

Inbreeding in harness horse breeding

Five to twelve

Inbreeding and a too high kinship have been a problem in harness horse breeding for years. And although much has been said and written about it already, it has just not been possible to really tackle the problem. That is why the RVO, the organization that is responsible for the recognition of studbooks, rang the bell last year with a clear message to the KWPN: you have to intervene to prevent the harness horse from becoming a dying breed. We will discuss the possibilities with five people who absolutely agree on one thing: something must be done fast to secure the future of our harness horse.

English translation: **LIESBETH VAN WOERDEN** - Original Dutch text: **CHARLOTTE DEKKER**

At the table in the KWPN head office are General Board member René van Klooster, Breeding Council member Gerrit Wilting, breeding technical specialist Daniëlle Arts and university teacher Dr.ir. Bart Ducro, specialized in breeding and genetics. Also present, but by telephone, is harness horse breeder and stallion owner Wim Cazemier, who lives in The USA. He specifically set his alarm and dialed in local time at 3:00 AM to join this conversation. Reason: the letter from the RVO and their message urging the KWPN to take action as soon as possible.

René: “We received a letter from the RVO the end of last year (2019) with the clear message that we must intervene as soon as possible. The increase in inbreeding is a threat to the population; putting health, fertility and vitality at high risk of being affected. The letter indicates that the KWPN must come up with a clear plan before April 2020 on how it will reduce the worrying increase in inbreeding within harness horse breeding. A specific work group has been appointed to discuss possible solutions for reducing this problem and whether we can use 'foreign blood' in this regard. In the small population of the harness horses, the same stallions are regularly used, which means that too many horses are closely related to each other.”

Danger

René continues: “Since the summer of last year, a small work group was already active to examine a much broader subject, namely, to take a critical look at the possible contribution of Frisians. The great resistance to the use of Frisians became particularly clear during the autumn members' meetings in the regions, which is why the Breeding Council asked this new working group to reassess the possibilities.” Gerrit: “I am in this work group on behalf of the Breeding Council. The group has now met twice. In addition to me, four breeders, KWPN inspectors and the stallion inspection committee are also represented. I think we have found some good tools that everyone can use. We’re going to work out everything in clear terms now.”

Bart: "You say that the inbreeding percentage is increasing, but how high is that exactly?" Daniëlle: "The harness horse population has an inbreeding increase of 1.18% per generation, this is above the permitted 1%, the limit above which the increase is really seen as a danger. Hence the question from RVO to the KWPN how we are going to solve this." Bart: "That is indeed really high, according to our guidelines an increase in inbreeding between 0.5 and 1% should already be given attention, above 1% you should really give it priority."



Wim Cazemier with Colonist (Vulcano x Patijn x Renovo)

Bart continues: "The danger of inbreeding is that you really have an increased risk that the population will suffer from hereditary defects. Look at the Frisians who have a history of a too high inbreeding percentage. This eventually led to hydrocephalus and dwarfism: these single gene-driven hereditary defects are the first thing to notice, but there are often underlying problems such as reduced fertility. The great danger lies in the fact that when you see those problems and can relate them to inbreeding, then you are already too late." Daniëlle: "We are of course already seeing that it is becoming more difficult to breed larger harness horses, there is a clear trend that the progress in height decreases. I am not saying that this is due to inbreeding, perhaps that is partly the influence of the Hackneys. But it is known that heavily inbred populations are getting smaller, so it might be a signal."

Frisians

Wim: "We have already tried a lot with other blood, such as the use of American Saddlebreds and Hackneys. We breed for the sport and so we have to make sure that we have a happy horse with good harness suitability. In my opinion that is now a risk with the Hackneys. The pros will be able to work with the horse, but there are also a lot of amateurs and the common man should also be able to easily work with them. As far as I'm concerned, the Saddlebreds have not delivered what we hoped for. With regard to inbreeding problems, we may be able to get help from the Gelders horses. Maybe not directly via the

stallion side, but via a Gelders, harness type maternal line. As far as the Frisians are concerned: there are certainly a few harness typical Frisians around which make our hearts beat faster, but unfortunately, they also have weaknesses that you do not want in your own population. Does a breeder have the freedom to choose a harness horse-type Frisian stallion with his high-blooded harness horse mare?" René: "Of course, every breeder is free to make his own choices. However, this breeding product now enters the register B."



Marvel, half Saddlebred stallion by Immigrant.

Bart: "Genetically it is always a risk when you add other breeds. Within the harness horse population, we have built up a certain breed standard with specific gaits and conformation. Through years of selection, you try to anchor those qualities within the population. You risk throwing this overboard by introducing another breed. Therefore, crossing with another breed is a last resort for me. To me it is more preferable to look for solutions within your own breed, in order to prevent possibly bringing in lesser points through crossings that you have just bred." Gerrit: "The market determines what breeders are breeding. If you intend to cross with a Frisian, then the driving sport market won't be an option, because nobody is waiting for such a horse there." Bart: "I can imagine that, there are indications that the movement mechanism of a Frisian is really different from that of a Dutch Warmblood horse. The DNA of a Friesian is more like that of a cold blood than that of other Warmblood horses. Their muscle building, for example, could also be different."

Fashion breeding

Gerrit: "We've been talking about inbreeding for 30 years, but I think it's still too far off for most breeders. Most breeders just want to breed a good foal that is a winner at inspections. Most of them think: 'let someone else solve the inbreeding problem'. So, step one is creating more awareness with the breeders. When I think about inbreeding, I think two things are really important: one is reducing fashion breeding, in any way, because that is deadly for breeding. And two is to keep the variety of sires high enough, so

that there is sufficient diversity and not everyone runs after the same two stallions.” Wim: “In the Netherlands there are three stallions who pull the cart and really earn a living as a stallion. In the past, sometimes stallions were just approved because they had an attractive color, because that sells easily. But that has not progressed breeding either. I myself select very strictly, and if I then see such a couple of offspring of a stallion at the inspection, which have a nice color but not the desired qualities, then I think, the inspectors could ramp up the surveillance on that. A well-functioning hind leg is a very determining factor in every discipline, we should never give in to that. The bar could be raised with regard to stallion selection, but we will also need to consider breeding restrictions to prevent breeders from continuously using the same stallions. Judges should also include the kinship percentage as a selection criterium for approving a stallion. Because stallions have a higher chance of having a lot of influence on breeding, all these details have to be taken into consideration as far as I'm concerned. Also with regard to their offspring: if a stallion is not approved, but people still breed to him, and then you first see the same shortcomings in the foals as the sire has and later in the inspection in the three-year-olds you see it again, then I don't think you should register this offspring in the books. Above all, be clear in the information, also about negative qualities.”



Urgent (Waterman x Ureterp x Marconi)

Wim continues: “By the way, I do wonder whether the number of 10 foals that young stallions have to show for the offspring inspection is not too high. They often fail and then the assessment is postponed, and that is often not a positive signal for breeders. In the beginning Urgent, for example, had trouble getting enough mares: very annoying for the owner, while he is very interesting in terms of his bloodlines. You must cherish such a stallion.” René: “Breeding restrictions are a possibility, we can legally take that step if necessary in the context of inbreeding. But I don't think we should use that as the first means, let's first look at what possibilities there are within our population, both with regard to stallions and mares. I agree that fashion breeding is a risk. There are plenty of examples of low related stallions with offspring in the sport who meet all the requirements, but then they are not used because of their color. Perhaps we can stimulate breeding to low related stallions with breeders' premiums.” Wim: “I don't think you should necessarily start ‘waving the wallet’. But as Gerrit also said it: breeders all want to breed the

champion at the end of the day, that is clear... but sorry, you can't keep breeding with Manno x Patijn forever."

Relationship percentage

Bart: "I am a great supporter of breeding values, so everyone can see what the qualities of a horse are. Without looking at color or phenotypic values." Gerrit: "I cannot speak for all breeders, but many people breed on feeling and emotion and not on paper. It is of course not only possible from a piece of paper, but you can make the combination. Look at your mare objectively and do something different from someone else!" Bart: "With breeding values you can actually indicate which qualities a stallion will pass on to the next generation and the kinship can also be involved in this. Anyway, you can publish breeding values and point out its importance, but if the breeders don't pick it up, it will remain a difficult story. While the Frisians are a good example of how well it can work. There the breeders are very aware of the problem, of course also because they are confronted with the negative consequences of inbreeding. The publication of the kinship percentages has been very effective there, breeders really had the idea that they could do something about the situation themselves and were more inclined to opt for low-related stallions. Their inbreeding increase was also above 1%, now it is around 0.5%. That proves that it really is possible." Daniëlle: "But it should also not be the case that everyone will soon use the same low-related stallion, it is precisely distribution that is important. That really cannot be said often enough."

Wim: "I think there is more to be gained through good Gelders stallions in combination with high blood mares." Gerrit: "Indeed, our harness horses are modern enough; I think you can easily make the step to a Gelder stallion or experiment with a suitable dressage stallion. By the way, the dressage horses are also involved in fashion breeding, where everyone runs after the same stallions." Daniëlle: "Shouldn't we also encourage the use of younger stallions? You see that in harness horse breeding, quite a lot of older stallions and mares are used, while the genetic progress is a lot faster if you use young animals. You do have to look at your kinship percentage, that will continue to play a role if you want to reduce inbreeding." Bart: "I agree, the genetic progress is limited. The tricky thing here is that to calculate a reliable breeding value, you need offspring. Some interesting stallions don't get that or hardly, while fashion stallions do breed a lot and thus sometimes achieve a higher reliability of their breeding value. You can only say

something about offspring if there is one. That is why I would not choose to lower the requirement for 10 foals, then you can say even less about it."



Nando (Fortissimo x Bayard x Wervelwind

Genebank

René: "Until 5 or 6 years ago, the KWPN had the service of sending breeders advice on stallion selection for their mares, which was received very enthusiastically. The service is still available digitally." Wim: "A professional breeder knows what to do with that, but you may have to put a stamp on it again, so that you also reach the less digital breeder. And you may have to expand it further with stallions that are genetically interesting." René: "Another

good option is the Genebank, where frozen semen is available from various older stallions, such as Urgent, Nando, Vodka, Stuurboord, Torino, Cinovo, Wervelwind, Patijn ... This can be a very interesting solution

for breeders. Think of a low-related stallion such as Marvel: this stallion is rarely used, but has indeed good results in sport and breeding. He can also be used with the aid of the Genebank." Gerrit: "But what is also interesting is that you can now make combinations that were not possible when he was still alive." Wim: "It seems good that the KWPN points out breeders not only to listen to the stallion owners, but also to look at what is literally still in the tank." Gerrit: "Stallion owners often also have very interesting frozen semen available."

Wim: "The stallion Bentley has now been gelded, but I regularly see good offspring of him. It would be interesting to see if there is still semen available from him." Gerrit: "Interesting that you mention Bentley. That was a Larix bred from the full sister of the approved stallion Milano, who died early. Milano's great-grandmother, Gonnies, was the dam of the stallion Cabochon. Perhaps there are still Cabochon mares that can form a very good combination with a harness horse stallion."

Sales and marketing

Gerrit: "It is often said that the studbook or the stallion owners should help with sales. But as a breeder you also have your own responsibility. You will meet some breeders at a meeting about inbreeding and they will say: 'It will all be fine; I just want a black horse with a blaze and four white legs'. You can't blame them, that's their right. But when you hear how many people complain that they don't generate enough income, I think: put a hand in your own pocket, take care of your own marketing and give a trader with many contacts something. You often really benefit from that in the long run. Breeders must also dare to experiment and make mistakes. I have the impression that most of them always choose the popular stallions. Or simply take the advice of the stallion owner. Look at your own mare and your idea of what fits best with it and make your own choice. And then also take care of your own marketing. With a unique combination you make a difference: I prefer to breed a special combination instead of one where there are 600 of." René: "For many years the breeding goal has been to breed an Honorary Class horse: we all breed for the sport. That is our starting point, but we also know that the horses that do not perform at that highest level can be very suitable for driving. Our Dutch harness horse is incredibly popular and successful in driving. So, we have to convince breeders to use low-related stallions, and if that breeding product does not become an Honorary Class horse, then there still are enough sales opportunities."



Bentley VDL (Larix x Renovo x Waterman)

Daniëlle: "Wim, you indicated that workability and character are important characteristics, we do not collect that information now. We also leave the canter and rideability out of consideration in the breeding values, but should we not do something with this in the context of marketing within the driving sport? Perhaps broadening the breeding goal also ultimately contributes to genetic diversity. With the Frisians they are already looking at different types of traits that are relevant for dressage and driving. You don't have to let go of your main breeding goal, but by informing potential buyers about the qualities of a

particular bloodline, you may be able to gain an advantage.” Wim: “Financially, the shortest route is the driving sport: most horses get sold there and for decent prices. The demand in the harness horse sport is very high, but the wallet is usually small.”



American multiple championship winning driver Chester Weber winning the national four-in-hand driving championship at Live Oak International in Ocala, 2019 with his KWP horses.

René: “A true harness horse breeder wants to breed a harness horse, preferably an Honorary Class horse or an approved stallion. If they don't make it, the driving sport is an escape route for them. But for the driving sport, the better harness horses are also more attractive: a good hind leg and workability are very important there as well. The interface between the driving sport and the harness horse sport is quite large.” Gerrit: “The image many breeders have is that a driving horse is a waste product of harness horse breeding. That is absolutely not the case. If he takes action in all parts, then he has to do a lot more than twice to the left and twice to the right like at a harness horse competition. It's not comparable. The market is already there. We must not let go of the breeding goal, but breeders must realize what they have in their hands.”

Wim: “There is also a market in America for the harness horse as a dressage horse. One of the reasons for that is the fact that they like good feet there which the harness horses usually have. The 45+ year old amateurs in particular are a very interesting group who would like a functional and workable horse.” Gerrit: “And that is all possible without changing your breeding. If you buy a dressage horse, you often have to spend much more money. People also buy Tinkers or Haflingers as riding horses for that reason. I have already sold quite a few harness horses to people who want an uncomplicated riding horse that is not prone to injuries.”

Character

René: “We have described the future harness horse in the Breeding Council and towards the stallion inspection committee as follows: ‘A harness horse with size, height, front, a strong hind leg, which is as

closely related as possible to the population'. Of course, with an Honorary Class horse as the breeding goal." Wim: "Yes, you have to constantly strive for that and never let that go."

"But don't forget the good workability," Wim continues. "We need a happy horse that proudly goes around without many 'tools'." Gerrit: "Ask any rider what makes their top horse so special and the answer is always: their character. That is important for a good sport horse, regardless of discipline." Daniëlle: "And at the same time that is the most difficult to measure. It is such a catch-all term, 'character'; it has a different meaning for everyone. How do you define it? If you want to select for that, you have to make that measurable and I think that we still do that too little within the harness horses. We also do not collect data on this, although we do of course look at their performance and drivability in the performance tests. And what about the genetic inheritance of character? If it is low hereditary it is more difficult to make it a priority." Bart: "The starting point is measuring it."

Wim: "Measuring, knowing, seeing and acknowledging. If a stallion trots for a 9 and scores a 5 for character, show that clearly in your communication." Gerrit: "I think it would be good to add it to the evaluation of the stallions. You see a mare briefly at the inspection, then it cannot be measured. But in the performance test if you have the stallions at the center for a longer period of time, then it is easy to do and you also get a more reliable estimate." Daniëlle: "I think it is good to also take it into account with the mares, we can already assess the willingness to work at the IBOP." Gerrit: "Information is important here. If a breeder knows that he has a difficult, sensitive mare and he can find out which stallion inherits a calm and workable character, then he can take that into account."

A step forward

René: "Wim, isn't there a stallion in America that could be of interest to Dutch breeders?" Wim: "In the future, there may be something from North America for Dutch harness horse breeding. They are more likely to use a stallion that has not been approved. But those horses must of course meet the veterinary requirements of the KWPN. And then subsequently, that interesting one could just pass by. Harness horse breeding in America has taken a very big leap, but is now on the back burner." René: "But many low-related, good mares have also left for America? What if we were to identify which mares or offspring are interesting to retrieve?" Wim: "I would like to play a role in that, but the country is large, so that will not be easy."

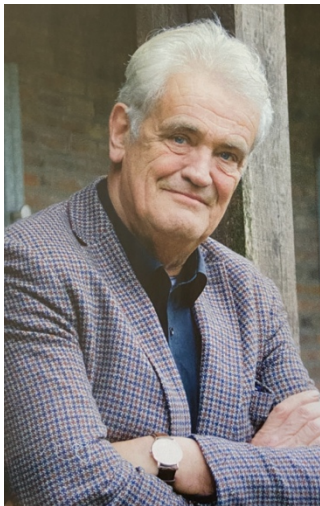


Heineke (Waterman x Pygmalion x Monarch)

Gerrit: "In the Netherlands we also have low-related mares that we may have considered 'too old fashioned' in the past, but which can now play a role in the fight against inbreeding. They could possibly be a future stallion mother. I am thinking of Heineke mares, for example. There will probably still be one here and there grazing under an apple tree, it seems smart to me to map that out. The fact that not all horses are registered may make it difficult to locate these mares, but there may be a breeder who has or knows such a mare and is reading this. Then I hope he will call the KWPN."

Bart: "Perhaps the key lies with the mare? Such breedings will help you in the future. Do you also calculate the kinship percentage of the mares?" Daniëlle: "Yes, we all know that, all percentages of mares between

3 and 25 years are available. We also need this information for our digital inbreeding tool, with which we inform breeders about the kinship percentage of their future foals. There are certainly interestingly bred mares that are currently not used for breeding, but could make a major contribution to the future of the harness horse. We have to broaden, there is no other way. Low kinship should become a quality of a horse.” Bart: “With regard to inbreeding and blood distribution, I think it is very good to realize that the registry alone cannot turn the ship, all members must cooperate.” Gerrit: “Breeders must also dare to take a ‘step-in-between’. For example, I know a Patijn x Ferro mare: put a harness horse stallion on her, then you will stay within the KWPN and we may take a good step forward in terms of inbreeding. We should not quick to think “that will not work.” Sometimes you have to take a step back to be able to take a step forward.” •



René van het Klooster



Bart Ducro



Gerrit Wilting



Daniëlle Arts