

- **Minerals:**
- **Rickets and Osteomalasia**
- **Causes:** inadequate dietary Ca, P or Vit D3; or Ca:P imbalance
- Rachitic deformities develop especially in the legs, producing painful, hard joint swelling and lameness, abnormality being most clearly seen in the structure of the proximal tibiotarsus.
- The bones, beak and claws become soft and pliable. Growth is retarded, feather development is poor.
- In the laying bird, egg production decreases, with thin or soft shelled eggs and reduced hatchability.

# CANNIBALISM

- **Cannibalism is a problem that is associated with large poultry flocks kept in restricted cage. This can result in significant mortality within the flock when a wound is generated and it will also cause a decrease in egg production**

## What Are The Causes of Cannibalism In Poultry Flocks?

**The causes of this vice are not well understood, but the onset of cannibalism has been attributed to a number of things which are outlined below:**

**\*The problem may simply arise because of the normal pecking behavior of this type of animal when searching for food or exploring an environment.**

**The birds are kept in barren, crowded conditions and may have little else to peck besides their pen mates. Once one hen has picked up this technique other hens, observing the behavior, will learn from the initial pecker and a serious episode will develop.**

**\*A lack or a deficiency of nutrients in a poultry ration may lead to cannibalism in the flock. Imbalance of the diet, usually **protein** or **sodium** level of the ration is involved in the outbreak**

**\*Deficiencies can also be caused by insufficient feeding and water space.**

**\*An abrupt change in the palatability or form of a flock's ration may also be a contributing factor in the onset of cannibalism as the birds might impulsively seek alternative sources of food.**

**\*Poor ventilation, high temperature, low humidity, excessive population density, and excess illumination are all factors in the flock's environment that may precipitate an outbreak of this vice, especially with the lighter breeds.**

**During egg laying the cloaca may become damaged and distended especially with the passage of large eggs and this protrusion of the vent may be an attractant to other birds due to its stark color difference against the white body.**

# How Can An Outbreak Of Cannibalism Be Prevented In a Flock?

- The onset of this vice can be prevented by paying particular attention to the
  - **dietary factors** (protein, sodium, and palatability),
  - **environmental factors** (ventilation, temperature, humidity, population density, and lighting)
  - **feeding and water space** should be available for each bird.
  - **light intensity** should be reduced, perhaps by changing to a light which is of a red hue.
  - **beak trimming** the most common and cost effective mode of prevention is the use of beak trimming. Beak trimming is usually done at 4-6 weeks of age

Several studies report that the risk of cannibalism is lower when hens are fed a **mash diet** which takes longer to eat, than when fed a diet consisting of pellets, which are quickly consumed.

An increase in the time spent foraging reduces the incidence of cannibalism. This has practical value, as poultry farmers could potentially reduce or prevent cannibalistic behavior among their flocks simply by increasing the time birds spend feeding.



- It should be remembered when approaching a problem of cannibalism in the poultry industry that the best method of control is to prevent it from starting at all, since **once it has begun it will be very difficult to stop.**

- **Outbreaks of feather pecking and cannibalism in laying hens remain a serious problem in the egg industry, in terms of both welfare and economics. In developing strategies to reduce cannibalism among laying hens, it is important to understand the causation of cannibalistic behavior.**

# GOUT

**Uric acid is one of the end breakdown products of dietary protein in birds and other animals. The uric acid is removed from the blood by the kidneys and excreted in the urine.**

**Gout can occur if the level of uric acid in the blood exceeds the ability of the kidneys to remove it. In articular or synovial gout, the uric acid crystallizes in the joints, ligaments, and tendon sheaths.**

**In visceral gout, uric acid deposits are found in the liver, spleen, pericardial sac (the covering of the heart), kidneys, and air sacs. When the uric acid crystallizes in tissues it forms small, white nodules called "tophi."**

**There are two types of gout.**

**In primary gout**, the high uric acid level is a result of an abnormal breakdown of protein. Primary gout is thought to be hereditary in humans.

**In secondary gout**, the high level is due to the inability of the kidneys to adequately excrete the uric acid. This can be caused by medications, *chronic* diseases, kidney disease, overeating, improper diet (high protein, and possibly high Vitamin D or low Vitamin A), poor blood circulation, inactivity, decreased water intake or chronic dehydration, some infections, and other environmental factors

# How is gout treated?

- Birds with gout will be placed **on a low protein diet.**
- **Vitamin A** may be given to birds
- **Proper hydration** is necessary and fluids may need to be administered.
- **Medications** may be used, but the exact dosage and safety of drugs in birds have not been determined.  
Most birds will need to be treated for life or the condition will quickly reappear if therapy is discontinued.  
If arthritis from gout is severe, it is possible to surgically remove the uric acid crystals from the joint. Often the damage to the joints or organs is irreversible.
- **Pain medications** such as aspirin may be given.
- **The prognosis for a bird with gout is generally poor.**

# Caged Layer Fatigue

- **Cage layer fatigue is a condition that is unique to hens that are in a high state of egg production, primarily caged layer hens.**

# Causes of CLF

The cause of the condition is not known exactly. It is thought to be associated in **an imbalance of minerals/electrolytes in the body.**

\*High energy density and high environmental temperature, which reduce feed intake of bird

\*Infestation with parasites and management mistakes may play a role for arising the condition

**\*Genetic sensitivity**

**\*Failure to retention of phosphorus from kidney which is damaged because of viral diseases**

**\*It is not found there is a relationship between CLF and inorganic P level of ration or high egg production.**



**\*In layers under thirty weeks of age, the cause is usually a temporary calcium deficiency when egg production reaches 80% or higher. If intake of calcium does not satisfy the need for egg production, the hen will remove calcium stored in the bones. Ultimately, osteoporosis develops, bones become soft and hens are subject to bone fractures. Crippled and unable to stand, the hen suffers from the caged fatigue symptoms.**

- **Many hens show spontaneous recovery if removed from the cages and allowed to walk normally on the floor.**

**This indicates that a lack of exercise may be a partial cause. Cage layer fatigue is more prevalent in single-hen cages than in multiple-hen cages. When two or more hens are caged together, they get more exercise because of competition for feed and water.**

- **Supplementation of the diet with phosphate, calcium and vitamin D3 is usually helpful.**
- **Adding calcium to young birds will often help the condition.**
- **In older hens, calcium deficiency is less likely than phosphorus or vitamin D3 deficiencies. Adding a vitamin/electrolyte supplement to drinking water is recommended in any age bird suffering from this condition.**

# Fatty Liver Syndrome

This problem is commonly referred to as "**Fatty Liver Hemorrhagic Syndrome.**" It results when large amounts of fat is deposited in the hen's liver and abdomen.

- Fatty liver syndrome is a condition that affects either hens at the beginning of laying period or broilers at 2-4 weeks of age.

# Causes of Fatty Liver

- **Hereditary:** Hereditary tendencies vary among various strains of egg production stock, but heredity is not the entire cause for this malady. It is thought to be Leghorn breeds more susceptible.