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DISORDERS OF THE SKIN AND FEATHERS OF DOMESTIC POULTRY

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Abnormalities of the skin and feathers can be important, easily observed, outward signs of disease or management problems in chickens and turkeys.

In general, healthy birds tend to "preen" or groom themselves, often resulting in smooth, clean, glistening feathers. Unhealthy, depressed birds often present an unkempt, ruffled appearance.

Birds with upper respiratory infections may have dirty, darkened feathers around the eyes as well as on the outside feathers of the wings near the shoulders. Affected birds have eye and nasal discharges that accumulate around the eyes and beaks which they rub onto their wings. Dust and litter tend to stick to these areas of mucoid secretions, causing dark, dirty areas on white feathers. Birds with diarrhea may have fecal soiling around the vent area, and birds on wet litter often have manure caked on their toes and foot pads.

Abnormal skin coloration can also be associated with suboptimal health. Pale skin or blue/gray coloration (cyanosis) of the head and extremities is a sign of blood loss, anemia, or poor oxygenation of the blood. Broilers in advanced heat failure from ascites syndrome often show this symptom.

In some markets, broilers are fed extra carotenoid pigment-containing feed ingredients in order to impart a deep yellow color to the skin. Pale shanks or other pale skin in these birds may indicate coccidiosis or other intestinal problems resulting in malassimilation of the pigments and other nutrients.

Nutritional deficiencies are well documented causes of skin/feather abnormalities. Thickened, cracked skin and crusty lesion around the head and feet are seen with deficiencies of pantothenic acid, biotin, or zinc. Profound vitamin E deficiency can result in bloody fluid accumulations in the subcutaneous tissue. Various amino acid deficiencies can result in developmental problems in feathering, particularly in young, growing birds. These nutritional deficiencies should not occur in poultry that are correct for the specific species, production type, and age of bird.

Contact irritation, generally from continuous contact with wet litter, manure, or rough litter or other abrasive surfaces, can cause ulcerated foot pads, breast buttons, and breast blisters, especially in heavy strains of birds. High bird density and poor litter conditions predispose to "scabby hip syndrome," in which crusted scars are present on the outer thigh, flank and back skin of broilers.

Skin trauma — scratches, wounds, etc. — from toenail damage or excessive picking and fighting can be common in certain management situations. Large, aggressive male breeders may cause excessive loss of back feathers and skin scratches in hens. The breaks in the skin can lead to generalized bacterial infections and death in some instances. Proper beak trimming and toe trimming, appropriate lighting, and good male breeder management can help alleviate these problems.

Squamous cell carcinoma, a skin "cancer" of unknown origin, causes small ulcerated areas of skin with raised borders. These lesions are generally not seen on live birds because of feather coverage and they do not cause ill-health in the affected bird. When two or more of these lesions are seen on a broiler carcass after picking, the carcass is condemned for aesthetic reasons.

Known infectious causes of integument disorders in poultry include several viruses, bacteria, molds and parasites as follows:

Viruses

• *Pox virus* infections cause nodules and crusty, raised lesions on the skin of the head and facial appendages (wattle, comb). Lesions may also be found on the feet, vent or other parts of the body including the inside of the mouth.

• *Marek's Disease* virus can cause enlargement of feather follicles and various degrees of reddened, raised tumors on the skin. Extensive raised, reddened areas on the shanks of the legs of broilers is called "Alabama red leg." A gangrenous dermatitis-like condition has been associated with chick anemia agent, also referred to as chicken infectious anemia virus.

• *Reticuloendotheliosis* virus can cause feathering abnormalities in association with a "runting syndrome."

• Highly pathogenic *avian influenza virus* can cause striking edema of the face with vesicle or blister formation and dark, necrotic areas on the combs and wattles.

• Virulent strains of *Newcastle Disease* can cause puffiness around the eyes and neck due to subcutaneous edema fluid accumulation.

• Various enteric viruses such as *reovirus* can indirectly cause feather problems due to interference with normal digestion and absorption of nutrients necessary for proper feather development. The result is rough, bent feathers with stress lines and abnormal feather orientation in which feathers stick out at odd angles ("helicopter feathers").

Bacteria

• Gangrenous dermatitis is a skin condition caused by a mixed bacterial infection of *staphylococcus aureus* with *clostridium perfringens* or *clostridium septicum*. It can cause high mortality in commercial chickens and is highly associated with previous immunosuppression. The skin becomes necrotic, feathers pull out easily, and bloody fluid is present under the skin. This "weeping" skin lesion on the wings is commonly called "blue wing."

• *Erysipelas* classically causes a swollen, dark red to purple snood on tom turkeys, or a generalized red and congested appearance to the skin. Other acute bacterial septicemias may also cause the skin to appear flushed.

• Wattles may be greatly swollen on chickens with chronic *fowl cholera* due to *Pasteurella Multocida* infection.

• *Infectious Process* or "IP" is a common cause of condemnations in broilers. The subcutaneous tissues of the abdomen and legs contain yellow exudate, and *e. coli* bacteria are usually isolated from the lesions. It is likely that other factors are involved in the development of IP.

Molds

A fungal skin infection known as *favus* or ringworm is rarely seen in the modern poultry industry, but occasionally occurs in small specialty flocks.

• The yeast *Candida Albicans* sometimes causes *"vent gleet"* in laying hens, characterized by white encrustations on the skin and feathers of the vent area.

Parasites

External parasites such as *mites* and *lice* cause skin irritations to the birds they infest. In heavy numbers, they can also cause profound blood loss and anemia.

• The northern fowl mite is the most economically important pest in this group, as it is a common parasite in caged-layer complexes.

• The scaly leg mite is uncommon today, but still exists in some small flocks of chickens. This mite burrows under the skin scales of the lower legs and feet, causing raised scales and scabs that may progress to actual deformation of the lower limb. Chiggers, bed bugs and ticks are rarely problems in commercial confined flocks in the mid-Atlantic region.

The causes of skin or feather disorders are many and varied. In some instances, changes in the integument may not impact significantly on the productivity of the flock as a whole. However, outward skin symptoms may be important clues to specific disease entities affecting the productivity of the flock as a whole.

Investigation into these problems can point to management and disease control deficiencies that can be improved upon in the future to maximize health and profitability in your poultry operation.

Students Practice Sheep Shearing Skills

CAMPBELLTOWN (Lebanon Co.)—The 8th session of the Lancaster County Sheep and Wool Growers' Association's Shearing School was held April 7-8. Bucks County Extension Agent Mike Fournier was the sheep shearing instructor and Lancaster County Extension agent Chester Hughes was the workshop coordinator.

The class met at a farm in Campbelltown. Rod Nissley, sheep producer, volunteered his sheep flock for the shearing students to practice their new skills.

Twelve enthusiastic students ranging in age from late teens to early sixties completed the two-day workshop, shearing 68 head of white-face ewes. Since the sheep shearing school began, 141 shepherds have been trained in the art of sheep shearing in this Penn State Cooperative Extension program.

Since taking the shearing course, there have been five individuals who have collectively more than 7,500 sheep (2,500 in 1994). One of these individuals reported an income of over $9,000.

The sheep shearing school started in 1987 to address the need for more skilled shearers in southeast Pennsylvania to accommodate the numerous small sheep flocks scattered throughout this region.

John E. Zerphey, Halifax, shears sheep at the two-day shearing workshop.

The workshop provides a list of available sheep shearers for small flock owners to complete this springtime chore. More information about this list of sheep shearers is available at (717) 394-6851.

The second day of the workshop, all attendees reported stiff and sore muscles. There was a greater appreciation for the professional sheep shearers, who can shear 50-60 sheep in one day.

Students Gain Professional Experience

DOYLESTOWN (Bucks Co.) — Delaware Valley College (DVC) students competed against twenty-nine other college teams from throughout the United States in the student marketing competition of the National Agri-Marketing Association (NAMA) Conference held in St. Louis, Mo.

Industry professionals, including representatives from Rumrill-Hoyt Advertising, FMC Corporation, and the Beef Industry Council, judged the event. The students placed third in their heat, missing the next round by a very narrow margin.

It had been six years since a team from Delaware Valley College competed in the prestigious event. When asked about making a presentation of this magnitude, senior Ken Harman said, "It (the competition) has involved many hours of work, but I've learned as much from working on this presentation as I have in many of my classes because it was so practical."

Students also gathered ideas for future presentations by watching other schools and by observing *The Best of NAMA*, an awards ceremony featuring advertisements and commercials developed by member industries.

NAMA provides students with the opportunity to interact with agricultural suppliers as well as marketing and communications professionals. Senior Amy Welker said, "I feel that the NAMA Conference and student marketing team competition were very valuable experiences. By interacting with other student chapters, industry representatives, and professionals, and by attending development meetings, I learned new ideas which will help me make valuable career connections."

Dr. John Avery, who advised the college's NAMA Chapter commented on his team's success, noting they were among the top 10 in outstanding chapter competition and received compliments on their marketing team's performance.

1995-96 chapter president Leslie Cline looks forward to participating in next year's competition, scheduled for San Diego, Calif. in April. She said, "Students presented plans with as much competence as any professional. Those of us who competed, as well as those of us who watched the competition, came back from the conference highly motivated to accomplish even more next year."

Participating in the NAMA Conference were seniors Steve Dietrich of Germansville; Ken Harman of New Castle; Ricardo Siemsen of Doylestown; Travis Werley of Shoemakersville; Amy Welker of Gettysburg and Diane Yoder of McVeytown. Also participating were junior Julie Dolin of Herndon, Va.; sophomores Leslie Cline of Ashaway, R.I. and Lonce Scott of Philadelphia; and freshman Bill Kitsch of Dorothy, N.J.