and the application of plant and animal materials or low-solubility natural minerals.
2. These practices must maintain or improve soil organic matter content, manage deficient and excess plant nutrients, and control erosion.
3. Producers must use preventive practices to manage crop pests, weeds, and disease.
4. Certified organic seed and annual planting stock must be used if available.
5. Organic livestock must have access to the outdoors, shade, shelter, exercise areas, fresh air, and direct sunlight as appropriate for the type of animal and the local climate.

6. Organic livestock may not be given antibiotics or hormones and must be fed 100% organically grown feed. Ruminants must have access to pasture offering significant feed value.
7. Organic products (crops and livestock) must be kept separate from non-organic products and handled without the use of prohibited materials.
8. An independent organic inspector will visit the farm annually to review both production operations and recordkeeping systems.

For annual crops or a perennial livestock feed crop such as hay, a period of three years is required for the transition from conventional to organic production, calculated from the date of application of the last prohibited material or practice to the harvest of the first organic crop. NOP Standards make no provision for marketing products as “transitional”—any crops and livestock sold during the transition years must be represented as non-organic.

Land free of prohibited materials for three or more years can often be immediately put into certified organic production upon approval by the certifier. A signed affidavit verifying that there’s been no use of prohibited substances on that specific land is needed from the person responsible for the land’s management during that period.

ORGANIC IS A STANDARD OF PRODUCTION

It’s important to understand that organic is a standard of production, not a guarantee of final product characteristics. For certification purposes, organic products are tested for contaminants only when there is reason to believe contamination has occurred. If tests show contamination in excess of 5% of the Environmental Protection Agency tolerance level for a particular substance (such as a pesticide), the crop cannot be sold as organic.

Buyers of organic products may require testing to satisfy their own purchasing specifications, however. Buyers of food-grade crops may test for GMO contamination, which may occur via use of non-organic seed,

insufficient equipment cleanout, or pollen drift. If contamination is found, the crop does not lose its organic certification, but the buyer may reject it.

Like all laws and regulations, the National Organic Program Standards are subject to change. To remain certified, you’ll need to stay up to date on the regulations. Your certification agency should inform you of any changes.

The Organic System Plan is the central piece of your certification application. It should fully describe your farm’s operational features, from production and marketing to recordkeeping and natural resource conservation.

After the application has been submitted and reviewed, the certification agency may have additional questions. When the application package is complete, an inspector will conduct the on-site inspection and submit a report to the certifying agency. If the report and the application are satisfactory, the agency will issue an organic certificate.

Organic certificates are not dated and technically do not expire, although they can be revoked. This is to avoid situations in which producers can’t conduct business due to delays in inspection and renewal. Instead, each year, you’ll receive an addendum to your certificate listing specific organic crops to be grown and sold over a given period of time. Your Organic Farm Plan or Plan Update should cover all crops or livestock you intend to raise in a given year.

DO YOU REALLY NEED TO GET CERTIFIED?

The USDA National Organic Program regulates use of the term “organic” as a marketing and labeling claim. If you want to sell your agricultural products as organic, then you need to be certified. There is a small-farmer exemption: if your gross agricultural income from products sold as organic is less than \$5,000 a year, you don’t have to get certified, but you still have to follow the organic standards (including the paperwork requirements). You should be able to document that you qualify for the exemption and that your production methods are in keeping with the rules. By statute, the USDA and/or your state organic program can ask to see your records going back

three years.

The under-\$5,000 exemption is meant for direct-to-consumer sales, such as at farmers markets. Exempt producers may not use the USDA Organic seal, cannot describe their products as “certified organic,” and cannot sell their products as organic ingredients to be processed by others. You may process your own produce—say, organic strawberries into strawberry jam—as long as you meet the criteria above.

Note that the exemption does not allow livestock feed to be sold as organic to a farmer feeding certified organic livestock. For example, a certified organic dairy may not purchase non-certified organic hay from a neighbor claiming exemption from certification under the \$5,000-a-year limit.

Some states invite exempt producers to register with the state. This gives state departments of agriculture, policymakers, and organic advocates a more accurate understanding of current farming practices so they can better serve the public.

FARMER-TO-FARMER

“Certification makes all the difference in the world. If you use 90% less pesticides, or you’re almost organic, you don’t get the organic premium. And if you don’t get the premium, you’re never going to make that much money.”

—Ron Rosmann
Harlan, IA

CHOOSING A CERTIFIER

Choosing a certifier may not seem like a big decision compared to your production and marketing choices, but it’s something you should consider carefully. Your certifier serves as your interface with the National Organic Program Standards, which is important because interpretations of the Standards vary somewhat among certifiers. Depending on your market, your certifier can also function as the symbolic link between your farm and your customers. Some buyers may request that you be certified by a specific certification agency.

In general, the closer a certifier is to your farm geographically, the more likely they’ll be easy to work with. But you also need to consider whether the certifier’s areas of expertise match what you’re doing on your farm. If you’re planning to sell soybeans to Japan, you’ll want to work with a certifier that’s familiar with Japan’s organic standards (known as JAS, for Japan Agricultural Standard) and can offer an export certificate for that country.

Certification fees vary depending on the size and complexity of the operation. Fees are generally calculated on a sliding scale or as a percentage of gross sales. Cost-share programs for certification fees are available in some states.

You’re free to switch certifiers at any time, although doing so may involve additional paperwork. Your new certifier will want to know what other agents you’ve been certified with, whether they found any non-compliances and how those non-compliances were addressed. The bottom line is to find somebody who understands your operation and can provide the services you need.

Key factors to consider when choosing a certifier:

1. Fees. Are annual certification fees based on gross sales, or is there a fixed fee structure, or do you pay an additional royalty fee on your organic sales? Is there a separate new-applicant fee? Are inspection costs included? Many certifiers charge additional fees for separate field sites or for export certificates.
2. Areas of expertise. What sizes and types of farms does the certifier primarily handle?

FARMER-TO-FARMER

“Talk to other organic producers to learn about the different certifiers and how they work with producers. Are they available to answer questions when you need them? Are they prompt and organized with paperwork? Ask about all the costs.”

—Jack Erisman
Pana, IL

3. **Market access.** This is particularly important if you think you may be selling your product(s) overseas. European, Japanese and other international organic markets require certification to their own organic standards and/or accreditation of the certifying agent.
4. **Other services offered.** These can include everything from annual conferences to seminars, field days and newsletters. Some certifiers also offer testing and consulting services or ancillary certification programs such as biosecurity assessments and restaurant/retail organic practice standards.
5. **Structure.** Would you prefer to work with a state agency, a large for-profit company, a large nonprofit, or a small nonprofit? Certifiers come in all shapes and sizes.

UNDERSTANDING ORGANIC STANDARDS

Certifying agencies and inspectors are prohibited by law from consulting with applicants for certification about ways to overcome certification barriers. Generally, certifiers prefer to discuss rules in a meeting-type format, telling everyone at the same time; that’s clearly “education” and not consulting. They can also put you in touch with other farmers who do well—saying, in effect, “Here’s how other people have solved the problem.” Some organic certification agencies have developed separate certification and outreach units in order to keep these two functions clearly distinct. Private consultants and

extension agents may also offer advice on issues related to certification.

International organic standards are broadly similar to the NOP Standards but vary in some details. For example, the European Union organic standards (known as EEC 2092/91) prohibit the use of manure from large confinement livestock farms on organic land. Some inputs such as lignin sulfonate, potassium bicarbonate, and alkali-extracted humic acids are allowed under the NOP, but not under Japan’s organic standard.

Complying with as many international standards as possible maximizes your global marketing opportunities. Some U.S.-based certifying agencies can offer export certificates for areas such as the European Union and Japan, usually for an additional fee. The International Federation of Organic Agriculture Movements (IFOAM) is working to harmonize global organic certification programs to facilitate trade.

THE INSPECTION PROCESS

The basic farm inspection consists of an interview, a farm tour, and a report. During the interview, the inspector will review your application, field histories and maps, and the specific production system for which you’re seeking certification. Questions may also be asked about your background and interest in organic farming, as well as your long-term plans for the land. The audit trail consisting of all relevant records will be reviewed. If applicable, the inspector will ask to see your package labels for organic products processed on-farm.

Next, the inspector will tour the farm with you to verify the information listed on your application and look for potential problems. He or she will usually:

- Verify that the crops match the field acreage and field numbers on the application
- Look at soil conditions and review soil management practices
- Check buffers on fields adjacent to non-organically managed areas
- Verify seed and/or planting stock sources

CERTIFIERS

As of August 2007, there were 55 USDA-accredited certifiers in the United States and 40 overseas. At least 17 state departments of agriculture (in Colorado, Idaho, Iowa, Kentucky, Louisiana, Maryland, Mississippi, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oklahoma, Rhode Island, Texas, Utah and Washington) also act as certifying agents. A complete list of USDA-accredited certifiers can be found on the [NOP website](#).

- Tour any greenhouses, evaluating plant health, growing media, and general environmental conditions
- Note weed and pest problems and discuss management strategies
- Note water sources and quality, particularly for washing or processing
- Tour livestock housing and/or pasture to evaluate animal health and living conditions
- Tour farm buildings, equipment, and post-harvest storage areas to note their condition and possible sources of contamination
- Note any signs of prohibited materials use such as burned-down vegetation or empty containers

The inspector will also be looking to see that your overall numbers make sense. If you have 100 acres of corn and your yields average 100 bushels an acre, but you sold 20,000 bushels of corn, that's going to raise some eyebrows. Similarly, if your fields are 100 percent weed-free, you have 1,000 acres, and you say you cultivated only once, it might look a little suspicious.

GETTING THROUGH THE FARM INSPECTION

Try to approach the inspection as an opportunity to review your operation from top to bottom. Provide full and honest answers to the questions asked of you, and ask your own questions in return. Most inspectors have been on dozens if not hundreds of organic farms. Although inspectors are not allowed to tell you how to correct a noncompliance, they can point you toward other sources of information. They can also clarify areas of the regulation that may be confusing. If you don't have many other organic farmers nearby to talk to, it can be refreshing to have someone on your farm who supports and understands your organic farming methods.

If you have a mixed operation (with both organic and non-organic production), the inspector will be particularly interested in seeing what systems you have in place to prevent contamination and to keep organic and

non-organic crops from getting mixed up. Show the inspector where you store your organic as well as your non-organic inputs, where you keep your equipment and how you distinguish organic harvest containers from non-organic harvest containers.

Most inspections take three to five hours, depending on the size and complexity of the operation. First-time inspections often take longer than annual renewals. Inspections involving livestock or processing also generally take longer. The more prepared you are with your paperwork (input labels, sales receipts, etc.), the faster this aspect of the inspection will go. Then you will have more time to spend outside looking at fields and livestock and discussing your farm management system.



INPUT FROM RODALE

It's natural to feel apprehensive about your first organic inspection, but try not to. In my experience, inspectors are smart, good-natured people who are committed to organic farming principles and have a broad familiarity with organic production systems. Their role is to act as neutral observers—to be the eyes and ears of the certification agency and, by extension, of the public.

—Jeff Moyer

TIPS FOR A SMOOTH INSPECTION

- Don't be in a rush. Schedule the inspection at a time when you'll be able to meet with the inspector personally and show them what they need to see.
- Review your letter from the certifying agency in advance. The inspector will want to see that any previously noted non-compliances have been corrected.
- Take another look at your farm map to make sure it's up to date. Add up your field acreages to check for consistency with your total acreage requested for certification.
- Get rid of any inputs or materials you no longer use. Having them on hand will only give the inspector more work.

- Be open—show your weediest fields as well as your cleanest ones. Talk about what you'd like to improve as well as what you're happy with. Inspectors are trained to ask questions in a variety of ways to verify that statements are true. They are also bound by confidentiality agreements (as are certification agencies), so they will not discuss what they have seen or learned about your operation with other farmers or processors.

POST-INSPECTION FOLLOW-UP

At the end of the inspection, the inspector is required to review with you any potential compliance problems he or she has identified, in each case citing the relevant section(s) of the NOP Standards. This is good because it prevents any surprises when you hear back from the agency later on. If there are items you need to follow up on—labels you need to chase down or figures that need to be verified—do so as soon as possible, before some other pressing farming task puts it out of your mind.

VIOLATIONS, COMPLAINTS AND CONSEQUENCES

In addition to defining standards for organic food production and handling, the [Organic Foods Production Act \(OFPA\)](#) spells out detailed procedures for reporting suspected violations, petitioning for a specific material to be reviewed for organic permissibility, filing complaints against certifying agents and appealing a decision to decertify.

The [National Organic Standards Board \(NOSB\)](#) was established as part of the OFPA to act as the public's representative in researching and addressing inconsistencies and ambiguities in, and proposed revisions to, the federal organic regulation. The NOSB has 15 rotating members representing organic farmers, food processors, consumers, scientists, environmentalists, retailers, and certification agencies, and makes official recommendations to USDA National Organic Program staff. Topics addressed by the NOSB include commercial availability of organic seed, pasture requirements for organic livestock, and the use of synthetic methionine in organic poultry

production.

If an accident or emergency results in contamination of an organic crop or field, generally the worst that can happen is that you'll lose the ability to sell the crop as organic and/or you may have to start again with one or more fields at the beginning of the 36-month transition period. You or an inspector can take soil, tissue, or product samples to be tested for contamination. This is in your best interest, since there may be less contamination than you think.



Any operation that knowingly sells or labels a product as "organic" without following the NOP Standards may be subject to a civil penalty of up to \$10,000 per violation. A certified operation or any person in charge of an operation for which certification has been revoked becomes ineligible for recertification for five years.

Any person who believes a violation of the Standards has occurred or is about to occur may file a complaint with the NOP or with any state or independent certifying agency. For more information see the [NOP website](#) or call NOP Compliance at 202-720-8311.

SUMMARY

Use of the word "organic" as a food marketing claim has been regulated by the U.S. Department of Agriculture's National Organic Program since October 2002. Organic is a standard of production, not a guarantee of final product characteristics. The NOP Standards stipulate that crops be grown without synthetic fertilizers, that natural resources be protected, and that preventive measures be used to promote crop and livestock health. Organic standards in place in other countries vary in some details, but are broadly similar to the U.S. program.

Organic status is verified through a third-party certification process. Individual certification agencies receive accreditation from the USDA to certify producers, processors, and handlers to the

NOP Standards. There are currently nearly 100 USDA-accredited certification agencies operating worldwide. Certification agencies contract with independent organic inspectors to conduct scheduled annual inspections for all certified farms and processing facilities.

Choose your certification agency carefully, and get input from other organic farmers in your area. Your best approach to the certification and inspection process is to be completely open about your farming practices and recordkeeping systems. Good recordkeeping makes the difference between a certified and a non-certified organic producer.

In the next lesson, we'll talk in more detail about allowed and prohibited inputs for organic production.

LESSON 2: MATERIALS AND INPUTS

OVERVIEW

Producers new to organic production frequently have questions about allowable materials. The NOP Standards do not explicitly list all materials permitted for use in organic systems. Instead, they provide general guidelines as well as specific prohibitions for certain types of inputs, such as genetically modified organisms.

In earlier sections of this course, we've talked in passing about various organic inputs and emphasized that the Standards require an integrated approach to fertility and pest management issues. As an organic farmer, you should try to avoid an "input substitution" mindset toward transitioning. You're also generally better off keeping the use of purchased inputs to a minimum. But the use of some organic inputs can be essential to commercial viability.

In this lesson, we'll review the rules governing input use, list some commonly used materials, and caution you about some common material pitfalls to avoid.

By the end of this lesson you should:

- Understand what the [National List](#) is and how it regulates the use of synthetic and natural materials
- Recognize commonly used fertility and pest management inputs

- Understand organic regulations regarding the use of composts and manures
- Be able to list the three types of "categorically prohibited" inputs under the NOP Standards



Jeff Moyer, Executive Director of Rodale Institute

Photo Credit: Rodale Institute

WHAT THE STANDARDS SAY ABOUT MATERIALS AND INPUTS

All input materials used in organic production must comply with the NOP's National List of Allowed and Prohibited Substances, [§205.600-606](#) of the Standards.

The basic principle underlying the National List is this: natural materials are considered innocent unless proven guilty; synthetic materials are considered guilty unless proven innocent.

The National List is thus a list of exceptions, itemizing prohibited natural materials (the Standards refer to these as "nonsynthetic") and allowed synthetics. All synthetic substances must appear on the National List in order to be used in production. A wide variety of natural substances commonly used in organic farming do not appear on the list because they are understood to be nonsynthetic and are thus allowed.

Because the National List is not a comprehensive list of materials for use in organic crop and livestock systems, it is sometimes

referred to as an “open” list. By contrast, some countries’ organic programs maintain “closed positive lists,” meaning everything allowed is listed.

Note too that the National List is actually made up of several lists, with allowed synthetics and prohibited naturals itemized separately for crop production (§205.601-602), livestock production (§205.603-604), and processed food (§205.605-606).

[Section 205.607](#) states that “any person may petition the National Organic Standards Board” (NOSB) to have a substance evaluated for inclusion or deletion from the list. Items on the National List are also required to be reviewed by the National Organic Standards Board every five years.

All inputs used or intended for use must be listed in your Organic System Plan, including the product, source, and location used. The certification agent will review the plan and verify that all inputs and practices comply.

IS IT ALLOWED?

The single best source of information on organic materials and brand-name products is the nonprofit [Organic Materials Review Institute](#). Not all approved brand-name products are on the OMRI list, but you are more assured of an item’s acceptability when it is present. Your certifier can also answer questions about what materials you can use. Always ask your certifier before using any new or questionable input.

THE NATIONAL LIST—SYNTHETICS

The NOP Standards define synthetic as “A substance that is formulated or manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources, except that such term shall not apply to substances created by naturally occurring biological processes.”

Synthetic substances permitted for crop fertility include fish products stabilized with acids, seaweed products extracted with potassium hydroxide, humic acids that are alkali-extracted, lignin sulfonate used as a binding agent, and

synthetic micronutrients formulated without chlorides or nitrates. Synthetic micronutrients are restricted to use when a soil deficiency is documented by testing.

Most synthetic fertilizers are prohibited. This includes ammonium nitrate, anhydrous ammonia, ammonium sulfate, urea, superphosphate, triple phosphate, calcium oxide, and calcium hydroxide. Calcium chloride (derived from the brine production process) is permitted only for foliar sprays to treat disorders related to calcium uptake, such as blossom-end rot in tomatoes.

Minor synthetic ingredients added to formulations (such as, the plastic polymers in seed pellets) are also prohibited unless included on the National List. This includes preservatives in fish or algae products, as well as chelating agents and binders in fertilizers, unless they are derived from natural sources.

If you wish to purchase a soil amendment, you will need documentation from the supplier that it is a mined product and has not been heated or chemically changed in any way. For example, mined rock phosphate, potassium sulfate from a mined source, and crushed lime direct from a quarry are all acceptable.

All active and inert ingredients that you use must be acceptable. To verify all inerts are allowed, you either need to get permission to use the specific brand name product from your certification agency, or look to the OMRI list. Inerts are often not identified on the product label since suppliers consider this information proprietary.

FARMER-TO-FARMER

“In the Rodale Institute gardens, we use a kelp-and-fish product called Kelpak, made by processing freshly harvested kelp at low temperatures. Naturally occurring enzymes are isolated from the kelp and help break it down into a rich brew. The active compounds stimulate the growth and productivity of most crops.”

—Eileen Weinsteiger
former Rodale Institute master gardener

THE NATIONAL LIST— NONSYNTHETICS

The NOP Standards define nonsynthetic, or natural, as “A substance that is derived from mineral, plant, or animal matter and does not undergo a synthetic process as defined in section 6502(21) of the [Organic Foods Production] Act.”

An example of a natural substance is pyrethrum, which is extracted from chrysanthemum flowers using acids or alcohol solvents that do not change the chemical structure of the active pyrethrum compound. As long as the solvents are not present in the final product, the compound is considered to be nonsynthetic.

Combustion of natural minerals at high temperatures can cause a synthetic reaction, as in the case of calcium oxide (burnt lime) and calcium hydroxide (quicklime). These forms of lime are considered to be synthetic and are prohibited because high temperatures were used to change the molecular structures of the compounds.

Natural mined substances are allowed and include commonly used minerals such as limestone, gypsum, and potassium sulfate. Other natural substances commonly used include wood ashes, bonemeal, blood meal, microbial inoculants, and plant products such as non-GE corn gluten meal, alfalfa meal, and soy meal.

Acetic acid, lactic acid, and citric acid derived from fermented sources are permitted and are used as pH adjusters. Tocopherols (vitamin

E from plant oils) may be used as antioxidants. Yucca is a permitted natural plant extract used as an adjuvant for spray materials.

CATEGORICALLY PROHIBITED INPUTS AND METHODS

In addition to the guidelines provided by the National List, three types of inputs are specifically excluded from organic production in any form. These are:

- Genetically modified organisms (GMOs)
- Irradiation
- Sewage sludge

The NOP Standards refer to genetic modification techniques as “excluded methods.” Such methods and any products derived from them—with the exception of GMO vaccines if present on the National List—are prohibited for use in organic production.

Products derived from microorganisms—such as microbial seed inoculants, microbial pest-control products and microorganisms fed to livestock for nutritional purposes—must come from non-GM strains. Products made from plants, such as corn gluten meal (used as a weed suppressant) and soy meal (used as a fertilizer), generally must also be made from non-GM plant materials, although this point has been subject to varied interpretation by some certifiers. Check with your certifier for clarification.

Irradiation (or ionizing radiation) is mostly a food processing issue, but sometimes farm inputs like peat moss are sterilized using irradiation, so these types of inputs should be avoided.

Sewage sludge is prohibited because of concerns about heavy metals and other types of contamination in materials derived from sewage waste. Even if the supplier can prove the absence of heavy metals in its specific product, the use of sludge is very clearly prohibited in organic systems.

GLOSSARY TERMS

Excluded methods: A variety of methods used to genetically modify organisms or influence their growth and development by means that are not possible under natural conditions or processes and are not considered compatible with organic production. Such methods include cell fusion, microencapsulation and macroencapsulation, and recombinant DNA technology (including gene deletion, gene doubling, introducing a foreign gene, and changing the positions of genes when achieved by recombinant DNA technology). Such methods do not include the use of traditional breeding, conjugation, fermentation, hybridization, in vitro fertilization, or tissue culture. (*NOP definition*)



Some bagged fertilizers derived from sewage sludge are labeled “organic,” meaning carbon-based. This does NOT mean they are acceptable for certified organic production.

COMMONLY USED FERTILITY INPUTS

Soil amendments used on organic farms vary widely by region and system type. Some of the best organic inputs are inexpensive, locally available carbon- and nitrogen-based materials such as dairy manure, fish processing waste, seaweed, wood chips, etc.

Sodium nitrate, also known as Chilean nitrate, is a natural (nonsynthetic) fertility input whose use has been somewhat controversial due to its high solubility and salt content. NOP Standards restrict use of Chilean nitrate to “no more than 20% of the crop’s total nitrogen requirement” [[§205.602\(g\)](#)]. Some growers find it useful for early-season nitrogen needs.

If you use sodium nitrate, you must provide clear documentation showing the crop’s total nitrogen requirement and exactly how much of that was provided by the sodium nitrate. If sodium nitrate is present in a fertilizer blend, information must be obtained from the supplier as to how much of the total nitrogen in the blend is derived from the sodium nitrate. If more than 20% of the nitrogen needs of the crop are provided by sodium nitrate, you could lose certification for three years on that land.



Check and double-check the history of any amendments you import to your farm. Hay mulch contaminated by herbicide residue severely damaged crops on Rachel Bynum and Eric Plaksin’s Waterpenny Farm in June 2007. They estimated their losses at 12,000 plants with a harvest worth of \$80,000.

MANURES AND COMPOSTS

As we saw in the Soils chapter, the NOP Standards include strict requirements governing the use of raw and composted animal manures. Raw manure and other animal and plant materials must be handled to meet rule requirements in order to prevent water, soil, and crop contamination. Manure does not have to be from organic sources, but it should be known to be free of any prohibited materials.

Basic documentation that may be required

on manure from non-organic sources includes documentation that no herbicides or insecticides were used on solid manure piles and no synthetic additives were put into manure lagoons. If the manure comes from a broiler operation, documentation should show that the chickens were not fed arsenic, since it will not break down, and is prohibited in organic systems. There may also be some question concerning bedding used in a non-organic operation, especially if there are wood shavings that are not from raw wood and may contain synthetic treatments, paints, or glues.

Raw animal manure must either be composted according to specific guidelines or, in the case of human food crops, be incorporated into the soil a minimum of 120 days prior to harvest for crops whose edible portion is in close contact with the soil (like root crops and greens), or 90 days prior to harvest for other crops whose edible portion is not in contact with soil (like sweet corn or shell peas).

If animal manure is used in a composted product, the compost must be managed so that it reaches 131° to 170°F (55 to 75°C) and stays in that range for 15 days, with five turnings of the pile during that period of heating. In addition, the carbon-to-nitrogen ratio of the compost ingredients must fall between 25:1 and 40:1. Plant materials composted without animal manures or applied as mulch are allowed without restriction.



As of July 2007, the NOP allows processed manures to be applied like compost (no interval between application and harvest) if documentation can show that the processing of all portions of the product, without causing combustion, reached a temperature of 150°F for one hour or 165°F and dried to a maximum moisture content of 12%. An equivalent dehydration process may be used if testing can show that the finished product contains less than 1,000 MPN (most probable number) of fecal coliform per gram of processed manure sampled, and less than 3 MPN of *Salmonella* per 4 grams sampled.

COMMONLY USED PEST MANAGEMENT MATERIALS

Farmers faced with pest, weed, and disease problems must demonstrate the use of cultural methods (use of resistant varieties, rotations, sanitation, beneficial insects, traps, mulching, mowing, etc.) before applying a pest control substance.

Natural substances frequently used for organic pest control include pyrethrum, neem extracts, *Bacillus thuringiensis*, *Beauveria bassiana*, spinosad, limonene, and other plant extracts, such as garlic oil and hot pepper spray.

Permitted synthetic substances on the National List for pest management include soaps, narrow-range oils (also called dormant or summer oils), sticky traps and barriers, copper products, hydrogen peroxide, elemental sulfur, and pheromones.

ACTIVE VS. INERT INGREDIENTS

You should be aware that many packaged pest management materials contain both active and inactive (inert) ingredients. Inert ingredients typically include adjuvants, surfactants, dispersants, and diluents used to help the product adhere to the crop, apply more uniformly, or last longer on the plant surface.

Pesticides used in organic crop production must have active ingredients that are either natural or included on the National List. In addition, any inert ingredients must be classified as “List 4 Inerts” by the United States Environmental Protection Agency. List 4 Inerts are defined by the EPA as inert ingredients “of minimal concern” or, in other words, of low toxicity.

United States pesticide regulations do not require manufacturers to disclose all inert ingredients in proprietary products. This creates a challenge for organic farmers and certifiers, who must verify that all product ingredients, including all inerts, are permitted in organic systems. If you cannot get the information you need from the manufacturer, it's best to be cautious and not use it, or you may jeopardize your organic certification status. Ignorance of ingredients is no excuse if the product is not acceptable.

The EPA has created a voluntary labeling program to help identify products meeting NOP requirements. The phrase “For Organic Production” with a three-leaf logo means the product met EPA review for organic use. But because the program is voluntary, not all products that are compliant with organic rules will carry the label.

The EPA is currently in the process of changing its management of the inert list, and the NOP and NOSB are seeking to determine how best to verify that only inerts of minimal concern are present in approved-for-organic pesticide products. Again, check with your certification agency before using any products on your transitioning or certified organic land.



Photo Credit: Rodale Institute

Companies are not required to disclose all inert ingredients in proprietary products, but prohibited inerts can still jeopardize your certification.

SUMMARY

Materials and inputs for use in certified organic systems are governed by the National List of Allowed and Prohibited Substances. The National List is an “open” list, itemizing allowed synthetic and prohibited nonsynthetic inputs; it is not a comprehensive list of all materials permitted for use in organic systems. Allowed use of materials is specific to organic crop, livestock,

and food processing applications.

While a variety of generic and brand-name materials are in common use by organic producers, brand-name products can be difficult to classify, since they may contain proprietary, inactive ingredients that may or may not be allowed. The Organic Materials Review Institute (OMRI) and your certifier are your best sources for information about permissibility of a particular product. Always check with your certifier—don't risk three years of transition time.

The National Organic Program's "big three" of prohibited materials and methods are genetically modified organisms, sewage sludge, and irradiation. Bagged fertilizers derived from sewage sludge are available for purchase in many farm and garden centers and may not always be clearly labeled as such.

For more information about specific fertility inputs, pest management materials and other products, consult the Resources section at the end of this chapter. In the next lesson, we'll discuss recordkeeping systems and strategies for organic producers.

LESSON 3: RECORDKEEPING

OVERVIEW

For many farmers, recordkeeping is among the most daunting aspects of certified organic production. But most people find that the reality of organic recordkeeping is not all that bad—and, in fact, has a number of benefits. Getting things on paper can help you look at your operation from a new perspective. Even just making a farm map—one of the first requirements for certification—can be instructive.

Some of the records and documents required for certification, you may already be keeping for other reasons, such as mandatory nutrient management rules or worker safety regulations. Knowing how much manure or compost you're spreading on your fields is required for organic certification, but it's a good thing to know anyway.

Good recordkeeping is also good business. Keeping inventory logs of Rodale Institute grain bins and other storage areas, for instance, also helps with marketing. If somebody calls to say

they'd like to buy 100 bales of organic alfalfa hay, we can look at one form and give them an answer.

Since organic farming is based on management rather than inputs, having records that you can use as a historical reference as to what works well, what could be improved and what should be changed is invaluable in both developing and managing a lucrative operation. Long-term, successful organic farmers all have at least one thing in common: a good recordkeeping system that they refer to regularly when making decisions.

FARMER-TO-FARMER

"Certification takes less time and paperwork today than it did before the creation of the National Organic Program. Because of the cost-share program, it's more economical as well."

—Anne and Eric Nordell
Trout Run, PA

"Over the years, I've learned that documenting my practices enables me to evaluate my operation based on reality—not memory. For me, farming is a continuous learning process, and the creation and maintenance of an organic farm plan is an integral part of that."

—Rosie Koenig,
Gainesville, FL

WHAT THE STANDARDS SAY ABOUT RECORDKEEPING

[Section 205.103](#) of the NOP Standards states that certified operations "must maintain records on the production, harvesting, and handling" of all products to be sold or represented as organic. Records must:

- Be tailored to the particular operation
- Fully disclose all activities and transactions
- Be readily understood, auditable, and sufficient to demonstrate compliance with the Standards
- Be kept on file for at least five years

Beyond that, there are no specific rules about

how your recordkeeping system has to be set up.

There are, however, some basic systems and forms that organic farmers and farmers' organizations have developed that seem to work well for certification. The array of different types of records may seem overwhelming at first, but trust me—it's not as bad as it looks.



It's a good idea to request application materials at least six months before you hope to be certified. Many certifiers make some or all of the necessary forms and instruction materials available on their websites; some charge a fee of \$25 or so to cover photocopying and postage costs for a full application packet. Sit down and read or at least skim through all the materials before you start filling out the application.

CREATING A FARM MAP

A farm map is not explicitly required by the NOP Standards as part of the Organic System Plan, but it's widely accepted as the easiest and best way to help inspectors and certifiers understand your operation and in particular to show that border and buffer requirements are being met.

Some people have artistic talent and create beautiful farm maps showing detailed aspects of their entire operation. This is great, but it's not required. The key is to indicate all of your fields, assign each a unique number and have these numbers correspond to those listed on your Field History sheets (part of the Organic Farm Plan). You should also indicate adjoining land uses and buffer zones. Vegetable growers may want to assign bed numbers within fields to indicate field operations at a finer level. Storage units, buildings, roadways, water sources, greenhouses, and conservation areas such as wetlands or woodlots are other essential items to identify.

Many farmers use aerial photo-maps provided by their local Farm Services Agency office. If the detail on the photo is too distracting, try tracing the major features onto a clean sheet of paper and using that to create your farm map template. Making multiple blank copies of this

template to fill out each year with annual rotations creates an invaluable graphic record for your farm's files.

FREQUENTLY USED FORMS

Rodale Institute recordkeeping categories

Categories	Types
Activity Records	<ul style="list-style-type: none"> • Field Activity Log • Activity Calendar • Field Maps
Input Records	<ul style="list-style-type: none"> • General/Whole Farm <ul style="list-style-type: none"> ▪ Purchase and Receiving Log ▪ Input Application Record • Soil Management and Fertility <ul style="list-style-type: none"> ▪ Compost Production Record ▪ Manure Application Record ▪ Other Soil Amendments Used ▪ Soil Tests • Seed and Planting Stock <ul style="list-style-type: none"> ▪ Seed Sources ▪ Organic Seed Search ▪ Inoculants and Seed Coating Log • Crop Rotation Plan/Record • Pest Management Activities and Materials Use Record
Harvest, Storage, and Sales Records	<ul style="list-style-type: none"> • Bin Logs • Sales Invoices
Monitoring Logs	<ul style="list-style-type: none"> • Water Log • Pest/Weed/Disease Monitoring Log
Commingling and Contamination Prevention	<ul style="list-style-type: none"> • Equipment Cleaning Log • Buffer Crop Disposition Record

Depending on your operation, other records you may need to maintain include:

- Clean-transport affidavits
- Adjoining land-use verifications
- Conventional farming records

GETTING ORGANIZED

It's important to develop a recordkeeping system that fits your work style and personality—that way, you'll be more likely to follow through and keep it up-to-date. Some use ring binders for keeping paperwork under control; the binder can be divided into sections for purchases (things brought onto the farm), field activity records (things happening on the farm), and sales (things leaving the farm). Small bits of paper like receipts or labels can be kept in plastic sleeves with three-hole tabs.

Other people like accordion files. An aluminum clipboard with an internal box for papers can be handy for taking records out into the field. Carrying a pocket-size notepad at all times is another good habit to develop. Scrawled field notes can be transferred to more permanent records at the end of the day or the end of the week. Even a calendar hanging at the door or where you wash your hands when you come in from chores can be used to track your activities.

One basic decision is whether to keep your records by hand or on a computer. At the Institute farm we use both computer and handwritten systems. Many of the forms we use outside were created as computer spreadsheets, making it easy to write in the relevant information and then transfer it to the computer later on.

RECORDKEEPING RULES OF THUMB

- Save all your receipts and input labels. If a product has no removable label, save at least one empty bottle or bag to show the inspector.
- Make a place for your receipts and records and develop a habit of putting them there.
- Document your efforts to obtain organic seed. You should be able to show that you tried three separate seed

houses to find the variety you wanted in organic form. Make a copy of your seed order, and keep a phone log including the date, the name of the person you talked to, and the outcome of the conversation. Save seed catalogs—most seed companies serving the organic market include policy statements regarding certified organic and non-GM seeds. You can ask your seed supplier to write on the invoice that all seeds purchased are non-GM and untreated, or that the supplier did not have organic seed available in a particular variety, if that is the case.

- Document cleanout of any combines, trucks, bins, and augers used for both organic and non-organic product. Cleanout logs are often the only evidence you can show that proper procedures were followed to prevent cross-contamination. If you do the cleaning, you can note this on your activity logs or calendar.
- Document strategies to prevent GMO contamination. These might include offsetting crop flowering periods with non-organic neighbors or keeping cleanout logs for trucks and equipment.
- Find some filing cabinets. Certified operators are required under the NOP to keep organic production, harvesting, and handling records for a minimum of five years.

TRACEABILITY AND THE AUDIT TRAIL

Traceability is fundamental to the idea of organic certification and is becoming increasingly important in all forms of agricultural production. The “certified organic” label is a promise to the consumer that the labeled item has been produced, processed and handled in accordance with organic standards, including safeguards to make sure it hasn't gotten mixed up along the way with non-organic product.

The audit trail is the chain of paperwork backing up this promise. A solid audit trail makes it possible to trace an individual item—a package of pork chops, a bag of frozen peas, a jar of apple sauce—from the market shelf back

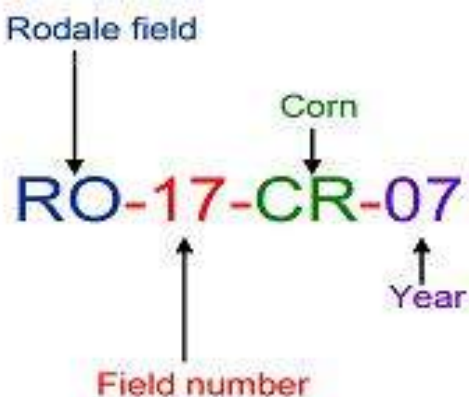
to the field it came from. The organic premium can be understood as payment for this “extra” recordkeeping.

The NOP Standards define an audit trail as documentation “sufficient to determine the source, transfer of ownership, and transportation of any organic agricultural product.” Some items have long audit trails; others have short ones. Each time an organic product changes hands from farmer to processor to distributor to retailer, paperwork testifying to its organic status must accompany it.

CREATING LOT NUMBERS

Lot numbers are a key part of the audit trail. A lot number is a unique code of numbers and/or letters that stand for specific pieces of information connected to a specific batch of product. Information that a lot number should contain includes the type of crop, crop year, and either field or storage unit numbers. Make your lot numbering system as simple as possible while still including all the necessary information.

The lot numbering system we’ve developed at the Rodale Institute farm reflects the fact that some of our acreage is rented to a neighbor, John Brubaker. Because we have more bin space than he does, we store and ship out some of the organic grain he produces together with our own. The first element of our lot numbers is an “RO” for a Rodale field or a “BU” for a Brubaker field. Next comes the field number (1 through 132), then the type of crop (“CR” for corn, “SB” for soybeans, “RY” for rye, etc.), then the year (“07” for 2007). “RO-17-CR-07,” then, is the corn crop from Rodale field #17 harvested in 2007. “BU-04-OT-06” is the oat crop from Brubaker field #4 in 2006.



Bin logs record the lots as they go into the bins after harvest. Then, as we sell crops out of the bins, each shipment is assigned a number indicating the bin it came out of, the year, and the shipment order in the season. Since we know which crops went into which bins when, we can trace a particular shipment back to the fields those crops came from.

Additional care is necessary in our joint Rodale-Brubaker operations because John also farms some land non-organically, including a few fields he rents from other neighbors. To prevent mix-ups, he never grows the same crop handled in the same way both organically and non-organically in the same year. With corn, for instance, he typically cuts all his non-organic corn for silage, saving only his organic corn for grain.

RECORDKEEPING FOR ORGANIC LIVESTOCK PRODUCTION

Organic livestock production generally entails more recordkeeping than crop production. Recordkeeping systems for organic livestock need to be detailed enough to track individual animals (flocks in the case of poultry, hives in the case of bees) from birth to sale or slaughter.

For poultry, you’ll need to maintain flock health records including date and number of mortalities, a running flock inventory, records to document outdoor access, and slaughter and/or sales records. For laying hens, you should keep monthly egg packing records as well as monthly egg sales summaries. Many farmers find that the “best by” or “laid on” date works well as a lot number for organic eggs. For meat birds, a lot number can be made up of your farm’s initials, the flock number, the year, and the slaughter date.

Systems for larger animal should include purchase records (with documentation of organic status, if applicable), breeding records, dates on pasture, and detailed health records including all treatments, vaccinations, procedures, and medicines. Organic dairy producers should record somatic cell and standard plate counts as well as milk sales records.

All organic livestock must be fed 100% organic feed or forage. Mineral feed additives are not classified as agricultural products and

thus cannot be certified organic; these can be fed without restriction so long as they are in compliance with the National List. Any agricultural ingredients such as soy oil or wheat middlings in a mineral supplement must be certified organic.

Bedding materials do not need to be certified organic if they are not normally eaten by the livestock. If they are eaten (like cornstalks for cattle, say), then they must be certified. Sawdust must be free of prohibited materials (no sawdust from chemically treated wood).

Organic livestock rules are covered in more detail in the Livestock chapter.

SUMMARY

Good recordkeeping is essential to the certified organic system. Documentation of production, processing and handling methods from the field to the final retail product underpins the “certified organic” label and the price premium that consumers pay for certified organic items.

Forms and activity logs suitable for organic recordkeeping purposes have been developed by groups like [ATTRA](#) and may also be available through your certifier. Don’t be discouraged when you first start looking through the forms. You probably won’t need to use all of them, and it’s perfectly appropriate to tailor them to suit your particular operation.

Most successful organic producers find that once they get their recordkeeping system set up, it’s not that difficult to maintain. More important, it can provide the basis for sound financial management of your operation and help you evaluate and improve your systems over time.

LESSON 4: MAINTAINING ORGANIC

INTEGRITY

OVERVIEW

For most of this course, we’ve focused on organic production methods, starting with the soil and moving on to crops and animals. But organic certification is equally concerned with what happens to crops and animal products after



Photo Credit: Rodale Institute

Jeff Moyer, Executive Director of Rodale Institute, checking the grain bin

harvest and even after they leave the farm.

In terms of maintaining quality, organic crop storage and handling is similar in many ways to conventional crop storage and handling. All of the basic rules still apply: keep it cool, keep it clean, and keep it dry or damp, according to the needs of the crop in question.

What’s different about handling and storing organic crops comes down to three fundamental issues:

- Many synthetic fumigants and disinfectants allowed for non-organic production are prohibited for organic production.
- Organic crops are frequently grown for high-value markets (like food-grade soybeans for tofu or vegetables for high-end restaurants), so quality is of primary importance.
- NOP Standards require detailed recordkeeping and established procedures for keeping organic crops separate from non-organic crops.

Maintaining high quality without resorting to chemicals requires familiarity with the optimal storage requirements of different crops, attention

to detail and a generous helping of common sense. Maintaining organic integrity calls for careful recordkeeping and attention to organic handling and processing regulations. It also requires open communication with neighbors, public utility workers, truckers, and other individuals who can affect the organic status of your land and its products.

WHAT THE STANDARDS SAY ABOUT ORGANIC INTEGRITY

There are two sections of the NOP Standards that relate specifically to the maintenance of organic integrity. [§205.272](#) states that handlers of organic foods and other products “must implement measures necessary to prevent the commingling of organic and nonorganic products and protect organic products from contact with prohibited substances.”

It goes on to prohibit:

- Packaging materials, storage containers, or bins containing synthetic fungicides, preservatives, or fumigants; and
- “The use or reuse of any bag or container that has been in contact” with any prohibited material, unless “such reusable bag or container has been thoroughly cleaned and poses no risk” of contamination.

The “Facility pest management practice standard” ([§205.271](#)) stipulates that pest control for organic handling and storage areas must begin with:

- Physical exclusion (such as closing up cracks to keep out mice),
- Removal of nesting areas (such as mowing around bins), and
- Environmental management (such as reducing temperatures to eliminate insects).

Physical controls such as traps or noisemakers are also permitted, as are lures and repellents consistent with the National List. Vitamin D3, for instance, is allowed as a rat poison.

If these methods aren’t enough (or if

federal, state, or local regulations require use of a particular control measure), materials not on the National List may be used along with an approved method for preventing contamination of organic product, contingent upon permission of the certifying agent.

BORDERS AND BUFFERS

Properly maintained buffer zones along the perimeter of an organic production area are another cornerstone of organic integrity. The NOP Standards don’t specify a required buffer width (as did some earlier organic standards); instead, evaluation is made on a case-by-case basis as to the adequacy of the buffer to prevent contamination of organic fields by prohibited materials applied to adjacent non-organic fields. If you have a tight hedgerow of trees along your border, your buffer zone could be 15 feet wide; if your organic land is downhill with black dirt between you and the non-organic land, then you may need 60 feet of buffer. If your neighbor doesn’t apply prohibited materials and is willing to sign an affidavit to that effect, you may not need a buffer at all.

Buffer zones can be made up of grassy areas, tree lines, hedgerows, or just a designated margin of a crop field. Most buffer areas primarily serve to stop airborne drift of pesticides or other prohibited materials, but water runoff from adjacent non-organic fields can also create contamination issues.

Crops harvested from within buffer zones must be kept separate from organic crops and sold as conventional, not organic. If any of your buffer areas are cropped, your Organic System Plan will need to include information about how you harvest and sell the buffer-zone crop.

Think about road frontage and utility lines as well as neighbors. State, county, and local road crews and utility companies have various rules concerning use or nonuse of herbicides and insecticides. Some road crews are willing to mow rather than use synthetic herbicides; others may require you to do the mowing. All agreements should clearly document the rights and responsibilities of both parties and be signed and dated. If the road crew sprays without

notification, then the organic farmer may be eligible for damages, since the agreement was broken.

Remember, communication is key—prevention of contamination is better than dealing with liability claims or losing your organic certification.

MIXED OPERATIONS

Farms producing both organic and non-organic crops (sometimes referred to as “mixed operations”) have to be particularly careful about maintaining organic integrity. Some people make a distinction between “parallel operations,” or farms producing the same crop both organically and non-organically, and “split operations,” or farms producing some crops organically and other crops non-organically. Some certifiers disallow parallel production altogether (as do some international organic standards, such as the European regulation).

The NOP Standards define “commingling” as “physical contact between unpackaged organically produced and non-organically produced agricultural products during production, processing, transportation, storage, or handling, other than during the manufacture of a multi-ingredient product containing both types of ingredients.” Contamination is contact of organic products with prohibited substances such as pesticides, heavy metals, or genetically modified organisms.

All organic farms need to protect against commingling and contamination, but mixed operations must be doubly vigilant. Any and all tillage equipment, harvest containers, combines, etc., need to be either permanently dedicated to the organic side of the business or thoroughly cleaned between nonorganic and organic use. The same applies for the equipment of any custom operators you may use.

Equipment used for the application of prohibited materials, such as spray rigs, should not be mixed-use. Sprayers used for the application of organic-approved materials (such as fish fertilizers or compost teas) should be purchased new, not secondhand.



Photo Credit: Rodale Institute

If equipment can't be dedicated to organic production, it must be thoroughly cleaned between organic and non-organic work.

ORGANIC GRAIN STORAGE

For some farmers, crop storage and handling take a backseat to the main business of production. As an organic farmer, however, that attitude is not one you can afford. Remember, the organic market is a premium market, and to receive a premium price, you need to supply a premium product. This means doing everything you can to make sure your high-value crops stay that way from the field to the final sale.

Organic grain storage is different from non-organic grain storage in part because of differences in how the organic grain market works. Many non-organic farmers store grain (either on-farm or off-farm) in hopes of selling it later at a better price. Organic farmers are more likely to hold grain short-term until trucking can be arranged (since many local elevators can't take field-run organic grains) or to store grain to supply contracts to other farmers or small processors with limited storage facilities.

If you're in an area with a large number of organic farmers, you may be lucky enough to have an elevator or mill nearby that's certified as an organic handler. If not, you may find you need to increase your on-farm grain storage capacity as

part of your transition to organic.

If you do store your grain on-farm, the same rules that apply to organic handlers apply to you as well. This includes the development and use of a lot numbering system (so individual units of sale can be traced back to where and when they were harvested), not using prohibited materials in or around storage and handling areas, and keeping records of all activities and materials.

ORGANIC GRAIN HANDLING

Organic grain handling requires close attention to details like weed management around bins, keeping bins rodent-, water- and weatherproof, and sweeping and vacuuming out bins in between lots. If you get those bins as clean as you can, down to the last little piles of grain dust, you'll be more likely to eliminate insect eggs and other tiny potential contaminants that could lead to headaches later on.

Climate and season are two critical storage factors: grain is much easier to store in cold weather than in warm weather and in dry climates than in humid climates, since most insects and molds spread faster in warm and humid conditions.

Another strategy for preventing pest problems in storage is to rotate crops (e.g., using a bin for corn one year and for soybeans the next). Some farmers use diatomaceous earth (DE) products to limit insect populations in stored grain. Sprinkling DE on the floor of an aerated bin and running the fan on low while filling helps incorporate the DE through the grain; adding some periodically as you're filling the bin also works.

When shipping organic grains, obtain a signed statement from the truck driver verifying that the truck is clean before loading to show your inspector. Climb up and view the truck to make sure this statement is true. If the truck opens the bottom chute at the buyer's facility and a few handfuls of corn come out before your organic food-grade soybeans, you have just lost your significant organic premium.

Ultimately, it is the responsibility of the farmer to make sure the truck is clean, since it is the farmer's responsibility to protect organic

integrity until the crop has left the farm. If the trucker says he or she carried an organic crop immediately prior to yours, have him or her sign a document to that effect.

FARMER-TO-FARMER

Klaas and Mary-Howell Martens farm and run a mill in upstate NY. Here are some tips they wish all farmers would follow:

1. Prepare the destination of the grain before you start harvesting. If you're delivering the grain to the buyer directly out of the field, be sure you let them know when it's coming before you harvest and give them an accurate, honest assessment of grain moisture, cleanliness and condition.
2. Get a good moisture meter and calibrate it carefully. Learn how to read and interpret samples accurately for percentage of moisture with appropriate temperature calibrations. Check moisture often as you harvest.
3. Clean before drying. If the grain is above 2% foreign matter, run it through a rotary cleaner before drying and/or storing.

ORGANIC PRODUCE STORAGE AND HANDLING

For fruits and vegetables, as for grains, organic rules restrict the use of synthetic fungicides and other post-harvest treatments. This means that extra care has to go into good sanitation practices and the maintenance of optimal storage conditions for your crops. Whether you're selling to wholesalers, to restaurants, or directly to consumers, your customers are going to expect consistent, top-quality produce that looks great and keeps well until they expect to use it.

The major determinants of storage survival for fruits and vegetables are temperature and humidity. Fruits and vegetables can be roughly divided into four classes in terms of preferred storage conditions: cold and dry (garlic, onions), cold and humid (apples, berries, beets, carrots), cool and dry (winter squash), and cool and humid (citrus, potatoes). It's not always easy for smaller

farms to maintain that many different storage areas, but good storage facilities can be a crucial investment for reaching high-value markets.

Post-harvest quality can also be affected by variety selection, soil conditions and the care with which crops are handled during harvest and post-harvest operations.

Again, as for grains, produce harvest and handling equipment, such as boxes, bins, and bags has to be new, free of prohibited materials and dedicated to organic production or thoroughly cleaned with approved materials prior to entering the organic system. Wagons or bins made from treated wood are not acceptable for organic production. Wooden crates from conventional orchards cannot generally be recycled for organic purposes; plastic ones can because they can be thoroughly cleaned. Waxed or unwaxed boxes that previously held non-organic produce cannot be used to harvest, store, or sell organic crops.

WASH WATER

Water sources used for organic produce washing must be legally fit to drink and tested at least once a year for nitrate and coliform bacteria. Many organic farmers growing baby salad greens use mesh bags and household washing machines set to the spin cycle to remove excess water from greens after rinsing. You can also purchase commercial-size salad spinners. Regular hose sprayers or barrel-washers can be used to remove field dirt from root crops.

Organic growers may use periacetic acid, hydrogen peroxide, or sodium hypochlorite (Clorox) to disinfect wash water, but should take care to get the correct dilution level, especially with bleach, which is classified as “restricted” rather than “approved” for organic production.

The bleach restriction states that “residual chlorine levels in the water shall not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act” ([§205.601](#)). This has been interpreted to mean that if chlorine concentrations in wash water of edible crops exceed 4 ppm (parts per million), the crops must be rinsed afterward in fresh water. Hydrogen peroxide solutions as low as 0.5 percent can eliminate the fungi that cause post-harvest decay.

SUMMARY

Maintaining organic integrity refers to the protection of organic products from contamination with prohibited materials and commingling with nonorganic products. It encompasses everything from establishing adequate buffer zones along property perimeters to making sure harvest containers are not treated with synthetic preservatives. Recycled or secondhand containers should be thoroughly cleaned prior to organic use.

Equipment can also be a source of potential contamination. Tractors and trucks should be kept in good repair to prevent oil or other fluid leaks in organic fields. Equipment used in both organic and nonorganic applications should be thoroughly cleaned between uses. This usually means hosing off soil from tillage equipment and tractor tires and vacuuming out combines and seed drills. Check with your certifier about the acceptability of your clean-out procedures.

Maintaining organic integrity goes hand in hand with maximizing organic crop quality. As in so many other areas of organic management, careful sanitation is a key to preventing pest and disease problems in stored crops. Storage bins and areas should be scrupulously cleaned between uses and kept in good repair to prevent the entry of rodents and other pests. Cleaning materials must be approved for organic use.

In the final lesson of this chapter, we’ll talk more about organic processing and handling requirements.

LESSON 5: ORGANIC HANDLING AND PROCESSING

OVERVIEW

Since this is primarily a course about transitioning to organic farming, we’re not going to go into extensive detail about organic food processing. But it’s important to have a basic understanding of how the NOP Standards relate to the processing and retail handling of organic products. You may find you can bring in more income by adding value to your crops with some basic processing. Or you may operate an organic farm stand and be thinking about selling organic



Photo Credit: Rodale Institute

Wisconsin-based certified organic Sibby's ice cream uses organic cream and eggs from nearby farms.

baked goods along with vegetables and flowers.

Organic processing has three aspects: ingredients, facilities, and labeling. If you want to make and market organic bread, for instance, you'll need to use organic ingredients (and be able to document that they're organic), process them in a certified organic processing facility, and comply with organic labeling requirements. We'll talk about each of these aspects in the following pages.

By the end of this lesson you should:

- Recognize the four USDA categories for organic labeling
- Understand organic rules regarding storage and processing facilities
- Understand the basic requirements for sourcing organic ingredients
- Know whether you'll need to complete an Organic Handling Plan as part of your certification application

WHAT THE STANDARDS SAY ABOUT ORGANIC HANDLING AND PROCESSING

The NOP Standards define handler as "any person engaged in the business of handling agricultural products, including producers

who handle crops or livestock of their own production," but not including "final retailers of agricultural products that do not process agricultural products" (§205.2).

The Standards further define "to handle" as "to sell, process or package agricultural products, except such term shall not include the sale, transportation or delivery of crops or livestock by the producer thereof to a handler." If you do nothing but harvest your organic crop and deliver it to a buyer, you're not a handler.

Processing is viewed by the NOP as a specialized type of handling, including:

"...cooking, baking, curing, heating, drying, mixing, grinding, churning, separating, extracting, slaughtering, cutting, fermenting, distilling, eviscerating, preserving, dehydrating, freezing, chilling, or otherwise manufacturing," including "packaging, canning, jarring, or otherwise enclosing food in a container." (§205.2)

In other words, just about anything you might think about doing to a food or feed product to prepare it for sale beyond simple washing and bagging is considered processing. On-farm grinding or mixing of organic grains for livestock feed also counts as processing.

Handlers who do not process are not required to be certified if the products remain in the same containers or packages they were received in. These "excluded" handlers—a group including most retail markets selling organic items—must be able to show that organic products do not come in contact with prohibited substances and aren't getting mixed up with non-organic products.

CATEGORIES OF "ORGANIC"

There are four different organic labeling categories for certified organic processed food items:

- "100% Organic"
 - All ingredients of the final product, including processing aids, must be certified organic. Water and salt don't count, since they're not "agricultural products" and hence cannot be certified.

- The USDA Organic seal and/or the certifying agent’s seal may be used.
- “Organic”
 - At least 95 percent (by weight or fluid volume) of all ingredients must be certified organic, excluding water and salt.
 - If a given ingredient is commercially available in organic form, it must be organic in your product. Organic and non-organic forms of the same ingredient may not be mixed. Non-organic ingredients may not include irradiated or GM products or products raised with sewage sludge.
 - The USDA Organic seal and/or the certifying agent’s seal may be used.
- “Made with Organic Ingredients”
 - At least 70 percent of all ingredients must be organic, excluding water and salt. Other ingredients may not include irradiated or GM products or products raised with sewage sludge.
 - The USDA Organic or other certifying agent’s seal may not be used.
- List of ingredients with organic products identified
 - Products with less than 70 percent organic ingredients (by weight or fluid volume) may not be identified as organic on the primary display panel, but may identify organic items in the ingredients list.
 - Products in this category do not need to be processed in a certified organic processing facility.
 - The USDA Organic or other certifying agent’s seal may not be used.

LABELING RULES

Specific rules govern where the USDA Organic seal and the certifier’s seal may be placed, how the ingredients may be listed and what other information needs to be on the label. Other

label claims, such as “kosher” or “biodynamic,” may be made as long as they are truthful and not misleading. But the bottom line is that organic labeling requirements are complicated, and if you’re ordering custom-made labels, mistakes can be expensive. Have your certification agency review and approve your label before printing and use in the marketplace. They can help you understand the fine points detailed in the regulation to ensure that you to have a legal label.



INPUT FROM RODALE

I learned more than I wanted to know about organic processing and labeling requirements when we started selling jarred organic apple and pumpkin butters here at the Rodale Institute. We were looking for a value-added product to make use of our processing-quality organic apples and pumpkins. They’ve been good products for us, and it was worth the effort, but it took a while to work out all the kinks.?

—Jeff Moyer

ON-FARM PROCESSING IDEAS

All on-farm organic processing facilities must follow any applicable state and/or local regulations. Items such as honey, maple syrup and apple cider may not be required to be made and packaged in a licensed kitchen, depending on the state. Some states also allow a certain number (less than 1,000, for example) of poultry to be slaughtered on-farm and sold direct to consumers without a licensed kitchen. Large animals such as hogs or beef usually need to be slaughtered and packaged in a state or federally licensed facility.

A wealth of opportunities await those interested in value-added organic production and marketing. Grain farmers can sell organic livestock feeds (again, check with local regulations), or they can clean grain and sell it to local bakeries. You could buy a small grain mill and make pancake or bread mixes and sell these to stores or at farmers markets.

For fruit and vegetable growers, there is a wide range of possibilities, including pickles from many types of veggies (beets, cukes, green beans, cauliflower, brussels sprouts, hot peppers, etc.),

sauerkraut, jams, jellies, conserves, chutneys, ketchups, salsas, pancake sauces, tomato sauce, and much more. Dried vegetables can be made into soup mixes, pasta toppings, or salad dressings. It's a good idea to visit some of your possible outlets first to assess your competition and market, and perhaps find a niche you could fill.

Herbs can be dried and used in blended seasoning mixes and teas, added to vinegars and oils, or just bound nicely and sold for hanging as decoration and food. Catnip can be dried and put into little toys and sold for pets. Many types of flowers dry well and can be made into everlasting bouquets or sachets. Garlic and chilis can be fashioned into braids or ristras.

Body care products such as lip balms and soaps made from milk, beeswax, oils, and herbs are another possibility. A good idea, a high-quality product, a nice label, and package can do a lot to get you on your way to an enjoyable home business. Your only limit is your imagination.

STORAGE AND PROCESSING FACILITIES

Facilities used for processing organic foods—even small on-farm facilities—must be certified just like farms. They don't necessarily need to be on-site, however, and in some cases, you can save money by combining certification applications of linked farms and processing facilities. If you have a dairy farm and you make cheese, for instance, you'll need to complete an Organic Farm Plan, Organic Livestock Plan and Organic Handling Plan, but it can all be part of a single certification application. If you have the dairy and your neighbor has the cheese business, you may also be able to be certified under one joint application.

Even if you don't have your own processing facilities and there are no certified processors in your area, you may be able to work something out for processing with a local facility. We arranged to have our organic apple and pumpkin butters made by a small-line processor nearby, with inspection and certification of their facility falling under our certification application. They have to follow all the organic processing and handling rules; we pay for the inspection and handle some of the paperwork.

The additional regulations aren't so different from what our processor already has to do to follow health department and FDA rules. The facility processes our organic product at the beginning of the run (after clean-out), so there's no possibility of contamination with non-organic product. We've worked with them to make sure all of their cleaning materials and methods comply with the NOP Standards.

We also contract with an off-site facility for bulk apple storage. We pay for that inspection, too, but I think it's worth it because there's no way we could buy or build our own large-scale apple storage for that price.

Before investing in your own licensed kitchen, see if a local school, community center or church will rent its kitchen to you during off hours or days. You'll have the benefit of trying out their equipment, perfecting your recipes and working out your production needs before making an investment in your own facility.

ORGANIC INGREDIENTS AND PROCESSING AIDS

The simplest way to create a processed organic product is to use all your own organic ingredients. Our apple butter, for example, has one ingredient: organic apples. Our pumpkin butter posed additional challenges because the recipe also called for white grape juice concentrate, lemons, oranges, cinnamon, and mace, so we had to find organic sources for these items.

One challenge is that it can be difficult to obtain documented certified organic product in small quantities. You can combine with other farmers for a group purchase, or buy part of a larger lot from another processor. No matter where you get your ingredients, you'll need documentation to show that they're organic. If you buy prepackaged ingredients in small quantities at the grocery store, save the receipt and the package.

Earlier in this chapter we talked about the National List governing allowed and prohibited organic inputs. Part of the List relates to organic processing:

- [§205.605](#) lists nonagricultural substances allowed as ingredients in products labeled as “organic” or “made with organic ingredients”
- [§205.606](#) lists non-organic agricultural products allowed as ingredients in products labeled as “organic” or “made with organic ingredients”

The former group includes things like ascorbic acid, low-methoxy pectin and sodium bicarbonate; the latter is much shorter and includes kelp, carob bean gum, and unbleached lecithin. Most of these substances are used primarily by large-scale commercial processors, but some, like pectin and xanthan gum, can be purchased in retail quantities and are used by farm-based processors in products like jams or lotions.

All production methods, facilities and recipes—including all ingredients and processing aids (such as oil used on bread pans)—must be approved by the certification agency before sale with an organic label.

SUMMARY

Organic food processing has become big business in recent years, with an increasing number of companies offering organic ingredients, approved-for-organic processing aids and related services. Finding a slaughterhouse, bakery or other facility that can offer custom, certified organic processing for your value-added product is gradually getting easier.

But if you can't find a certified processor in your area, you can still find ways to create

value-added, certified organic products for sale as part of your marketing mix. You may be able to rent a facility from a local school or other community group; you may be able to contract for certified processing with a local firm; or you may decide to invest in your own facilities for on-farm certified organic processing.

Remember that in addition to the organic standards, you also need to comply with any and all applicable federal, state and local regulations for public health, food safety, waste management, worker safety, etc.

The NOP Standards provide for four organic label categories based on the level of organic ingredients: 100% organic, 95% organic, 70% organic, and less than 70% organic. Each one carries specific labeling requirements. Make sure you have your product label approved by your certifier (and any other relevant state or federal authorities) before you begin using it for sales.

The NOP Standards define handling and processing very broadly. Check with your certifier to find out if you need to fill out an Organic Handling Plan in addition to your Organic Farm Plan.

CONCLUSION

This concludes the Certification chapter. In the pages of this chapter we've reviewed the steps toward certification and discussed specific details like how to choose a certifier and what to expect from your visit with the organic inspector. We've talked about the rules governing organic inputs, some guidelines for organic recordkeeping and the importance of maintaining organic integrity, particularly if you have organic and non-organic farm activities under way at the same farm location.

Finally, we've talked about the different legal categories of organic products, the labeling rules for each and the definition of processing and handling under the NOP Standards. We've discussed some basic on-farm processing ideas and things you should consider before venturing into organic processing.

The paperwork required for organic certification may seem daunting at first, but it's

GLOSSARY TERMS

Nonagricultural substance: A substance that is not a product of agriculture, such as a mineral or a bacterial culture, that is used as an ingredient in an agricultural product. For the purposes of this part, a nonagricultural ingredient also includes any substance, such as gums, citric acid, or pectin, that is extracted from, isolated from, or a fraction of an agricultural product so that the identity of the agricultural product is unrecognizable in the extract, isolate, or fraction. (*NOP definition*)

essential to providing a guarantee to consumers about the methods by which the food and other items they're purchasing were produced and handled. It also gives you the opportunity to evaluate your farm business from year to year, to find new efficiencies and make improvements.

Don't forget to finish filing out your Organic System Plan, and to download and save your work. If you need to review any sections of the course, you can do that now, too.

RESOURCES

THE CERTIFICATION PROCESS

[National Organic Program Compliance Checklist for Producers](#)
(NCAT/ATTRA, 2003) 20 pp.

[Organic Certification, Farm Planning, Marketing and Management](#)
Laura Tourte et al
(UC Davis Small Farm Center, 2006) 5 pp.

[Organic Farm Certification & the National Organic Program](#)
(NCAT/ATTRA, 2002) 8 pp.

[Preparing for an Organic Inspection: Steps and Checklists](#)
Ann Baier
(NCAT/ATTRA, 2005) 8 pp.

MATERIALS AND INPUTS

[Alternative Soil Amendments](#)
Preston Sullivan
(NCAT/ATTRA, 2001) 12 pp.

[Current Evaluation Procedures for Fertilizers and Soil Conditioners Used in Organic Agriculture](#)
Stefano Canali et al, eds.
(Research Institute of Organic Agriculture/ FiBL, 2005)

[Directory of OMRI-Approved Products](#)
(Organic Materials Review Institute)

RECORDKEEPING

ATTRA Organic Documentation Forms Series
[Organic Field Crops Documentation Forms](#)
[Organic Livestock Documentation Forms](#)
[Organic Market Farm Documentation Forms](#)
[Organic Orchard, Vineyard and Berry Crop Documentation Forms](#)
[Forms, Documents and Sample Letters for Organic Producers](#)
George Kuepper et al
(NCAT/ATTRA, 2005)

[Organic Vegetable Operation Recordkeeping Systems](#)
Jim Riddle & Joyce Ford
(Carolina Farm Stewardship Association).

ORGANIC INTEGRITY

[Making Sense of Rules Governing Chlorine Contact in Postharvest Handling of Organic Produce](#)
Trevor Suslow
(University of California, 2006) 6 pp.

[Postharvest Handling for Organic Crops](#)
Laura Tourte et al
(University of California Small Farm Center, 2000) 8 pp.

HANDLING AND PROCESSING

[National Organic Program Compliance Checklist for Handlers](#)
Holly Born
(NCAT/ATTRA, 2006) 18 pp.

Organic Processing Fact Sheet Series
[Organic Food Processing Basics](#)
[Organic Meat and Poultry Processing Basics](#)
[Organic Livestock Feed Processing Basics](#)
(Minnesota Dept. of Agriculture, 2005)
4 pp. each