Backyard poultry have gained popularity within the United States as a sustainable and small farm production animal that can be kept in a relatively small area. In the City of Pensacola and Escambia County, local governments have passed ordinances to make it easier for residents in non-agriculturally zoned areas to legally keep poultry for personal egg and meat consumption. University of Florida IFAS (Institute of Food and Agricultural Sciences) Extension works to provide citizens with the information they need to keep a healthy and productive flock. Additional information can also be found through the University of Florida Electronic Data Information Source database (EDIS).

**Benefits of Backyard Chickens**
- Nutritious food for family consumption
- Sustainable local food systems
- Pet therapy
- Fertilizer production
- Bug terminator
- Agro biodiversity conservation
- Biology and nutrition education
- Promote friendly neighbors with egg share
- Bridge urban and rural communities

**Getting Started: Laws and Regulations**
- Be aware of your city ordinances before planning a backyard flock
- [http://escambiachickens.com/ordinances/](http://escambiachickens.com/ordinances/) – Copies of Escambia County Ordinance and the City of Pensacola policy

**Poultry Terms**
- Chick – a new hatch or very young chicken
- Pullet – a young female chicken
- Hen – a mature female chicken
- Cockerel – a male chicken less than 1 year old
- Cock – a male chicken more than 1 year old
- Rooster – a mature male chicken
- Broiler – used mainly for meat. A broiler is a chicken 6 to 7 weeks of age and weighs 4+ pounds when it is sent to market.
- Layer – a mature female chicken that produces eggs. Most can lay 300+ eggs/year. Layers can begin to produce eggs at between 4 to 6 months of age.
- Molt – process of shedding feathers during a rest period from laying; under normal conditions would occur once a year.
The Basics: NUTRITION and FEEDING

Digestion Parts and Functions

- **Mouth/Beak** – gather and break down feed (no teeth)
  - Esophagus – tube from mouth to stomach that is open at the mouth end
  - Crop – feed storage and moistening
  - Proventriculus – glandular stomach (HCl and gastric juices)
  - Gizzard – muscular stomach; mechanical breakdown; grit particles are essential
  - Small Intestine – site of enzymatic digestion and absorption
    - Functions of the small intestine: digestion of proteins, carbohydrates, and fats; absorption of the end products of digestion
  - Ceca – site of beneficial digestive microbes
  - Large Intestine
    - bacterial activity
    - water absorption
    - waste storage
  - Cloaca – common chamber for GI and urinary tracts
  - Vent – common exit for both GI and urinary tracts

- **What do Poultry Need?**
  - Unlimited Water – For temperature regulation & digestion
  - Protein – 11 of 20 amino acids
  - Carbohydrates
  - Fat – 1 fatty acid
  - Vitamins – 13
  - Minerals – 27 known

- **Nutritional requirements to provide a balanced diet depend on:**
  - Maintenance
  - Growth
  - Production
  - Health of the birds

- **Rules**
  - Do not feed layer feed to broilers. Layer feeds are for chickens in the egg-laying maturity stage, not chickens that are intended to be harvested for meat consumption.
  - Do not feed finely ground feed. Chickens need coarser feed or grit supplements (see photos) to have a healthy digestive system.
  - Most commercial feeds are designed to meet all of the bird’s requirements when fed as a sole source of nutrition.

- **Feed Additives (Optional)**
  - Antioxidant: Prevents rancidity of the fat in the diet or to prevent nutrient loss.
  - Pellet binders: Used to improve texture and firmness of pelleted feeds.
  - Hormones are not added to any poultry feeds.
  - Coccidiostats: To prevent coccidian problems from microscopic parasites called coccidian which poultry can ingest. Symptoms include pale skin, no energy, not eating, and blood in manure.
Feed Storage

- Store feed in container with a tight-fitting lid and in a cool, dry place. Never feed moldy or discolored feed.
- Limit purchases to a 2-3 week supply. Also, be sure to check dates on the feed purchased to make sure it was packaged within the last month. Older feed can have mold or have insect problems that will ruin the feed before you ever open the bag.
- Keep feed and cool, clean water available to birds at all times.
- Ration-feeding of diets can result in reduced growth, egg production and eggshell strength. Ration feeding refers to limiting the amount of feed consumed per animal.
- Fill feeders at ¾ capacity to avoid excessive waste.

What inhibits food and water intake?

- Inadequate water
- Stale or rancid feed
- Mold
- Disease
- Heat
Acceptable Kitchen Scraps and Food Examples

<table>
<thead>
<tr>
<th>Food</th>
<th>Type</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td>Raw &amp; applesauce</td>
<td>Apple seeds contain cyanide, but not in sufficient quantities to kill</td>
</tr>
<tr>
<td>Asparagus</td>
<td>Raw &amp; cooked</td>
<td>Okay to feed, but not a favorite</td>
</tr>
<tr>
<td>Bananas</td>
<td>Without peel</td>
<td>High in potassium, a good treat</td>
</tr>
<tr>
<td>Beans</td>
<td>Well-cooked only</td>
<td>Also green beans</td>
</tr>
<tr>
<td>Berries</td>
<td>All kinds</td>
<td>A treat, especially strawberries</td>
</tr>
<tr>
<td>Broccoli &amp; cauliflower</td>
<td>Raw or cooked</td>
<td>Tuck into a suet cage and they will pick at it all day.</td>
</tr>
<tr>
<td>Carrots</td>
<td>Raw &amp; cooked</td>
<td>Poultry like the carrot foliage also</td>
</tr>
</tbody>
</table>

DO NOT FEED TO A CHICKEN... and why

<table>
<thead>
<tr>
<th>Food</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw green potato peels</td>
<td>Toxic substance called Solanine.</td>
</tr>
<tr>
<td>Anything very salty</td>
<td>Can cause salt poisoning in small bodies such as chickens.</td>
</tr>
<tr>
<td>Dried or undercooked beans</td>
<td>Raw, or dry beans, contain a poison called hemaglutin which is toxic to birds.</td>
</tr>
<tr>
<td>Avocado skin &amp; pit</td>
<td>Skin and pit have low levels of toxicity.</td>
</tr>
<tr>
<td>Raw eggs</td>
<td>You don’t want to introduce your chickens to the tastiness of eggs which may be waiting to be collected in the nest boxes</td>
</tr>
<tr>
<td>Candy, chocolate, sugar</td>
<td>Bad for their systems and chocolate can be poisonous to many pets.</td>
</tr>
</tbody>
</table>

Foraging Feeding

- Chickens that can go outdoors can supplement their diet with greens and insects.
- It will not take them long to devour the forage within their enclosure. Make sure to keep this in mind when selecting a location of your coop. Consider a moveable coop as shown above.
- If free ranging is used to supplement the diet, do not use chemical pesticides in foraging area unless it is labeled for use with poultry, or withdrawal periods are followed carefully.
- Poultry are not ruminants and cannot digest cellulose in most plants very efficiently.
- Caeca develop microbes with the capacity to digest fiber and eat backyard forage.
- Chickens will eat almost anything as long as it is not too tall or too tough.
- The amount of sun and the time of day has the most impact on foraging activity.
- Poultry should spend more time outside foraging during the early morning and late afternoon, compared to around noon.
- Foraging during overcast conditions is higher than during full sun.
- To maximize foraging, provide shade and remove feeders in the morning when birds are most likely to forage.
- On pastures, birds may consume enough nutrients to supplement 10% to 30% of their diet.
Managing Backyards for Forage

- Keep the yard vegetation young and productive.
- Poultry coops should be laid out so it is easy to move pens.
- Oats, clovers mixed with grasses are most palatable.
- Be cautious – some seed blends are not adapted to our area.

Insect Nutrient Composition

<table>
<thead>
<tr>
<th>Insect</th>
<th>Protein %</th>
<th>Fat %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crickets</td>
<td>6.7</td>
<td>5.5</td>
</tr>
<tr>
<td>Termites</td>
<td>14.2</td>
<td>NA</td>
</tr>
<tr>
<td>Caterpillars</td>
<td>28.2</td>
<td>NA</td>
</tr>
<tr>
<td>Grasshopper</td>
<td>14.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Water Bugs</td>
<td>19.8</td>
<td>8.3</td>
</tr>
<tr>
<td>Spider</td>
<td>63</td>
<td>10</td>
</tr>
</tbody>
</table>

Nutrient Deficiency Effects

- Salt – feeding a salt-deficient diet will lead to increased feather pecking and a decline in egg production.
- Calcium – inadequate calcium consumption will result in decreased egg production and lower egg shell quality.
- Vitamin D – inadequate levels of vitamin D quickly results in decreased egg production.
- Protein – if dietary protein is too low or the amino acid requirements are not met, poor egg production, and hatchability will occur.
- Fat – impairment of the absorption of fat-soluble vitamins (A, D, E, and K) is the most serious consequence of a dietary deficiency of fat and will adversely affect egg production.
Feeders

- **Hanging System**
  - Raise and lower to bird height with a good rule of thumb being to have the outer lip level with the bird’s back. This prevents spillage and spoilage of feed.

- **Trough Feeder Systems**
  - Chickens are more susceptible to disease with this system and the feeder should be taken out of pen before moving. This system does allow more chickens to feed at once than other conventional systems.

- **Watering Systems**
  - Five-gallon bucket on top of the pen will gravity-feed a bell-type container. The bucket needs to have mesh screen across the top and the whole system needs to attach to the pen.
  - Daily water consumption at 90°F for chickens will be approximately ½ pint per bird per day.
  - Water intake can vary greatly depending on weather conditions, size of the bird, and the production level they are currently in (egg or meat birds).
The Basics: SHELTER

❖ Housing
  o Chicks will need to spend 3–5 weeks in the brooder after hatching. Depending on the weather this may vary slightly.
  o Protect from rain and cold when first outside. After about three weeks, chickens can tolerate cold or rain, but not both at the same time.
  o Provide some sort of shade.

❖ Before you build a coop:
  o Check your ordinance requirements: Type; Dimensions; Setback
  o Search online for basic or customized coop plans. Use keywords: chicken coop; brooder; henhouse; chicken tractor

❖ Building options
  o Build new
  o Acquire and refurbish
  o Buy kit and assemble
  o Buy finished unit

❖ Types
  o Brooders — pens for raising chicks
  o Henhouse — can have runs for birds and should be for adult birds only
  o Chicken Tractors — bottomless, movable pens that serve as housing for adult birds
  o Chicken Coop — a stationary pen for adult birds that is usually large enough for humans to enter

❖ All Housing should have the following:
  o Clean, dry, free of drafts (in winter), and comfortable year-round
  o Larger spaces promote less insect problems, disease, and odors
  o Constructed of pressure treated lumber for all wood that touches the ground

❖ Henhouse Flooring, Lighting, and Ventilation
  o Constructed of ¾” exterior grade plywood or concrete
  o Use 3”-deep absorbent litter that is clean, mold-free, and dry, but not dusty. These could include pine or hardwood shavings, rice hulls, chopped straw, shredded newspaper, peanut hulls, or other alternative materials. Cedar shavings are not recommended because of allergy and odor problems.
  o Litter needs to be stirred to keep from becoming compacted and replaced when wet to reduce odors. Water containers should be moved to prevent wet areas from forming within the structure.
  o Hens needs adequate light year round since they will molt and reduce production without enough light hours. Aggression, food and water intake, and overall health can all be affected by light hours.
  o Production and health can be maximized through providing artificial light to reach 14–16 hours per day of light. A 15–25 watt light bulb on a timer can provide the light needed for a flock.
  o Ventilation is an important part of the construction of any poultry confinement structure. Place windows on the south side of the henhouse and insure adequate light and warmth during the winter. Also, slanted window sills are recommended to discourage roosting.
o Place vents on the south or east side of the structure. Chickens cannot sweat and will start panting at around 95 degrees. A damp structure or one with odors could indicate not enough ventilation.

o Insulation is another idea to consider to help reduce heat during the summer and keep heat in during the winter. This modification also will help with moisture accumulation.

**Confinement Systems**

❖ **Traditional Coops** *(Note: Guidelines recommend no less that 3–4 square feet of space per bird)*

  o **Advantages**
    ▪ Built to your specs
    ▪ Plans readily available
    ▪ Used in urban areas

  o **Disadvantages**
    ▪ Ground can become barren
    ▪ Not made for a large number of animals

❖ **Chicken Tractors**

  ▪ Bottomless, portable shelter-pen that fits over garden beds
  ▪ Many designs available
  ▪ Mostly commonly used with fruit and vegetable production
  ▪ Popular among sustainable production enthusiasts

  o **Advantages**
    ▪ Can be moved very easily
    ▪ Insect control
    ▪ Source of fertilizer
    ▪ Used in urban areas

  o **Disadvantages**
    ▪ Ground can become barren
    ▪ Semi-labor intensive
    ▪ Not made for a large number of animals

❖ **Lack of cleanliness is often a precursor to poultry disease. Preventive measures include:**

  o Completely clean and disinfect houses, and equipment before starting chicks or housing layers
  o Daily cleaning of waterers
  o Screened manure pits under roosts
  o Manage litter to keep it dry and clean
  o Spread accumulated manure and litter under soil away from areas used by chickens. Compost before use as garden fertilizer according to UF recommendations

**Nests**

❖ Provide one nest for every 4–5 hens at least 12” x 12” in size. Nests can be made of wood, metal, or plastic and placed on a west or east facing wall for a south facing coop. Provide a landing board for easier entrance and bedding to prevent the eggs from breaking.

**Roosts**

❖ Each bird should have 8”–9” of roost space with roosts themselves spaced 12”–14” apart. 1½” dowels or 2”x 2” lumber works well for the perch. Birds may have to be taught to use these but will catch on quickly.
The Basics: PREDATOR CONTROL

- The goal is to balance safety with freedom for the chickens to provide them with every opportunity to exercise their free will and natural instincts.
- We also need to safeguard them in a way that respects and protects the wild animals we live among who are entitled to equal consideration. It is important to know the wildlife in your particular area.
  - Common Predators: fox, raccoon, hawk, opossum, owl, coyote, skunk, dog, snake, bobcat
- The most effective means of predator-proofing is to lock chickens up each night before twilight in a secure coop.
- Situating the coop in close proximity to the house not only discourages wild visitors but also allows for quick action if an invasion occurs.
- Some people install baby monitors and security cameras in their coops.
- A perimeter fence is needed to keep the chickens in a protected outdoor area during the day. Any fence has to be at least five feet high.
- Fences can be made from a variety of materials but durability is essential for long-term security. Woven wire fencing is best (two-inch gauge or less) because there are no welds to corrode and break. Staple fencing to the inside of windows and vents, as well as covering runs.
- The fencing has to be buried underground at least a foot or folded outward on the ground for a foot and a half to deter burrowing predators.
- If the area adjacent has overhanging tree branches expect lightweight chickens to fly up to roam the tree tops.
√ Chicken Anatomy

√ Wing and Feather Anatomy
The Basics: BREEDS

Choosing a breed

- There are many things to consider before selecting a chicken breed for your flock - whether you are planning to start a new flock or to add to an existing one.
- For instance, what are you looking for?
  - a broiler breed
  - a layer breed
  - a dual-purpose breed
  - a pet
  - chickens to show at exhibitions
  - a heritage breed

- Before selecting your chickens also review your zoning restrictions.
  - For example . . .
    - is slaughtering allowed?
    - how many chickens are you allowed?
    - are roosters allowed?

- Many websites are available on Breed Traits, including the Handy Dandy Chicken Chart and publications from individual Breed Associations.

Breed Groups

- Meat Breed Factors
  - A fast growing 'broiler' breed
  - A Cornish cross can reach 4-5 lbs in six weeks and 6-10 lbs in twelve weeks
  - A slower growing breed (for ‘ethnic markets’)
  - Examples of home meat birds: Australorp and Silkie breeds

- Layer Breeds
  - There is a variety of breeds suitable for laying hens, depending on size, egg color, and temperament.
  - It is best to thoroughly research breeds through UF/IFAS EDIS, internet sites, or the local Extension Agent.
  - At around 20 weeks, hens will start to lay on their own, regardless of whether you have a rooster.

- Heritage Breeds
  - Allow you to participate in conservation of genetic and breed diversity
  - Use breeds that are adapted to area’s environmental conditions
  - Opportunities to provide specialty products

Reproduction

- Female Poultry Reproductive System
  - The ova produced in the ovary develop into egg yolks.
    - It takes approximately 3 hours for the thick white to be placed around the yolk in the magnum.
    - It takes approx. 1¼ hour’s for two shell membranes to be placed around the yolk and thick white.
    - It takes about 25 to 27 hours for a chicken to produce one egg.
Male Poultry Reproductive System
- The vas deferens carries the seminal fluid and sperm cells to the cloaca.
- The cloaca is the enlarged part where the large intestine joins the end of the alimentary canal.
- The alimentary canal is the food-carrying passage that begins at the mouth and ends at the vent.
- The papilla is the organ in the wall of the cloaca that puts the sperm cells into the hen’s reproductive tract.
- **Roosters are necessary only for fertile eggs**

Development
- An **incubator** provides and maintains a favorable environment for hatching fertile eggs.
- The incubator replaces the hen.

4 Important Factors to Successful Incubation Are:
- Temperature — 98 – 102 degrees F.
- Ventilation — air must flow through the incubator.
- Turning the eggs — at least 3 times daily. Incubators can have automatic turners.
- Humidity (water) — there must be moisture to keep the egg shell healthy.

Candling is the process of using a bright light to look inside of the egg without cracking it to see if the chick is developing properly.

Hatching Time
- Hatching begins on Day 21, give or take 3 days, and can be impacted by light and temperature.
- May take several hours for chick to exit shell
- Don’t help Chicks Hatch -- Struggle Necessary for Survival

And then....
- Chicks remain in incubator until dry and fluffy
- May take several hours to dry
- Once dry and fluffy place in the **brooder**

What is a brooder?
- Pen for chicks
- Absorbent bedding i.e. sawdust, shredded newspaper, etc. (no cedar)
- Shop light hung low to warm chicks
  - Select a bulb that is made for a heat lamp. They can be purchased along with most poultry equipment at a store.

Why Is Proper Brooder Management So Critical?
- All of the chicken’s body systems are developing
  - Immune system
  - Thermoregulatory system
  - Digestive system
  - Feathering
  - Eating and drinking behavior
Keep the Brooder Clean!
- Change out daily
  - Bedding
  - Water
  - Food

Brooder Requirements
- Space
  - Draft shield
    - 12”–18” high
  - ½ square foot of space per chick
- Heat Sources
  - Light bulb
  - 95°F for Week One – then decrease 5°F per week.
- Litter
  - 3 inches of clean dry litter (No VERY fine sawdust and no cedar)
  - Keep litter around water and feed dry and clean.

Brooder Success “Rules-of-Thumb”
- Water
  - 1 quart for every 25 birds (clean and fill daily)
  - For large number automatic watering systems work best
- Feeders
  - Place near heat, but not directly underneath source
  - Fresh food in front of chicks at all times
- Delivery Day
  - Brooder up and running 24 hours before chicks arrive
  - Have them sent overnight
  - Show each bird water source

The chicks will tell you if they are not comfortable.

The Basics: EGG LAYING
- A layer will produce an egg every 1-2 days and pullets will start laying when they reach 20-24 weeks. The first eggs will be small and on the floor.
- Light hours are an important part of the process and requirement having a program to manage the light hours your chickens receive. You will need to decrease light hours for growing pullets and increase hours after they start laying with artificial lights (orange/red lights are best) to maintain 14-16 hour day length.
- 250 eggs per year = 1st year of production
- Why have my hens stopped laying?
  - Nutrition
    - Completely balanced diet
    - Out of feed or water
Disease
  - Vaccinate (especially in confinement systems)

Age (see chart)

Management
  - Heat
  - Overcrowding
  - Light

Backyard Chicken Sources
  - Local Chicken Breeders
  - Contact local breeders through a local farmers’ market or feed store
  - Mail Order Companies
    - e.g., Murray McMurray Hatchery
  - Local Supply Stores
    - Feed & Seed Stores
    - Pet Supply Stores
    - Country Supply Stores
  - Craig’s List

Online Resources
  - American Livestock Breeds Conservancy - [http://albc-usa.org/](http://albc-usa.org/)
  - 4 H Virtual Farm – Poultry - [http://www.sites.ext.vt.edu/virtualfarm/poultry/poultry.html](http://www.sites.ext.vt.edu/virtualfarm/poultry/poultry.html)

Acknowledgements
  - Burbaugh, B. Pasture Poultry Systems. UF/IFAS Duval County Extension.
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