

British Skewbald and Piebald Association

Everything for the Coloured Horse Enthusiast



So you want to Breed a Coloured Foal or try to!

**Some of your frequently
asked questions answered**



**Some helpful advice from BSPA
to encourage responsible breeding**

Why breed a foal when you can buy one much cheaper?

Remember the saying “Fools breed horses for wise men to buy”

Please consider these points when deciding to breed from your mare – run through this check list first:

Don't put her in foal just because

- You don't have anything else you can do with her
- She is too awkward to ride or handle or exhibits bad temper – inevitably the foal you breed will inherit her traits.
- She is continually unsound or has conformation defects which make her unsuitable for ridden competition – again the foal may inherit her problems
- She is a bad example of her type

Do breed from mares

- With a good performance record, that have remained sound and whose conformation and temperament are good. This applies to all types.

Why breed a foal?

- For what purpose are you breeding a foal – competition, jumping, dressage, showing?
- Is there a commercial value on the foal should you decide you cannot keep it all its life?
- Do you have the expertise to manage a mare and foal?

Choosing a coloured stallion

Do not use ungraded, unlicenced stallions – you will regret it because

1. All stock will be unverified and get basic passports
2. You will be unable to compete in BSJA age classes
3. You may not be able to grade any offspring as a stallion

Do not use the cheapest or the one nearest to you – research your suitable sire – look on websites and keep the following in mind when making your selection:–

- Look at the stallion to see if his conformation will improve your mares.
- Look at his performance/show record
- Make sure he is Graded and is able to issue Covering Certificates
- Check his breeding record – has the stallion sired a suitable foal before?
- Do not choose a stallion with the same faults as your mare
- Ask to see examples of his stock preferably from more than one type of mare.
- Make a shortlist from the details of the stallions you are interested in
- Make sure the stallion you use is compatible with your mare. Do not breed an 11.2 mare to a 16.2 stallion or vice versa. You may end up with an equine equivalent of a Basset Hound, i.e. big body and short legs!



Take these costs into consideration before sending your mare to stud

Costs involved in breeding a foal

Pre-stud check up	To make sure she is in breeding condition
Various tests as required by the stud + tetanus	Equine herpes £60+ Equine viral arthritis (EVA) Contagious equine metritis (CEM) £100+
Transport to and from stud	£2+ per mile
Keep charges whilst at stud	May vary from stud to stud. Grass keep, grooms fee, part stabled
Stud Fees	Ask what terms the stud fee means, e.g. NFNF - no foal no fee; NFFR - no foal free return
Settlement on removal of mare	You pay your fees when you remove the mare from the stud
Vets fees whilst at stud	All vets fees for work carried out whilst at stud will be sent directly to you by the vet
Studs reserve the right to worm and have the farriers to your mare	Fees added to your bill
Keep for the period of pregnancy	Grass keep, DIY livery bills, stabling costs
Veterinary treatment whilst mare in foal	Vaccinations etc. Teeth checking
Foaling vets fees	All mares should have the vet attend them to make sure they have cleansed and to give foal anti joint ill vaccination
Gelding foal	Weaning, gelding vaccinations
Keeping foal for three years	Vets fees, farrier fees, wormers. Keep for three years: livery, feeding, hay. Registration and passporting. Your time
Plus the unexpected	Accidents, operations, insurance fees (3rd party a must) training, taking to shows

Some familiar terms used in breeding coloured foals

So, now you'd like to breed yourself a coloured foal?

Well – in the case of the Tobiano we have to start with one coloured parent at least. Whilst this may be an obvious statement on the surface – it is a fact that you could breed two solid coloured horses with Overo genes and still get an Overo out of it. This is not the case with the Tobiano gene, it is a dominant gene and therefore every horse with a Tobiano gene will be coloured. Sadly it is impossible to actually see if a Tobiano carries one of those prized “colour” genes, or maybe two. This is of interest as a horse with a double set of Tobiano genes will produce a coloured foal regardless of the markings of the other parent, whilst those with only one Tobiano gene will only produce 50% coloured offspring when crossed to a solid coloured horse.

Never EVER believe anybody who tries to tell you that a particular stallion produces 80% (or whatever) coloured foals out of solid coloured mares – it might be true that this has been the stallion's tally so far – but even then your statistical chance of a coloured foal out of a solid mare will be 50%. A coloured horse will either be something called “heterozygous” for the Tobiano gene – meaning he has one of a pair of genes that is responsible for the Tobiano pattern – or “homozygous” for the Tobiano pattern. A heterozygous parent has a gene set of Tt (one T for the Tobiano gene, one t for the solid gene) and will produce 50% Tobiano offspring from a solid partner. A homozygous parent has a gene set of TT (both T for Tobiano genes) and will produce a Tobiano offspring regardless what colour the other parent is.

As each parent gives its foal ONE of those genes, it takes two coloured parents to produce a homozygous (TT) horse. Hence a horse with one known solid parent can never be homozygous for the Tobiano gene and therefore will only produce 50% of coloured offspring to solid mares.

A solid foal by two Tobiano parents cannot – contrary to popular belief, produce any colour itself, or rather, no more than any other solid coloured horse. Had it been given a T from either parent then it

would, itself, have been a Tobiano. The fact that it isn't means it does not possess that priceless T gene, and can therefore not pass it on.

However, what can never be guaranteed is what type of pattern you'll get, and whether your foal, coloured or not – is going to grow into the horse you ultimately wanted.

Breeding any horse, coloured or not, is a huge responsibility, and when you are breeding for colour this responsibility is, if anything – even greater. What if your foal ends up solid? Will you still want it? when you choose a stallion for your mare – ask yourself: "If this horse was plain bay – would I still want to breed my mare to him?" If the answer is "no", walk away. There are always coloured youngsters on the market, and it can often be cheaper to buy a youngster than to attempt to breed one. And at least when you buy your youngster, you know what you're getting – so think twice before you rush your mare to the nearest available coloured stallion.

TOBIANO – A Tobiano describes a coat pattern. Most of the coloured horses we see have this pattern. Looks like white paint has been poured from the top line downwards.

OVERO – Overo describes a coat pattern which looks like white paint has been poured from the belly upwards, never crosses the top line of the horse.

TOVERO – A cross between Tobiano and Overo genes.

GENE – A gene carries information which gives a horse certain characteristics

HOMOZYGOUS – In simplest terms, a homozygous tobiano horse will always have a tobiano foal unless mated to an Overo mare, then you may have a Tovero foal.

Homozygous means two of the same. When a stallion is homozygous for the tobiano gene, it means that he has two tobiano genes. one was inherited from the sire, and one from the dam. Since he has two tobiano genes, one of them will always be given to the foal. The foal will inherit the other gene from the dam. The tobiano gene is a dominant gene, so the foal should ALWAYS be a tobiano.

If the dam is a tobiano mare, the foal will have a 50% chance of being

homozygous. If the mare is solid, or an overo, it is not possible to have a homozygous foal. The homozygous horse must have both parents tobiano.

What if the stallion that you choose for your mare is NOT homozygous?

When you breed a solid mare to a tobiano stallion that is NOT homozygous, you have a 50% chance of a tobiano foal and a 50% chance that the foal will be solid.

When you breed a tobiano mare to a tobiano stallion that is NOT homozygous you can end up with a homozygous foal but the chances are 75%. There is also a 25% chance that the foal will be solid. 50% of the foals should be non homozygous tobianos.

Genetic markers linked to tobiano may help. but the cannot prove homozygosity since they are not direct tests for the tobiano gene. The tobiano gene is very closely linked to the Albumin and GC genes. Most often the tobiano gene is marked by the "B" variant of Albimin and the "S" variant of GC, although exceptions do occur. These variants also appear in solid colour horses, but the combination is significantly less frequent than in tobianos. A tobiano with tobiano parents (of Quarter Horse breeding) that also has only the markers ALB-B and GCS is five times more likely to be homozygous for tobiano than to be heterozygous.

If marker information from parents as well as offspring is available, the odds of homozygosity for tobiano offspring (by marker analysis alone) may change (up or down). If either parent is heterozygous for tobiano and homozygous for ALB-B and GC-S, then the marker testing is inconclusive. The horse could be homozygous, but the markers now provide only the information that the horse is equally likely to be homozygous or heterozygous.

If both parents are known to be heterozygous for tobiano, and both are ALB-AB and GC-FS, then their ALB-B and GC-S tobiano offspring is highly likely to be homozygous for tobiano (greater than 90% chance).

PHENOTYPE – Colour you can see, e.g. exhibits a pronounced coat pattern that is clearly visible.

GENOTYPE – Carries the colour gene but does not visibly show broken coat pattern, e.g. historical grey skewbalds.

PIEBALD – Black and white.

SKEWBALD – Any other colour and white (except black).

TRICOLOUR – Vary rare. The horse must have three defined colour patches on its body above the stifle and elbow. Black or white in the mane or tail does not count nor do black bands around the legs where bay, or any other colour, meets white.

HETEROZYGOUS – Will not always produce or donate a coloured coat to the offspring. 50/50 chance of colour.

CROSS BREEDING – Crossing individuals from two different breeds or types, e.g. cob x thoroughbred.

IN BREEDING – Relates to the number of times one or more common ancestors appear in a pedigree.

PREPOTANT – The ability of a stallion or mare to consistently stamp or mark their foals with desirable traits.

DOMINANT GENE – A dominant gene is one that over-rides the second gene in a pair. That is why any foal which has been passed on 'T' will display a Tobiano coat pattern.

RECESSIVE GENE – A gene that is not present in every generation. The Overo gene is recessive and may 'miss' a generation.

ESTROUS – The cycle when a mare is receptive towards a stallion, 6–7 days in length. Ovulation occurs in the final 24–48 hours of estrous. Most studs miss out the first day a mare is in season and cover on the 2nd, 4th and 6th days. (sperm can live viably for 24–48 hours).

DIESTRUS – 14–15 Days in length – a mare is not receptive to a stallion during this period.

GESTATION PERIOD – Eleven months or about 342 days (normal average range 320–370 days).

COLD BLOOD – Large horses and ponies generally with a genetic placid disposition. Descendants of the ancient European breeds used for farming, hauling and other types of heavy work. Early Cold Blood horses were also used to carry medieval knights who needed strong mounts that could carry an armoured man in battle. Draft horses are considered Cold Bloods, they tend to be larger and heavier than warm or hot blooded horses. Examples include Clydesdale, Shire and some of the European breeds like Brabant, Belgium Draft and usually have a feather and a profusion of mane and tail hair.

WARM BLOOD – Were originally created when warriors from the middle ages brought Arabian horses back to Europe from the Middle East that had been captured in battle and crossed them with European breeds. Now with generations of selective breeding the most successful sport horse in the world has been created. Those included are Dutch Warmblood, Hanovarian, Swedish Warmblood and many more.

HOT BLOOD – Arab and Thoroughbred. Arabians did not reach Europe until the 16th or 17th century but once here revolutionised horse breeding. Crossing Arabs with english horses created the thoroughbred. Some breeds considered Hot Blood: Anglo-Arab, Arabian, Moroccan Barb.

Best time to start the breeding process is in the spring – March, April, May. The start of the breeding season is 14th February officially. The age of a horse starts on 1st January no matter what date it was actually foaled, i.e. foaled 1st June 2007, a yearling on 1st January 2008.

Frequently Asked Questions Facts and Fiction

Q A non homozygous stallion is advertising it throws 80% coloured foals – is this possible?

A No – a stallion may throw a higher number of coloured foals one year but the next will produce less. The 50/50 rule applies.

Heterozygous coloured stallion to plain mare = 50% chance coloured 50% chance of solid offspring.

Homozygous coloured stallion to plain mare = 100% coloured.

Heterozygous coloured stallion to heterozygous coloured mare = 75% chance coloured 25% chance solid

Homozygous coloured stallion to heterozygous coloured mare = 100% coloured (50% chance homozygous)

Homozygous coloured stallion to homozygous coloured mare = 100% coloured (100% homozygous) offspring.

Q I have seen a heterozygous coloured stallion advertised as having had 90% coloured foals to plain mares, does this mean my mare is more likely to have a coloured foal to him than another heterozygous stallion with only 50% coloured foals from plain mares?

A ANY heterozygous coloured stallion will only have a 50% chance of producing a coloured foal at each breeding. For example out of 10 matings this stallion may have nine coloured foals, however in the next 10 matings she may only have one coloured foal and nine solid foals. Never be misled into thinking you are more likely to get a coloured foal from any heterozygous stallion rather than another.

Q I had a plain foal from two Tobiano parents – will it throw colour to a plain coloured stallion?

A No. The Tobiano gene is phenotype which means if it's there you can see it. A plain foal from two coloured parents does not carry the Tobiano gene.

Q A homozygous Tobiano stallion always throws well marked foals

A Not true. All his foals may be coloured but there is no way to predict the allocation of colour. Some will be well marked others not.

Q Will my Tobiano cob mare have more of a chance of throwing colour than a finer mare?

A No. Every Tobiano mare (except those that are homozygous) have exactly the same chance of throwing colour no matter what their type.

Q I have a foal that is coloured, the dam is solid coloured, the sire Tobiano – can it be homozygous? It has ink marks on its coat pattern.

A No. The first rule of breeding a homozygous foal is it MUST have two Tobiano parents.

Q Do I have to use a coloured stallion on my chestnut mare in order to try to get a coloured foal?

A Yes. There is no other way.

Q How do I know if a stallion is homozygous

A There is no direct diagnostic test available for the Tobiano gene. However, a test is available for the two serum protein markers linked closely to the Tobiano gene, the test can help predict the likelihood that a horse is homozygous for the Tobiano gene. Record of breeding is essential. A stallion that produces non-coloured foals from any breeding is NOT homozygous. A stallion bred to at least 10 solid colour mares that has produced

ONLY Tobiano foals is statistically 99.9% certain to be homozygous. Remember a stallion or mare must have two Tobiano parents to even be considered suitable for the protein test for homozygosity.

Q If a stallion or mare has a blue eye or eyes, then will the foal have them?

A No, not necessarily

Please, when trying to breed your coloured foal do not just breed for colour by using homozygous stallions, they are not the holy grail. RESPONSIBLE BREEDING MEANS CONFORMATION AND TYPE MUST BE PARAMOUNT WHEN CHOOSING A STALLION – COLOUR IS A BONUS. Breeding a foal gives you a great responsibility. It's up to you to choose the best available with the conformation and temperament and type characteristics to produce the best foal. You are in it for the long term – don't breed if you cannot afford it, don't have the time, experience or patience to raise a foal.

"It's their life in your hands"

Typical Head and Leg Markings



Star and snip



Stripe



Race



Blaze



Bald



Apron



Coronet



Half Pastern



Pastern



Ankle



Half Stocking

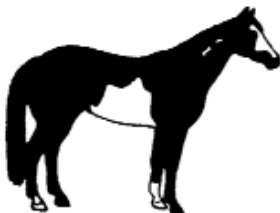


Full Stocking

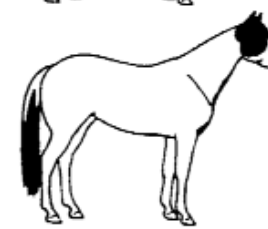
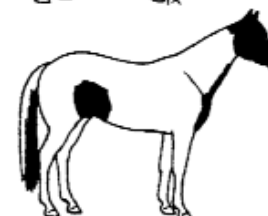
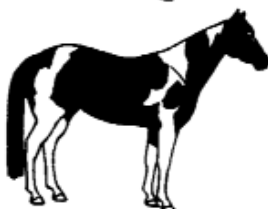


High Stocking

Typical Overo Patterns

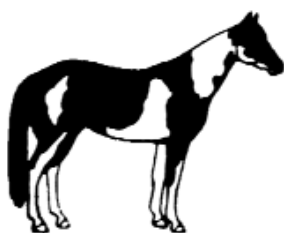


Typical Tobiano Patterns



Tobiano-Overo Cross Coat Patterns (Tovero)

Horses show characteristics of both coat patterns



USEFUL INFORMATION

GENETIC TESTING

Animal Genetics, Inc., 1336 Timberlane Road, Tallahassee, FL 32312-1766, USA. Tel: 1-850-386-2973, Fax: 1-850-386-1146, E-mail: contact@animalgenetics.us

Avian Biotech International UK, PO Box 107, Truro, Cornwall TR1 2YR. Tel: 01872 262737, E-mail: contact@avianbiotech.co.uk

USA site also has a section for offspring coat colour calculator

BOOKS ON GENETICS

Horse Colour Explained by **Jeanette Gower**, published 23/10/2000

"This guide explains the principles of inheritance of colour in horses for the serious student and the pleasure horse breeder alike. Topics covered include: colour genetics; colour breeds and terminology; interrelationships of colours; predicting outcomes of mating; and coat colour changes."

Horse Genetics by **Ann T Bowling**, published 05/1996

"In this genetics textbook, an overview of genetic principles is given using horses as the primary examples. The author concentrates on topics such as coat colour, and covers issues including parentage, testing, medical genetics and gene mapping."

Both books are available from www.amazon.co.uk





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