A BEAUTIFUL BREAST

Text & photos:Sigrid van Dort, Feb 2023
Other photographers mentioned in captions.

What is going on here? For the colour multiple laced 'partridge' or its silver version 'silver pencilled', two separate groups of chickens are needed in some countries to give the hen the correct show colour on the one hand and the cock on the other. The show colour for hens is multiple laced partridge (eb, s+ or S, Pg), there is a lot of ground colour visible (s+ gold or S silver). The corresponding male has the breast colour as shown in the lemon cock's breast.

Large photo top: lemon partridge.

Bottom square: red'ish partridge detail.

Hen on the right: partridge.

Cock on the left: partridge, black'ish breast

Photo cock: Udo Ahrens

First this, the basics
In partridge (eb), cocks and hens have the colours corresponding to their sex. They are a sort of enhanced wildtype. So the cock colour, also has a hen version which doesn't look the same. The colour of the hen also has a cock version, her brother, which looks different from his. This, assuming they are born of the same parents or group of parents of the same colour variety, here partridge or silver pencilled. Two completely different names for the gold or silver version. You could have said gold pencilled and silver pencilled, but that runs things in the soup for other breeds where 'pencilling' is a totally different pattern. You know by now that hobby colour names don't reflect the genetics, if you read my stuff over the years.

Therefore, looking at the sister, you know approximately what her brother looks like, and vice versa.
Is your goal a hen with a certain pencilling, then her brother follows in his way of expressing the chosen genes in male form. You cannot change that, the hen and cock colours of sisters/brothers are attached to each other.
Is your goal a cock with a certain colour expression, then its sister follows. You cannot change that. Why? Nature has rules, it will always obey them.
For example, you cannot breed white hens and black cocks from a black father and a white mother.
Nature's rules are not like that, so what you want is not always possible. The children inherit roughly* 50/50 from both parents with the exception of sex-linked genes.
**) this is more complicated on a molecular level however this is not visible in the resulting offspring when you breed a colour variety - for example something partridge.*

Black breast of partridge cocks
In some countries the show colour for the partridge cock is (still) jet black, free of ground colour which was called 'mottling' in the past (1800-1900s). This has nothing to do with the gene 'mo' for mottled. The corresponding hen has no lacings at all so are pg+ (stippling) or they have a muddy colour due to the more undefined lacings with smut in between. I have no photo of this cock-breeding-hen, it doesn't exist anymore in Europe and at shows you only saw their sons and brothers anyway.
This smutty expression compared to the partridge multiple laced show hens with defined lacings and clean - non-smut - ground colour (gold or silver) between the lacings.

The hens used for black breasted show-cocks can sometimes be just within the margin of 'okayish' to show them without their brothers getting (too much) ground-coloured feather tips or edging

The manifestations of eb 'partridge':
In fact, in partridge, there are two genetically different colours which are those that have a Pg gene, and those that do not have Pg (pg+).

- Pg, hens muddy and smutty multiple laced, cocks with black breast,

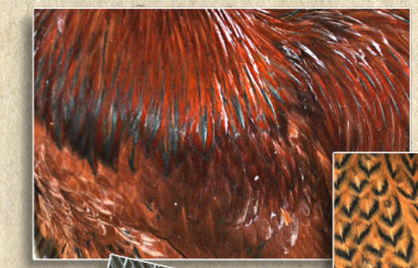
- Pg hens with good open lacings, cocks with some ground colour in the breast.

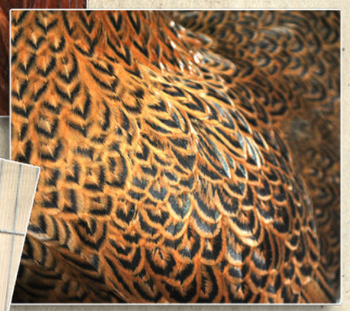
Something in between the two above which, however, is a balancing act and lower percentage of good enough 'show quality'.

- Pg hens with super open lacings and even lacings (pencilling) in hackle and cocks looking like black tailed gold,

- pg+ version, stippled hens, cocks with a jet black breast.

It depends on the country and the standard of the breed what is tolerated. And you decide what works best for you, regardless.





The three photos above are the german hen breeding colour partridge (Wyandotte bantams). The cock lost his wildtype outfit - black is in his under colour. His is genotype is still the same as the cock on the left, the Brahma bantam cock, photographed and bred by Alan Kemp (UK). The sisters of this cock are much less defined in pencilling as the hen above. Only due to a different gene expression. Amazing isn't it?

of the breast feathers. The cock on the first page could be such a black breasted, although a 'bad' one compared to their 'black breast bred brethren'. The Wyandotte cock on the front page was at a show in Germany and really not showing the 'hen breeding cock' breast as the ones in the background on the same page (the lemon and red partridge cock's breasts).

Gene expression
It is possible to push gene expression unbelievable far, which is how the hen-breeding cocks in Germany were created that look like golds with a blacktail due to the extreme increase of ground colour. They look in really nothing wildtype'ish anymore, while their genes are the same as the 'normal' partridge cocks with a black or black-mixed-with-ground-colour colleagues. The sisters of these totally non-wild-type looking cocks have super defined narrow lacings and a large proportion of ground colour as a result. Those hens are also multiple laced in hackle, instead of the normal wildtype shaft stripe. For the German genetics book Udo Ahrens bred such a 'black tailed gold' cock to a standard partridge hen en the resulting offspring was indeed in between although the males were more reddish than wildtype. This is a sign of superduperselection and a mega tera gene expression such that it is unbelievable as said above. How is this even possible?

Using the e-allele's characteristics
Especially with eb, this allele favours neither black (eumelanine) nor red (pheomelanine) pigment by its chicken colour factory settings. It is possible to tweak the expression such, that either black or red gets an advantage as in more expression than the other.
With wheaten eWh, for example, this is not possible. This allele will always favour pheomelanine (red).
This is in contrast to ER birchen, which will always favour eumelanine (black). ER requires brute force to get a pattern on the chicken, force that makes it impossible for black to take over at the expense of the ground colour (pheomelanine - gold or silver).
You won't find 'partridge colour' on ER birchen because the means of containing black pigment is limited to the columbian genes and Pg doesn't help either. To date, no one has considered it necessary to create the multiple laced pattern on an ER birchen.
It will probably be possible, though. Then a balance has to be found: super strong Pg and perfectly tuned Co and Db. Might take 50 years or so to do that, or longer.

Use what is already there
However, why should you make an ER based partridge when there is eb?
Especially with the existence of the eb basis, whose allele favours neither black nor red, it's a piece of cake.
This is also the reason why certain colours exist on certain e-alleles. For patterns such as single laced, spangled, pencilled as on Hamburgand other ancient landfowls, which exist on both e-alleles eb and ER (with

Above: hen breeder from and by Alison Harrison (UK), a blue partridge Brahma. Below an example of 'clean' pencilling (hen breeding) and'smutty' pencilling to illustrate how smutty looks.

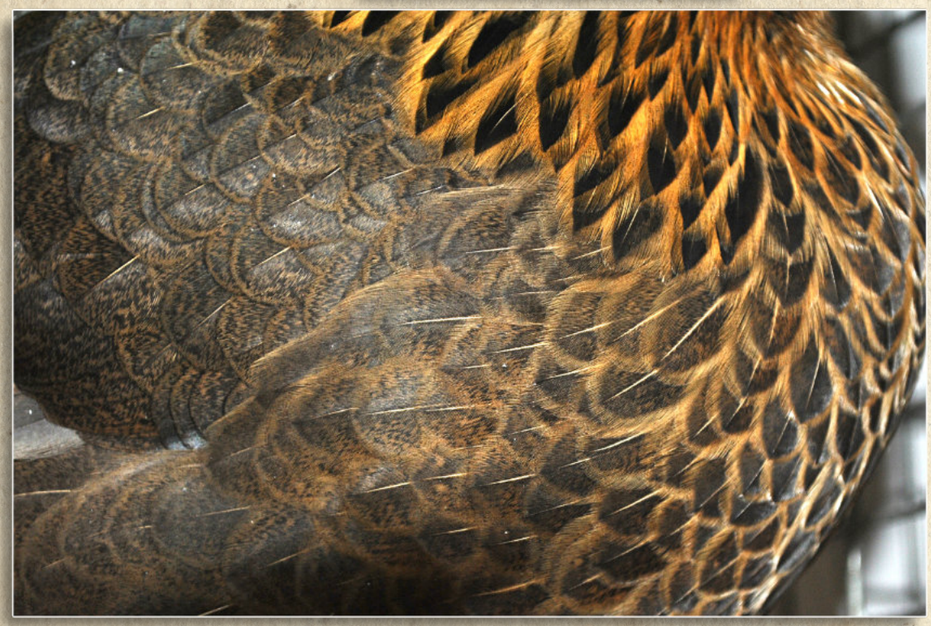
consequences for the cock), history caused this, which goes back centuries. The silvers were ER and the golds were eb, nobody decided this. It happened. Mixes looked smutty and were liked less than the cleaner patterned chickens, so ‘the eye’ kept this silver=ER and gold=eb going.
No knowledge of genetics necessary, which didn’t exist.

Tweaking vs what nature wants
The bottom line is that you can tweak all the controls on how loud, moderate or silent the expression of a gene is in its interplay with other genes.
Of course, there are a lot more molecular variables of course. These go way too far for a hobby chicken breeder. Whether it makes any difference on that level to the end result, I don't think so.

Why mixed colours have so many different appearances is precisely because of the tweaking of the expression of the genes present in a mum/dad combination.
This can happen even if you use a new chicken of the same colour variety and breed, bred by someone else. The result can be a little disappointing. This is due to the fine-tuning of the genes the other breeder found necessary for the best results in their breeding. Your black may suddenly explode, or smut may appear in your hens' rear end, or autosomal red may pop up in your silver based variety, without being visible in the new hen.

Targeted instead of the shotgun method
A perfect partridge doesn’t exist, that's why you always keep 'improving'. For that, you really don't need to breed large quantities of chicks. Breeding should, on the contrary, not be 'hard work'. It is more like making a painting or composing a piece of music, with feeling, sophistication, deep thinking, and knowledge. With a defined target or goal in mind and a roadmap how to achieve it.
With about 15-20 chicks in a colour variety, you have a pretty good palette of individual differences. 'Breed much and cull hard' means you are breeding like a shotgun, rather than being a sniper, hitting your goal. Shotgun breeding of 100+ chicks in one colour variety costs more room, feed, bedding, gives a higher

The pg+ version of eb partridge to breed cocks with a black breast. Instead of Pg, they have stippling as seen in e+ duckwing. Also seen in eb Satsumadori of the same genotype. In those you see a tendency to form ghost lacings you can see in the large bottom photo. That’s the nature of eb. The photo of the black breast is just informative. It is the breast of a Brahma bantam cockerel of Alan Kemp (UK).



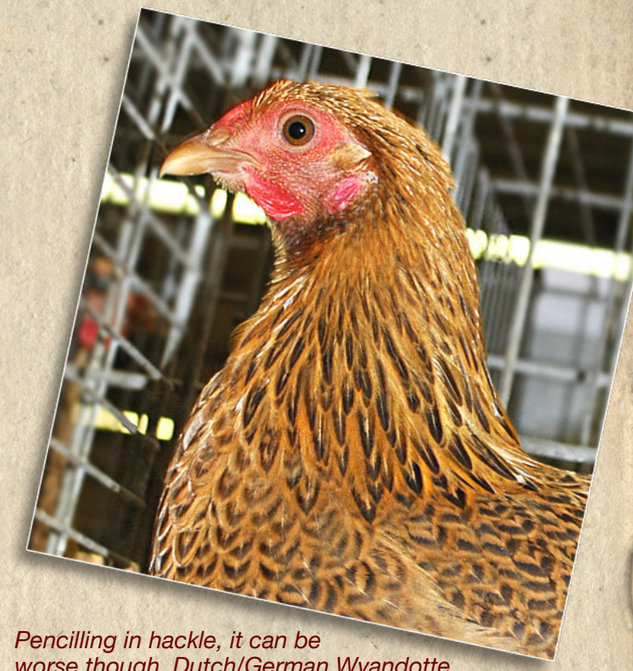
A hen breeder cock, German Wyandotte bantam, for ‘normal’ partridge as now exist since cock breeding partridge is not longer fashion.

disease pressure, compared to sniper breeding. Especially if you have more colours/breeds, which can add up to hundreds of chicks a year.

1:1 mating is the best way to see how a particular combination works out, you need patience, however. Moving fast isn’t always the best way forward.

Stippled eb partridge instead of multiple laced
Only in the separate German eb partridge colour with the confusing* hobbyname gold- and silberhalsig where the hens are stippled (pg+) similar to e+ hens, does the cock always have a jetblack breast. And the hens are show-worthy too if they are accepted (standard).
This colour was made for cock breeding and the hens are beautiful too, they are just as important as the cocks with their black breast.
*) this hobby colour name is another colour in other breeds. Compare to ‘pencilled’ in English which can be both genetically and visually different colours. Complicating things by using the same words for different things happens in many languages.

End of the scam in some breeds
No ‘partridge scam’ as in Brahma is happening in Wyandottes and Cochin bantams in some countries, here Germany. The scam of ‘secretly’ breeding from two different pens with opposing breeding goals to get a show hen & cock of the same colour name. Aaarrgghhh!!!!
I was into chickens for years before I understood the gaslighting going on. It had to be kept a secret to prevent competition at shows? It wasn’t told or explained to starters, at least not to me. How did I find out? Reading ancient books! Then I felt it unfair



Pencilling in hackle, it can be worse though. Dutch/German Wyandotte bantam (choc) from Danny Stindt.

for the cock-breeding-smutty-hens, who were kept out of sight.

Discrimination of the means to an end, ended
The cock with jet black breast and their hidden sisters and mothers... the hidden hen breeding cocks with ground colour in breast feathers... this hiding was ended some 20 years ago in Europe. There was a transition period of about 5 years to adjust to the new ‘cock’s breasts reality’: the hen-breeders. During the transition period the best cocks were compared and if it was a hen breeder he would win.
Even if hobby chicken breeding is a rather rigid and ‘conservationist’ state of affairs, sometimes you better have to move along with reality.
In Europe, time and space for a hobby is becoming less. Less cocks with a black breast entered the shows compared to the other colour hens. Because breeders favour hen breeding (of course). They enjoy a flock of beautifully pencilled hens and the cock is the means to the end. The hen breeders are shown in similar quantities as the hens now.
No chicken is hidden anymore due to a weird system of two-pen breeding for the fake-same colour (partridge, silver pencilled or dark).

The other option was: allow the cock breeding hens at the show too, rename them. Judge the not necessarily uniform dark smutty semi-multiple laced hens to their own standard.
The harem system of chickens worked against this, there are more beautiful hens than beautiful cocks. Or create a stippled (pg+) colour variety instead of multiple laced if you want eb cocks with a black breast, like is done in Wyandottes and Cochin bantams.

Young German Wyandotte bantam hen, in 'normal' silver pencilled.
Her brother shows silver edging on the breast feathers. Photo by Udo Ahrens.

Photos below of silver pencilled (dark) and partridge Brahma hens with lacing starting in hackle. Their brothers show ground colour in breast feathers, pencilling is open.

Right: lavender partridge project large Brahma with pencilled hackle. Below silver pencilled Brahma bantam pullet, dropping feathers at show. Her pencilling is different from the Wyandotte on the opposite page. Note hackle. Breeds have their own characteristics feather (colour) wise.