

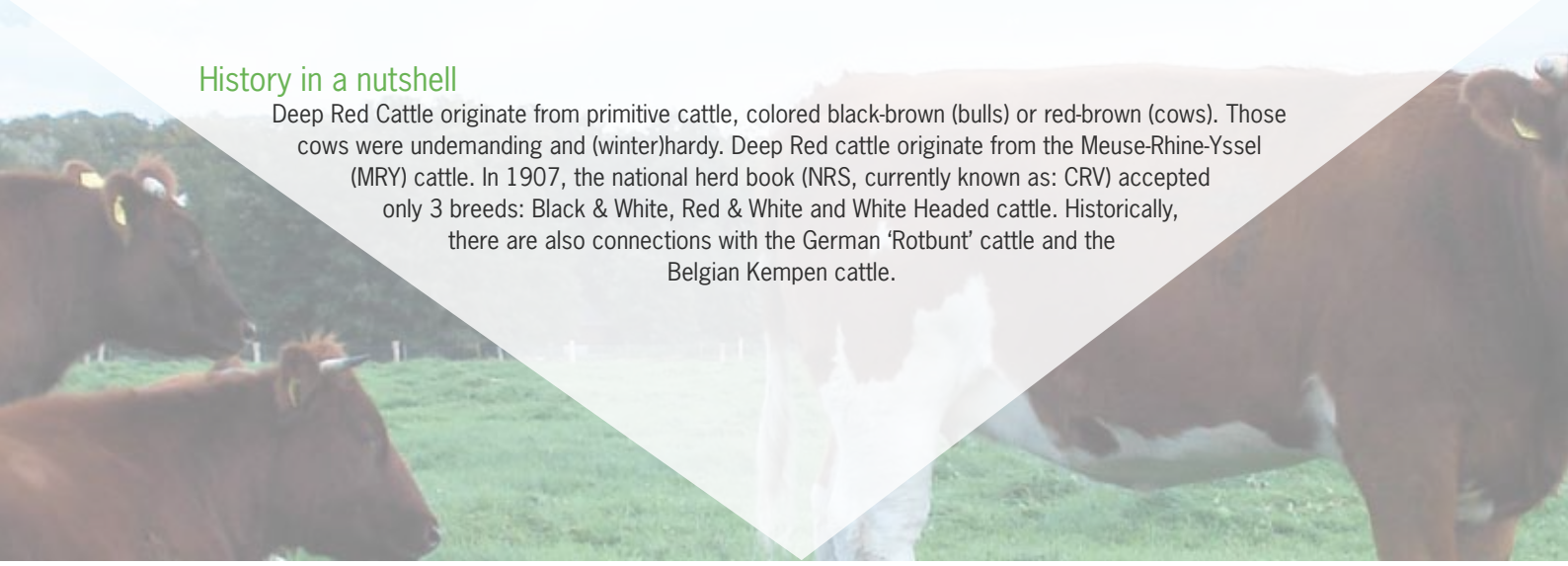
- ✓ For grazing in nature reserves
- ✓ Easy to manage cows
- ✓ Living cultural heritage

# Deep Red Cattle



## History in a nutshell

Deep Red Cattle originate from primitive cattle, colored black-brown (bulls) or red-brown (cows). Those cows were undemanding and (winter)hardy. Deep Red cattle originate from the Meuse-Rhine-Yssel (MRY) cattle. In 1907, the national herd book (NRS, currently known as: CRV) accepted only 3 breeds: Black & White, Red & White and White Headed cattle. Historically, there are also connections with the German 'Rotbunt' cattle and the Belgian Kempen cattle.



## Breed origin

The MRV breed originates from two regions in The Netherlands. The first region is along the river Yssel: the West-Achterhoek, Salland, Twente and in the south-west of the Province Drenthe. The second region is in the east of the Province Noord-Brabant. Before the Second World War, especially the deep red colored variant dominated, which was muscular and was favored for its dual purpose characteristics.

After the Second World War it became more important to select for a high milk production and the color of the coats was less important. White colored animals (like the sire 'Prins', born in 1941) were used as well, because of their genetic tendency for increased milk production. However, for a few farmers the color was important and they started using their own deep red bulls. After several generations, their cattle was genetically isolated from the MRV population, conserving the old type and deep red color. Recently, this genetic line has become accepted as an official breed: Deep Red Cattle. Deep Red cattle is very suitable as free roaming cattle in nature reserves because of their robustness and genetic resistance against diseases.



## Breed description

Deep Red cattle are dark red with a white star on the head, a white belly, white socks and a white tip on the tail. Sometimes the tongue and palate are pigmented. On certain parts of the body (especially the head and legs) the color tends to black rather than to brown.

Deep Red cows are 135-140 cm high, they have strong feet and legs and are reasonably strong muscled. The conformation of the udder is not as important as for the dairy cows. The cows have a quiet and calm nature and can cope easily with changing weather conditions. The Deep Red cow is strong, undemanding and winter hardy, with strong feet and legs. They have a good fertility, calve easily and have strong mothering capacities. In nature reserves Deep Red cows are used as suckling cows.

*"That is something different"*



## Breed conservation

In 2001 only 100 purebred Deep Red cows were registered, hardly any semen was available and the risk of inbreeding was high. At that point in time a foundation called 'Het Brandrode Rund' launched a 'national call' and succeeded to increase the number of herd book registred Deep Red breeding animals up to 200 cows. In 2007, 454 purebred Deep Red cows and 66 purebred Deep Red bulls are registered at the national herd book. In the meantime, semen was also frozen and stored in the Dutch Gene bank of the Centre for Genetic Resources, the Netherlands (CGN). Unfortunately, this semen came from only 1 herd, and the risk of inbreeding had therefore still not disappeared. In 2008, semen from additional Deep Red bulls was frozen and stored in the Dutch Gene bank, which now contains semen from 12 bulls, as well as 14 embryos.

2.

“Beautiful cows that belong to this region”



**Breed demographics**

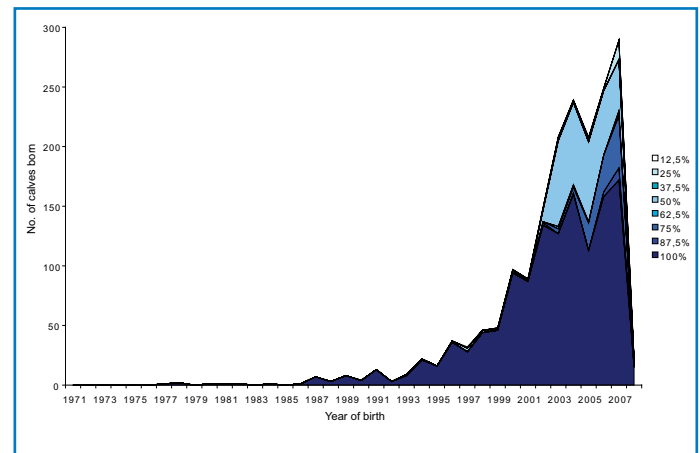
In order to analyze trends in numbers of purebred and cross-bred Deep Red over the years, a demographic analysis was performed including all calves born between 1970 and 2005. The population was split in eight classes, depending on the percentage of Deep Red genes in each calf that was born (1/8, ..., 8/8). Figure 1 shows that already in '80s and '90s some Deep Red calves were born. At that time, these animals had been registered as MRY, but after the national call in 2001, the animals had retrospectively been redefined as Deep Red. In the late '90s only 100 Deep Red cows were registered. Since then, 100 new purebred calves are born each year.

Most Dutch regional cattle breed populations are decreasing since the '80s. In this sense, the Deep Red breed distinguishes itself from other breeds, because it is only recently recorded as an official, separate breed. Even though the number of animals of the Deep Red breed has recently increased, the breed is currently still considered to be endangered.

After the national call in 2001, the foundation ‘Het Brandrode Rund’ bought as many unrelated bulls and cows as possible. The Deep Red breed is used for grazing management in several nature reserved, like Kraanvense Heide (Loon op Zand), De Groote Modderkolk (Loenen), Duno (Doorwerth) and Regulieren (Beusichem). For breeding in those territories a pool of circulating sires is used to avoid inbreeding.

**Table 1.** Number of bulls per breed with semen stored in Dutch Gene bank (December 16, 2008).

Breed	No. of bulls	Doses of semen
Deep Red	12	2,893
White Headed (Red)	59	3,737
White Headed (Black)	31	3,179
MRY	420	17,976
Holstein Friesian	7,037	91,317
Dutch Friesian	310	24,129
Friesian Red	75	13,973
Dutch Belted	10	476
Dutch Witrik	7	629



**Figure 1.** Total number of registered Deep Red calves born within each year with 1/8 to 8/8 Deep Red genes, between 1971 and 2008.

## Breeding goal

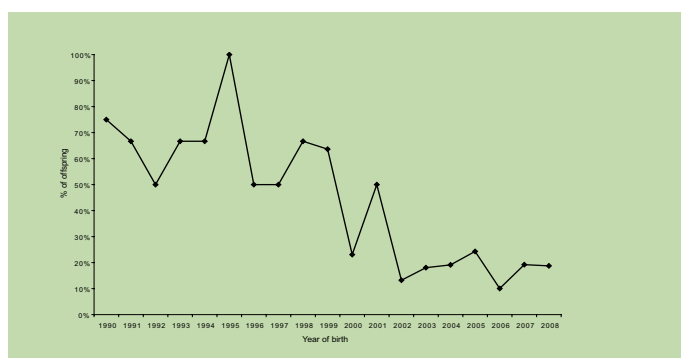
The breeding goal for Deep Red cattle is to breed dark red cattle with a white star, a white belly, white socks and a white tip on the tail. The cattle has to be undemanding and should be able to adapt easily to changing (weather) conditions in nature reserves. Their nature has to be calm and quiet. The breeding goal is: good fertility, even at older ages, with easy calvings, and the mothering capacities of the cows are also important.

## Genetic analyses

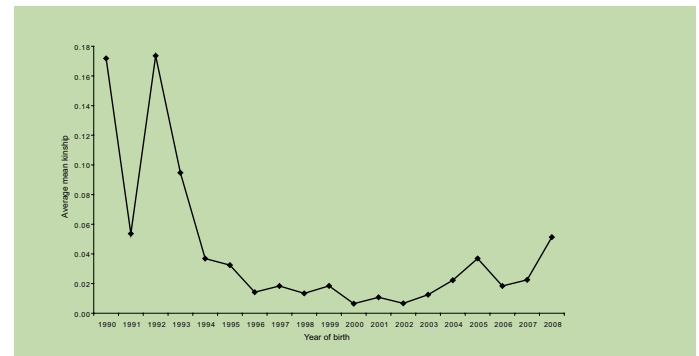
For long, there was only a limited number of bulls available that met all the breed criteria. Many sires carried Holstein genes or genes of beef cattle. With only a few sires available, there is a high risk that one single bull has a large number of offspring in a certain year. In 1995, only one purebred Deep Red bull was available and all purebred calves were offspring of this sire. Figure 2 shows that the proportion of offspring from the most popular sire is decreased to 20-30% since 2002. This affects the average mean kinship positively, and has also a positive effect on the presence of genetic diversity in the population.

The effect of high percentages of offspring resulted in an increased average mean kinship of the Deep Red population in those years, up to 17% in the early '90s (Figure 3). The average mean kinship of calves born in a certain year decreased during the '90s when more sires became available and stabilized early 2000.

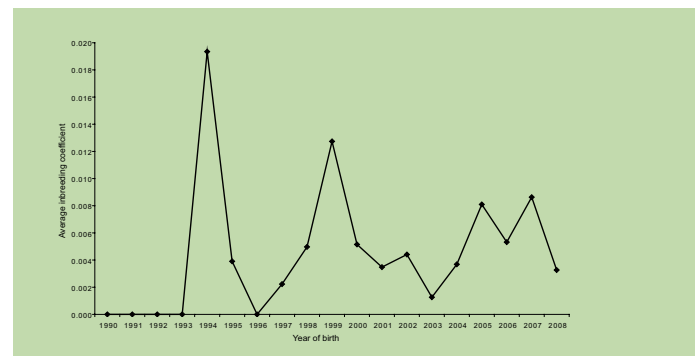
Figure 4 shows that the inbreeding coefficient in the purebred Deep Red population fluctuated a lot over the last decades, reaching a peak of almost 2% in 1994. An animal is inbred when both its parents are related to each other. To restrict inbreeding, it is important to limit an increase in the average mean kinship of a breed. In general, an increase of the inbreeding coefficient of 0.5% per generation is seen as acceptable. Based on the figures of 1990 and 2007 (Figure 4), the increase of the inbreeding coefficient is calculated to be 0.05% per year, which amounts to 0.28% per generation assuming a generation interval of 5.5 years.



**Figure 2.** Percentage of offspring of the most popular bull per year as a percentage of all Deep Red calves born in that year.



**Figure 3.** The average mean kinship of the purebred Deep Red population born within each year from 1990 and 2008.



**Figure 4.** Average inbreeding coefficient of purebred MRY animals born within each year between 1990 and 2008.

## Herd and breed comparison

An important question in the EURECA-project is why some regional cattle breeds still cope with the current conditions while other breeds decrease rapidly? What considerations may farmers have to choose specifically for Deep Red cows, or to continue with another breed (mostly Holstein-Friesian)? What are the strengths and weaknesses of this breed? We have looked at why some Deep Red farmers continue to use the breed, whereas others stop using Deep Red and continue farming with another breed.

For the EURECA-project 22 Deep Red farmers, 25 MRY farmers, and 23 White Headed farmers have been interviewed (Table 2). On average, the interviewed Deep Red farmers have 16 cows on 34 ha, of which 19 is owned. The MRY and White Headed farmers have on average more cows (56 and 39 cows, respectively) on more land (39 ha, of which 31 ha is owned and 50 ha,

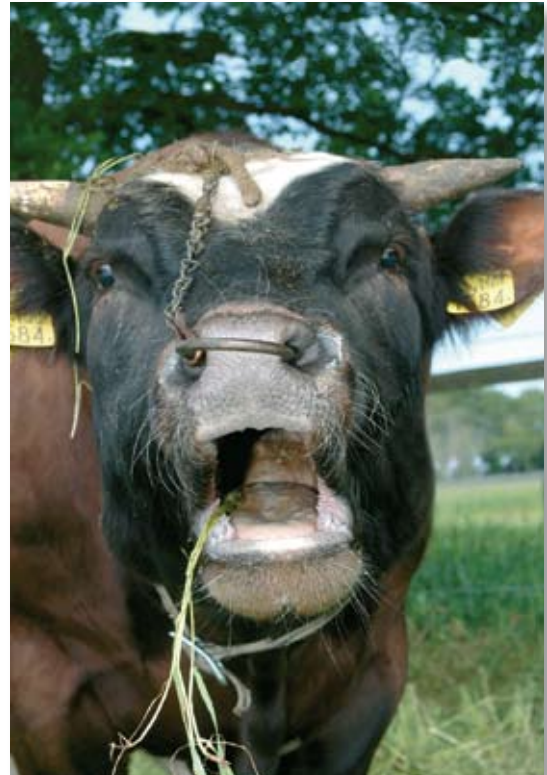
*“Extremely suitable for grazing management in nature reserves”*

of which 39 ha is owned, respectively). The minority (23%) of the interviewed Deep Red farmers obtain 75 to 100% of their income from the farm. For the MRY and White Headed the percentages income from the farm are 88% and 83%, respectively. Most Deep Red-farmers obtain a substantial part of their income from other sources than their farm.

The average age of the interviewed Deep Red farmers is 51 years, with a range between 39 and 61 years. 72% has a Bachelor-degree or lower and 28% has a Master-degree. The average age of MRY and White Headed farmers is comparable, 52 and 50 years, respectively. The percentage farmers with a Master-degree is higher for the White Headed and Deep Red-farmers, than for MRY-farmers.

*“You cannot make any money with Deep Red cattle”*

All three breeds are dual purpose breeds. MRY and White Headed are mainly used on dairy farms and Deep Red cattle is



kept mostly as suckling cows or as free roaming cows in nature reserves. All breeds are known for their durability, strong legs (with good claws) and fertility. They are all calm and strongly muscled. The Deep Red cows can cope with changing conditions and are less demanding compared to more high productive breeds.

#### **Farmers' opinion on Deep Red breed**

The appearance of the cow (color and type) are important characteristics for the interviewed Deep Red farmers. For 32% of the interviewed Deep Red farmers the history of the region and/or the tradition of the farm is the most important reason to

**Table 2.** Overview of herd and farmer characteristics per breed

	No. of herds	No. of cows	No. of ha (ownership)	% main income	Age (years)	% BSc-degree or lower
Deep Red	22	16	34 (19)	23	51	72
White Headed	23	39	50 (39)	83	50	67
MRY	25	56	39 (31)	88	52	88

## Eureca

The EURECA-project (Towards (self)sustainability of European REgional CATTLE breeds) started on May 1st, 2007. Partners from 10 European countries participate in the project (for more information, see: <http://www.regionalcattlebreeds.eu/>). The purpose of this project is to learn from each other in Europe to develop better strategies to preserve the regional cattle breeds. In total 15 cattle breeds from 10 different countries are being analyzed in detail; for The Netherlands we have chosen the MRY, the Groningen White Headed and the Deep Red cattle breeds.

keep Deep Red cattle. The quiet, calm and friendly nature of the cattle is the second most important reason for 25% of the interviewed Deep Red farmers. Third reason for 26% of the farmers is to keep the cows for grazing management in nature reserves.

When comparing Deep Red with the Holstein-Friesian, the interviewed farmers state that the milk production of Deep Red is low, but the fertility, durability, robustness, health and nature of the cows are scored better than that of HF. For 68% for the interviewed farmers, the profitability of the Deep Red cattle, compared to the Holstein, is seen as a weakness of the breed.

### Farmers' opinion on their farm

33% of the interviewed farmers do not expect that their herds will grow in the next 5 years. The rest expects to grow, by more than 100%. 38% of the farmers took the initiative to develop other activities and/or other products related to the breed. 43% has not taken those initiatives yet, but they are planning to do so.



The small population size might be a potential risk to maintain the Deep Red breed in the future, as well as outbreaks of diseases (e.g. Foot and Mouth Disease). Opportunities for Deep Red cattle are to develop a niche market and to use the cows as free roaming cows in nature reserves.

### Farmers' opinion on preservation

According to the interviewed farmers, the appearance and type of the breed are the most important reasons for preservation of the Deep Red breed. They suit extremely well as free roaming cows in nature reserves and can adapt easily to changing weather conditions. The breed organization is very active and promotes the strong points of the breed.

Technical support is for 90% of the interviewed farmers crucial to continue using Deep Red cattle on their farm. A breeding program and breeding value estimation has to be set up. Besides, it is also important to increase the familiarity with the breed of the consumers.

*“Nice cow, beautiful color”*

### SWOT

Using the information obtained in the interviews, a SWOT-analysis is performed to point out the strengths, weaknesses, opportunities and threats.

### Strengths-Weaknesses

Deep Red cattle has a recognizable appearance and is undemanding and (winter)hardy. The foundation ‘Het Brandrode Rund’ actively promotes the breed, and ‘Brandrode Rund’ is also used as a brand name as well.

The most important current weakness is the population size. It is still a small population, but strongly increasing during the past years. Due to this increase, selection hardly occurs and the attention for inbreeding is low. The maintenance of the breed is mainly depending on volunteers and hobby farmers. Profitability of Deep Red cattle is low because it is difficult to create a niche market for breed products with added values.

*“Perfect cow for inexperienced farmer”*

### Opportunities-Threats

The non-standard use of Deep Red cattle is also the biggest opportunity for the breed to distinguish from other breeds. Deep Red cattle is mainly used for grazing management in nature reserves, for tourism and on green care farms. The good-tempered cows suit well as ‘pet cows’. Because the cows are undemanding and can cope well with all different conditions, the inexperienced farmers can farm with these cows as well.

Another important opportunity is to make money with special breed related products. This will improve the profitability and also the brand awareness of the breed. Changes in the European policy on sustainability, environment and biodiversity can strengthen the position of Deep Red cattle as a non-production breed.

The most important possible threat for the Deep Red cattle is the small population size, without a clear breeding goal for either dual purpose cattle, beef cattle, suckling cows or free roaming cattle in nature reserves. Besides, because the foundation aims at increasing the population, no selection of bulls and heifers occurs in young generations. As a result, it is hard to specialize the breed in one of the directions and profitability of the breed will stay low. Maintenance of the breed remains

to be depending on hobby farmers and the policy of nature or landscape foundations. In the long end, this might turn out to be a threat for the breed as well.



## Conclusions and recommendations

Deep Red cattle are friendly cows that are extremely suitable for grazing management in nature reserves. The strong characteristics of the breed are the longevity, robustness, nature and ability to cope with changing conditions. The cows are undemanding and (winter)hardy, and can be kept outdoors all year round.

It is recommended to develop a breeding program, with a clear breeding goal and breeding structure. One can, for instance, think of setting up a breeding circle for the sires. By stimulating herd book registration and add missing records in the pedigree, more information from the cows will become available for breeding and for maintenance of the Deep Red population.

One of the most important opportunities is to promote the breed to a large audience of potentially interested (hobby) farmers to (1) keep Deep Red cattle and to (2) develop and sell breed related products. Developing niche markets, using the cultural-historical value of the breed and disseminate the brand name 'Het Brandrode Rund' can be very valuable. Designing a logo for this purpose is recommended.



## Colophon

This breed assessment is compiled by Yvette de Haas, with help of Rita Hoving-Bolink, Myrthe Mauricevan Eijndhoven, Debbie Bohte-Wilhelmus, Henk Sulkers and Sipke-Joost Hiemstra. More information about the EURECA-project can be found on the website: [www.regionalcattlebreeds.eu](http://www.regionalcattlebreeds.eu). Veeteelt is acknowledged for the photos. The farmers, the foundation 'Het Brandrode Rund' and CRV are acknowledged for providing the data.

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