

Management of Backyard Poultry

By Yuko Sato, DVM, MS, DACPV, Poultry Extension and Diagnostics, Iowa State University ; Patricia S. Wakenell, DVM, PhD, DACVP, Head, Avian Diagnostics, Animal Disease Diagnostic Laboratory; Associate Professor, Department of Comparative Pathobiology, Purdue University School of Veterinary Medicine

Environment:

Backyard poultry ownership laws and regulations vary by city, county, and neighborhood. Some cities and homeowner's associations have specific rules about chicken ownership, whereas other cities permit chicken ownership with no limitations on the number or type of chickens. It is important to know the regulations and to keep peace with the neighborhood about owning poultry.

It is crucial to fence in backyard poultry to keep them at home and to protect them. Domestic chickens are easy prey for predators such as cats, dogs, skunks, hawks, and foxes. The fencing should extend into the ground at least a foot to prevent predators such as raccoons and foxes from digging under the fencing. Water holes and vegetation should be avoided around the coop, because they encourage waterfowl, insects, rodents, and other vermin to the area, which can harm poultry and spread disease. It is wise to cover the top of the enclosure to protect the birds from predators that fly or climb, as well as to prevent exposure to wild fowl that may transmit disease.

Overcrowding should be avoided; space allocation must consider and allow for growth of the birds. Enough indoor space should be available to prevent overcrowding during inclement weather. The type of bird will help determine the type of housing. Most breeds of chickens are hardy, although meat-type birds are usually sturdier than egg layers. Show breeds often do not have hybrid vigor and require heated or cooled housing. Minimum space requirements should be determined not only by size of bird but also for activity levels. However, in general, laying hens and larger chickens need a minimum of 1.5–2 sq ft of space inside and 8–10 sq ft in outside runs. Ducks and geese need much more space, 3–6 sq ft inside and 15–18 in outside runs.

Floor type is an important consideration in building a coop, and owners need to be cognizant about how to work with various materials. Putting the birds on dirt is cheap and easy, but manure is hard to remove and can become a muddy mess without proper maintenance. When the soil gets wet or contaminated, the dirt must be tilled and new soil added after topdressing the old dirt with lime or bleach to prevent parasite and microbial overgrowth. Wood is another option, but it must be in good condition, because old wood may rot and harbor pathogens, and exposed splinters can result in injuries. In addition, wood should not be treated, because chemicals such as lead can be harmful to birds. Concrete flooring is the best for permanent coops, because it is easy to clean, impervious to vermin, and a good barrier to predators. However, it is the most expensive and takes the most effort to maintain. It is also important to use good, absorbent litter material for bedding in the houses. The litter should be clean, dry, and free of mold. Good litter choices include pine shavings, rice and nut hulls, chopped straw, and ground corncobs. Litter can get very wet around the drinkers, and proper removal of caked litter is necessary. Wet litter encourages growth of pathogens, such as bacteria, fungi, and parasites, as well as leads to problems such as footpad dermatitis. Dry litter creates a dusty environment and may cause tracheal irritation. Ideally, litter should contain 20%–25% moisture; a quick test is to grab a handful of litter and see whether the litter clumps briefly and then crumbles apart. Wet litter and high ammonia levels can lead to serious welfare issues, including ammonia burns of the cornea, footpad dermatitis, breast blisters, and skin burns. The US Environmental Protection Agency (EPA) recommends that people and animals not be exposed to 25 ppm of ammonia for ≥8 hr. Adequate ventilation allows for moisture to be properly removed from the bedding.

Chickens have a body temperature of 105°–109°F (40°–43°C) and start to feel heat stress at environmental temperatures >75°F. In temperature extremes, poultry will modify their behavior to stay in their thermoneutral

zone (55° – 75° F). The ideal temperature range for poultry is 65° – 75° F, with a relative humidity of up to 40%. To encourage good air circulation, windows should be put up on the south or east side of the barn, with a narrow ledge on the windows to prevent birds from roosting and defecating in the area. Using misters and fans will help keep the poultry cool during the hot summer months, and a well-insulated barn will keep birds warm during the winter.

Nutrition:

The biggest expense in raising poultry is the cost of feed. However, good feed is a sound investment, because unbalanced diets will reduce performance levels and may result in nutritional diseases. Common issues in backyard flocks are insufficient water quality or amount, prolonged storage and degradation of vitamins and minerals, dilution of balanced and complete nutrition with scratch or supplemental feed, and feeding diets for the wrong life stage. Poultry require 1.5–3.5 parts water for every 1 part of feed consumed (up to 5–6 times for waterfowl) and require more in hot weather. Poultry will not consume feed if the amount of water is inadequate, which can lead to serious health problems. Poultry owners also have to consider the possibility of bacteria (eg, coliforms) and other contaminants in the water, including arsenic, calcium, chlorine, copper, fluorine, iron, lead, magnesium, mercury, nitrates, sodium, sulfate, and zinc.

Vitamin and mineral deficiencies seen in poultry are discussed in more detail in the poultry section (see [Vitamin Deficiencies in Poultry](#) and see [Mineral Deficiencies in Poultry](#)). The most common vitamin deficiency problems in backyard flocks are caused either by not using a vitamin premix in the diet or by using a vitamin premix beyond its shelf-life, resulting in loss of efficacy. Typically, fat-soluble vitamin deficiencies, especially vitamin D₃, will become clinically evident before water-soluble vitamin deficiencies. The most common presentation of birds with vitamin D₃ deficiency is skeletal abnormalities (rickets) that can present in a flock as mortality, loss of condition, and birds that are lame or reluctant to move because of scoliosis, soft and pliable bones, or lack of bone strength. Owners should be advised to purchase quality feed, store it correctly (avoid temperature extremes to prevent vitamins and minerals from denaturing), and use it within the expiration date. Feed should be stored in a dry, cool area to avoid vitamins from breaking down and to prevent mold/fungal growth. Using a black light to check for fluorescence in corn grains is a quick way to screen for harmful mycotoxins. If poultry owners wish to mix their own feed, the most common range of inclusion for a vitamin/mineral premix would be 3–10 pounds of premix per ton of feed. Most feed and premixes are available in large quantities and expire in 3–6 mo (as short as 2 mo in the summer), and poultry owners need to be aware of the dangers of feeding old and improperly stored feed.

Backyard poultry owners need to know how much feed each bird will consume a day to predict when to order the next batch of feed. A day-old chick will eat approximately the amount of feed that can fit on the surface of a US quarter, and an adult laying hen should eat no more than a quarter of pound of feed per day. In contrast, a meat-type bird may consume close to twice as much feed as an adult layer. However, overfeeding or giving feed ad lib can result in musculoskeletal disorders. Using commercial broiler breeds in a backyard setting is strongly discouraged, because these birds need to be on very strict feed restriction to avoid metabolic disease. Birds with access to outdoors will supplement their diet by foraging and eating insects. In addition, many poultry owners choose to supplement their birds' diet with table scraps and scratch grains. Scratch should not be overfed, because it may cause the birds not to eat a balanced diet. Fat scraps should be avoided also, because they promote fatty liver and acute death from liver rupture. Signs of low or inadequate nutrient density include slow growth, slow or lack of egg production, and feather loss. Although foraging behavior may be desired, the birds should still receive most of their diet from a balanced, complete ration.

The type of feed recommended varies with the species, age, and use of the bird. For some species of birds, finding the appropriate feed ingredients can be difficult. In general, gamebird owners who cannot find the appropriate gamebird starter feed can substitute a turkey poult starter feed, which is typically high in protein (25%–28% crude protein). It is critical to not feed layer diets to nonlaying, growing birds, because the inadequate protein levels and high calcium content (3.5%–6%) may result in irreversible renal damage. Thus, one of the most common problems seen in mixed-age flocks is urolithiasis (gout). Causes of gout include infectious bronchitis virus, feeding excessive levels of sodium bicarbonate, mycotoxicosis, and more often, feeding a high-calcium (adult layer) diet to an immature bird. Diets for growing birds (pre-lay) are typically 0.8%–1.2% calcium, whereas laying birds require 3.5%–6% calcium because of the nutritional demand for laying eggs (a typical egg requires ~2 g of calcium). However, it is important for adult layers to have adequate calcium to avoid osteoporosis (cage-layer fatigue) and thin-shelled eggs.