

Breeding plan

for the Norwegian

Fjord Horse



valid from 2022

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INTRODUCTION

1. Framework for horse breeding in Norway

In Norway the organized breeding of horses is based on tradition. Interested breeders, the breeding advisor (Statskonsulenten), the Judge's panel, among others, have in addition to traditional breeding incentives such as approved stallions with mares on mountain grazing (hestealsseter), local organizations (hestealslag), and the show system laid the foundation for the quality of the current horse in Norway. The recent decades, more emphasis has been on performance and competitions. Thus, the basis for breeding horses has somewhat changed.

Norges Fjordhestlag is responsible for the breeding plan of the Fjord Horse. The breeding plan have been operational since 1995. In addition to indicate how the breeding should be carried out in the future, the breeding plan must provide a basis for selection of horses for breeding, be a guide for the judge's panel and provide guidelines for awarding financial support for breeding.

The main goal is to achieve genetic progress for the traits in the breeding goal. An important part is to assess the various limitations that lie ahead, both external and internal factors. External factors could be e.g. national and international, biotechnology, and quality requirements. The framework set for breeding will be influenced by external factors, but will also be governed by the organization itself, the animal structure, regulations for breeding horses, business policy, and the economy of the industry. The horses also have biological limitations (such as fertility) which sets limitations for the efficiency of the breeding. Breeding measures should therefore be assessed in relation the expected effects and limitations.

1.1. Extent of horse keeping and users

The total equine population of Norway is today about 100,000 horses. Approximately 5000 mares are mated every year. In recent years, the breeding has decreased drastically. This creates both short-term and long-term challenges. In the short term, this causes economic challenges for the keeping of stallions, among other things. Potential loss of genetic diversity is a long term challenge. The size of the breeding stock is reduced, which might have a negative impact on genetic progress. The native breeds rely on a larger market share to increase breeding to a sustainable level.

1.2. Breeding structure and the number of breeding horses

The number of animals used for breeding within a population limits the genetic progress. The selection intensity and accuracy is lower in small populations, and reduces the genetic progress. In small populations breeding policies must often be confined, in order to counteract inbreeding. In breeding programs where new techniques such as estimation of breeding values is included, it will be necessary to take inbreeding into account.

The size of the breeding stock is variable among the Norwegian horse breeds. Often the horses are also spread out over great distances across the country, making breeding challenging. The structure of horse breeding with many small units means that the ability to invest is low, both in terms of technical and labour-related breeding measures. This means that implementation or maintaining breeding measures must be financially viable and not labour-intensive.

The four native horse breeds have little or no possibility of bringing in new blood. The Fjord Horse is in a special position due to relatively large Fjord Horse populations abroad. However, different breeding goals, registration systems, and evaluation makes importing horses for breeding challenging. The Norwegian Ministry of Agriculture and Food has a special responsibility towards the native breeds as they represent a living inheritance. Norway is responsible for the breeding, development and maintenance of these breeds. This means that breeding policies must be carried out in a reasonable way. Breeds of international origin follow international standards and often have a collaboration with the parent organization. There are often clear rules and duties for the breeding, which the individual breed association must comply with. This applies both to keeping pedigrees, identification, and breeding techniques (artificial insemination, new fertility techniques etc.).

In line with “Forskrift om avl av storfe, svin, sau, geit og hest, FOR-2018-01-31-145”, 4 - 12, an official approval of breeding organizations which maintain or start stud books is required.

1.3. Professional development and collaboration

According to the organization’s articles of association of 03.01.2014 (§4), the Norwegian Horse Centre (NHS) should be the top professional center for horse breeding in Norway, and play a central role in handling and coordination of data for breeding. A close collaboration with the relevant academic communities within livestock and veterinary medicine is emphasized, which leads to mutual benefit. Furthermore, the breeding plan should be evaluated and followed up continuously, based on recent research results and relevant practical experience. Contact and collaboration with the breeding organizations and the equine sport societies is important both to follow up the breeding, and for discussions of future selection and breeding strategies. NHS also sees the importance of increasing the knowledge among the breeding organizations and the central actors (e.g. judges, breeders etc.) through information, meetings and courses.

2. General breeding goals for horses

The horse of today is used in many different and new fields, and must be a very versatile animal with a wide range of activity, suitable for sport and recreation as well as riding for the disabled. To a greater extent than in the past, horse breeding emphasizes the use of the horses. An important aspect of the breeding plans will be an attempt to analyse the characteristics of a breed in relation to the area in which it is used. For many breeds, too much emphasis on the horses’ ability to perform could lead to loss of breed type, character, and reduced over-all impression. For these breeds it is of utmost importance to retain breed type, character, and the over-all impression.

The development and use of breeding plans enables an opportunity to guide the breeding towards long-term goals. Health, temperament, soundness, and fertility are important values within a breed. Problems arising from inbreeding must be avoided. The inclusion of these traits in the breeding objective will reduce the genetic progress in the short term. Over time, the inclusion of the traits is a viable strategy to serve future horse-owners with a sound horse with reduced veterinary expenses. Such breeding strategy is also important from an ethical point of view.

An important aspect of the breeding plans is the long-term management of the breeding, of which the breeding organizations are responsible. This mainly involves monitoring the level and rate of inbreeding. The native breeds are important in a cultural context, and it is important for

future breeding to ensure a viable population.

International breeds have a greater opportunity for importing new breeding material. Thus, the management of those breeds are related to breeding of Norwegian horses and produce horses for various equine sports. For some breeds, the import of horses for sport and leisure is quite extensive. For example, currently the demand for warmblood sport horses is not met by Norwegian breeding. An important goal is therefore to increase the number of Norwegian-bred horses of international quality. Thus, the breeding objectives for native and international breeds are slightly different. The long-term management of the native breeds is crucial. However, the breeds must compete with the imported horses in several equine sports. The international breeds can to a greater extent select for performance, and breed a horse that is competitive internationally. Breeding horses on an international level will provide the opportunity for export. The genetic progress will be dependent on the framework (i.e. management of imported horses and imported semen).

It seems obvious that the point of carrying out breeding is for everyone to work towards the same goals and ensure progress for the traits in the breeding goal. The breeding will benefit the entire industry. Ensuring good framework and serious breeding is therefore important. The breeding plans must contribute to systematic and structured breeding.

PART 1: Breed characteristics and breeding goals for Fjord Horses

3. General breeding goals for Fjord Horse

The breeding of the Fjord Horses must be carried out according to the following general goals:

- Through pure breeding maintain the distinctive character, diversity, and the versatile characteristics of the Fjord horse, and to breed a healthy and functional horse.
- Preserve the original colours and markings of the breed, dependent on the different shades of body colour.
- The Fjord Horse should be a strongly built, hardy, well-proportioned and athletic horse with great charm and presence. Different types is accepted.
- The Fjord Horse should be reliable, co-operable and willing, as well as being sensible and calm. In addition, the aim is natural and well balanced movements with good forward motion. The Fjord should be versatile. It should be easy to handle and suitable for the whole family. Breeding should focus on producing a Fjord that is attractive for future users with emphasis on good conformation, movement, and function.

4. The following characteristics are emphasized

Characteristic	Weighting in %
Conformation	70 %
Function	10 %
Temperament	10 %
Soundness	10 %

4.1. Conformation

Conformation counts for 70 % of the main breeding goal for the Fjord. See defined weighting of conformation traits under «Indexing». Conformation should be judged as follows:

4.1.1. *Breed type/character – performance and function*

When judging breed type, character and function the following criteria shall be considered:

- *Height:* There is no maximum or minimum height but the desired height is between 135cm and 150cm at the wither. Sizes below or above these measurements can give reduction in breed type/character.
- *Colour and markings:* The five accepted colours are dun, white dun, grey dun, red dun (chestnut dun), and yellow dun. There are different shades of colour within each accepted main colour. It is important to keep the so-called primitive markings. A star up to 5cm measured at the largest diameter is accepted on mares. Other visible markings are not accepted with the exception of markings on the genitals. Light stripes on hooves and light hooves/limbs that gradually merge into the characteristic colour of red dun or yellow dun horses are not reckoned to be markings but a distinctive feature of these colours. When a horse with markings enter

an official show for the first time and the marking is approved, this should be valid in the context of shows further on.

- *The forelock and mane:* the forelock on adult horses should usually cover from one third of the head. The mane should be traditionally clipped, and the upright mane should be convex and be cut to suit the top line of the horse.
- *The head:* The head is important for the special character of the Fjord. It should be small and well defined with a broad and flat forehead. The bridge of the nose should be short and may be straight but preferably concave. The eyes should be large, dark, and clear with a friendly expression. The nostrils should be large and open and the muzzle should be square. The lower jaw and cheek bone should be well defined, especially in stallions, but not so strong that the head seems heavy. There should be a good space between the branches of the jaws. The ears should be short, wide apart, parallel and be well pointed.
- *Gender:* There must be a clear distinction between stallions and mares. A mares' head should be finer than the stallions. A broad forehead and a well-defined lower jaw as well as well-defined and large eyes can give the impression that a stallions has a more triangular head than a mare. The neck and crest muscles of the stallion should be stronger than in a mare.

4.1.2. Conformation and muscular development

The following points should be considered when evaluating conformation and muscular development:

- *The neck:* The neck should be well placed on the shoulders and have a convex top line. Stallions especially should be well muscled. The Fjord Horse was primarily a working horse and a short heavy neck and straight shoulder was preferred. Today a longer and suppler neck more suitable for riding and driving and as a pack horse, is desired. It is important that the transition between head and neck is more flexible and that the nape of the neck is longer. A long thin neck is not wanted.
- *The shoulder and wither:* The shoulder very much influences movement. It is important that the shoulder is well defined, sloping and long. The withers should not be flat but long and sufficiently marked so that the line from the top of the neck to the back is even.
- *Body and top line:* The back and loins should be even and well muscled. The back should not be too long and the loins should be short and strong. The transition between back and quarters must not be stiff and at the same time the transition between the loin, back and quarters must be even and strong.
- *The quarters:* The quarters should be long, broad and well muscled. The quarters should not be flat and not too sloping. The hip joint should be 4-6cm higher than the ischial joint. The sett-on of the tail should not be too high or too low. The thigh should be well muscled both from the side and from behind.

4.1.3. Limbs and limb position

When looking at the limbs, the following should be taken into account:

- *Forelegs:* Joints and tendons should be dry and the leg position from the front, the side and from behind should be correct. The forearm should be long and well-muscled and the gaskin should be well let down and well-muscled. The knees should

be well defined and straight seen from the front. The cannon bones should be dry and be correctly placed straight below the knee. Front legs that are back at the knee is not desired as this puts a great deal of strain on the knee (during fast work) and can lead to inflammation of the knee joint. The length and angle of the pasterns should be such that movement is soft and elastic.

Splints can have various causes. Classical splints on the inside of the cannon bones right below the knee is often a result of stress injury caused by the conformation of the knee. Such splints can occur on both forelegs (double-sided and symmetrical). Splints can be a symptom of unfortunate conformation, such as parallel-displaced forelegs or that the horse is calf-legged. In such cases, the horses score is lowered both due to the undesired conformation and the splint. One should not put too much emphasis on splints, especially if they are small.

- *Hindlegs:* Joints and tendons should be dry and limb position correct seen from the front, the back and from the side. The thigh and second thigh (gaskin) should be sufficiently long with strong and well developed muscles. The hocks should be strong and well defined. The hocks should not be too straight or too bent as this type of conformation can lead to problems with the stifle joint or the development of spavins, respectively. The length and angle of the pasterns should be such that movement is soft and elastic.
- *Hooves:* Hooves should be of good horn quality, well shaped with a strong, deep, wide heel and with the hoof walls at a good angle. The sole should be open and not flat and with a well developed frog.

4.1.4. Movement

Movement and the different gaits should be free and natural. Movement should engage the whole body, top line and joints. They must show good forward motion, balance and rhythm. The Fjord should be free at the shoulder and use his hocks. Unnatural high leg action is not desired.

4.2. Performance and function

The following performance traits are included in the breeding: Versatility (the allround horse), driving, riding, movement, and temperament. See the performance test regulations ('Bruksprøvereglement') for description of the applicable performance tests for mares and stallions.

4.3. Hardiness, soundness

Soundness is weighted at 10% and is judged during the veterinary inspection in agreement with the stallion judges' panel (kåringensnemd). In classes without a veterinary examination, the conformation judges look at the general health of the horse and the conformation that can lead to unsoundness.

4.4. Temperament

Temperament is weighted at 10% and is an assessment of the behaviour during the show. For older stallions, additional information will be obtained during the stallion performance test. Temperament should be described and evaluated by the vet, the conformation judges, and the performance judges.

5. Judging the individual

The results from the judging of conformation, performance, temperament and health/soundness should be evaluated and weighted in accordance with paragraph 5.1 and the result will decide whether or not the horse will be approved and awarded a premium or licence. Each characteristic must in itself be acceptable. If the conformation is not good enough, the horse will not be accepted no matter how good the performance results are. Visa versa, if the performance is very poor though the conformation is good the horse will not be accepted either. The same principles apply for temperament and soundness. The horse will be awarded the appropriate marks for each individual trait, regardless of the quality of the others. An individual cannot receive a premium or license if any mark is 4 or below. The sum of the conformation scores is not relevant for the judges' decision and should not be emphasized in the final decision.

5.1. Indexing

A mathematical study has been done weighting each trait and each separate part to fit the score sheet that was introduced in 2011. All separate marks will be weighted into the main mark for the trait, using the assigned weighting. This is done to ensure that each mark is weighted equally every time, and in accordance with the breeding plan. Indexing will therefore ensure a fair and consistent system.

In the assessment of the conformation, the traits must be weighted as follows:

Trait	Weighting
Breed type and character	40 %
Conformation (body) and muscular development	20 %
Limbs and limb position	20 %
Movement	20 %

5.2. Guidelines for awarding of premiums

Conformation, performance, temperament, and hardiness/soundness are important for the individuals premium in accordance with the current breeding plan (see chapter 4). The conformation has the greatest weight in the breeding goal and is guiding for awarding premium to adult horses. The premium can be adjusted up or down on the basis of performance, temperament, and hardiness/soundness.

Stallions must have at least 7 on breed type/character to obtain breeding approval.

Otherwise, it is recommended for stallions that:

To achieve license, the stallion should have 7 in overall impression and no mark under 6.

To achieve 3rd premium, the stallion should have 7.5 in overall impression and no mark under 6.5.

To achieve 2nd premium, the stallion should have 8 in overall impression and no mark under 7.

To achieve 1st premium, the stallion should have 9 in overall impression and no mark under 7.

It is recommended for mares that:

To achieve 3rd premium, the mare should have 6.5 in overall impression and no mark under 6.

To achieve 2nd premium, the mare should have 8 in overall impression and no mark under 7.

To achieve 1st premium, the mare should have 9 in overall impression and no mark under 7.

There are no guidelines for awarding ribbons for young horses, but the awarding of an «extra ribbon» to fillies follow the criteria 2nd premium.

PART 2: Breeding regulations

6. Regulations for registration of Fjord horses in Norway

All horses must have a passport, according to the «Regulation on identification of animals of the equine family, FOR-2010-04-28-631», «Regulation on breeding of cattle, pigs, sheep, goats and horses, FOR- 2018-01-31-145» (previously «Regulation on approved (purebred/registered) animals of the equine family» from 13.01.1999) and «Regulation on horse welfare» from 01.07.2006.

In accordance with the «Regulation for registration of Dole horse, Fjord horse, and Nordland-/Lyngen horse» from 16.03.2005, all Fjord horses must be pedigree checked using DNA typing and be tagged with a microchip. This has been practiced for all foals born after 1998.

6.1. The Norwegian Stud Book for Fjord Horses

The Norwegian Stud book for Fjord horses is based on pure breeding. The Stud book is differentiated, and foals are entered in the A-, B- or C- register depending on the stud book status of the parents. The registration rules govern into which register the individuals are entered. Horses in the A- register get a red passport, horses in the B- and C-register get blue passports.

From 2015 it is no longer illegal to use not-licensed stallions for breeding, but foals by approved and non-approved stallions are entered into different registers.

6.1.1. Definitions in the studbook

- *A-register*

Approved/licensed sire. Dam in A- register or B-register with 4 generations documented and approved pedigree. Offspring from mares registered in the B-register due to missing DNA from their dam (see below), will be entered to the A-register. Horses in the A-register have full right to breed shows.

- *B-register*

The B-register is for horses not qualified for the A-register. The offspring from dams in the B-register can build up an approved pedigree and thus enter the A-register. Horses in the B-register does not have the right to enter breed shows.

Examples:

- Approved/licensed sire. Dam not fully registered. (Documented pedigree of dam, but too few approved generations in the pedigree.)
- Horse with approved pedigree, but DNA from dam is not obtainable. Thus, control of origin is not possible.
- Pure bred horse, but sire not approved/licensed.
- Approved/licensed sire. Type approved mare.

- *C-register*

The C-register is for horses not qualified for the A- or B- register. Horses in the C-register does not have the right to enter breed shows.

Examples:

- Not approved/licensed sire. Dam not fully registered.
- Fjord horses conceived through embryo transfer.

Type approval of mares

Type approval of mares can take place according to given criterias determined by Norges Fjordhestlag. In order to meet for type approval, one of the following points must be fulfilled:

- DNA control against a given approved sire which cannot rule out the sire and information about the dam which seems plausible compared to information found in the breed's archive. The sire will then be listed in the pedigree.
- DNA control against a given registered dam which cannot rule out the dam and information about the sire that seems plausible compared to information found in the breed's archive.

If neither the sire or the dam is DNA typed, the information of the mares' lineage must be plausible with information on the breed's archive.

6.2. The Norwegian Elite Stood Book for Fjord Horses

In addition to the Stud book, there is an Elite Stud book for Fjord Horses. This Elite Stood book includes horses awarded a premium at breed shows.

6.3. Registration of the individual

Both stallion owners and mare owners are responsible for reporting all coverings and the result of the covering to NHS within the given deadlines. Stallion owners are responsible for sending a list of all mares covered during the season. Mare owners are responsible for registering the result of the covering. All results should be registered, whether the mare is empty, the foal is still born, the foal is born alive etc.

6.4. Use of sperm from a dead stallion

Sperm from a deceased approved/licensed stallion can be used after the stallion's death after application to the stallion judges' panel and if the use is found to purposeful and preventative in relation to inbreeding. The application must be sent to Norges Fjordhestlag for a comment. The registration of the offspring is dependent on the status of the stallion.

6.5. Artificial insemination (AI)

Artificial insemination may be used on Norwegian mares.

6.6. Stallions licensed and stationed abroad

Mares can be mated abroad or be inseminated with imported sperm. The stallion must fulfil the pedigree requirements that apply to Norwegian horses and be approved in the country where the mating/sperm production occurs for the offspring to be registered in the A-register. This does not apply if the stallion has 0. Premium (not approved) from stallion show in Norway. Norwegian born offspring from such stallions will be registered in the B-register according to section 6.1.1.

7. Stallion selection

7.1. Rules on Stallion selection (Kåringsvedtekter)

In breeding, the selection of stallions is the most important as they have the greatest influence in the population. The selection of stallions has based on judging of the

individual (kåring). This leads to choosing the best possible breeding stock based on the traits desired in accordance with the breeding goal, and at the same time discovering defects which will disqualify the horse for breeding. Additional information will be gained by reviewing the progeny of older stallions.

7.1.1. *The right to show*

A stallion has the right to be shown and may be licensed if he is registered in the A-register in the Fjord Horse stud book. Foreign stallions may be shown, but must follow the same criteria for registration as a Norwegian bred horse. To be accepted for breeding they must carry out the same conformation and performance tests as the Norwegian bred horses.

7.1.2. *Selection and the awarding of premiums*

Selection and the awarding of premiums are carried out by an official judge's panel at an officially recognized show. Selection is made in relation to the current breeding plan.

7.1.3. *First time evaluation*

The first time a young stallion can be evaluated is in the spring at 3 years old. The stallion's conformation and performance test is judged according to the traits defined in the breeding goal. The horse is shown loose in an indoor arena, if possible. Seeing the horse loose gives the judges a good way of judging movement. A stallion can be licensed the first time he is shown and placed in order of quality. The license gives him the right to be used for breeding for a certain period of time (usually one year), and the right to show for performance test. A stallion evaluated for the first time as an older stallion (> 3years old) must go through the same program as a 3 year old.

7.1.4. *Second evaluation*

A licensed stallion must be shown for a new evaluation in class 1 and 2 (see current showing rules) after going through the performance test, see section 7.3.3. If the stallion for veterinary reasons (or any other valid reason) cannot enter the performance test, an application to postpone must be sent and the stallion must meet the next year. The horse will be judged on the results of the performance test as well as the other criteria as defined in the breeding plan. The stallion may be awarded a 1st, 2nd, or 3rd premium and can also be placed in order of quality. Stallions who are not up to standard for conformation or performance, lose their license.

7.1.5. *Third evaluation*

All approved stallions will be called for a new assessment when they are 8 years old. The call is made by the Breeders group (avlutvalget) of Norges Fjordhestlag. If the hardiness of the stallion is low or the contribution to the breeding is high through a high number of offspring, the stallion can lose his approval for breeding. Regardless of whether he loses breeding approval or not, the stallion will keep or improve the premium

The stallion must do the following:

- Health check with an emphasis in hardiness
- Description of conformation

Stallions that does not show for the third evaluation will automatically lose their breeding approval. This also applies to stallions abroad.

7.1.6. *The importance of pedigree*

In special occasions, the pedigree of a stallion can be taken into account on advice from the Breeders group/the board in Norges Fjordhestlag. The entire Breeders group/board in Norges Fjordhestlag should prior to the show examine the list of horses that are registered in the show catalogue and inform the judge's panel if there is any stallion with a pedigree that should be especially taken into account. An important part of the work of the Breeders group is to be familiar with and follow different blood lines to see which should be preserved to ensure genetic variation in the Fjord Horse population. Looking at the extent of inbreeding in the population as a whole is a means to ensure that the emphasis on certain blood lines is correct. Provided that the system of optimal contribution in Fjord Horse breeding is introduced, this will cover the need for a systematic evaluation of the average relationship in comparison with the rest of the population.

7.1.7. *The removal of a stallion license*

Stallions which without valid reason do not show up for a new evaluation will automatically lose the license/premium.

7.1.8. *Foal percentage/fertility*

In consultation with the Breeders group/the board in Norges Fjordhestlag, the judge's panel can decide whether to call in a stallion with a low fertility rate to a closer examination. Poor fertility can lead to the approval being withdrawn.

7.1.9. *Progeny groups for stallion*

Stallion progeny groups are to be judged by the relevant "Rules for official horse shows".

7.1.10. *Guiding criteria for evaluating progeny groups*

Stallions

Progeny grade Elite: At least two approved (licensed/premium) stallions of which at least one has obtained 1st or 2nd premium. At least eight mares with premium of which five have obtained 1st or 2nd premium.

Progeny grade A: At least two approved (licensed/premium) stallions and five mares with premium of which three have obtained 1st or 2nd premium.

Progeny grade B: At least one approved (licensed/premium) stallions and five mares with premium.

Mares

There is no requirement for offspring of both sexes.

Progeny grade Elite: At least four offspring after at least three stallions. At least four approved (licensed/premium) offspring with have obtained 1st or 2nd premium.

Progeny grade A: At least four offspring after at least three stallions. At least three licensed offspring with have obtained 1st or 2nd premium.

Progeny grade B: At least four offspring of which four have to be approved (licensed/premium).

This will be assessed in collaboration with the Norwegian Horse Society (Norsk Hestesenter) and Norges Fjordhestlag.

7.2. Veterinary examination of stallions

The stallion must be examined by the veterinarian during the show or performance testing. The veterinarian shall also look at the temperament of the stallion. The following procedure should be carried out when examining Fjord stallions:

- A general examination of the digestive system with emphasis on mouth and respiration system where the heart is auscultated.
- Movement at walk and trot, flexing of the foreleg (knee, carpus) and hocks. Palpation of joints and examination of hooves.
- Special examination of the patella joint for locking of the joint/patella luxation for 4 year old horses. The horse must be led in a small circle on both hands, be backed and be led slowly down a slope at least four times (so the veterinarian may see the horse twice from each side).

7.2.1. Defects disqualifying stallions from breeding

A stallion shall not be accepted for breeding if a veterinary examination proves that the following defects are present:

- Cryptorchidism unilateral (one testes in the scrotum) or bilateral cryptorchism (no testis in the scrotum). Large differences in size and consistency of the testes are not accepted.
- Scrotal hernia is not accepted in stallions 10 years or younger. Owners of licensed stallions are obliged to notify NHS if the stallion develop a scrotal hernia. Stallion owners should be informed of this on receiving the license.
- Serious conditions of the mouth (bite correctness) are disqualifying i.e. parrot mouth or undershot jaw. Any condition where the upper and lower teeth do not meet is disqualifying unless this is caused by injury.

7.2.2. Examination of the male genital organs

Clinical examination of the testicles is carried out at the stallion licensing. The first time shown a stallion shall have two normal sized testicles. The position in the scrotum should be normal, they should be symmetrical and of normal consistency. Rotation of one or both testicles is not unusual in some breeds. The condition is not automatically disqualifying. Rotated testicles shall be described.

7.3. Performance test for stallions

The performance tests for Fjord horses are under evaluation, and changes will come. The performance tests described in this document are valid until new performance tests are decided. If a horse is shown again, it will be possible to take a new performance test, which then will be weighted.

7.3.1. Seeing the stallion loose in the indoor arena

Showing the horse loose in an indoor arena is carried out (where this is practically possible) during the first-time evaluation licensing for stallions-. To see the horse loose gives added information to the judges when judging movement. The stallions should be walked in hand on the track before leaving the arena.

7.3.2. Driving test

The driving test is compulsory the first-time a stallion is judged at the stallion show or if an unlicensed stallion is to be reassessed. Otherwise see NHS `s current performance rules for

mares and stallions. Results from the judging of conformation, performance, temperament and soundness shall be rated in relation to weighting the different traits and be a basis for licensing.

7.3.3. Performance testing

To be granted a new breeding license and be awarded premium, all stallions with a first approval license must complete the station test. This test gives a clearer picture of the stallions' performance traits and temperament. Stallions which are imported or leased and are licensed for breeding in Norway are called in to the station test in the same way as Norwegian registered stallions. Tests carried out abroad may be accepted if they are of the same quality and can be compared directly with the Norwegian tests. The owner of the stallion is responsible for all the test expenses involved. The stallions are invited to the performance test the year after the awarding of the first license. The current performance test is carried out over three days. A test rider and a test driver will evaluate the rideability and driveability.

The elements that are part of the performance test are as follows:

- driving
- riding in the indoor arena and terrain
- gaits and forward movement
- behaviour in the stable, not at feeding time (stereotypic behaviour)
- health assessment
- overall impression

The stallions shall be examined by the veterinarian at the beginning of the test period. The veterinarian will give a description and score for health status. A judge's panel assesses each stallion and gives marks for each part of the performance test. The traits will be weighted as described, see paragraph regarding weighting. At the following show the results from the test will be part of the stallions results, combined with conformation, temperament, and health.

7.4. Dispensation

7.4.1. Dispensation from performance test

Norges Fjordhestlag can, upon written application, grant one year's postponement of the performance test. Norges Fjordhestlag decides whether or not the stallion can be used for breeding during the dispensation period. Stallions that receive a dispensation will not be invited to the station test the following year, the stallion's owner must register the stallion themselves. If the stallion does not attend a new assessment as expected, he automatically loses the breeding approval.

7.4.2. Dispensation from third evaluation

Stallions that are abroad, or for other reasons (injuries or similar) cannot be shown for the third evaluation the year they are summoned, can apply for postponement and retain their breeding approval for a limited period. Applications must be in writing and must be sent to Norges Fjordhestlag. Decisions concerning individual stallions are made individually and does not give precedence.

8. Selecting mares

8.1. Mare shows

Selecting mares for breeding ought to be based on the individual and through her progeny. Mare shows with performance tests are an important step in the selection of breeding stock. For judging see “the relevant rules for official Horse Shows” and the judging sheet, [see Appendix 4](#). The performance tests are carried out according to the current rules from NHS. The show results of the mares must be according to the breeding plans for the Fjord Horse. The good tradition of breeding from young mares ought to be kept. It is very important to encourage the showing of mares with the right incentives (prize money and other grants).

9. Breeding regulations and measures

Optimization of the breeding with consideration of selection strategies (selection/progeny testing) in relation to genetic gain and inbreeding has not been done on the Fjord horses. Currently, the breeding population of Norwegian-registered Fjord horses includes approx. 40 breeding stallions and 300 breeding mares, in other words a relatively small population. Additionally there are Fjord horses in many countries around the world, so the total breeding population is larger if the total population is considered. There are a number of measures to limit and/or reduce the rate of inbreeding in a population in the long term. These can be quotas on the number of coverings a stallion can get, or quotas on the number of sons that can be approved after a stallion. Together with relevant academic advisors, Norges Fjordhestlag can implement quotas to regulate the Fjord horse breeding, if considered appropriate. Measures cannot be implemented without consultation with Norges Fjordhestlag. Norges Fjordhestlag wants a lifetime quota for stallions of 70 matings/coverings. An application of additional quotas can be sent to the NFL on special occasions.

9.1. Progeny testing and the use of optimal contribution

Progeny testing with a selected progeny group has played its part in the breeding of Fjords. A future goal is to estimate breeding values by using BLUP. If implemented, breeding values will be estimated for the traits registered in the current breeding evaluation system. If it is necessary to reduce the rate of inbreeding, a quota will be introduced. The quota or optimal contributions will be calculated annually. The responsibility for estimating breeding values using BLUP and optimal contribution is assigned to the breeding expertise from which Norges Fjordhestlag buys services (for example Norwegian University of Life Sciences).

9.2. Unwanted heritable diseases

Horses with summer eczema should not be used for breeding. Everyone is responsible for not breeding horses with heritable diseases, see the Animal Welfare Act ([Lov om dyrevelferd §25](#)).

10. Breeding incentives directed by Norges Fjordhestlag

10.1. Stallion shows

Norges Fjordhestlag is responsible for arranging the annual stallion show for Fjord horses at Nordfjordeid together with the local organizer.

10.2. Mare- and gelding shows

Mare- and gelding shows held by local show committees must be coordinated by partners in

agreement with Norges Fjordhestlag. The local breed societies shall contribute with technical personnel.

10.3. Young Stock Shows

Young stock shows held by local show committees must be coordinated by partners in agreement with Norges Fjordhestlag. The local breed societies shall contribute with technical personnel. An «extra ribbon» can be awarded to particularly good 2- and 3-year-old fillies. To be considered particularly good, the filly must have 8 in overall impression and no mark under 7. Norges Fjordhestlag has designated ribbons for this purpose.

11. Instructions for Stallion Judges and Judges

11.1. Regulations

Judging of stallions are always following the breeding plan and rules for shows and performance tests that are valid at the time of judging. Judges who are to be part of the Judges Panel for Stallions are appointed by the board in Norges Fjordhestlag. Norges Fjordhestlag has a major responsibility regarding partiality, and shall receive any complaints regarding incapacity and impartiality. The law of Public Administration Act (Forvaltningsloven) should form the basis of the assessment.

11.2. Education of Judges

The education and authorization of Judges of conformation and performance is done by NHS and follows an approved system.

11.3. Following up Judges

NFL shall organize designated assemblies for Fjord Horse judges. These assemblies should be held each year so Judges may discuss and share their knowledge and be advised on potential changes in regulations or in the breeding plan. To continue judging, a judge must attend a minimum of these assemblies over a time period. Norges Fjordhestlag establishes such rules in collaboration with other breed organizations (or organizations that represents/has authorization from such).

12. Realizing the Breeding Plan

12.1. Revision of the breeding plan

The breeding plan for the Fjord Horse shall be revised every four years. In special cases, individual changes can be made outside of the ordinary revision.

12.2. Suggested changes in the breeding plan

Norges Fjordhestlag sends suggested changes to the Norwegian Food Safety Authority before the 31st of December in the year before the changes are to be materialized/implemented.

DEL 3: THE BASIS. The history of the Norwegian Fjord Horse

13. The origin of the breed

The Fjord Horse is one of the oldest and purest breeds in the world. The West of Norway (Vestlandet) has been the centre of breeding and that is the reason why the breed has also been known as the Vestlandshest. It is uncertain where the Fjord Horse originated. The breed is quite similar to the only surviving wild horse the Przewalski from central Asia. The Fjord shares the dun colour, the primitive markings such as zebra stripes, markings on the limbs, the neck, withers as well as the dorsal stripe through the mane and along the back as the name implies. The Fjord Horse is also similar to the European Wild Horse – the Tarpan of which there are few remaining. It is clear that the Fjord is not descended from the Przewalski, which has 66 chromosomes. The Fjord shares the same number of chromosomes, 64 with the Tarpan and other equine breeds.

Most likely, the horse came to Norway from the east, via Sweden. Both in Denmark and in the south of Sweden, there were probably wild horses from the last Ice Age. There have been many archeological finds from the early Bronze Age. It appears that the horse was domesticated in Bronze Age Norway about 1200 BC. Through the excavation of Viking burial sites, finds indicate that the horse has been bred in Norway for over 2000 years and that the Fjord is descended from the original horses in Norway. As a seafaring nation there has been a great deal of traffic through time, to the British Isles and to Iceland which means that horses from these areas have been part of the development of the Fjord.

In the northern and southern areas of the West, it appears that the Fjord has varied somewhat in breed type and size. In Sunnhordaland the horse was smaller, lighter in build and type, whilst the Fjord in Nordfjord and Sunnmøre was recognised as being larger of frame and with more prolific hair growth. The origin of the different types has been discussed and it might have been different types of Fjords due to a slight variation in the breeding stock found in the districts.

Rosendalsborken I 8, foaled in Kvinnherad in 1863, appears to have been of the lighter type. He was shown in Germany, as a 20 year old and commanded a great deal of attention. The most prominent stallion in the breed's history is Njål 166, foaled in Stryn in 1891. Njål was an approved county stallion in Sogn og Fjordane and was stationed at Sunde in Stryn from 1896 to his death in 1910. Njål is to be found in all present Fjord Horse pedigrees throughout the world.

Due to the fact that the Fjord was and is hardy, surefooted, easy to feed and full of stamina, he was very suitable for work on the small, hilly farms in the West of Norway before mechanization. He was also used extensively to convey passengers around the country. It is thanks to the farmers in the west and their special interest in the breed that the Fjord horse has maintained traits such as breed type right up to the present day. The Fjord with his great charm, good temperament and versatility that he is highly appreciated even today. Many people see the Fjord horse as a Norwegian National symbol.

14. Fjord Horse Breeding

14.1. The beginning of Fjord Horse breeding

There have been fjords in Norway since times immemorial but it was between 1840 - 1850 that organized breeding was first implemented. In 1843 it was decided that a stud should be established at Hjerkin in the Dovre Mountains, at an altitude of some 1000 meters. The aim was to improve the quality of the horses in Norway and breed animals that were suitable for the times. At that time the Fjord was an all purpose horse used on the farm, in the winter for logging, harvesting in the summer as a pack horse on the mountain farm as well as driving to church. The fjord was also used extensively for the conveyance of passengers, as a post horse and as a tradesmen's horse.

One stallion and six mares "of the original Norwegian breed" (i.e. the Fjord Horse) were bought for the stud at Hjerkin. At that time one had no knowledge of how colours were inherited and white dun was the most popular colour at that time. Between 1857 and 1879, 48% of the registered stallions and 46.8% of the registered mares were white dun. All the stallions purchased for this project were of this colour and of the 32 foals born during the nine years the stud existed, 15 were white and dappled. The stud was disbanded because of this as well as the stud being poorly run and the horses not well looked after. Instead, it was decided that the Government would purchase stallions which the breeders could use. The government agronomist Lindeqvist could not find any fjords that he saw "suitable for improving the breed" so the powers that be opened the door for cross breeding.

The first show in the West of Norway (Vestlandet) was held at Førde in 1864. Up until 1875, there were annual shows alternating between the counties of Møre and Romsdal, Sogn and Fjordane and Hordaland, after which two annual shows were held including the county of Rogaland. From 1895 there were annual shows in each of the four counties of the West. The Government started buying pure bred Fjord horses in 1875, which were placed in various districts for breeding. The counties in the West started buying stallions in the 1870-1880s. Similar to the Government stallions, these were placed in various districts and stationed at different places. The last state owned stallion in the west was in 1937. In 1937 in Rogaland the same thing happened. The other counties in the west had discontinued this practice some years before.

Njål 166 is the foundation sire of all the most important stallion lines throughout the world. He was the county stallion in Sogn and Fjordane between 1896 and 1910. The breeders saw the unfortunate results of cross breeding which led to a veritable war which culminated in a meeting in 1907 at Innvik in Nordfjord. There were diverging points of view but in the end it was agreed that only pure breeding of the Fjord should be permitted. This conflict has since been known as the Rimfaksestriden (Rimfakse conflict) after the much used crossbred stallion Rimfakse 146.

14.2. The Stud Book

The first stud book for the Fjord Horse (at that time known as the Vestlandshest) was instigated by det Kongelige Selskap for Norges Vel (The Royal Society for the Good of Norway) and published in 1910. The Stud Book includes 308 stallions foaled between 1857 and 1904. The Government Stud Book Office, under the Ministry of Agriculture, was founded in 1918 and was responsible for the Stud Book. Up to 1989 the stud book was an "elite" stud book where only animals that were licensed for breeding or had been given a premium, were entered. Now, the Stud Book includes the mares and stallions of all registered fjords. In addition, there is an online stud book. In collaboration with Fjord Horse International, Norges Fjordhestlag aims to develop

an international stud book for all registered Fjord horses in the world.

14.3. Official Advisors

At the end of the 19th century Government advisors responsible for animal husbandry, were appointed in the different districts. The West of Norway (Vestlandet) was divided into two districts, of which the advisor was responsible for all livestock breeding. In 1922 the vet Jens Nordang was appointed as Government Advisor for the Fjord Horse. Breeding then became more organized and new measures were introduced. Over time, the system of State owned stallions was phased out and financial aid was instead given to local breed societies. Up until 1967, there was a special advisor for the Fjords. After 1967, one Government Advisor (statskonsulent), was appointed for all breeds. From 1993, the leader of breeding (avlsleder) at the Norwegian Horse Society (Norsk Hestesenter), has taken over many of the breeding advisor's (Statskonsulenten) duties. In 2015, Norges Fjordhestlag was given the responsibility for management and breeding of the Fjord Horse.

14.4. The Norwegian Horse Centre (Norsk Hestesenter)

In 1987, the Norwegian Horse Centre (NHS) was established as a foundation comprised of the Norwegian equine organizations. The Centre was authorized by the Ministry of Agriculture to be responsible for matters such as horse breeding, registration, stud book keeping and shows up until 2015.

14.5. Public breeding regulations

Before 1941 all stallions could be used in breeding. In 1941 a public ruling "law on licensing of breeding stallions" (kåringsloven) was introduced. After this date it was forbidden to use other stallions than those which were formally approved, though it was still permissible to use an unlicensed stallion on the owners own mare. Though there were minor adjustments over the years, this law was in action until 1995. Then it was substituted by a regulation - "Regulation about approved (purebred) equines". In 2018, the regulation was replaced by the "Regulation of the breeding of cattle, pigs, sheep, goats and horses, FOR-2018-01-31-145". Norwegian regulations are continuously adapted so that they correspond to the common European rules. From 2002 until 2014 it was not permitted to use unlicensed stallions in Fjord Horse breeding.

14.6. Breeding plans

The overall breeding goal of the Fjord horse was formulated as such: "The aim of Norges Fjordhestlag is through pure breeding to maintain the breed type and versatility and further to breed a healthy and functional horse. For the Fjord Horse this means to ensure long term progress of the traits defined in the breeding goal. The Breeding plan shall serve as a useful document, to assist all those involved in the breed and ensure long term management of the population". According to the European Domestic Animal Convention and resolution in the EU commission, Norway is recognized as the country of origin and mother country of the breed and is thereby responsible for the breed and its character.

14.7. Breeders groups and organizations

The first local breeders' organizations were founded in the late 1890s. Before that there were private "interest groups", which kept stallions. Local organizations could be made up of local farmers clubs or wider districts many of which later merged to strengthen the economy. The aim was to stand quality stallions. In 1943 there were 130 local groups encompassing 165 stallions. Many of the groups had more than one stallion. The largest group, Jæren had as many as 11

stallions. During breeding advisor Nordangs time, grants were given to the organizations for the purchase and keeping of approved stallions. There was a need to strengthen the local organizations giving them more validity and strength in relation to the authorities. Smaller groups merged and formed district and/or county organizations. The first was Nordfjord Fjordhestlag, founded in 1919. The others were founded in the 1930s and 40s. Subsequently, there was also a need for a unified national organization, and the district and county organizations formed Norges Fjordhestlag (NFL) in 1949. In 2015, there were 52 local groups under Norges Fjordhestlag. Most of the groups concentrate on activities for their members and does not keep stallions. Anyone can now become a member of NFL but it is only county or district groups that may send representatives to the annual general meeting.

14.8. FHI (Fjord Horse International)

Through the years, the Fjord horse has been exported to many countries where they have been bred extensively. As a result, NFL took the initiative to establish an international breeders organization for all countries interested in Fjord Horse Breeding. Fjord Horse International (FHI) was founded in 1997 as a company, but in 2001 this was changed to an organization with membership.

14.9. Organizations and their mandate

NFL has been the main organization in Norway for the Fjord Horse since 1949. Today, Norges Fjordhestlag is approved by the Norwegian Ministry of Agriculture and Food as the only breeding association for fjord horses in Norway. According to the Rio Convention for Biodiversity, Norway is the country of origin of the Fjord and is, thus, responsible for the Fjord Horse and its development of the fjord horse in Norway, in the European Union and in the countries that have economic agreements within the EU.

15. The show system (selecting of breeding animals)

In the beginning, shows were open for mares and stallions and the horses were judged in order of merit 1st, 2nd etc. Later, based on the quality of the horse, premiums were awarded, which (with smaller adjustments) is still used today. The individual was awarded 1st, 2nd, 3rd premium, approved or licenced according to quality. Young stock, 1-2 year old colts and 1-3 year old fillies, could usually be shown in the spring. Yearlings were shown in “unofficial” classes. Today yearlings are shown in official classes. Mares are divided into classes based on age and if they have a foal at foot. The stallion shows have classes for 3-year olds, 4-5 year olds and 6-year olds and older. Three year old stallions are licensed for one year. To keep their license they have to complete a performance test and be shown again as 4 year olds. At all stallion-, mare-, and young stock shows, the horses are judged according to the breeding goal as formulated in the breeding plan.

From 2009 the performance test was altered. From 2008 onwards the showing system was altered so there is now a system which gives premiums to the individual and a separate awarding of premiums based on progeny.

16. Fjordhorse breeding today and in the future

16.1. National and international responsibility

As the country of origin, Norway has a special responsibility for the breed. It has been decided through the Rio Convention on Biodiversity and through the EU commission, that the Fjord horse is a part of our Norwegian Heritage. It is especially important that traditions be maintained but that the Fjord should also be a horse of its time. In the late 1800s, the expression “head like a brisling, neck like a spinning wheel, body like a turnip, and limbs as steel springs” was used to describe a typical Fjord horse. The conformation of the Fjord of today has evolved along with the use of the horse, however the breed type and presence is maintained. This is largely due to the selection, training and feeding deemed necessary to produce a more athletic horse. The demands we place on the Fjord Horse have changed with the times and the changes of society at large. The breed is adaptable and is now to be found all over the world. The last years have shown a considerable reduction in Fjord Horse breeding. During the last decade the number of mares covered has almost halved. The number of breeding stallions is also reduced. This has led to a reduction of animals evaluated and shown.

16.2. The main responsibility – maintain breed type, character and variety

In pure breeding of the Fjord Horse, breed type and character must be more important than other traits. The Fjord Horse can vary in height and structure which may be looked on as an advantage knowing the versatile use of the breed. The studbook register demands 5 known generations in the pedigree, of pure-bred registered Fjords. These rules were introduced in 2008.

16.3. Different demands over the years

What is looked for in the Fjord Horse has changed over the years and with that a need to find out which traits should be prioritized in breeding of the Fjord. The drive and packhorse type of the 19th century was considered too small and light to fill the demands of what was needed in farming at that time. A heavier draught horse type was required. This was one of the views forwarded when crossbreeding was introduced. When pure-breeding was reinstated, the aim was still to breed a draught horse type. The aim was followed through when a breeding consultant for the Fjord was appointed in 1922. This policy was followed until the 1960s when the machines and tractors gradually replaced the horse. There was a desire to develop a lighter and more athletic horse. These demands are strengthened as the use of the Fjord has gradually changed to an animal suitable for riding and driving. Through time, the aim has always been to breed an animal with a functional conformation. At the present time there is a need for a supple horse with a good temperament easy to ride and drive, which is sure footed and equally at home in the riding arena as in the mountains. The fjord is a good riding school horse and is also used in competitions.

16.4. Breeding, rearing and economy

There have been many capable breeders and stockmen in Fjord Horse breeding. In these difficult times with breeding at a low, it is so important that breeders are enthusiastic, knowledgeable and aware of what is needed. With few horses bred, it is more important than ever to maintain a high standard of the breeding stock. It is important to choose the right combinations of stallions and mares. The standing of stallions in various districts groups has been an all important aspect of Fjord breeding but there is an increasing number of privately owned stallions. Many district groups have had economic challenges combined with the difficulty of finding suitable people and places to keep a stallion. It is all important that local Fjord Horse groups encourage breeding and use of the Fjord.

16.5. Problems of inbreeding

In 1967 a limited investigation on the rate of inbreeding in the Fjord Horse population was carried out. (See the Norwegian Breeds Studbook of 1967) In 1910 the average inbreeding coefficient in the breed was calculated to be 0.010, in 1930 to 0.047 and in 1957 to 0.077.

A more extensive investigation was carried out in 2009 in a master thesis at the Norwegian University of Life Sciences (then UMB, now NMBU). Here is a summary of the thesis: In the 1960s- and in the 1970s the rate of inbreeding was very high and not sustainable. In 1980 the curve had evened out. This was in the same period that stallions from abroad were introduced into Norwegian Fjord Horse breeding. By 2009 the inbreeding coefficient was 0.070. As a comparison, the mating of half sibs is 0.125. The administrators must focus on this and the inbreeding rate (i.e. changes in inbreeding) during the last generation. The inbreeding rate in the last generation (ΔF) were 0.46 % in 2009 (Johnsen & Seilen 2009). This is acceptable as international guidelines recommend a ΔF of maximum 0.5 to 1% per generation (Wooliams et.al 2005). The acceptable results from 2009 should be seen in the light of the factors that have influenced the breeding of Fjords in this period. The two main factors that contribute to maintaining the level of inbreeding during the last 25 years at an acceptable level are a) the introduction of foreign horses since 1980 and b) the wide use of young stallions. In effective population size (N_e), the estimated inbreeding rate for 2009 is equivalent to a N_e of 107. This means that the ΔF of 2009 contributes to 107 unrelated horses in breeding. The effective population size should not be below 100 animals. The position of the Fjord Horse is thus genetically on the borderline of what is acceptable. Examining the rate of inbreeding in a population is important but can never in reality give a complete picture of the situation. At the moment, the low number of mares covered is the most direct sign that the breed is threatened. The number of foals registered in the last few years is about 150-200 per year. At NMBU it has been concluded that in small populations increased inbreeding will be a challenge if the number of foals is below 200, with a large proportion of the foals being by young stallions. With the number of coverings and foals born in the Norwegian population which we experience at the moment, it is crucial that in the future the level of inbreeding is carefully monitored. Norges Fjordhestlag, as a breed society, will be focused on this and will consider taking measures recommended by the researchers, to handle the increase in inbreeding.

16.6. Breeding, use, and the market

Breeding and use must at all times be considered simultaneously. An interest in using the Fjord for more than breeding and showing is important for selling at a reasonable price, for the economy, and for further breeding. To increase the number of horses for sale, it is important to produce animals that are attractive to the buyer. The domestic market will always be the largest, but there should be an increased market for export of breeding stock and horses for sport and leisure as well. It appears that showing the Fjord in use, whether in tests or in competitions at different levels, is an extremely good way of promoting the breed. The Fjord has shown himself to be a versatile, all-round horse and is especially suited as a driving horse.

17. Appendix

- Appendix 1: [«Regulations on the breeding of cattle, pigs, sheep, goats, and horse» \(FOR-2018-01-31-145\) \(In Norwegian\)](#)
- Appendix 2: [Rules for official horse shows](#)
- Appendix 3: [COLOURS of the FJORD HORSE](#)
- Appendix 4: [Judging Sheets for horses \(In Norwegian\)](#)
- Appendix 5: [Form for health control](#)
- Appendix 6: [Performance test rules for mares and stallions](#)
- Appendix 7: [Performance tests for stallions \(from 1.2.2021\)](#)
- Appendix 8: Score sheet for observation test of stallions (not included - pending changes)
- Appendix 9: Score sheet for performance test for Fjords (not included - pending changes)

COLOURS of the FJORD HORSE

By Tor Nestaas

The colours of the Fjord Horse are a variety of dun colours. The central –Asian Wild Horse, the Prezewalski horse and the European Wild Horse, the Tarpan have the same types of colour and these colours are seen to be the original colours of the wild horse. The colour is also called a primitive colour or “viltfarge”. (Protective colour). The pure dun colours are brown dun, red dun and grey dun but variations such as “uls dun “ and yellow dun are also seen . These five colours are recognized as pure fjord horse colours.

Earlier these colours could have different names in different districts, but in 1922 the Department of Agriculture decided on the names that are used today. The Annual General Meeting of NFHL in 1980 agreed that these five colours are all typical fjord horse colours and should be treated equally.

Colour variations

The brown dun colour (brunblakk) is dominant, 85-90 % of all fjord horses have this colour which can be of lighter or darker shades. The body colour is pale yellow brown and can vary from cream yellow to almost light brown. The “midtstøl” “the middle darker stripe through the mane, carrying on as the dorsal stripe* to the snow -shute* (all considered as primitive markings) is black or dark brown. In paler individuals the forelock and “sides“ (of the upright mane) are white but darker in darker individuals. * *Sometimes called eel or list. Fanshaped growth of hairs at the top of the tail*

Ulsdun (ulsblakk) is a variation of brown dun because of a factor which reduces the production of pigment ; so called diluted colour. In the old days this colour was widespread, the percentage is now between 3-4%. The body colour is almost white or yellow white. The “midtstøl” (see above)dorsal stripe ,snow- shute are black or grey. The mane and tail are light coloured.

In red dun (rødblakk) individuals the body colour is pale red/yellow and appears in lighter or darker shades. In some cases it can be difficult to distinguish between brown dun and red dun as the body colour. With red dun the “midtstøl “, dorsal stripe and snow - shute hair is red (chestnut)or redbrown ,and is always darker than the other hair but is never black. The mane and tale is often very pale or yellowish. With the palest shades the forelock, mane and tail may be white. At birth some red dun individuals have pale hooves but the hooves generally become darker with age. 4-5% of Norwegian Fjord Horses are red dun.

Yellow dun (gulblakk) is the rarest colour, only some 0.5% having this colour which is a variation of red dun due to the same factor mentioned under ulsdun. The body colour is yellow/white or golden. The “midtstøl” dorsal stripe and snow-shute are paler than in the red dun. The forelock is always more or less white as are the mane and tail. The dorsal stripe is then indistinct. At birth, as with the red dun, the hooves may be pale.

In greys (grå) individuals may have body colour ranging from pale silver grey to dark slate coloured grey. The “midtstøl”, dorsal stripe and snow shute are black. The mane and tale is paler than the body colour. The forelock and muzzle are dark in contrast to brown dun and red dun which most often have pale forelocks and muzzles .In the darkest individuals the mane and tail can be very dark. If the same pattern of colour coding had been followed as with the other colours, this colour should be called black dun (svartblakk) but this term has never been used. Internationally this colour is known as “blue dun “ (blåblakk). About 4% of Fjords are grey.

Deciding the colour

Sometimes it can be difficult to decide which colour a foal is, especially before it has lost its foal coat. The best way is to see what the colour of the “midtstøl”, dorsal stripe and snow -shute are, as previously mentioned under the different colours. Indistinct transitions may arise between brown dun and ulsdun and between red dun and yellow dun and it can be difficult for the eye to see what the colour is. The colour may seem to “change” with the coat and the seasons.

When they have short coats they may seem to be grey or ulsdun whilst when they have their winter coat they seem to be brown dun. The state Advisor Johs. Loen, in his paper on the colours of the Fjord Horse, mentions the stallion Solungen 882 as an example. By his fenotype the stallion should be called brown dun but the genotype was ulsdun : his covering of brown dun mares often resulted in ulsdun foals.

Primitive markings

An important part of the description of the fjord horse is the so called primitive markings. These are dark centre of the forelock, mane (midtstøl) and tail (and snow- shute) a dark stripe along the back (dorsal stripe eel, list) and horizontal stripes on the legs, especially the forelegs (zebra stripes). Some horses have stripes over the withers (grep). These are very rare. Some individuals have small brown marks on the body and on the jaw or the thigh. These are named Njål`s mark from the stallion who is the forefather of the modern Fjord Horse, Njål 166. He had marks like this on his jaws.

As mentioned in “Colour Variations” the shade of the primitive markings vary with the body colour. In red and yellow dun horses the forelock, mane, tail are nearly the same light colour, the dorsal stripe is indistinct and the zebra stripes may be lacking altogether. In the palest variations of brown dun the stripes may be pale or lacking entirely.

The zebra stripes follow the colour of other primitive markings but are often paler. The markings are most distinct when the coat is short. Foals lack zebra stripes at birth, but the stripes appear after the first changes of coat. The stripes are most evident and most often seen on the forelegs and some individuals can have a broad stripe on the forearm. As previously mentioned lighter coloured horses can have pale markings or lack them altogether. Sometimes the zebra stripes are lacking completely in grey or ulsdun individuals. The limbs of grey or ulsdun can have the same colour as the body but the limbs may be darker up to the knees or hocks.

Other markings

White or flesh-coloured markings are seldom found on the Fjord horse. How these markings are inherited is not quite clear but appears that the inheritability is *recessive*.

This means that both parents, even though it is not visible, carry the disposition for markings, which then may appear on the offspring. It is probable that the disposition for white markings on the head and limbs come from the same gene but where the markings appear is random. For a stallion to be approved for breeding, it must be free from all white or flesh coloured markings. Mares may have a small star on the forehead.

Extent of the colours

The extent of the different colour variations has varied over the years. Of the earliest Ford Horses, in Norway, entered in the studbook and foaled between 1857-1880, over half were ulsdun a colour which used to be called *borket* (another word for various shades of dun). Ulsdun fell into disrepute because at that time the knowledge of inheritability was unknown, so ulsdun covered ulsdun. This resulted in a spreading of white and wall-eyed foals. In later years the brown dun has become more and more popular, especially the lighter shades, which are now dominant. The interest for preserving all the colour variations, now prevails.

The genetics of colour

One cannot decide by the looks (*phenotype*) of a horse what kind of *genotype* of colour it has. Only by studying the pedigree and the colours of his ancestors may one be more or less certain which genotype a horse may have. To be quite sure one must see the colour of the progeny. The different [Inheritability of the Vestlandshesten`s colours (Fjord Horse)] This article is based mainly on Loen`s studies.

Terminology

The terms used are those that are most often used internationally:

- A** - gene for limitation (distribution) of black
- B** - gene for black
- C** - gene (basic factor) for colour
- C^{er}** - gene for dilution of colour
- D** - gene for dun or primitive colour (pale factor and possibility for markings)

The Heredity of the colours

Genes come in pairs, one half from each parent. Small letters indicate that the gene is lacking (aa-bb) and the primitive markings are brown or reddish. Greys do not have the limitation gene for black. If they did not have the gene for dun or primitive colour **D** their body colour would have been black. **C^{er}** is the gene that gives ulsdun and yellow dun. This can also occur in the genotypes of greys. In double **C^{er} C^{er}**, this factor gives white and wall-eyed horses. These white horses have light blue irises and are therefore not true albinos. An expression used to describe a brown horse which has double genes for the dilution factor is *perlino* (**Aa /AA, Bb/BB, C^{er} C^{er}**). The name of a red dun with a double dilution factor (aa/Aa/AA,bb,C^{er}C^{er}) is *cremello* with a further catogorie "blue eyed cream" (cream ,blue eyes) for those with a blue iris.

The fjord horse is homozygote for markings or dilution factor (**DD**) and thus has an extra gene for paler colours. A brown dun fjord horse with a double dilution factor is "*agouti perlino*" and a red dun of this type will be an "*agouti cremello*". Because the dilution factor is not visible in blacks and greys, the horses with the genotype (**aa.BB/Bb,C^{er}C^{er},DD**) called "blue dun ", in Norwegian "grå " /grey.

The Fjord horses different colour genotypes follow below. All in all there are 18 different genotypes for colour: 4 for brown and ulsdun, 3 for red and yellow dun and 4 for grey. For each of these genotypes the result of the different combinations is noted.

Brown dun genotypes

1. AA BB CC DD

Individuals with this genotype covering brown dun or red dun, only produce brown dun progeny. By covering grey, ulsdun and yellow dun the result can be brown dun or ulsdun progeny.

2. AA Bb CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun and red dun. By covering grey, ulsdun and yellow dun the result can be brown dun, red dun, ulsdun and yellow dun.

3. Aa BB CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun and grey. By covering grey, ulsdun and yellow dun the result can be brown dun, grey and ulsdun.

4. Aa Bb CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun red dun and grey. By covering grey, ulsdun and yellow dun the result can be brown dun, red dun, grey ulsdun or yellow dun.

Ulsdun genotypes

Ulsdun covering ulsdun or yellow dun give a 25% risk that the progeny will be white and wall-eyed, so called *albino*. The same can occur by covering ulsdun and grey with genotype 3 and 4.

1. AA BB CC^{cr} DD

Individuals with this genotype covering brown dun and red dun can give brown dun and ulsdun. The covering of grey, ulsdun and yellow dun can give brown dun, ulsdun or albino.

2. AA Bb CC^{cr} DD

Individuals with this genotype covering brown dun and red dun can give brown dun, red dun, ulsdun and yellow dun. The covering of grey, ulsdun and yellow dun can give brown dun, red dun, ulsdun, yellow dun and *albino*.

3. Aa BB CC^{cr} DD

Individuals with this genotype covering brown dun and red dun can give brown dun, grey and ulsdun. The covering of grey, ulsdun and yellow dun can give brown dun, grey, ulsdun and *albino*.

4. Aa Bb CC^{cr} DD

Individuals with this genotype covering brown dun and red dun can give brown dun, red dun, grey, ulsdun and yellow dun. The covering of grey, ulsdun, yellow dun, can give brown dun, red dun, grey, ulsdun, yellow dun and albino.

Red dun genotypes

All coverings by the red dun genotypes with red duns only results in red dun. If these genotypes cover yellow dun all three genotypes will give red or yellow dun.

1. AA bb CC DD

Individuals with this genotype covering brown dun can give brown dun or red dun. Covering grey and ulsdun can give brown dun, red dun, ulsdun or yellow dun.

2. Aa bb CC DD

Individuals with this genotype covering brown dun can give brown dun, red dun and grey. Covering grey and ulsdun can give brown dun, red dun, grey, ulsdun and yellow dun.

3. **aa bb CC DD**

Individuals with this genotype covering brown dun can give brown dun, red dun and grey. Covering grey can give red dun, grey, ulsdun or yellow dun.

Yellow dun genotypes

All three yellow dun genotypes covering red dun, give red dun or yellow dun, covering yellow dun can in theory give all three genotypes 25% red dun, 50% yellow dun and 25% *albino*.

1. **AA bb CC^{cr} DD**

Individuals with this genotype covering brown dun can give brown dun, red dun, ulsdun, and yellow dun. Covering grey and ulsdun can give brown dun, red dun, ulsdun, yellow dun and *albino*.

2. **Aa bb CC^{cr} DD**

Individuals with this genotype covering brown dun can give brown dun, red dun, grey, ulsdun, and yellow dun. Covering grey and ulsdun can give brown dun, red dun, grey, ulsdun, yellow dun and *albino*.

3. **aa bb CC^{cr} DD**

Individuals with this genotype covering brown dun, can give brown dun, red dun, grey, ulsdun and yellow dun. Covering grey can give red dun, grey, yellow dun, and albino. Covering ulsdun can give brown dun, red dun, grey, ulsdun, yellow dun and albino offspring.

Grey genotypes

1. **aa BB CC DD**

Individuals with this genotype covering brown dun and red dun can give brown dun and grey. Covering grey the only colour will be grey. Covering ulsdun and yellow dun can give brown dun, grey or ulsdun.

2. **aa Bb CC DD**

Individuals with this genotype covering brown dun and red dun can give brown dun, red dun and grey. Covering grey can give red dun, grey and yellow dun. Covering ulsdun and yellow dun can give brown dun, red dun, grey, ulsdun and yellow dun.

3. **aa BB CC^{cr} DD**

Individuals with this genotype covering brown dun and red dun can give brown dun, grey and ulsdun. Covering ulsdun and yellow dun can give brown dun, grey, ulsdun, yellow dun and *albino*.

4. **aa Bb CC^{cr} DD**

Individuals with this genotype covering brown dun and red dun can give brown dun, grey or ulsdun and yellow dun. Covering grey can give red dun, grey, ulsdun, yellow dun and *albino*. Covering ulsblakk and yellow dun can give brown dun, red dun, grey, ulsdun, yellow dun and *albino*.

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Vedlegg 4: Dommarkort for hest



DOMMERRAPPORT

INDIVIDDATA

Utstillingssted:

Dato:

Kat.nr.

Hestens navn:

Klasse:

Rase:

Reg. nr.:

Innmelder:

Stamboknr:

Kjønn:

Eier:

Mål (cm)

Manke		Bryst	Pipe		Kryss	Kropp
Stang:	Bånd:	Omkrets:	Omkrets:	Klavemål:	Stangmål:	Lengde:

EKSTERIØR:

Rasetype og preg:

Karakter

Kroppsbygning og muskulatur:

Karakter

Beinkvalitet, beinstilling:

Karakter

Frambein

Karakter

Bakbein

Karakter

Høver

Karakter

Bevegelsesens korrekthet

Karakter

Bevegelser

Karakter:

Skritt:

Karakter

Trav:

Karakter

Galopp:

Karakter

Helhetsvurdering eksteriør:

Helhet
eksteriør

LYNNE:

Bruksprøve:

Eksteriør:

Veterinær:

Lynne total:

BRUKSEGENSKAPER:

Bruksegenskaper:

Prestasjoner:

Bruksegenskaper karakter:

Premiegrad:

Kvalitet:

Underskrift:

Vedlegg 4: Dommarkort for hest



SKJEMA FOR LØSVISNING

Rase:

Navn:

UELN:

Microchip nr.:

Klasse:

Eier:

		<input type="checkbox"/>	<input type="checkbox"/>
5	Skritt		
6	Trav		
7	Galopp		
8	<u>Helhetsintrykk</u>		
Oppførsel			
Underskrift:			

Vedlegg 4: Dommarkort for hest

Kjøreprøve



Utstillingssted:	Dato:	Kat.nr:
Hestens navn:	F.år:	UELN:
Eier:	Rase:	

Momenter		Delpoeng	Poeng
1. For- og fraspennning	<i>Forspenning:</i>		
	<i>Fraspenning:</i>		
2. Bevegelser	<i>Skritt:</i>		
	<i>Trav:</i>		
3. Kjøremomenter	<i>Rygging:</i>		
	<i>Åttetalls vending:</i>		
	<i>Bakkeprøve/holdt:</i>		
4. Kjørbarhet			
Anspenhet	(Avspent) A B C D E F G H I (Anspent)		
Samarbeidsvilje	(God) A B C D E F G H I (Dårlig)		
Framdrift	(Stor) A B C D E F G H I (Liten)		
5. Helhetsvurdering:			
		Sum:	
		Oppførsel:	

Kusk:

Dommersignatur:

Vedlegg 4: Dommarkort for hest

Rideprøve



Utstillingssted:	Dato:	Kat.nr:
Hestens navn:	F.år:	UELN:
Eier:	Rase:	

Momenter	Poeng
1. Skritt	
2. Trav	
3. Galopp	
4. Ridemomenter	
<div>Holdt:</div> <div>Bøyde spor:</div>	
5. Ridbarhet	
Anspenhet (Avspent) A B C D E F G H I (Anspent) Samarbeidsvilje (God) A B C D E F G H I (Dårlig) Framdrift (Stor) A B C D E F G H I (Liten)	
6. Helhetsvurdering:	
Oppførsel:	

Rytter:

Dommersignatur:

Vedlegg 5: Skjema for helsekontroll

SKJEMA FOR HELSEUNDERSØKELSE AV HINGST FOR GODKJENNING TIL AVL

Hingstens navn: _____ Alder: _____

Rase: _____ UELNnr.: _____

Farge: _____ Microchipnr.: _____

1) **IDENTIFISERING** (kryss av). Hestepass skal framlegges og mikrochip skal avleses.

☐ Hingstens identitet er kontrollert mot hestepass/sertifikat/registreringspapir.

☐ Hingstens mikrochipnr. er avlest og kontrollert mot hestepasset

☐ Hingstens identitet er ikke kontrollert mot hestepass/sertifikat/registreringspapir.

☐ Hestepasset var ikke til stede

☐ Mikrochipen i hesten ser ikke ut til å fungere

GENERELL OG SPESIELL ALMENNTILSTAND. I tillegg til en generell vurdering skal følgende kontrolleres og evt. beskrives:

- Hud og hårlag.
- Hjerne og lunger.
- Bitt.
- Kjønnsganer/ testikler.
- Ortopedisk undersøkelse.
- Temperament ved undersøkelsene.

2) **GENERELT INNTRYKK.** Hingstens hold og kondisjon ved framvisningen, hvilket inntrykk den gir

☐ Normale funn

☐ Andre funn, beskriv _____

3) **HUD OG HÅRLAG.** Det skal observeres spesielt med tanke på kronisk man- og halekløe, unormalt håravfall, spesielle hudforandringer etc.

☐ Normale funn

☐ Andre funn, beskriv _____

4) **HJERTE OG LUNGER.** Det skal spesielt auskulteres med tanke på systoliske suselyder over hjertet

☐ Normale funn

☐ Andre funn, beskriv _____

5) **KONTROLL AV BITT** ved normal hodestilling, OBS. ikke strekk halsen.

☐ Normalt bitt.

☐ Bittfeil.

☐ Overbittmm.

☐ Fortennene i over- og underkjeven berører hverandre.

☐ Fortennene i over- og underkjeven berører **IKKE** hverandre.

☐ Underbittmm.

☐ Fortennene i over- og underkjeven berører hverandre.

☐ Fortennene i over- og underkjeven berører **IKKE** hverandre.

Vedlegg 5: Skjema for helsekontroll

Hingstens navn:.....

6) KONTROLL AV KJØNNSSORGANER/ TESTIKLER

- Antall testikler i pungen

☐ Normale funn

☐ Andre funn, beskriv:

- Testiklenes størrelse og konsistens (evt. asymmetri)

☐ Normale funn

☐ Andre funn/ asymmetri. Beskriv:

- Testiklenes leieforhold (dreining, rotasjon, posisjon i pungen)

☐ Normale funn

☐ Andre funn, beskriv:

7) ORTOPEDISK UNDERSØKELSE

- Høver

☐ Normalbeslag

☐ Barbeint

☐ Symmetriske, velformede høver med god homkvalitet

☐ Andre funn, beskriv:

- Palpasjoner av knokler, sener, seneskjeder og ledd (mugg/ raspe, overbein, hevelser, fylninger, asymmetrier, ømheter etc.)

☐ Normale funn

☐ Andre funn, beskriv:

- Mønstring i skritt og trav på fast underlag (vurdering av halthet)

☐ Normale funn

☐ Andre funn, beskriv:

8) HINGSTENS OPPFØRSEL VED UNDERSØKELSENE (mulig med flere kryss)

☐ Rolig, samarbeidsvillig

☐ Urolig

☐ Anspent, engstelig

☐ Ikke samarbeidsvillig for alle undersøkelser

Annet, beskriv:

Sted og dato:..... Signatur og stempel:.....



Performance Test Fjord Horse Stallions

CHANGES APPROVED JANUARY 2021
NORGES FJORDHESTLAG

PERFORMANCE TEST FJORD HORSE

The purpose of the performance test is to assess the stallions' performance traits under relatively similar conditions. The tests have been selected to reflect the Fjord horse's versatility and area of use. Health, temperament, and behaviour in the stable will also be assessed. The current performance test is carried out over three days in advance of the stallion show. The stallions shall be examined by the veterinarian the first day (Tuesday), while on day 2 and 3 (Wednesday and Thursday) there will be a riding test and a driving test. A judge's panel assesses each stallion and give scores (scale 1-10) as well as a written comment. The riding test and the driving test will each be weighted with 50% in the overall result. The veterinarian will give a numerical grade for health, which will be included in the evaluation at the following stallion show.

General information about the performance tests:

Both the riding test and the driving test must be performed with both own rider/test rider and own driver/test driver, with the own rider/-driver showing the horse first. Own rider/-driver could be the owner, or a person of the owners choice. Own rider and own driver can be different persons. Test rider and test driver are appointed by the Norwegian Horse Society (NHS) in consultation with Norges Fjordhestlag.

If the stallion's owner is not satisfied with the riding test or the driving test, the stallion can have another attempt in the afternoon the day the test is taken. The new attempt will not include test rider/test driver. The new attempt is voluntary, and only the best test will count. New voluntary driving test requires that the judges find this justifiable for safety reasons. If the judges have to reject a stallion on a second attempt at the driving test, the performance test is not approved.

Behaviour in the stable:

Behaviour in the stable must be evaluated two times each day (Wednesday-Friday) with regard to stereotypic behaviour, cf. the Breeding Plan. The evaluation will take place during breaks/feeding. Thus, all stallions must be in their stables.

Day 1: Attendance and veterinary examination

Day of attendance and veterinary examination.

In the afternoon there will be an information meeting for the stallion owners.

Day 2: Riding test

The stallions will be evaluated one by one in the order of the catalogue. The test will be performed in the indoor arena, with the warm-up in the outdoor area. A total of 20 minutes per stallion. The equipment (e.g. bridle, saddle) must be according to the general performance test regulations ('Bruksprøvereglement').

The collection of the stallions must be in relation to age and education. The judges will look for free and natural movement. The stallions must show willingness, good forward motion, balance and rhythm.

Stallions must be shown in walk, trot and canter. All gaits must be shown on both hands. The stallions does not follow a specific riding pattern, but during the test they must show circles of approx. 20 meters in trot. The stallions must also halt at least 5 seconds.

After the test rider is finished, the test end with the own rider walking a trail outside in the terrain. Here the judges will evaluate the stallion's movements and balance in terrain.

Vedlegg 7

Day 3: Driving

The stallions will be evaluated one by one in order of the catalogue. The test starts in the indoor arena, after warming up in the designated outdoor area. A total of 25-30 minutes of viewing time per stallion.

The driving test can be carried out with a work harness or marathon harness, and a 2- or 4-wheel carriage that fits the selected harness. The organizer provides carriages. It is possible to use your own carriage for the driving test. The stallions arrive to the test fully harnessed and hitched to the carriage.

Inside the indoor arena, the stallions must be shown in walk and trot on both hands, and halt for at least 10 seconds. The stallions does not follow a specific driving pattern, but during the test they must show circles of approx. 20 meters in trot. The test is ended outside with halting on a hill (uphill and downhill), a figure-of-eight turn, and backing up.

The judges evaluate the gaits and willingness, forward motion, and that the stallion is relaxed and safe to drive.