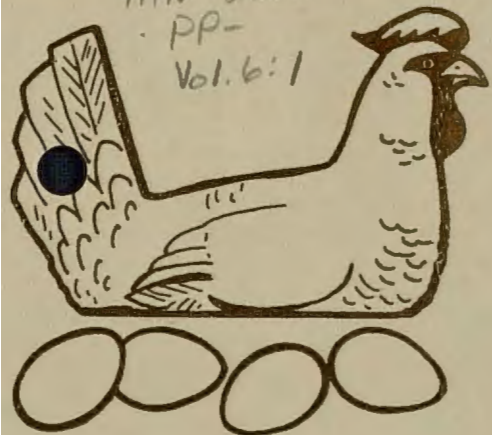


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EGG YOLK ABNORMALITIES

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Although albumen quality generally receives more attention in quality egg production programs, yolk quality factors should also be of major concern to the producer. Yolk quality is usually not a major problem, but occasionally instances of abnormal yolk conditions do occur.

Abnormalities may be severe enough to cause downgrading of the producers' eggs at the processing plant. Perhaps even more serious is the fact that when eggs with abnormal yolks reach the consumer, it causes concern about the fitness of these eggs for food. This may even reduce egg consumption.

Confinement Housing Helps

Confinement housing of the laying flock has solved many of the problems associated with yolk quality. Better uniformity of yolk color is much more easily attained under today's commercial flock conditions than in the farm flock of previous years. Also gone are variations in yolk color that could range from green to red-orange: a result of hens' ranging the barnyard and occasionally picking up certain weed seeds or highly pigmented materials from the trash heap.

A problem still with us is the colorless or "platinum yolk" condition reported in a number of areas during the past few years. The condition occurs in flocks which are producing mostly normal-pigmented yolks so a lack of pigment in the ration isn't the cause of the abnormality. The cause hasn't been identified, but antibiotic treatment has given relief from the condition.

Egg Mottling--A Problem

Egg yolk mottling has been one of the more serious problems of the poultryman. Mottling is described as transparent, orange-yellow, oily ap-

pearing areas which occur on the yolk surface and as a yolk blemished by a combination of translucent and opaque areas with the result that yolk surface color isn't uniform. A curdled effect is sometimes noted. Some chemical substance in the ration may cause abnormal yolk color as well as the mottled effect.

Consumer panel tests recently conducted in Detroit, Michigan and Athens, Georgia to determine consumer reaction to mottled egg yolks show that low level incidence of mottling wasn't noticed by consumers. Moderate mottling, often appearing as swirls or undulate shapes, covering 5 to 10 percent of the exposed yolk surface was found to be the breaking point for consumer acceptance. Mottling of this degree or less wasn't considered objectionable. Mottling above this level was definitely objectionable to the panels.

An early study of yolk mottling described it as non-uniformity in the outer layer of light yolk. Yolks from the same hens varied in the presence and intensity of this condition. The mottled effect could be simulated by placing a slight mechanical pressure on the yolk membrane.

Heredity plays a part as it does in many other egg quality factors. Some strains of commercial layers produce a greater number of eggs with mottled yolks than other strains.

Studies Point To Cottonseed Meal

A number of studies show that cottonseed meal in laying hen rations causes yolk mottling. As a result cottonseed meal hasn't been generally recommended in laying hen rations. Individual hens vary in incidence and degree of laying yolk mottled eggs due to eating this feedstuff. Appearance of mottling increases with the age of the egg so it may be more noticeable in an aged egg than one freshly laid. Although cottonseed meal can be treated and processed to remove the gossypol and its derivatives, the marked differences due to origin and processing history make it difficult to determine quality.

Drugs Can Cause Mottling

Yolk mottling caused by the coccidiostat Nicarbazin has probably received the most attention. The incidence and degree of mottling due to feeding this drug to layers also varies with the individual hen.

Levels of 0.005 percent Nicarbazin in the feed have been found to produce a greater incidence of mottling than might be found with hens on a normal ration.

Reports state piperazine compounds and dibutyltin dilaurate used to control internal parasites have also caused increased incidences of yolk mottling. The problem may be more severe during warm months and more noticeable the longer the egg is stored.

Tannic acid, gallic acid, and propyl gallate have increased yolk discoloration and mottling. Small amounts of these or similar substances may be used as antioxidants in certain feedstuffs. While it is difficult to see how large quantities of these compounds could get incorporated into a feed, the possibility shouldn't be ruled out if other causes of the problem can't be determined.

Other Factors Involved

Some mottling occurs in eggs not subjected to the previously mentioned conditions. It is noted that eggs transported long distances tend to have more mottling than those moved only short distances. A recent study shows that increased age of the egg, shaking of eggs, and storage at

high temperatures increases the incidence of yolk mottling. So it appears that procedures recommended to maintain interior quality of eggs can also be effective in reducing mottling problems.

The changes that occur in the structure and composition of the mottled egg yolk haven't been fully determined. In the mottled area there has been a separation of the two layers of the yolk membrane. This separation may permit a greater movement of water and substances from the albumen to the yolk to cause the development of the mottled areas. Some definite changes in certain components of the mottled yolk have been found when compared to normal yolks.

Properly Formulated Feed Important

In presenting a number of the causes of yolk mottling it points up the importance of using a properly formulated feed for the laying hen and the dangers of misuse of drugs in commercial poultry flocks.

Although all the answers aren't known about yolk mottling, producers should be aware of the problem. Follow recommended production practices that will reduce its incidence and keep consumer concern about this egg quality problem to a minimum.



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