Small Flock Poultry Program

Monday, May 18: Getting Your Flock Started
Tuesday, May 19: Healthy Management Practices
Wednesday, May 20: How to Increase Egg Production
Thursday, May 21: Egg Handling, Food Safety and Egg Sales

Texas A&M Agrilife Extension
Getting Started with Poultry

Craig D. Coufal, Ph.D.
Associate Professor and Extension Specialist
Department of Poultry Science
https://posc.tamu.edu
ccoufal@poultry.tamu.edu
Getting Started with Poultry

1. Gather accurate information
2. Find reputable source of birds
3. Plan well
   • Be prepared for all possibilities
     ✤ Manure management/disposal
     ✤ Dead bird disposal
     ✤ Housing – adaptable to weather extremes
     ✤ Predator control
4. If for business, know the applicable rules and regulations
Gather Information

- **University/Extension**
  - posc.tamu.edu
  - poultry.extension.org
    - Small and Backyard Poultry
      - Publications, webinars, Ask an Expert

- **Government agencies**
  - Texas Department of Agriculture (TDA)
  - Texas Department of State Health Services (DSHS)
  - United States Department of Agriculture (USDA)
  - Centers for Disease Control and Prevention (CDC)
  - Etc.
eXtension Small and Backyard Flocks Website

- **Upcoming webinars**
  - June 16 – Slaughter and processing of poultry
  - July 15 – Managing egg laying hens in small and backyard flocks
  - August 4 – Managing predators with a small and backyard poultry flock
  - September 1 – Raising exhibition chickens
  - October 6 – Raising your own meat chickens
  - November 4 – Selecting, handling and cooking turkey

- All webinars at 3 pm Eastern (2 pm Central)
Should I Get Chickens?

- Reasons for owning chickens
  - Personal enjoyment
    - Satisfaction of producing own food
    - You enjoy animals
    - Taste preference for home-grown food
    - Fun hobby
  - Teaching tool for children
    - Animal husbandry
    - Introduction to agriculture and food production
# My Poultry Investment

## Table 2. Typical Average Body Weight and Weekly Feed Consumption for Replacement Pullets.

<table>
<thead>
<tr>
<th>Age (weeks)</th>
<th>Leghorn (white-egg layers)</th>
<th>Dual-purpose (brown-egg layers)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Body Weight (lb)</td>
<td>Feed (lb)</td>
</tr>
<tr>
<td>0</td>
<td>0.08</td>
<td>0.22</td>
</tr>
<tr>
<td>2</td>
<td>0.22</td>
<td>0.62</td>
</tr>
<tr>
<td>4</td>
<td>0.57</td>
<td>1.14</td>
</tr>
<tr>
<td>6</td>
<td>0.99</td>
<td>1.50</td>
</tr>
<tr>
<td>8</td>
<td>1.46</td>
<td>1.58</td>
</tr>
<tr>
<td>10</td>
<td>1.65</td>
<td>1.68</td>
</tr>
<tr>
<td>12</td>
<td>2.16</td>
<td>1.76</td>
</tr>
<tr>
<td>14</td>
<td>2.43</td>
<td>1.86</td>
</tr>
<tr>
<td>16</td>
<td>2.69</td>
<td>1.90</td>
</tr>
<tr>
<td>18</td>
<td>3.03</td>
<td>1.98</td>
</tr>
<tr>
<td>20</td>
<td>3.25</td>
<td>2.20</td>
</tr>
</tbody>
</table>

1 Leghorns: Fed well-balanced diet with 2,850 kcal ME/kg (1,293 kcal/lb) 0-12 weeks of age and 2,900 kcal ME/kg (1,315 kcal ME/lb) 12-20 weeks of age.

2 Dual-purpose/brown-egg laying strains: Fed well-balanced diet with 2,800 kcal ME/kg (1,270 kcal/lb) 0-12 weeks of age and 2,850 kcal ME/kg (1,293 kcal ME/lb) 12-20 weeks of age.

Source: “How much will my chickens eat?” University of Kentucky Cooperative Extension Service publication by Dr. Jacquie Jacob and Dr. Tony Pescatore.
Egg Economics

- Getting to egg production (pullet rearing to 20 weeks of age)
  - 17 lbs. of feed for pullets
  - Feed prices range from $0.25 to $0.73/lb
  - $0.25 x 17 = $4.25
  - Chick cost = at least $2.50
  - Minimum chick + feed = $6.75/bird
  - Other costs to consider:
    - housing, litter, equipment (feeders, drinkers, nest boxes, etc.), vaccination and medication and the unexpected.
Egg Economics

- Egg production phase (20 weeks +)
  - Optimum performance standards of commercial strains
    - 3.4 lbs. of feed/dozen eggs
  - Layer feed = $0.23 to $0.63/lb.
  - Feed costs
    - 3.4 lb. x $0.23 = $0.78/dozen
Egg Economics

- **Pullet cost per dozen**
  - Assume 280 eggs/hen/year (76.7% production rate)
  - $6.75 / 23.3 = $0.29/dozen

- **Total cost per dozen produced**
  - $0.29 + 0.78 = $1.07/dozen
  - Minimum chick and feed cost estimates only
  - (Does not include housing, equipment, vaccination and medication, losses to mortality, etc.)
Egg Economics

- **Pullet cost per dozen**
  - Assume 280 eggs/hen/year (76.7% production rate)
  - $6.75/23.3 = $0.29/dozen

- **Total cost per dozen produced**
  - $0.29 + 0.78 = $1.07/dozen
  - Minimum chick and feed cost estimates only
  - Does not include housing, equipment, vaccination and medication, losses to mortality, etc.
  - $2.36/1.5 = $1.57/dozen
## Egg Economics

<table>
<thead>
<tr>
<th></th>
<th>Optimum production with minimum cost</th>
<th>Less than optimum production</th>
<th>add higher chick cost</th>
<th>add higher feed cost</th>
<th>add lower feed conversion</th>
<th>Organic feed optimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chick price</td>
<td>2.50</td>
<td>2.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>2.50</td>
</tr>
<tr>
<td>Pullet feed (lbs)</td>
<td>17.00</td>
<td>17.00</td>
<td>17.00</td>
<td>17.00</td>
<td><strong>18.00</strong></td>
<td>17.00</td>
</tr>
<tr>
<td>Pullet feed price ($/lb)</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.35</td>
<td>0.35</td>
<td><strong>0.73</strong></td>
</tr>
<tr>
<td>Pullet cost (20 wks)</td>
<td>6.75</td>
<td>6.75</td>
<td>7.75</td>
<td>9.45</td>
<td>9.80</td>
<td>14.91</td>
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<tr>
<td>Layer feed (lb/dozen)</td>
<td>3.40</td>
<td>3.40</td>
<td>3.40</td>
<td>3.40</td>
<td><strong>3.60</strong></td>
<td>3.40</td>
</tr>
<tr>
<td>Layer feed price ($/lb)</td>
<td>0.23</td>
<td>0.23</td>
<td>0.23</td>
<td>0.28</td>
<td>0.28</td>
<td><strong>0.58</strong></td>
</tr>
<tr>
<td>Layer feed ($/dozen)</td>
<td>0.78</td>
<td>0.78</td>
<td>0.78</td>
<td>0.95</td>
<td>1.01</td>
<td>1.97</td>
</tr>
<tr>
<td>Eggs per hen per year</td>
<td><strong>280</strong></td>
<td><strong>250</strong></td>
<td><strong>250</strong></td>
<td><strong>250</strong></td>
<td><strong>250</strong></td>
<td><strong>280</strong></td>
</tr>
<tr>
<td>% production</td>
<td>76.7</td>
<td>68.5</td>
<td>68.5</td>
<td>68.5</td>
<td>68.5</td>
<td>76.7</td>
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<tr>
<td>dozen per year</td>
<td>23.33</td>
<td>20.83</td>
<td>20.83</td>
<td>20.83</td>
<td>20.83</td>
<td>23.33</td>
</tr>
<tr>
<td>Pullet cost ($/dozen)</td>
<td>0.29</td>
<td>0.32</td>
<td>0.37</td>
<td>0.45</td>
<td>0.47</td>
<td>0.64</td>
</tr>
<tr>
<td>Pullet + feed ($/dozen)</td>
<td><strong>1.07</strong></td>
<td><strong>1.11</strong></td>
<td><strong>1.15</strong></td>
<td><strong>1.41</strong></td>
<td><strong>1.48</strong></td>
<td><strong>2.61</strong></td>
</tr>
</tbody>
</table>
University of Wisconsin Extension

- Poultry Break Even Calculator
- https://richland.extension.wisc.edu/agriculture/poultry-and-rabbits/

- Input:
  - Pullet = $6.75
  - Layer feed = $0.23/lb @ 0.25 lb/day
  - Period = 52 weeks
  - Average production = 76.7%
  - Nothing input for housing, equipment, medication, etc.

- Break even price per dozen = $1.19
Poultry Break Even Calculator

https://richland.extension.wisc.edu/agriculture/poultry-and-rabbits/

Input:
- Pullet = $9.45
- Layer feed = $0.28/lb @ 0.25 lb/day
- Period = 52 weeks
- Average production = 76.7%
- Nothing input for housing, equipment, medication, etc.

Break even price per dozen = $1.50
## Egg Economics

<table>
<thead>
<tr>
<th># of hens</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>dozens/hen/year (optimum)</td>
<td>23.33</td>
<td>23.33</td>
<td>23.33</td>
<td>23.33</td>
<td>23.33</td>
<td>23.33</td>
<td>23.33</td>
</tr>
<tr>
<td>total dozens</td>
<td>116.65</td>
<td>233.30</td>
<td>466.60</td>
<td>116.65</td>
<td>233.30</td>
<td>466.60</td>
<td>466.60</td>
</tr>
<tr>
<td>Housing, equipment, other costs</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Other cost ($/dozen)</td>
<td>0.43</td>
<td>0.21</td>
<td>0.11</td>
<td>0.86</td>
<td>0.43</td>
<td>0.21</td>
<td>1.07</td>
</tr>
<tr>
<td>Pullet + feed ($/dozen) (optimum)</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
</tr>
<tr>
<td>Total cost ($/dozen)</td>
<td>1.50</td>
<td>1.28</td>
<td>1.18</td>
<td>1.93</td>
<td>1.50</td>
<td>1.28</td>
<td>1.71</td>
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</table>
# Egg Economics

<table>
<thead>
<tr>
<th># of hens</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>20</th>
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<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>300</td>
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<td>0.11</td>
<td>0.86</td>
<td>0.43</td>
<td>0.21</td>
<td>1.07</td>
</tr>
<tr>
<td>Pullet + feed ($/dozen) (optimum)</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
<td>1.07</td>
</tr>
<tr>
<td>Total cost ($/dozen)</td>
<td>1.50</td>
<td>1.28</td>
<td>1.18</td>
<td>1.93</td>
<td>1.50</td>
<td>1.28</td>
<td>1.71</td>
</tr>
<tr>
<td>More realistic chick and feed costs ($/dozen)</td>
<td>1.48</td>
<td>1.48</td>
<td>1.48</td>
<td>1.48</td>
<td>1.48</td>
<td>1.48</td>
<td>1.48</td>
</tr>
<tr>
<td>Better cost estimate ($/dozen)</td>
<td>1.91</td>
<td>1.69</td>
<td>1.59</td>
<td>2.34</td>
<td>1.91</td>
<td>1.69</td>
<td>2.12</td>
</tr>
</tbody>
</table>
Poultry Break Even Calculator

https://richland.extension.wisc.edu/agriculture/poultry-and-rabbits/

Input:
- Pullet = $9.45
- Layer feed = $0.28/lb @ 0.25 lb/day
- Period = 52 weeks
- Average production = 76.7%
- Misc. expenses = $50

Break even price per dozen = $1.72
Where do I get birds?

- **Reputable sources**
  - National Poultry Improvement Plan (NPIP) certified hatcheries (can order through U.S. mail)
    - Most feed stores get the chicks they sell from NPIP certified hatcheries
  - Reputable breeders
    - Ask for documentation of disease testing (PT test)

- **Sources of concern:**
  - Flea markets
  - Ads in the paper
  - Friend of a friend
Mail Order Hatcheries

- Ideal Poultry – Cameron, Texas
  - www.idealpoultry.com
- Murray McMurray – Iowa
- Morris Hatchery – Miami, Florida
- Strombergs - Minnesota
- Meyer Hatchery – Ohio
- Welp Hatchery – Iowa
- Cackle Hatchery - Missouri
- many more on internet
What kind of bird?

- Depends on your goals
  - Type of production
    - Eggs
    - Meat
    - Both – dual purpose breeds
  - Production expectations
    - Profitable business – need commercial hybrid strains
  - Personal use, enjoyment and satisfaction
    - Then get what you like
White Egg Layers

LEGHORN — SINGLE COMB WHITE MALE

LEGHORN — SINGLE COMB WHITE FEMALE

Slide courtesy of Ideal Poultry
White Leghorn Production

LSL-LITE Performance (Lohmann commercial strain)
White Egg Layers

- Anconas
- Black Minorcas
- Buff Minorcas
- Production Blacks
- Ideal 236
Brown Egg Layers

- Production Reds
- Barred Plymouth Rocks
- Rhode Island Reds
- Silver Laced Wyandottes
- New Hampshire Reds

Sex Links (not pictured)

Slide courtesy of Ideal Poultry
Figure 30. Heritage Barred Plymouth Rock, Bi-weekly Percent Egg Production and Period Feed Consumption\(^1\) in Hens kept on Range

\(^1\) kg per 100 Hens
Hy-line, Bovans or ISA brown commercial layers
Brown Leghorn-Cross

Hy-Line Brown Hen-Day Performance Graph

% Hen-Day Production

Body Wt. Kg
2.1
2.0

Egg Wt. g/Egg
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0

Age In Weeks

% Cumulative Depletion

10
5
10
5

Hy-Line LAYERS
Commercial vs Heritage Breeds

AVERAGE HEN DAY EGG PRODUCTION

HEN DAY PRODUCTION (%)

1 2 3 4 5 6 7
1 2 3 4
5 6 7
8 9 10

LOTATION PERIOD

Black Australorp  Barred Plymouth Rock  Black Sex-linked
ISA Brown  Rhode Island Red  Red Sex-linked

Commercial strain

Slide courtesy of Dr. Jacquie Jacob, University of Kentucky Poultry Extension
Commercial vs Heritage Breeds

AVERAGE EGG WEIGHT

0  1  2  3  4  5  6  7  8
PRODUCTION PERIOD

40  50  60  70

AVERAGE EGG WEIGHT (g)

Commercial strain

Black Australorps  Barred Plymouth rocks  Black sex-links
ISA browns  Rhode Island Reds  Red sex-links

Slide courtesy of Dr. Jacquie Jacob, University of Kentucky Poultry Extension
Commercial vs Heritage Breeds

**AVERAGE EGG WEIGHT**

![Graph showing average egg weight over production period for different breeds.](image)

- **Commercial strain**
- Minimum wt. for USDA “large”

Slide courtesy of Dr. Jacquie Jacob, University of Kentucky Cooperative Extension
Green Egg Layers

ARAUCANAS SILVER DUCKWING — MALE

ARAUCANAS SILVER DUCKWING — FEMALE

Slide courtesy of Ideal Poultry
Dual Purpose Breeds

Buff Orpingtons

Black Australorps

Dark Cornish

Cochins

Delawares

Slide courtesy of Ideal Poultry
Meat Breeds

Black Broiler

Cornish Cross

Red Broiler

Slide courtesy of Ideal Poultry
Getting Your Chicks Started

- Brooding - the basics
  - Temperature control
  - Good feed
  - Clean water
  - Clean litter
Temperature

- General rule of thumb
  - 90 degrees the first week
  - Decrease temperature 5 degrees each week until reach 70 degrees
  - Birds should be fully feathered at this time (5 to 6 weeks)
**Infrared heat lamps**

- Usually adequate and most commonly used
- Do not “heat” the air
- Provide heat to objects through infrared energy
- Should be removed as soon as birds are well feathered
Be Careful! Can Cause Fire

Infrared camera image

Too hot
Temperature

- Evidence of appropriate temperature or deviations is easily determined by the behavior of the birds.
  - Cold birds will crowd or pile
  - Hot birds will migrate away from the heat source
  - Comfortable birds will be scattered throughout the brooding area moving in and out to feed and get water.
Birds are cold and huddled under heat source
Birds are well distributed and appear to be comfortable

Notice use of brooder guard
Temperature control

- Thermostats can be helpful to control heat lamps and fans
Clear flip cover keeps dial clean and easy to read.

- Controls heating or cooling from 30°F to 110°F.
- Stainless steel coil calibrated for accuracy.
- Dual voltage: 16 FLA at 120V, 8 FLA at 240V.
- Waterproof enclosure with clear flip cover.

#1 seller! $35.95 as low as $35.95

NEMA 4 THERMOSTAT

<table>
<thead>
<tr>
<th>STK#</th>
<th>EACH</th>
<th>SALE</th>
<th>DISCOUNT SALE</th>
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</thead>
<tbody>
<tr>
<td>CR2095</td>
<td>$59.95</td>
<td>$39.95</td>
<td>$35.95 (20 &amp; up)</td>
</tr>
</tbody>
</table>

This completely watertight unit provides precise, automatic control of your heating, cooling and ventilation systems.

- Temperature range: 30°F to 110°F.
- Includes 8' cord for hanging where you want it.
- Clear flip cover keeps dial clean and easy to read.
- Stainless steel sensing coil.
- Dual voltage: 16 FLA at 120V, 8 FLA at 240V.

PORTABLE WATERPROOF PREWIRED THERMOSTAT

<table>
<thead>
<tr>
<th>STK#</th>
<th>EACH</th>
<th>SALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR2045</td>
<td>$69.95</td>
<td>$75.95</td>
</tr>
</tbody>
</table>
Drinkers

Fountain or jug style drinkers are commonly used.
Nipple drinker systems are suitable for all chickens (not turkeys)

- automated
  - reduced time and labor
- more sanitary than trough or bell drinkers
- low pressure
- less spillage
  = drier manure/ litter
Laying hens on nipple drinkers

Garden hose for water supply
Water Equipment Options

- FarmTek catalog (by mail or online)
Creating your own Poultry Nipple Bucket Drinker is as easy as 1-2-3!

1. Drill holes in the bottom of the sealed bucket with an 1 1/32" drill bit (purchased locally). We suggest three holes, spaced accordingly, for maximum efficiency.

2. When installing nipples, place rubber grommet in drilled hole first, followed by the actual nipple. Grommet is included with each nipple. Wetting the nipple first eases the application.

3. Hanging or fastening your drinker will depend on the location and application. We recommend using rope, cable or chain. All are sold separately. Ask your National Account Manager for more details.
PVC Pipe style
Chicks arrive
1 hour after chick arrival
Litter for Brooding Chicks

- Use 3 – 4 inches of good quality litter
  - Pine wood shavings
  - Rice hulls
  - Coarse, dry sawdust
  - Washed builder’s sand
- Stir the litter daily after 10 days of age to prevent wet litter.
- Remove wet or compacted areas.
- Course straw (hay) not recommended
Foot Pad Lesions and Dirty Feathers

- **Causes:**
  - Wet litter
  - Not enough litter
  - Poor ventilation
  - Overcrowding
Housing

Less than ideal
Better, but can be improved
Good Design with Adjustable Doors

Concrete footings

Nice overhangs

Sloping ground

Vents
All kinds of chicken coops for sale
Functions of Housing

• Protection from weather extremes
  – Rain and storm events
  – Winter and summer

• Protection from predators
  – particularly at night

• For laying hens, a place to nest and lay eggs

• For chicks, proper brooding environment for early growth period

• Minimize stress and maximize efficiency
Location considerations

• Adequate drainage a must
• Proximity to habitat for wild birds and predators
• Harborage for pests and rodents
  – eliminate trash and brush piles, old equipment
• Natural air flow (breeze)
• Visibility from your house
• Lack of visibility from your neighbor’s house
Vegetation - Good

Tall trees can provide shade while allowing air flow through house

(limbs trimmed)

air flow
Low trees and shrubs block breeze and provide little shade

Vegetation - Bad

Rodent, predator and wild bird habitat
Principles of Housing Design

• Shape of house
  – Rectangular superior to square
  – Natural ventilation
    • want to minimize the distance air must travel through naturally ventilated houses
  – Mechanical ventilation
    • holding ventilation rate constant, air speed increases as cross-sectional area decreases
Principles of Housing Design

• **Orientation**
  - Long axis east-west
    - Minimizes wall area directly facing sun
  - For naturally ventilated houses:
    - minimizes direct sunlight shining into house
    - takes advantage of prevailing south wind in summer
Principles of Housing Design

• **Materials**
  
  – Metal is fine for exterior walls and roof
  
  – Metal not recommended for interior surfaces
    
    • metal is an excellent conductor of heat (radiant heat transfer)
    
    • Insulation can help
  
  – Cleaning and disinfection should be considered for interior surfaces
    
    • lower porosity materials are easier to clean
    
    • paint can help to seal wood surfaces for easier cleaning
But what about mobile coops or “chicken tractors”?
But what about mobile coops or “chicken tractors”?

Not good for Texas summers!
Fig. 104. A well-constructed range shelter built on skids to facilitate moving.
The “egg mobile”. Highly recommend anchoring.
Things to consider with mobile coops

- May have to move daily, depending on density of birds
  - Enough land??
- Heat/cold stress
  - Air flow
  - Shade
- Predators
- Rain and ground moisture
- Not recommended for brooding chicks
Predator Control

- **Barriers to entry**
  - Walls, mesh wire, electrified poultry fencing, overhead netting

- **Reduce habitat (cover) near poultry area**
  - Thick brush, brush piles, tall grass, abandoned structures

- **Reduce attractants**
  - Household garbage or access to other food sources (pet food)

- **Deterrents and repellents**
  - Scare devices (scarecrows, radio playing, other noise devices)
  - Guard dogs?

- **NOTE:** Owls, hawks, eagles and other birds of prey are federally protected