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Organic Poultry Production

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In organic poultry production systems, birds are raised without cages in housing that allows outdoor access, are fed organic feed, and are managed with proactive practices. This publication discusses organic husbandry including living conditions, health, genetics and origin, feed, and processing as specified under the livestock requirements of the U.S. Department of Agriculture National Organic Program.

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Photo: Sergio Venturi

Introduction

Organic refers to the way livestock and agricultural products are raised and processed, avoiding agrichemicals such as synthetic pesticides and fertilizers. Although non-chemical farming is a good working definition, avoiding synthetic inputs is just one feature. Organic production focuses on animal health and welfare, good environmental practices, and product quality. In contrast, conventional production focuses on reducing costs and maximizing production through weight gain, feed efficiency, and more (Sundrum, 2006).

Since USDA established the National Organic Program (NOP) in 2002, the organic food market has experienced double-digit growth annually. The organic meat industry is a relatively young one, although organic production has been practiced for decades in the United States. This publication is written for U.S. producers who are complying with the NOP.

This document provides guidance on how organic certifying agencies normally interpret the NOP livestock standards for poultry production. However, it is important that producers talk to their accredited certifying agencies about specific interpretations.

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Basic requirements for organic poultry include:

- Appropriate housing that permits natural behavior, including outdoor access
- Certified organic feed
- No antibiotics, drugs, or synthetic parasiticides
- Organic processing of meat and eggs
- Recordkeeping system to allow tracking of poultry and products (audit trail)
- Organic system plan including description of practices to prevent contamination, monitoring practices, and list of inputs
- Production that does not contribute to contamination of soil or water
- No genetically modified organisms, ionizing radiation, or sewage sludge

Related ATTRA Publications
www.attra.ncat.org

Organic Farm Certification and the National Organic Program

Guide for Organic Livestock Producers

Organic System Plan Template for Crop and/or Livestock Production

Tipsheet: Organic Poultry Production for Meat and Eggs

Organic Poultry Production: Providing Adequate Methionine

The USDA Organic Regulations are available online. The regulations are broken down into subparts, and subpart C deals with crops, livestock, and handling. Sections 205.236 through 205.239 deal specifically with livestock, including poultry. If you do not have Internet access or would like a hard copy of the regulations, contact the NOP (see Further Resources). Section 205.603 through 205.604 is the National List of Allowed and Prohibited Substances and lists synthetic substances that can be used in organic livestock production and a few natural substances that may not.

Living Conditions and Housing

Housing should protect birds from the elements, maintain a comfortable temperature, provide ventilation and clean bedding, and allow birds to exercise and conduct natural behaviors. Cages are not permitted. In addition, the birds must have access to the outdoors for exercise areas, fresh air, and sunlight. The NOP does not specify the amount of outdoor access a bird should have. Birds should have enough room to express natural behaviors such as scratching and dust-bathing. Combining free-ranging poultry with ruminant production can help manage the forage for the poultry and reduce mowing for the producer. Shelters such as pastured poultry pens or field pens are questionable because they may not provide adequate housing or permit birds to express natural behavior, due to confinement. The NOP does not specify if ponds are required for waterfowl; check with your certifier.

The NOP does not specify indoor or outdoor stocking densities. However, at the time of publishing, the USDA has proposed a rule that would stipulate how much floor space poultry are required to have outdoors and within a house. The rulemaking process is still in the early stages, but this new rule would change the way producers house their flocks and the outdoor access they will provide. Many organic certifying agencies currently look for at least 1.5 square feet (0.14 square meters) per bird; which is more than the conventional industry average of 0.7 square feet (0.07 square meters) per bird. There is no limit on the number of birds that may be raised in one house, nor is there a requirement for the number of bird exits or popholes that should be provided. Livestock and poultry may be temporarily confined for inclement weather, the stage of production, conditions under which the health, safety, or well-being of the animal could be jeopardized, or if the animals being outside could pose a risk to soil or water quality. Chicks, poults, and other young birds are normally confined during brooding when they need to be heated, although outdoor access can be provided at a young age. Birds can be confined during cold weather, although some breeds are hardy and venture outdoors in cold weather. Adequate nestboxes and perches are needed for laying birds. While there is no official standard on the amount of perch space needed for laying hens, eight to 12 inches per bird is recommended.

Organic pullets are often not provided outdoor access until they are ready to lay, at about 20 weeks. Many producers have concerns regarding biosecurity in outdoor access areas and use the argument that vaccines need sufficient time to create immunity; however, long periods are not required. Immunity generally develops a week or so after the first boost. The last round of vaccines, usually at 16 to 18 weeks, is intended to maintain lasting titers to protect the flock during lay. Outdoor access is not likely to interfere, although many producers are concerned about biosecurity and their vets may order no outdoor access. In addition, the light period is carefully managed

for pullets to delay egg production until sufficient maturity exists for proper egg size.

All-slat flooring is generally not permitted. Some flooring should be solid with litter so birds can scratch. If birds are likely to eat their litter, it must be organic. For example, alfalfa may be consumed by poultry if used as bedding and would need to be certified organic. However, most poultry litter, such as **wood shavings**, is not consumed by flocks. Although litter treatments are common in conventional production to lower pH and reduce microbial growth and ammonia production, in organic production litter amendments are not as common. Any amendment must be natural. For example, synthetic materials, such as commercially available sodium bisulfite, are not permitted. Some small producers use hydrated lime to lower moisture in litter. Although hydrated lime is permitted in organic livestock production, it is only permitted for external pest control.

Producers must not allow lumber treated with arsenate or other prohibited substances to be in contact with animals, for new installations or replacement. Existing treated lumber is handled differently by certifying agencies: some require removal or a barrier, while others permit it if it does not impact livestock. See ATTRA's *Pressure-Treated Wood: Organic and Natural Alternatives* for information on alternate lumber options.

Poultry should be protected from predators, both indoors and outdoors. Electric fences can exclude ground predators and keep poultry where desired. For more information on fencing and managing outdoor areas for poultry, see ATTRA's *Alternative Poultry Production Systems and Outdoor Access.*

Artificial lighting is permitted, but there are limits on its use. Although the NOP has no specific requirements on lighting, many certifiers look for an eight-hour dark period because a dark period is needed to maintain the immune system and for good bird welfare. When managing layers and breeders, the lighting period shouldn't be longer than 16 hours or the longest day of the year. Many certifiers require a relatively high level of light in the house to encourage bird activity and may require windows in order to provide direct sunlight. In contrast, the conventional industry usually keeps lights low for broilers to reduce activity. The light level is so low that it is difficult to read a newspaper. Some welfare assurance programs require at least two footcandles of light intensity (Humane Farm Animal Care, 2008).

Electronet fence protects birds from predators. Photo by: Anne Fanatico, NCAT.

For rodent, fly, and other pest control, a multilevel approach is used, beginning with prevention and sanitation including habitat reduction and physical exclusion from facilities and feed. Secondly, control can include mechanical and physical methods such as tarps, electric fences, adhesive, and fans. Thirdly, it can include natural or allowed synthetic rodenticides such as cholecalciferol and sulfur dioxide as an underground smoke bomb. ATTRA can provide additional information on natural rodent control.

In terms of waste, the producer must manage waste in a way that does not contribute to environmental contamination and that optimizes recycling of nutrients. Although poultry litter and manure have nutrients that are very useful for crop and pasture production, producers must be careful not to apply manure to land that is already too high in nitrogen or phosphorus. For more information on potential hazards in poultry litter, see ATTRA's *Arsenic in Poultry Litter: Organic Regulations.*

Also, because raw manure cannot come into contact with organic crops ready for harvest and human consumption, poultry may not be grazed on crops within 90 days of harvest or 120 days if a harvestable crop part contacts soil. Manure or other waste that is composted according to NOP specifications is not subject to these harvest restrictions. Also see ATTRA's *Manures for Organic Crop Production.*

Health

Proactive health management is used in organic

production. A working relationship with an avian veterinarian is an integral part of health management, and an animal health plan is often part of the Organic System Plan.

Provide adequate housing and space, ventilation, and good nutrition to reduce stress and maintain the immune system. Prevent the introduction of disease with the use of vaccines and biosecurity practices. Use natural treatments if needed.

Preventing disease starts with clean birds. If you purchase birds or eggs, make sure they are from breeding flocks approved by the USDA National Poultry Improvement Program, which certifies that flocks are free of certain diseases.

External parasites such as mites should be managed by allowing birds to dustbathe.

Vaccines are allowed in organic production to prevent disease. Interestingly, vaccines may be genetically engineered, a practice that is otherwise not permitted in organic production. This information appears in section 205.105(e) and 205.600(a) of the NOP Final Rule. Poultry vaccines are commonly used in the United States to prevent Marek's disease, Newcastle, infectious bronchitis, and coccidiosis.

Probiotics are often used in organic poultry production, particularly to replace antibiotic growth promoters, which are not permitted. Probiotics are beneficial microbes, fed to birds to establish beneficial gut microflora, reducing colonization by pathogenic organisms such as *Salmonella* and *E. coli.* This mechanism is called competitive exclusion because beneficial microorganisms are competing with pathogenic ones for nutrients and attachment areas in the gut. Other natural products include prebiotics, which are nondigestible food ingredients that benefit the host by selectively stimulating the growth of bacterial species present in the gut. An example is lactose, which is used by beneficial lactic acid bacteria in the gut but cannot be digested by chickens.

In 205.238(c)(1), the NOP emphasizes that drugs, growth promoters and synthetic parasiticides are not permitted, but natural materials can be used. However, no materials in violation of the Federal Food, Drug and Cosmetic Act should be used. Examples of natural treatments include enzymes, antioxidants, pyrethrum for controlling mites, and botanicals such as garlic and oregano.

Antibiotics and other medical treatment must not be withheld if needed, and birds that receive this treatment must be diverted to nonorganic markets.

Mortality may be higher in large-scale organic production than conventional production because medications are not permitted. Necrotic enteritis is a common health problem in large organic broiler flocks. In fact, broiler mortality may be 5% to 10% in organic production. Organic layer flocks may have 3% to 5% mortality rate.

Good biosecurity and sanitation practices should be followed on the farm, including limiting visitor access to the bird area. Sunlight and dry conditions help reduce pathogens in outdoor areas. Footbaths with approved disinfectants, such as iodine, can be used at the entrance to houses, as well as disposable booties or dedicated footwear. The use of "all-in, all-out" management (completely harvesting a flock before starting a new one) results in the reduction of pathogens, many of which die during the downtime. Mixing ages in a flock is a risk because older birds may be carriers of disease for younger birds. Likewise, mixing species can result in some species carrying diseases to other species. See Table 1 on the next page for more information.

External parasites such as mites should be managed by allowing birds to dustbathe. Many producers also add diatomaceous earth to dustbaths. If mite treatment is needed, pyrethrum is a natural product that is permitted in organic production. For roost mites that do not actually live on birds themselves, the roosts, cracks, and crevices in the house should also be treated. Natural oils, such as linseed oil, are often used on roosts.

Incidence of internal parasites, such as roundworms, cecal worms, and capillary worms, can be a problem in organic poultry production and has been the focus of scientific studies (Permin et al., 1999 and Thamsborg et al., 1999). Rotating access to different outdoor areas is key in reducing incidence of internal parasites. Anticoccidial medications are not permitted for control of the protozoan parasite coccidiosis; therefore, many producers focus on management or the use of a vaccine. See ATTRA's *Parasite Management for Natural and Organic Poultry Production: Coccidiosis* for more information.

Physical alterations are allowed if they are essential for animal welfare and done in a manner

Table 1

Sanitation	Biosecurity
Sanitation between flocks is particularly important and a downtime of two to three weeks will help control pathogens that need a host to survive. Cleaning is the first step, because organic matter must be removed in order for a disinfectant to work. First, sweep or air-blow the house from top to bottom to remove organic matter, and then spray the house with a high-pressure sprayer and detergent. Rinse and allow to dry, and then apply disinfectant. Approved materials that are used for disinfection and sanitation of premises and equipment include chlorine materials, iodine, hydrogen peroxide, peracetic acid, phosphoric acid, and organic acids. Hydrogen peroxide is particularly corrosive to metal and should be rinsed well. Iodine may stain surfaces. Alcohol is also a disinfectant but not very effective. Propane-fueled heat tools are also used to disinfect. In addition, water lines need regular care. Water lines can be flushed with organic acids, such as citric acid or vinegar, to loosen debris, and then sanitized with iodine or hydrogen peroxide between flocks. Chlorine is also used for routine sanitation of water lines when birds are in the house. Chlorine level should not be more than 4 ppm.	Good biosecurity is important in any poultry operation and particularly in organic operations. Since wild birds, particularly waterfowl, can carry diseases that harm domestic poultry, it is important to exclude wild waterfowl from the free-range poultry area. Outdoor feeders should not attract wild birds. One example is a self-feeder that dispenses feed to poultry on demand. If necessary, netting can be placed over outdoor yards. The USDA's Biosecurity for the Birds website has information on biosecurity. Although highly pathogenic H5N1 avian influenza is not currently in the United States, there is concern that wild waterfowl may carry various types of avian influenza to free-range flocks. See ATTRA's *Avian Influenza in Free-Range and Organic Poultry Production* for more information.

that minimizes pain. However, physical alterations should not be done on a routine basis. Beak trimming in particular is a controversial practice performed on layers to reduce feather pecking. Feather pecking is a concern in cage-free and organic poultry production because of large group sizes. Feather pecking is an indicator of stress in the perpetrator and the victim and can lead to cannibalism. Beak-trimming is only permitted if other methods of prevention fail. See the sidebar on preventing feather pecking for more information. Most welfare programs require that beak trimming be done before 10 days of age with a humane method such as a hot blade or infrared. No more than 50% of the beak should be trimmed, as measured from beak tip to nostril (Kuenzel, 2007).

Molting is a natural process that birds undergo annually to renew their feathers. Molting can help replenish the reproductive systems and bones of layers. Molt usually takes several weeks and egg production declines or ceases. A flock of the same age and origin will molt about the same time, although there may be some variation among individuals in the length of molt. Force-molting is a way to induce the layers in a flock to molt at a particular time and at a faster rate. Molt can be forced by reducing the nutrient density of the diet and reducing the light period.

In conventional layer operations, layers are destroyed or processed at about 70 weeks of age, or they are force-molted and then, after laying begins again, kept until about 105 weeks of age. If producers force-molt, they should provide a molt diet and a light period of at least eight hours.

Preventing Feather Pecking

Prevention of feather pecking begins early, when rearing the pullets. In a Dutch study, researchers Monique Bestman and Jan-Paul Wagenaar (2006) found that pullets that feather peck during rearing will continue to feather peck as layers. However, pullets that do not feather peck during rearing will not do so later. Pullets need to be raised on litter (not in cages) and have perches and a low stocking density. Flocks that feather pecked were at a density of 35 chicks per square meter (3.2 chicks per square foot), while flocks that did not feather peck were at only 22 chicks per square meter (two chicks per square foot) during the first four weeks of life.

Other risk factors that led to feather pecking included the use of slat flooring during the first weeks of life (no litter), absence of perches, and no grain scattered for a pecking incentive. Bestman and Wagenaar quoted the 1955 work of German scientist Dr. Erich Bäeumer, who said:

"[D]uring the first weeks of life, a pullet learns to eat … they will peck at everything in order to find out what is edible and what not. If their environment consists mainly of flock mates, the chance is big they start pecking at their flock mates' plumage."

Hanging roughage or providing it in baskets also helps reduce feather pecking and birds learn to peck at different levels. If pullets are reared by an organic pullet specialist, the producer should ensure these practices have been followed so that the layers producers buy are less likely to feather peck.

The NOP does not have specific standards on forced molting, but generally certifiers do not permit it due to stress to the bird. Organic producers usually destroy or process the flock at about 70 weeks, although small producers may let birds molt naturally.

Natural molting is not as efficient as forced molting, but it maintains bird welfare and extends the productive life of the layer (fewer layers are needed over time). Ideally, layers should be allowed to molt naturally and kept for at least two to three years.

The welfare of the bird is a cornerstone of organic poultry production. Welfare assurance programs, such as Humane Farm Animal Care (HFAC) and American Humane Association (AHA), have measurable standards and can document that birds have adequate access to feed and water, that they have good litter and air quality, that caretakers are well trained, that handling and euthanasia methods are humane, and more. Reducing stress is key in promoting poultry welfare and is of particular concern during capture, transport, and processing.

Although slow-growing birds are less efficient meat producers, they have better livability, lower mortality rates, and are more active.

Food safety in organic poultry production is another consideration. Some studies have shown that food-borne diseases are more prevalent in organic livestock production than in conventional production. In a Danish study, *campylobacter* was found in all 22 organic broiler flocks compared to only one-third of conventional broiler flocks (Heuer et al., 2001). Organic birds are generally kept longer than conventional and have more opportunity to encounter pathogens. In contrast, Lunangtongkum et al. (2006) found that campylobacter bacteria developed resistance to fluoroquinolones, a group of antibiotics important in human health, in 46% of conventionally raised chickens and 67% of conventional turkeys, but in only 2% of the organically raised chickens and turkeys.

Origin of Birds and Genetics

The NOP stipulates that breeds should be chosen for their resistance to disease and their appropriateness to a site or operation. However, in the United States, high-yielding genetics are typically used in both conventional and organic poultry production. Conventional broilers are generally a cross between the Cornish and White Plymouth Rock breeds. The conventional broiler is an efficient bird that grows to market weight in seven weeks and has a high yield of breast meat. However, it may have health problems due to the fast growth. Metabolic problems include ascites (water belly) and sudden death syndrome, and leg problems include lameness. Although slow-growing birds are less efficient meat producers, they have better livability, lower mortality rates, and are more active. Slow-growing breeds include Red Broilers, Delaware, Naked Necks, and "Freedom Rangers." In terms of egg layers, high-yielding birds lay more than 300 eggs per year but may develop osteoporosis or brittle bones. There is increasing interest in using standard breeds with historical significance, known as heritage breeds, for organic production, but heritage breeds have only been selected for egg production or exhibition for the last several decades, so good utility strains for meat need to be developed. For more information on genetics, see ATTRA's *Poultry Genetics for Pastured Production.*

Medium-growing alternative genetics. Photo: Anne Fanatico, NCAT

The NOP does not require the origin of the birds to be organic. In fact, there are currently no certified organic poultry hatcheries in the United States. According to 205.236(a)(1) of the organic regulations, chicks must be under organic management after the second day after hatching.

Slow-growing naked neck genetics. Photo: Anne Fanatico, NCAT

Feed

Any feed provided to a flock must be certified organic. Feed rations must provide the levels of nutrients (protein, energy, minerals, and vitamins) appropriate to the type of bird, breed, and age or stage of development. Typically, organic corn is used for energy, while organic soybeans provide protein. Soybeans must be roasted due to a trypsin inhibitor that will otherwise slow the growth of the bird. Roasted, extruded, or expelled soybeans are used because feeds that have been defatted with chemical solvents are not permitted. In cold areas, wheat and peas are often used for energy and protein, respectively. No animal drugs or antibiotics are allowed in organic feed, nor can feed from genetically modified crops be used. Although chickens are omnivores in nature, animal slaughter byproducts are not permitted in feed in organic production. Fishmeal is the exception to this rule and is usually fed to flocks in order to meet amino acid requirements. Due to these regulations and overall limited availability, organic feeds are very expensive in comparison to conventional rations.

In addition to organic feed, any pasture and forages must also be certified as organic. Therefore, any pasture used for organic poultry should be free of synthetic chemicals for three years before it can be used. Organic seed must be used when seeding pastures, and weeds should be managed with cultural practices rather than synthetic chemicals. If organic hay is harvested for poultry, it should be stored separately from conventional hay. If grains are sprouted for poultry or roughage provided during temporary confinement, these must be organic. For more information on the nutrition of pastured poultry, see ATTRA's publication *Pastured Poultry Nutrition and Forages.*

According to the NOP website, feed may also contain natural, nonagricultural feed additives and supplements or approved synthetic substances that are included on the National List of Allowed and Prohibited Substances, which basically allows trace minerals and vitamins, as well as some inerts and excipients. Feed additives and supplements must comply with the Federal Food, Drug, and Cosmetic Act.

To further clarify, feed additives such as vitamins and minerals are used in micro amounts to fulfill a specific nutritional need. However, synthetic amino acids are not permitted in organic production, although synthetic methionine is allowed with restrictions. See the sidebar on synthetic methionine for more information. Feed supplements such as fishmeal, enzymes, and oyster shell are permitted in larger amounts to improve the nutrient balance. The fishmeal does not have to be organic because it is a natural substance used as a feed supplement. However, prohibited substances such as ethoxyquine cannot be added to preserve fishmeal. (Tocopherol and lecithin are currently allowed as preservatives in fishmeal.) As a reminder, feed additives and supplements cannot be from genetically modified organisms.

If poultry feed is raised on-farm, crop production must comply with the organic production standards for crops. This information is in sections 205.202 to 205.206 of the NOP Final Rule. Handled feed must comply with organic handling

Synthetic Methionine

Methionine is the only synthetic amino acid permitted in organic livestock production, at a rate of two pounds per ton for chickens (broilers and laying hens) and three pounds per ton for turkeys and other species of poultry. Synthetic methionine is added to virtually all commercial poultry diets in order to meet the amino acid requirements of birds. Although some feedstuffs are naturally high in methionine, such as fishmeal and corn gluten meal, certified organic sources are hard to find. Some companies market their poultry products as "veg-fed" and therefore don't use fishmeal.

Supplying sufficient methionine to birds with plant proteins such as soybeans or sunflower meal results in diets that are excessive in overall protein, and thus hard on birds (causing heat stress, excreting excessive nitrogen, and more) and the environment (excess nitrogen and ammonia emissions). Innovative protein sources such as algae are of interest. Some literature suggests the use of alternative genetics that are lower-yielding; however, research at the University of Arkansas (Fanatico et al., 2006; Fanatico et al., 2007) has not shown slow-growing meat birds to have lower methionine requirements. For more information on this issue, see ATTRA's *Organic Poultry Production: Providing Adequate Methionine.*

requirements, or the feed must be from a certified organic feed mill. This is outlined in sections 205.270 to 205.272 of the USDA organic regulations. For more information on organic feed processing, see the ATTRA publication *Guide for Organic Livestock Producers.*

Water should be from a clean source and may need to be tested for fecal coliform bacteria and nitrates. Water chlorination must not be above accepted levels of 4 ppm in the United States.

Processing

If meat or eggs are processed on-farm, the processing must comply with the organic handling standards. This information appears in sections 205.270 to 205.272 of the NOP Final Rule. If the meat or eggs are handled off-farm, the processing plant must be certified organic.

Processing plants that are that already complying with Federal or State regulations are usually not difficult to certify as organic. Important points include using approved organic detergents, sanitizers, and pest-control methods; preventing contamination; and preventing commingling with nonorganic products. Good recordkeeping is important for the audit trail. Organic is usually the first run of the day if plants also processes nonorganic products. Operations that compost offal and apply it to organic fields or pastures should follow NOP requirements for compost and manure management.

Organic eggs should be handled according to NOP handling requirements. Photo: Rex Dufour, NCAT

Slow-growing turkeys cooling in air-chilled room. Photo: Anne Fanatico, NCAT

Sanitizers that may be used in organic poultry meat processing facilities are limited but include chlorine materials, hydrogen peroxide, peracetic acid, phosphoric acid, and organic acids. See the Organic Materials Review Institute's (OMRI) brand name lists online for products that are allowed. Some certifiers permit highly chlorinated water to come in contact with food products in immersion chilling and for sanitizing surfaces, but the final rinse should be with a chlorine level less than the limit under the Safe Drinking Water Act (or 4 ppm). For chill-tank water, some organic poultry processors use no additives at all; others use hydrogen peroxide or innovative technologies such as ozonated water. Post-chill antimicrobial dip and spray are of interest. Shell-egg detergents and sanitizers should also be NOP compliant.

Recordkeeping

Recordkeeping is an important process in the organic audit trail to document that the standards have been followed. Flocks must be identified and records kept for stock, material, and feed purchases; all health treatments and other inputs; weight of slaughter animals; slaughter; packing and handling; sales; and more. Records should be kept for at least five years. Split production is permitted and since organic poultry and eggs products are indistinguishable visually from conventional, it is important to prevent comingling. Records should allow a producer or auditor to trace a product (either meat or eggs) back to its point of origin.

Small producers that sell less than $5,000 worth of organic products each year are exempt from certification. If small producers want to call or label their product organic, then they must follow the standards but do not need to be certified, although they may not use the USDA organic seal. Their eggs cannot be sold as organic ingredients.

Economics

It is more expensive to raise organic poultry than conventional poultry due to feed costs, lower stocking densities, the cost of providing outdoor access, and health care without the use of antibiotics in intensively produced flocks. If there is a longer growing period, feed efficiency may decrease. Mortality is often higher. Labor may be increased and recordkeeping may be an added expense, along with certification fees. However, organic poultry products bring a premium price. See ATTRA's *Growing Your Range Poultry Business: An Entrepreneur's Toolbox* for a discussion of expenses and income for alternative poultry meat production systems and small-scale processing. Also see the following:

- Case study of organic egg economics on a small Wisconsin farm, http://newfarm.rodaleinstitute.org/depts/talking_shop/0303/umoc.shtml
- Organic Broiler Chicken Production Trial, Allee Farm, 2001, lib.dr.iastate.edu\cgi\viewcontentcgi?article=2621&context=farms_reports

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Further Resources

ATTRA maintains farmer-friendly information on organic farming on its website, www.attra.ncat.org

USDA National Organic Program
Room 4008 - South Building
1400 and Independence Ave, SW
Washington, DC 20250-0020
202-720-3252
www.ams.usda.gov/about-ams/programs-offices/national-organic-program

American Humane Certified
63 Inverness Drive East
Englewood, CO 80112
303-792-9900
info@thehumanetouch.org
www.humaneheartland.org/our-farm-programs/american-humane-certified

Humane Farm Animal Care
P.O. Box 727
Herndon, VA 20172
703-435-3883
www.certifiedhumane.org

Organic Materials Review Institute (OMRI)
P.O. Box 11558
Eugene, OR 97440-3758
541-343-7600
www.omri.org

Notes

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