



Ok. So how did that affect the foot color in my Cochins again due to my glaring lack of genetics proficiency. I'll try to explain what I learned in layman's terms.

Foot color in poultry is a combination of several genes or lack of and involves both the epidermis (outer layer) and dermis (underlying layer) of skin on the feet and shanks. The final foot color is determined by the combination of genes and where the color is deposited in the skin.

David Soderquist has a great article on these combinations. The article can be found on the CI Facebook page under the "Files" link:

<https://www.facebook.com/groups/Cochinsinternational/permalink/945398692187489>

If you want to dig deeper this European article is another great read via Dave Soderquist:

<http://www.aviculture-europe.nl/nummers/09E05A09.pdf>

So, what happens if you have the right genetic combination for good yellow legs but the color is not there? Yellow foot color is the result of the proper plant-based pigments being available to the birds so the color can be expressed. For yellow, this is carotenoids.

These are pigments contained in grasses, assorted vegetables, flowers, and corn. Bingo! As it turned out, my feed was being least cost reformulated due to ingredient price increases. The corn carrying the important carotenoids was being cut back. And since poultry cannot synthesize carotenoids, they must be provided in feed either naturally or as supplements. This directly affects the foot color.

Next question was how do I correct this? As always, being given the opportunity to learn something new is interesting and challenging. I have a friend, Richard Higgins, who is Director of Hatchery Operations for Perdue. I contacted him about my issue and he in turn contacted Perdue's poultry nutritionist, who knew exactly what I was dealing with! It seems Perdue used to use a specialty all-natural carotenoid to add skin color to whole chickens for several broad markets, and he just happened to have a few pounds available. Three days later, my friend Richard showed up with several pounds of the additive for me to try.

Digging a little deeper, it seems carotenoids are not all equal. There are hundreds of different types, but only a handful relate to poultry. Some impart yellow color (marigold extracts) others orange (paprika extracts). Often a combination of them is used to get the proper egg yolk color depending on geographic color preferences. Anyway, my interest was in improving skin color. Seems there are 2 carotenoids that will affect yellow skin color: Apo-ester, a synthetic formulation, and Lutein/zeaxanthin, a natural marigold extract. Both only require a minimal amount (2 lbs./ton) mixed in the feed to enhance the expression of the yellow gene in the feet and shanks.

I feel pretty certain that when the feed formulations changed and corn was decreased, an additional carotenoid source was not incorporated in the feed. And that would explain the loss of color in the feet of my Cochins. When I added the supplement to the feed, my birds readily ingested the processed marigold powder. Within a matter of a few weeks, I could see a definite improvement. (Foot pic # 5,6,&7)



After I had used all the original powdered extract, it had made such a difference I wanted to continue mixing it in lower levels in all my feed. I searched online and found that both marigold (Calendula) petals and processed powder are available. (Pic #8,9) Since then, I've learned that some feed companies do incorporate additional

carotenoids in their premium lines of feed, but with what's available, I have found it's much more economical to mix your own.

An important takeaway is to know your feed ingredients. (Pic#11) If corn is not primary, ask if there is any supplemental Zeaxanthin in the formula. If not, a little added marigold powder (¾ oz to the 50 lb. bag ) can make a big difference in foot color.



If your birds don't have at least some yellow pigment in the metatarsal pad and the shank, then lack of color is probably genetic. (Pic #2,#10)



There is always so much more to learn about poultry. Consequently, the challenge of trying to breed the perfect bird will never end!