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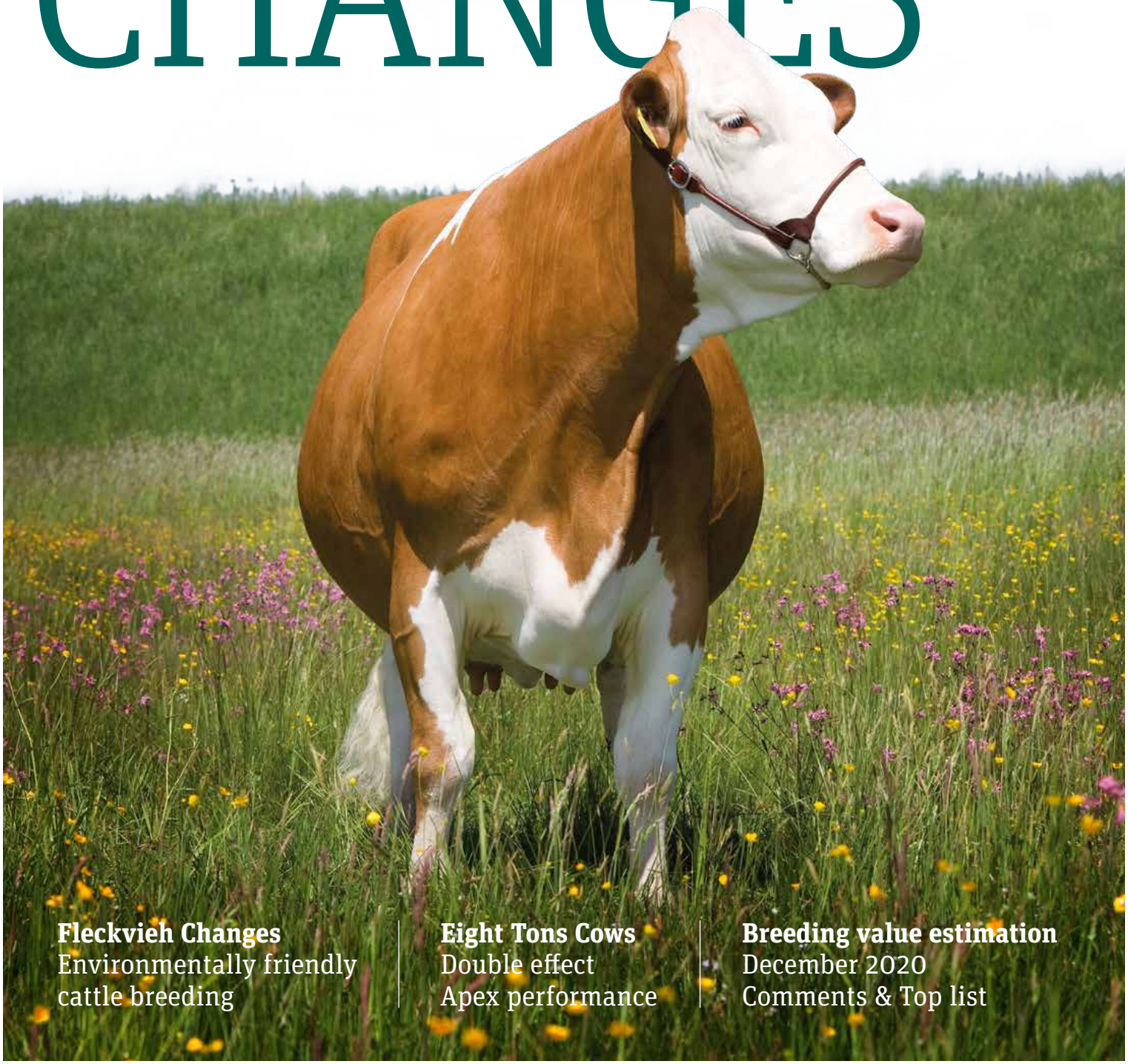
FLECK VIEH CHANGES



Fleckvieh Changes
Environmentally friendly cattle breeding

Eight Tons Cows
Double effect
Apex performance

Breeding value estimation
December 2020
Comments & Top list

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CONTENT

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FLECKVIEH CHANGES

Ideal genetics for environmentally friendly cattle breeding

ING. JOHANN TANZLER, FLECKVIEH AUSTRIA – ZWETTL, AUSTRIA

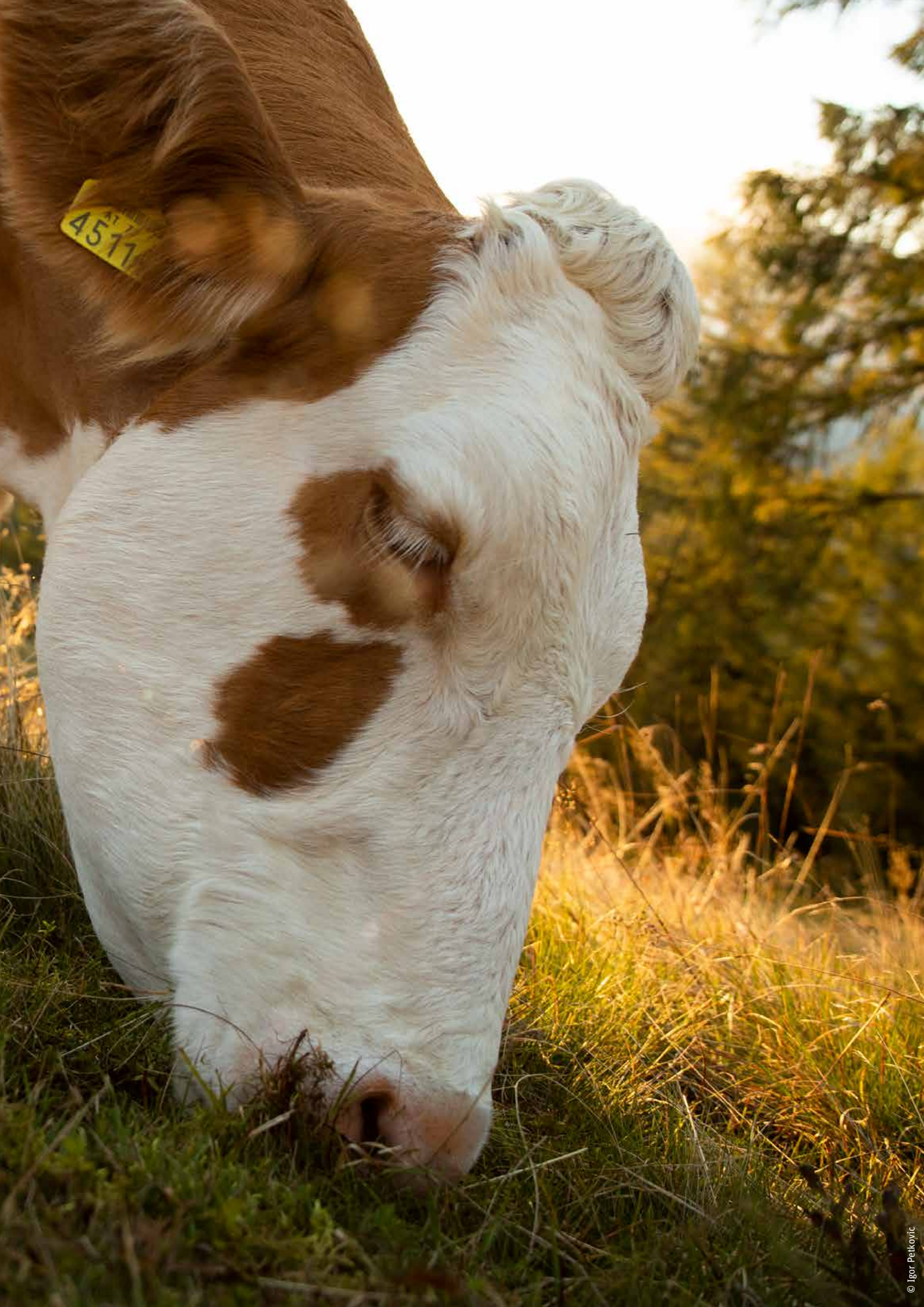


Fig. 1: Fleckvieh is three to four times more climate-friendly.

The megatrends currently affecting agriculture have the potential to become real game changers for the entire cattle breeding industry. They not only influence the breeding goals for each population, but also shift the valuations between the major breeds. New rules of the game are emerging and ignoring them for too long will only lead to a dead end.

Especially in breeding, it is immensely important to act with foresight in order to limit abrupt changes of course as much as possible so that now breeding progress is wasted. Today, acting with foresight not only means anticipating future developments, but also to communicate the quality and the positive aspects of such breeding work, with a view to reconciling the needs and welfare of the planet, of society and of farmers and breeders.

The climate protection megatrend has arrived in cattle breeding

Even in agriculture, it is by no means a novel idea to examine and optimise the various production systems with regard to their different greenhouse gas emissions, but the breeding organisations have only recently begun to actively address this issue.
The main reason for this prolonged reluctance was probably the fear that an offensive approach would add fuel to the public debate on the high methane emissions of cattle. At the same time, it has been clear for a long time that genetics plays a significant role in this regard.

» Beef production with cows from dairy herds is three to four times more climate-efficient. «

Jack Britt, North Carolina Study

As early as 2010, a study in North Carolina showed that meat production from dairy herds is three to four times more climate-friendly in terms of greenhouse gas emissions than meat production from suckler cows. And already at that time, the author made a recommendation that, to my knowledge, has not yet been implemented: Beef produced in a climate-friendly way should also be labelled as such on supermarket shelves.

Three to four times more efficient – this represents a real breakthrough, considering that scientists today are looking for improvements in the range of less than a percentage point, with enormous amounts of money going into research on this topic.

And a real breakthrough when you consider that in Austria, we have been producing milk and meat with Fleckvieh cattle for many years using exactly this system. The climate protection megatrend is propelling the Fleckvieh breed into an absolute top position as the genetic foundation for future-oriented dairy farms.

Fleckvieh is different

Fleckvieh is different, and this is an important factor to consider in order to put its alternative genetics to successful use. Fleckvieh breeding stands for milk production based on robust cows. We are convinced that this is cost-effective – and we would even go so far as to claim that today's top milk yields can only be further increased in a reasonable way if robust cows are used. As far as Fleckvieh is concerned, muscles make

the milk. The ideal Fleckvieh type is characterised by a certain elegance of the muscularity, which ensures many years of milk production and invariably yields calves that are ideally suited for fattening cattle.

This double effect, milk and meat, is the key to environmentally efficient production, but it also gives farms an important additional source of income. Especially if they either fatten the calves themselves or are able to sell them on to specialised fattening farms at a price that corresponds to their true value, as is usually the case in Central Europe.

Fleckvieh cattle make excellent use of the feed offered to them, both during the growth and production phases. Dual purpose is further enhanced by another genetic trait of the breed: The individual muscularity of the cows increases gradually from lactation to lactation, so that even older cows remain stable and ultimately produce excellent carcasses.

How can I best benefit from modern breeding techniques?

For many dairy breeds, conventional selection methods are being called into question, not least because of the issues outlined above. Economic as well as environmental factors are increasingly pushing farmers to use beef bulls in order to produce as few "inferior usable" calves as possible. One option is to use sexed female and male semen, but this requires a certain amount of extra work and a reasonably high level of herd fertility.

Instead, we recommend that Fleckvieh breeders take a completely different path, namely that of pure breeding. If you want to make full use of the possibilities offered by the latest techniques, intensive selection should start already with the calf. Thanks to the increasingly accurate genomic breeding value estimation, this process is now very efficient, making it increasingly popular.

In the case of Fleckvieh cattle, the principle of pure breeding should therefore be applied in order to obtain as many breeding variants as possible. You will be amazed how often calves with average ratings shoot to the top of the rankings after typing. No selection resource should go to waste – Fleckvieh heifers are in demand all over the world and even negative variants are still ideally suited for fattening large cattle.

By using female-sexed semen in the better half of the herd, you can further enhance the positive effect of genomic selection. Moreover, the genomic breeding values are a big help in mating and facilitate the rapid creation of a harmonious herd that will meet all your expectations.

Fig. 2: Increased muscularity from lactation to lactation.

Fig. 3: Cow milk

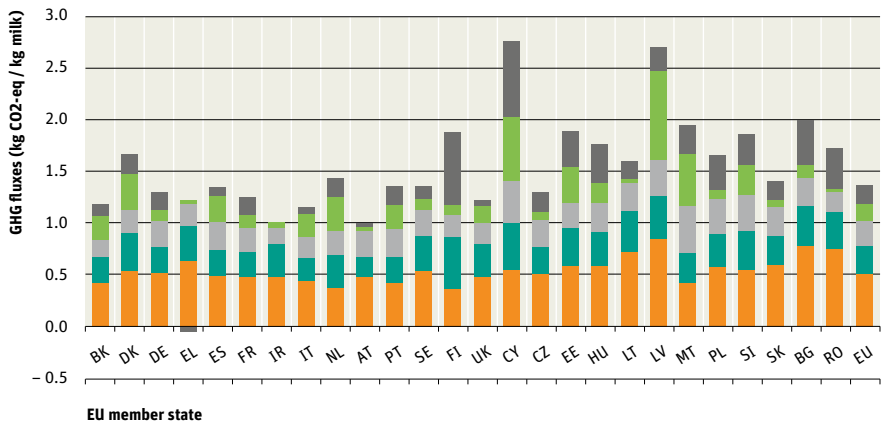


Fig. 4: Beef

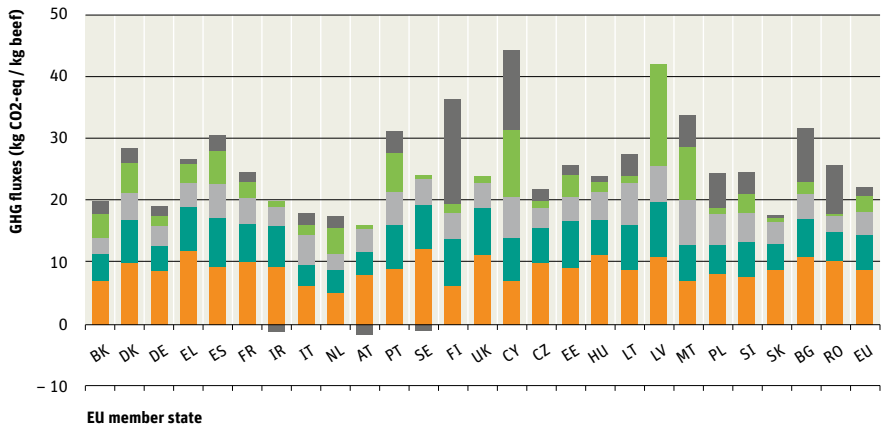


Fig. 3 & 4: In Austria, Fleckvieh accounts for 75% of all cattle, which means milk and meat production to a very high standard. In terms of the quality of raw milk, Austria has been at the top of the field for a long time, and the same is now also true for the climate impact of its cattle industry. Source: EU JRC Evaluation of the Livestock sector's contribution to the EU greenhouse gas emissions (GGELS).

Fleckvieh AUSTRIA Breeding programme – *continuously on the road to success*

DR. CHRISTA EGGER-DANNER, ZUCHTDATA – VIENNA, AUSTRIA

Around 20 years ago, based on the results of a research project supported by the then Ministry of Sustainability and Tourism to optimize the breeding programmes for Fleckvieh and Braunvieh, it was decided to put the results into practice in the form of the »FLECKVIEH AUSTRIA« breeding programme.

The people responsible for the Fleckvieh breeding in Austria have continuously developed the breeding programme together with representatives of science. Innovations and new breeding possibilities were and are taken up continuously, the benefits are evaluated and, if necessary, quickly integrated into the breeding programmes. This article gives a brief overview of the performance development of Fleckvieh AUSTRIA in the period from 1999 to 2019. Furthermore, reference is made to the implementation of the breeding programme in the control year and current challenges and the future need for further developments are discussed.

Tab. 1: Development of phenotypic performance at FLECKVIEH AUSTRIA in the past 6 years

	2014	2015	2016	2017	2018	2019
Milk kg – HB (herd book) all lactations	7,214	7,220	7,370	7,393	7,713	7,790
Fat and protein kg	544	545	558	560	584	590
Carcass Percentage	57.3	57.3	57.4	57.2	57.2	57.3
EUROP trade class E-U %	63.2	61.3	60.0	60.3	64.8	65.5
Number of calving	3.96	3.97	3.98	3.97	4.02	4.04
Productive life (years)	3.80	3.80	3.80	3.81	3.86	3.89
Calving interval (days)	390.3	390.0	391.0	388.3	388.3	388.5
Insemination index	1.9	2.0	2.0	2.0	2.1	2.2
Cell count (in 1000)	179.7	180.1	176.6	175.5	181.0	183.3
Lifetime yield in kg	27,695	28,114	28,533	28,846	29,825	30,689

Performance development over the past 20 years Figures 1–4 show the development of lifetime yield in milk-kg, fat-protein-kg, average lactation yield of all herd book cows in milk-kg and the productive life over the past 20 years (source: ZuchtData annual reports). It can be seen that all breeds have succeeded in massively increasing their lifetime yield. For the Fleckvieh cows that left in the 2019 control year in Austria, it was 30,689 milk-kg and 2,344 fat-protein-kg. The productive life of the Fleckvieh cows (FV) that left in 2019 was 3.89 years with an average of 4.04 calvings. The increase in lifetime yield from 1999 to 2019 in milk-kg is 9,378 kg for the Fleckvieh, 5,084 kg for the Braunvieh (BV), 6,304 kg for the Holstein (HF). A similar development can be seen in the amount of fat and protein. Here the increase in the average fat-protein-kg achieved by Fleckvieh is 716 kg, i.e. Fleckvieh cows leaving in 2019 achieved an average of 2,344 kg, Fleckvieh cows leaving in 1999 achieved an average of 716 kg less with 1,629 fat-protein-kg. These increases in the case of Fleckvieh could be achieved by a large increase in milk yield (Figure 3) in combination with a stabilization or slight improvement in productive life (Figure 4) over the last few years.

Table 1 gives a more detailed insight into the development of various parameters from the yield testing at FLECKVIEH AUSTRIA in the past 6 years. It is striking that the average milk yield of all herd book cows rose by around 570 kg between 2014 and 2019, i.e. a little more than 100 kg per year. The fitness and meat yield has remained roughly stable, the productive life has increased slightly.

Breeding progress increases continuously

Regardless of environmental influences (sales prices, feed prices, drought...), the genetic trends show the absolute performance of how the genetic potential of the Fleckvieh breed develops. The development of the partial breeding values (Figure 5) confirms that despite the large increase in the TMI (Total merit index) and the milk index, the fitness characteristics could be maintained on average. The same can be seen in the beef index. The genetic trends of individual breeding values in the fitness and beef sector are also consistently positive (ZuchtData, 2020).

Key figures from the FLECKVIEH AUSTRIA breeding programme

In order to achieve the breeding goal with the desired improvements, the consistent implementation of the breeding programme is essential. Every year, various evaluations are carried out by ZuchtData to monitor the breeding programmes. Some key figures on the status of implementation at FLECKVIEH AUSTRIA (ZuchtData, 2020) are listed here.

In 2019, those responsible for Fleckvieh breeding in Austria decided to further develop the FLECKVIEH AUSTRIA breeding programme. Percentage of inseminations with genomic young bulls of 75 percent of the herd book cows is now defined as a target across Austria. As Figure 7 shows, the percentage of inseminations with young genomic bulls has increased continuously since 2010. On average across Austria, the proportion of young bull inseminations in the herd book cows of Fleckvieh is 55.4 percent. There are relatively large differences between the associations. The proportion of breeding associations in Austria varies between 32.4 and 76.7 percent in the 2019 control year.

In the targeted mating, de facto almost only young genomic sires are currently used. The proportion of targeted insemination of candidate mothers with young genomic sires as bull fathers was increased to 90 percent in the breeding programme. With this further development, the breeding progress to be achieved for the various trait complexes should be further increased. Results from

Fig. 1: Development of lifetime yield in milk-kg in Austria

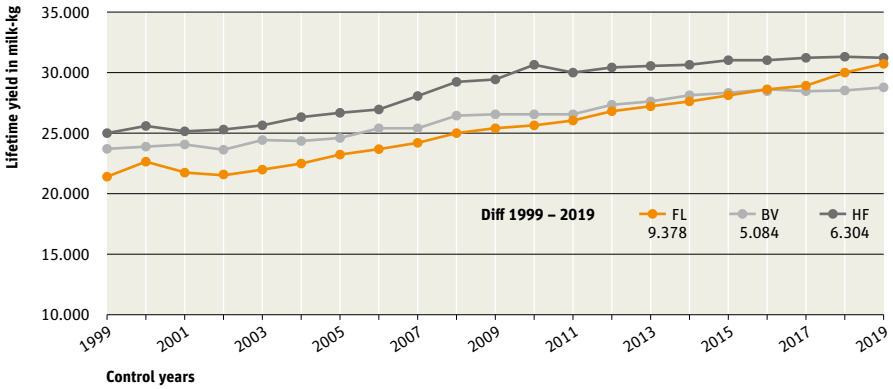


Fig. 2: Development of lifetime yield in fat-protein-kg in Austria

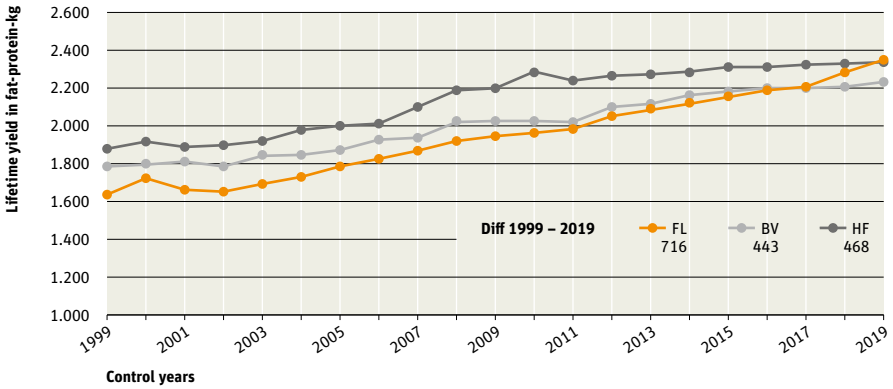


Fig. 3: Development of the lactation yield of all herd book cows in milk-kg in Austria

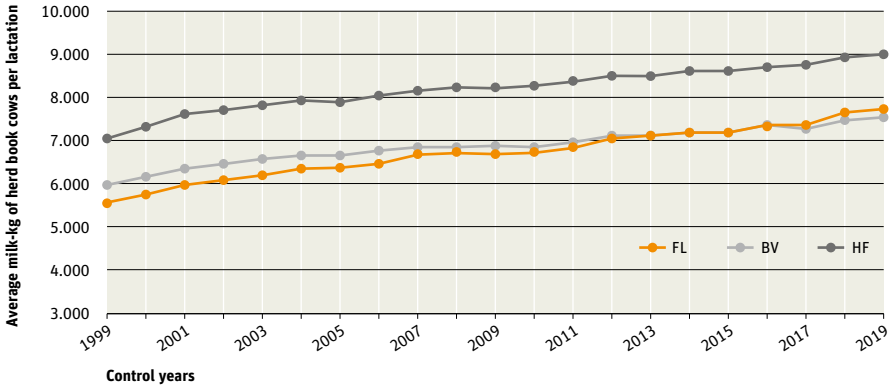
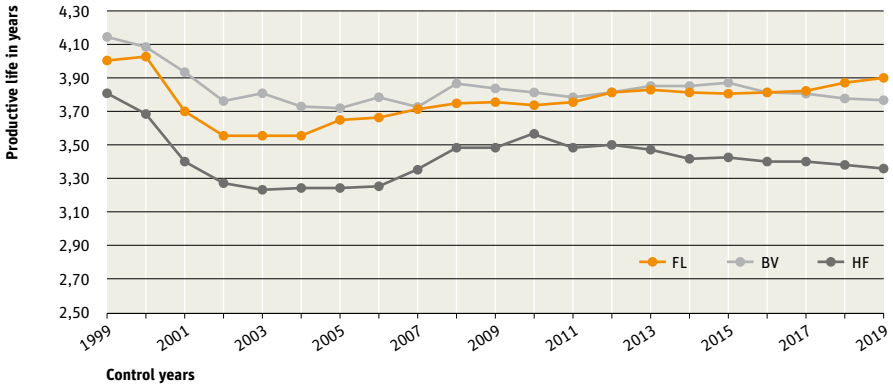


Fig. 4: Development of the productive life (in years) in Austria



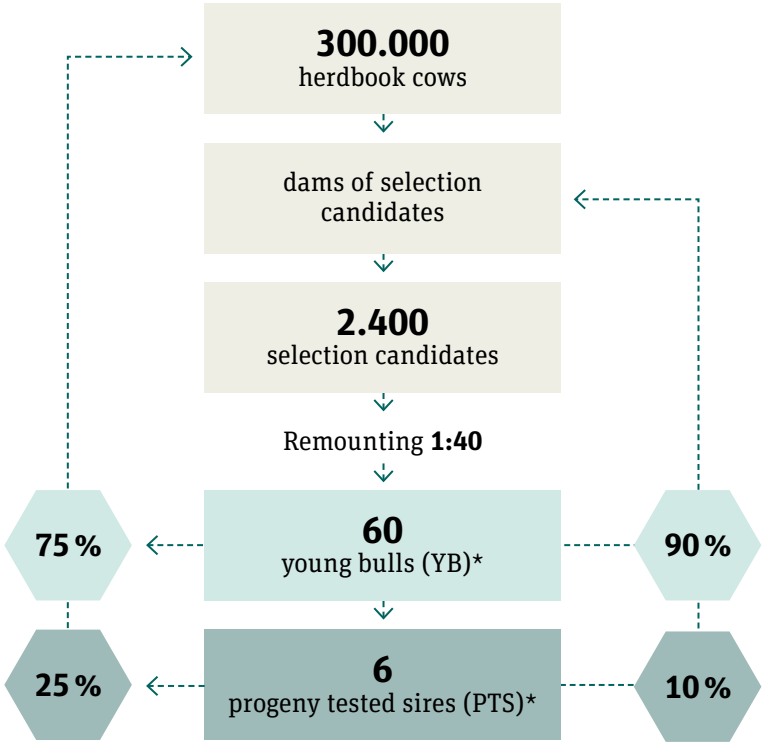
various international studies confirm the success of genomic breeding programmes. The most important factor influencing breeding progress is the generation interval. This can be shortened by a higher proportion of matings with young sires, thus increasing breeding progress. This aspect is now taken into account with the current further developments in the breeding programme. The reliability of the genomic breeding values is also essential. This has been continuously improved in the 10 years since genomic selection was introduced. The prerequisites for genomic breeding values are the corresponding phenotypes (yield information), the genotypes and the corresponding methodological developments.

What developments can be expected?

The bulls used today determine the cows of tomorrow. The average breeding values of the insemination bulls used provide information on the expected breeding developments. The Fleckvieh herd book cows were inseminated with bulls with an average total merit index of 126.8 points in control year 2019. The average milk index is 120.8. Fitness and beef index are slightly positive at 109.9 and 105.8 respectively. In the fitness area, the average fertility value is in the critical range. In terms of milkability, further improvements can be expected with an average breeding value of 107.1. The udder health should be maintained with an average udder health value of 106.9.
For the conformation, an average breeding value of 104.8 in the frame over all inseminations suggests a tendency towards slightly larger cows. The muscularity is constant (average breeding value 100.9), the feet & legs will continue to improve (107.5). With an average of 114 points for the udder breeding value, further significant improvements can be predicted for the udders. In principle, the analysis of the bulls used suggests that stable continuous improvements can be expected. The milk yield will continue to increase, the fitness characteristics should also improve slightly. It should be possible to maintain carcass quality.

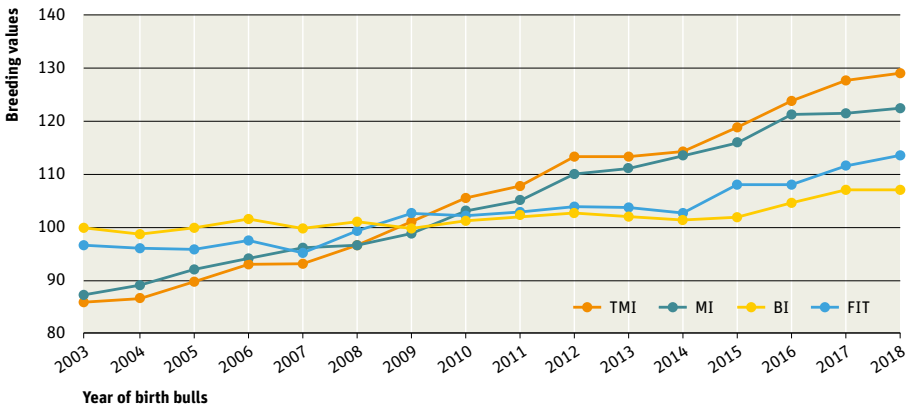
The most frequently used bull in 2019 is MINT with 18,421 inseminations on Fleckvieh herd book cows. Top performers among the genomic young bulls were HERMELIN, WEISSENSEE and HOOLIGAN. Between 14,049 and 16,888 inseminations were performed with these three bulls in 2019 (Tab. 2).

Fig. 6: FLECKVIEH AUSTRIA Genomic breeding programme



* additional use of foreign genetics

Fig. 5: Genetic trend of TMI (Total merit index) and the partial breeding values, milk index (MI), beef index (BI) and fitness index (FIT) of Austrian bulls (birth cohorts 2003 to 2018)



TMI = total merit index, MI = milk index, BI = beef index, FIT = fitness index

Challenge of "new features"

Genomic breeding values for these characteristics are necessary in order to be able to better estimate the hereditary potential in the health sector when selecting the young animals (young genomic sires and also female breeding calves) for further breeding. Health information and genotypes of tens of thousands of animals are needed here. In the case of Fleckvieh, intensive work is currently being carried out in Austria and Germany on the development of this cow sample for characteristics from the fitness and efficiency range. The aim here is to provide the basis for genomic health breeding values for already existing conventional health breeding values (mastitis, milk fever, cysts and early fertility disorders) on the one hand, and on the other hand to develop genomic breeding values for areas that are currently not considered in the overall breeding value in Fleckvieh, such as hoof health, metabolic stability and feed efficiency. The main challenges here are the available phenotypes. Within the framework of various projects such as Klauen-Q-Wohl (AT), FoKUHs (AT), D4Dairy (AT+DE), FleQS (DE), KlauenFitNet (DE), Fleckfficient

(DE) or KlauenCheck BW (DE), and others Fleckvieh is working on these trait complexes. The sustainable availability of various health and efficiency information (veterinary diagnoses, hoof care data, relevant laboratory results, relevant information from other surveys, auxiliary features from automatic milking systems, animal sensors, feeding ...) is essential. It is important to find solutions that enable the use of this data for breeding. For the profitability and competitiveness of the Fleckvieh breed, but also for individual operations, it is important that the potential for improvements in breeding is used and that there is continuous further development. For Fleckvieh as a dual-purpose breed, characteristics of meat quality ("enjoyment factor" for consumers) are becoming increasingly important. A feature of particular interest in the future is feed efficiency, which, in addition to having an impact on economic viability for the individual farmer, also represents a means of reducing the environmental impact of cattle farming. Here, however, just as for the methane emission characteristic, it is particularly difficult to generate reliable data for genomic breeding value estimation beyond research stations. Here the Fleckvieh breeding organizations will be challenged to find solutions together across national borders.

Summary

The developments over the past 20 years show that those responsible for the Fleckvieh breeding have continuously and consistently developed the Fleckvieh breed over the years. Together with its international partners in Fleckvieh breeding, FLECKVIEH AUSTRIA has very quickly taken up new technological possibilities (e.g. genomic selection) and implemented them into routine. Automation and digitization offer new opportunities in breeding for "new characteristics". Internationally, reproductive technologies are increasingly used in breeding programmes. Competition also within the Fleckvieh breed accelerates further developments and the pursuit of improvements. It is essential that the direction is right and that the FLECKVIEH AUSTRIA breeding programme provides the farmers with the basis for successful, sustainable farming with the Fleckvieh breed in the area of conflict between society's requirements for high product quality, animal health, animal welfare and environmental impact and international competition.
It is important to continue to meet these challenges and to find solutions together with the partners along the value chain that will continue to enable and strengthen cattle breeding. The developments over the past 20 years make us confident that this will continue to be successful.

Fig. 7: Percentage of young genomic bull inseminations in herd book cows at FLECKVIEH AUSTRIA in the period from 2010 to 2019

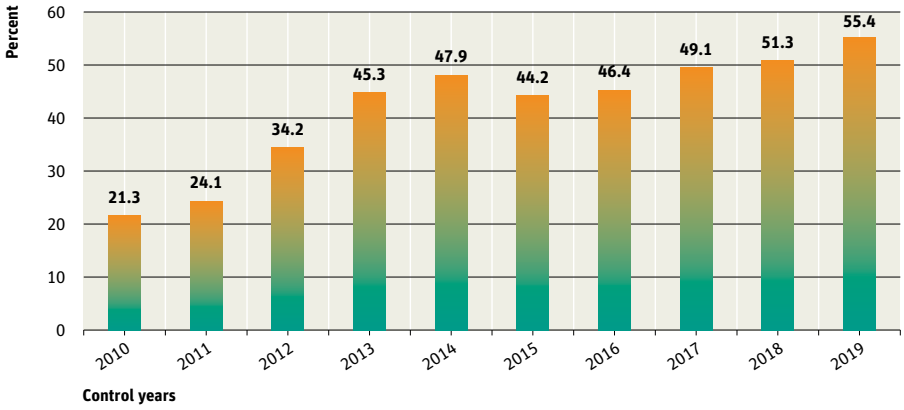
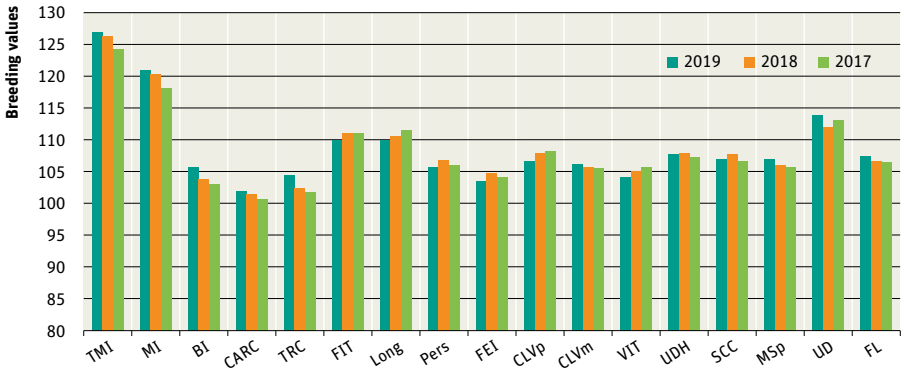


Fig. 8: Average breeding values of inseminations of Fleckvieh herd book cows in the control years 2017–2019 (ZuchtData, 2020)

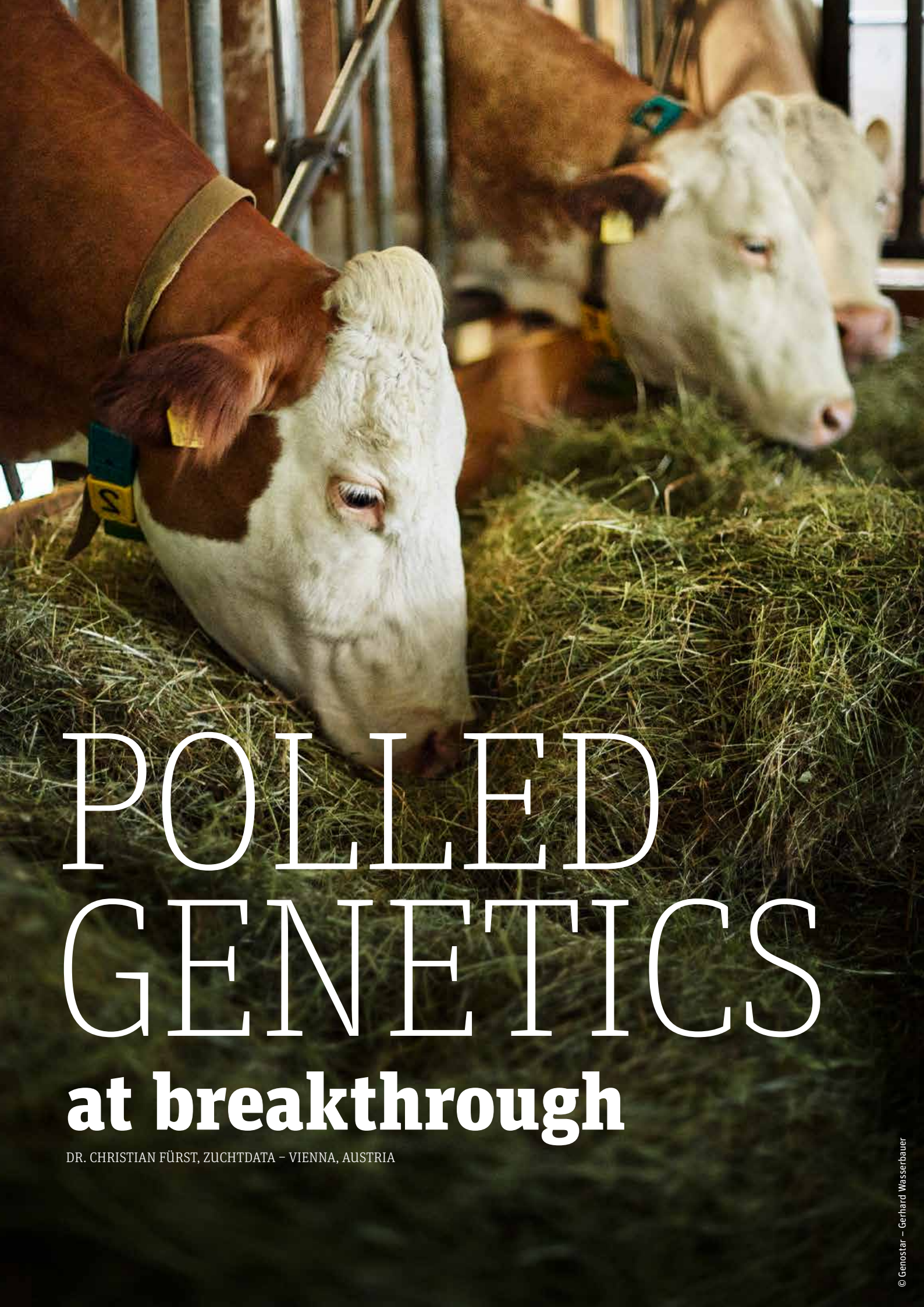


TMI = total merit index, MI = milk index, BI = beef index, CARC = carcass percentage, TRC = EUROP trade class, FIT = fitness index, Long = longevity, Pers = persistency, FEI = fertility index, CLVp = paternal calving ease, CLVm = maternal calving ease, VIT = vitality index, UDH = udder health index, SCC = somatic cell count, MSp = milkability/milking speed, UD = udder , FL = feet and legs

Tab. 2: The 20 most frequently used bulls in the FLECKVIEH AUSTRIA breeding programme in control year 2019 (ZuchtData, 2020)

Rank	Name	Number	Year of birth	No. of insemin.	TMI	MI	BI	FIT	PB*	Line name
1	MINT	DE 09 48271424	2012	18,421	120	110	94	114	Y	MORELLO
2	HERMELIN	DE 09 51697464	2016	16,888	127	131	107	98	N	HUCH
3	WEISSENSEE	AT 364.261.168	2017	14,049	133	124	102	120	N	HOREX
4	HOOLIGAN	AT 357.392.838	2016	14,012	127	129	106	97	N	HUCH
5	HURLY	DE 09 47424346	2012	13,997	129	113	113	116	Y	HUCH
6	EVERGREEN	DE 09 48470307	2013	13,678	120	118	101	103	Y	EGEL
7	METTMACH	AT 294.555.138	2017	12,561	125	124	106	108	N	MORELLO
8	WOBBLER	DE 09 46673832	2011	11,865	128	113	108	115	Y	HOREX
9	REMMEL	DE 09 46581932	2012	11,794	115	117	114	91	Y	ROMEN
10	SEHRGUT	DE 09 47357352	2012	9,327	130	122	98	114	Y	STREIK
11	WABAN	AT 806.062.819	2012	9,152	137	121	97	123	Y	HOREX
12	HERZSCHLAG	AT 303.304.428	2014	9,066	124	133	109	83	Y	HUCH
13	GS W1	AT 039.867.568	2017	8,921	124	118	110	108	N	HOREX
14	MAHANGO	DE 09 48097266	2013	8,755	127	119	111	107	Y	MORELLO
15	VADIN	AT 400.591.222	2013	7,995	121	105	121	110	Y	REDAD
16	MOGUL	DE 09 47679302	2012	7,521	117	106	110	112	Y	MORELLO
17	WALOT	AT 461.672.318	2010	7,171	108	109	97	101	Y	HOREX
18	VILLEROY	DE 09 47673487	2012	7,069	132	113	118	116	Y	REDAD
19	WOOKIE	DE 09 52511381	2016	6,922	117	106	99	122	N	HOREX
20	ROYAL	DE 09 46221893	2011	6,830	125	109	114	113	Y	ROMEN

*PB = Proven bull / Y = yes, N = no



POLLED GENETICS

at breakthrough

DR. CHRISTIAN FÜRST, ZUCHTDATA – VIENNA, AUSTRIA

The breeding of naturally (genetically) polled animals has experienced a massive boom in the last decade due to the possibilities of genomic selection. This article shall give an overview of the current status of breeding Fleckvieh without horns.

Inheritance of polledness

In dairy and dual-purpose breeds, two different mutations on chromosome 1 are currently known to cause natural (genetic) polledness. The Celtic polledness is mainly found in meat and dual-purpose breeds, the Friesian mainly in Holstein and Jersey. Both variants occur in the Fleckvieh, whereby the Friesian variant is strongly on the rise.
In the polled gene locus (P-locus, P=polled) two different forms of alleles occur, whereby the allele P is dominant over the allele p and thus suppresses normal horn formation.

PP = homozygous polled → phenotypically polled
Pp = heterozygous polled → phenotypically polled
pp = horned

For some years now, the determination of horn status has been carried out almost exclusively by genetic testing, mostly in connection with genomic breeding value estimation. The genetic test results are labeled with an asterisk (*), i.e. PP*, Pp* and pp*.

In addition to the P-gene locus, there is also a gene locus that is responsible for the formation of scurs, the S-locus (S = scurs). The S-locus overlaps the P-locus and can lead to later development of scurs in various forms in heterozygous animals (Pp). Labeling is done with PS or, if a P-gene test is available, with P*S. There is currently no genetic test for the S-locus itself.

Figure 1 shows the development of the insemination percentage with naturally polled bulls (homozygous and heterozygous). The proportion has increased significantly in the last 10 years and is currently around 20 percent. The increasing importance can also be clearly seen from the development of the allele frequencies (Fig. 2). With the most current insemination bulls every 4th bull is already homozygous or heterozygous polled. In the female population, the polled allele frequency rises with a time delay, but also increases significantly.

Inheritance pattern

Horn status WParent 1	Horn status Parent 2	Horn status offspring Genotype	Phenotype
PP	PP	100% PP	100% polled
PP	Pp	50% PP, 50% Pp	100% polled
PP	pp	100% Pp	100% polled
Pp	Pp	25% PP, 50% Pp, 25% pp	75% polled, 25% horned
Pp	pp	50% Pp, 50% pp	50% polled, 50% horned

Fig. 1: Development of inseminations with polled bulls (PP, Pp, PS)

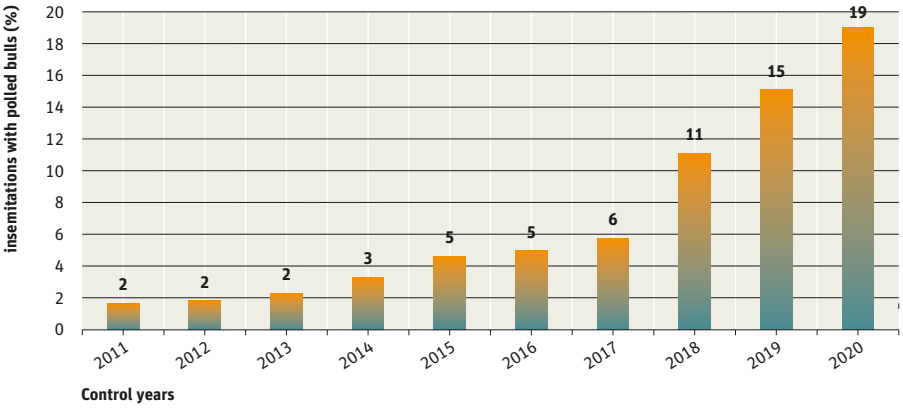
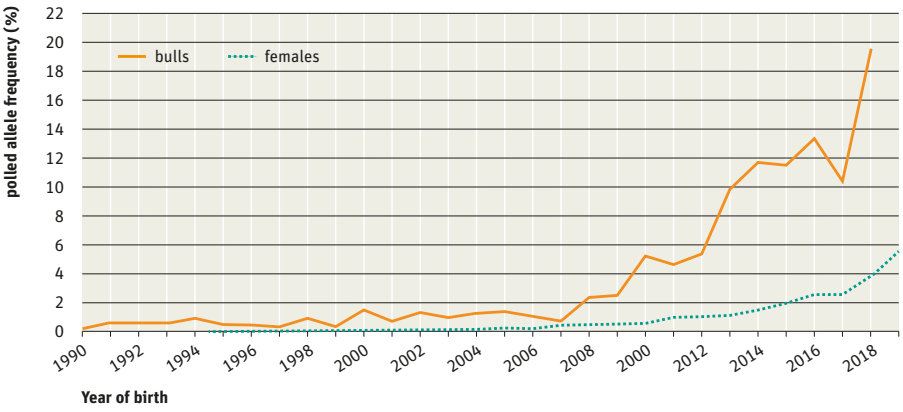


Fig. 2: Development of polled allele frequency for insemination bulls and females.



Genetic level with a need to catch up

The differences in the genetic level of the male calves (candidates) examined within the framework of the joint breeding value estimation Germany-Austria-Czech Republic and the Fleckvieh bulls purchased from insemination stations divided into horned (pp), heterozygous (Pp and PS) and homozygous polled (PP) by the example of the 2018 birth cohort are shown in Table 1. The 2018 birth year is the most recent insemination bull cohort, with one or the other bull likely to be added in the next few weeks.
From this evaluation it can be seen that the heterozygous polled animals show only a relatively low lag to the horned animals, which is about 2-4 points in TMI (total merit index), MI (milk index), milkability and also in the udder. In the case of homozygous polled animals, however, the gap is much greater and lies on average between about 4 and 8 breeding value points in these characteristics. With the homozygous insemination bulls there are also disadvantages in the fitness area. If about every 40th of the horned candidates were bought for insemination, it was about every 30th for Pp and about every 15th for PP animals. This means that selection in the polled segment can currently be much less stringent and therefore a genetic lag will remain for even longer.

Table 2 shows the average breeding values of the inseminations in the control year 2019, differentiated according to genetically polled (homozygous or heterozygous) and horned bulls. The results are mostly similar

Table 1: Differences in the estimated breeding values between horned (pp), heterozygous polled (Pp) and homozygous polled (PP) candidates and insemination bulls born in 2018.

	Candidates					Insemination bulls				
	pp	Pp	PP	Pp-pp	PP-pp	pp	Pp	PP	Pp-pp	PP-pp
No.	12217	2444	386			312	86	29		
TMI	115.7	113.7	108.8	–2.0	–6.9	128.5	125.7	122.1	–2.8	–6.4
MI	113.2	110.7	104.5	–2.5	–8.7	123.2	120.6	118.2	–2.6	–5.0
BI	102.9	103.7	105.0	+0.8	+2.1	105.6	105.8	106.8	+0.2	+1.2
FIT	106.2	106.0	105.8	–0.2	–0.4	112.3	111.0	107.9	–1.3	–4.4
Mkg	501	436	200	–65	–301	854	771	708	–83	–146
F%	–0.02	–0.03	–0.01	–0.01	+0.01	–0.01	0.00	–0.01	+0.01	0.00
P%	0.00	–0.01	0.00	–0.01	0.00	0.01	–0.01	–0.03	–0.02	-0.04
NDG	105.0	106.8	106.8	+1.8	+1.8	107.7	109.6	111.8	+1.9	+4.1
CARC	100.2	100.0	101.4	–0.2	+1.2	102.5	101.5	101.3	–1.0	–1.2
TRC	102.6	103.3	104.5	+0.7	+1.9	103.9	104.4	105.2	+0.5	+1.3
Long	106.5	105.6	105.2	–0.9	–1.3	112.8	111.1	107.5	–1.7	–5.3
Pers	103.6	102.9	103.6	–0.7	0.0	108.0	106.5	104.0	–1.5	–4.0
FEI	102.0	102.4	103.8	+0.4	+1.8	104.7	103.0	103.2	–1.7	–1.5
CLVp	103.9	105.1	105.1	+1.2	+1.2	105.4	106.7	107.2	+1.3	+1.8
CLVm	103.9	105.1	104.5	+1.2	+0.6	105.7	107.0	107.8	+1.3	+2.1
VIT	102.1	103.1	102.3	+1.0	+0.2	104.3	105.0	104.2	+0.7	–0.1
UDH	104.7	104.2	102.7	–0.5	–2.0	108.1	108.6	104.0	+0.5	–4.1
SCC	103.8	104.1	102.8	+0.3	–1.0	106.9	108.0	104.2	+1.1	–2.7
Msp	104.0	100.2	96.7	–3.8	–7.3	107.5	103.3	103.4	–4.2	–4.1
FR	103.0	104.7	103.9	+1.7	+0.9	103.4	105.1	108.7	+1.7	+5.3
MU	99.3	103.1	105.3	+3.8	+6.0	98.8	102.8	104.2	+4.0	+5.4
FL	106.1	105.7	104.7	– 0.4	–1.4	108.5	108.1	106.0	–0.4	-2.5
UD	109.2	106.0	102.6	– 3.2	–6.6	115.1	113.4	107.6	–1.7	-7.5

to those shown in Table 1. The genetic level of insemination with polled bulls is clearly below average in terms of milk yield, udder quality and above all milkability. Advantages are particularly evident in the meat characteristics and in the muscularity.

Table 3 shows the most widely used polled bulls in 2019. METTMACH Pp* leads the heterozygous polled bulls, ahead of his progeny-tested sire MAHANGO Pp*, who probably brought the decisive push in polled breeding. Among the homozygous polled bulls, two bulls VOLLKOMMEN PP* and MAROKKO PP* lead the list, which do not have MAHANGO in their pedigree.

The large increase in polled bulls in insemination was only possible through the introduction of genomic breeding value estimation. Currently, about 85 percent of all polled inseminations are performed with a genomic young sire. Naturally polled bulls are used in all farm types. A comparison of organic farms with conventional farms shows that the polled percentage in organic farms is slightly higher (18.3 to 14.1 percent in 2019). Occasionally there is the opinion that genetically polled animals are conspicuous in their behavior. However, no significant differences in behavior can be seen from the figures on milking behavior, which is recorded in the context of the linear description of offspring. No data is available on other behavior.

Conclusion

The breeding of naturally (genetically) polled animals, which has been established in the beef cattle sector for a long time, has also seen a clear upswing in dairy cattle breeding over the past decade. With the help of genomic selection, strict selection made it possible to find suitable polled animals in a relatively short time and to breed them in a targeted manner. Due to the intensive breeding efforts, several genetically competitive polled bulls are now available in Fleckvieh. This applies at least to heterozygous bulls, with homozygous bulls the difference to the horned population is even greater. It should be borne in mind that too much concentration of breeding on this trait results in noticeable losses in breeding progress in most other traits, but especially with regard to milk yield, udder quality and milkability. From an overall breeding point of view, the polled gene must not be forced too quickly. The exclusive use of homozygous polled bulls in order to completely avoid dehorning the calves is currently associated with loss of breeding progress and losses in several economically important characteristics.

The exact further development is of course not foreseeable, but it can be assumed that the trend towards polledness will continue in the next few years. In the case of the Fleckvieh, the existing high genetic level should already make it a sure-fire success, although high-quality, homozygous bulls are still in short supply.

Table 2: Differences in the estimated breeding values between horned (pp) and polled (PP, Pp, PS) bulls of inseminations in 2019

	horned	polled	Diff
TMI	126.9	125.7	–1.2
MI	121.1	118.3	–2.8
BI	105.2	109.6	+4.4
FIT	109.6	111.9	+2.3
Mkg	805	686	–119
F%	–0.02	0.02	+0.04
P%	0.00	–0.01	–0.01
NDG	107.9	111.4	+3.5
CARC	101.7	103.4	+1.7
TRC	104.0	108.6	+4.6
Long	110.0	110.3	+0.3
Pers	105.3	108.1	+2.8
FEI	103.0	105.9	+2.9
CLVp	106.5	108.6	+2.1
CLVm	105.9	108.2	+2.3
VIT	104.0	103.7	–0.3
UDH	107.6	108.5	+0.9
SCC	106.5	109.0	+2.5
Msp	108.5	98.6	–9.9
FR	103.9	109.6	+5.7
MU	99.5	109.2	+9.7
FL	107.6	106.6	–1.0
UD	114.7	109.6	–5.1

TMI = total merit index, MI = milk index, BI = beef index, FIT = fitness index, Mkg = milk yield, F% = fat content, P% = protein content, NDG = net daily gain, CARC = carcass percentage, TRC = EUROP trade class, Long = longevity, Pers = persistency, FEI = fertility index, CLVp = paternal calving ease, CLVm = maternal calving ease, VIT = vitality index, UDH = udder health index, SCC = somatic cell count, MSp = milkability/milking speed, FR = frame, MU = muscularity, FL = feet and legs, UD = udder

Table 3: Most frequently used polled bulls (Pp* or PP*) in 2019 (Breeding values as of 12/20)

Rank	Name	Sire / Damsire	No.	TMI
1	**METTMACH Pp***	Mahango / Hutera	**9599**	125
2	**MAHANGO Pp***	Mungo / Round up	**7365**	127
3	**WOOKIE Pp***	Walk / GS Polled	**5934**	117
4	**GS MYSTERIUM Pp***	Manolo / Watt	**4538**	131
5	**GS MCDRIVE Pp***	Mahango / Hurrican	**2977**	128
1	**VOLLKOMMEN PP***	Versace / Hutera	**3866**	115
2	**MAROKKO PP***	Manolo / Witam	**3467**	130
3	**MAJESTAET PP***	Mahango / Votary	**2490**	121
4	**VOLLGUT PP***	Vollgas / Zwingler	**2235**	116
5	**GS MUNDL PP***	Mahango / Witam	**1948**	128

HEALTHY FEET AND LEGS **for good performance**

DI. (FH) SILKE SCHAUMBERGER, HBLFA RAUMBERG-GUMPENSTEIN IRDNING-DONNERSBACHTAL, AUSTRIA

DI. MARLENE SUNTINGER, ZUCHTDATA VIENNA, AUSTRIA

Good claw health is an important prerequisite for the well-being of dairy cows as well as for efficient and economical milk production. When cows experience claw problems, this does not only affect milk production.

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Looking over the shoulders of practitioners

Fertility is often considerably reduced as well. If cows experience lameness for the entire post-natal period following calving until the next pregnancy, then the probability of becoming pregnant again can be reduced by up to 38% in comparison with healthy animals (Somers, 2015). Sick animals mean additional expense - direct and indirect costs of lameness are estimated at €450 per cow (Kofler, 2015). Claw health is, accordingly, an important consideration when it comes to improving the efficiency of dairy farms.

The causes of claw diseases are very diverse. Since the claw forms part of the skin, it reacts to internal factors as well as to external influences. Stress and a correspondingly weakened immune system play an essential role.
Feed and metabolism both have a decisive influence on the formation of healthy claws. Fatty liver disease, milk fever and ruminal acidosis, for example, are diseases which often result in claw problems. In addition, these diseases weaken the immune system, so that the animals affected become more susceptible to claw infections as well as infections generally (e.g. uterus, udders and, as a result, laminitis). Species-appropriate and performance-focussed feeding provide a healthy foundation. Pressure upon and contusions of the dermis (leather hide) tend to be the most common debilitating external influences. Firm, even walkways have become indispensable on modern dairy farms. So, it becomes problematic if the surface is very rough, which leads to considerable wear of the soles. Bumps, brittleness, or protrusions result in the exertion of strong, intermittent pressure on the soles, thereby causing contusions of the leather hide and, consequently, inferior claw quality. One possible solution is to place rubber mats on the walkways - this reduces wear and tear and thus provides a solution to some of the problems. If cubicles are too few in number and are not built smoothly and with enough space, then the cows' claws are exposed to increased pressure during the reduced time for which the cows are permitted to remain idle. For every hour by which the cows are required to remain standing unnecessarily, the incidence of lameness increases by a factor of 2.5, and milk production is reduced by 1.7 litres, on average (see also Klindworth). This must be taken into consideration during stall construction.

What can I do to ensure the health and well-being of my animals?

To begin with, one should observe one's animals closely and, optimally, document all important issues. This way, problems can be easily identified and, if necessary, the causes responsible therefor may be located and remedied by e.g. changing the feed provided to the animals, rebuilding stalls etc. Regular, functional claw trimming plays a decisive role - at least 2-3 times per year, though this must ultimately be approached on the basis of the individual animal should care measures be carried out. This interval may be shortened in the case of exercise pens and where animals have exhibited improved performance. The best solution is to adapt claw trimming appointments to the life cycle of the cow. In doing so, particular attention must be paid to to the cow's condition at the beginning of the lactation stage: is the cow able to stand well on its feet, i.e. were any signs of lameness to be observed at the moment of insemination and before they enter in the dry season. The objective is to prevent pain and/or stress due to illness, thereby guaranteeing a good start to mounting as well as pregnancy.
The important thing is to act immediately at the first sign of even slight lameness in order to prevent the development of severe health problems. Performing a preventative examination of all animals for lameness once a week is also recommended. The young animals, i.e. calves reaching the age of reproductive maturity, must not be overlooked when it comes to claw trimming and checking for lameness.

Functional Claw Trimming in Practice

Performing regular, proper claw trimming is one of the most important preventative care measures in maintaining claw health. The goal of claw trimming is to (re)distribute the weight of the cow on all 8 claws. Overburdening a claw (particularly the outer claws) or claws which are too long can quickly cause lameness. Every keeper of animals should be aware that the costs associated with preventative measures, such as regular claw trimming, are far less significant than the costs of "repair". Claw trimming should always be performed by a person who has received proper training in this area.

Claw Trimming and Documentation

The claws are often affectionately referred to as the "black box" of the cow. Findings regarding the claws ascertained in connection with claw trimming have proven to be valuable sources of information in developing a comprehensive and consistent model for claw health (Heringstad and Egger-Danner et al. 2018). Digital programs for the electronic documentation of findings associated with claws ascertained during claw trimming constitute an important basis for monitoring claw health among cattle. Immediate analysis of the information recorded yields advantages for trimming specialists as well as for the farms where they engage in their practice. In Austria, various educational institutions offer certified training programs for trimming specialists. The electronic documentation of claw trimming has already become a permanent component of this training program. The "Klauen-Q-Wohl" project was commenced with the aim of developing an infrastructure for the unified registration of findings associated with claws throughout Austria, as well as to promote opportunities and awareness with regard to electronic documentation and to develop instruments for targeted improvement of claw health, lameness and the well-being of animals residing on Austrian dairy farms (ZAR, 2017) The findings associated with claws in accordance with the ICAR Atlas for Claw Health constitute the standard for documentation (ICAR 2015).

Klauenprofi App

Earliest Results from the Klauen-Q-Wohl Project

The electronic infrastructure for the registration, transmission and storage of findings associated with claws has been successfully established in Austria. 43 claw trimmers from all over Austria are already taking part in the project. They electronically document claw trimming as carried out on their farms and can later send the registered findings to the Austrian Cattle Data Network (RDV) by means of an interface installed in their documentation software. Since May, 2020, farmers also have the opportunity to document claw trimming being performed on their animals with the "Klauenprofi" app which has been developed. This way, they can also examine the findings regarding the claws well as the values derived therefrom using their mobile phones and their web-based herd management program. There are currently 62,100 Fleckvieh cattle on 2,617 farms in Austria, for which information and data regarding claw health is being documented. This data forms the basis for the long-term and sustainable improvement of claw health in cattle-raising. The breeding valuation system for claw health is already in the making. Good animal health is a particularly important issue for the Austrian cattle-raising industry. Currently, claws form a very significant focus of research and development. In the end, the goal is the targeted promotion of good claw health among Austrian Fleckvieh cattle.

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LE 14-20

Find the best cow in the barn with »Effizienz-Check«

DI FRANZ STEININGER, ZUCHTDATA – VIENNA, AUSTRIA

The new web application "Effizienz-Check" has been available on the RDV Portal since the beginning of the year 2020. Effizienz-Check employs the copious data gathered by the RDV to conduct efficiency analysis and permits a detailed glance at the economic profitability of individual animals without additional recording expense.

Effizienz-Check represents the final outcome of a project by the same name selected for implementation in 2016 during the first call for EIP bids in Austria. Over the course of the years to follow up to the end of 2019, the project was successfully realised thanks to the support of the Austrian federal and state governments as well as the European Union.

EIP – European Innovation Partnership

The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) is a concept of the EU engaged in the promotion of 14–20 agricultural innovations for rural development. Altogether, 30 so-called operational groups have received the support of this program for the materialisation of projects, and they continue to receive this support.
In cooperation with agriculturalists, the RINDERZUCHT AUSTRIA organisation succeeded in the practical implementation of two innovative project ideas in connection with EIP-AGRI One of these projects is "Effizienz-Check", which forms the subject of this presentation, while the other project, known as "Klauen-Q-Wohl", is specifically devoted to the topic of hoof health.

The operational group for the "Effizienz-Check" project consisted of the Zentrale Arbeitsgemeinschaft österreichischer Rinderzüchter (ZAR = Association of Austrian Cattle Breeders), the Landwirtschaftskammer OÖ (Chamber of Agriculture for Upper Austria), the Tiergesundheitsdienst Steiermark (Styria Animal Health Service), the LKV Austria Gemeinnützige GmbH (Austrian non-profit state inspection organisation), the ZuchtData EDV Dienstleistungen GmbH, breeders and farmers, veterinarians as well as employees of the inspection organisations of individual Austrian states.

Successful Completion of the Project

In connection with the project, an attractive and intuitive WEB application was successfully developed for use by practitioners in the evaluation of their own dairy herds. The WEB application also permits comparisons with other companies and businesses and offers tips regarding potential organisational optimisation.
In addition to the actual "final product" – the WEB application – valuable, practice-based knowledge and insight were gathered and scientifically-based analyses were conducted regarding the connection between husbandry conditions, animal health and the performance potential of dairy cows in Austria.
With the collection and combination of existing and newly-generated knowledge, a tool was created which provides support for farmers in their daily work and which, as far as possible, permits them to gain new knowledge regarding their operation without additional expense.

Key Functions at a Glance

The web application's fundamental concept consists of the offer of additional evaluation regarding the profitability of each individual cow, as far as possible without additional expenditure of labour. The basis for this innovation is constituted by the information

Image 1: The core element of the Effizienz-Check web application: the comparison of individual animals.

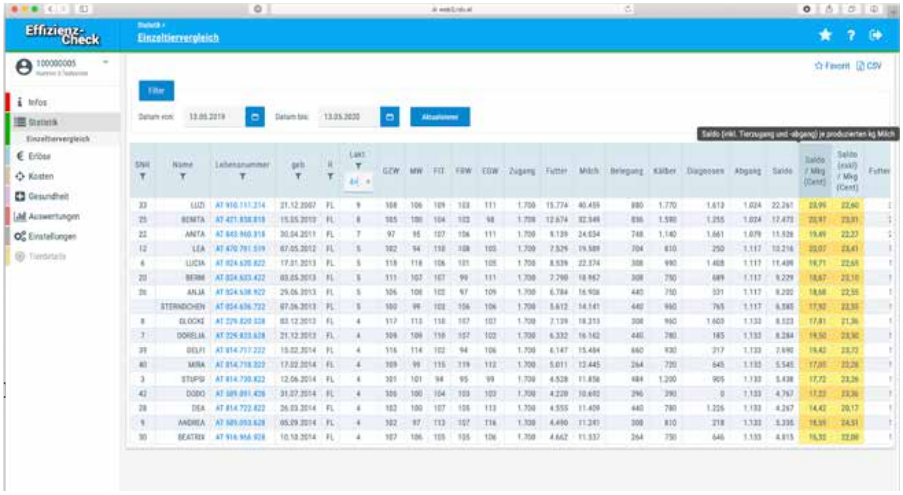
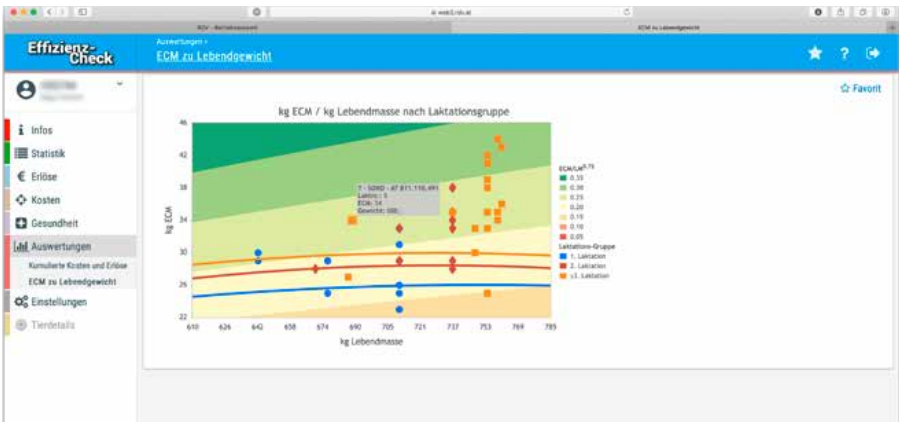


Image 2: The graphic comparison of accumulated costs and revenue provides the user with support in the detailed analysis of his animals on the farm.

Image 3: The number of kilograms of ECM (= energy corrected milk) per kilogram of metabolic live weight constitutes an important principle of measurement in the evaluation of animals' energy efficiency.



regarding performance testing, breeding valuation estimation and health monitoring already stored in the Rinderdatenverbund (RDV).

The following items of revenue and expense were taken into consideration in the course of the evaluations offered:

- **Income/proceeds**
  - **Milk proceeds**
  - **Calf proceeds**
  - **Proceeds from slaughter and/or sale of animals**
- **Costs or expenses**
  - **Additions to stock/purchase of animals**
  - **Feed costs**
  - **Serving costs**
  - **Health expenses (including average veterinary expenses, expenses associated with loss of milk due to waiting periods and performance decrease as well as hours of work).**

Udder health calculator

In addition to the extensive evaluations regarding the profitability of individual animals and the overall operation, an analysis is offered with respect to another theme, the importance of which is all too often underestimated: udder health and milking hygiene.

The cell count – perhaps the most important indicator in determining udder health generally – and the number of cases of clinical mastitis present in a company's herd are investigated to determine a company's commercial performance. On this basis and without requirement for any additional observation, Effizienz Check calculates, in Euros, the annual reduced earnings of individual enterprises on the basis of prevailing udder health and renders a graphic depiction of the results.

Moreover, this permits a company to establish its own objectives with respect to number of cells and number of cases of clinical mastitis and provides a graphic visual depiction regarding the commercial utility to be anticipated in the course of these improvements.

The infinite expanse that is Effizienz(-Check)

If one follows the various discussions regarding the theme of efficiency, one quickly discovers that in this area, everybody is talking about something different - for example: nutrient efficiency, spatial efficiency, operational efficiency, profitability. The term "efficiency" can come into play in just about any context. Ultimately, though, the issue of efficiency always comes down to the relationship between input and output. In other words: a comparison is made of the items introduced into a system (for example: hours of work or feed quantity)

Image 4: Without necessitating any additional required information, the udder health calculators provide visual depictions of the loss or earnings suffered on the basis of a company's status as regards udder health.

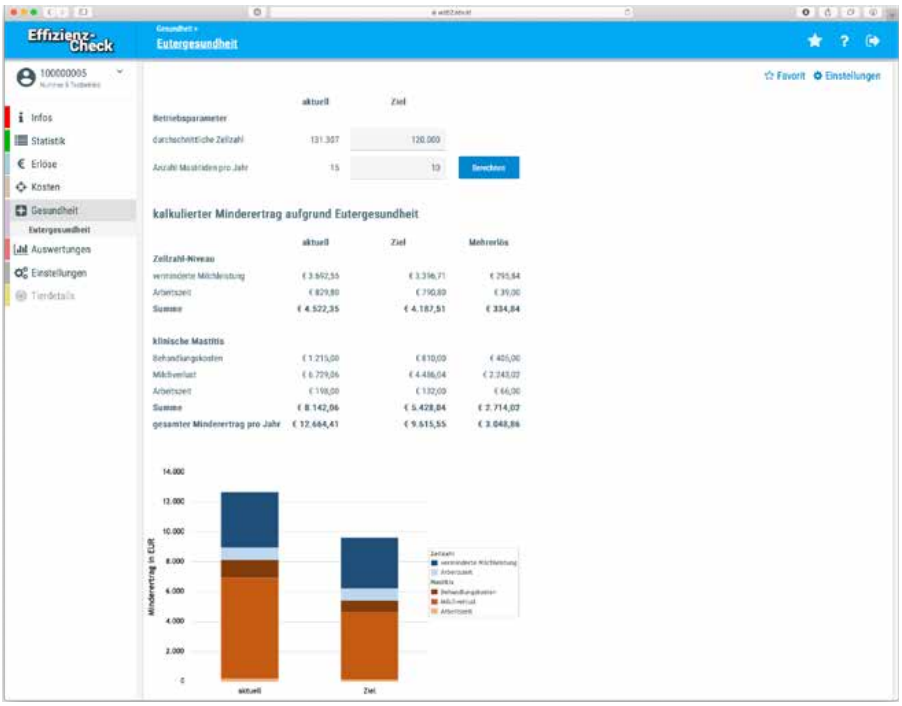
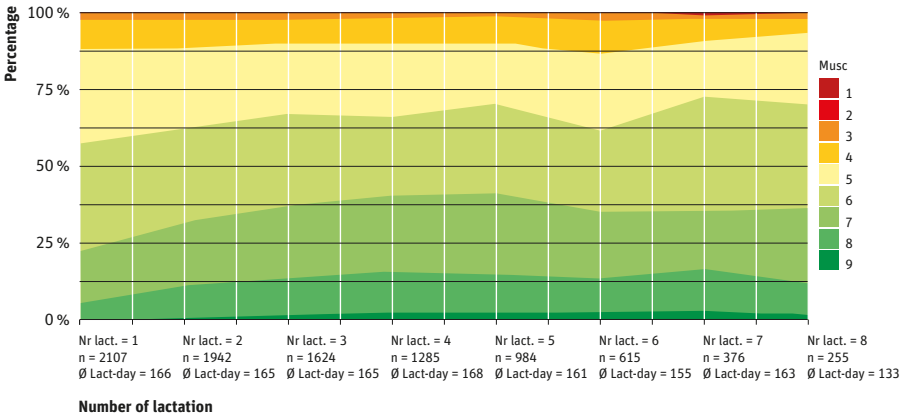


Image 5: Distribution of muscularity development (notes) in Fleckvieh during the course of the life cycle of an animal (data record: Efficient Cow 2014)



and what quantity thereof can ultimately be produced (e.g. kilograms of milk) Effizienz-Check focusses on comparing the economic viability of an operation's individual animals by conducting the most extensive commercial evaluation possible of all events related to an animal's development which have been registered in the RDV (for example: insemination, calving, daily milk production) It also offers parameters for the evaluation of nutrient efficiency and stable space efficiency.

If only parameters associated with nutrient efficiency are used, then specialised breeds can be seen to possess an undeniable advantage when it comes to milk production, since these breeds typically exhibit a lesser liveweight, with the result that the quantity of milk produced is offset by fewer conservation requirements in relation to these animals' bodies. Moreover, such efficiency parameters are often indicated in connection with milk/ECM produced and thus fail to take account of many by-products of milk production - such as the cow's meat, which, hopefully following a long phase of milk production, can constitute a value source of nutrition for humans.

By means of the commercial evaluation rendered possible using Effizienz-Check, in addition to those considerations purely devoted to milk production, an attempt is made to take account of the additional strengths and weaknesses associated with individual animals and breeds, for example: beef production, fertility, health.

Good beef production improves profitability

When using Effizienz-Check, the value of the animal upon retirement from the farm is evaluated on the basis of breed, age, company form as well as the reason for the animal's retirement (for use or for slaughter). On the basis of this approach, the unequivocal strength of the breed of Fleckvieh is taken into account in the area of beef production.

As Image 5 shown, Fleckvieh cows exhibit increasing muscularity notes until approximately the fourth lactation and are able to retain good muscle attachment up to an advanced age. This represents a significant difference in comparison with other cattle breeds with comparable milk production and exerts a considerable influence on the breed's profitability.

Effizienz-Check's specialty was not intended to be breed comparison, but the comparison of individual animals on a particular cattle breeding farm. All breeds are able to live and thrive in accordance with their advantages as well as shortcomings, irrespective of production type, region or the particular focus of the farming operation in question. With Effizienz-Check, farmers are handed a tool which provides them with support in the analysis of animals' strengths and weaknesses, irrespective of breed and pedigree.

Acknowledgements

We would like to extend our special thanks to the farmers who have contributed their time and knowledge, as well as all partners participating in this project. Without the financial support of the European Union as well as the Austrian federal and state governments, the original idea of an individual breeders would never have culminated in the Effizienz-Check web application, which currently provides support to all farmers in their daily work.

For additional information regarding web applications as well as a comprehensive set of user instructions, please consult the ZAR homepage at **https://zar.at/Service/RDV-Portal/Effizienz-Check.html** as well as the application itself.

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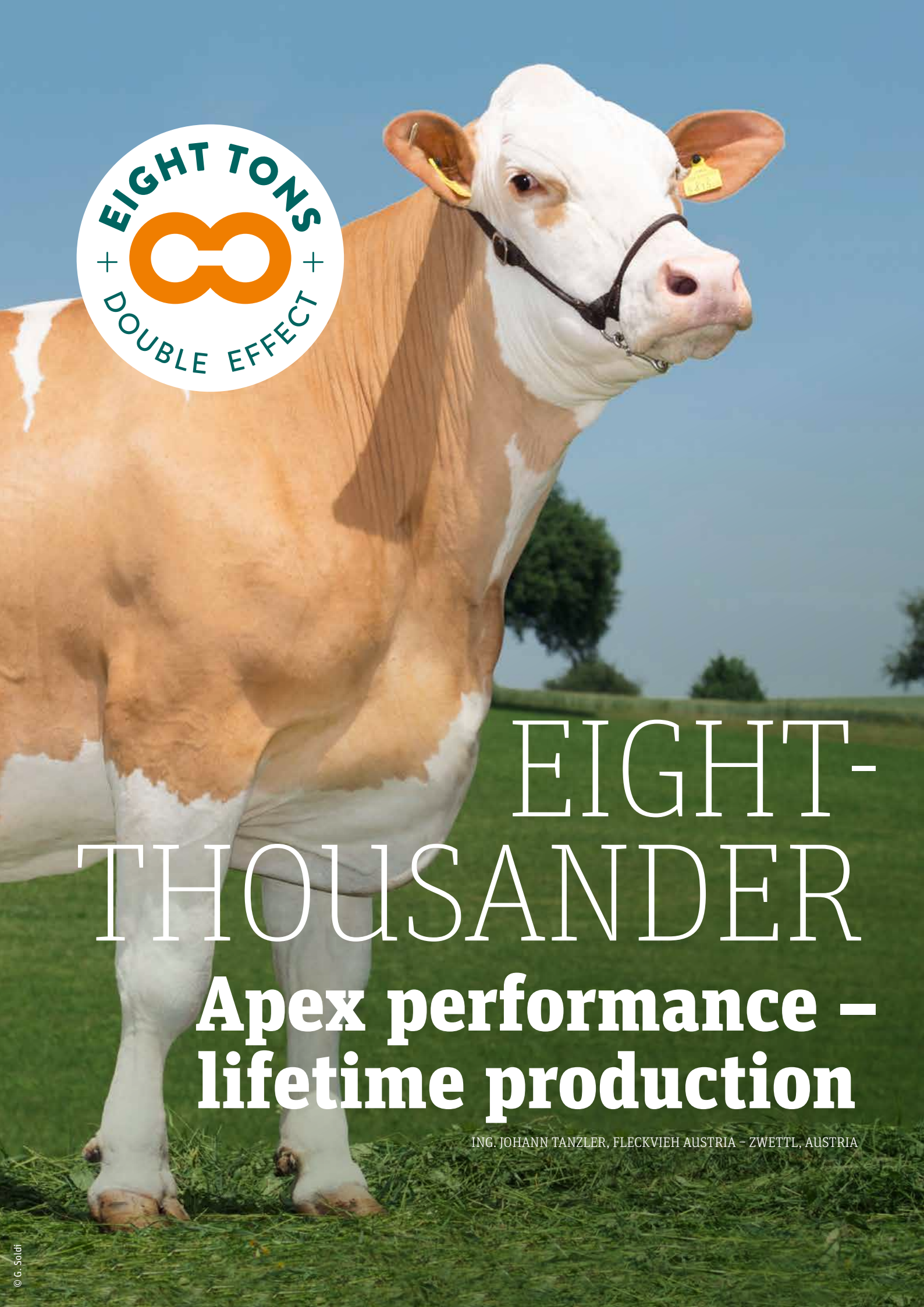


EIGHT-THOUSANDER

Apex performance – lifetime production

ING. JOHANN TANZLER, FLECKVIEH AUSTRIA – ZWETTL, AUSTRIA

In this section we would like to introduce you, dear readers, to some very special cows. These are animals that are very important to breeders, though not only because they accompany their owners for a good part of their lives, creating emotional bonds. If everything goes well, their daughters, grandchildren and great-grandchildren in their own lives will have a significant impact on the genetics of the entire herd in the most positive sense.

Since our goal in Fleckvieh breeding is to think and breed holistically and sustainably, we also want to evaluate these extraordinary services in this way. We have therefore defined the following criteria:

1. A total lifetime production of at least 100,000 kilogrammes of milk.
   This is simply a benchmark that is common in cattle breeding around the world and is synonymous with sustainable performance in Europe.

2. A total lifetime production of at least eight tonnes (8T) of fat and protein.
   These are "Eight-thousanders", so to speak. The amount of fat and protein is our actual selection criterion for milk and therefore also the ranking criterion for lifetime production. In Fleckvieh cattle breeding, we would like to keep the percentage of these solids a little higher, as this means that the proportion of lactose is relatively lower. This increases efficiency since the production of lactose uses energy without adding any value.

3. The special Fleckvieh advantage must be revealed - call it the "Double Effect".
   These cows' naturally elegant muscling not only stabilizes them, but also ensures that purebreds can produce beef of the best quality and quantity in addition to their milk. Every calf, male and female, that is not used for breeding is excellently suited for large cattle farming and is also used that way. It's now also been scientifically proven. While in one-sided dairy breeds a cow's muscle mass is highest at the first lactation and then gradually decreases, the opposite is the case with the naturally higher muscle mass of Fleckvieh cows. Their muscle mass builds up until the sixth or seventh lactation. This explains quite well why Fleckviehs work doubly: even very old animals make excellent carcasses. An "Eight-thousander" lifetime-production cow therefore usually produces more than four tons of good quality beef through its offspring!

In addition to the economic aspects, this "double effect" has a very big advantage that has only come into focus in recent years but is now becoming increasingly important: This is clearly the most climate-friendly way of producing milk and meat.

Of course, we know that things are not about individual animals at the population level. Average lifetime production is the actual criterion. We are thus pleased with the consistently positive trend in growth over the past few years. In the last annual accounts, Holstein cows were overtaken for the first time in terms of fat and protein. The annual growth in these of approx. 2%, which has persisted for ten years, is based on a slight increase in useful lifetimes and a greater increase in the amount of fat and protein during lactation.

We would like to introduce you to the following 6 cows from the large group of "Eight-thousander" "Double Effect" lifetime-production cows.

© Eibegger

Four beautiful queens from Fam. Sackl in Scheifling, Estiria
From left to right: HELENE – AT 951.786.772, ANABELL – AT 984.590.914, BAMBI – AT 576.514.409 and HELMA – AT 984.584.214

HELENE – AT 951.786.772 Birth: 07.03.2004

15/14 10,534-4.00-3.16-754
HL 9. 12,932-3.65-3.14-877 | LP: 159,271 kg / 11.44 t F+P

ANABELL – AT 984.590.914 Birth: 27.03.2008

8/7 10,948-4.86-3.71-938
HL 4. 12,892-4.96-3.63-1,107 | LP: 101,617 kg / 8.80 t F+P

BAMBI – AT 576.514.409 Birth: 20.02.2006

10/10 10,464-4.42-3.55-833
HL 5. 11,607-4.44-3.51-924 | LP: 111,787 kg / 9.00 t F+P

HELMA – AT 984.584.214 Birth: 20.01.2008

10/10 12,052-3.83-3.33-862
HL 7. 14,358-3.77-3.20-1.001 | LP: 130,886 kg / 9.44 t F+P

HL: Highest lactation; LP: Life permormance; kg: Milk yield in kg; t F+P: Tons of fat + protein

© KeLeKi

BETTY – AT 523.550.516 Vanstein x Hostress, Birth: 05.02.2008

8/8 12,289-3.90-3.32-887
HL 5. 15,234-3.84-3.20-1,073 | LP: 118,387 kg / 8.52 t F+P

© freeza

FINA – AT 314.036.614 Zahner x GS Waxin, Birth: 27.10.2006

10/9 10,446-4.62-3.40-838
HL 4. 11,958-4.78-3.44-983 | LP: 114,822 kg / 9.29 t F+P

© private

SUMSI – AT 494.518.272 Streller x Paul, Birth: 01.06.2003

13/13 9,660-3.92-3.46-713
HL 7. 11,413-3.70-3.49-821 | LP: 143,652 kg / 10.88 t F+P

© FIH

LIESI – AT 565.528.507 Rubens x Samson, Birth: 06.11.2004

12/12 7,943-4.27-3.63-627
HL 12. 8,779-5.16-3.66-774 | LP: 104,195 kg / 8.32 t F+P

© KeLeKi

BIRNE – AT 565.675.407 Romel x Zahl, Birth: 18.3.2005

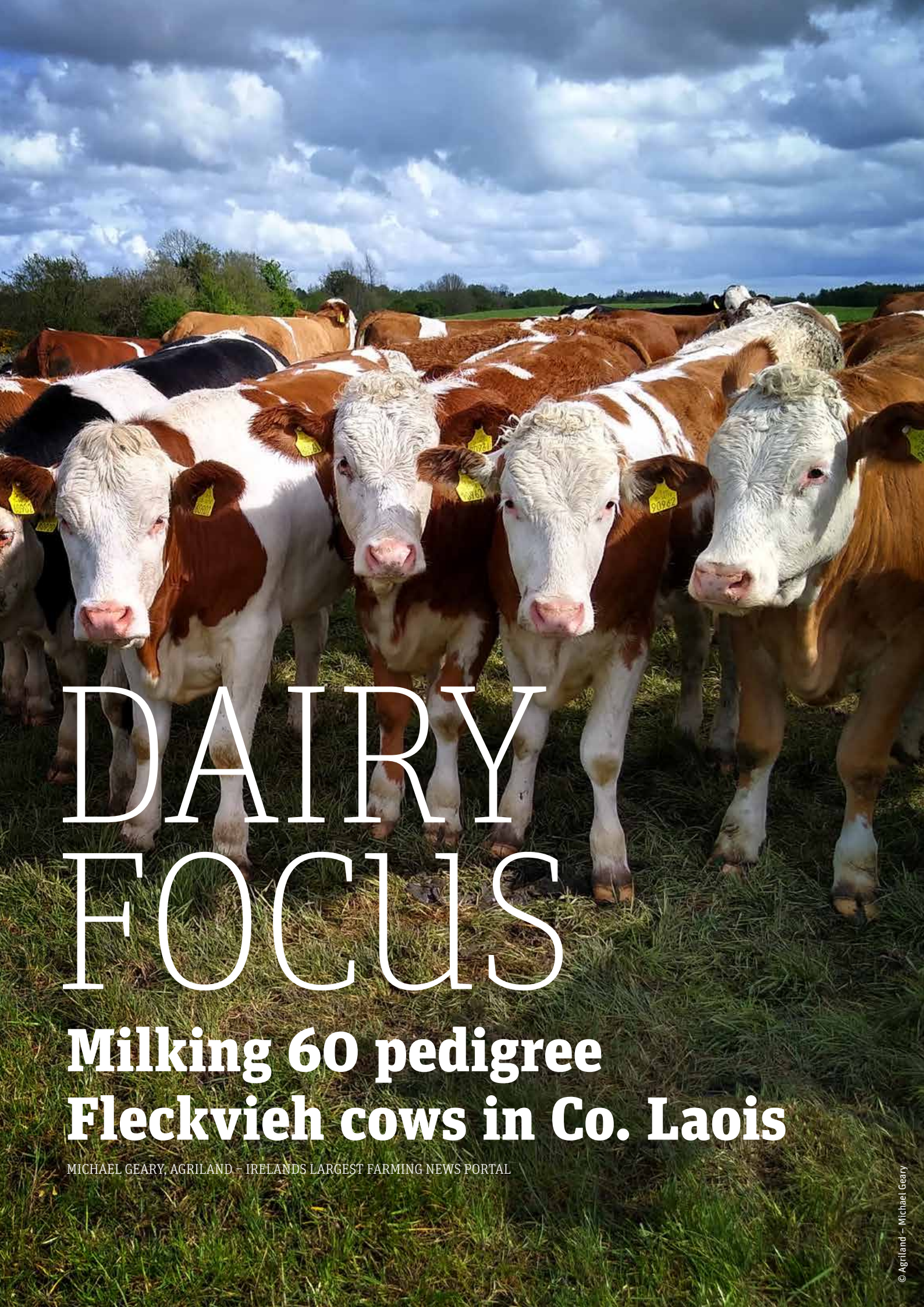
12/11 8,175-4.64-3.80-690
HL 4. 9,632-4.63-3.82-814 | LP: 100,338 kg / 8.50 t F+P

© KeLeKi

SIMONE – AT 628.869.416 Manz x GS Dionis, Birth: 17.01.2009

7/7 12,118-4.93-3.53-1,025
HL 6. 15,090-4.79-3.48-1,248 | LP: 101,104 kg / 8,61 t F+P

HL: Highest lactation; LP: Life permormance; kg: Milk yield in kg; t F+P: Tons of fat + protein



DAIRY FOCUS

Milking 60 pedigree Fleckvieh cows in Co. Laois

MICHAEL GEARY, AGRILAND – IRELANDS LARGEST FARMING NEWS PORTAL

© Agriland – Michael Geary

In this Dairy Focus, AgriLand caught up with Gerard Brickley from Coolrain in Co. Laois who milks a herd of pedigree Fleckvieh cows.

Gerard along with his wife, Angela, started milking cows when milk quotas were abolished in 2015; the duo began milking a herd of Friesian cows before switching to Fleckvieh cows a year later. Before that, Gerard worked for Bord Bia, which saw him work abroad for many years, where he was able to build up contacts, that in later years would end up helping him to build his own herd of Fleckvieh cows.

In terms of the system, the Brickley's opted to install a robotic-milking machine, while also deciding to keep the milking herd indoors all-year-round, because they felt it suited a robotic system better. On the other hand, the young stock and dry cows are out on grass. In total, the farm stretches 80ac – all in one block. Speaking to AgriLand, Gerard said: "Before 2014, we ran a pedigree herd of predominately Simmental and some Charolais cows.

» However, even at that time, when beef prices weren't as bad as they are now, the sums weren't adding up to say to me that this was the way forward for us. «

"So, we sold our suckler cows and bought a batch of Holstein Friesian heifer weanlings and began work setting up the farm in a way that would allow us to go milking, such as installing a robot and converting an existing shed into a cubicle house."

Going from Friesian to Fleckvieh cows

The Brickley's began milking their herd of first-time calving Friesian cows in 2015. However, having worked in Germany and Austria, Gerard began researching and looking for a breed of cow that would produce good volumes of milk but, also, produce a good-quality calf. This led to him buying in pedigree Fleckvieh cows from farmers in Austria who he had met while working out there. He also visited farms in Northern Ireland and the Netherlands that were milking crossbred Fleckvieh cows to increase his knowledge of them and to see how they were performing. Therefore, gradually, over the last few years, Gerard has imported a number of pedigree Fleckvieh cows that have seen his herd grow from originally 15 cows up to 60 cows. In total, Gerard is milking 70 cows, 10 of these consist of Holstein and Fleckvieh cross cows.

Over the years, Gerard crossed some of the original Friesian cows that he bought initially with Fleckvieh bulls.

Speaking about the switch from Friesian to Fleckvieh cows, Gerard said: "In my opinion, the Fleckvieh breed offers a number of advantages in comparison to the 'black and white' cows. They're a very robust cow and they almost produce as much milk as a Holstein cow would, but they have better fertility and physical strength to withstand any knocks that come their way.

» They're a very robust cow and they almost produce as much milk as a Holstein cow would, but they have better fertility and physical strength to withstand any knocks that come their way. «

© Agriland – Michael Geary

Gerard and Angela Brickley

"The dual-purpose element of them, for us, gives a higher and more balanced income. This isn't me just talking up the breed because I milked Friesian cows, so I can clearly see the differences between the two breeds.

"One difference I find is that a Holstein cow's yield will peak higher and earlier in lactation in comparison to a Fleckvieh cow. Moreover, the fact that a Fleckvieh cow's yield doesn't peak as high or early as a Holstein cow would, it helps her to hold her condition better after calving. "They also produce nice square calves which I think are very suitable for beef production."

Indoor system

Going against the grain, the Brickley's decided that they wanted to keep their milking cows indoors all-year-round. Speaking about this decision, Gerard explained: "First off, we decided to go with a robotic-milking system because it takes the hard labour element out of milking. "Secondly, we run our own AI business, which takes up quite a bit of time, so in order to go down the route of milking cows we had no choice but to install a robot. "The reason for keeping the cows indoors all-year-round is down to management. It's an easy system to manage and the cows produce good volumes of milk.

» It is a more expensive system to run, but the higher output that we are getting from our cows helps to balance the extra costs that are involved. «

© Agriland – Michael Geary

Fleckvieh calves represent an essential pillar of income on the farm

"We find the system is much easier to run than if we were to let them out on grass. Once the cows are fed and the cubicles are limed then there is very little other routine physical work that has to be done with the cows – except obviously at calving or at breeding time when it is busy."

Calving season

The Brickley's operate a split-calving system that sees them calve down cows in autumn and spring, which allows them to produce milk all-year-round.

A larger proportion of the herd calve in spring. The pedigree Fleckvieh heifer calves are kept as replacements; whereas, the bulls that Gerard feels are fit for breeding are kept and sold to farmers at between 12 and 14 months-of-age. Any bulls or heifers that he doesn't feel are fit to breed off, are kept and finished for slaughter. The Fleckvieh bull calves from the crossbred cows are sold at the mart. Gerard added: "We sell the crossbred calves at our local mart. On average, we would make €330/head for them, which is a great price in comparison to what your typical Friesian or Jersey calves would make at the mart.

"The crossbred calves would have a fairly good frame, obviously not as good as the purebred Fleckvieh calves, but, still, they would be suitable for farmers looking for calves to rear and finish for beef."

Breeding season

At the time of writing, the breeding season had kicked off on the farm. The heifers and mature cows are bred artificially with semen from the "top Austrian Fleckvieh bulls". The Brickley's supply Fleckvieh semen to farmers across the country, having built up their own business – Celtic Sires.

The heifers are bred 10 days before the mature cows, so that they can be trained to use the robotic-milking machine before the mature cows calve. For the first time, Gerard decided to synchronise the heifers this year. Gerard and Angela are both qualified AI technicians, so they can carry out all the breeding on the farm themselves.

Herd performance

Gerard has been very happy with the performance of his herd over the last few years. He puts a lot of this down to buying in the best genetics at the start and culling any animals that didn't make the grade as early as possible. He added: "To give you a flavour of how well the cows are performing, in 2019, on average, the herd produced 8,726L. The fat and protein content of the milk was 4.18% and 3.47%.

» At the moment, the spring-calving herd are producing 36L of milk at 4.2% and 3.2% protein. All in all, I am very happy with how they are performing. «

"A number of factors, in my opinion, are contributing to these results such as the genetics of the herd and the diet. We have a nutritionist that comes in and puts a feeding plan in place for us that seems to be working well."

Sustainability

Improving the carbon footprint of the farm was another reason for Gerard being drawn to the Fleckvieh breed. He said: "The majority of dairy farms in Austria milk Fleckvieh cows. Austria is number one in Europe for having the lowest carbon footprint for dairy production [joint first with Ireland]. "However, looking at the beef side of things [in terms of the carbon footprint], Ireland is fifth in Europe while Austria is number one. So, I think that shows just how efficient the Fleckvieh breed is at producing both milk and beef."

Right decision

Looking back on the decision to move away from sucklers, Gerard has no regrets. The only thing that took him by surprise was the cost that was involved in changing systems. He explained: "Both Angela and I have no regrets in changing systems. The farm was set up perfectly for dairy farming, so it made sense.

» The cost that was involved in changing systems was a bit of a shock I have to say. However, looking back now and having five years of milking cows or so behind us, the decision was the right one. «

"The system we are running provides us with income from three different sources, which include: milk from the cows; the calves and cull cows we sell to other beef and dairy farmers; and the semen we sell from the Austrian Fleckvieh AI stations. "So, all in all, it has worked out well. What swung our decision was back in 2014 when milk quotas were set to be abolished the following year. "We realised that there were going to be fewer suckler cows in Ireland, which meant there would be less customers for our beef bulls, which was going to have a huge impact on our business. In truth, it wasn't viable to continue with what we were doing."

CHANGES FOR THE BETTER

A successful model with Fleckvieh in Spain

DI ALEXANDER MANRIQUE GÓMEZ, FLECKVIEH AUSTRIA – VIENNA, AUSTRIA


© Alexander Manrique Gómez

It has been known for years that breeders all over the world are looking for new alternatives in dairy farming. For many, it is still a challenge to produce high quality milk in a competitive economic environment, unlike what is known as the “standard”. In the following article, we present a successful model: Ruben Martin’s farm in Toledo, Spain.

Since October 2018, geneticAUSTRIA GmbH has exported a total of 82 top Fleckvieh fresh cows and pregnant heifers from auctions and breeding farms in Austria to a pilot project in Spain.

The Spanish dairyfarm Ganadería El Prado SL is located in Guadamur / Toledo near Madrid. It was founded in 1973 by grandfather Antonio Alonso and managed by him until 1991. From then on, son-in-law Eugenio Martin took over the management until he finally passed the farm on to his son in 2012.

For many it is probably hard to imagine (or even not allowed) 150 dairy cows to be milked without owning a single hectare of land. Not so in Spain: Land is relatively expensive, the climatic conditions are difficult, so the production of basic fodder also requires irrigation and there is no need to buy expensive machinery for fodder production! Therefore, the basic ration and concentrate is also purchased at the El Prado farm.

In order to keep the costs low, it is also not intended to raise young cattle on the farm – therefore they have to buy the remounts regularly. This system has been working for over 40 years. However, it has always been important for the farm to purchase animals that show good feed efficiency and a long productive life in order to keep the remounting costs as low as possible.

Complete conversion of the herd to Fleckvieh cows

In March 2018, the junior manager took part in an AGROTOUR excursion at geneticAUSTRIA in Austria and saw for the first time how milk production with Fleckvieh works. In his imagination, Fleckvieh was a breed of meat that could perhaps be used to produce some milk. But what he found on the Austrian farms did not fit into this picture: excellent milk yield with high ingredients, good fertility, and the robustness and feed efficiency of the breed convinced him! For him the decision was made that this breed is perfectly suited to his management system and he decided to convert his dairy farm from Holstein to Fleckvieh.

In the beginning pregnant Fleckvieh heifers were bought, later it was decided to continue with the purchase of fresh cows. For Rubén Alonso, the quality of the cows is clearly the focus of his selection. Young, high-yielding fresh cows with the best udders and good feet & legs are preferred. Ruben Martin:

» I was looking for an option that would allow me not to have to say goodbye to my animals after the third lactation. I needed a breed with longevity and endurance ...«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Austrian fleckvieh cows after one week of arrival in Toledo

Resilience after transportation

The first significant breed difference was recognized by the Spanish Fleckvieh pioneer when the young cows arrived at the family farm in Toledo. “For an Austrian cattle breeder, you can imagine the unloading of the animals as much as the first grazing in spring. The animals jump for joy, are clean, healthy and well, ”describes the Spanish family. These new red-white-red-spotted animals will find a well-maintained cubicle housing system and feed of excellent quality.

The animals lose less weight during transportation. After a week, the Fleckvieh fresh cows are accustomed to the feed or the

barn and get used to the daily routine more quickly in best body condition (for Holstein it would take between 20 – 25 days).

Results from the Fleckvieh herd

On the farm Fleckvieh and Holstein cows are separated from each other so that they can be observed in direct comparison. Already in the first lactation the farm manager was happy to see the progress.
The Fleckvieh cows finished their debut with 9,500 kg milk, with significantly higher contents and lower somatic cell count than before.

Recently the company switched to an automatic milking system with two Lelly robots. The owner says about his Fleckvieh cows: *"I can't imagine selling a Fleckvieh cow after the third lactation. They look so young! These animals show more strength in the feet & legs, udder health and body condition than the Holstein cows, which unfortunately have to leave the farm at this stage."*

There are currently 150 cows on the farm. 20 of the Holstein cows are in third lactation, which in all probability will have to leave the farm at the end of lactation. In contrast, the Fleckvieh cows are in the second or third lactation and are all still on the farm. Even under these breed conditions, Ruben can already see the reduction in veterinary costs and the dual-purpose effects:

» The body condition (muscularity) of the Fleckvieh cows increases from lactation to lactation. «

Another advantage that Ruben noticed from the start was the feed efficiency of the Fleckvieh cows. Initially, due to the different lactation stage of the two breeds, it was hardly possible to compare the two breeds in order to establish that Fleckvieh need less concentrate to achieve high milk yields. Today, since both herds are in comparative lactation stages, the junior manager realizes with absolute certainty that a Fleckvieh cow needs up to 3-4 kg less concentrate for the same yield:

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Fleckvieh cows: High milk and meat potential. Healthy cows, robust appearance and adapted to their new home. They gather the basic components for an efficient production.

» Fleckvieh cows are easier to manage and give you a carefree working day. The bottom line is that significantly better fitness is an argument for the Fleckvieh breed! You have to be patient until you see all the positive effects, but in the end you will be rewarded. You can say that my Fleckvieh cattle are the "marathon runners" that will accompany me for several years, and my Holstein the "sprinters". «

Key data of the farm GANADERÍA EL PRADO SL

Sea level:	640 m
Average precipitation/year:	340 mm
Temperature:	min. –3 ° C, max. 26.8 ° C
Production direction:	milk production (intensive)
Farm size:	15,000 m²
Workers:	Farm manager Ruben, father Eugenio and milker
Livestock:	150 dairy cows (110 lactating and 40 dry cows)
Breed:	75 head Fleckvieh, 75 head Holstein Friesian
Average annual yield before conversion:	10,800 kg – 3.60 %F – 3.15 %P (Holstein Friesian only)
Average annual yield after conversion:	10,675 kg – 3.80 %F – 3.20 %P (with both breeds)
Fertility:	NRR90: 70%
Udder health (cell count):	(2019) 100,000 – 150,000 (Fleckvieh herd <70,000)
Management:	hoof care before drying off, 3 times a week hoof bath with Formol 10%, heat detection with podometer, crossbred calves (with Belgian Blue) are sold after 10 days
Feeding:	15 kg of corn silage, 10 kg of oat silage, 2 kg of straw, 6 kg of olive pulp, 7 kg of concentrate (basic) + additive depending on yield
Barn form:	cubicle housing system
Milking technology:	2 x LELY robots
Marketing:	The milk is delivered to Lacteos Toledo SL.

In 2019 TAUBE Pp* was the world's number one polled cow with a TMI of 138

© KeLeKi

Impressive confirmation of last year's victory

Breeder of the year – Fürst family, Lasberg, Upper Austria

DI FRANZ KALTENBRUNNER, RZO FREISTADT, AUSTRIA

The Fürst fleckvieh breeding establishment, known as "white on the meadow" is located in the community of Lasberg in the district of Freistadt, in the region of Mühlviertel in Upper Austria. With a 732 point record, the Fürst family was able to win another impressive victory this year. It is the first farm in Austria to win this competition three times.

© KeLeKi

Fürst family with TAUBE Pp* (Sire: Mahango Pp*), front left: Michael senior, Gertrude, Verena with Lena and Michael junior

"Fleckvieh breeder of the year" is a competition where breeders' work is assessed. The basic idea is not only to know the best farms in terms of absolute milk yield, but also to evaluate their work in breeding. By resolution of the Consortium of Austrian Fleckvieh Breeders (AGÖF), ZuchtData was entrusted with the task of setting up an evaluation key and putting the idea into practice in 2003. All farms with Fleckvieh cattle as their main breed automatically take part in the competition if they have at least one bull (young bull or progeny-tested bull) or 1 genotyped bull calf during the observation period. The observation period spans from October 1st to September 30th of the following year, with September 30th as the reference date.

The following criteria are used for evaluation: The number of offspring tested bulls in re-use and their use as AGÖF test sires, the number of young bulls used for the first time and use of these as AGÖF test sires, the number of genotyped bull calves (TMI ≥128, FL + UD ≥205), the average total breeding value of the cows, the proportion of young bulls in the total inseminations, the number of "lifetime performance cows", the calving interval, the number of cells and participation in health monitoring and data delivery.

The Farm

For decades, fleckvieh cattle have been bred with technical expertise, dedication and very considerable joy. Confidence in genomic breeding value estimation has been high from the beginning, and for approximately three years, genome research has been performed on all male and female animals.

In total, over three hundred animals have been examined and, needless to say, the farm is a participant in the FoKUHs project. Due to these measures and/or the extensive implementation of embryo transfers, the farm has been able to consistently improve its genetic potential in the course of the last few years and, with fifty-three cows and an average TMI (Total Merit Index) of 115.6 (+675 kg - 0.09 %F - 0.04 %P milk value 115), it is currently ranked as the thirteenth best facility of its kind in Austria.

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DANILO (Sire: GS Dragoner, dam: Taube Pp*) TMI 122

© KeLeKi

MISCHKO (Miami x Wikinger) TMI 123

© Privat

VELIANO P*S* (Sire: Vespasian, dam: Taube) TMI 121

© HAKA

GS VERISMO PP* (Sire: Vespasian, dam: Taube) TMI 122

© KeLeKi

VERRATI PP* (Sire: Vespasian, dam: Taube) TMI 113

© KeLeKi

VERSTAPEN1 Pp* (S: Vespasian, dam: Taube) TMI 125

TAUBE Pp (polled status)-dominated

During the last few years, TAUBE, the hornless daughter of MAHANGO Pp* has exerted a particular influence on breeding at the Fürst farm. The animal was bred by the Kerschbaummayr farm in Waldburg, where three successive generations of cattle have produced the fledgling, 100,000 litre cow TITANIA, a remarkably fortunate acquisition. TAUBE was successfully flushed three times and 41 of her descendants are thriving today.

She is experiencing her second lactation and currently produces over forty (40) litres of milk daily. She completed her first lactation with 10,016 kg - 4.12 %F - 3.42 %P - 756 kg F+P. In 2019 she was the world's number one polled cow with a TMI of 138.

Four of her male offspring are currently being deployed for artificial insemination purposes at various insemination stations in Austria and Germany, and a number of additional, hopeful candidates are being raised, all of whom are the offspring of bulls HERZAU and VOLLKOMMEN PP*. Most notable among the female descendants is the hornless daughter TITANIA Pp* , who likewise occupies a top position globally with a TMI of 132. The offspring and descendants of TAUBE which have attracted the most interest are depicted in the table below.

Genomic Bulls

In the competition for the title of Breeder of the Year, the Fürst farm had the opportunity to consider a total of six (6) bulls and thirteen candidates. Due to this high number, a total of 615 points was attained for breeding while a 117 point total was scored for the fitness facilities owing to the very good calving interval and considerable number of cows boasting high lifetime production. The resulting total score of 732 constitutes a new record for this competition.

Breeding Goals

The farm's aim is to breed top-performing, dual purpose-type fleckvieh cows – functional exterior, profitability and breeding suitability are paramount objectives. Particular attention is paid to a short calving interval (364 days) and a high average lifetime production on the part of the delivering cow, as well as a relatively young age at the time of rearing its first calf, currently an average of 26.6 months. The bulls pictured were the most frequently deployed, both in 2019 as well as today.

From the bulls currently deployed, it is also clearly evident that the breeding of polled animals accounts for the farm's principal focus, since, on the one hand, this obviates the need for de-horning while maintaining the great demand for polled sires within the farm's field of vision.

Joy of Breeding

The Fürst family considers the above-mentioned measures to be an important basis for breeding success and excellent herd vitality. However, they also believe finding joy in breeding to be equally decisive when it comes to the production of valuable breeding animals.

The Fürst Farm in Lasberg, Upper Austria

OPERATIONAL DATA

Family:	Operating managers Michael and Verena Fürst together with their daughter Lena, their parents Michael and Gertrude, and their grandfather Michael
Location:	Mühlviertel, 600 m above sea level
Precipitation:	500 – 600 mm annually
Farm Size:	15 ha permanent grassland, 24 ha arable land, 6.5 ha woodland
Machinery Used:	all machinery fully-owned by Fürst, including 3 tractors (110 to 200 hp), round baler, maize chopper, combine
Silo & Storage of Liquid Manure:	500 cubic metre maize silage in silos, grass silage in round bales, 750 cubic metre slurry pit and 550 cubic metre manure pit
Construction Measures:	Chow hall with indoor crane and hay wilting (1988), three silos (1990), resting pen (1999), machinery room (2005), farmer's cottage (life interest estate), tractor garage and grain storage facility (2011), milking robot (2015), two silos (planned for 2020)
Stables:	Deep bed cubicle loose housing for cows and young heifers with open yard and/or grazing meadow, deep bed cubicle with rubber mats and litter with separate manure, scraper robot Calves maintained in groups with deep litter and open yard
Livestock:	55 dairy cows with offspring, total approximately 120 – 130 cattle
Feeding of Cows:	Mixed ration with electric mixer-wagon, additional concentrated feed by means of transponder in the robot automatic feed pusher (Lely Juno)
Feeding of Calves:	Whole milk automatic calf feed (Holm & Laue Calf Expert)
Milking System:	Lely Astronaut A4 milking robot with scales, content-measuring and cell count measuring
Marketing:	each year, approximately 10 – 15 first-calf-cow are sold at breeding cattle auctions in Freistadt, while male calves are sold at calf auctions as well as directly from the farm.
Breeding Association:	Rinderzuchtverband Oberösterreich (RZO = Upper Austrian Cattle Breeding Association)
Performance development:	1990 20.6 cows 6,100 – 4.74 – 3.59 – 508 2000 31.1 cows 7,561 – 4.19 – 3.52 – 583 2010 41.4 cows 8,967 – 4.16 – 3.51 – 688 2019 53.0 cows 10,637 – 4.21 – 3.52 – 822 2020 55.2 cows 10,928 – 4.10 – 3.50 – 830
Other Livestock:	8 laying hens, 2 fattening pigs

Excellent newcomers, but no changes at the top

Comment on the December 2020 breeding value estimation

ING. JOHANN TANZLER, FLECKVIEH AUSTRIA – ZWETTL, AUSTRIA

As far as the proven bulls are concerned, this time, all the top bulls are already in the calibration, meaning they will be able to transmit their full effect to their offspring. There are no major changes at the top: ETOSCHA continues to lead while VILLEROY has advanced to second place by improving his fertility value to 117 points.

OREO, one of the later sons of GS HEIDUCK, has also achieved an extremely high fertility value that puts him in the top group. His heredity is characterised by excellent fat percentages and good udders with below average feet and legs. The MARTIN MANTON son GS MAXIMAL has gained two points in the fitness trait, which also puts him in the top ten. With a strong increase of +3 points each in the milk index and the fitness trait, GS DER BESTE is one of the big winners of the current breeding value estimation. A son of DAX, he combines high performance with a good frame and excellent udder quality. He is already set to leave his mark in Fleckvieh breeding, at the very least as a dam's sire of interesting insemination bulls.

Also, in the spotlight are the GS WERTVOLL son WORLDCUP, who stands out for his very balanced and solid heredity, as well as the GS WOHLTAT son WHATEVER, who achieved a strong TMI gain of 9 points.

Young sires

GS RAZFAZ and EASY, who were previously in the lead, have been replaced by WINTERTRAUM, who stands out across the board and boasts truly fantastic conformation values. The combination of GS WOIWODE x GS THE BEST stands for the latest progress in genetics. The top polled sire GS MY BEST Pp* (S.: GS MYSTERIUM Pp*) also features the latest genetics and even comes from the same dam's sire.

The top list comprises 158 genomic young sires with a total breeding value of at least 128 points and represents an excellent selection with quite broad lines. The range of polled genetics is becoming more and more diverse, so that this interesting segment is continuing to gain in importance.

The preparations for Single Step are in full swing

If everything goes according to plan, this was the last breeding value estimation according to the old method, and we will be discussing new top lists with major changes next April. And this is exactly how it should be, given that we assume that safety will be a significant factor, especially in the case of young animals, which will produce results that are much closer to the actual breeding values. If the new model's impact on the ranking of the animals were small, it would only bring modest improvements after all.

We are excited and look forward to the many positive effects of the changeover, such as:

- Simplifications for breeders – there will only be one breeding value, with no distinction between purely genomic and genomically optimised values.
- All typed animals with phenotypes will thus be calibrated, which means that typing will pay off to an even greater extent.
- The elimination of distortions – the typing results will, on average, correspond exactly to the ancestor index and will no longer be below it, meaning fewer "jumps" between the breeding value estimates.
- The introduction of many new breeding values – especially in the case of health data there will now be sufficient certainty for publication.
- In the case of typed animals, this results in strong increases in safety, but non-typed animals will also benefit, especially if their offspring are typed and the genome can thus be calculated ("imputed").
- Greater safety also means greater extreme values (both higher and lower)
- in other words, this will be an exciting change.

Single Traits Main Focus – December 2020

The schedule contains the best 10 bulls, assessed on the basis of individual traits, from a joint list of proven bulls (in brown) and genomic bulls (in blue). The lists are arranged in accordance with relative breeding values as associated with individual traits, total merit index and milk index. The two best proven bulls have been listed in any event, even if they have not been counted among the top ten.

Rank	Name	Diff.TMI
12	WHATEVER	+9
8	GS DER BESTE	+6
3	OREO	+4
8	ICEBREAKER	+3
135	IVARIS	+3
140	GS MCDRIVE Pp*	+3
39	ZAFON	+2
63	GS DEFACTO	+2
7	GS MAXIMAL	+2
103	MAROKKO PP*	+2

Rank	Name	MI
14	VOCO	138
133	HERZKLOPFEN	135
11	GS DOC	133
37	GS HOFSTATT	133
54	HUMIDOR	133
29	HERZSCHLAG	133
12	WUNDERLING	132
25	MANAUS	132
72	GS HILUX	132
15	IRREGUT P*S	132

Rank	Name	BI
17	VESTEL	127
24	GS ZARAS	126
12	WHATEVER	126
26	HOLOWITZ	125
102	ZIROS	125
30	VELTLINER	125
1	ETOSCHA	124
131	WITKOP	124
1	GS RAZFAZ	123
46	WALL	123

Rank	Name	FIT
2	WINTERTRAUM	138
10	GS EPOSCH	134
23	GS WEG FREI	132
71	MARCO Pp*	131
36	EISENHUT	130
69	GS ELGAR	130
6	ERASMUS	129
88	GS ECONOMIC Pp*	129
1	ETOSCHA	121
11	WORLDCUP	118

Rank	Name	CCI
46	WALL	132
1	GS RAZFAZ	131
53	HOFRAT	131
73	HEX HEX Pp*	130
131	WITKOP	130
13	GS HUBERBUA	129
36	EISENHUT	128
26	HOLOWITZ	127
1	ETOSCHA	127
17	VESTEL	127

Rank	Name	Mkg
133	HERZKLOPFEN	+1664
14	VOCO	+1394
112	SENNA	+1317
11	GS DOC	+1248
29	HERZSCHLAG	+1245
54	HUMIDOR	+1235
27	VISION1	+1234
90	HOROTTO	+1174
2	WINTERTRAUM	+1173
89	GS HOFBAUER	+1173

Rank	Name	F%
15	IRREGUT P*S	+0,42
10	GS RENEGADE	+0,39
55	ZACHARIUS	+0,34
138	GS MIDNIGHT	+0,31
38	IMMENS	+0,30
72	GS HILUX	+0,27
6	VARTA	+0,26
30	VELTLINER	+0,25
97	GS MORRICONE Pp*	+0,24
59	IMPOSSUM	+0,23

Rank	Name	Fkg
29	HERZSCHLAG	+61
15	IRREGUT P*S	+59
37	GS HOFSTATT	+57
72	GS HILUX	+57
25	MANAUS	+56
55	ZACHARIUS	+56
133	HERZKLOPFEN	+56
38	IMMENS	+54
14	VOCO	+54
11	GS DOC	+52

Rank	Name	P%
15	IRREGUT P*S	+0,21
21	GS WIZZARD	+0,20
6	VARTA	+0,15
32	VASTUS	+0,13
105	MONDRIAN	+0,13
7	GS WEXFORD	+0,12
131	WITKOP	+0,12
154	MALUS	+0,10
20	MAKAY	+0,09
51	MITTELWEG	+0,09

Rank	Name	Pkg
14	VOCO	+57
27	VISION1	+45
95	EINMALIG	+43
133	HERZKLOPFEN	+43
54	HUMIDOR	+42
11	GS DOC	+41
89	GS HOFBAUER	+41
29	HERZSCHLAG	+40
4	GS MY BEST Pp*	+39
12	WUNDERLING	+39

Rank	Name	Long
2	WINTERTRAUM	136
10	GS EPOSCH	133
23	GS WEG FREI	132
71	MARCO Pp*	132
156	WILMUT	131
158	WINTERSTAR	129
24	GS ZARAS	128
153	GS WOIWODE	128
20	GS WOHLTAT	120
2	VILLEROY	119

Rank	Name	Pers
145	HUDEC	131
9	GS MARKANT	128
158	WINTERSTAR	127
52	HADRIAN	126
16	GS MOJOS	125
40	WEISSENSEE	125
156	WILMUT	125
111	GS MADARAS Pp*	124
23	HARIBO	122
22	GS ZUGSPITZE	118

Rank	Name	Msp
72	GS HILUX	134
89	GS HOFBAUER	132
25	MANAUS	124
12	WUNDERLING	123
56	HEADLINE	123
29	HERZSCHLAG	122
96	GS WHAT ELSE	121
35	ERZHERZOG	120
79	GS MYDARLING	120
23	HARIBO	118

Rank	Name	UDH
124	WITALIS	127
51	MITTELWEG	126
64	GS WABANGO	125
2	WINTERTRAUM	124
20	MAKAY	123
36	EISENHUT	123
153	GS WOIWODE	123
17	WETTINER	122
5	SEHRGUT	119
1	ETOSCHA	118

Rank	Name	FEI
1	ETOSCHA	126
109	HILLTOP	125
110	EDELSTEIN	125
123	HYPER	125
2	WINTERTRAUM	124
70	GS JEDERMANN	124
6	ERASMUS	123
98	GS HUSKY	122
120	HABAKUK	122
3	OREO	120

Rank	Name	VIT
8	ICEBREAKER	121
127	SPARTACUS	120
99	HARDENBERG	119
4	GS MY BEST Pp*	118
70	GS JEDERMANN	118
10	GS EPOSCH	117
65	HUMAN	117
69	GS ELGAR	117
5	SEHRGUT	117
4	MANDRIN	116

Rank	Name	CLVp
10	GS EPOSCH	121
141	GS DEFINITIV	121
94	GS DROPBOX	120
103	MAROKKO PP*	119
127	SPARTACUS	119
4	GS MY BEST Pp*	118
30	GS WIRECARD	118
45	SUNRISE	118
10	GS RENEGADE	118
23	HARIBO	118

Rank	Name	CLVp
114	GS METAXA Pp*	122
33	GS WOLFSKIN	122
143	WANG	120
2	WINTERTRAUM	116
43	VICI Pp*	116
44	VIDI Pp*	116
23	GS WEG FREI	115
8	GS DER BESTE	115
120	HABAKUK	115
123	HYPER	115

Rank	Name	Fert
47	GS MAURIZIO	+5%
142	GS MURTAL Pp*	+5%
140	GS MCDRIVE Pp*	+3%
147	GS MUNDL PP*	+3%
38	IMMENS	+2%
62	VALTRA P*S	+2%
79	GS MYDARLING	+2%
83	MCFIT	+2%
10	GS RENEGADE	+2%
31	GS MAECHTIG Pp*	+2%

Rank	Name	FR
43	VICI Pp*	124
44	VIDI Pp*	124
6	ERASMUS	122
61	HIGHPOWER	122
120	HABAKUK	121
136	GS HERANGO Pp*	121
16	MAHANGO Pp*	119
80	GS WANOLO Pp*	118
109	HILLTOP	118
31	GS MAECHTIG Pp*	117

Rank	Name	MU
16	MAHANGO Pp*	121
140	GS MCDRIVE Pp*	119
69	GS ELGAR	118
5	MERT	116
29	WUESTENSOHN	116
43	VICI Pp*	116
44	VIDI Pp*	116
61	HIGHPOWER	114
88	GS ECONOMIC Pp*	114
21	GS WIZZARD	113

Rank	Name	FL
2	WINTERTRAUM	128
25	MANAUS	123
79	GS MYDARLING	122
87	GS MYSTERIUM Pp*	122
11	GS DOC	121
24	GS ZARAS	120
119	MAI P*S	120
31	GS MAECHTIG Pp*	120
127	SPARTACUS	119
14	VOCO	116

Rank	Name	DU
67	HABSBURGER	145
110	EDELSTEIN	138
6	ERASMUS	137
8	GS DER BESTE	133
72	GS HILUX	132
35	ERZHERZOG	131
18	HANNSTAETT	130
117	GS HARDY	130
141	GS DEFINITIV	130
1	ETOSCHA	120

Rank	Name	UDD
110	EDELSTEIN	138
22	SIDO	125
6	ERASMUS	123
23	GS WEG FREI	123
35	ERZHERZOG	122
158	WINTERSTAR	122
33	HORAZIO P*S	121
106	MACFRANK	121
8	GS DER BESTE	121
1	ETOSCHA	114

Rank	Name	Add
29	WUESTENSOHN	112
65	HUMAN	110
80	GS WANOLO Pp*	110
105	MONDRIAN	109
149	HIMMELBLAU	109
31	WESTWIND	108
84	VILIUS	108
94	GS DROPBOX	108
11	WORLDCUP	108
15	IRREGUT P*S	108

Toplist by Total Merit Index – Proven bulls

Rg	Identification data	Partial breeding values	Milk/Conformation	Beef	Fitness	Absolute performances indicators
	Name ID Sire / Dam's sire YoB, Foreign Genet. def. Al Center Availability	TMI MI BI FIT TOI *Re Re Re Re Re* *Diff Diff Diff Diff Diff*	Mkg F% P% Fkg Pkg Ext-Dau FR-MU-FL-UD-(Add)	CCI NDG CARC TRC	Long UDH SCC Mas Pers FEI Fert EFD Perf CLV Cyst MSp VIT MiFe	Int-Dau Farm D100 Mkg F% P% ØH in 1.L MP1 D1 in 2.L MP2 D2 in 3.L MP3 D3
1	**ETOSCHA** DE 09 48786057 EVEREST / IDIOM 2013 10, AV E, J	**133 108 124 121 125** *97 99 99 96 98* *-1 -3 +1 +1 -1*	+511 -0,23 +0,01 +2 +19 893 Tö: 110-110-111-120-(104)	127 *99* 123 *99* 118 *99* 115 *99*	108 *93* 118 *98* 119 *99* 104 *76* 93 *99* 126 *93* 0 108 *92* 84 *99* 109 *99* 105 *99* 108 *79* 90 *99* 108 *99* 108 *95*	2483 1311 2008 2824 3,93 3,25 8689 2483 6 1064 7578 4,04 3,54 98,0 574 3 9 7156 3,95 3,72 2 2 0
2	**VILLEROY** DE 09 47673487 REUMUT / ETTAL 2012, 5 % RF Eu, 6, A3 J	**132 113 118 116 133** *98 99 99 97 98* *+1 -2 0 +3 0*	+616 -0,15 +0,02 +13 +24 524 Tö: 90-92-110-114-(102)	118 *99* 113 *99* 113 *99* 115 *99*	119 *94* 98 *98* 100 *99* 93 *87* 101 *99* 117 *95* -2 105 *94* 115 *99* 102 *99* 110 *99* 107 *88* 109 *99* 106 *99* 114 *96*	2067 1337 1554 2713 3,96 3,25 8262 2067 6 1188 7265 4,09 3,51 94,2 1013 7 575 8049 4,11 3,61 441 6 181 8871 4,09 3,59
3	**OREO** DE 09 49532769 GS HEIDUCK / REUMUT 2015, 4 % RF 17, A1, A9 E, J, J	**131 115 113 117 123** *92 97 99 88 94* *+4 +1 -1 +4 +4*	+390 +0,20 0,00 +33 +14 151 Tö: 101-111-89-116-(96)	115 *99* 105 *99* 111 *99* 112 *99*	110 *81* 112 *94* 115 *95* 89 *50* 91 *97* 120 *79* 0 109 *71* 97 *97* 104 *99* 103 *93* 107 *58* 106 *97* 111 *93* 103 *80*	368 317 289 2637 4,17 3,18 8395 368 6 120 7008 4,37 3,46 94,7 59 3 0 0 0 0
4	**MANDRIN** AT 650.446.817 MANDARIN / VANSTEIN 2009 Eu, A3 J	**130 122 110 107 124** *99 99 99 99 99* *-2 -2 0 +1 -1*	+1026 -0,15 -0,03 +30 +34 1697 Tö: 94-89-99-101-(101)	117 *99* 108 *99* 107 *99* 108 *99*	106 *99* 99 *99* 103 *99* 90 *96* 105 *99* 104 *99* 1 95 *98* 109 *99* 115 *99* 96 *99* 106 *96* 96 *99* 116 *99* 101 *99*	10872 5293 8857 2899 3,98 3,14 8436 10872 6 5139 7773 4,17 3,45 96,5 3283 4 582 8273 4,23 3,55 274 5 130 8962 4,18 3,46
5	**SEHRGUT** DE 09 47357352 SERANO / WINNIPEG 2012 Eu, 6, A3 J	**130 122 98 114 126** *94 98 99 92 96* *-2 -1 -3 +1 -1*	+1017 -0,17 -0,01 +27 +35 147 Tö: 93-93-108-106-(105)	108 *99* 106 *99* 93 *99* 100 *99*	110 *87* 119 *95* 122 *96* 109 *67* 106 *98* 101 *86* 0 100 *80* 117 *98* 112 *99* 93 *97* 102 *72* 102 *96* 117 *99* 103 *87*	305 246 289 2782 4,05 3,22 8395 305 8 270 7697 4,08 3,47 91,5 232 8 183 8805 4,11 3,56 144 6 63 9278 4,17 3,57
6	**VARTA** DE 09 50350294 VALEUR / GS VOGT 2015 17, A1 J	**130 119 116 109 125** *94 99 99 91 96* *-1 0 -2 0 +1*	+301 +0,26 +0,15 +34 +23 352 Tö: 99-105-94-119-(101)	119 *99* 116 *99* 112 *99* 110 *99*	105 *85* 99 *96* 100 *98* 89 *54* 101 *99* 112 *83* 1 104 *79* 95 *99* 105 *99* 111 *96* 105 *60* 99 *99* 110 *99* 102 *86*	830 571 584 2749 4,17 3,27 8584 830 5 153 7341 4,38 3,56 96,5 46 2 0 0 0 0
7	**GS MAXIMAL** AT 023.375.729 MARTIN / REUMUT 2015 A1, 17 J	**130 116 112 117 129** *88 95 99 85 92* *+2 0 +1 +2 +3*	+654 +0,03 -0,06 +30 +18 120 Tö: 109-109-108-111-(102)	114 *99* 108 *99* 110 *99* 108 *99*	115 *77* 108 *91* 107 *92* 105 *48* 114 *95* 115 *72* 1 102 *63* 107 *95* 114 *99* 104 *89* 104 *52* 97 *96* 102 *93* 107 *72*	249 210 157 2698 3,83 3,06 7954 249 4 21 6582 4,21 3,36 92,7 2 2 0 0 0 0
8	**GS DER BESTE** AT 514.740.229 DAX / REUMUT 2016 F5C A1, 17 J	**129 128 100 105 128** *88 95 99 84 92* *+6 +3 0 +3 +7*	+972 +0,09 0,00 +49 +34 136 Tö: 108-100-105-133-(104)	101 *99* 100 *99* 108 *99* 93 *99*	109 *77* 110 *91* 107 *92* 103 *37* 109 *95* 92 *69* 0 92 *60* 108 *94* 110 *99* 115 *92* 106 *41* 102 *97* 96 *98* 116 *71*	262 208 66 3084 4,08 3,16 9705 262 2 0 100 0 0 0 0 0 0
9	**HURLY** DE 09 47424346 HULKOR / SEGO 2012 Eu, 6, A3 J	**129 113 113 116 124** *99 99 99 99 99* *-1 -1 -1 0 0*	+778 -0,26 -0,03 +10 +25 808 Tö: 103-102-112-116-(103)	118 *99* 108 *99* 117 *99* 104 *99*	113 *97* 106 *99* 104 *99* 108 *93* 103 *99* 113 *98* 0 108 *96* 88 *99* 115 *99* 103 *99* 104 *93* 81 *99* 114 *99* 116 *98*	2676 1852 2381 2803 3,85 3,18 8395 2676 7 2124 7678 4,04 3,44 93 1913 7 1302 8492 4,07 3,54 914 5 238 8748 4,07 3,51
10	**GS RENEGADE** AT 583.231.928 RUKSI / WALDBRAND 2014, 9 % RF A1 J	**128 122 107 107 124** *89 95 98 86 92* *-2 -2 0 -1 0*	+397 +0,39 +0,07 +49 +20 87 Tö: 102-83-94-118-(96)	111 *98* 102 *98* 106 *98* 107 *97*	109 *79* 112 *92* 112 *92* 104 *53* 110 *95* 98 *77* 2 105 *66* 108 *95* 118 *98* 95 *88* 99 *59* 107 *95* 101 *89* 110 *74*	165 148 154 2724 4,20 3,10 8164 165 7 127 7128 4,48 3,42 92,2 86 5 14 7133 4,67 3,56 3 2 0
11	**WORLDCUP** DE 09 51373137 GS WERTVOLL / WATT 2016, 5 % RF 17, A1, A9 J	**128 117 111 118 129** *78 81 99 76 86* *-1 -2 0 0 -3*	+734 -0,06 -0,03 +26 +23 32 Tö: 113-110-110-120-(108)	112 *99* 110 *99* 105 *98* 111 *99*	118 *73* 114 *80* 114 *78* 0 *0* 99 *81* 116 *54* 1 99 *34* 109 *80* 105 *99* 110 *87* 0 *0* 97 *82* 101 *98* 108 *39*	39 34 3 0 0 0 0 39 2 0 0 0 0 0 0 0 0
12	**WHATEVER** DE 08 16320104 GS WOHLTAT / EVEREST 2015 Eu, 27 J	**128 115 126 106 118** *89 97 90 86 92* *+9 +6 0 +4 +7*	+615 -0,09 +0,04 +18 +25 145 Tö: 105-105-103-107-(91)	124 *97* 125 *99* 120 *74* 116 *99*	107 *79* 101 *93* 100 *95* 102 *38* 93 *97* 112 *71* 1 101 *64* 91 *96* 102 *99* 105 *93* 106 *44* 117 *94* 95 *96* 102 *75*	428 264 216 2522 3,85 3,25 7479 428 4 12 6555 3,99 3,50 93,0 3 1 0 0 0 0
13	**WOBBLER** DE 09 46673832 WATNOX / MANDELA 2011 17, A1 J	**128 113 108 115 126** *99 99 99 99 99* *+1 -1 0 +2 0*	+768 -0,23 -0,04 +12 +24 1934 Tö: 102-109-110-109-(100)	112 *99* 101 *99* 105 *99* 110 *99*	115 *99* 114 *99* 115 *99* 109 *94* 112 *99* 104 *99* -3 104 *98* 105 *99* 115 *99* 106 *99* 101 *94* 99 *99* 109 *99* 104 *99*	10205 4840 7539 2740 3,91 3,20 8395 10205 6 3750 7268 4,06 3,44 96,9 2348 6 1141 7830 4,01 3,48 1043 8 868 8493 3,99 3,43
14	**VOCO** DE 09 49132376 VORUM / HUTOED 2014 B2C, F5C 17, A1 -, J	**127 138 74 101 118** *95 99 99 93 96* *-2 -2 0 -1 -2*	+1394 -0,04 +0,08 +54 +57 250 Tö: 105-87-116-99-(99)	82 *99* 87 *99* 77 *99* 79 *99*	95 *89* 96 *96* 98 *97* 90 *63* 108 *99* 107 *88* -2 107 *82* 109 *99* 114 *99* 102 *95* 104 *69* 112 *98* 104 *95* 107 *88*	541 431 464 2827 4,13 3,29 8407 541 7 360 7771 4,14 3,50 95,5 264 5 56 9261 4,15 3,69 12 2 0
15	**IRREGUT P*S** DE 09 50075810 IROKESE P*S / MUNGO Pp 2015, 5 % RF Eu, 6 J	**127 132 113 92 115** *87 95 98 82 91* *-3 -5 -1 0 -2*	+562 +0,42 +0,21 +59 +38 91 Tö: 112-109-103-108-(108)	117 *98* 124 *98* 107 *97* 105 *97*	94 *76* 101 *90* 100 *91* 0 *0* 87 *94* 90 *63* -1 104 *54* 103 *94* 104 *99* 98 *88* 91 *32* 102 *93* 103 *94* 107 *65*	202 150 126 2870 4,50 3,31 8273 202 5 6 8362 4,59 3,81 97,2 1 1 0 0 0 0
16	**MAHANGO Pp*** DE 09 48097266 MUNGO Pp / ROUND UP 2013, 8 % RF 10, AV, C5 J	**127 119 111 107 119** *99 99 99 99 99* *-1 -1 0 0 0*	+809 +0,01 -0,08 +34 +22 2196 Tö: 119-121-111-101-(102)	113 *99* 113 *99* 103 *99* 112 *99*	104 *99* 106 *99* 107 *99* 102 *95* 104 *99* 105 *99* -2 109 *99* 91 *99* 107 *99* 115 *99* 93 *95* 93 *99* 98 *99* 108 *99*	11881 4909 10535 2845 4,01 3,16 8472 11881 8 8195 7769 4,17 3,42 95 6015 6 1981 8434 4,23 3,56 1005 3 6 10128 4,40 3,53

Toplist by Total Merit Index – Proven bulls

	Identification data		Partial breeding values					Milk/Conformation			Beef	Fitness								Absolute performances indicators						
Rg	Name ID		TMI	MI	BI	FIT	TOI	Mkg	F%	P%	CCI	Long		UDH		SCC		Mas		Int-Dau	Farm	D100	Mkg	F%	P%	ØH
	Sire / Dam's sire		Re	Re	Re	Re	Re		Fkg	Pkg	NDG	Pers		FEI		Fert		EFD		in 1.L	MP1	D1				Mat
	YoB, Foreign	Genet. def.	Diff	Diff	Diff	Diff	Diff	Ext-Dau			CARC	Perf		CLV				Cyst		in 2.L	MP2	D2				
	Al Center	Availability						FR-MU-FL-UD-(Add)			TRC	MSp		VIT				MiFe		in 3.L	MP3	D3				
17	**VESTEL** DE 09 47331693		**127**	**116**	**127**	**102**	**118**	+1108	-0,28	-0,15	127	*99*	100	*86*	99	*95*	100	*95*	98	*72*	258	213	250	2782	3,98	3,12	8212
	VANADIN / WINNIPEG		*93*	*97*	*99*	*92*	*95*		+21	+26	131	*99*	107	*97*	107	*86*	0		109	*79*	258	7	224	7681	3,99	3,32	92,2
	2012	F2C	*-2*	*-2*	*-1*	*-1*	*-2*	130 Tö:			121	*99*	95	*97*	107	*99*	99	*93*	104	*75*	192	6	128	8522	4,06	3,43	
	A1	J						109-112-97-97-(104)			114	*99*	110	*97*	94	*94*			125	*86*	97	5	25	9007	3,87	3,38	
18	**EPINAL** DE 09 48747459		**126**	**122**	**96**	**109**	**121**	+989	-0,18	+0,03	100	*99*	101	*98*	95	*98*	95	*99*	97	*85*	3121	1518	2635	2819	3,85	3,27	8411
	EVEREST / SAMPRO		*98*	*99*	*99*	*98*	*99*		+25	+37	103	*99*	116	*99*	118	*95*	0		105	*94*	3121	7	1822	7755	4,01	3,52	96,5
	2014	F5C	*-4*	*-3*	*0*	*-1*	*-6*	1115 Tö:			89	*99*	105	*99*	109	*99*	107	*99*	110	*86*	1270	5	343	8782	4,10	3,64	
	17, A1	J, E						115-99-107-112-(105)			101	*99*	109	*99*	99	*99*			111	*96*	116	2	0				
19	**EVEROY** DE 08 16208611		**126**	**121**	**118**	**104**	**114**	+725	0,00	+0,06	122	*98*	102	*76*	100	*86*	101	*86*	102	*34*	103	68	36	2836	3,91	3,29	8250
	EVERGREEN / VANSTEIN		*83*	*90*	*95*	*80*	*89*		+30	+31	124	*99*	99	*90*	109	*60*	0		104	*45*	103	3	0				94,9
	2015		*-3*	*-6*	*-1*	*0*	*+1*	49 Tö:			109	*91*	92	*89*	106	*99*	99	*85*	100	*37*	0	0	0				
	Eu, 27, A8	J						96-98-103-101-(103)			112	*97*	94	*87*	105	*93*			100	*53*	0	0	0				
20	**GS WOHLTAT** AT 172.718.519		**126**	**113**	**112**	**111**	**123**	+491	-0,11	+0,07	110	*99*	120	*99*	105	*99*	105	*99*	104	*97*	7578	3346	6158	2623	4,07	3,29	8252
	WILLE / GS POLARI		*99*	*99*	*99*	*99*	*99*		+11	+23	104	*99*	112	*99*	101	*99*	1		88	*99*	7578	8	5616	7200	4,11	3,50	90,4
	2012		*-1*	*-1*	*0*	*0*	*-1*	1846 Tö:			111	*99*	106	*99*	98	*99*	110	*99*	108	*97*	5699	8	3846	8184	4,13	3,58	
	A1, 17	J						94-100-102-95-(97)			111	*99*	109	*99*	101	*99*			116	*99*	3581	6	1708	8722	4,15	3,56	
21	**GS WIZZARD** AT 411.065.428		**126**	**111**	**120**	**111**	**126**	+25	+0,19	+0,20	119	*99*	116	*81*	113	*94*	111	*95*	114	*59*	306	259	252	2495	4,12	3,27	8036
	WATNOX / GS VULVUS		*91*	*97*	*99*	*88*	*94*		+16	+17	117	*99*	107	*97*	100	*80*	0		98	*73*	306	6	154	6651	4,32	3,52	93,5
	2014, 7 % RF		*+1*	*0*	*0*	*+1*	*-2*	126 Tö:			116	*99*	111	*97*	101	*99*	93	*92*	108	*64*	98	4	4				
	A1	J						103-113-106-119-(103)			113	*99*	103	*97*	103	*92*			109	*81*	0	0	0				
22	**GS ZUGSPITZE** AT 459.067.828		**125**	**122**	**98**	**109**	**124**	+530	+0,23	+0,06	97	*98*	111	*76*	104	*88*	102	*88*	106	*40*	123	113	90	2529	4,17	3,21	7747
	ZARADIN / WILLE		*85*	*92*	*98*	*81*	*89*		+41	+24	94	*99*	118	*93*	102	*66*	0		99	*52*	123	5	15	6834	4,26	3,38	94,2
	2015, 5 % RF	TPC	*+1*	*+2*	*0*	*-2*	*+1*	67 Tö:			104	*98*	110	*92*	101	*98*	108	*83*	98	*44*	4	2	0				
	A1	J						98-94-107-113-(101)			96	*98*	104	*93*	99	*85*			112	*62*	0	0	0				
23	**HARIBO** DE 09 48636664		**125**	**120**	**98**	**107**	**121**	+679	+0,10	-0,01	105	*99*	106	*99*	99	*99*	99	*99*	100	*93*	8133	3355	6390	2769	3,97	3,18	8317
	HUTERA / REX		*99*	*99*	*99*	*99*	*99*		+37	+23	97	*99*	122	*99*	105	*98*	0		101	*97*	8133	6	3733	7529	4,16	3,45	96,4
	2013		*-2*	*-3*	*0*	*+1*	*-4*	2516 Tö:			91	*99*	100	*99*	118	*99*	93	*99*	105	*93*	2296	4	296	8287	4,27	3,60	
	17, A1	J						90-108-110-113-(107)			107	*99*	118	*99*	107	*99*			110	*98*	102	2	0				
24	**VLUTLICHT** DE 09 49898525		**125**	**117**	**123**	**102**	**122**	+915	-0,22	-0,03	119	*96*	112	*79*	106	*90*	106	*91*	100	*37*	140	119	127	2870	3,87	3,18	8531
	ROTGLUT / HUTERA		*88*	*94*	*91*	*86*	*91*		+18	+30	122	*95*	105	*95*	97	*73*	-1		106	*59*	140	8	114	7874	4,07	3,48	92,9
	2014		*+2*	*+1*	*+1*	*+1*	*+2*	74 Tö:			118	*87*	101	*95*	106	*99*	102	*88*	105	*49*	93	5	5	9363	3,91	3,58	
	Eu, 6, 9	J						113-103-115-117-(101)			114	*93*	110	*91*	80	*95*			93	*67*	0	0	0				
25	**GS WOHLSTAND** AT 044.448.929		**125**	**114**	**108**	**114**	**124**	+683	-0,08	-0,06	105	*96*	116	*75*	97	*85*	95	*84*	101	*39*	60	55	53	2680	4,01	3,08	8292
	GS WOHLTAT / RUREX		*82*	*88*	*96*	*79*	*87*		+22	+19	97	*97*	114	*88*	118	*62*	-1		100	*45*	60	5	20	7584	4,05	3,30	95
	2015		*0*	*-4*	*+1*	*+2*	*+1*	38 Tö:			112	*97*	107	*87*	104	*93*	108	*76*	106	*42*	3	1	0				
	A1	J						90-107-105-102-(103)			105	*96*	105	*89*	96	*77*			108	*51*	0	0	0				
26	**WINDSHEIM** DE 09 51128317		**125**	**112**	**111**	**114**	**117**	+596	-0,08	-0,04	111	*97*	113	*76*	111	*86*	111	*86*	107	*31*	83	71	40	2717	4	3,14	7773
	WATT / GS VOGT		*83*	*90*	*97*	*79*	*88*		+18	+17	109	*97*	105	*90*	104	*59*	0		93	*44*	83	3	0				96,9
	2015, 5 % RF		*0*	*-1*	*-1*	*0*	*+1*	41 Tö:			112	*97*	97	*88*	95	*95*	115	*80*	104	*34*	0	0	0				
	Eu, 6, A3	-, -, J						95-98-95-96-(95)			106	*96*	97	*90*	107	*82*			108	*52*	0	0	0				
27	**POLAROID** DE 09 47470646		**125**	**112**	**111**	**112**	**118**	+570	+0,03	-0,10	106	*99*	105	*96*	118	*99*	118	*99*	114	*91*	1599	1095	1490	2710	4,08	3,20	8349
	POLARBAER / MANITOBA		*98*	*99*	*99*	*98*	*99*		+26	+12	97	*99*	92	*99*	110	*96*	-1		107	*95*	1599	8	1329	7242	4,26	3,43	91,2
	2012		*-2*	*-2*	*0*	*-1*	*-2*	413 Tö:			115	*99*	112	*99*	96	*99*	105	*99*	105	*91*	1179	7	868	8458	4,27	3,49	
	Eu, 6, A3	N, N, J						102-110-100-97-(101)			108	*99*	94	*99*	99	*99*			118	*97*	653	5	147	8792	4,25	3,49	
28	**ROYAL** DE 09 46221893		**125**	**109**	**114**	**113**	**121**	+636	-0,22	-0,05	118	*99*	106	*99*	112	*99*	112	*99*	108	*95*	4889	2640	4084	2679	3,95	3,20	8095
	ROMARIO / RESOLUT		*99*	*99*	*99*	*99*	*99*		+ 7	+18	119	*99*	90	*99*	113	*99*	-1		108	*98*	4889	7	3269	7228	4,01	3,46	92,7
	2011, 6 % RF		*-1*	*-2*	*0*	*-1*	*-1*	1089 Tö:			110	*99*	111	*99*	104	*99*	105	*99*	107	*95*	2950	8	2491	8371	4,04	3,53	
	Eu, 6, A3	J						100-101-97-113-(106)			107	*99*	97	*99*	109	*99*			107	*99*	2127	7	1404	8937	4,06	3,51	
29	**HERZSCHLAG** AT 303.304.428		**124**	**133**	**109**	**83**	**109**	+1245	+0,10	-0,05	113	*99*	84	*99*	91	*99*	94	*99*	85	*96*	8868	4213	7570	3046	4,11	3,16	8689
	HUTERA / WILDWEST		*99*	*99*	*99*	*99*	*99*		+61	+40	122	*99*	87	*99*	86	*99*	0		98	*98*	8868	7	4731	8258	4,28	3,45	95,2
	2014		*-3*	*-5*	*0*	*0*	*-4*	2984 Tö:			95	*99*	80	*99*	105	*99*	107	*99*	95	*96*	2911	4	358	8749	4,36	3,60	
	Eu, A5, A3	J						107-95-95-120-(102)			110	*99*	122	*99*	101	*99*			110	*99*	84	2	0				
30	**VELTLINER** DE 09 48784581		**124**	**116**	**125**	**102**	**119**	+275	+0,25	+0,07	119	*96*	101	*82*	107	*90*	107	*91*	101	*35*	100	76	93	2738	4,17	3,22	8150
	REUMUT / WINNIPEG		*88*	*94*	*90*	*86*	*92*		+32	+16	121	*96*	105	*94*	101	*72*	0		95	*58*	100	8	81	7307	4,40	3,55	89,7
	2013		*-3*	*-2*	*-1*	*-1*	*-2*	62 Tö:			120	*82*	107	*94*	89	*99*	109	*93*	102	*48*	79	8	59	8080	4,50	3,62	
	10, AV, 16	J						100-107-98-106-(106)			118	*95*	101	*90*	90	*99*			107	*65*	43	5	3				
31	**GS MAECHTIG Pp*** AT 499.975.429		**124**	**116**	**111**	**111**	**121**	+892	-0,21	-0,07	109	*99*	108	*77*	99	*88*	98	*88*	104	*32*	141	129	24	2989	3,81	3,16	9242
	MAHANGO Pp* / HURRICAN		*85*	*90*	*99*	*82*	*90*		+19	+26	111	*99*	115	*90*	112	*64*	2		105	*51*	141	2	0				99,7
	2016		*-4*	*-4*	*-1*	*-2*	*-3*	78 Tö:			107	*99*	102	*90*	91	*99*	114	*90*	96	*36*	0	0	0				
	A1, 17	J						117-111-120-96-(101)			108	*99*	89	*93*	102	*97*			109	*60*	0	0	0				
32	**ROCKY** DE 09 49220548		**124**	**112**	**113**	**112**	**121**	+855	-0,22	-0,14	119	*98*	107	*83*	102	*92*	102	*93*	97	*45*	172	146	164	2689	4,11	3,12	8055
	ROYAL / VANSTEIN		*90*	*95*	*97*	*88*	*93*		+17	+19	115	*97*	95	*95*	118	*76*	1		105	*63*	172	8	138	7380	4,13	3,39	94,4
	2014, 5 % RF		*-2*	*-2*	*0*	*0*	*-2*	90 Tö:			111	*97*	110	*95*	113	*99*	101	*89*	108	*55*	94	5	14	8380	4,07	3,47	
	Eu, 6, A3	J						97-101-94-108-(107)			106	*96*	106	*94*	110	*94*			102	*72*	7	2	0				

GS MAXIMAL

AT 023.375.729
GENOSTAR

Breeder: Gaugl Josef
8252 Moenichwald

Breeding Value:
gTMI 130 (88) | BI 112 (99) | FIT 117 (85) | TOI 129 (92)
MI 116 (95) +654 +0.03 +30 -0.06 +18

Hereditary transmission: With a total TMI of 130 points, GS MAXIMAL is among the top ranked daughter-proven bulls of the Fleckvieh breed. Currently the best grandson of the Bavarian sire Manton, GS MAXIMAL comes from the up-and-coming Josef Gaugl breeding farm in Mönichwald, Styria, Austria; with a stable dam that resulted from the combination Reumut x GS Rumgo. His well-balanced heredity makes him a valuable sire for large-scale breeding. GS MAXIMAL improves the beef and fitness values and yields problem-free young cows with durable conformation. GS MAXIMAL is ideally suited for the insemination of heifers.

DESCENT

MARTIN	DE 09 47682715	**MANTON**	DE 09 42405989	**MANITOBA**
Index: 112 / 110 / +764 -0.23 -0.13		**GRACIS**	DE 09 39533378	**SAMUT**
ZITHA	AT 109.481.222	**REUMUT**	DE 09 44127123	**RAUFBOLD**
Index: 117 / 113 / +256 +0.16 +0.05		**ZOE**	AT 492.127.718	**GS RUMGO**
5/5 - 8,779-4.40-3.56-699			4/3 - 9,412-4.42-3.46-742	
HL: 4. - 10,030-4.28-3.42-772				

CONFORMATION 109 – 109 – 108 – 111 (93)

120 DAUGHTERS			76 88 100 112 124 136	
Frame	**109**			
Muscularity	**109**			
Feed & legs	**108**			
Udder	**111**			
Cross height	109	small		large
Body length	112	short		long
Rump width	108	narrow		wide
Body depth	108	shallow		deep
Rump angle	87	rising		sloped
Hock angularity	102	steep		sickled
Hock development	100	spongy		dry
Pasterns	109	weak		strong
Hoof height	111	low		steep
Fore udder length	108	short		long
Rear udder length	79	short		long
Fore udder attach.	117	loose		tight
Ligament	102	weak		strong
Udder depth	111	deep		high
Teat length	108	short		long
Teat thickness	90	thin		thick
Fore teat placement	100	wide		close
Rear teat placement	111	wide		close
Rear teats attitude	111	outwards		inwards
Udder cleanness	102	add. teats		clean udder

= optimal range

GS DER BESTE

AT 514.740.229
GENOSTAR

Breeder: Ferstl Heidemarie
8793 Trofaiach

Breeding Value:
gTMI 129 (88) | BI 100 (99) | FIT 105 (84) | TOI 128 (92)
MI 128 (95) +972 +0.09 +49 +0.00 +34

Hereditary transmission: GS DER BESTE's high performance values are due to the combination of the standout Fleckvieh bulls Dax x Reumut x Mandela in his bloodline and his dam, an experienced show animal from the Ferstl breeding farm in Trofaiach, Styria, Austria. Thanks to his verified calving traits, he is suitable for the large-scale insemination of heifers. With a daughter-proven udder breeding value of 133 points, GS DER BESTE is one of the top sires in Fleckvieh breeding. The udder depth, fore udder length and central ligament traits as well as the placement of the teats are all within the ideal range.

DESCENT

DAX	DE 09 48300739	**DELL**	DE 09 74602964	**DEXTRO**
Index: 121 / 118 / +599 +0.06 +0.02		**ROMVANY**	DE 09 42047442	**VANSTEIN**
KALLA	AT 911.733.722	**REUMUT**	DE 09 44127123	**RAUFBOLD**
Index: 112 / 115 / +645 -0.04 -0.06		**KAMERUN**	AT 217.848.717	**MANDELA**
5/4 - 10,582-4.36-3.30-810			9/8 - 9,299-3.89-3.38-677	
HL: 3. - 12,206-4.67-3.24-964				

CONFORMATION 108 – 100 – 105 – 133 (94)

136 DAUGHTERS			76 88 100 112 124 136	
Frame	**108**			
Muscularity	**100**			
Feed & legs	**105**			
Udder	**133**			
Cross height	111	small		large
Body length	107	short		long
Rump width	101	narrow		wide
Body depth	105	shallow		deep
Rump angle	106	rising		sloped
Hock angularity	97	steep		sickled
Hock development	107	spongy		dry
Pasterns	95	weak		strong
Hoof height	100	low		steep
Fore udder length	103	short		long
Rear udder length	102	short		long
Fore udder attach.	119	loose		tight
Ligament	119	weak		strong
Udder depth	121	deep		high
Teat length	83	short		long
Teat thickness	91	thin		thick
Fore teat placement	130	wide		close
Rear teat placement	125	wide		close
Rear teats attitude	121	outwards		inwards
Udder cleanness	104	add. teats		clean udder

= optimal range

Toplist by Total Merit Index – Genomic young bulls

	Identification data		Partial breeding values					Milk			Beef		Fitness								Conformation			
Rg	Name ID Sire / Dam's sire Genet. def.	YoB, Foreign AI Center Availability	TMI *Si* *Diff*	MI *Si* *Diff*	BI *Si* *Diff*	FIT *Si* *Diff*	TOI *Si* *Diff*	Mkg	F% Fkg	E Pkg	NDG CARC TRC		Long Pers Perf		UDH CLV VIT		SCC p/m Msp		FEI Fert		FR *Re*	MU	FL	UD Add
1	**GS RAZFAZ** AT 095.456.669 ROLLS / ETOSCHA F2C	2019 A1 J	**142** *63* *-1*	**122** *68* *-3*	**123** *59* *+1*	**128** *66* *+2*	**146** *72* *+1*	+894	-0,05 +33	-0,03 +29	122 113 119	*62* *56* *61*	126 118 126	*67* *69* *68*	120 115 103	*69* *66* *59*	123 107 106	*66* *55* *67*	116	*46*	91 *75*	108	105	112 102
*2	**WINTERTRAUM** AT 989.327.769 GS WOIWODE / GS DER BESTE	2019 A1, 17, 2 E	**141** *61* *new*	**123** *67* *new*	**100** *58* *new*	**138** *65* *new*	**147** *70* *new*	+1173	-0,21 +30	-0,07 +35	122 113 119	*62* *56* *61*	126 118 126	*67* *69* *68*	120 115 103	*69* *66* *59*	123 107 106	*66* *55* *67*	116	*46*	91 *75*	108	105	112 102
3	**EASY** DE 08 17423218 ETHOS / GS WATTKING	2019, 5 % RF Eu, 6, A5 E, E, J	**139** *62* *-2*	**124** *67* *-2*	**117** *60* *0*	**121** *65* *-1*	**138** *71* *-2*	+1076	-0,08 +38	-0,09 +30	120 116 106	*65* *56* *60*	121 108 111	*65* *67* *67*	108 106 101	*68* *63* *57*	105 113 113	*65* *54* *65*	118	*44*	114 *74*	92	103	118 100
*4	**GS MY BEST Pp*** AT 781.642.769 GS MYSTERIUM Pp* / GS DER BESTE	2019 A1 E	**138** *62* *new*	**126** *68* *new*	**107** *59* *new*	**124** *65* *new*	**140** *71* *new*	+1114	-0,16 +32	0,00 +39	112 108 100	*62* *56* *61*	122 110 113	*65* *68* *66*	111 118 118	*68* *64* *58*	110 107 97	*66* *55* *66*	114	*43*	109 *73*	97	117	116 103
*5	**MERT** AT 450.312.569 METTMACH Pp* / ROYAL	2019 Eu, A3, 6 J	**138** *62* *new*	**122** *67* *new*	**118** *63* *new*	**127** *65* *new*	**138** *72* *new*	+1016	-0,11 +33	-0,09 +28	113 109 120	*65* *61* *63*	127 118 113	*66* *68* *67*	113 103 103	*68* *62* *57*	114 107 96	*65* *55* *66*	118	*44*	102 *74*	116	105	111 105
6	**ERASMUS** DE 08 17174893 GS EHRSAM / GS WATTKING	2019 Eu, 27, A3 J, J, E	**138** *61* *-1*	**115** *66* *-3*	**118** *63* *-1*	**129** *64* *+2*	**140** *71* *0*	+874	-0,20 +19	-0,08 +24	121 118 105	*67* *61* *65*	127 105 105	*65* *66* *66*	116 97 107	*67* *63* *57*	112 107 116	*64* *53* *64*	123	*43*	122 *73*	110	106	137 103
*7	**GS WEXFORD** AT 665.790.269 WEISSENSEE / GS DENKMAL	2019 A1 E	**137** *61* *new*	**125** *67* *new*	**114** *59* *new*	**119** *65* *new*	**138** *71* *new*	+715	+0,06 +35	+0,12 +35	115 107 111	*62* *55* *60*	117 121 114	*65* *67* *67*	113 105 111	*68* *64* *59*	110 111 102	*65* *57* *66*	105	*43*	108 *74*	104	103	124 103
8	**ICEBREAKER** DE 09 53765346 IMPERATIV / GS VOLLWERT	2018 17, A1, 2 J, J, V	**137** *71* *+3*	**123** *75* *-1*	**118** *69* *+1*	**121** *74* *+5*	**137** *80* *+2*	+569	+0,17 +38	+0,08 +27	107 116 115	*73* *66* *71*	117 113 120	*72* *75* *75*	108 106 121	*75* *99* *87*	108 100 99	*73* *70* *73*	116	*54* +1%	85 *79*	95	107	106 98
9	**GS MARKANT** AT 117.518.768 METTMACH Pp* / MONUMENTAL	2019 A1 E	**137** *64* *-2*	**123** *69* *-1*	**111** *65* *-3*	**126** *67* *+1*	**138** *73* *-3*	+811	0,00 +34	+0,02 +30	112 101 113	*67* *62* *65*	125 128 115	*67* *69* *68*	112 106 105	*70* *66* *61*	113 108 102	*67* *59* *67*	113	*47*	108 *75*	98	116	104 105
10	**GS EPOSCH** AT 838.777.268 GS EHRSAM / MONUMENTAL	2019 A1 J	**137** *62* *-1*	**114** *67* *-2*	**111** *64* *-2*	**134** *65* *+3*	**142** *71* *0*	+721	-0,19 +14	0,00 +25	109 108 108	*67* *61* *65*	133 116 108	*65* *67* *66*	121 121 117	*67* *64* *57*	123 112 102	*64* *54* *65*	116	*44*	101 *73*	103	113	120 100
11	**GS DOC** AT 097.654.169 DREAM / WATT	2019, 7 % RF A1, 2, 17 J, E, J	**136** *64* *0*	**133** *69* *0*	**119** *66* *+1*	**105** *66* *-1*	**134** *73* *-1*	+1248	0,00 +52	-0,04 +41	121 114 112	*69* *62* *68*	107 106 111	*66* *69* *69*	96 113 102	*70* *66* *60*	96 108 108	*67* *56* *68*	106	*44*	98 *76*	92	121	112 104
*12	**WUNDERLING** AT 879.635.769 WEISSENSEE / HERZSCHLAG	2019 Eu, A3, A5 E, E, J	**136** *62* *new*	**132** *68* *new*	**105** *58* *new*	**111** *66* *new*	**134** *72* *new*	+1106	+0,06 +51	0,00 +39	104 100 108	*61* *55* *60*	116 119 116	*67* *68* *67*	114 99 97	*69* *63* *58*	115 108 123	*66* *57* *66*	93	*46*	100 *74*	99	109	117 102
13	**GS HUBERBUA** AT 873.887.868 HERMELIN / ETOSCHA	2019 A1 E	**136** *65* *-2*	**130** *71* *-3*	**121** *65* *-1*	**105** *68* *+1*	**130** *74* *0*	+1080	+0,07 +51	-0,04 +35	124 114 114	*68* *63* *67*	107 99 100	*68* *71* *70*	104 109 107	*71* *66* *60*	101 103 113	*69* *59* *69*	99	*47*	111 *76*	99	104	129 103
14	**EPHRAIM** DE 08 17174898 GS EHRSAM / GS WATTKING	2019 Eu, 27, A3 J, J, E	**136** *62* *-1*	**123** *67* *-1*	**119** *64* *-2*	**117** *65* *+2*	**134** *71* *0*	+1045	-0,09 +36	-0,10 +28	121 118 107	*67* *61* *65*	115 106 105	*65* *67* *66*	106 105 106	*68* *63* *57*	105 111 112	*65* *54* *65*	113	*43*	113 *74*	99	107	116 104
*15	**GS WUNDERINO** AT 097.146.569 WEISSENSEE / REUMUT	2019 A1 E	**136** *64* *new*	**120** *70* *new*	**118** *61* *new*	**125** *67* *new*	**137** *73* *new*	+516	+0,14 +33	+0,06 +24	111 119 110	*64* *58* *63*	122 109 115	*67* *70* *69*	119 111 101	*71* *68* *62*	120 110 100	*68* *60* *69*	121	*46*	101 *75*	100	102	115 96
16	**GS MOJOS** AT 278.283.669 MORALIS / HERZSCHLAG	2019 A1 J	**135** *61* *0*	**126** *67* *-1*	**102** *57* *+1*	**122** *65* *+2*	**138** *71* *0*	+1122	-0,13 +35	-0,03 +37	104 96 105	*61* *54* *59*	125 125 117	*66* *67* *66*	108 105 112	*68* *65* *58*	106 105 103	*65* *53* *65*	103	*44*	96 *73*	93	104	121 107
17	**WETTINER** DE 09 54030000 WABAN / RALDI	2018, 7 % RF 2, A1, 17 E, J, J	**135** *69* *-1*	**126** *74* *0*	**99** *68* *0*	**123** *72* *+1*	**137** *77* *0*	+964	-0,01 +39	0,00 +34	102 91 106	*72* *65* *69*	122 115 123	*73* *74* *73*	122 104 105	*75* *67* *60*	121 112 107	*72* *59* *72*	106	*55*	102 *79*	106	99	120 104
18	**HANNSTAETT** DE 09 54934162 HERMELIN / WOBBLER	2019, 4 % RF Eu, 6 J	**135** *65* *-1*	**125** *70* *-3*	**116** *66* *+2*	**115** *68* *0*	**130** *74* *-1*	+951	+0,02 +41	-0,04 +31	114 109 113	*71* *63* *67*	118 97 100	*68* *70* *70*	119 101 103	*71* *66* *61*	119 108 105	*68* *60* *69*	100	*48*	107 *75*	106	103	130 102
19	**HOFMEISTER** AT 213.043.769 HERZPOCHEN / VILLEROY	2019 Eu, A3, A5 J	**135** *60* *-1*	**121** *65* *-3*	**117** *57* *+2*	**119** *64* *+2*	**135** *70* *-1*	+1109	-0,21 +28	-0,10 +30	117 108 115	*61* *53* *58*	124 117 103	*64* *65* *64*	106 110 106	*67* *61* *56*	107 103 115	*63* *53* *63*	107	*42*	95 *72*	105	114	121 99
20	**MAKAY** DE 09 54382991 MALAWI / VARTA	2019, 5 % RF 17, A1 J	**135** *66* *-1*	**121** *72* *-2*	**107** *63* *-1*	**123** *69* *0*	**132** *74* *-2*	+612	+0,07 +31	+0,09 +29	110 106 102	*66* *60* *64*	125 110 100	*69* *72* *71*	123 105 103	*72* *68* *61*	122 103 114	*70* *57* *70*	107	*50*	104 *77*	93	107	127 103
21	**MCGYVER** DE 09 54344202 MACBETH / HURLY	2018 Eu, 6, A3 J	**135** *69* *-1*	**121** *75* *-1*	**105** *69* *+1*	**124** *73* *-1*	**138** *77* *-1*	+816	-0,03 +31	-0,02 +27	107 109 97	*73* *66* *70*	124 118 115	*72* *75* *74*	114 114 113	*75* *68* *61*	113 105 97	*73* *61* *73*	112	*55*	104 *77*	88	111	123 103

New bulls are orange-coloured

Toplist by Total Merit Index – Genomic young bulls

Rg	Identification data Name ID Sire / Dam's sire Genet. def.	 YoB, Foreign Al Center Availability	Partial breeding values TMI *Si* *Diff*	 MI *Si* *Diff*	 BI *Si* *Diff*	 FIT *Si* *Diff*	 TOI *Si* *Diff*	Milk Mkg	 F% Fkg	 E Pkg	Beef NDG CARC TRC		Fitness Long Pers Perf		 UDH CLV VIT		 SCC p/m Msp		 FEI Fert		Conformation FR *Re*	 MU	 FL	 UD Add
22	**SIDO** DE 09 55073917 SYSTEM / ETOSCHA	2019, 5 % RF Eu, 6, A3 J, J, E	**135** *64* *-2*	**120** *71* *-2*	**109** *63* *+1*	**125** *67* *-1*	**136** *73* *-1*	+819	-0,03 +32	-0,06 +24	112 107 104	*69* *57* *66*	122 109 106	*67* *71* *68*	117 108 111	*71* *63* *54*	114 103 116	*68* *54* *68*	117	*46*	111 *76*	98	107	126 101
23	**GS WEG FREI** AT 905.196.168 GS W1 / HURLY	2019 A1 J	**135** *63* *-1*	**117** *69* *-1*	**107** *61* *-1*	**132** *67* *+1*	**136** *73* *-1*	+727	-0,08 +24	-0,03 +24	97 110 106	*64* *58* *62*	132 115 103	*67* *69* *69*	119 101 105	*70* *65* *59*	116 115 101	*67* *57* *68*	119	*47*	95 *75*	102	110	124 101
24	**GS ZARAS** AT 873.880.168 ZAZU / ETOSCHA	2018 A1, 17 J	**135** *62* *0*	**115** *66* *-4*	**126** *66* *+5*	**123** *65* *+1*	**137** *71* *+1*	+774	-0,19 +16	-0,02 +26	117 122 119	*68* *62* *67*	128 103 105	*65* *67* *66*	122 95 89	*67* *64* *58*	121 108 115	*64* *55* *65*	114	*43*	110 *73*	105	120	128 103
25	**MANAUS** DE 06 67162219 MIAMI / POLAROID	2018 17, A1, 2 V, J, V	**134** *70* *-3*	**132** *75* *-3*	**105** *70* *0*	**108** *72* *-2*	**131** *79* *-4*	+1097	+0,11 +56	-0,05 +35	107 98 109	*73* *67* *71*	110 120 110	*69* *75* *71*	99 106 108	*75* *99* *92*	98 101 124	*73* *76* *74*	100	*51* -1%	104 *80*	109	123	105 100
26	**HOLOWITZ** DE 09 53953551 HOLLYWOOD / WOBBLER	2019 Eu, 27, A3 J	**134** *62* *-1*	**129** *68* *-1*	**125** *58* *0*	**105** *65* *-1*	**127** *71* *-2*	+1152	-0,01 +47	-0,07 +34	121 114 122	*64* *54* *59*	106 103 97	*66* *68* *67*	110 100 98	*68* *64* *57*	110 108 107	*65* *53* *66*	97	*44*	112 *73*	95	112	121 103
27	**VISION1** DE 09 54016500 VOLLENDET / EVEREST	2018, 7 % RF Eu, 6, A3 J	**134** *66* *+1*	**129** *72* *-1*	**106** *71* *+5*	**114** *69* *-1*	**128** *75* *0*	+1234	-0,14 +38	+0,01 +45	111 105 100	*74* *68* *72*	115 107 107	*69* *72* *71*	111 105 103	*72* *67* *61*	115 106 100	*70* *59* *70*	109	*49*	99 *78*	104	112	107 104
28	**WAALKES Pp*** AT 818.534.568 WABAN / VOLLGAS P*S	2018 10, AV, 16 J	**134** *67* *0*	**127** *72* *-1*	**105** *66* *+1*	**117** *71* *+1*	**128** *75* *+1*	+1009	-0,02 +40	0,00 +36	110 103 101	*68* *63* *67*	115 101 103	*71* *72* *72*	122 103 104	*74* *65* *58*	121 109 102	*70* *58* *71*	107	*53*	102 *77*	90	98	125 101
29	**WUESTENSOHN** DE 09 53631006 WORLDCUP / RALDI	2018, 10 % RF 17, A1, 2 J, J, E	**134** *65* *0*	**125** *70* *0*	**117** *69* *0*	**117** *68* *+1*	**133** *74* *0*	+1017	-0,06 +37	-0,04 +33	117 108 116	*73* *66* *70*	116 95 113	*68* *70* *69*	122 105 97	*71* *86* *65*	124 105 103	*69* *59* *70*	113	*47* -2%	107 *77*	116	106	121 112
*30	**GS WIRECARD** AT 269.991.569 GS WHAT ELSE / ETOSCHA	2019 A1 E	**134** *63* *new*	**125** *69* *new*	**112** *60* *new*	**117** *67* *new*	**135** *73* *new*	+721	+0,08 +37	+0,08 +32	115 112 103	*63* *57* *62*	117 97 109	*67* *69* *69*	106 118 109	*70* *64* *59*	101 100 106	*67* *57* *68*	119	*47*	107 *75*	101	114	124 105
31	**WESTWIND** DE 09 54382865 WORLDCUP / EPINAL	2018, 5 % RF 17, A1 J	**134** *65* *-1*	**125** *70* *-1*	**109** *69* *0*	**119** *68* *0*	**136** *74* *-2*	+701	+0,11 +38	+0,08 +31	110 102 111	*73* *66* *70*	118 112 118	*68* *70* *69*	110 108 101	*71* *83* *62*	109 107 105	*69* *59* *70*	114	*47* -2%	114 *77*	113	112	115 108
32	**VASTUS** DE 09 54726482 VARTA / VERMEER	2019 Eu, A3 J	**134** *66* *-1*	**123** *72* *-1*	**110** *67* *-1*	**117** *69* *0*	**132** *75* *0*	+530	+0,16 +35	+0,13 +29	115 102 109	*71* *63* *68*	116 114 103	*69* *73* *72*	104 108 110	*73* *63* *57*	101 109 110	*70* *58* *71*	110	*50*	104 *77*	102	94	128 105
33	**HORAZIO P*S** AT 226.832.169 HILFINGER / MAHANGO Pp*	2019 Eu, A3, A5 J	**134** *62* *0*	**122** *67* *0*	**106** *63* *-2*	**123** *65* *0*	**129** *71* *0*	+585	+0,11 +34	+0,08 +27	114 104 100	*68* *55* *66*	123 114 96	*65* *67* *66*	113 115 107	*68* *63* *57*	109 107 96	*64* *55* *65*	111	*43*	114 *73*	92	105	114 99
*34	**GS WEGA Pp*** AT 237.794.869 WEISSENSEE / MAHANGO Pp*	2019 A1, 2, 17 J, E, J	**134** *61* *new*	**118** *67* *new*	**115** *56* *new*	**126** *65* *new*	**133** *71* *new*	+887	-0,14 +24	-0,07 +25	111 110 113	*60* *53* *58*	125 115 107	*66* *67* *66*	116 104 102	*68* *64* *58*	115 108 105	*64* *57* *65*	116	*44*	109 *73*	98	102	115 101
35	**ERZHERZOG** DE 08 17174889 GS EHRSAM / GS WATTKING	2019, 5 % RF 17, A1, 2 E, J, E	**134** *62* *-2*	**116** *67* *-3*	**111** *65* *-2*	**122** *65* *+2*	**135** *72* *-1*	+1099	-0,32 +17	-0,12 +28	118 109 103	*69* *62* *66*	121 94 98	*65* *67* *67*	107 110 115	*68* *64* *58*	101 112 120	*65* *54* *65*	117	*44*	115 *74*	96	110	131 101
36	**EISENHUT** AT 921.271.838 ETOSCHA / GS WOHLTAT	2017 Eu, A8, A3 J, J, N	**134** *70* *-1*	**111** *75* *-2*	**120** *68* *-1*	**130** *73* *+1*	**137** *78* *+1*	+417	-0,07 +11	+0,06 +19	115 113 118	*70* *65* *69*	125 109 110	*72* *75* *74*	123 108 116	*76* *95* *76*	126 109 86	*73* *63* *73*	121	*46* -1%	108 *79*	112	116	115 103
37	**GS HOFSTATT** AT 873.888.968 HERMELIN / ETOSCHA	2019 A1 J	**133** *63* *-1*	**133** *69* *-2*	**109** *64* *+1*	**103** *66* *+1*	**129** *73* *+1*	+1047	+0,15 +57	-0,01 +36	111 107 105	*67* *61* *66*	107 97 103	*67* *69* *68*	105 111 105	*70* *65* *60*	102 101 119	*67* *58* *67*	94	*45*	110 *75*	97	112	128 98
38	**IMMENS** DE 06 67162193 IMPERATIV / POLAROID	2017 Eu, 26, 6 J, J, V	**133** *71* *0*	**128** *76* *-2*	**120** *70* *+1*	**108** *74* *+1*	**125** *79* *-2*	+677	+0,30 +54	+0,05 +28	116 111 119	*72* *67* *71*	108 115 108	*72* *76* *75*	103 108 98	*76* *96* *81*	106 101 97	*74* *68* *75*	109	*55* +2%	93 *81*	108	112	93 95
39	**ZAFON** DE 08 17176955 ZAZU / HERZSCHLAG	2019 Eu, 27 J	**133** *62* *+2*	**127** *67* *-3*	**113** *65* *+6*	**114** *65* *+1*	**129** *71* *+2*	+1028	+0,01 +44	-0,04 +32	104 109 114	*68* *62* *66*	117 118 105	*66* *67* *66*	114 95 90	*68* *63* *57*	117 107 107	*65* *55* *65*	103	*44*	101 *74*	103	112	114 98
40	**WEISSENSEE** AT 364.261.168 WABAN / VULCANO	2017 Eu, A8, A3 J	**133** *73* *-1*	**124** *76* *-1*	**102** *69* *-1*	**120** *76* *0*	**131** *82* *-2*	+789	+0,02 +34	+0,07 +34	101 100 104	*72* *66* *71*	120 125 114	*74* *76* *75*	117 106 105	*77* *99* *99*	117 105 106	*74* *91* *75*	104	*42* 0%	100 *80*	98	104	113 100
41	**GS WUHUDLER** AT 267.174.169 WABAN / MANIGO	2018 A1, 2, 17 J	**133** *67* *-2*	**124** *72* *-2*	**102** *66* *0*	**119** *71* *0*	**133** *76* *-2*	+1170	-0,16 +34	-0,08 +34	100 102 102	*68* *63* *67*	119 121 116	*71* *73* *72*	121 94 108	*74* *63* *57*	120 103 110	*70* *58* *71*	99	*54*	105 *78*	103	111	113 104
42	**MAHARI Pp*** AT 237.411.469 GS MAHATMA Pp* / RALDI	2019, 6 % RF Eu, A3, 6 J	**133** *62* *-1*	**123** *67* *0*	**115** *66* *-1*	**119** *65* *-1*	**130** *72* *-1*	+731	+0,08 +38	+0,02 +27	112 108 115	*68* *63* *67*	121 112 105	*66* *67* *67*	119 113 103	*68* *65* *58*	124 102 98	*65* *54* *66*	107	*43*	91 *75*	110	103	118 103

New bulls are orange-coloured

Toplist by Total Merit Index – Genomic young bulls

	Identification data		Partial breeding values					Milk			Beef		Fitness								Conformation			
Rg	Name ID Sire / Dam's sire Genet. def.	YoB, Foreign AI Center Availability	TMI *Si* *Diff*	MI *Si* *Diff*	BI *Si* *Diff*	FIT *Si* *Diff*	TOI *Si* *Diff*	Mkg	F% Fkg	E Pkg	NDG CARC TRC		Long Pers Perf		UDH CLV VIT		SCC p/m Msp		FEI Fert		FR *Re*	MU	FL	UD Add
43	**VICI Pp*** DE 09 53973292 VOTARY P*S / MAHANGO Pp* J	2018, 7 % RF 10, AV	**133** *69* *+1*	**123** *74* *0*	**110** *69* *+2*	**115** *72* *0*	**128** *77* *+2*	+1025	-0,08 +35	-0,07 +30	123 97 110	*72* *66* *70*	112 97 102	*72* *74* *74*	112 108 108	*73* *67* *60*	112 116 99	*72* *60* *73*	111	*55*	124 *78*	116	107	113 95
44	**VIDI Pp*** DE 09 53973291 VOTARY P*S / MAHANGO Pp* J	2018, 7 % RF 10, AV	**133** *69* *+1*	**123** *74* *0*	**110** *69* *+2*	**115** *72* *0*	**128** *77* *+2*	+1025	-0,08 +35	-0,07 +30	123 97 110	*72* *66* *70*	112 97 102	*72* *74* *74*	112 108 108	*75* *67* *60*	112 116 99	*72* *60* *73*	111	*55*	124 *78*	116	107	113 95
45	**SUNRISE** DE 09 53196995 SISYPHUS / MINT J	2017 Eu, 6, A3	**133** *71* *0*	**122** *75* *-2*	**119** *69* *+1*	**114** *74* *+1*	**122** *80* *-1*	+870	-0,04 +33	-0,01 +30	122 106 119	*73* *66* *70*	115 94 84	*72* *75* *74*	115 118 101	*75* *99* *90*	117 105 106	*73* *72* *73*	110	*54* +1%	99 *80*	100	111	117 100
46	**WALL** DE 09 54505282 WARRIOR / MANDRIN J	2019, 6 % RF Eu, 6, A3	**133** *68* *-1*	**121** *73* *-1*	**123** *67* *+1*	**110** *71* *-1*	**132** *76* *-1*	+926	-0,15 +25	+0,01 +34	125 115 116	*71* *64* *69*	108 106 112	*71* *73* *73*	100 112 110	*74* *64* *58*	97 105 111	*71* *59* *72*	108	*53*	106 *76*	98	100	113 105
47	**GS MAURIZIO** AT 839.574.129 MAHANGO Pp* / GS WOHLTAT J	2016 A1	**133** *71* *-1*	**121** *73* *0*	**120** *95* *0*	**114** *73* *-1*	**128** *80* *-1*	+924	-0,07 +32	-0,06 +27	106 113 123	*95* *95* *94*	118 114 100	*73* *73* *73*	107 104 102	*75* *94* *77*	109 113 106	*72* *62* *72*	100	*55* +5%	99 *79*	106	112	99 100
48	**HAUK** DE 09 54200963 HERZPOCHEN / MANIGO J	2019 Eu, 6, 27	**133** *65* *-2*	**121** *71* *-3*	**115** *62* *-1*	**117** *68* *+1*	**132** *74* *-2*	+823	-0,07 +28	+0,01 +30	111 109 115	*68* *58* *64*	119 110 103	*68* *71* *71*	111 104 108	*71* *66* *61*	112 108 108	*69* *59* *69*	106	*48*	106 *76*	113	117	118 101
49	**ELEXIS** DE 09 55044012 ELEVATION / HERZSCHLAG J	2019, 4 % RF 2, A1, 17	**133** *62* *-2*	**121** *68* *-3*	**115** *60* *-1*	**115** *66* *0*	**128** *71* *-2*	+1014	-0,15 +29	-0,07 +30	121 107 111	*65* *56* *61*	114 104 91	*67* *68* *67*	111 111 106	*69* *64* *56*	110 106 118	*66* *52* *66*	109	*46*	108 *74*	104	107	125 103
50	**GS WEDER** AT 177.746.269 GS W1 / HURLY J	2019 A1	**133** *62* *-1*	**120** *68* *-1*	**111** *60* *-1*	**121** *66* *+1*	**133** *72* *-1*	+975	-0,15 +27	-0,07 +29	105 111 108	*63* *57* *61*	122 109 111	*67* *68* *68*	113 90 103	*69* *65* *58*	110 109 106	*66* *56* *66*	109	*46*	104 *74*	95	108	117 99
51	**MITTELWEG** DE 09 55141312 MINOR / ZASPIN J	2019 10, AV, 16	**133** *64* *0*	**120** *70* *-1*	**106** *66* *+3*	**126** *68* *+2*	**130** *73* *0*	+414	+0,20 +33	+0,09 +22	106 103 105	*71* *62* *67*	124 98 104	*68* *70* *69*	126 106 111	*71* *67* *59*	131 109 96	*69* *56* *70*	115	*47*	98 *76*	97	118	107 103
52	**HADRIAN** AT 010.301.869 HUSAM / MANDRIN J	2019 Eu, A3, A8	**133** *61* *-2*	**119** *66* *-3*	**108** *65* *+1*	**126** *64* *0*	**141** *71* *0*	+718	-0,09 +22	+0,07 +31	103 114 100	*68* *62* *67*	126 126 122	*65* *66* *66*	108 105 104	*67* *62* *56*	106 110 102	*63* *55* *64*	114	*43*	108 *72*	109	109	119 105
53	**HOFRAT** AT 792.739.668 HERZPOCHEN / VILLEROY J	2019 Eu, A3, 6	**133** *61* *-2*	**113** *67* *-2*	**122** *58* *-1*	**122** *65* *+2*	**133** *71* *-1*	+648	-0,10 +18	-0,07 +17	124 117 113	*62* *55* *60*	122 111 94	*66* *67* *66*	106 113 105	*68* *63* *57*	103 114 112	*65* *55* *65*	115	*44*	111 *73*	109	109	125 95
54	**HUMIDOR** DE 08 17217296 HUSAM / HERZSCHLAG J	2019 Eu, 27, 6	**132** *62* *+1*	**133** *67* *-2*	**103** *66* *+3*	**105** *65* *+2*	**129** *72* *+1*	+1235	-0,02 +49	-0,02 +42	103 108 96	*69* *63* *67*	106 115 112	*66* *67* *67*	100 98 104	*68* *63* *57*	99 111 116	*64* *56* *65*	94	*43*	117 *73*	97	104	115 102
55	**ZACHARIUS** AT 878.232.668 GS ZICKZACK / REUMUT J	2018 Eu, A3	**132** *63* *-1*	**130** *69* *-2*	**113** *67* *+1*	**110** *66* *0*	**127** *72* *+1*	+666	+0,34 +56	+0,06 +28	109 106 114	*70* *65* *69*	110 103 110	*66* *69* *68*	111 93 94	*69* *66* *56*	115 103 114	*66* *53* *67*	114	*45*	108 *74*	94	109	112 102
*56	**HEADLINE** DE 09 55126575 HERMELIN / VILLEROY J	2019, 5 % RF Eu, 6	**132** *64* *new*	**128** *69* *new*	**110** *65* *new*	**107** *67* *new*	**130** *73* *new*	+907	+0,10 +47	+0,01 +33	111 112 102	*70* *62* *66*	111 94 103	*67* *70* *69*	96 103 102	*70* *64* *59*	94 107 123	*67* *58* *68*	109	*46*	104 *75*	93	113	127 106
57	**ENRICO** AT 216.735.269 GS ENJO / HERZSCHLAG J	2018 Eu, A3	**132** *65* *0*	**127** *70* *-2*	**116** *69* *+1*	**109** *67* *+2*	**125** *74* *0*	+988	-0,01 +40	0,00 +35	120 105 115	*73* *66* *70*	108 108 102	*67* *70* *69*	99 105 95	*71* *66* *60*	101 111 111	*68* *57* *68*	112	*47*	107 *76*	106	100	112 99
58	**DORFPRINZ** DE 09 54894742 DREAM / ZAMPANO J	2019, 4 % RF Eu, 6	**132** *62* *0*	**127** *68* *0*	**112** *65* *+2*	**112** *65* *-1*	**129** *72* *0*	+889	+0,08 +44	+0,02 +33	113 106 109	*70* *61* *67*	113 113 103	*65* *68* *68*	114 103 104	*69* *63* *56*	114 104 96	*67* *53* *67*	98	*42*	109 *75*	94	113	126 103
59	**IMPOSSUM** DE 06 67162194 IMPERATIV / POLAROID J, J, V	2017 Eu, 26, 6	**132** *71* *-2*	**127** *76* *-2*	**108** *70* *0*	**114** *74* *0*	**128** *80* *-2*	+666	+0,23 +47	+0,07 +30	97 110 108	*73* *67* *71*	115 113 111	*72* *76* *74*	117 104 104	*76* *99* *90*	119 97 105	*74* *74* *74*	104	*54* -3%	98 *80*	109	109	112 100
*60	**GS WOSTOK** AT 713.572.969 GS WOIWODE / VARTA E	2019, 8 % RF A1	**132** *62* *new*	**126** *68* *new*	**101** *59* *new*	**121** *65* *new*	**131** *71* *new*	+1008	-0,03 +40	-0,04 +33	95 102 102	*62* *55* *60*	119 118 109	*66* *68* *67*	118 105 108	*68* *64* *58*	119 109 96	*65* *55* *66*	108	*44*	107 *73*	101	105	117 102
61	**HIGHPOWER** DE 09 54613454 HURLY / VLUTLICHT J	2019 Eu, 6, A5	**132** *68* *-1*	**124** *74* *-1*	**120** *67* *+2*	**110** *72* *-2*	**129** *76* *-1*	+1014	-0,12 +32	0,00 +36	119 118 110	*71* *63* *68*	113 112 105	*71* *74* *73*	102 104 89	*75* *64* *59*	98 105 100	*72* *59* *72*	110	*54*	122 *78*	114	109	120 104
62	**VALTRA P*S** AT 792.938.768 VOTARY P*S / MAHANGO Pp* J	2018 Eu, A3, 6	**132** *67* *-2*	**124** *73* *0*	**108** *67* *0*	**114** *71* *-3*	**130** *76* *-2*	+1116	-0,11 +36	-0,09 +31	121 99 104	*71* *64* *68*	114 106 109	*71* *73* *72*	115 114 109	*74* *74* *58*	118 113 90	*71* *59* *71*	102 +2%	*54*	115 *78*	110	107	115 97
63	**GS DEFACTO** AT 953.502.538 GS DER BESTE / MINT F5C	2018 A1 J	**132** *70* *+2*	**123** *75* *+1*	**105** *70* *0*	**115** *72* *+1*	**132** *78* *+2*	+868	+0,01 +37	-0,04 +27	112 104 100	*72* *67* *71*	118 98 106	*70* *75* *70*	115 107 105	*75* *97* *81*	111 110 116	*73* *66* *74*	105	*51* 0%	112 *80*	98	112	129 101

New bulls are orange-coloured

GS MY BEST Pp*

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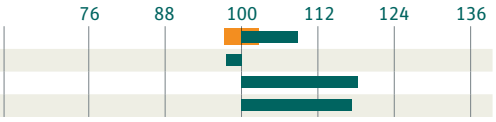
AT 781.642.769 **Breeder:** Sitka Engelbert
GENOSTAR 8190 Miesenbach bei Birkfeld

Breeding Value: gTMI 138 (62) | BI 107 (59) | FIT 124 (65) | TOI 140 (71)
MI 126 (68) +1,114 -0.16 +32 +0.00 +39

DESCENT			
GS MYSTERIUM Pp* AT 903.294.838 Index: 131 / 115 / +682 -0.11 -0.01	**MANOLO Pp*** DE 09 48496774	**MANIGO**
	LAURA AT 353.515.528	**WATT**
NABEST AT 447.880.768 Index: 128 / 128 / +1030 +0.00 -0.01 100 T. - 3,183-4.08-3.13-230	**GS DER BESTE** AT 514.740.229	**DAX**
	NAXY AT 498.925.129 3/1 - 8,969-3.40-3.56-625	**HURLY**

CONFORMATION 109 – 97 – 117 – 116 (73)

0 DAUGHTERS	
Frame	109
Muscularity	97
Feed & legs	117
Udder	116



= optimal range

MERT

© KeLeKi

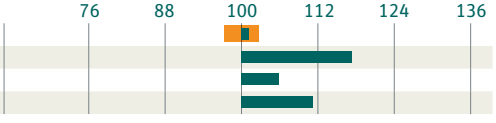
AT 450.312.569 **Breeder:** Lang Aloisia und Gerhard
EUROgenetik; OÖ Besamungsstation; Neustadt/Aisch; Rinderunion Baden-W. 5122 Hochburg-Ach

Breeding Value: gTMI 138 (62) | BI 118 (63) | FIT 127 (65) | TOI 138 (72)
MI 122 (67) +1,016 -0.11 +33 -0.09 +28

DESCENT		
METTMACH Pp* AT 294.555.138 ZW: 125 / 124 / +814 +0.13 -0.07	**MAHANGO Pp*** DE 09 48097266	**MUNGO Pp**
	EXTRA AT 870.959.322	**HUTERA**
ENTE AT 098.347.229 Index: 121 / 111 / +555 -0.10 -0.04 4/3 - 9,902-4.07-3.43-742 HL: 3. – 10,205-4.32-3.62-810	**ROYAL** DE 09 46221893	**ROMARIO**
	ENZIAN AT 471.970.122 3/3 - 10,092-4.47-3.68-823	**WILLEM**

CONFORMATION 102 – 116 – 105 – 111 (74)

0 DAUGHTERS	
Frame	102
Muscularity	116
Feed & legs	105
Udder	111



= optimal range

GS WEXFORD

© stephanhauser.com

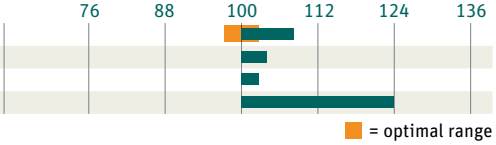
AT 665.790.269 **Breeder:** Schafferhofer Alois
GENOSTAR 8192 Strallegg

Breeding Value: gTMI 137 (61) | BI 114(59) | FIT 119 (65) | TOI 138 (71)
MI 125 (67) +715 +0.06 +35 +0.12 +35

DESCENT		
WEISSENSEE AT 364.261.168 Index: 133 / 124 / +789 +0.02 +0.07	**WABAN** AT 806.062.819	**WILLE**
	LUXA AT 373.871.322	**VULCANO**
GRANDIOS AT 563.129.538 Index: 135 / 130 / +724 +0.24 +0.11 200 T. - 5,757-5.21-3.73-514	**GS DENKMAL** DE 09 45875179	**DAX**
	GOLLA AT 113.601.229 4/3 - 9,846-4.24-3.96-807	**WATT**

CONFORMATION 108 – 104 – 103 – 124 (74)

0 DAUGHTERS	
Frame	108
Muscularity	104
Feed & legs	103
Udder	124



= optimal range

SUPERIOR

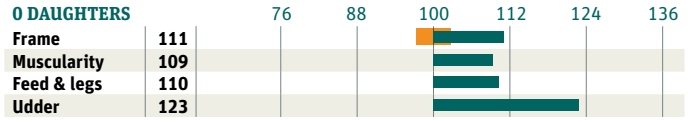
© KeLeKi

AT 976.926.738 **Breeder:** Wimberger Margarete & Manfred
EUROgenetik; OÖ Besamungsstation 4263 Windhaag bei Freistadt

Breeding Value: gTMI 132 (68) | BI 114 (69) | FIT 117 (71) | TOI 126 (76)
MI 120 (74) +663 +0.04 +31 +0.02 +25

DESCENT					
SISYPHUS DE 06 66439378 Index: 140 / 118 / +342 +0.27 +0.08		**SYMPOSIUM** AT 499.482.519		**SERANO**	
		HILLARY DE 09 46730259		**WILLE**	
GEDUNA AT 075.449.629 Index: 123 / 117 / +785 -0.09 -0.04 2/2 - 11,111-3.83-3.59-825 HL: 2. – 11,740-3.78-3.63-870		**MANUAP** DE 09 74585475		**MANITOBA**	
		GEWINN AT 840.053.322 5/5 - 10,651-3.55-3.41-742		**IWINN**	

CONFORMATION 111 – 109 – 110 – 123 (79)



GS MUTMACHER Pp*

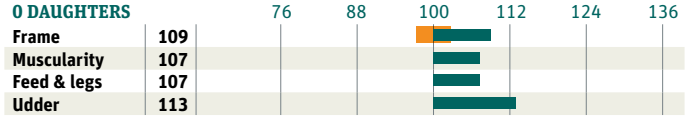
© stephanhauser.com

AT 117.507.468 **Breeder:** Schweighofer Hannes
GENOSTAR 8225 Pöllau

Breeding Value: gTMI 132 (62) | BI 106 (60) | FIT 123 (66) | TOI 131 (72)
MI 118 (68) +666 -0.04 +24 +0.03 +26

DESCENT					
GS MUNDL PP* AT 051.166.168 Index: 128 / 119 / +744 -0.03 -0.02		**MAHANGO Pp*** DE 09 48097266		**MUNGO Pp**	
		NETTL PP* AT 688.426.828		**WITAM P*S**	
ZENZI AT 556.985.729 Index: 126 / 113 / +731 -0.30 +0.05 200 T. - 6,817-3.61-3.52-486		**MONUMENTAL** DE 09 49729097		**MANIGO**	
		ZORA AT 897.459.522 4/3 - 13,237-3.61-3.32-917		**HURRICAN**	

CONFORMATION 109 – 107 – 107 – 113 (74)



MAROKKO PP*

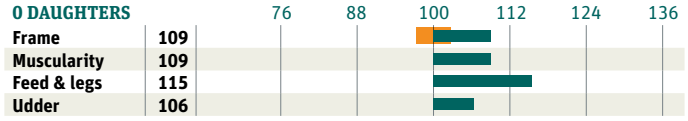
© KeLeKi

AT 010.406.468 **Breeder:** Schrems Hubert
EUROgenetik; OÖ Besamungsstation; 4931 Mettmach
Rotholz/T.; Neustadt/A.

Breeding Value: gTMI 130 (70) | BI 115 (69) | FIT 117 (72) | TOI 135 (79)
MI 119 (73) +1,000 -0.22 +23 -0.06 +30

DESCENT					
MANOLO Pp* DE 09 48496774 Index: 133 / 113 / +779 -0.27 -0.03		**MANIGO** DE 09 43304203		**MANDELA**	
		FANFEE DE 09 46181372		**WAPULS**	
ROSENDUFT Pp* AT 073.408.128 Index: 121 / 114 / +788 -0.17 -0.09 3/2 - 9,544-3.80-3.36-684 HL: 2. – 10,396-3.82-3.36-747		**WITAM P*S** DE 09 47303667		**WITZBOLD**	
		RISPE AT 809.043.118 5/5 - 10,153-3.97-3.33-742		**WALOCH**	

CONFORMATION 109 – 109 – 115 – 106 (78)



Legend of the toplist

IDENTITY DATA

Rg	Rank sorted according to TMI, MI, BI, FIT (all descending)
Name	Name
ID	Identification's number
Sire / Dam's sire	Sire / Dam's sire
YoB	Year of birth
Foreign	Breed with any foreign gene share
Genetic def.	Genetic defects with 3 digit code:
Digit 1–2	Abbreviations for genetic defects (B2 – Brown Swiss haplotype 2, F2 – Growth defect/Short stature, F5 – Fleckvieh haplotype 5, TP – Thrombopathy)
Digit 3	„C" for „heterozygous carrier" (Carrier), „S" for „homozygous carrier" (Sure)
AI Center	Insemination centre, which are in the (co-) owning of the bull: A1 = GENOSTAR A3 = Hohenzell, OÖ A5 = Samendepotstelle Rotholz, Tirol A7 = Klessheim, Salzburg A8 = Perkohof, Kärnten A9 = Samenvertretung Vorarlberg AV = Vöcklabruck, OÖ Eu = EUROgenetik 2 = Greifenberg 3 = Höchstädt 6 = Neustadt a. d. Aisch 7 = Memmingen 9 = Marktredwitz-Wölsau 10 = Bayern-Genetik 16 = Bauer, Wasserburg 17 = CRV Meggle 26 = ZBH Alsfeld 27 = RBW C1 = CRV (CZ) C2 = Jihocesky chovatel (CZ) C3 = Plemko (CZ) C4 = Plemo (CZ) C5 = CHD Impuls (CZ) C6 = Reprogen (CZ) C7 = Natural (CZ)
Availability	Availability of semen in relation to the owning stations (J=yes, E=restricted; V=available, but curretly no distribution, N=no), if the availability is the same for all stations, it will be expressed only once, otherwise, in the appropriate order

PARTIAL BREEDING VALUES

TMI	Total merit index
MI	Milk index
BI	Beef index
FIT	Fitness index
TOI	Total organic index
Re	Reliability
Diff	Difference to the last breeding value estimation

MILK/CONFORMATION

Mkg, F%, P%, Fkg, Pkg	Breeding values for milk yield, fat and protein content, fat and protein yield
Ext-Dau	Number of described daughters
FR-MU-FL-UD-(Add)	Breeding values for frame, muscularity, feet&legs, udder, udder cleanness

BEEF

CCI	Breeding value for commercial cross
NDG	Breeding value for net daily gain
CARC	Breeding value for carcass percentage
TRC	Breeding value for EUROP trade class

FITNESS

Long	Breeding value for longevity
Pers	Breeding value for persistency
Perf	Breeding value for performance increase
MSp	Breeding value for milking speed (average kg/min)
UDH	Breeding value for udder health
FEI	Breeding value for fertility
CLV p/m	Breeding value for direct and maternal calving ease
VIT	Breeding value for calf vitality
SCC	Breeding value for somatic cell count
Fert	Breeding value for fertility in %
Mas	Breeding value for mastitis
EFD	Breeding value for early fertility disorders
Cyst	Breeding value for ovarian cysts
MiFe	Breeding value for milk fever

ABSOLUTE PERFORMANCES INDICATORS

Int-Dau	Number of daughters in international milk breeding value estimation
Farm	Numbers of farms, where the daughters are being bred
in 1.L, in 2.L, in 3.L	Number of daughters in the milk evaluation in the 1st, 2nd and 3rd lactation
MP 1, MP 2, MP 3	Average number of test days of daughters in the 1st, 2nd and 3rd lactation
D100, D1, D2, D3	Number of daughters with completed 100-day performance, 1st, 2nd and 3rd lactation
Mkg, F%, P%, F+P	Average milk yield, fat and protein content, fat and protein yield of the daughters
ØHd	Herd average in which the daughters are kept
Mat.	Mating level expressed as MI average of daughter's dams

FLECKVIEH CHANGES

WORLD SIMMENTAL/FLECKVIEH CONGRESS
NATIONAL FLECKVIEH EXHIBITION
AUSTRIA

Due to the current situation surrounding the Covid-19 pandemic this event has been postponed until further notice.
The date will be announced soon!

Please check our Website for updated information: www.fleckvieh.at

Thank you very much for your understanding.

Stay safe and take care ...

FLECKVIEH AUSTRIA

RZO

geneticAUSTRIA

WORLD SIMMENTAL FLECKVIEH CONGRESS AUSTRIA