

# HUSBANDRY AND NUTRITIONAL MANAGEMENT OF HOBBY AND BACKYARD POULTRY FLOCKS: GENOTYPE, NATURAL FEED RESOURCES, HEALTH, AND PERFORMANCE

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**ABSTRACT:** Hobby and backyard poultry keeping encompasses systems ranging from a few urban laying hens kept for companionship to low-input rural flocks that generate income and provide animal-source protein. This review examines how flock purpose, genotype, life stage, feed resources, housing, and health considerations inform husbandry and feeding decisions in these diverse systems. Egg production, companionship, and the use of household scraps predominate in urban hobby flocks, whereas income, household nutrition, and low-cost production are central to rural systems. Indigenous breeds are important for adaptation to low-input conditions and genetic resource conservation, although small, dispersed breeding populations are vulnerable to inbreeding and genetic loss. The amount and nutritional value of scavenged feed and separately supplied household scraps vary with season, region, genotype, and flock size; these resources do not guarantee a balanced diet. Balanced feeding is particularly important during chick rearing, while adequate energy, amino acids, minerals, and clean water are required during lay. Evidence on feeding behavior, gut microbiota, stress, biosecurity, and soil lead exposure indicates that nutritional management extends beyond ration composition. Geographic and methodological differences among studies limit generalization. For practical flock management, the review emphasizes defining flock purpose, selecting a suitable genotype, assessing local feed resources, providing life-stage-specific supplementation, ensuring secure housing and feed access, and managing health and environmental risks. Future studies should address genotype-specific nutrient requirements, seasonal feed resources, and the effects of feeding and management interventions. Existing evidence does not establish a universal feed formula for all hobby and backyard poultry.

**Keywords:** Animal welfare, Backyard poultry keeping, Hobby poultry, Indigenous breeds, Scavenging feed resource, Supplementary feeding.

## INTRODUCTION

Small household flocks serve several purposes, including egg production, use of household scraps, gardening, education, and companionship (Elkhoraibi et al., 2014; Buddle et al., 2025). Fortunel (2024) examined the social and spatial circumstances of amateur chicken keeping in France, where the position of chickens between food-producing and companion animals is changing. These differing purposes affect how keepers judge the value of a flock and make management decisions.

For clarity, this review uses three working categories: hobby systems are small, non-commercial flocks kept mainly for personal interest or household use; rural backyard systems are small household flocks managed with limited external inputs and linked to household food or income; and commercial systems are market-oriented flocks managed primarily for meat or egg production. These categories are descriptive rather than rigid, because their boundaries may overlap.

In rural and resource-poor settings, backyard poultry commonly contributes to household income and access to eggs and meat with relatively few purchased inputs (Kumar et al., 2021; Singh et al., 2022). Reviews from India also discuss its contribution to rural employment and household nutrition (Lal et al., 2021; Rajkumar et al., 2021).

These settings require different husbandry and feeding approaches. A few urban hens kept for eggs and companionship may differ substantially from a rural flock that depends on scavenging and generates household income, particularly in genotype, purchased inputs, and access to veterinary services (Özdemir, 2020; Kumar et al., 2021; Singh et al., 2022). Field surveys also need careful interpretation. Kitchen scraps were commonly offered alongside commercial feed in the US survey by Elkhoraibi et al. (2014) and in the eight-household study in Seattle and Portland by Blecha and Leitner (2014). Neither study established that scraps could replace a balanced ration.

This narrative review examines how flock purpose, genotype, life stage, feed resources, housing, health, and welfare inform husbandry and feeding decisions in hobby and backyard poultry. The evidence concerns mainly domestic chickens and includes surveys, qualitative studies, experimental work, and earlier reviews. Findings from commercial flocks are considered where they address relevant biological or management questions. The aim is to identify practical implications and research needs while distinguishing reported practices from demonstrated effects.

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## EFFECTS OF FLOCK-KEEPING OBJECTIVES ON MANAGEMENT AND FEEDING DECISIONS

Flock purpose influences genotype choice, feeding expenditure, and the outcomes that keepers consider important (Kumar et al., 2021; Singh et al., 2022). In the US survey, 95.2% of respondents kept chickens for household food production, with gardening and companionship also common motivations (Elkhoraibi et al., 2014). Australian interview participants valued eggs, the use of food scraps, and companionship, while meat production was not a reported benefit (Buddle et al., 2025). Most of the 18 participants interviewed in central North Carolina kept small flocks of several breeds for eggs and companionship. Temperament, appearance, and eggshell color also influenced breed selection (Faulkner et al., 2026).

Respondents in Türkiye reported keeping poultry as pets and enjoying their behavior as well as producing food (Özdemir, 2020). Attachment to birds does not necessarily lead to veterinary consultation: Australian participants described reluctance to seek veterinary advice for sick chickens (Buddle et al., 2025). In North Carolina, keepers often managed health problems at home using online advice and reported limited access to veterinarians experienced in poultry medicine (Faulkner et al., 2026). Husbandry plans should therefore address body condition, chronic disease, and access to treatment alongside egg production.

In rural subsistence systems, supplementary feeding must be considered in relation to purchasing power, local availability, and the expected economic return. Low-input production still requires balanced supplementation and preventive health measures: malnutrition, disease, predation, limited biosecurity, and restricted access to animal-health support remain recurring constraints (Kumar et al., 2021; Singh et al., 2022).

Performance criteria should reflect the purpose of the flock, the resources available, and the health and welfare of the birds. Financial returns alone cannot capture the objectives of every hobby flock.

## GENOTYPE SELECTION, BREEDING-STOCK MANAGEMENT, AND GENETIC RESOURCE CONSERVATION

Genotype choice should reflect production goals, available feed resources, and management capacity, because improved germplasm can realize its potential only when nutrition, housing, health care, and local ecological conditions are considered together (Kumar et al., 2021; Singh et al., 2022). Growth rate, egg production, body size, resilience to environmental conditions, and foraging ability can alter the productive response to the same feed resource. Rajkumar et al. (2021) discussed two approaches in India: within-breed selection that preserves the characteristic traits of indigenous breeds and improved lines containing indigenous genetic material. Greater productive potential must be weighed against dependence on externally sourced breeding stock, segregation in subsequent generations, and genetic erosion.

Interviews with Finnish stakeholders identified non-commercial hobby keeping as one option for conserving local livestock breeds, although views differed on its adequacy (Ovaska and Soini, 2017). Eight of ten indigenous chicken breeds in Bulgaria were maintained exclusively by amateur breeders, and all of the breeds evaluated except Bregovska dzhinka were classified as endangered or critical. In this Bulgarian sample, adjusted effective population size was 64.8–1,163.5, and the rate of increase in inbreeding per generation was estimated at 0.04–0.77%. The concentration of some breeds at a small number of breeding sites and within a narrow geographic area constrained their long-term conservation (Pavlova and Lukanov, 2024). Monitoring breeding numbers, sex ratio, effective population size, and the distribution of birds among sites can help identify vulnerable populations. Pedigree recording and planned exchange of breeding stock are practical options, but their effectiveness was not tested in this survey.

In a study of 121 breeders and 21 indigenous breeds in Italy, 38% of participants were classified as backyard/fancy breeders. Of the 37 backyard/fancy breeders who answered the question on production cycles, 30 (81%) operated a closed production cycle. Among all breeders, 73% reported that they did not collect data on the production performance of their flocks (Franzoni et al., 2021). Although backyard/fancy breeders contribute to the maintenance of indigenous breeds, limited performance recording may hinder flock evaluation. Closed production cycles also make the source and relatedness of replacement breeding stock relevant to conservation planning.

Compatibility between genotype and feeding is important in two respects. First, a fast-growing or highly productive laying genotype may have energy, amino acid, and mineral requirements that cannot be met by the scavenging feed resource base. Second, the robustness of an indigenous genotype under low-input conditions does not mean that it can tolerate inadequate nutrition without limit. Data from India compiled by Rajkumar et al. (2021) show that deficits in the scavenging feed resource base vary widely among regions. Expected production level, the capacity to provide balanced feed during chick rearing, the supplementary feeds available, and the breeding objective should therefore be considered together when selecting a genotype.

## CHICK REARING AND FLOCK INTEGRATION

Rajkumar et al. (2021) described backyard systems in India in which chicks receive controlled rearing for 4–6 weeks before access to free-range scavenging. Balanced feed, suitable brooding temperatures, clean water, and protection from predators are priorities during this period. Lal et al. (2021) likewise emphasized brooding facilities and preventive health

care, although their short communication provides practical guidance rather than experimental estimates of nutrient requirements.

Mixed-age flocks require particular attention to feed allocation because chicks, growing birds, and laying hens have different nutrient needs, especially for protein and calcium. [Faulkner et al. \(2026\)](#) recorded the use of commercial pellets, chick starter, cracked maize, and scraps, as well as feeds described by participants as medicated or fortified. These reports identify a range of feeding practices but do not verify feed composition or nutritional adequacy. Studies that measure the intake of individual age groups would help determine whether all birds receive an appropriate diet.

#### **Housing, outdoor areas, and access to feed**

Housing does more than provide protection at night; its design and management may influence feed intake, drinking-water hygiene, resting behavior, oviposition, disease transmission, and predator losses. In the United States survey, approximately half of the participants reported allowing their chickens to range freely during the day, whereas more than one-third used an enclosed run. Although most respondents provided perches and nest boxes, predation, reported by 48.8% of respondents, was the most common problem ([Elkhoraibi et al., 2014](#)). All eight households in Seattle and Portland had enclosed coops, and most had a predator-protected run. Access to outdoor areas was restricted at times because the chickens damaged garden plants ([Blecha and Leitner, 2014](#)). Participants in North Carolina likewise reported providing dedicated housing for protection against weather and predators and modifying the design of outdoor areas according to local predation pressure ([Faulkner et al., 2026](#)).

Space allowances reported for particular systems should not be treated as universal welfare thresholds. For night shelters in the Indian systems reviewed, [Rajkumar et al. \(2021\)](#) specified approximately 0.09 m<sup>2</sup> (1 ft<sup>2</sup>) per bird during the growing period and 0.19–0.23 m<sup>2</sup> (2–2.5 ft<sup>2</sup>) during the laying period. These are indoor shelter allowances, not estimates of total outdoor space requirements. Ventilation, dry-litter management, feeder and drinker distribution, access to perches and nest boxes, and simultaneous access to resources should be considered alongside the nominal space allowance.

Feeder provision involves more than linear space per bird. Using video recordings from commercial broiler houses with chain feeders, [Collins and Sumpter \(2007\)](#) found that birds were more likely to join, and less likely to leave, a feeding group as local feeder occupancy increased. This social facilitation produced synchronized feeding bouts. The study did not measure individual feed intake or compare feeder layouts in hobby flocks, so it cannot define an optimal number or arrangement of feeders for those systems. The value of multiple feeding stations in small, mixed-age flocks remains a question for direct investigation.

Outdoor areas should be evaluated as both foraging environments and exposure routes: in a survey in Türkiye, wild-bird and rodent access to feeders and drinkers was associated with owner-reported internal and external parasitism, *Escherichia coli* infection, and chronic respiratory disease ([Özdemir, 2020](#)). Vegetation and invertebrates provide nutritional diversity, whereas wet soil, fecal accumulation, wild birds, and rodents may increase exposure to parasites and pathogens. [Pollock et al. \(2012\)](#) recommended a properly constructed coop and feed-storage area that exclude rodents, removal of loose feed from the coop at night, and keeping the surrounding area clean. The authors also emphasized the limited evidence available to quantify risks specifically in urban flocks.

#### **Scavenging feed resource base and supplementary feeding**

##### **Nutritional contribution of scavenging**

Scavenging chickens consume variable amounts of invertebrates, spilled grain, and plant material; keepers may also supply household scraps. Their nutritional contribution depends on season, rainfall, vegetation, household practices, flock density, and access to the range. [Rajkumar et al. \(2021\)](#) cited daytime scavenging periods of 6–11 hours in Zimbabwe and daily intakes of 45–54 g per bird from scavenging resources in Central Tanzania. These observations describe different populations and should not be combined into a single feeding standard. Assessments of crop and gizzard contents reviewed by the same authors indicate that nutrient shortages can extend beyond energy.

Across four agroclimatic regions in India, nutrient deficits summarized by [Rajkumar et al. \(2021\)](#) ranged from 9% to 20% for energy, 40% to 50% for protein, 42% to 66% for calcium, and 72% to 83% for phosphorus. The review also noted that protein may be less limiting where insects are abundant. This variation supports regional and seasonal assessment of feed resources rather than assuming that the same nutrient limits production in every scavenging system.

Feeding practices reported in field studies vary considerably. In the US survey, 75.4% of respondents combined purchased feed with kitchen scraps, whereas 21.2% provided only a commercial ration. Feeding based exclusively on scraps or grazing was reported only rarely ([Elkhoraibi et al., 2014](#)). The qualitative study from North Carolina reported commercial pellets, cracked maize, fruit and vegetable scraps, meat scraps, insects, and garden-derived feed resources ([Faulkner et al., 2026](#)). These studies describe feeding practices; they do not establish whether the diets supplied adequate energy, amino acids, minerals, or vitamins.

Keepers perceive kitchen and garden scraps as having economic and environmental value. Participants in the study by [Blecha and Leitner \(2014\)](#) described a cycle in which scraps were fed to chickens, chicken manure was returned to the garden, and waste reduction was an explicit objective. In Australia, the use of food scraps was likewise reported as one reason for keeping chickens ([Buddle et al., 2025](#)). These reported motivations do not establish the nutritional adequacy or net environmental benefit of the practice. [Pollock et al. \(2012\)](#) stated that kitchen scraps should not be used to the exclusion of commercially prepared feed. Scraps should therefore be treated as a supplementary feed resource of controlled quantity and nutritional quality, not as a complete ration.

#### ***Life-stage-specific feeding***

Nutrient requirements vary with genotype, age, body size, production purpose, physical activity, ambient temperature, and stress. The quantitative specifications considered here largely concern genotypes developed for backyard production in India. Drawing on results from earlier studies, [Rajkumar et al. \(2021\)](#) summarized dietary nutrient concentrations for these genotypes from 1 to 42 days of age, providing approximately 2,400–2,500 kcal/kg metabolizable energy, 16% crude protein, 0.77% lysine, 0.36% methionine, 0.35% available phosphorus, and 0.70% calcium. These values were reported for specific genotypes and a defined age period; they should not be applied as universal requirements for adult laying hens, ornamental breeds, or all hobby chickens.

During the laying period, calcium, phosphorus, and water need to be considered alongside energy and amino acid supply. In the United States survey, approximately half of the keepers reported routinely providing laying hens with a calcium source ([Elkhoraibi et al., 2014](#)). [Rajkumar et al. \(2021\)](#) recommended supplementary calcium sources to support eggshell quality and skeletal health in free-range laying hens. The cited sources do not provide controlled calcium dose–response data for different hobby breeds. Mineral supplementation should therefore be planned around a complete feed appropriate to age and production stage, with attention to the intake of free-choice calcium sources and eggshell quality.

#### ***Local feed resources, cost, and record-keeping***

The economic viability of supplementary feeding depends not only on the use of inexpensive ingredients, but also on knowledge of the nutritional value of local resources and their effects on production. [Rajkumar et al. \(2021\)](#) considered maize, broken rice, sorghum, and millets as energy sources and various oilseed meals as protein sources, and recommended using a vitamin–mineral premix with local ingredients. This approach is based on resource availability in India. Because the composition, processing method, availability, and price of the same ingredients may differ in other regions, local ingredient analysis and appropriate formulation are needed before using a similar ration.

Feed costs can become a concern as flock size increases. [Elkhoraibi et al. \(2014\)](#) found that owners of larger flocks more often reported difficulty obtaining sufficient quantities of feed at a reasonable cost, although the study did not measure actual expenditure.

Routine records can help keepers recognize changes in feed use, production, and health. In the Italian survey of indigenous breeds, 73% of breeders did not collect production performance data ([Franzoni et al., 2021](#)). Useful records may include feed offered and refused, body weight, egg number, shell defects, hatchability, illness, mortality, and costs. Priorities should reflect flock purpose: pedigree and hatching outcomes for breeding flocks, egg traits for layers, and body condition and health events for birds kept over several years. Records can guide investigation, although concurrent changes in season, age, and management complicate attribution to a particular feed.

## **FEED, ENVIRONMENT, AND GUT MICROBIOTA**

Feeding management extends beyond feed formulation. The manner in which birds access feed may influence feeding behavior ([Collins and Sumpter, 2007](#)), while stress and nutritional conditions may influence host–pathogen interactions ([Humphrey, 2006](#)). [Seidlerova et al. \(2020\)](#) compared the cecal microbiota of 20 indoor laying hens from three commercial farms with that of 17 outdoor hens from six backyard flocks. The relative abundances of Bacteroidetes and Proteobacteria were higher and that of Firmicutes was lower in the outdoor group. In addition, some horizontally transferable antibiotic resistance genes were less abundant in the outdoor group than in the commercial group. However, the indoor hens were 30–50 weeks old and the outdoor hens 2–4 years old, and the groups also differed in genetic background, diet, and environment. Individual antibiotic exposure was not measured, which also limits interpretation of the resistance-gene findings.

Diet was one possible explanation for the microbiota differences. [Seidlerova et al. \(2020\)](#) discussed the contribution of complex plant polysaccharides outdoors and more readily digestible commercial diets indoors, but the study did not isolate these dietary effects. Differences in microbial composition alone do not establish better health, and the results do not identify a probiotic or feed additive suitable for hobby flocks.

Studies in hobby flocks are needed to separate the effects of diet, feeder access, age, and genotype on intake and gut microbiota. Health and production measurements should accompany microbiota analyses so that biological differences can be interpreted in terms of flock outcomes.

## FEED AND ENVIRONMENTAL SAFETY

Scavenging can expose birds to contaminants in soil as well as to useful feed resources. Yazdanparast et al. (2022) sampled 69 chickens and their eggs from 55 urban gardens in Sydney and found that soil lead concentration predicted lead in blood and eggs. Blood lead exceeded 20 µg/dL in 31 of the 69 chickens. Their models indicated soil concentrations below 166 mg/kg to keep blood lead below 20 µg/dL, and below 117 mg/kg to keep egg lead below the study benchmark of 100 µg/kg.

These model estimates concern the Sydney sample and are not legal or universal safety limits. They indicate that assessing purchased feed alone can miss an important exposure route: birds may ingest contaminated soil while foraging. The findings support investigation of soil contamination where previous land use or old paint creates concern, alongside checks of feed and water quality (Yazdanparast et al., 2022).

Proper feed storage and assessment of the water sources used are important components of biosecurity (Pollock et al., 2012; Faulkner et al., 2026). Pollock et al. (2012) recommended providing a rodent-proof coop and feed-storage area, leaving no spilled feed overnight, and disposing of manure and carcasses appropriately. In the survey conducted by Elkhoraibi et al. (2014), 81.8% of keepers reported providing fresh water to their chickens every day; however, this self-reported practice does not establish the microbiological quality of the water. Participants in North Carolina used various sources, including well water, the municipal supply, and rainwater, and reported that wild birds sometimes accessed the flock's feed and water resources (Faulkner et al., 2026). These findings indicate that the type of water source and wild-bird access to feed and water should be included in flock assessments.

Biosecurity guidance may be tailored according to whether keepers regard their chickens as production animals or companion animals. Pollock et al. (2012) noted that the potential benefits and risks of urban poultry keeping could not be quantified using direct data and recommended caution when extrapolating from commercial flocks. Faulkner et al. (2026) identified a need to investigate whether biosecurity messages framed from a pet-owner perspective would be more effective for keepers who regard chickens as companion animals. Such messages could clearly describe practical measures, including handwashing, designated yard shoes, coop cleaning, and reduced contact with wild birds.

## FEEDING, STRESS, FLOCK HEALTH, AND WELFARE

Nutrition, housing, and stress can interact with the host response to infection. Humphrey (2006) reviewed evidence linking adverse environments, poor diets, and stress with susceptibility to *Salmonella* and *Campylobacter*, including interactions between immune or neuroendocrine responses and pathogen behavior. Much of this evidence concerns commercial poultry, so it does not quantify disease risk in hobby flocks. It nevertheless provides a biological basis for considering feeding and environmental management together when assessing flock health.

The sources from which backyard-flock keepers obtain health information are a major concern. In the United States survey, 59% of respondents reported experiencing no health problems during the previous 12 months. Nevertheless, 61% did not vaccinate against Marek's disease, and keepers most frequently identified the recognition and treatment of health problems as areas in which they needed further information. The internet was the most frequently consulted source (Elkhoraibi et al., 2014). In the qualitative North Carolina study, online groups likewise emerged as rapid and accessible sources of information, and some keepers treated health problems at home without specialist veterinary support (Faulkner et al., 2026). Both studies point to a need for accessible, reliable guidance suited to small-flock owners.

Reproductive and neoplastic disorders also require attention in hobby hens. Beecroft et al. (2022) described a diagnostic case with chronic yolk impaction and oviductal dilation, egg yolk coelomitis (peritonitis), and an associated oviduct/ovary adenocarcinoma with carcinomatosis. The case illustrates the value of veterinary investigation and pathological examination; it does not establish a nutritional cause or the frequency of these disorders in backyard flocks.

A large outdoor area alone does not ensure good welfare. Predation, extreme weather, parasites, contaminated water, and untreated disease may still affect the flock. Rajkumar et al. (2021) emphasized suitable night housing, balanced feed, fresh drinking water, a calcium source, and routine health monitoring. Elkhoraibi et al. (2014) found that most respondents provided fresh water daily and used perches and nest boxes, while predation remained the most frequently reported problem. Pollock et al. (2012) recommended keeping coops clean, providing additional nest bedding to reduce egg breakage, and securing feed-storage areas against rodents. Outdoor access therefore needs to be accompanied by appropriate shelter, preventive care, and regular observation.

## INTERPRETATION OF PRODUCTIVITY AND ECONOMIC OUTCOMES

Calik and Obrzut (2023) evaluated three conserved hen strains over five generations under standardized feeding and housing. The strains differed in body and egg weights, age at first lay, and laying performance; several egg-quality traits also changed with hen age. These findings support accounting for genotype and age when comparing flock outcomes. They do not establish that one ration is suitable for every backyard genotype.

Lal et al. (2021) and Rajkumar et al. (2021) described the potential of backyard poultry to supplement rural incomes in India with relatively low initial investment. Profitability still depends on local feed and housing costs, losses, and the value of the products obtained.

A different approach may be required when evaluating productivity in hobby flocks. Blecha and Leitner (2014) noted that the costs of housing and maintaining chickens could exceed savings from home-produced eggs. Participants in Seattle and Portland reported spending money not primarily to reduce costs, but to obtain eggs they considered healthier, support animal welfare, contribute to their children's education, and reduce waste (Blecha and Leitner, 2014). Australian participants likewise considered egg production and the use of scraps alongside the companionship provided by chickens (Buddle et al., 2025). In such a system, success should be evaluated not only by cost per egg, but also by flock health, reduced losses, keeper satisfaction, and the environmental safety of the system.

### **Integrated husbandry and feeding framework**

The following six steps summarize practical implications of the reviewed evidence. Their combined effectiveness has not been tested as a management intervention.

#### ***Defining the purpose and flock profile***

Management begins with the purpose of the flock. Urban keepers commonly value eggs, gardening, the use of scraps, and companionship (Elkhoraibi et al., 2014; Buddle et al., 2025). These priorities affect suitable flock size, retention of roosters and older hens, breeding plans, and the amount the keeper is willing to spend on feed and care.

#### ***Aligning genotype and the breeding-stock plan with the intended objective***

Conservation-oriented flocks need regular assessment of effective population size, inbreeding, and genetic diversity, particularly when birds are concentrated at a small number of sites (Pavlova and Lukanov, 2024). The Italian survey identified both closed production cycles and limited routine performance recording (Franzoni et al., 2021). Recording the origin of breeding birds and planning matings can help make conservation decisions explicit. In production-oriented flocks, expected body weight and egg production should be considered alongside the available scavenging resources and capacity to provide supplementary feed (Rajkumar et al., 2021).

#### ***Preliminary assessment of space, soil, water, and the scavenging feed resource base***

When assessing the outdoor area, not only its size but also vegetative cover, drainage, predation pressure, contact with wild birds, and previous contaminant exposure should be considered. Where historical lead contamination is suspected, soil testing consistent with local regulations and expert guidance may be considered. In the single Sydney study reviewed here, ingested soil was identified as a potential contributor to lead exposure in chickens and eggs (Yazdanparast et al., 2022). Water-source type and wild-bird access to feed and water should also be included in the initial assessment; keepers in North Carolina reported using well water, municipal water, and rainwater, and stated that wild birds occasionally accessed feed and water sources (Faulkner et al., 2026).

#### ***Life-stage-specific basal and supplementary feeding***

During controlled chick rearing, chicks should be provided with a balanced starter feed and clean water; after transition to outdoor access, supplementary feeding should continue, taking into account the quantity and quality of the scavenging feed resource base (Rajkumar et al., 2021). The quantity and composition of supplementary feed should be adjusted in accordance with genotype, age, egg production, season, body condition, and the available scavenging feed resources. Household scraps should remain supplementary to an appropriate complete diet (Pollock et al., 2012). The need for additional calcium and other minerals in laying hens should be assessed in relation to the basal diet (Rajkumar et al., 2021).

#### ***Monitoring feed access, hygiene, and daily observations***

Regular observation should establish whether every bird can reach feed and clean water. The socially facilitated feeding described in commercial broilers provides a reason to investigate access within groups (Collins and Sumpter, 2007). Keepers in North Carolina reported handwashing, designated yard shoes, variable cleaning schedules, and occasional wild-bird access to feed and water (Faulkner et al., 2026). Pollock et al. (2012) recommended secure feed storage, removal of spilled feed at night, and a clean area around the coop to reduce rodent access.

#### ***Evaluating outcomes through record-keeping***

After a change in feeding, keepers should record egg production, shell defects, body weight and condition, disease, mortality, and costs. Records may also include fertility and hatchability in breeding flocks, and pedigree and mating information where breed conservation is an objective. Franzoni et al. (2021) found limited routine recording of production performance. Such records can document changes within a flock and inform veterinary assessment, with allowance for changes in age, season, and other management practices.

## EVIDENCE GAPS AND RESEARCH PRIORITIES

Among the sources reviewed, controlled evidence on feeding specifically for hobby chickens was limited. Quantitative nutrient specifications came mainly from [Rajkumar et al. \(2021\)](#), who focused on improved backyard genotypes in India. Studies by [Blecha and Leitner \(2014\)](#), [Elkhoraibi et al. \(2014\)](#), and [Faulkner et al. \(2026\)](#) describe owner practices but do not measure their nutritional adequacy or treatment effects.

Research should first establish life-stage-specific requirements for different hobby and indigenous genotypes. Energy, digestible amino acids, calcium, and available phosphorus should be evaluated against growth and egg production, as well as bone health, eggshell quality, body condition, behavior, and longevity. Seasonal and regional assessments of scavenged feed resources are also needed. These should measure outdoor area, stocking density, plant and invertebrate biomass, actual feed intake, and the extent to which scavenged feed replaces supplementary feed.

Feeding behavior and resource distribution also warrant investigation. The social facilitation observed in commercial broilers by [Collins and Sumpter \(2007\)](#) should be examined in small laying flocks, indigenous genotypes, and mixed-age groups. Studies of diet and microbiota need designs that separate dietary effects from those of age, genotype, and environment. These factors differed simultaneously in the comparison by [Seidlerova et al. \(2020\)](#), preventing attribution to any one factor. Future work should use age- and genotype-matched groups, quantify feed intake, and relate microbiota findings to health and performance.

Lead-exposure models should be tested across urban and rural settings before the thresholds reported for Sydney are applied elsewhere ([Yazdanparast et al., 2022](#)). Keeper education also warrants study. [Elkhoraibi et al. \(2014\)](#) and [Faulkner et al. \(2026\)](#) both identified the internet as an important information source, but their different samples and study periods do not establish a temporal trend. Research should assess the accuracy of feeding and biosecurity messages, their relevance to keepers' companion-animal or production goals, and their effects on behavior.

Finally, terminology and outcome measures need to be standardized. The terms "hobby," "backyard," "small-scale," "rural," and "free-range" denote different flock sizes and input levels across sources. This heterogeneity complicates the integrated assessment of economic outcomes, feed use, and health risks. Future studies should report, at a minimum, flock type and size, age structure, genotype, housing, outdoor area, feed quantity, water source, how poultry products are used, and access to animal health services.

## CONCLUSION

Husbandry and feeding plans for hobby and backyard flocks should reflect their purpose, genotype, age structure, local feed resources, and access to veterinary care. Outcomes extend beyond growth and egg output to body condition, longevity, keeper objectives, and the conservation of small breeding populations. Outdoor access supplies foraging opportunities, but scavenged resources, grain, and household scraps do not necessarily meet nutrient requirements. An appropriate basal diet and targeted supplementation need to be accompanied by secure housing, reliable feed and water access, hygiene, and regular flock records. Soil contamination and other environmental hazards also require attention. The available evidence supports this integrated approach, while its geographic and methodological limits preclude a universal ration for all hobby and backyard poultry. Feeding trials in defined genotypes and seasonal assessments of local feed resources remain priorities.

## DECLARATIONS

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### Data availability

This narrative review used information from the published sources cited in the reference list. No new datasets were generated or analyzed.

### Authors' contribution

Ercan Mevliyaogullari, Fatma Yenilmez, and Arda Yildirim: Conceptualization, Investigation (literature review), Writing – original draft, and Writing – review and editing.

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### Ethics approval and consent to participate

Not applicable. This narrative review uses published literature and reports no new studies involving animals or human participants. Animal ethics approval and ARRIVE reporting requirements for original animal experiments therefore do not apply.

### Competing interests

Ercan Mevliyaoğulları is the founder and owner of Mevli Pet Food and Animal Nutrition Ltd. This affiliation is disclosed as a potential competing interest. The other authors declare no competing interests.

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