

Reducing IP in broiler chickens: a new strategy

Research now indicates scratches are primary cause of lesions, pointing to management problem.

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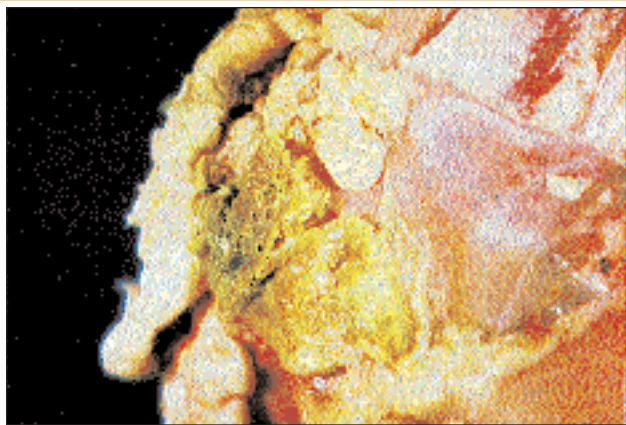


Figure 1. Typical subcutaneous lesion, sometimes referred to as a "plaque," seen in birds affected with IP.



Figure 2. Discoloration of skin seen at processing and caused by an infection under the skin.

Inflammatory process or "IP" in broiler chickens has emerged as one of the most frequent causes of carcass condemnation with direct bird losses exceeding \$35 million annually. Combined with other losses from carcass downgrades, slowed processing line speeds and further processing expenses, total costs may exceed \$70 million to \$80 million annually.

More properly called cellulitis, the problem was once commonly attributed to hatchery associated infections. Research now indicates that scratches are the primary cause of the lesions seen at processing. These scratches most commonly occur in the last few weeks of the growout as birds rapidly gain weight and become more crowded. The scratches become infected with bacteria such as *Escherichia coli* (*E. coli*), which proliferate under the skin and cause the formation of irregular mats of yellow coagulated exudate (Figure 1). When observed by

inspectors, the carcass can be ordered trimmed, if the lesion is small, or condemned if the lesion is more involved. Other lesions frequently associated with cellulitis include a dark discoloration of the skin (Figure 2) and

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thickly roughened skin commonly called "waffle skin" (Figure 3). Cellulitis lesions occur in virtually any area of the body, but most commonly the abdominal region (Figure 4), legs

and base of the tail (Figure 5). Unfortunately, most lesions are difficult to observe in the field, which makes prevention particularly critical.

Research at Auburn University indicates that once cellulitis *E. coli* are present in the house, they can become more prominent with time, causing chronic cellulitis problems to develop in the house. The presence of cellulitis *E. coli* on intact skin has no effect, since the bacteria are not invasive. If, however, birds are scratched, bacteria can contaminate the wounds and lesions form rapidly. Such rapid development suggests that even when birds are caught and transported to slaughter, consideration should be made to minimize scratching, since lesions can develop during transport.

Diseases may play role

Diseases affecting the immune system, such as bursal disease or chick infectious anemia, appear to play a role in at least some cases of cellulitis.

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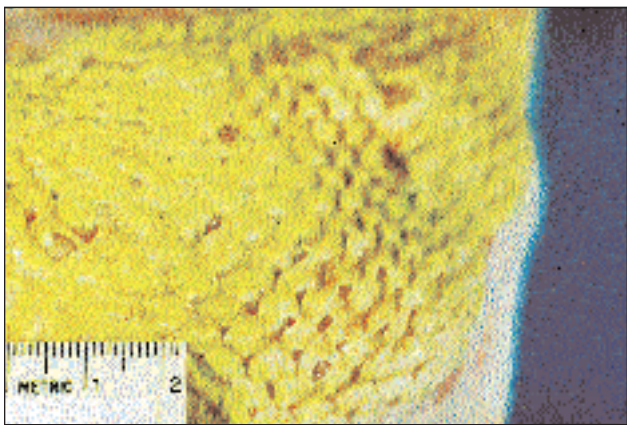


Figure 3. Characteristic "Waffle skin" seen on many birds affected by IP.

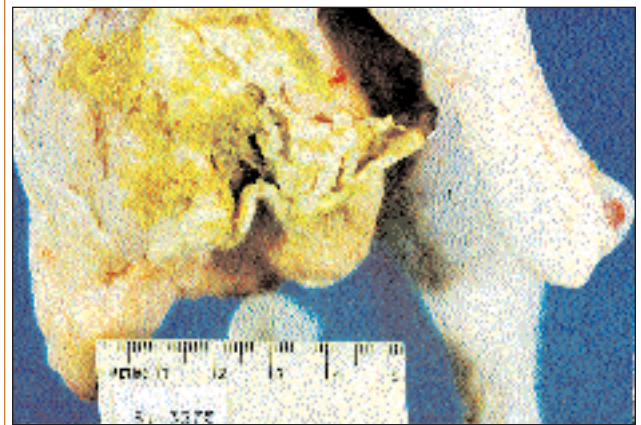


Figure 4. Close up view of subcutaneous IP lesion that extends into the abdominal portion of the bird.

tis, particularly where other *E. coli* infections are simultaneously present. Research presently is being conducted to determine if the immune system can be primed to better deal with *E. coli* infections and thereby prevent cellulitis development.

Stocking density is a significant component of cellulitis development. Birds placed at higher density will generally have more scratches and, therefore, higher rates of cellulitis. This tendency can be magnified by lighting, feeding and environmental management programs which cause birds to become agitated. Problems with scratches often develop when birds rapidly move to feeders and water. Individual farmers can increase problems by disturbing the birds unnecessarily, such as by moving trucks or other equipment near the broiler houses. A good rule of thumb: any activity that causes increased agitation, particularly in the last two to three weeks of growout, can increase cellulitis. New strategies are needed to minimize bird agitation, particularly if stocking densities on problem farms are to remain at present levels.

So what can be done to break the escalating cellulitis cycle? The most important requirement is the recognition that cellulitis is a grow-out problem and not the result of hatchery-borne infections. The idea that hatch-

eries were the source of cellulitis infections was first expressed when

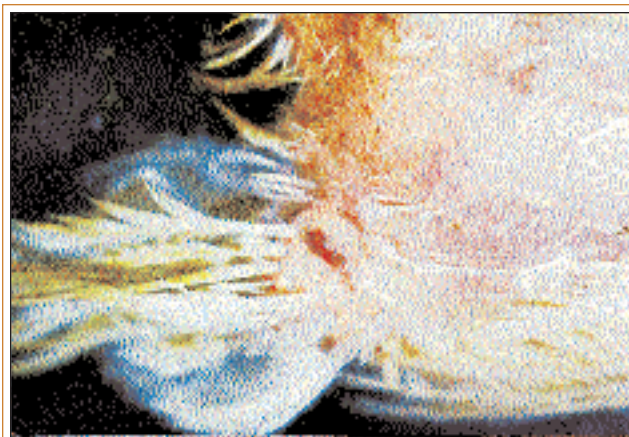


Figure 5. Subcutaneous IP lesion seen at the base of the tail of an affected bird.

cellulitis emerged in the early 1980's. Unfortunately, this opinion was based solely on anecdotal information, which under scientific scrutiny has proven to be incorrect. Although hatchery cleanliness is essential, the many attempts to "treat" cellulitis in the hatchery have resulted in failure.

Bird density important

Bird density should always be examined by the individual company in terms of the cost:benefit ratio. Obviously, the desire is to grow the largest amount of meat in the shortest period of time. This, however, can be achieved only by placing birds at "higher" density to the point where the cost of increased cellulitis condemnations does not reduce the total

profit from the increased tonnage of finished product. Once that breakpoint has been exceeded, density should be readjusted back to levels where cellulitis incidence is reduced to acceptable levels.

Problem houses/farms should be identified by examination of processing data. Changes should be instituted only on those problem farms, since sweeping management changes across the complex might cause the problem to develop where it had never previously occurred. Several diagnostic approaches to determine the importance of bursal disease and chick anemia are available and should be incorporated into monitoring efforts.

Housing cleanliness should be carefully examined. Problem houses should have all litter removed and be carefully cleaned and disinfected. The house should then be heat treated by achieving the highest possible temperature in the closed, empty house for two to three days. Disinfectants should regularly be rotated, since as with antibiotics, bacteria can become resistant. Clean litter can then be placed back in the houses. This procedure should be repeated with each successive growout until acceptable condemnation levels are achieved.

Some things to watch

Feeding space, environmental tem-

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perature, ventilation, feed restriction and lighting programs should be collectively examined and the overall program adjusted if excessive scratching is occurring among the birds.

Processing records should be correlated back to supervisors to determine if particular catching crews are associated with higher cellulitis condemnation. Re-education programs may be

necessary for personnel causing excessive skin tears and scratches. Delays in transportation or yard time should also be correlated back to condemnation data. If excessive delays are being experienced, adjustments in pickup and transportation times may be necessary.

Cellulitis is a problem that the broiler industry must learn to deal with

properly. Past attempts have failed and in light of current research new strategies must be adopted to reduce bacterial infections which result from skin damage. Management techniques which have a positive influence on minimizing skin scratches should be adopted. Continuation of programs which attempt to reduce cellulitis by hatchery management practices will continue to misplace effort that would better be focused on the growout. □