

Poultry Science      Capital Region      Veterinary Science


Entomology

Penn State

# Poultry Pointers

Food Science

Agricultural & Biological Engineering      Agricultural Economics



## E. COLI INFECTIONS IN POULTRY

**Dr. Patty Dunn**  
 Animal Diagnostic Lab  
 Dept. of Veterinary Science  
 Infectious diseases — those caused by invading organisms such as bacteria, viruses, mold, and parasites — are often looked for first when investigating a livestock or poultry health problem.

However, infectious diseases are but one of the many disease categories affecting our domestic food animal species. Diseases caused by genetic abnormalities, nutritional imbalances, and metabolic disturbances are examples of other categories that alone or in

combination have become increasingly important.

Disease syndromes such as ascites in broilers and caged layer fatigue in commercial egg layers can cause significant problems in today's high performing chickens. In contrast, certain infectious diseases such as Pullorum disease and mycoplasmosis, which threatened to destroy the developing poultry industry earlier in this century, are extremely rare in commercial birds in the U.S. today.

In general, our knowledge of infectious diseases and the agents that cause them has increased greatly, and control has improved. However, there are still many dis-

ease-causing microorganisms that remain as formidable enemies to a healthy poultry flock. In fact, the number one *direct* killer of poultry worldwide is a bacteria that most of us have heard a lot about — E. Coli.

Most recently, E. Coli bacteria have been in the news for causing foodborne illness in people in the northwestern U.S. Hamburger contaminated with a particularly virulent E. Coli strain was the source of illness in this case. Certain other strains of E. Coli cause severe diarrheas in calves and piglets, and yet others cause mastitis in dairy cows. Unfortunately, domestic poultry species also succumb to several different types of disease conditions caused by E. Coli infections. To follow is information relevant to the recognition and prevention of E. Coli disease in poultry.

*Escherichia Coli* is the full genus and species name of this gram-negative bacteria. It is a normal inhabitant of the digestive tracts of all mammals and domestic fowl. E. Coli is ubiquitous in the environment where it can persist for a long period of time.

Certain serotypes can be pathogenic in specific host species. Most avian strains of E. Coli are different from those strains that cause disease problems in mammals.

In general, E. Coli is considered an "opportunistic" or "secondary invader" when it causes disease in chickens older than one week of

age. This means that predisposing factors are necessary to "open the door" for an otherwise healthy chicken with an intact immune system to develop a serious E. Coli infection.

Although differences in opinion exist, many poultry disease specialists think that E. Coli can be a primary pathogen in turkeys, meaning that the presence of a virulent strain of E. Coli can cause disease without any other predisposing factors present. However, the E. Coli infection will be more likely to develop and worsen in severity if one or more of these factors are present.

The predisposing factors to the development of E. Coli infection, also known as "colibacillosis," are many. Concurrent diseases and environmental stresses, often related to improper management, are common conditions that promote the development of colibacillosis. In the chicken, common viral respiratory diseases such as Newcastle disease and infectious bronchitis (including reactions to live vaccines for these diseases) can predispose to E. Coli infection.

The normal host defenses of the bird's upper respiratory tract can be impaired by these viruses, and E. Coli bacteria may invade by the respiratory route into the air sacs. Immunosuppressive conditions such as infectious bursal disease often lead to E. Coli infection. Coccidiosis predisposes to colibacillosis by injuring the intestinal

wall and allowing the bacteria to enter the bloodstream of the birds. Similarly, in the turkey, respiratory diseases such as bordetellosis, aspergillosis, and Newcastle disease, as well as intestinal and immunosuppressive disease such as hemorrhagic enteritis, are common precursors to outbreaks of colibacillosis.

Suboptimal environmental conditions are the most common predisposing factors for the disease. These are conditions relating to increased bacterial load in the environment as well as increased "stress" on the bird to compete for food, water, and space. Poor ventilation resulting in increased ammonia and dust is the best example. Chilling, overcrowding, and unsanitary conditions are frequent contributors, as are contaminated water and feed.

There are common disease syndromes associated with E. Coli infection: colisepticemia, egg peritonitis, and yolk sac infection/omphalitis. Colisepticemia is most commonly seen in chickens and turkeys between 4 and 12 weeks of age. Clinical signs include depression, decreased feed consumption, labored breathing, snickering, uneven growth, and condemnations (air sacculitis). Post mortem examination often reveals a thick white to yellow exudate covering the surfaces of the air sacs, heart, and liver. In very acute cases, lesions may be limited to whole carcass congestion with en-

(Turn to Page D3)

## Administration Appoints Director

SYRACUSE, N.Y. — James Bays took his position as New York state director of the Farmers Home Administration recently.

Bays, a Smyrna, N.Y. dairy farmer, ran the farm with his father and brother before taking up his position as state director.

"I have a great affection for and sensitivity to rural New York - it's my home, it's my business," Bays said. "I want to be a strong advocate for New York."

A 1974 Cornell University graduate with a bachelor's in animal science, Bays has held the positions of special assistant to the state commissioner of agriculture and markets, regional organizational director of the State Farm Bureau, and assistant to the dean of the College of Agriculture and Life Sciences at Cornell University, where among his many duties he held the posi-

tion of executive director of the New York State 4-H Foundation, Inc.

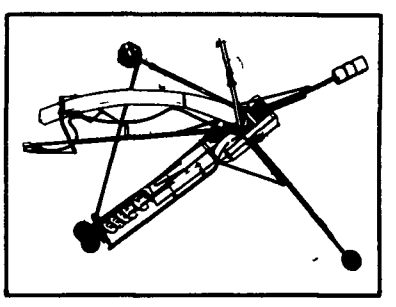
0% - 12 Mos.  
 4.9% - 24 Mos. OR  
 7.9% - 36 Mos.

5 Months  
 Waiver Of  
 Financial

...Now Available On  
 Most Badger Equipment!



EMPLOYEE-OWNED. QUALITY DRIVEN.



### Pack Drive Silo Unloader Badger Frost Busters!

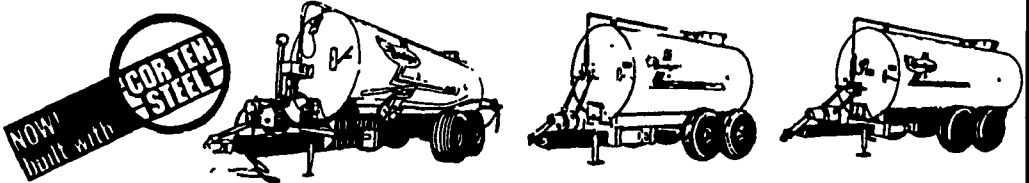
- Center-mounted blower allows for further travel between doors
- Simple, trouble-free collector ring designed for greater ease of service
- Quick installation and low cost, the ideal replacement unit
- High strength, extra-heavy angle iron frame
- Rugged 10" auger with double flighting on outer end, equipped with heat treated Zinc Dichromated knives
- Heavy-duty chipper sheel shaves silo wall clean



### Ring Drive Silo Unloader



### Badger Liquid Manure Pumps, Spreader Tanks and Box Spreaders

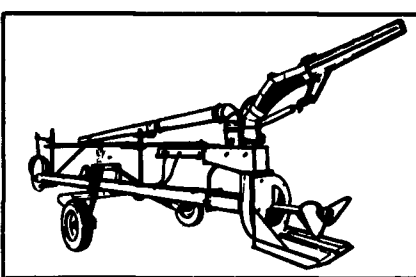


Now built with  
**COR-TEN STEEL**

### Badger Belt or Single Chain Conveyors...



0% - 12 Mos.  
 4.9% - 24 Mos.  
 7.9% - 36 Mos.  
 OR  
 5 Months  
 Waiver Of  
 Financial



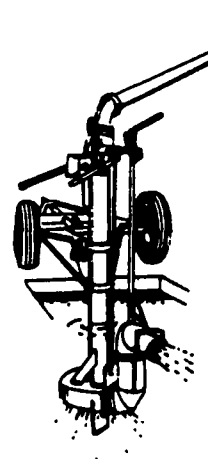
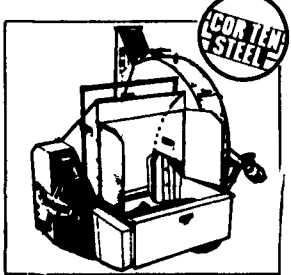
### Badger BN185 Souper Trail Pump/Agitator

- Up to 26,000 GPM agitation capacity
- Standard 28 foot length extendable to 38 feet for really big lagoons
- Choice of cutter blade or propeller options to match biggest agitation needs
- Exclusive internal shear bar chops even straw-laden manure
- Semi-cupped impeller paddles for high capacity pumping

### BN 2054 540 RPM FORAGE BLOWER

High throw capacity with an affordable price! Blow 'em high and blow 'em big. Badger's 540 rpm Blower can take all you give it. For forage or grain, this is the best performing, best priced blower you can buy. Check out these features:

- Cupped paddle design for high throw capability with minimum horsepower
- High-strength Cor-Ten steel band
- Shear bar design prevents feed carryover
- Simple trouble-free shaker pan - fewer moving parts
- 54" high capacity fan
- Hopper magnet option removes tramp metal



Ask Your Dealer About The All New  
**BN 104 PUMP**

**Badger Forage Boxes & Running Gear... The Right Combination For Your Farm!**

### UNI-HYDRO IRONWORKER 35 to 120 Tons



Selling: Scotchman Uni-Hydra Mubea



**DAVID S. KING**  
 873 S. Railroad St.  
 Myerstown, PA 17067  
 Answering Service  
 (717) 866-6556

### See Your Local Badger Dealer

**HONESDALE SPREADING SERVICE INC.**  
 505 Cliff St.  
 Honesdale, PA 18431  
 (717) 253-2410

**CHIDESTER FARMS**  
 RD 2, Box 75  
 Kingsley, PA 18826  
 (717) 289-4260

**MELVIN G. MILLER**  
 RT 2, Spring Mills, PA 16875  
 (814) 422-8279

**PIKEVILLE EQUIPMENT INC.**  
 RT 2, Oley, PA 19547  
 (215) 987-6277

**BHM FARM EQUIP. INC.**  
 RR 1, Annville, PA 17003  
 (717) 867-2211

**SHOW EASE STALL CO.**  
 573 Willow Rd.  
 Lancaster, PA 17601  
 (717) 299-2536

**DEERFIELD AG & TURF CENTER, INC.**  
 RD 2, Box 212  
 Watsonstown, PA 17777  
 (717) 538-3557

**HEFLIN SALES & SERVICE**  
 12312 Oak Hill Rd.  
 Woodsboro, MD 21798  
 (301) 898-3233

**CHAMBERSBURG FARM SERVICE**  
 975 S. Main St.  
 Chambersburg, PA 17201  
 (717) 264-3533

**SOMERSET BARN EQ.**  
 R.D. #5  
 Somerset, PA 15501  
 (814) 445-5555

**McMILLEN BROS.**  
 RD 1 Box 134  
 Loyville, PA 17047  
 (717) 789-3961

**HESS' EQUIPMENT Sales & Service**  
 RR 3, Mifflinburg, PA 17844  
 (717) 966-2720  
 966-1996