# Poultry Production Basics

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# What is Well-Being (Welfare)

Means different things to different people

The National Chicken Council states that; “Generally, it means providing animals with their physical and mental needs throughout their life. The physical needs are relatively easily discussed, described, and studied. Mental (behavioral) needs are more debated and often anthropomorphized.”

> *Anthropomorphize = To attribute human form or other characteristics (feelings, thoughts) to anything other than a human being*

# In General

1. Poultry raised for food should be cared for in ways that prevent or minimize fear, pain, stress, and suffering
2. Guidelines for welfare should balance scientific knowledge and professional judgment with consideration of ethical and societal values
3. It is the welfare of the chickens themselves that is foremost, not how humans might perceive a practice or the environment in which they live
4. Poultry should be treated with respect throughout their lives and provided a humane death when processed for food or when they are euthanized for any other reason

# What Does That Mean?

1. Food (appropriate for their age and rate of production) and clean water are readily accessible
2. Freedom to move, stand, turn around, stretch, sit and lie down
3. Birds can see each other (visual contact with other members of the species)
4. Housing which protects birds from the weather and predators, and which doesn't harm or distress the birds
5. Prevention of disease, injury and vice. If animals are diseased or injured, or there are outbreaks of feather pecking or cannibalism, they must be treated or managed as quickly as possible

# Why is it Important

## Moral obligation

Animals that are reared in an environment that promotes good welfare will be more productive



# General

At least twice a day and when there are sudden changes in weather

- Inspect you birds
- Check housing conditions
- Make sure equipment is functioning properly

Try and spend time with your birds to watch for potential problems

Make sure you have everything you need **before** the birds arrive at the farm

# What Can We Do

Follow BMPs that promote welfare

1. Housing
    1. Lighting
    2. Ventilation
    3. Litter quality
    4. Emergency backups
2. Food
3. Water
4. Euthanasia/culling
5. Biosecurity



# Housing

Housing for Poultry needs to meet the needs of the birds

1. Protection from the environment
    1. Freedom to move, stand, turn around, stretch, sit and lie down
    2. Must provide fresh air
    3. Doesn't harm or distress the birds
    4. Safe place to lay eggs
2. Provide feed and water
3. Protect from predators



# Fixed Housing

Housing needs will very depending on the age of the birds

- Younger birds will need heat and are more susceptible to cold and wind
- Older birds are very hardy if they are keep dry and out of the wind

Other considerations include:

- Type of production – Free range vs. Confided
- Electricity and water
- Distance to neighbors
- Topography

# Housing and Confinement

There Are Two Main Types of Barns

Moveable

- Housing is moved to new locations on a regular basis so that birds have access to fresh pasture

Fixed

- Most barns of this type keep birds indoors, but some do allow birds to have access to pasture
- Can’t be moved
- Some have multiple fixed pasture areas so pasture can be rotated

# Moveable Housing









# Fixed Housing





# Stocking Density

| Age (Weeks) | 0 – 2 Weeks | 2 – 5 Weeks | 6 Weeks-Adult |
|---|---|---|---|
| Birds / $m^2$ | 30 | 20 | 5* |
| Birds / $f^2$ | 4 | 1-2 | 1/2* |

*Larger birds will need more space that smaller ones

# Stocking Density

| Type of bird | Sq ft/bird inside | Sq ft/bird outside runs |
|---|---|---|
| Bantam Chickens | 1 | 4 |
| Laying Hens | 1.5 | 8 |
| Large Chickens | 2 | 10 |
| Quail | 1 | 4 |
| Pheasant | 5 | 25 |
| Ducks | 3 | 15 |
| Geese | 6 | 18 |

# Predators

Most predation occurs at night so make sure your chicks are in their house and that it is shut tight to keep them safe

Cover chicks in boxes or feed tanks with poultry wire to protect them








| Predator | Signs |
|---|---|
| Coyote | Whole bird missing, with scattered feathers |
| Cat | Chicks or young birds missing |
| Dog | Birds usually mauled but not eaten |
| Fox | Whole bird missing, with scattered feathers |
| Hawk | Bird eaten on site, lots of feathers |
| Mink/Weasel | Dead birds neatly piled, back of head and neck eaten |
| Owl | Head and neck eaten, lots of feathers, sometimes whole birds missing<br>Happens at night |
| Opossum | Whole birds consumed feathers and all, sometimes leave only the wings or feet |
| Rat | Chicks or young birds missing, partially eaten chicks |
| Raccoon | Breasts and entrails eaten, backs bitten, scattered feathers |
| Skunk | Entrails eaten but not muscles or skin, lingering odor |
| Snake | Eggs or young chicks missing |

# Feed

Feed must be appropriate for their age and rate of production

- Appropriate nutrition
- Size if the feed particles
- Accessible




Photo: John Anderson, The Ohio State University.

# Feed Management

Make sure birds have access to plenty of feed, especially when placed





# Nutrition

Minimal amount of a nutrient that a bird must have to permit maximal performance.

Performance can be measured in terms of growth, egg production, hatchability, feed efficiency etc.

Nutrient requirements of poultry are published by the National Research Council, 1994.

# Factors that affect nutrient requirements

Age of animal

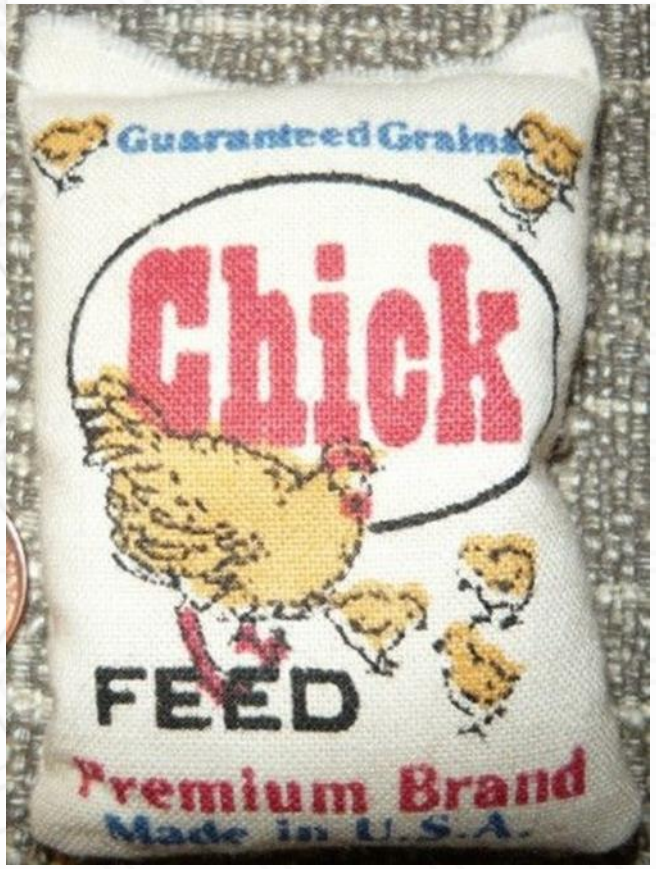
Environment

Disease and parasites

Species

Activity level

Nutrient imbalances

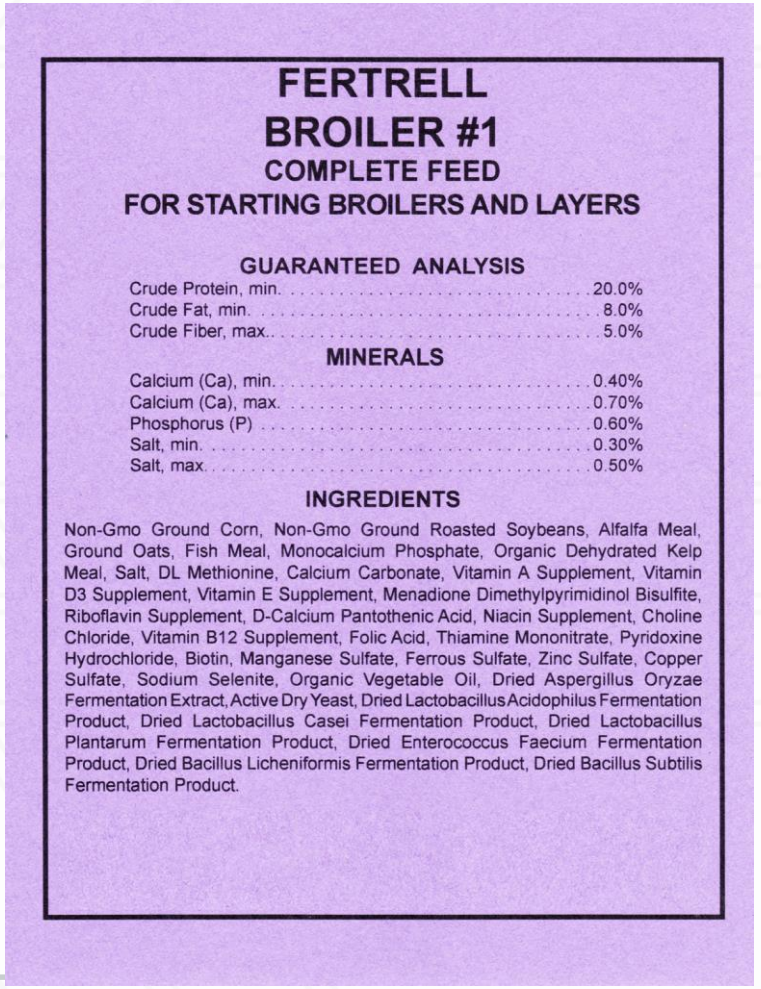


# Feeding the right ration

Commercial poultry feeds contain numerous similar feed ingredients.

Several types of rations are available (ie. starter, grower, finisher, and layer rations).

Designed to meet nutrient needs of different types of birds.



**FERTRELL**
**BROILER #1**
**COMPLETE FEED**
**FOR STARTING BROILERS AND LAYERS**

**GUARANTEED ANALYSIS**

| | |
|---|---|
| Crude Protein, min. | 20.0% |
| Crude Fat, min. | 8.0% |
| Crude Fiber, max. | 5.0% |

**MINERALS**

| | |
|---|---|
| Calcium (Ca), min. | 0.40% |
| Calcium (Ca), max. | 0.70% |
| Phosphorus (P) | 0.60% |
| Salt, min. | 0.30% |
| Salt, max. | 0.50% |

**INGREDIENTS**

Non-Gmo Ground Corn, Non-Gmo Ground Roasted Soybeans, Alfalfa Meal, Ground Oats, Fish Meal, Monocalcium Phosphate, Organic Dehydrated Kelp Meal, Salt, DL Methionine, Calcium Carbonate, Vitamin A Supplement, Vitamin D3 Supplement, Vitamin E Supplement, Menadione Dimethylpyrimidinol Bisulfite, Riboflavin Supplement, D-Calcium Pantothenic Acid, Niacin Supplement, Choline Chloride, Vitamin B12 Supplement, Folic Acid, Thiamine Mononitrate, Pyridoxine Hydrochloride, Biotin, Manganese Sulfate, Ferrous Sulfate, Zinc Sulfate, Copper Sulfate, Sodium Selenite, Organic Vegetable Oil, Dried Aspergillus Oryzae Fermentation Extract, Active Dry Yeast, Dried Lactobacillus Acidophilus Fermentation Product, Dried Lactobacillus Casei Fermentation Product, Dried Lactobacillus Plantarum Fermentation Product, Dried Enterococcus Faecium Fermentation Product, Dried Bacillus Licheniformis Fermentation Product, Dried Bacillus Subtilis Fermentation Product.

# Common Percentage of Nutrients Found in Poultry Diets

| | Protein, % | Calcium, % | Phosphorus,% | Fat, % |
|---|---|---|---|---|
| **Broilers** | | | | |
| Starter, 1 to 3 wks | 22-23 | 0.9 | 0.6 | 6.0 |
| Finisher, 4 to 7 wks | 19 | 0.8 | 0.5 | 7.0 |
| **Pullets** | | | | |
| Starter, 1 to 6 wks | 20 | 0.9 | 0.5 | 4.0 |
| Grower, 7 to 18 wks | 17 | 0.8 | 0.5 | 3.5 |
| **Laying Hens** | | | | |
| Layer 19 wks | 16-18 | 3.3-4.0 | 0.5 | 3.5 |

# How much feed to birds consume?

**Layers (Brown egg type)**

| *Age* | *Total feed (lbs)** | *Ration type* |
|---|---|---|
| Day old to 6 wks | 4 | Starter |
| 7 wks to 18 wks | 46 | Grower |
| 19 wks to 70 wks | 104 | Layer |

**Layers (White egg type)**

| *Age* | *Total feed (lbs)** | *Ration type* |
|---|---|---|
| Day old to 6 wks | 3 | Starter |
| 7 wks to 18 wks | 12 | Grower |
| 19 wks to 70 wks | 80 | Layer |

*Amount and type of feed required for one chicken by age and purpose (Vest and Dale, 2002)

# How much feed do birds consume?

**Meat Birds**

| *Age* | *Total feed (lbs)** | *Ration type* |
|---|---|---|
| Day old to 3 wks | 2 | Starter |
| 4 wks to 7 wks | 7 | Finisher |

# Scratch (Grains)

Cracked, rolled or whole grains such as corn, barley, oats or wheat

Usually low in protein in high in energy or fiber

Promote scratching behavior

Not necessary when birds are receiving a complete diet

Dilute nutrient levels in formulated diets

Rule of thumb: feed only as much scratch as the birds can consume in 20 minutes or about 10-15% of their total daily food consumption

Birds with access to the ground usually can find enough grit in form of pebbles and small stones.

# Two mistakes in feeding:

Feeding the wrong feed.

- Nutrient deficiencies may lead to:
  - Decrease production
  - Feather picking
  - Lameness
  - Death

Not feeding enough of the appropriate feed.

# Water Management

Water quality

Water quantity

Drinker management

Biofilm/waterer line cleaning



# Water Management

Prior to chick arrival water lines should be flushed and filled with water and then allowed to preheat to avoid chilling the birds

Water lines should be properly adjusted so chicks may access water readily

- Pressure
- Level



# Water Management





# Water Management

Water quality can affect bird performance and poor quality water can increase the likelihood of disease

Monitor your water quality

- Don’t give water to your birds that you would not drink!

Take steps to improve the quality of water

- Test Water
- Filters
- Chemicals

# Euthanasia/Culling

All birds must be euthanatized in a humane manner

Cervical dislocation is the most common method used on farms

- You must train your employees / family members on how to do this properly and record when they are trained

Other methods are;

- Rapid decapitation
- Displacement of oxygen with nitrogen or $CO_2$

# Culling

Bird that are not physically sound or that are unable to reach food and water due to leg problems should be promptly euthanized








# Biosecurity

# What is Biosecurity

"Bio" means life and "security" means protection

"Life protection"

Any and all practices and protocols for the prevention of disease

Why is it important?

- To prevent the spread of disease
- Maintain healthy flocks
- Increase income



# Elements of Biosecurity

- Isolation
  - Confine your birds within a controlled environment
    - Keeping other birds out
    - Locking doors to prevent others entering
  - Separating birds by age
- Traffic Control
  - Control traffic on and around your farm
- Sanitation
  - Disinfect material, equipment, and people that work or enter the farm

# Isolation

One of the best ways to accomplish this is to prevent people and animals from entering the farm

- Limit access to farm
  - Fences or farm land
  - Gates
    - Place at all access points
    - Lock when no one is present on farm, gate can’t be monitored if seldom used
- Signs
  - Place all access points

# PPE – Personal Protective Equipment

Wear designated footwear and clothing– worn only when working with your poultry.







# Keep Our Chickens Healthy




**No Admittance Without Owner Permission**

**Telephone:** _____

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# Disease – General Signs

Poor appetite

Huddling

Depression

Runting/stunting; poor uniformity

Ruffled feathers

Coughing, sneezing, oculo-nasal discharge, difficult breathing

Bloody or wet litter

Increased mortality



# What to do if your birds look sick:

Isolate sick bird(s) immediately

Dispose of dead birds promptly and properly

Observe the rest of the flock for signs of disease

Call veterinarian, animal health technician, or Extension agent for advice and assistance

Do not move birds or eggs off your farm

Do not add new birds to flock

Do not visit other farms

# Not all poultry health problems are caused by infectious agents

Always consider non-infectious conditions (management factors) first:

Feed quality

Water quality

Temperature and humidity

Ventilation and air quality/ammonia level

Litter/bedding quality

Equipment condition (feeders, drinkers, fans, etc.)

# Use medications judiciously and only when necessary

Management problems can only be fixed by proper management changes and/or corrections

Viral infections cannot be treated with antibiotics

Bacterial infections can only be treated with the proper antibiotic

Always consult a veterinarian before initiating any treatment

If antibiotics or other drugs are prescribed, follow recommended dose, route, duration of therapy, and withdrawal time



# Parasites -External

**Scaly leg mite**

Cull or isolate affected birds

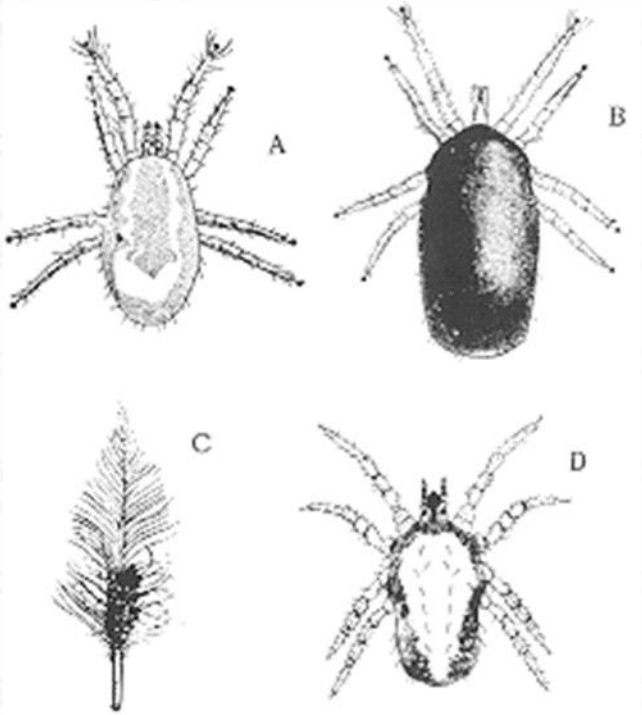
Dip legs in warm acaricidal solution (consult veterinarian)

**Northern fowl mite**

Monitor all birds and facilities for infestation; check egg flats and cases for mites

Treat birds with approved insecticide (e.g. permethrin)

Wash plastic flats and racks with hot water and detergent




Northern fowl mite. A, Female before feeding. B, Engorged female. C, Egg mass on feather. D, Nymph.

# Parasites - Internal

Roundworms, Hairworms, Cecal worms, & Tapeworms

**Prevention and Control**

Rotate birds in yards or pens

Deworm flocks regularly, particularly those raised on the ground or in floor pens

Provide medicated feed (containing broad-spectrum dewormer)

Treat infected birds with the proper dewormer

Piperazine is effective only against roundworms and cecal worms

Fenbendazole is effective against roundworms, cecal worms, and hairworms

Butynorate is effective against tapeworms

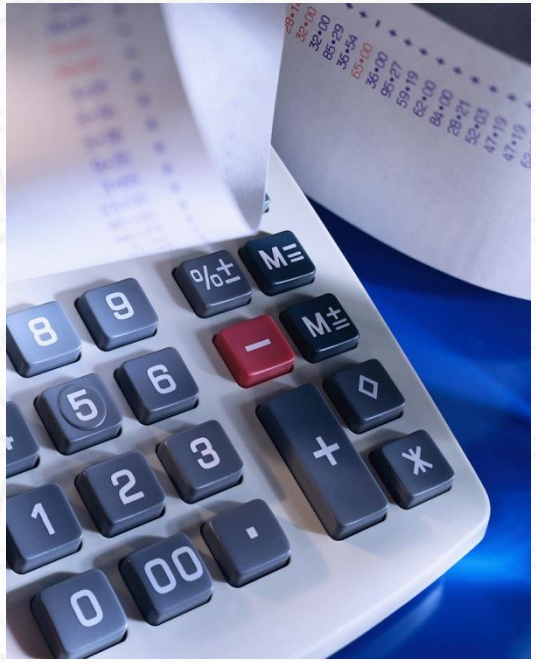
# Litter Management

- Poultry grower's goal is to keep birds healthy
- Litter management IS a large piece of the puzzle when growing birds
- Animal Welfare
- Reduced bird performance (lower weights/higher feed conversions/livability)

# Recordkeeping

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Solutions in your community

- Important
- Good reference
- Monitor progress
- Keep track of expenses!



# Other Considerations





Rodent control

- Clean any feed spills quickly
- Maintain bait stations around the perimeter of the houses
  - Follow an affective rodent control program

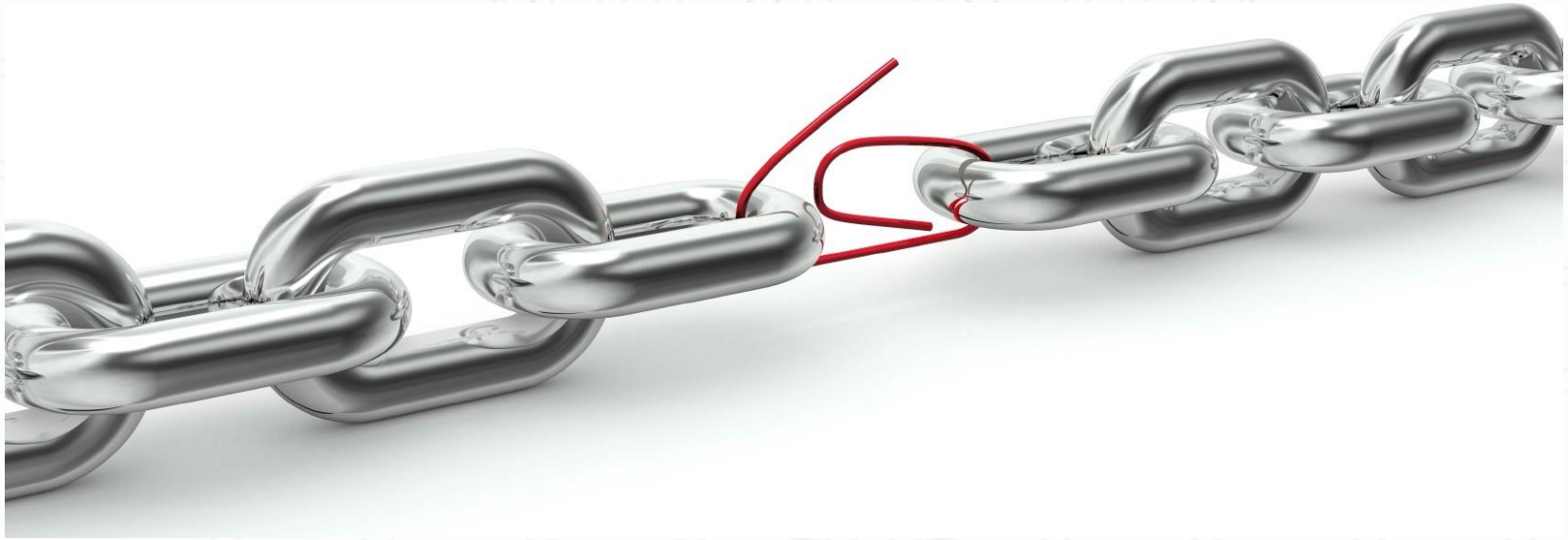
Fly control

- Keep litter dry
- Remove dead birds quickly and dispose of them properly
- Clean feed spill
- Maintain proper drainage around the houses



# Poultry Production

Broiler production is like a chain, it has several links and your program is only as strong as the weakest link



# One More Thing……

All poultry in Maryland must be registered with the Maryland Department of Agriculture

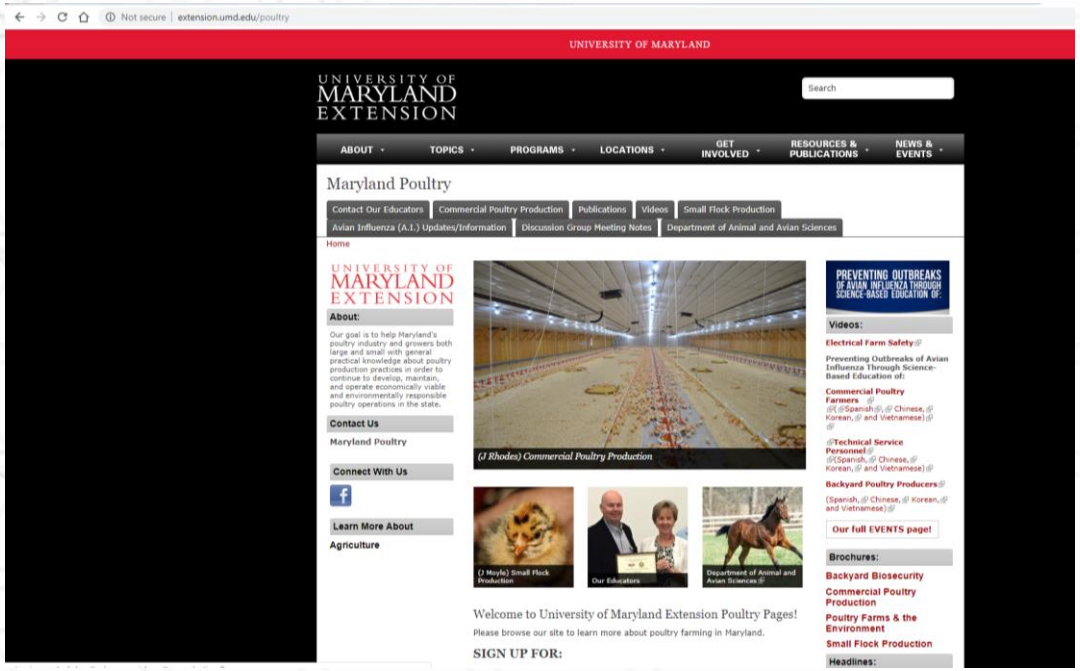
http://www.mda.state.md.us/animal_health/poultryreg/index.php



# Poultry email list & website

Sign up to receive timely email messages

http://extension.umd.edu/poultry



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# Thank You

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