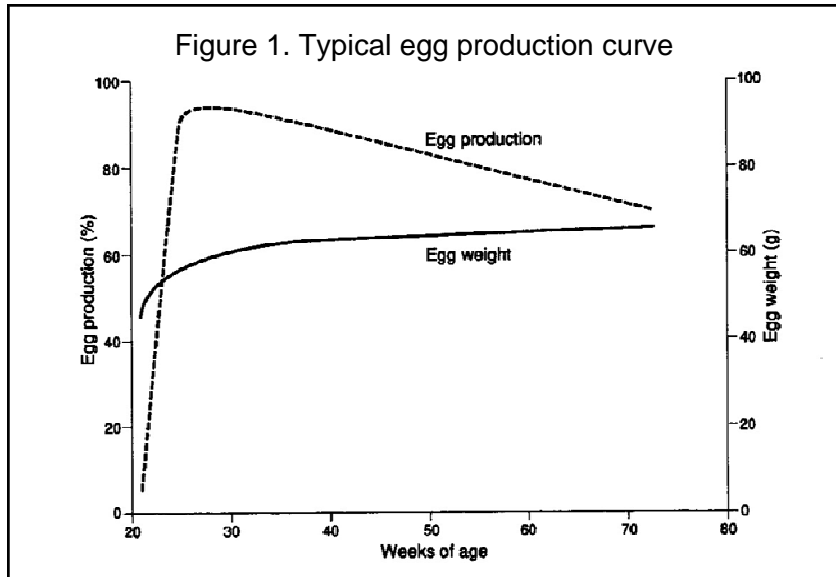


## EVALUATING EGG LAYING HENS

By Jacquie Jacob and Tony Pescatore



Most flocks of egg laying hens go through the same typical production curve. As shown in Figure 1, the flock quickly peaks in egg production and then slowly reduces its level of egg production.

It is important to remember, however, that not all the hens in a flock will be laying at the same rate. Some hens may never lay a single egg while others may go out of production

earlier than the majority of the flock. It would be helpful to find such hens and remove them from the flock. To do so requires an ability to assess the persistency and intensity of lay for each hen.

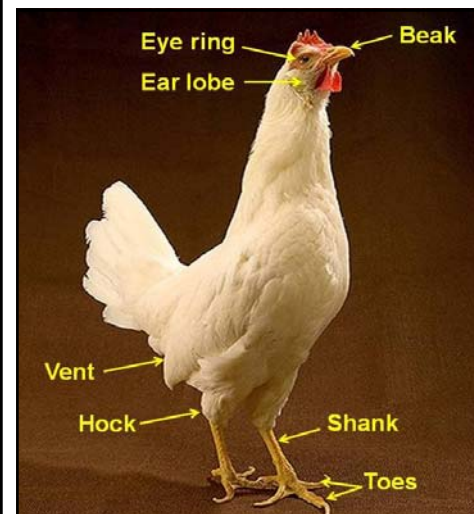
**Persistency of lay** refers to the number of eggs laid over a specific period of time. **Intensity of lay** refers to the current level of egg production.

With yellow-skinned hens, such as leghorns, loss of pigment from their skin is an important characteristic for determining the persistency of lay. As a pullet grows, yellow pigment is deposited in the skin, beak, shanks and feet. Once the pullet starts laying eggs, the pigment is then removed from the pigmented areas to provide the yellow color in eggs.

The pigment bleaches in a definite order - from the vent, eye ring, ear lobe, beak (corner of the mouth toward the tip), bottom of the foot, the shank (front, back and sides) and finally the hock and top of toes (see Figure 2 for the parts of the hen).

Once a hen stops laying eggs, pigment is regained to the skin in the same order in which it was bleach. It is NOT regained in the reverse order.

Figure 2. Photo showing the parts of the chicken bleached of pigment during egg laying



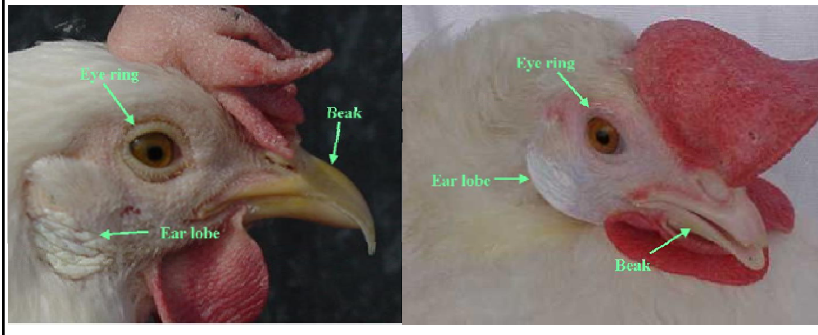
Source: Modified photo from the USDA/ARS photo gallery

Figure 3. Comparison in the color of the skin around the vent of a poor layer (photo on the left) and a good layer (photo on the right)



As previously indicated, the first place to lose pigment is the vent. A hen that has been producing eggs will have very little yellow remaining in the skin around the vent. As shown in Figure 3, the hen on the left still has yellow remaining in the vent. She has either laid few, if any eggs, or has been laying eggs and has gone out of production, putting pigment back into the vent. The vent of the hen on the right has been bleached of pigment.

Figure 4. Comparison of the yellow color in the eye ring, ear lobe and beak of a poor layer (photo on the left) and a good layer (photo on the right)



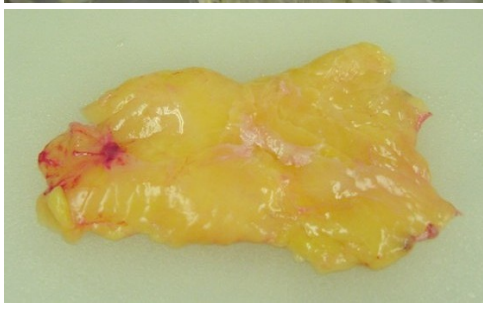
As shown in Figure 4, there is no yellow pigment remaining in the eye ring, ear lobe and beak of a hen that has been in production. Yellow pigment is present in all parts of a poor layer's head. In addition to differences in pigmentation, the comb of the poor layer is smaller and pale. The head is also too long in proportion to its depth.

Figure 5 shows the decrease in yellow pigment in the shanks and tops of toes of hens as the number of eggs produced increases. The feet of the hen on the left still has a lot of yellow pigment remaining in its shanks, feet and tops of toes indicating that she has laid less eggs than the other two hens. Most of the yellow has been bleached from the feet of the hen on the far right, indicating that she has laid the most eggs of the three hens.

Figure 5. Photographs showing the loss of pigment from the front of the shanks and tops of toes



Figure 6. Photographs showing the deposition of fat in a chicken, including the abdominal fat pad



If you are comparing two hens of equal pigmentation the next factor to consider is 'handling qualities.' Handling qualities are the main factor to consider when comparing hens from breeds that do not have yellow skin since level of pigmentation can not be used as an indicator of egg production.

'Handling qualities' refer to the amount of fat in the abdominal area. Unlike cattle which place their excess dietary energy as fat between muscle fibers producing the marbling effect of beef, poultry species deposit fat under the skin and in the abdominal area in what is referred to as the fat pad (see Figure 6). You do not see a marbling effect in poultry meat. That is why poultry meat is so much leaner than beef, especially if you remove the skin with its underling fat.

To evaluate handling qualities, take a pinch of skin just below the pubic bones (see Figure 7) and roll it gently between the thumb and finger to evaluate its thickness. If a hen is in production her dietary

energy is being used for egg production. If a hen is not laying, dietary energy is not being used for egg production so it is deposited in the fat pad in the abdominal area. As shown in Figure 7, a hen which is in production will have a thin pinch of skin in the abdominal area than one not laying.

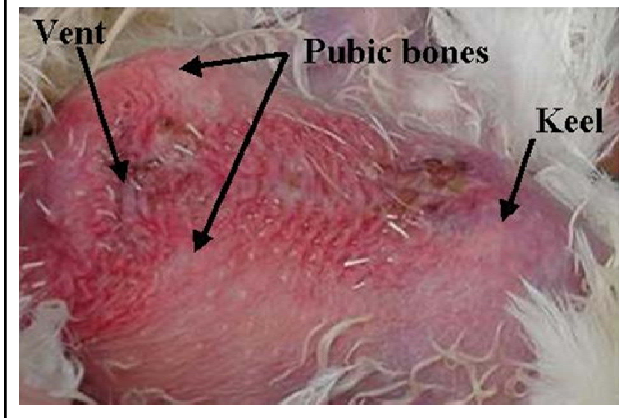
Another important factor in evaluating laying hens is 'abdominal capacity.' To evaluate abdominal capacity, place as many fingers as you can between the bottom of the pubic bones and the tip of the keel (see Figure 8 for the location of these parts of the chicken). Count the number of fingers you can get between these two locations. This is the depth of the abdomen.

Figure 7. Photographs showing the thickness of skin in the abdominal area of a poor layer (the photograph on the left) and a good layer (the photograph on the right)





Figure 8. Labeled photograph showing the location of the vent, pubic bones and keel of a chicken



Place as many fingers as you can between the two pubic bones. Count the number of fingers you can get between these two bones. This is the width of the abdomen.

Figure 9 gives examples of abdominal capacities for two hens. The abdominal capacity of the layer in the top pair of photographs is 2 finger depth x 2 finger width. This is an example of a poor layer.

The abdominal capacity of the layer in the bottom pair of photographs is 4 finger depth x 3 finger width. This is an example of a good layer.

Figure 9. Photographs showing the abdominal capacity for a poor layer (top pair of photos) and a good layer (bottom pair of photos)



Molt is another factor that can be used to evaluate the level of egg production for individuals in a flock. The short feather in the middle of the wing is known as the axial feather. The 10 feathers outside of the axial feather are the primary feathers (see Figure 10). To evaluate molt of a hen, it is these 10 primary feathers that are examined.

Hens in a molt loose primary feathers, starting with the feather closest to the axial feather and move outwards. Old feathers that have not molted will be worn on the ends and may be dirty and/or broken. New feathers are typically smooth and clean.

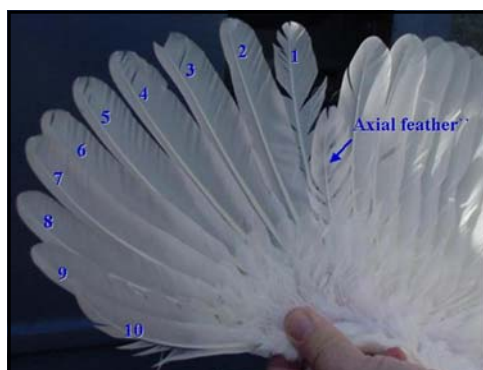


Figure 10. Photograph showing the axial and primary feathers on a wing of a chicken which is not in molt

The photographs in Figure 11 show two hens in different levels of molt. The hen on the left is missing one primary feather. This is referred to as a one-feather molt. The hen on the right has four new primary feathers. This is referred to as a four-feather molt.

Figure 11. Photographs indicating two different levels of molt.



## SUMMARY

It is important to remove the unproductive hens from a flock. For those breeds with yellow skin color, level of pigmentation is a good tool for evaluating the level of production of each hen. Yellow-skinned breeds include most of those kept for egg production - Leghorn, Plymouth Rock, Rhode Island Reds and New Hampshires.

The Australorp, an egg laying breed used in Australia, are not yellow-skinned. Their skin is black, though the bottoms of the feet and toes are pinkish white. For those hens that do not have yellow skin, the level of production of the hens can be evaluated using handling qualities (level of fat in the abdomen), abdominal capacity, and molt.