



Organic Poultry Production in the United States

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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 managed with proactive practices and natural treatments. 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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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 in 2002, the organic food market has grown by almost 20 percent 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.



Related ATTRA Publications

ATTRA materials provide information on best practices in sustainable poultry production. Many practices can also be used in organic production.

- Alternative Poultry Production Systems and Outdoor Access, which covers using cage-free systems and outdoor access
- Poultry House Management for Alternative Production, which covers housing, ventilation, temperature, lighting, litter management, rodent control and more
- Organic Farm Certification and the National Organic Program, which includes general information about organic certification
- NCAT's Organic Livestock Workbook, which includes details about organic livestock production

Basic requirements for organic poultry include:

- Appropriate housing that permits natural behavior, including outdoor access
- Certified organic feed, including pasture
- 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

The NOP regulations are available on the Internet at www.ams.usda.gov/nop. 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 National Organic Program. Information is listed in the **Resources** section. Section 205.600 is the National List of Allowed and Prohibited Substances and lists synthetic substances that can be used in organic production and a few natural substances that may not.

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. The producer's organic system plan describes many specific practices.

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 and must be able to scratch and dustbath. 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, but many organic certifiers look for a lower stocking rate than the industry average of 0.7 square feet (0.07 square meters) per bird. Most look for at least 1.5 square feet (0.14 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 amount of bird exits or popholes that should be provided. The NOP also does not specify the amount of outdoor access a bird should have. Organic programs in other countries have details on these issues to limit the size and density of flocks.

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.

Organic pullets are often not provided outdoor access until they are ready to lay, at

about 20 weeks. Many producers have biosecurity concerns with outdoor access 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 should be organic. Most poultry litter is not. 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 the commercially available Poultry Litter Treatment (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, hydrated lime is only permitted for external pest control. Adequate nestboxes and perches are needed for laying birds.

Producers must not allow lumber treated with arsenate or other prohibited substances for new installations or replacement to be in contact with animals. 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 *Organic Alternatives to Treated Lumber* 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).

For rodent, fly and other pest control, a multilevel approach is used and begins 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; and thirdly it can include natural or allowed synthetic rodenticides such as cholecalciferol and sulfur dioxide as an underground smoke bomb. ATTRA can



Electronet fence to protect birds from predators. Photo by Anne Fanatico, NCAT.

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 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.

Also, because raw manure cannot come into contact with organic crops ready for harvest and human consumption, poultry may not be grazed with crops within 90 days of harvest or 120 days if a harvestable crop part contacts soil. However, manure or other waste that is composted according to NOP specifications does not have these harvest restrictions. The NOP has additional guidelines for other heat-processed animal manure products online at www.ams.usda.gov/nop/NoticesPolicies/NOP5006ProcessedManure7-16-07.pdf

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 flocks are free of certain diseases.

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 205.104(e) 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. Other prebiotics include fructo-oligosaccharides, inulin and lactulose, which alter the microbial balance in favor of beneficial bacteria (Novak and Troche, 2006). Manno-oligosaccharides appear to have a different mechanism that prevents pathogenic bacteria from adhering to the gut lining.

The NOP emphasizes that drugs, growth promotants 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 these birds should 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

Vaccines are allowed in organic production to prevent disease.

problem in large organic broiler flocks. In fact, broiler mortality may be 5 to 10 percent in organic production. Organic layer flocks may have 3- to 5-percent 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 and 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 the biosecurity and sanitation sidebars for more information.

External parasites such as mites should be managed by allowing birds to dust-bathe. 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;

Sanitation

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.

Biosecurity

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. For example, a self-feeder dispenses feed to poultry on demand. See the Solway Feeders Web site at www.solwayfeeders.com for examples of self-feed dispensers. If necessary, netting can be placed over outdoor yards. The USDA's Biosecurity for the Birds Web site at www.aphis.usda.gov/vs/birdbiosecurity/ 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.

Physical alterations are allowed if they are essential for animal welfare and done in a manner 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 percent of the beak should be trimmed, as measured from beak tip to nostril (Kuenzel, 2007).

Ideally, animals should be able to breed without human intervention, but artificial insemination is allowed by the NOP.

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 pullets that feather peck during rearing will continue to feather peck as layers. However, pullets that do not feather peck during rearing will not later. Pullets need to be raised on litter (not in cages), 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:

“during 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.

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.

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 should provide a light period of at least eight hours.

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.

Although 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, have good litter and air quality, that caretakers are trained, handling and euthanasia methods are humane and more. Birds are particularly stressed during catching, transport and processing.

Food safety in organic poultry production is an area of interest. Some studies have shown that food-borne diseases are more prevalent in organic livestock production than conventional. 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 percent of conventionally raised chickens and 67 percent of conventional turkeys, but only 2 percent 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. 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. In contrast, slow-growing meat birds are used in the European Union organic program. Although slow-growing birds are less efficient meat producers, they have better livability, lower mortality rates and are more active. 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 and good utility strains for meat need to be developed. For more information on genetics, see ATTRA's *Poultry Genetics for Pastured Production*.

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. Nonorganic chicks may be used but must be under organic management after the second day after hatching.



Slow-growing naked neck genetics. Photo by Anne Fanatico, NCAAT.



Medium-growing alternative genetics. Photo by Anne Fanatico, NCAAT.

Feed

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. 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.

The feed must be organic, including pasture and forage. 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, it must be organic. Organic feeds are very expensive compared to conventional.

According to the NOP Web site, feed may also contain natural, nonagricultural feed additives and supplements or approved synthetic substances that are allowed by the National List, 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 permitted for a limited time for poultry. 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. 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 requirements or the feed must be from a certified organic feed mill. This is outlined in sections 205.270 to 205.272 of the NOP. For more information on organic feed processing, see NCAT's *Organic Livestock Workbook*.

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 and sanitizers and pest control methods, preventing contamination and preventing commingling with non-organic 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.

Sanitizers that may be used in organic poultry meat processing facilities to sanitize facilities and equipment are more limited than in conventional operations and include chlorine materials, hydrogen peroxide, peracetic acid, phosphoric acid and organic

Synthetic methionine

Methionine is the only synthetic amino acid permitted in organic livestock production and only for poultry on a temporary basis. Synthetic methionine is added to virtually all commercial poultry diets; however, it will be banned after October 2010 under the NOP. Although some feedstuffs are naturally high in methionine, such as fishmeal and corn gluten meal, there is a lack in organic form. There is no organic corn gluten meal and only limited fishmeal without prohibited preservatives. In addition, some companies market their poultry products as "veg-fed" and therefore don't use fishmeal and other animal products.

Supplying sufficient methionine to birds with plant proteins such as soybeans or sunflower meal results in diets that are excessive in overall protein that is 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, earthworm or insect meal 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. The report *Possibilities and Limitations of Protein Supply in Organic Poultry and Pig Production* provides a comprehensive European perspective as the European Union is also dealing with the same problem. It is available at www.organicrevision.org/pub/Final_Report_EC_Revision.pdf.

acids. See the Organic Materials Review Institute's brand name lists online at www.omri.org for products that are permitted. 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 in the chill tank; 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.

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 they must follow the standards but do not need to be certified, although they may not use the USDA organic seal. Their eggs can not 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 costs without the use of antibiotics in intensively produced flocks. If there is a longer growing period, feed efficiency may decrease. Mortality is



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

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:



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

- Case study of organic egg economics on a small Wisconsin farm, www.newfarm.org/depts/talking_shop/0303/umoc.shtml
- A 5,000 bird layer flock in Canada, www.agf.gov.bc.ca/busmgmt/budgets/budget_pdf/poultry/organic_eggs_2002.pdf
- *Organic Broiler Chicken Production Trial*, Allee Farm, 2001, www.ag.iastate.edu/farms_2001reports/nwallee/OrganicBroilerReport.pdf

Resources

ATTRA maintains farmer-friendly information on organic farming on its Web site www.attra.ncat.org; also see the Sustainable Poultry Web site www.sustainablepoultry.ncat.org.

USDA National Organic Program
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www.ams.usda.gov/nop

For information on producing organic poultry under the European Union (EU) regulations, see *Organic Poultry* (Thear, 2005); also see EU organic regulations (European Union, 1991).

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Appendix

Table 1. Comparison of highlights of poultry requirements of selected organic programs ^a						
	USDA NOP	European Union	Soil Association (UK)	Canada National	Bio-Gro (New Zealand)	IFOAM 2002
Living conditions	No cages					
Flooring		At least 1/3 of house must be solid with litter (all slats not permitted)	At least 1/2 of house must be solid with litter (no more than 1/2 slats permitted)			
Equipment			Minimum feeder space (linear): 2.5 cm; minimum drinkers: 10 birds per nipple			
Perches		18 cm/layer	18 cm/layer			
Nests		8 layers/nest	6 layers/nest			
Maximum indoor density		6 layer/m ² 10 meat poultry/m ² (21 kg/m ² max) ^b	6 layer/m ² 10 meat poultry/m ² (21 kg/m ² max) ^b 2 turkey/m ²	6 layers/m ² 10 meat chickens/m ² 2m ² / turkey	5 layers/m ² on litter or 10 layers/m ² on slats or 13 layers/m ² on multilevels, perches	
Outdoor area	Outdoor access required	At least 1/3 of birds' lives; mainly covered by vegetation; shelter required on pasture; access to pond for waterfowl	At least 2/3 of meat birds' lives and of all laying lives; well-covered with vegetation; shelter required on pasture; access to pond for waterfowl; outdoor drinkers required	At least 1/3 of birds' lives access to pasture required; covered by vegetation	Birds must forage as soon as possible (ideally by first week); outside area must provide access to forages; shelter required on pasture	Access to pasture required; "landless animal production" is prohibited
Popholes or "bird doorways"		4 m of pophole per 100 m ² house	4 m of pophole per 100 m ² house			
Pasture rotation			Rest pasture at least 9 months between each batch of layers; rest pasture for 2 months per year plus 1 year in every 3 years for meat birds	Pasture left empty periodically to allow vegetation to regrow	If run area is limited, pasture must be rotated	

Table 1. Continued

	USDA NOP	European Union	Soil Association (UK)	Canada National	Bio-Gro (New Zealand)	IFOAM 2002
Maximum outdoor density		4 m ² per chicken ^c ; 4 m ² per layer; 10 m ² per turkey; 4-5 m ² per duck	1,000 hens/ha; 2,500 meat chickens ^c /ha; 800 turkeys/ha	4 layers/m ² ; 4 meat chickens/m ² ; 7.2 m ² /turkey (over 10 wk) ^d	833 layers/ha; 1,500 meat chickens/ha	
Maximum flock/farm size		4,800 meat chickens; 3,000 layers; 2,500 turkeys; maximum total house area (entire farm) is 1,600m ²	500 layers or meat birds per house or 250 turkeys/house; if welfare and environment are well maintained, then 2,000 layers or 1,000 meat chickens or turkeys; maximum total house area (entire farm) is 1,600m ²			
Lighting			Artificial lighting cannot extend day-length more than 16 h		No fluorescent lighting	Natural daylight is needed
Health		Downtime between flocks required	Downtime between flocks required		Goal is to eliminate need for vaccines; no GMO vaccines	
Antibiotics	Not permitted	Antibiotics permitted as last resort; withdrawal is double		Emphasizes that vaccinations before 2 days cannot have antibiotics	Not clear	Antibiotics can be used as last resort if withdrawal is double
Beak trimming	Permitted as last resort	Permitted as last resort	Not permitted; nor is wing clipping	Permitted as a last resort	Not permitted	Not permitted
Artificial insemination	Not specified, generally permitted	Permitted		Permitted	Permitted	Permitted
Forced molting				Expressly prohibited		
Caponization		Permitted for traditional product	Expressly prohibited			

Table 1. Continued

	USDA NOP	European Union	Soil Association (UK)	Canada National	Bio-Gro (New Zealand)	IFOAM 2002
Stock						
Origin	Under organic management after 2 d	Organic must be used if available; or under organic management after 3 d	Organic must be used if available; under organic management after 3 d accepted, must be organic for at least 10 wk before slaughter	Under organic management after 2 d	Under organic management after 2 d	When no organic live-stock is available: 2d for meat chickens, 18 wk for hens, 2 wk for other poultry
Minimum age at slaughter		Chicken 81 d Turkey 140 d Duck (Peking) 49 d ^e	Similar to EU but differs depending whether birds are organic or nonorganic stock and fast or slow growing			
Genetics		Where producers do not apply these minimum slaughter ages, they must use slow-growing strains	If fast-growing genetics are used, they must be grown for 10 wk before slaughter			
Feed			Animals should be fed organic feed			
% organic feed	100% feed required	15% of feed may come from nonorganic sources (by 2012, 100% organic feed will be required)		Organic feed required	Organic feed required except for fishmeal; natural vitamins and minerals should be used if possible	Some non-organic feed allowed: 15% (dry matter basis)
Source			After 2010, 50% of feed must come from farm where birds are raised		Ideally, feed should come from the farm or region	At least 50% of feed should come from the farm itself or region
Nutrient level		At least 65% of finishing feed must be cereal		Grains during finishing	At least 65% of finishing feed must be cereal	
Roughage		Roughage required in daily ration		Roughage required in daily ration; grit required		

Table 1. Continued

	USDA NOP	European Union	Soil Association (UK)	Canada National	Bio-Gro (New Zealand)	IFOAM 2002
Synthetic amino acids	Prohibited, temporary exception for methionine	Prohibited	Prohibited			Prohibited
Transport/processing						
		Should be low stress	Humanely kill unfit birds and protect birds from elements during loading, unloading and lairage	Should be low stress; humanely kill unfit birds	Detailed transport standards	Transit time must not exceed 8 h; transport and slaughter should minimize stress and adverse effects of temperature

^a Note that 1 m² = 10.8 ft²; 4 m² = 43.2 ft²

^b If mobile housing is used in which the popholes remain open at night, the indoor stocking density can be increased: 16 birds/m² (maximum of 30 kg live weight). This type of housing must not be larger than 150m².

^c If mobile housing is used, only 2.5 m² per meat bird is required

^d Additional standards for mobile units moved daily

^e Other requirements for capons, female Muscovy ducks, male Muscovy ducks, Mallard ducks, guineafowl, roasting geese

Notes

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