Eye diseases in the Saarlooswolfdog

It is a recurring theme in our magazine, but we cannot write enough about it.

There is no genetic test for hereditary eye diseases in the Saarlooswolfdog breed available at the moment. Dogs are therefore screened during a special eye examination, carried out by a licensed ophthalmologist, who is recognised on a European level. By combining dogs with multiple perfect eye scores (= all clear) affected dogs can be prevented, but without a genetic test there is no guarantee.
The Saarlooswolfdog is a young and relatively healthy breed compared to other dog breeds. Still, problems within the breed do occur sometimes. Responsible breeders will test both parents and puppies and do everything in their power to prevent sick dogs from being born.
It's important to sceen as many Saarlooswolfdogs as possible. Not only dogs that have been selected for breeding, but also dogs which will not be used. You should do it for you and your dog - wouldn't you want to know if he's healthy and stays that way? - but also do it for the good of the breed in general. In one of our previous editions, we talked about PRA and the breed club's Eye Screening Day 2021, now we dig a little deeper into the other eye diseases. There is also a section on CCL in this magazine, not an eye disease but a neurological condition which causes sight problems and is often labelled as PRA.

ECVO examination

The main purpose of the eye examination, recognized by the ECVO - European College of Veterinary Ophthalmologists is to check the eyes of the animals and to determine hereditary and suspected hereditary eye diseases. The examination includes a general inspection of the eyes and the eyelids. That way, non-hereditary eye diseases can be diagnosed as well.

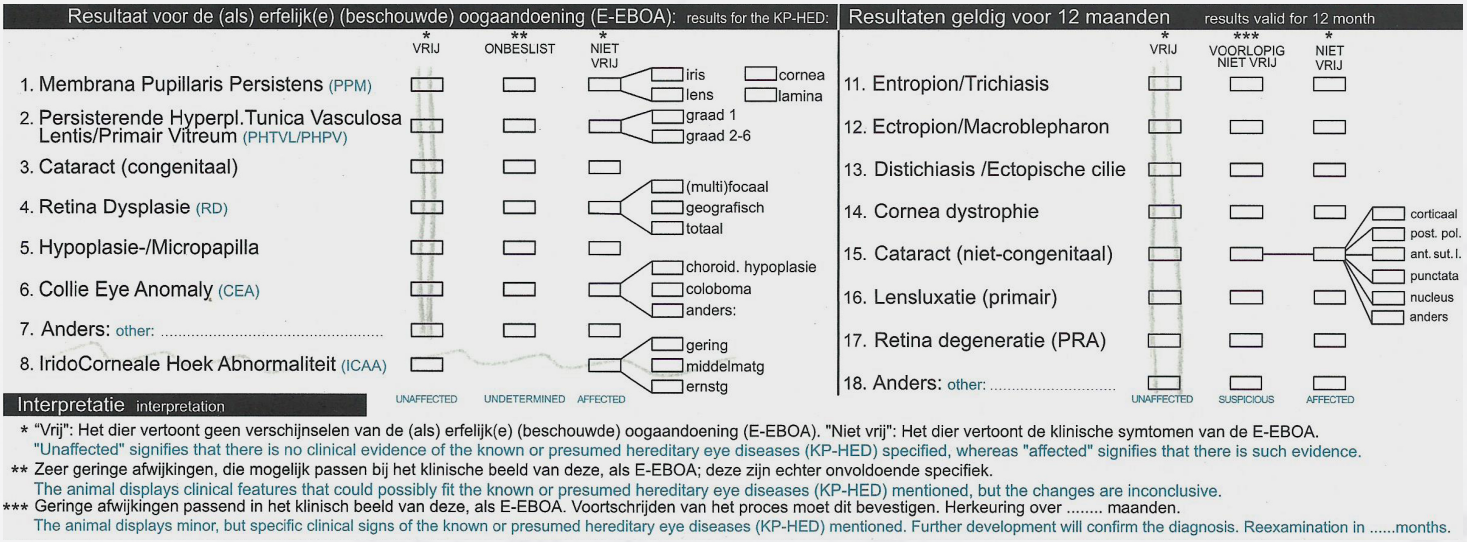
In an official examination, the shape and condition of the eye is closely examined for 13 eye diseases. A number of diseases are not (yet) present in the Saarlooswolfdog, but some others are. As long as the gene mutation of an eye disease in our breed has not been found, we do not know how the disease is inherited and no genetic test based on DNA has been developed, we always assume that the defect has a hereditary basis.

The ophthalmologist-specialist indicates the result of each disorder on the form:

Nederlands	**English**	**Français**
Vrij	Unaffected (free)	Indemné
Onbeslist / Voorlopig niet vrij	Undetermined / Suspicious	Douteux / Suspect
Niet vrij (lijder)	Affected	Atteint

Deutsch	**Italiano**
Frei	Esente
Zweifelhaft / Vorläufig nicht frei	Non definito / Sospetto
Nicht frei (betroffen)	Affetto

On the ECVO form “Certificate of Eye Examination” it looks like this:



* “Vrij”: Het dier vertoont geen verschijnselen van de (als) erfelijk(e) (beschouwde) oogaandoening (E-EBOA). "Niet vrij": Het dier vertoont de klinische symtomen van de E-EBOA.
"Unaffected" signifies that there is no clinical evidence of the known or presumed hereditary eye diseases (KP-HED) specified, whereas "affected" signifies that there is such evidence.
** Zeer geringe afwijkingen, die mogelijk passen bij het klinische beeld van deze, als E-EBOA; deze zijn echter onvoldoende specifiek.
The animal displays clinical features that could possibly fit the known or presumed hereditary eye diseases (KP-HED) mentioned, but the changes are inconclusive.
*** Geringe afwijkingen passend in het klinisch beeld van deze, als E-EBOA. Voortschrijden van het proces moet dit bevestigen. Herkeuring over ..... maanden.
The animal displays minor, but specific clinical signs of the known or presumed hereditary eye diseases (KP-HED) mentioned. Further development will confirm the diagnosis. Reexamination in .....months.

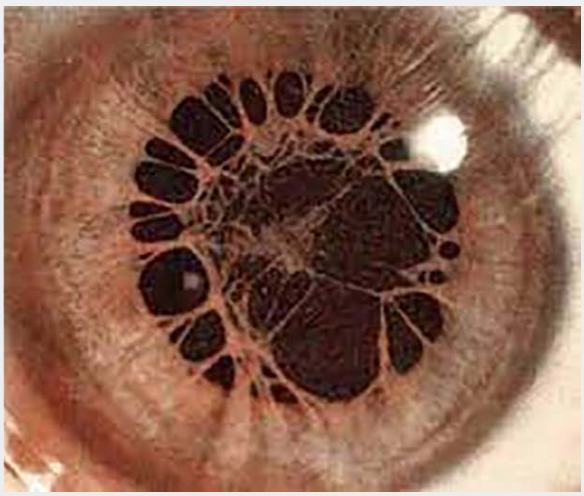
Results for the known or presumed hereditary eye diseases (KP-HED) - Results valid for 12 months

1. PPM - Persistent Pupillary Membrane *
2. PHTVL/PHPV – Persistent Hyperplastic Tunica Vasculosa Lentis / Primary Vitreous *
3. Cataract (congenital) *
4. RD - Retinal Dysplasia *
5. Hypoplasia / Micropapilla
6. CEA - Collie Eye Anomaly
7. Other: ...
11. Entropion / Trichiasis
12. Ectropion / Macroblepharon
13. Distichiasis / Ectopic cilia *
14. Corneal Dystrophy *
15. Cataract (non-congenital) *
16. Lens Luxation (primary) *
17. PRA – Progressive Retinal Atrophy *
18. Other: ...

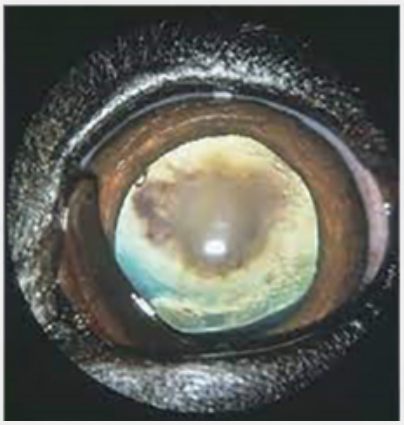
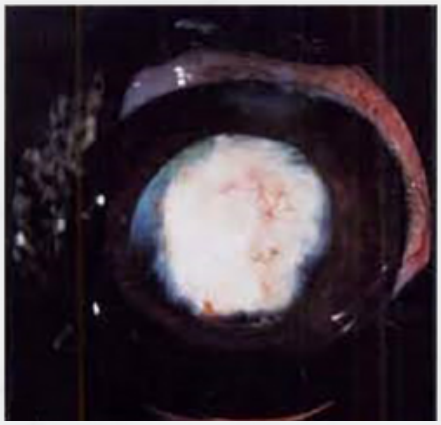
*** already diagnosed in the Saarlooswolfdog**

- PPM - Persistent Pupillary Membrane (1)

A disorder where the solid sheet of mesodermal tissue every dog is born with to form the pupil in the eye did not dissapear completely. Remnant strands become attached to surface of the iris, lens or cornea of the eye, causing clouded corneas, abnormal iris movement due to lack of light entering the eye and loss of vision.

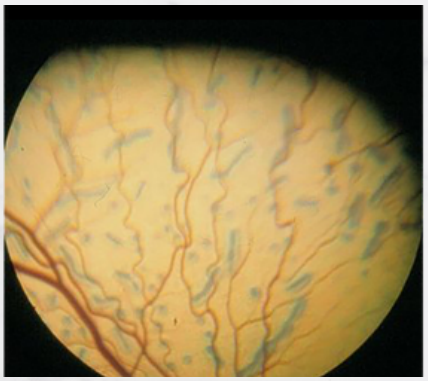


- Persistent Hyperplastic Tunica Vasculosa Lentis / Persistent Hyperplastic Primary Vitreous (2)
A disorder of the lens in which connective tissue remnants of the embryonic vascular structures do not regress normally and remain on the back of the lens, causing a change in the cone shape of the lens, blood or pigment accumulation in the lens, lens opacity and impaired vision.

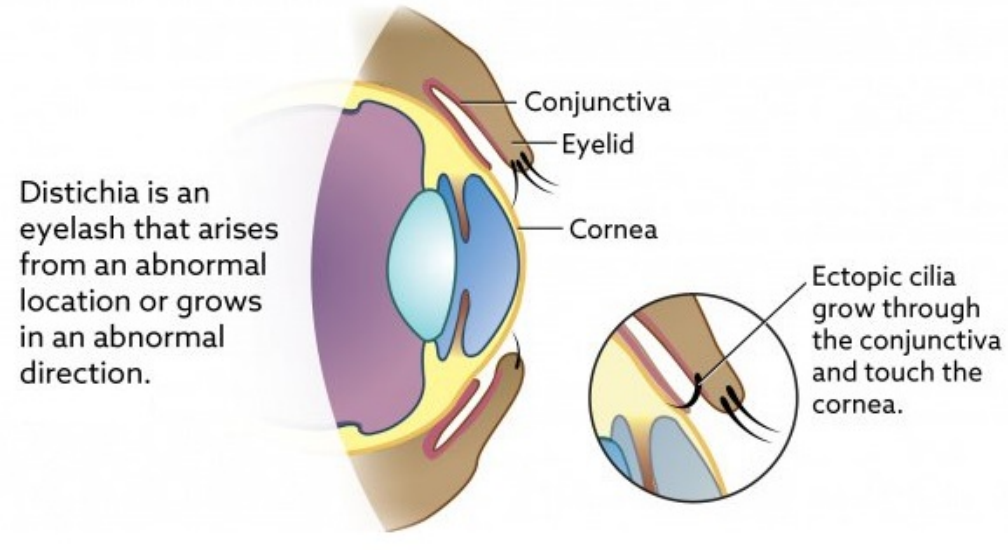



- Cataract (3) (15)
A disorder of the lens, also known as blank cataract, in which abnormal clouding of the normally clear lens of the eye occurs, resulting in partial or total blindness. A distinction is made between congenital (not acquired after birth) and non-congenital cataract. Congenital does not have to be genetic or hereditary, but it can be.


- Retinal Dysplasia (4)
A congenital and inherited retinal vascular disorder, which causes localised folds in the retina or detachment of the retina, resulting in severely impaired vision or total blindness.

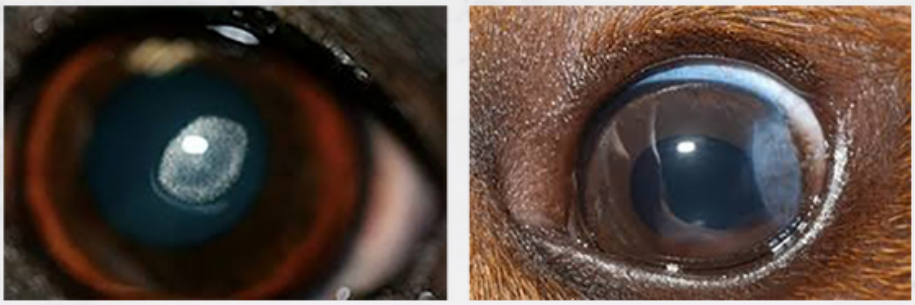
- Distichiasis / Ectopic cilia (13)
A disorder where one or more hairs protrude through the eyelid margin or the mucous membrane of the eyelid, causing irritation or even damage to the cornea.



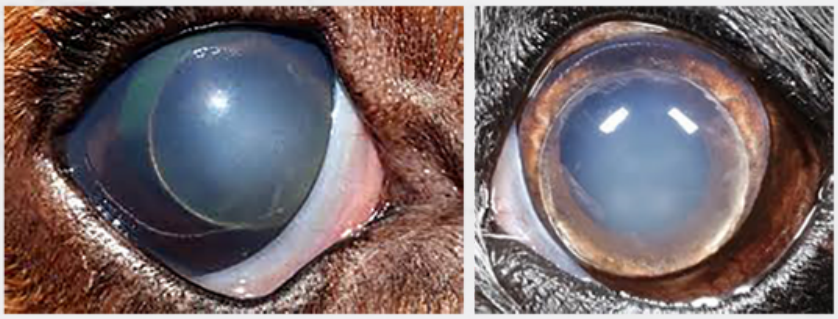
- Corneal dystrophy (14)
A disorder of the cornea of the eye, causing it to becomes opaque and not clear due to cholesterol or calcium deposits building up.

There are three different types of corneal dystrophy classified according to the layer of the cornea in which the disease occurs.
- Epithelial corneal dystrophy: The outer, most superficial layer or epithelium of the cornea is affected;
- Stromal corneadystrophy: The middle layer or stroma of the cornea is affected. Also known as macular corneadystrophy in Labradors;
- Endothelial corneal dystrophy: The inner layer of the cornea or endothelium is affected.

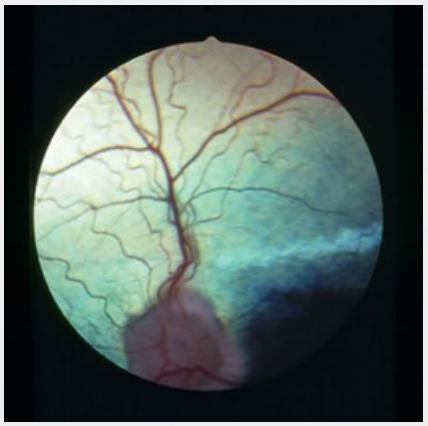
A genetic or hereditary cause is assumed, but high cholesterol and calcium levels, gender and age can contribute to the development.



- Lens luxation (16)
A disorder causing partial or complete displacement of the lens due to a weakening of the lens ligaments, the tissue that normally holds the lens in place between the iris and the retina. A forward displacement of the lens leads to increased pressure in the eye, with a high risk of glaucoma or green cataract and blindness as a result. Lens luxation usually appears at the age of 3 to 5 years, but can also be a sign of old age.



- PRA - Progressive Retinal Atrophy (17)
A collective name for a number of retinal disorders causing a gradual deterioration of the retina, with partial or total blindness as a result. In our previous magazine you will find an extensive article on PRA.



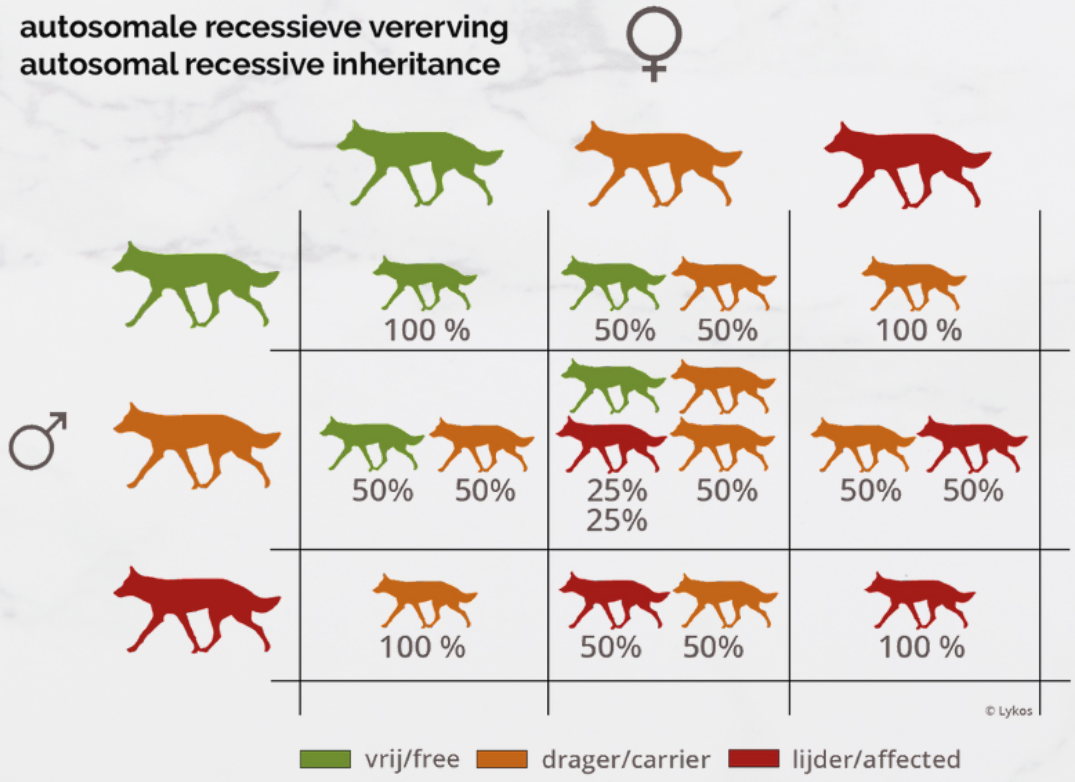
To measure is to know, to breed is to guess?

We test more and better than before, so more diseases pop up. It is very important to document all disorders as accurate and complete as possible. Not only for Saarlooswolfdogs who are used or will be used for breeding, but for all dog regular testing is important, i.e. 1x per year for breeding animals and 3 to 4x in a lifetime of the 'housewolf'.

With the help of elaborate databases – where carriers and affected dogs of all diseases are listed, kennel club websites – where test results are publicly accessible, social media – where information spreads like wildfire, close collaboration on an international level, ... (eye) problems can be mapped out and analyzed better.

Art. 10 BSWV Breeding Rules
"Both dogs should have a valid eye examination of less than 12 months old, without any abnormalities [..] Dogs who have not received the 'all clear' cannot be used for breeding."

In this respect, the Belgian breed club is stricter than some other breed clubs who only have PRA and Cataract as a breeding limitation. Is it still wise to only focus on PRA and Cataract, the most common diseases? Shouldn't we look at other eye diseases too? Why take PRA and Cataract into account, but not other eye diseases which are regarded as hereditary? As long as the mode of inheritance - the manner in which a genetic trait or disorder is passed from one generation to the next - has not been determined, it should be considered as autosomal recessive, i.e. a dog becomes affected if it inherits the mutated gene from both parents. In some dog breeds, certain eye disorders even have a dominant inheritance and the mutated gene of just one parent may cause a descendant to become affected.



The percentages shown are a probability calculation PER puppy born (often misinterpreted per litter). Each individual has the same percentile chance to be free /carrier / affected.

Is it still sensible to breed with dogs who are PRA- and Cataract-free, but do not have an all-clear ECVO result? Ground rules and basic breeding strategy starts with the breed clubs and national kennel club. The German kennel club VDH - Verband für das Deutsche Hundewesen for example, will not issue a breeding license to a dog without an all-clear ECVO result. If a breed club or other umbrella organization sets the example, their members will follow. It is a combination of duty, motivation, persuasion, obligation and yes, disciplinary action too! You cannot support / promote a combination or litter which does not comply with your own club's breeding rules. Of course, an individual breeder can always apply stricter selection and testing criteria, but the basic principles should have a solid foundation. In the end, the sole responsibility falls on the shoulders of the breeder who should make sensible combinations, limit risks and at the same time strive for a Saarlooswolfdog as he is supposed to be in terms of character, build and movement - and that does not include intentionally gambling with health and heredity.

Terminology

- Breed club = an organization which represents the interests of breeders and/or owners of a dog breed. An official breed club is affiliated to an umbrella organization per country, the kennel club.
- Kennel club = an organization which maintains and promotes the FCI breed standard for all purebred dog breeds, keeps the pedigree registrar, regulates breeding and shows, issues pedigrees, trains and appoints judges.
- Fédération Cynologique Internationale (FCI) = a worldwide umbrella association for purebred dogs and national kennel clubs, which describes and approves breed standards, confirms national regulations, establishes rules for all members, awards European and World shows, grants international titles and championships, sets rules for all members and organizes recognised hunting competitions.

ECVO Manual and the Veterinary ophthalmologists' advice on breeding (2021)

We will now only focus on the breeding advice for diseases that have been diagnosed in the Saarlooswolfdog.

Three categories of advice regarding breeding have been established:

- OPTIONAL (low priority)
- NO BREEDING from the affected animal
- NO BREEDING from the affected animal, its parents, or its offspring

(1) PPM - Persistent Pupillary Membrane

- Strands iris to iris: OPTIONAL
- Strands iris to cornea: NO BREEDING from the affected animal
- Retrocorneal remnants without strands: OPTIONAL, only if substantial: NO BREEDING from the affected animal
- Strands iris to lens: NO BREEDING from the affected animal
- Fibrotic more or less pigmented tissue remnants on the anterior capsule of the lens, without strands: OPTIONAL, only if substantial: NO BREEDING from the affected animal
- Laminae (layers): NO BREEDING from the affected animal

(3) Cataract (congenital): NO BREEDING from the affected animal

(15) Cataract (hereditary, non-congenital):
- Cataract 'cortical' (in the cortex): NO BREEDING from the affected animal
- Cataract 'posterior polar': NO BREEDING from the affected animal
- Cataract 'nucleus': NO BREEDING from the affected animal
- Cataract 'other': OPTIONAL, low priority and is valid for the following lens opacities, summarized in 'other': Punctate, Suture line tips, Suture line, Nuclear ring, Nuclear fiberglass-like/pulverulent

(4) RD - Retinal Dysplasia
- (Multi)focal form in any breed: OPTIONAL
- Geographical shape: OPTIONAL
- Total: NO BREEDING from the affected animal, its parents or offspring

(7) Other
- Optic Nerve Head (Papilla): NO BREEDING from the affected animal
- Hypoplasia:
° Iris: OPTIONAL, in severe cases: NO BREEDING from the affected animal
° Lens: NO BREEDING from the affected animal
° Choroidea: OPTIONAL

(13) Distichiasis/Ectopic Cilia: OPTIONAL, in severe cases: NO BREEDING from the affected animal

(14) CD - Corneal dystrophy:
- Epithelial and/or stromal: OPTIONAL, in severe cases that cause visual problems and/or pain for the dog (e.g. in Siberian Husky or Shetland Sheepdog): NO BREEDING from the affected animal
- Macular dystrophy (e.g. Labrador Retriever): NO BREEDING from the affected animal
- Endothelial dystrophy (e.g. Chihuahua, Boston Terrier, Dachshund): NO BREEDING from the affected animal

(16) LL - Lens luxation, primary: NO BREEDING from the affected animal, its parents or offspring (e.g. Small Terrier breeds, Chinese Crested Dog, Lancashire Heeler)

(17) PRA - Progressive Retinal Atrophy / Retinal Degeneration (PRA): NO BREEDING from the affected animal, its parents or offspring

OPTIONAL (low priority):
The defect is presumed to be hereditary, but there is no scientific evidence for its mode of inheritance and the entity does not represent a prevalent or potential threat to vision or cause any significant reduced ocular function, pain or distress to the animal. The breeder may decide whether to breed the animal or not, preferably after consultation and discussion with the kennel club and/ or the breed club. If the affected dog is used, it is recommended to mate the dog with a dog that is "unaffected" for the same entity.

NO BREEDING from the affected animal:
Substantial evidence exists to support the heritability of this entity AND/OR the entity represents a major potential threat to vision or other reduced ocular function, pain or distress to the animal.

NO BREEDING from the affected animal, its parents, or offspring:
Substantial evidence exists to support the heritability of this entity AND/OR the entity represents a major threat to vision or other ocular function, pain or distress to the animal. This category is to be used when the mode of inheritance of the entity is presumed or known to be recessive or (incomplete) dominant and therefore the affected animal's parents and offspring are at the least carriers of the gene mutation. Use of the relatives of the affected animal may be considered when a DNA-based test is available for the mutation.
In the presence of the DNA-based tests in certain circumstances, the use of affected animals and carriers may be warranted. Such matings should be carefully controlled and all offspring should be subjected to DNA-based testing.

source :
www.belgianecvopanel.be/english
www.ecvo.org/hereditary-eye-diseases/ecvo-manual.html
www.houdenvanhonden.nl/nieuws/wijziging-notatie-ecvo-oogonderzoek/