



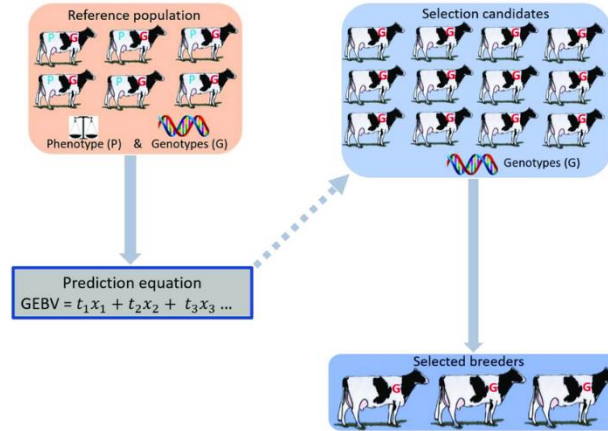
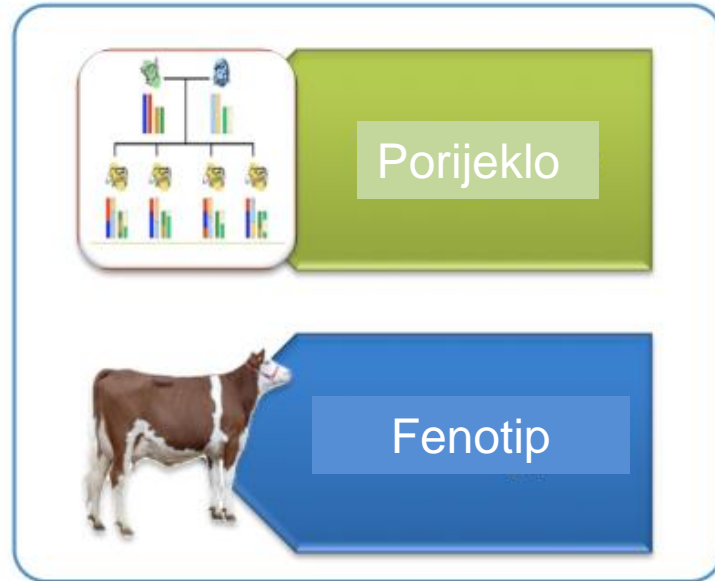
Hrvatska agencija za poljoprivredu i hranu | Croatian Agency for Agriculture and Food | L'Agence Croate pour l'Agriculture et l'Alimentation



Novosti u provedbi genomske selekcije – **simentalska** i **holstein** populacija goveda

Marija Špehar

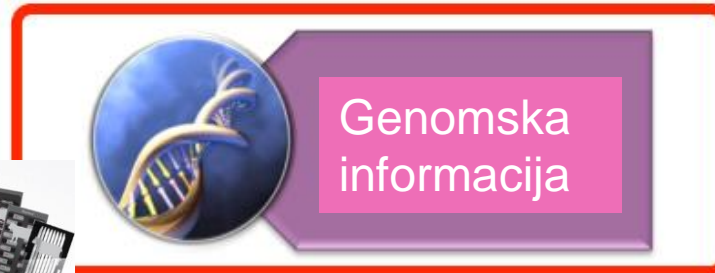
Genomska selekcija (GS) u govedarstvu



https://www.researchgate.net/publication/361756294_Genetic_Analysis_of_Milk_Production_Traits_in_Relation_to_Heat_Tolerance_in_Australian_Dairy_Cows

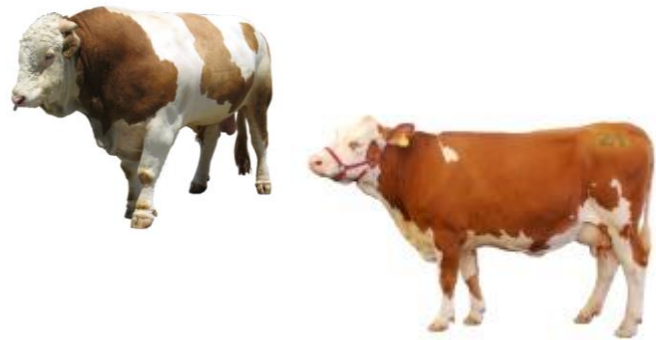
Prednosti GS

- Izračun gUV već **pri rođenju životinje** koja je genotipizirana
- Ubrzani genetski napredak
- Kraći generacijski interval (2-3 godine)
- **Veća pouzdanost procijenjene gUV**
- Korištenje više mladih genomski testiranih bikova
- Kontrola porijekla goveda - sprečavanje uzgoja u srodstvu



<https://www.icar.org/wp-content/uploads/2015/12/Eggen.pdf>

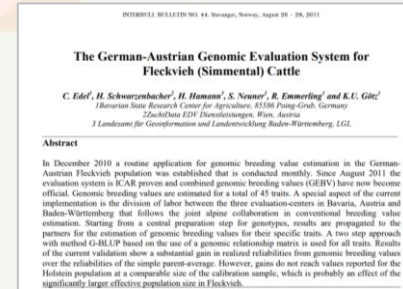
Novosti u provedbi GS



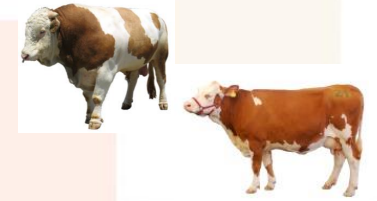
Primjena GS – simentalaska pasmina



- Uključivanje u **sustav genomskog testiranja Njemačke/Austrije/(Češke) – DAC (SI, SK, IT i HU)**
 - **Genotipizacija i izračun gUV** – njemačka skala
 - Početak – **2012. godina**
- **Srpanj 2013.** – službeni ulazak Hrvatske u DAC sustav genomskog vrednovanja

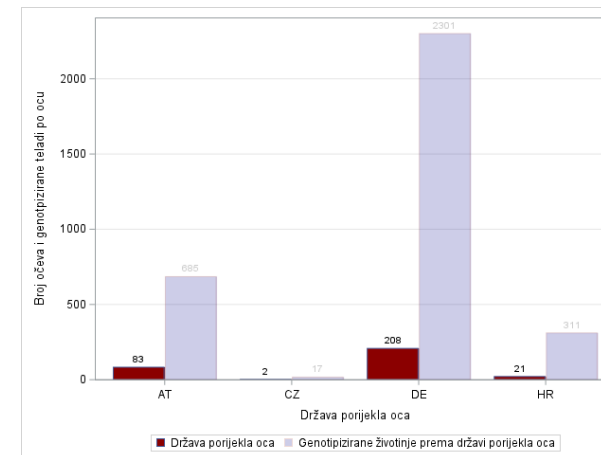
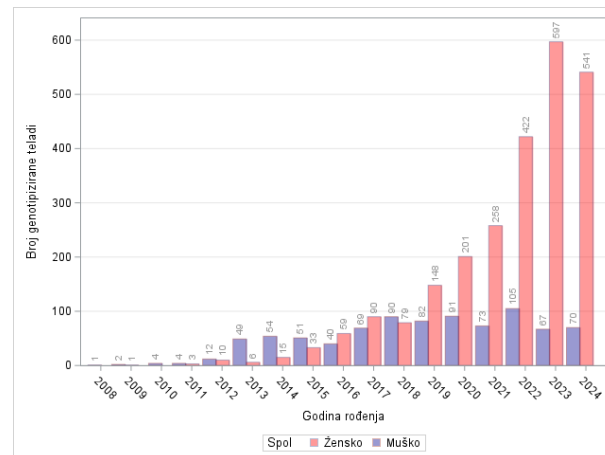


Broj genomski vrednovanih grla

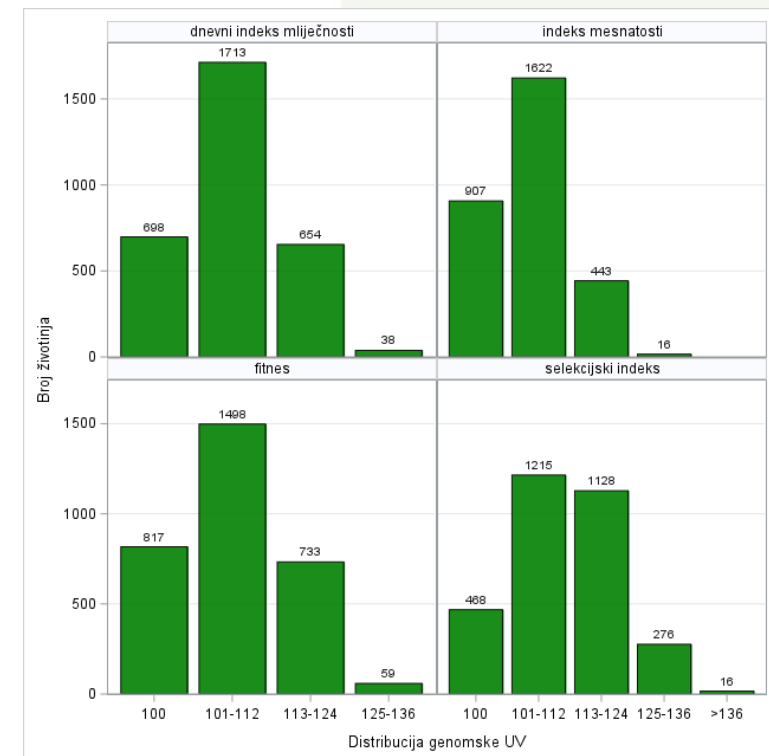
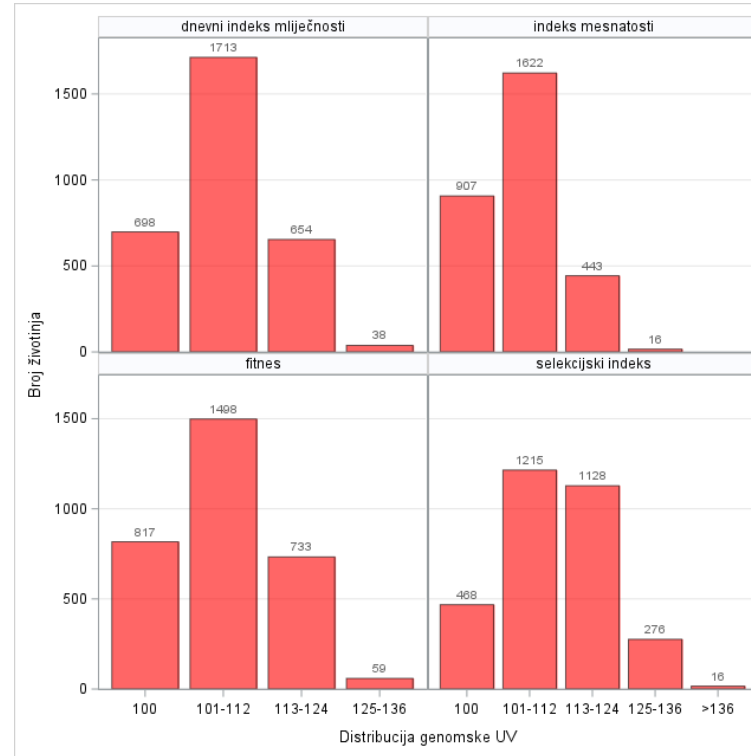
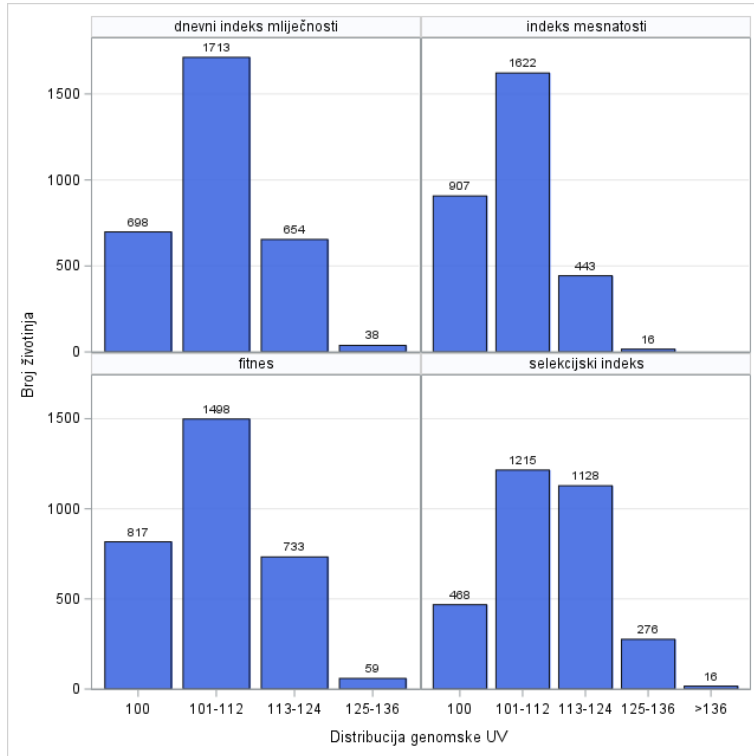


- **Do veljače 2025.** – genotipizacija i procjena gUV za **3,312 grla** (**857 muških** i **2455 ženskih**) u DAC sustavu genomskog vrednovanja

Spol	Godina dobivanja rezultata gUV													
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Ukupno
Muško	19	82	61	39	60	66	100	76	85	107	70	75	17	857
Žensko	0	5	5	3	3	0	32	81	98	114	1224	698	198	2455
Ukupno	19	87	66	42	63	66	132	157	183	221	1294	525	215	3312



Distribucija gUV za skupine svojstava

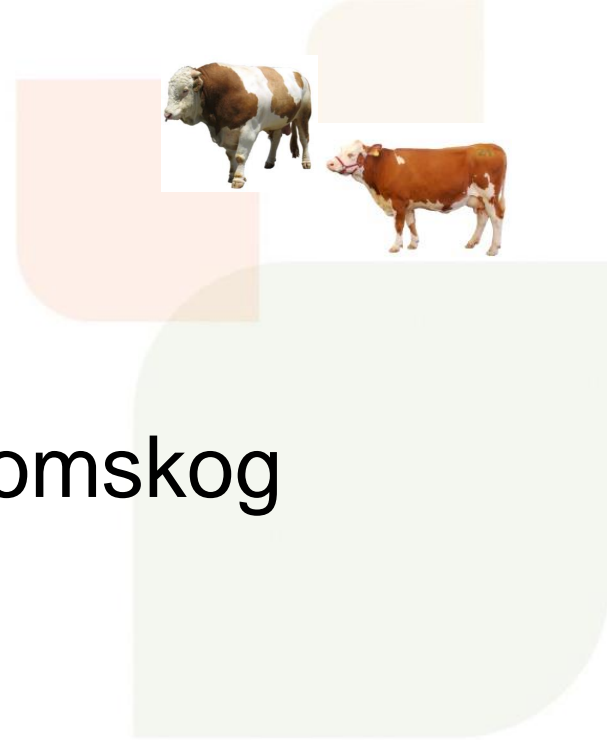


Genomsko vrednovanje - *Single-step*



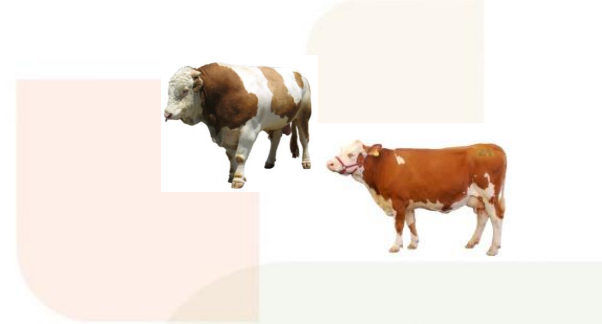
- **Travanj 2021.** – procjena gUV u jednom koraku (*single-step approach*)
- Iznimno osjetljiva metodologija
 - Pogrešne informacije porijekla
 - Nepotpune informacije porijekla
- Procjena gUV za genotipiziranu životinju ovisi o **‘količini informacija’**
- Pouzdanost gUV ovisi o
 - Povezanost s genotipiziranom populacijom
 - Povezanost sa ‘fenotipiziranom’ populacijom

Novosti u DAC sustavu (1)



- **2022. godina**
- **Travanj** – promjene u cijeni genotipizacije i genomskog vrednovanja
 - Ženska grla – 40€
 - Muška grla – 200 € (ako bik uđe u sustav u.o. - dodatna naknada 2.000 €)
- **Kolovoz**
 - Spremnost RH da postane **punopravna članica DAC sustava**
 - Postepeni ulazak (grupa po grupa svojstava - mliječnost, plodnost, mesnatost, vanjština)
 - Protokoli pripreme podataka (proizvodni podaci i porijeklo) – **oko godinu dana**

Novosti u DAC sustavu (2)

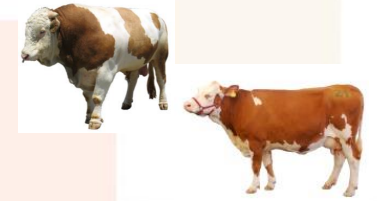


- **2023. godina**

- **Potpisani sporazum** o ulasku RH u DAC sustav genetskog/genomskog vrednovanja za **svojstva mliječnosti i porijeklo**



Novosti u DAC sustavu (3)



- **2024. godina**

- **Potpisani sporazum** o ulasku RH u DAC sustav genetskog/genomskog vrednovanja za **genotipizaciju (i genomsko vrednovanje)**

Agreement

on access to genotyping and the provision of results from the single-step breeding value estimation of the Fleckvieh breed

- Partial Access Transition Option -

between the

GenoSelect service unit of the
Federation of South German Cattle Breeders'
and AI Organizations (ASR),
Senator-Gerauer-Str. 23a, D-85586 Poing-Grub,

- on the basis of a cooperation agreement with Rinderzucht Austria -,

Središnji savez hrvatskih uzgajivača simentalskog goveda,
Trg Karla Lukaša 11, 48214 Sveti Ivan Žabno, Croatia,
hereinafter referred to as „HUSIM“,

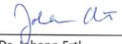
and


Hrvatska agencija za poljoprivredu i hranu
Vinkovačka cesta 63c, 31000 Osijek, Croatia,

GenoSelect service unit of

Federation of Southern German Cattle Breeders' and AI Organizations

Frankfurt, 28 July 2024
Place, date


Dr. Johann Ertl,
Managing director


Georg Hollfelder,
Chairman

Središnji savez hrvatskih uzgajivača simentalskog goveda

Sveti Ivan Žabno, 19. 08. 2024.
Place, date


Damir Horvatic,
President

Hrvatska agencija za poljoprivredu i hranu

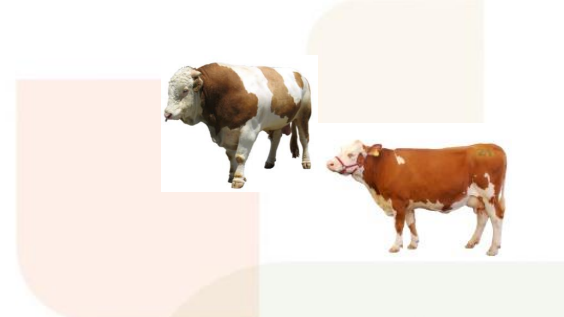
Osijek, 19. 08. 2024.
Place, date


izv. prof. dr. sc. Krunoslav Karalić,
Acting Executive Director

Republika Hrvatska			
Hrvatski registar za genotipizaciju i vrednovanje			
Primijeno:	27.08.2024	Datum	
Klasifikacijska oznaka	Org. jed.		
402-47/24-01/4	09		
Urudbeni broj	Pril.	Vrij.	
396-24-1	0	0,00	

P 1 5 7 9 3 1 3

Priprema podataka (1)



- **Svojstva mliječnosti**
 - Kontrole mliječnosti
 - Podaci od 2004. godine
 - **Tday.dat** (5.673.377)
 - Podaci o telenju
 - **Calving.dat** (783.200)

format data delivery: test day data

- One record per test day (24h milking performance)
- ISO identification links to the calving data
- lactation number is calculated by linking the test day date to the right calving date

Variable	Typ	Länge	Position	Bemerkung
ISO identification cow	char	15	1	
identification of herd	num	11	16	
region ^{a)}	num	2	27	
date of test day	num	8	29	CCYYMMDD
milk yield	num	4	37	(*10)
fat percent	num	4	41	(%*100)
protein percent	num	4	45	(%*100)
somatic cell count	num	5	49	(in thousands)
milk recording method ^{b)}	char	1	54	A / B / C
testing scheme ^{b)}	char	1	55	S / M / T
interval of testing ^{b)}	char	1	56	D=daily / 1-9 weekly
frequency of milkings per day ^{b)}	char	1	57	1 / 2 / 3 / R
if testing scheme is T, mark if milking was morning or evening ^{b)}	char	1	58	optional for testing scheme T
milking interval, if testing scheme T ^{b)}	num	3	59	optional for testing scheme T (*10)
method of 24h calculation if testing scheme T ^{b)}	char	1	62	optional for testing scheme T
record length		62		

Additional Notes:

- Region of production in Croatia? Are there milk production regions with different conditions?
- Variables defining milk recording method (scheme) for the observed test day observation

format data delivery: calving data

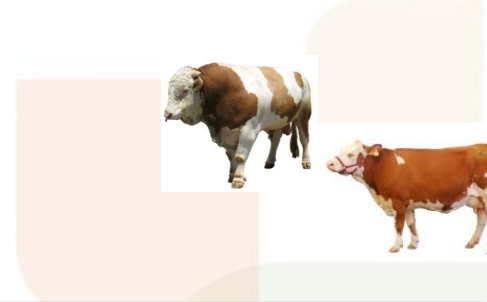
- One record per cow and calving

Variable	Type	Length	Position	note
ISO identification cow ^{a)}	char	15	1	
lactation number ^{c)}	num	2	16	
date of insemination ^{d)}	num	8	18	CCYYMMDD
date of calving	num	8	26	CCYYMMDD
inter calving interval of following lactation	num	3	34	
mark, if lactation is officially cancelled	num	1	37	„1“ = cancelled lactation
length of format		37		

Additional notes:

- ISO identification: means 15-digit identification with numerical country code (e.g. DEU=276,AUT=040 or CZE=203), equal to the identification used in the pedigree file
- and only cows with calvings are included
- one record for each calving within a cow; calvings from all parities should be delivered
- from this variable the number of 'days carried calf' in the current lactation will be calculated. Three different situations could happen:
 - if following calving is already known: date of insemination is the date that leads to the following calving.
 - if no following calving is available: last known insemination date within the lactation should be given
 - variable is not filled, if no insemination date is known

Priprema podataka (2)



- **Svojstva mliječnosti**

- **Kontrole mliječnosti**

- Podaci od 2004. godine
- Tday.dat (5.673.377)

- **Podaci o telenju**

- Calving.dat (783.200)

- **Laktacijski podaci**

- 100, 200, 305 dana (1, 2, 3 laktacija)
- **Pheno.dat (705.024)**

DAC file format data delivery: phenotypic data of cows for 1st (100-, 200-,305-day), 2nd (305-day) and 3rd (305-day) lactation

- 1 record per cow and defined performance period (100 day, 200 day, 305 day in 1st lactation, 305 day in 2nd lactation, 305 day in 3rd lactation)

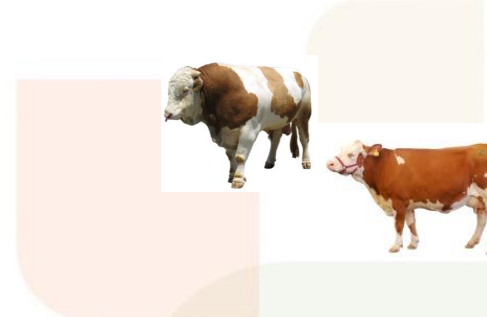
variable	typ	length	start pos.	remark, format
iso ID	char	15	1	
lactation number	num	2	16	
# days milked	num	3	18	number of days milked in (part) lactations => 100-days / 200-days / 305-days in first lactation, up to 305 days in 2 nd and 3 rd lactation
milk kg	num	5	21	
fat performance kg	num	4	26	(*10)
protein performance kg	num	4	30	(*10)
herd				
herd average milk kg**	num	5	34	
record length		37		

** herd average: sliding herd average of the cows herd for the period where part lactation or lactation performance was reached (all lactations independent from parity are included in the average calculation)

Remark:

This data is only used for calculating phenotypic statistics for daughter averages of bulls. These statistics are included in the back delivery of bull ebvs in columns 210-353. In DEA they are published as phenotypic information besides the ebvs for milk production traits.

Priprema podataka (3)



- **Svojstva mliječnosti**

- Kontrole mliječnosti

- Podaci od 2004. godine

- Podaci o telenju

- Laktacijski podaci

- **Podaci o protoku mlijeka**

- Mjerni uređaji (vage, izmuzište, Waikato mjerni uređaji, robot

- Promjena mjernih uređaja

- **Milkability.dat (163.586)**

FILE FORMAT FOR DATA DELIVERY
- MILKABILITY -

Starting Position	Field Description	Format
1	Region (if herd codes across regions are not unique)	Integer 2
3	Herd code/Management group code	Integer 11
14	ID number of cow (including numeric country ISO-code)	Integer 15
29	Birth date of cow (YYYYMMDD)	Integer 8
37	Breed of cow ¹	Integer 2
39	Calving date (YYYYMMDD)	Integer 8
47	Date of test (YYYYMMDD)	Integer 8
55	Time of test ²	Integer 1
56	Milk yield (x10) at test	Integer 3
59	Milkability (x100); calculated as kg milk per minute	Integer 3
62	Milkability (x100) adjusted for milk yield (if available)	Integer 3
65	Duration of milking (MMSS) (if available)	Integer 4
69	Method of recording ³	Integer 1
70	Recording device for milk yield ⁴	Integer 1
1	01=Fleckvieh	
2	1=Evening 2=Morning	
3	4=Stopwatch 5=LactoCorder	
4	1=Scale 2=Tru-Tester 3=Recorder 4=Stationary electronic device 5=LactoCorder 6=Milk recording device that measures the milk yield per quarter 7=Automatic milking system	

Priprema podataka (4)



- **Porijeklo**

- **ISO-ID** životni broj
- **ISO-SIRE, ISO-DAM**
- Udjeli krvi druge pasmine
- 5 generacija

+ porijeklo kandidata za genotipizaciju

Pdg_all.dat (406.978)

DATEIFORMAT STAMMSATZ (master record)

Name	Typ	Länge	Position	Bemerkung - Format
ISO identification (ISO-ID)	char	15	1	all cows and bulls
date of birth	num	8	16	CCYYMMDD
breed of animal	num	2	24	
sex	num	1	26	1= männlich 2= weiblich
foreign blood percentage (RED)	num	4	27	*10
animal no more alive	num	1	31	Abgegangen (J/N)
sire	char	15	32	ISO-ID
dam	char	15	47	ISO-ID
origin of data	num	3	62	e.g. Croatia = 191
origin of data (state of DE)	num	2	65	only Germany
herd book number	char	10	67	only for bulls, if available
name of animal	char	12	77	
SATZLÄNGE		88		

some notes:

- ISO-ID: column 1-3 -> numerical country code (ISO 3166 Codes, z.B. CZE: 203, DEU: 276, AUT:040, SVN:705, HRV:191), column 4-15: unique identification of birth (used nationally and internationally, in german: Lebensnummer)
- one unique record per animal
- Include all bulls and offsprings, all cows and young females, that are inseminated once in their live; all young genotyped animals should also be included (there is an additional delivery sire and dam delivery for animals with own performance record in the beef evaluation and also for calves in the evaluation for calving and stillbirth)
- Rasseschlüssel: numerischer Schlüssel des Rinderdatenverbundes AUT-BY-BW (siehe Seite 2) - Breed code: numerical code of the cattle data network AUT-BY-BW (see page 2)
- Fremdblutanteil: bei Rasse Fleckvieh Fremdblut der Rasse Red Holstein - Proportion of foreign blood: in the case of the Fleckvieh breed, foreign blood of the Red Holstein breed

Rasseschlüssel Rinderdatenverbund AUT-BY-BW - Breed code cattle data network AUT-BY-BW

Rasse	num. Code	alph. Code	Rasse	num. Code	alph. Code
Fleckvieh	1	FL	Sortbroget dansk Maelkerace	50	SD
Braunvieh	2	BV	Tuxer	51	TX
Original Braunvieh	3	BR	Ungarisches Steppenrind	52	US
Gelbvieh	4	GE	Valdostana Nera	53	VN
Pinzgauer	5	PI	Vorderwälder	54	VW
Grauvieh	6	GR	Waldviertler Blondvieh	55	WV
Original Schwarzbunte	7	SB	Wasserbüffel	56	WA
Holstein	8	HF	Weiß-blaue Belgier	57	WB
Red Holstein	9	RF	Yak	58	YA
Auerochse	10	AO	Pustertaler Sprintzen	59	PS
Aberdeen Angus	11	AA	Murnau Werdenfelser	60	MW
Angler Rotvieh	12	AR	Rotvieh (alte Angler Zuchtri)	61	RVaA
Armoricaïne	13	AC	Rotbunt - Doppelnutzung	62	RBDn
Ayrshire	14	AY	Limpurger	63	LP
Bison	15	BI	Vogesen-Rind	64	VGR
Blonde Aquitaine	16	AQ	Maine Anjou	65	MA
Zebu	18	CE	Aubrac	66	AB
Charolais	19	CH	Marchigiana	67	MAGI
Chianina	20	CN	White Park	68	WP
Deutsch Angus	21	DA	Welsh Black	69	WeBl
Ennstaler Bergschecken	22	EB	Lincoln Red	70	LR
Eringer	23	ER	Belted Galloway	71	BGA
Galloway	26	GA	Brangus	72	BG
Groniger Blaarkop	27	GB	Normanne	73	NM
Guernsey	28	GU	Zwerg-Zebus	74	ZZ
Harzer Rotvieh	29	HR	Dexter	75	DX
Hereford	30	HE	White Galloway	76	WGA
Hochlandrind	31	HI	Longhorn	77	LH
Hinterwälder	32	HW	South Devon	78	SDV
Jersey	33	JE	Fjäll-Rind	79	FR
Jochberger Hummeln	34	JH	Telemark	80	TM
Kämtner Blondvieh	35	KB	Fleisch Fleckvieh	81	FFV
Kerry	36	KE	Uckermärker	82	UM
Limousin	37	LI	Witrug	83	WT
Luing	38	LU	Lakenfelder	84	LF
Malkekorthorn	39	MH	Ansbach-Triesdorfer	85	ABTD
Montbeliarde	41	MO	Glannd	86	GLR
Murbodner	42	MB	Brahman	87	BH
Piemonteser	44	PM	Bazadaise	88	BZD
Reggiana	45	RG	Beefalo	89	BF
Rotes Höhenvieh	46	RH	Sonstige Kreuzungen	90	SK
Romagnola	47	RO	Sonstige taurine Rinder	91	STR
Salers	48	SL	Sonstige taur-indicus Rinder	92	STIR
Shorthorn	49	SH			

Priprema podataka (5)



- **Porijeklo bikova**

- Korišteni za u.o.
- ISO-ID, ISO-SIRE, ISO-DAM
- Udjeli krvi druge pasmine
- Genski defekti

- **Ai_bulls.dat (1161)**

format data delivery: file with AI bulls

Name	Typ	Länge	Position	Bemerkung - Format
ISO identification bull	char	15	1	
date of birth	num	8	16	CCYYMMDD
breed of bull	num	2	24	
gender	num	1	26	1= male 2 = female
foreign blood percentage ^{a)}	num	4	27	(*10)
sign if bull is already slaughtered	char	1	31	J=yes, N=no
ISO identification sire	char	15	32	
ISO identification dam	char	15	47	
origin of data (country numerical)	num	3	62	e.g. 203 = CZE
origin of data (region)	num	2	65	only for German regions
herd book number	char	10	67	2 digit = breeding unit +8 digit = herd book code
name of bull	char	12	77	
AI station	num	3	89	
breed of dam	num	2	92	
breed of sire	num	2	94	
ISO ident. of maternal grand sire	char	15	96	
name maternal grand sire	char	12	111	
genetic defects / polled status ^{b)}	num	10	123	(details see at bottom)
record length			132	

Additional notes

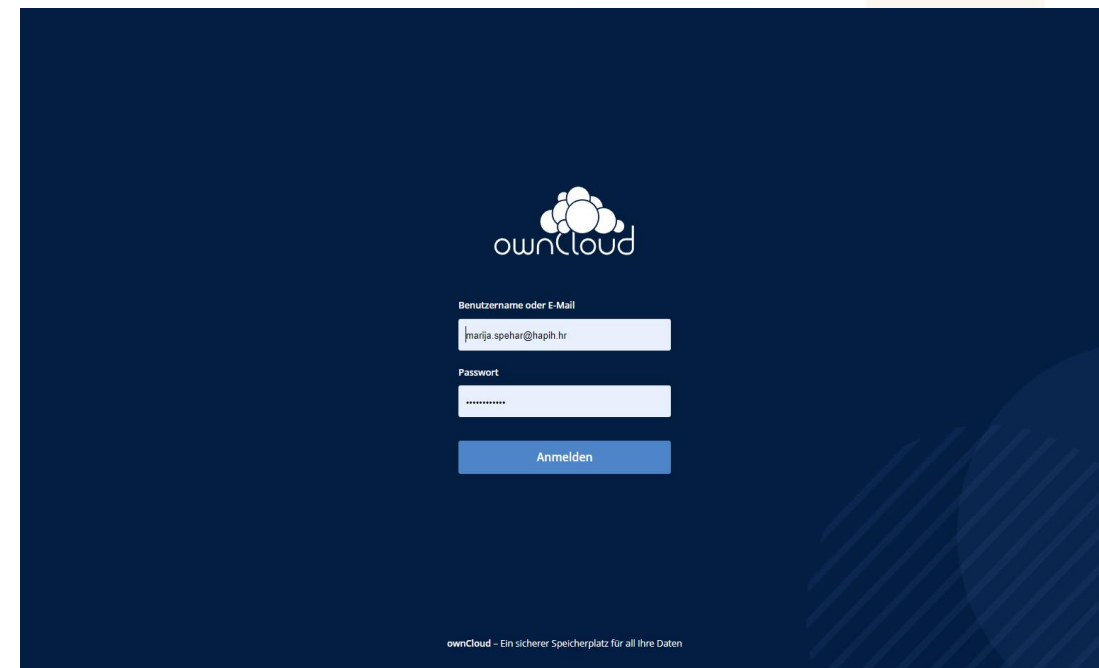
- file contains all bulls with usage in AI
- a) foreign blood percentage for Red Holstein or Holstein
- b) Coding of genetic defects and polled status:

column 123: polled status Fleckvieh
Code= Allel
homozygot polled 1 = PP
heterozygot polled 2 = Pp
phenotypic polled 3 = P
scurs (Wackelhörner) 4 = PS
homozygot (gen.marker) 5 = PP*
heterozygote (gen.marker) 6 = Pp*

column 124: genetic defect Arachnomelie (A) in Fleckvieh
coding of genetic defects:
0 = status unknown
1 = non carrier as result from genomic test published as *TA => new ARF
2 = carrier, because of affected offspring published as (A) => new ARC
3 = carrier as result from genomic test published as (A*) => new ARC
4 = non carrier as result of field test published as TA => new ARF

column 128: mark bulls with origin from embryo transfer
coding: 1 = origin from ET, 0 = no information

Slanje u DAC sustav



ownCloud

SpeharMarija

Alle Dateien > Shared > Datenaustausch_Kroatien

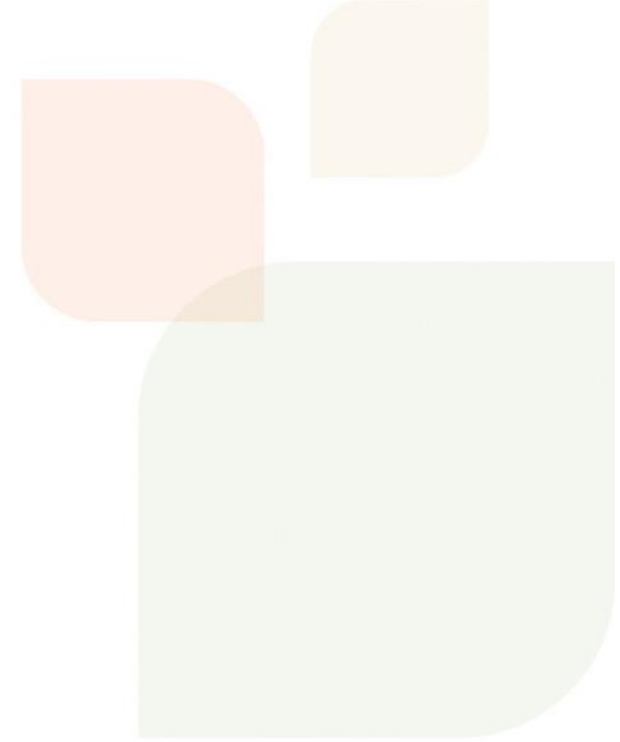
Name	Größe	Geändert
ai_bulls.dat	147 KB	Gerade eben
calving.dat	29.1 MB	vor 19 Stunden
milkability.dat	11.2 MB	vor 19 Stunden
pdg_all.dat	31.8 MB	vor 20 Stunden
pheno.dat	26.2 MB	vor 19 Stunden
test_day.dat	351.8 MB	vor einem Tag
6 Dateien		450.3 MB

Idući korak

- Priprema podataka mesnatosti (i/ili vanjštine)
- Uključivanje novih svojstava
 - Zdravlje papaka, mastitis, poremećaji plodnosti
- Kompleksno praćenje – uzgajivači, veterinari, HAPIH
- Iskustva Austrije (Christa Egger Danner)



Novosti u provedbi GS



Primjena GS – holstein pasmina



- **Svibanj 2015.** – dogovor o provođenju GS između SUHUH i DHV



- **2016.** – uključivanje u sustav **genomskog testiranja Njemačke**
- **Do veljače 2024.** – genotipizacija **775 ženske teladi** i provedba zajedničkog **genomskog testiranja s njemačkim partnerima**

Troškovi provedbe GS

	Number of animals per order					Without access for German BO
	< 10	10-19	20-49	50-99	>100	
Price per animal for reduced service (unchanged)	€ 39	€ 36	€ 32	€ 26	€ 22	€ 45
Price per animal for full service (old price)	€ 66	€ 63	€ 59	€ 53	€ 49	€ 72
Price per animal for full service (new price)	€ 60	€ 57	€ 53	€ 48	€ 44	€ 67



- + troškovi **pripreme i slanja genotipova** (4€ / genotipiziranoj životinji)

Traženje cjenovno povoljnije ponude (1)

- **DHV i VIT** – njemački savez uzgajivača i centar za genomsko vrednovanje
- **A.N.A.F.I.J.** (Associazione Nazionale Allevatori della Razza Frisona e Jersey Italiana) – talijanski savez uzgajivača
- **Semex** – vlasništvo tri kanadska A.I. centra - WestGen, EastGen i CIAQ
- **Viking Genetics** – organizacija odgovorna za provedbu uzgojnog programa i genomskog vrednovanja Danske, Švedske i Finske
- **CDCB** – organizacija odgovorna za provedbu genomskog vrednovanja u SAD (**ABS**, **Eurofins**)



Cjenovno najpovoljnija ponuda

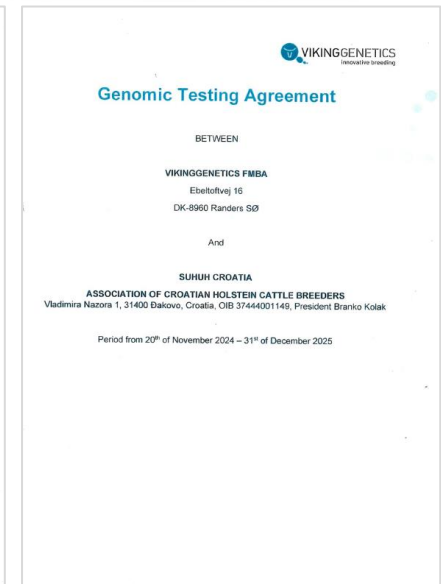
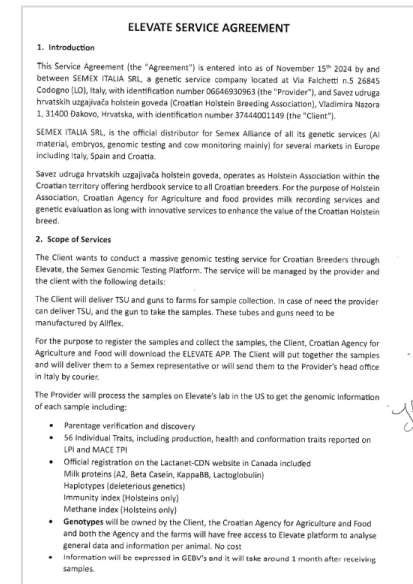
- **Studen 2024 – Semex i Viking Genetics**



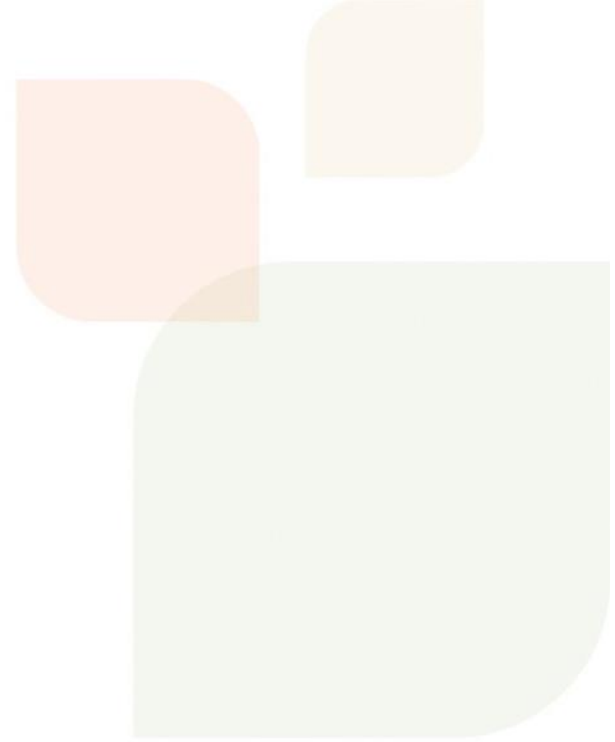
- Mogućnost genomskog vrednovanja (muško/žensko), slanje uzoraka i priprema naloga za genotipizaciju, dostupnost i format rezultata, **dobivanje genotipova**
 - **Cijena usluge**
 - Prethodna suradnja

Aktivnosti prije dobivanja rezultata

- Potpisivanje Ugovora (**SUHUH, Semex, Viking Genetics**)
- Slanje prikupljenih uzoraka u laboratorij – (Semex – Italija/Canada, Viking Genetics – Eurofins, Danska)
- Priprema i provjera porijekla
- Slanje porijekla u traženom formatu
- Izrada naloga za genotipizaciju



Semex



Slanje prikupljenih uzoraka

- Broj poslanih uzoraka - **815**

IKG	N poslanih uzoraka
00192799	275
10213321	282
50263401	200
80235832	58

Slanje porijekla u traženom formatu i izrada naloga za genotipizaciju

Submission Sheet - Italy Tag TSU - November 2024.xlsx [Read-Only] - Excel

Marija Šepar

Animal Identification (Ear Tag)	Official Registration Number	Breed of Animal	Birth Date	Sire ID (Semen Code or Reg Number)	Dam Reg Number	TSU Number	Date Sample Submitted	Gender		
ID	REG	CBRD	BDAT	SID	DREG	GSAMP	GSDAT	SEX		
3148	HOITA987654003148	HO	2024-11-20	200HO10000	HOITA987654002000	987654003148	2024-12-20	F	<- Example	YELLOW Boxes Required

Submission Sheet_Semex.xlsx - Excel

Animal Identification (Ear Tag)	Official Registration Number	Breed of Animal	Birth Date	Sire ID	Dam Reg Number	TSU Number	Date Sample Submitted	Gender	farm_ID	farm_name
	HR 9201698186	HO	2024-08-17	CA 13353753	HR 2201315390	863950	2024-11-19	F	50263401	belje
	HR 7201698195	HO	2024-08-20	US 3219742983	HR 9201545596	863913	2024-11-19	F	50263401	belje
	HR 5201698201	HO	2024-08-22	CA 14074947	HR 6201475793	863954	2024-11-19	F	50263401	belje
	HR 7201698205	HO	2024-08-22	CA 13353753	HR 4201422704	863908	2024-11-19	F	50263401	belje
	HR 2201698213	HO	2024-08-26	CA 13353753	HR 7201313652	863942	2024-11-19	F	50263401	belje
	HR 4201698217	HO	2024-08-27	CA 13353753	HR 7201316066	863940	2024-11-19	F	50263401	belje

Rezultati

- Broj dobivenih rezultata - **810**

IKG	N dobivenih rezultata/ u fazi dostave
00192799	275
10213321	281
50263401	197/3
80235832	57/1

Linkovi do rezultata

200 Genomic Results

3,843 Cows
1,570 Heifers
1 Males
0 Processing

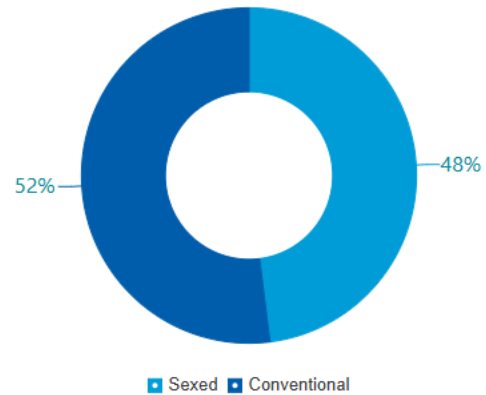


Parentage

Inbreeding

Haplotypes

Groups



Herd Immunity

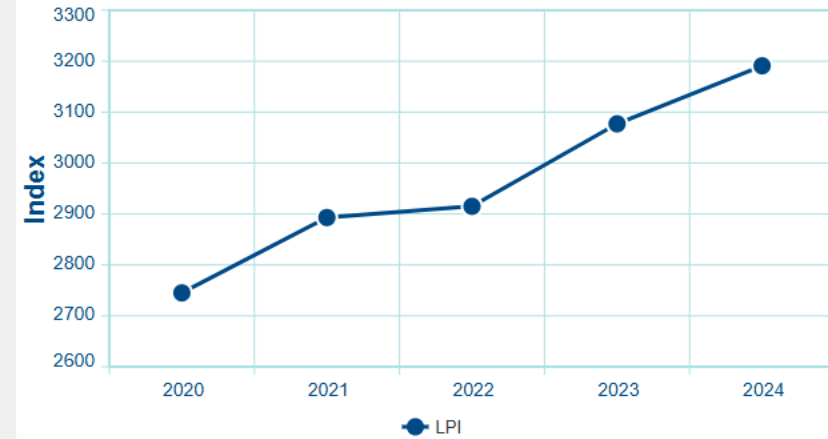
Immunity
102.1

Calf Immunity
101.1

Based on 198 females

CLARIFIDE® Plus Wellness traits are not included in the Immunity indexes for females.

Trends



Methane Efficiency

	Average ME	Emission Change
Herd	101.5	-0.9%
Top 10%	107.8	-4.7%

BREEDING THE WAY TO LOW METHANE COWS

20 to 30% By 2050 Herds Can Reduce Emissions 20-30% by 2050

CH₄ Methane Efficiency Independent From Other Traits

+ Permanent And Cumulative

Elevate® Index Available On All Holstein Tested Females

70 to 80% Reliable

SEMEX & METHANE EFFICIENCY

WHAT IS METHANE?

Methane (CH₄) is a colorless, odorless gas composed of carbon and hydrogen that enters the atmosphere from both human related activities and natural sources. It is also a potent greenhouse gas contributing to climate change.

WHY IS METHANE IMPORTANT TO SEMEX?

Semex, our customers and all of production agriculture are under the same climate scrutiny as all companies or organizations. As the global dairy cow is a significant source of methane emissions, Semex and every dairy producer in the world should be very interested in reducing methane.

WHAT ROLE DOES THE ANIMAL ITSELF PLAY IN METHANE PRODUCTION?

Multiple studies show that the cow plays a driving role when it comes to methane production. In 2020, Zhang et al. discovered that host genetics and rumen microbiome jointly explained 31% of methane emission variation. Twenty-four percent of the variance was explained by host (cow) genetics, while the balance (7%) was explained by the rumen microbiome (rumen microbes). They also suggested that the host's genetics impact ruminal methane emissions via mechanisms other than composition of the rumen microbiome.

WHY IS CANADA IN A UNIQUE POSITION TO DELIVER METHANE EVALUATION?

Canada has been recording milk Mid-Infrared (MIR) data from individual samples since 2013. The Canadian dataset includes more than 13M records from 1.6M cows. MIR spectroscopy relies on light absorption. The analysis produces a spectrum that passes infrared radiation through a sample, and measures the absorptions made by each type of milk compound bond. This can be used to predict different traits from milk samples including components, SCS and more recently methane production.

WHY IS METHANE IMPORTANT TO AGRICULTURE AND DAIRYING?

Methane's global warming potential is an estimated 25–35 times greater than carbon dioxide (CO₂) over a 100-year period, making methane emissions a climate change concern. Forty percent of global methane emissions are from agriculture. Dairy cows, as ruminants, produce methane from gut fermentation.

HOW DO COWS PRODUCE METHANE?

Approximately 90% of methane from cows is excreted by eructation (burping) rumen gases from their mouths. This is a rumen fermentation byproduct and is often referred to as enteric methane emissions.

HOW DID WE MEASURE METHANE PRODUCTION?

Measuring methane is expensive and difficult. Collecting methane emission data in research herds was made possible through two large-scale international projects led by Canadian researchers receiving funding from Genome Canada, and provincial genome centres and ministries. Methane emission was measured on +500 individual cows using the GreenFeed System.

CAN WE USE MIR PREDICTED METHANE TO SELECT FOR METHANE REDUCTION?

Yes! The genetic correlation between MIR predicted methane and methane measured with the GreenFeed System is 0.85, demonstrating that the genomic value methane predictions using MIR data is a very efficient and cost-effective way to select for methane reduction.



ELEVATE IS THE WAY TO BREED LOW METHANE COWS

All Semex, health, sustainability and the global 'Net Zero' discussion are high priority as we are all asked to reduce emissions by our global consumers and local governments.

Ten years ago, we started this conversation by changing the traditional trait discussions when we introduced 'resilience'. This technology genetically targeted breeding cows needing less antibiotics, that are healthier and last longer in herds. Now we're excited to introduce a Methane Efficiency (ME) trait.

Methane Efficiency Available on Semex Holstein Bulls

- New with April 2023 proofs
- 70-80% Reliable
- Permanent & cumulative
- Independent from other traits
- Methane index available on all Holstein females tested through Elevate
- Depending on selection intensity, herds can reduce emissions 20-30% by 2050

SUSTAINABILITY STARTS WITH SEMEX

Select for low-emission animals and make a valuable contribution to mitigating climate change

<https://www.semex.com/i?page=methane>

Dostupne informacije



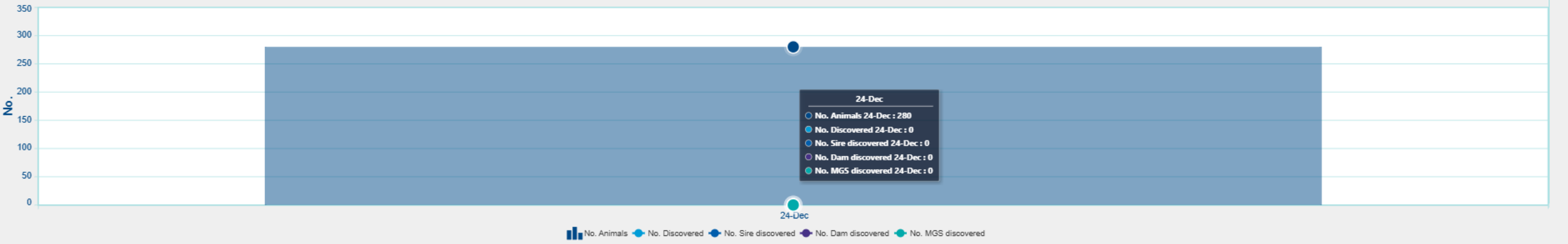
275 Genomic Results 783 Cows, 805 Heifers, 0 Processing Parentage Inbreeding Haplotypes

HO Animal Filters 5 Years Group By Month

Parent error



Parent discovered

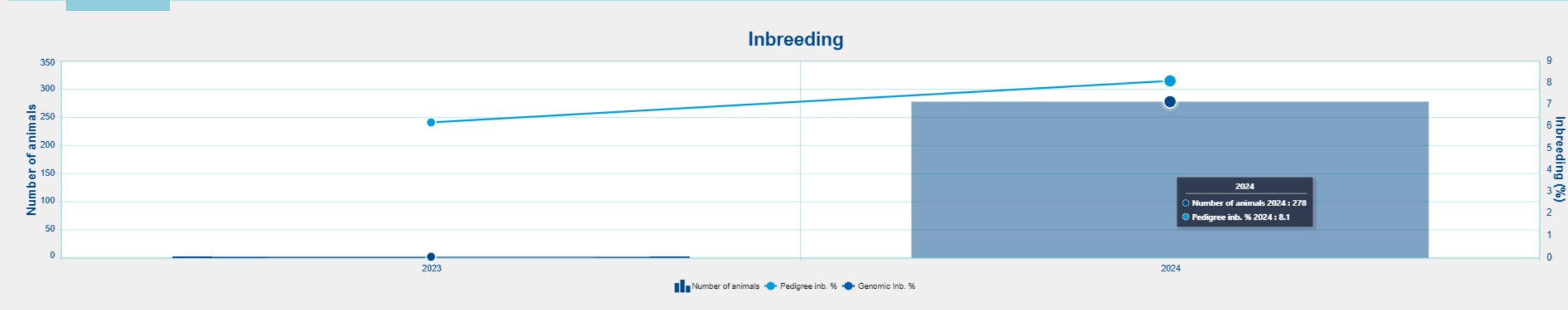


Dostupne informacije



275 Genomic Results 783 Cows, 805 Heifers, 0 Processing Parentage **Inbreeding** Haplotypes

HO Animal Filters: GENOTYPED ONLY (280) HEIFERS ONLY (280) 5 Years



Dostupne informacije

275 Genomic Results

783 Cows
805 Heifers
0 Processing



Parentage

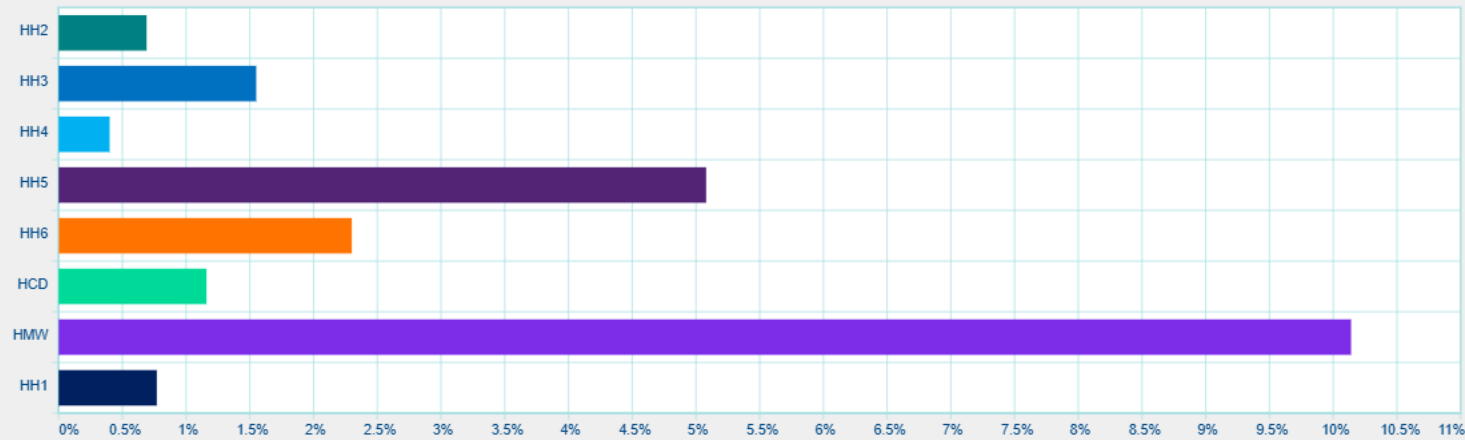
Inbreeding

Haplotypes

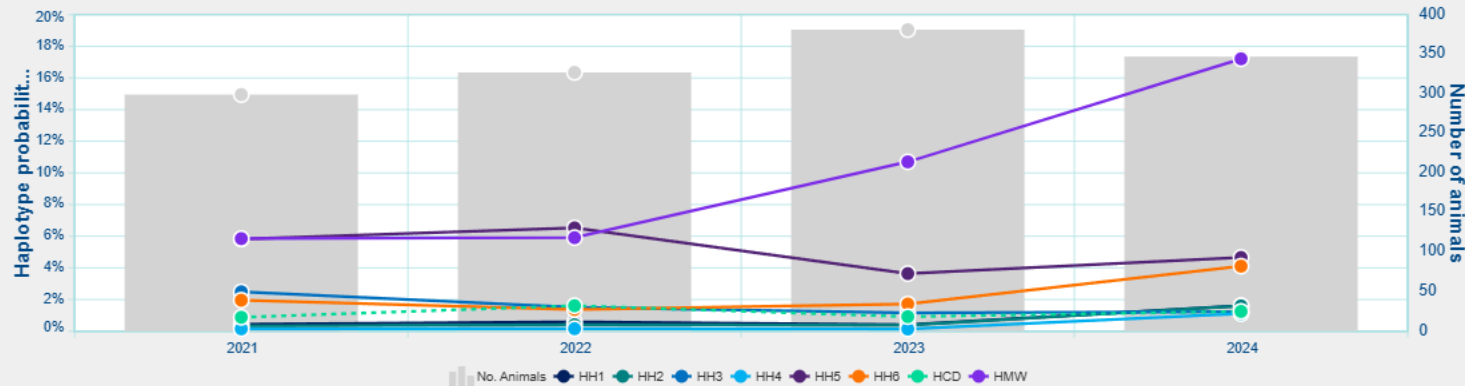


HO

Animal Filters COWS AND HEIFERS (1,354) 5 Years



Haplotypes



Haplotypes	Birth Year	Average
HH1	2021	0.44
HH1	2022	0.59
HH1	2023	0.41
HH1	2024	1.61
HH2	2021	0.33
HH2	2022	0.41
HH2	2023	0.38
HH2	2024	1.6
HH3	2021	2.49
HH3	2022	1.51
HH3	2023	1.16
HH3	2024	1.23
HH4	2021	0.15
HH4	2022	0.16
HH4	2023	0.14
HH4	2024	1.11
HH5	2021	5.82
HH5	2022	6.53
HH5	2023	3.64
HH5	2024	4.66

1 of 2 pages (32 items)

Haplotipovi koji utječu na plodnost – HH1-HH6

Haplotypes and Recessives	PC	Polled Carrier (Heterozygote)	Probability that the animal is carrier of one polled allele
	PP	Polled (Homozygote)	Probability that the animal is carrier of two polled alleles
	RC	Red Carrier (Heterozygote)	Probability that the animal is carrier of one red allele
	RR	Red (Homozygote)	Probability that the animal is carrier of two red alleles
	BLAD	Bovine Leucocyte Adhesion Deficiency	Probability that the animal is carrier of BLAD
	BY	Brachyspina	Probability that the animal is carrier of BY
	CIT	Citrullinemia	Probability that the animal is carrier of CIT
	CVM	Complex Vertebral Malformation	Probability that the animal is carrier of CVM
	DUMPS	Deficiency of Uridine Monophosphate Synthase	Probability that the animal is carrier of DUMPS
	MF	Mulefoot (Syndactylysm)	Probability that the animal is carrier of MF
	HH1	Holstein Haplotype 1	Probability that the animal is carrier of HH1
	HH2	Holstein Haplotype 2	Probability that the animal is carrier of HH2
	HH3	Holstein Haplotype 3	Probability that the animal is carrier of HH3
	HH4	Holstein Haplotype 4	Probability that the animal is carrier of HH4
	HH5	Holstein Haplotype 5	Probability that the animal is carrier of HH5
	HH6	Holstein Haplotype 6	Probability that the animal is carrier of HH6
	HCD	Haplotype associated with Cholesterol Deficiency	Probability that the animal is carrier of HCD
HMW	Muscle Weakness Haplotype	Probability that the animal is carrier of Muscle Weakness based on haplotype	
A2	Beta Casein A2	Probability that the animal is carrier of one A2 allele for Beta Casein	
A2A2	Beta Casein A2	Probability that the animal is carrier of two A2 allele for Beta Casein	
A2 Test	Beta Casein A2 Test Lab Results	Beta Casein A2 official value from the lab. (if requested at genotyping; Note that there is an additional fee)	

Informacije o haplotipovima: HAPIH i WHF

https://www.hapih.hr/cs/aplikacije/vrednovanje/web/cattle/_int/deh/2402/_main_doc.html

<https://whff.info/genetic-traits/>


Proteini mlijeka – beta, kapa kazein, laktoglobulin (1)

Barn ID	Sire Name	Birth Date	Lact. Number	A2 Test	BetaCasein	↑	KappaBB	Lactoglobulin
672144	MARAUDER	12/29/2023	0	A1/A2	AA		AE	AA
672151	TIMBERLAKE	12/31/2023	0	A2/A2	AA		AA	AA
672152	PAYPAL	01/01/2024	0	A1/A2	AA		AE	AB
672153	PAYPAL	01/01/2024	0	A1/A2	AA		AE	AA
672154	MARAUDER	01/01/2024	0	A1/A2	AA		AB	BB
672155	PAYPAL	01/02/2024	0	A1/A1	AA		AE	AB
672156	PAYPAL	01/02/2024	0	A1/A2	AA		BE	AA
672157	PAYPAL	01/02/2024	0	A1/A2	AA		AB	AA
672160	MARAUDER	01/02/2024	0	A2/A2	AA		AB	AA
672165	PAYPAL	01/03/2024	0	A1/A2	AA		BE	AA
672168	MARAUDER	01/05/2024	0	A2/A2	AA		AA	AA
672170	MARAUDER	01/05/2024	0	A1/A2	AA		BE	AB
672173	TOTAL	01/06/2024	0	A2/A2	AA		AB	AA
672175	TIMBERLAKE	01/07/2024	0	A1/A1	AA		EE	AB
672180	MARAUDER	01/09/2024	0	A2/A2	AA		AA	BB
672182	MARAUDER	01/09/2024	0	A1/A2	AA		BB	AB
672184	PAYPAL	01/10/2024	0	A1/A2	AA		AE	AB
672186	TIMBERLAKE	01/11/2024	0	A1/A2	AA		AE	AB
672188	MARAUDER	01/12/2024	0	A1/A2	AA		BF	AB

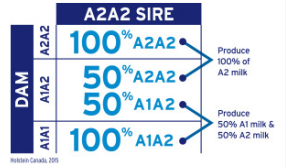
1 2 3 4 5 6 7 8 ... > > 20 Items per page

Proteini mlijeka – beta, kapa kazein, laktoglobulin (2)


HOMOZYGOUS A2A2 CARRIER SIRES



A2A2



DOWNLOAD INFOGRAPHIC



FIND OUT MORE

A2 milk popularity on the rise

CLICK HERE

HOLSTEIN HOLSTEIN GENOMAX JERSEY JERSEY GENOMAX AYRSHIRE AYRSHIRE GENOMAX LPI TPI

HOLSTEIN - Catalogue		December 2024																					
Sem	Name	TPI	NMS	DWPS	Milk	CFP	Fat	%F	Pro	%P	PTAT	UDC	FLC	IMM	CALF IMM	PL	DPR	CE	SCS	Beta	Kappa	Sire	MGs
0200HO11862	WESTCOAST LAMBEAU	3109M	1042	969	1514	196	125	0.25	71	0.09	1.79	1.48	0.26	97	95	4.2	-1.3	2.4	2.96	A2A2	AB	PURSUIT	DOC
0200HO11586	SILVERRIDGE V.EINSTEIN	3098M	1006	871	1438	179	111	0.21	68	0.08	1.22	1.99	-0.51	108	102	5.7	0.0	2.2	2.63	A2A2	AB	TOPNOTCH	DUKE
0200HO11852	PROGENESIS PINBALL	3079M	1021	833	1865	145	96	0.09	49	-0.04	1.91	2.46	0.23	98	96	5.6	0.6	1.9	2.56	A2A2	AB	CHALLENGER	IMAX
0200HO12156	WESTCOAST EARLYBIRD	3078M	998	732	1001	160	105	0.25	55	0.09	1.53	2.14	0.68	98	96	5.4	0.8	2.0	2.93	A2A2	BB	EINSTEIN	RENEGADE
0200HO12090	FLY-HIGHER SUGARHIGH	3050M	996	792	1972	156	84	0.03	72	0.04	1.90	2.18	0.02	107	105	4.9	0.2	2.5	2.78	A2A2	AB	EINSTEIN	JUICY
0200HO12123	PROGENESIS MONTEVERDI	3038M	1052	1082	1590	188	116	0.20	72	0.08	0.82	1.11	-0.59	97	91	3.8	-0.8	1.4	2.77	A2A2	AB	ZAZZLE	POSITIVE
0200HO11587	SILVERRIDGE V.CIRCUS	2979M	860	832	2252	197	117	0.11	80	0.03	2.00	1.66	0.31	106	101	2.4	-3.7	2.4	2.80	A2A2	AB	HARDROCK	DUKE
0200HO11668	CLAYNOOK ZASBERILLA	2976M	841	674	1661	202	117	0.20	85	0.12	2.32	2.44	-0.57	92	93	0.6	-3.7	2.2	2.97	A2A2	AB	CASPER	DUKE
0200HO12194	PROGENESIS JALAPENO	2969M	1069	1012	1912	184	105	0.12	79	0.07	0.65	0.90	-1.19	94	89	4.2	-1.5	1.7	2.77	A2A2	AB	HIGHJUMP	SPECTRE
0200HO12126	LA-CA-DE-LE MAUI	2946M	1007	876	2037	214	139	0.22	75	0.04	1.15	1.32	-0.65	94	102	2.1	-4.5	3.2	2.97	A2A2	AA	POSITIVE	ACHIEVER



Association of **kappa casein polymorphism** with **genomic breeding values** for **dairy traits** in **Croatian Holstein cattle population**

Marija Špehar¹, Zdenko Ivkić¹, Dora Ceranac¹, Jelena Ramljak², Ante Kasap²

¹Croatian Agency for Agriculture and Food, [Svetošimunska 25, 10000 Zagreb, Croatia](#)
²University of Zagreb Faculty of Agriculture, [Svetošimunska 25, 10000 Zagreb, Croatia](#)

275 Genomic Results

783 Cows
805 Heifers
0 Processing



Parentage

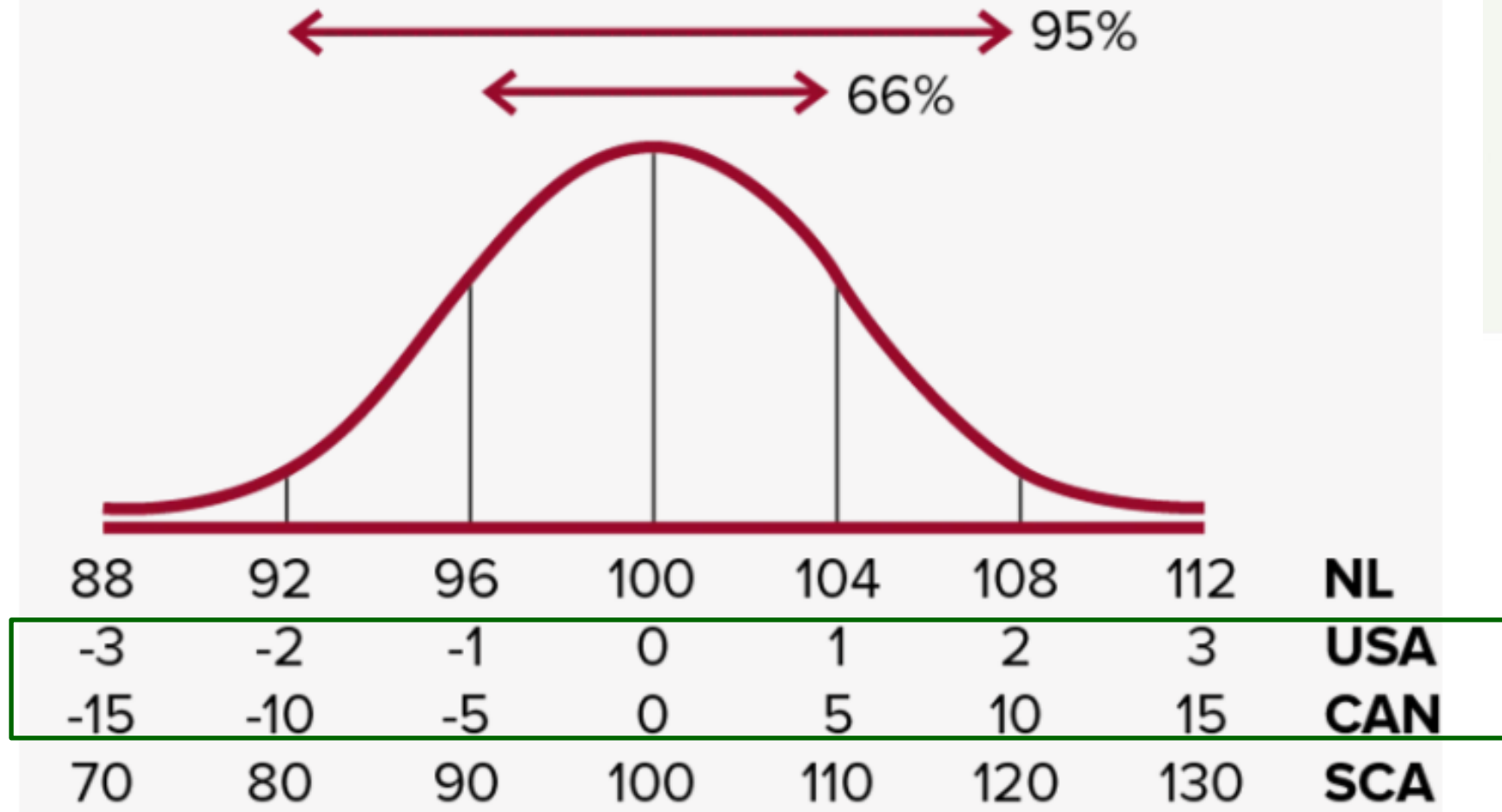
Inbreeding

Haplotypes

Excel spreadsheet showing a table of animal identification data. The table has columns for Barn ID, Barn Name, Ear Tag Code, Registration Number, Registration Name, Chain Number, Location Pen Number, Nomination ID, Order Number, Order Date, Lab Status, Lab Status Date, Genotyped, Current group, and Initial group. The data is organized into rows, with the first row being a header for 'Animal Identification'.

Animal Identification														
Barn ID	Barn Name	Ear Tag Code	Registration Number	Registration Name	Chain Number	Location Pen Number	Nomination ID	Order Number	Order Date	Lab Status	Lab Status Date	Genotyped	Current group	Initial group
689208		HR 0201689208	HR0201689208	689208			HOHRV201689208	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Conventional
689210		HR 7201689210	HR7201689210	689210			HOHRV7201689210	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689248		HR 4201689248	HR4201689248	689248			HOHRV4201689248	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689256		HR 9201689256	HR9201689256	689256			HOHRV9201689256	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Sexed
689258		HR 5201689258	HR5201689258	689258			HOHRV5201689258	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689260		HR 2201689260	HR2201689260	689260			HOHRV2201689260	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689265		HR 7201689265	HR7201689265	689265			HOHRV7201689265	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689308		HR 9201689308	HR9201689308	689308			HOHRV9201689308	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689317		HR 7201689317	HR7201689317	689317			HOHRV7201689317	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689318		HR 0201689318	HR0201689318	689318			HOHRV0201689318	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689376		HR 0201689376	HR0201689376	689376			HOHRV0201689376	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689378		HR 6201689378	HR6201689378	689378			HOHRV6201689378	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689446		HR 6201689446	HR6201689446	689446			HOHRV6201689446	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Conventional
689500		HR 3201689500	HR3201689500	689500			HOHRV3201689500	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689513		HR 3201689513	HR3201689513	689513			HOHRV3201689513	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689521		HR 8201689521	HR8201689521	689521			HOHRV8201689521	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689569		HR 6201689569	HR6201689569	689569			HOHRV6201689569	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689576		HR 8201689576	HR8201689576	689576			HOHRV8201689576	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Conventional
689581		HR 4201689581	HR4201689581	689581			HOHRV4201689581	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Conventional
689601		HR 5201689601	HR5201689601	689601			HOHRV5201689601	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689620		HR 4201689620	HR4201689620	689620			HOHRV4201689620	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689658		HR 1201689658	HR1201689658	689658			HOHRV1201689658	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689661		HR 1201689661	HR1201689661	689661			HOHRV1201689661	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Conventional
689664		HR 0201689664	HR0201689664	689664			HOHRV0201689664	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689666		HR 6201689666	HR6201689666	689666			HOHRV6201689666	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Sexed
689667		HR 9201689667	HR9201689667	689667			HOHRV9201689667	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Sexed
689671		HR 2201689671	HR2201689671	689671			HOHRV2201689671	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Sexed
689700		HR 1201689700	HR1201689700	689700			HOHRV1201689700	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Sexed
689704		HR 3201689704	HR3201689704	689704			HOHRV3201689704	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Sexed	Conventional
689708		HR 5201689708	HR5201689708	689708			HOHRV5201689708	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Sexed
689710		HR 2201689710	HR2201689710	689710			HOHRV2201689710	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Cull	Conventional
689714		HR 4201689714	HR4201689714	689714			HOHRV4201689714	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional
689166		HR 1201689166	HR1201689166	689166			HOHRV1201689166	15236-SYS-241126	11.27.2024	Completed	1.20.2025	Y	Conventional	Conventional

Comparison of type proofs



distribution of indexes

Svojstva u genomskom vrednovanju

- **N=55**
- **Lifetime Profit Index (LPI) -> alternativa Pro\$(Canadian economic selection index)**
- **LPI = 40:40:20**
 - **40%** proizvodnost (količina m.m. i proteina)
 - **40%** trajnost/izdržljivost (dugovječnost stada, vime, noge, zdravlje papaka, snaga, okvir)
 - **20%** zdravlje i plodnost (plodnost, otpornost na mastitis, broj somatskih stanica, dubina vimena, protok mlijeka, mliječni temperament)

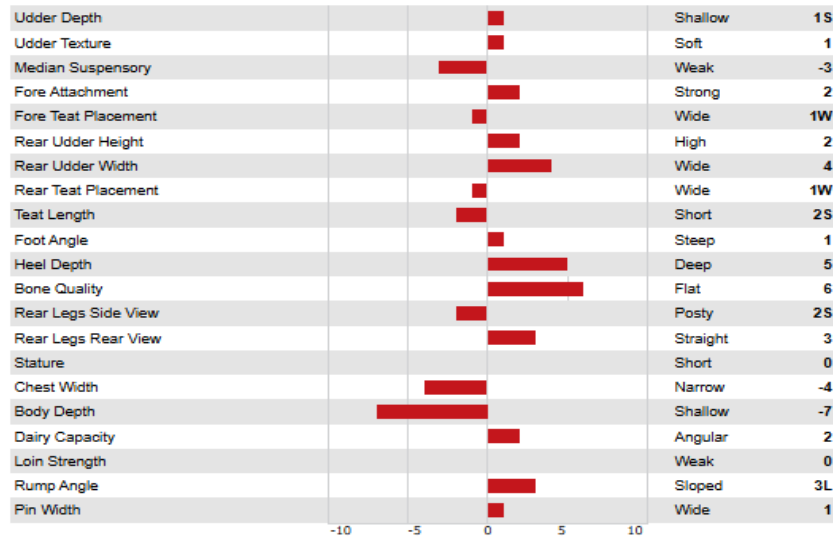


PROGENESIS PERKY
 PROGENESIS FANTIS VANITY
 PEAK FANTISMO
 PEAK PLINKO VANESSA
 PEAK PLINKO
 T SPRUCE VICTORIA VG-85-4YR-CAN

GPA LPI +3965 PRO\$ 3570		HH1F HH2F HH3F HH4F HH5F HH8F HCDF HMWF	
DPF RDF BLF CNF BYF MWF CVF		aAa: 243165 DMS:	
Reg. #: HOCANM14788505		Kappa Casein: BB Beta Casein: A1A2	
Born: 07/18/2023		GPA 24*DEC	
PRODUCTION G Herds G Daughters 81% Rel			
Milk kg	Fat kg	Fat %	Protein kg
588	140	+1.00	71
Protein %			
+0.42			
Feed Efficiency	BMR	Methane Efficiency	
102	98	101	

HEALTH & REPRODUCTION		Immunity 108	
Herd Life	111	Calf Immunity	100
Somatic Cell Score	109	Calving Ability	106
Daughter Fertility	106	Daughter Calving Ability	112
Body Condition Score	97	Milking Speed	103
Mastitis Resistance	109	Milking Temperament	100
Lactation Persistency	100	Metabolic Disease Resistance	105

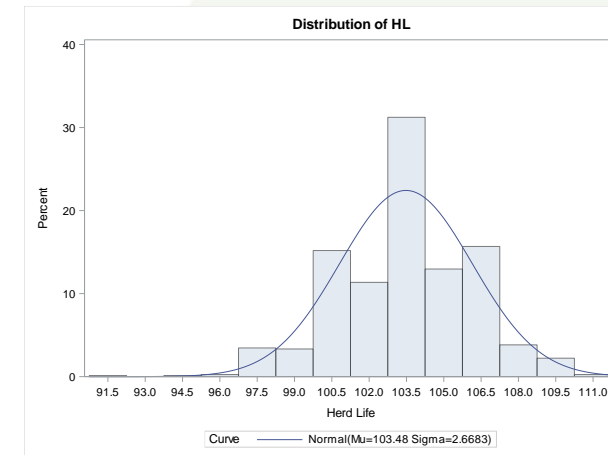
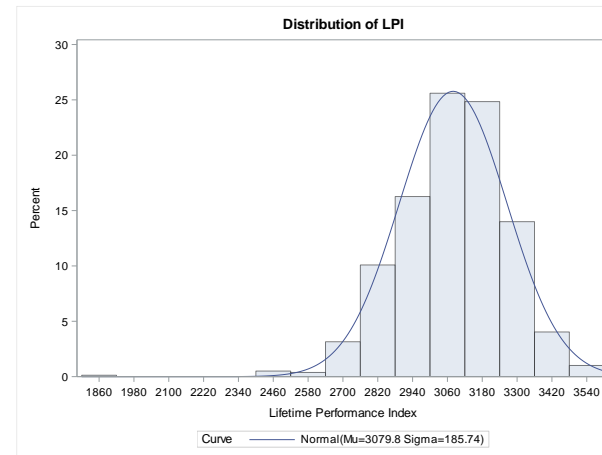
CONFORMATION G Herds G Daughters 77% Rel		GPA 24*DEC	
Conformation	3	Dairy Strength	-3
Mammary System	3	Rump	3
Feet & Legs	6		



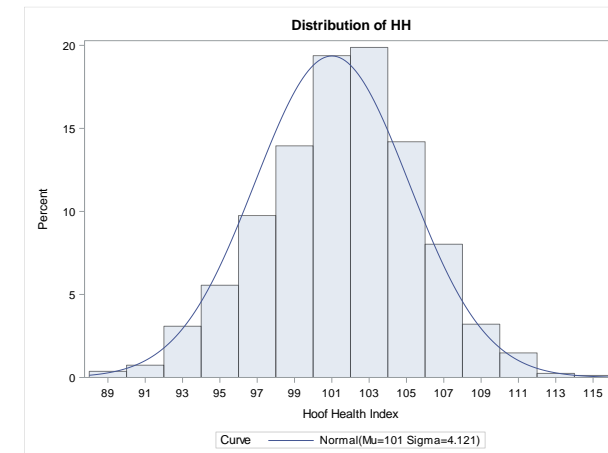
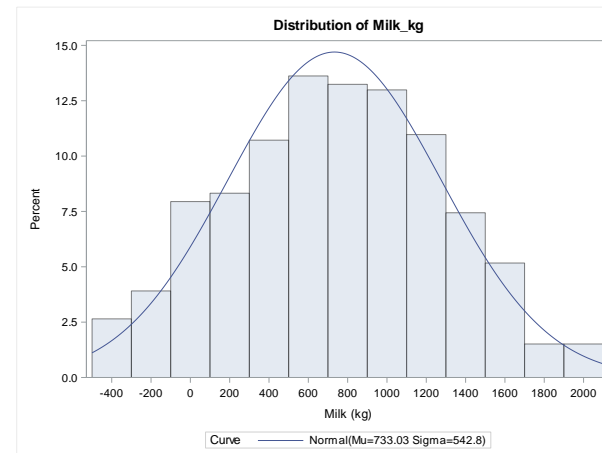
Proizvodnost: 'sirove' gUV
 Zdravlje i reprodukcija: 85-115
 Vanjština: -20-+20 (std 5)

Prosjeci i distribucije gUV

Label	N	Mean	Std Dev	Minimum	Maximum
Lifetime Performance Index	810	3071.78	210.90	926.00	3549.00
Canadian economic selection index	810	1414.84	445.30	-2760.00	2585.00
Milk (kg)	810	694.00	612.36	-4026.00	2094.00
Fat (kg)	810	50.20	24.29	-126.00	109.00
Fat (%)	810	0.19	0.29	-0.56	1.07
Protein (kg)	810	41.75	16.50	-106.00	78.00
Protein (%)	810	0.14	0.12	-0.19	0.55
Feed Efficiency	810	100.83	3.96	89.00	115.00
Body Maintenance Requirement	810	100.66	3.24	90.00	122.00
Methane Efficiency	809	99.52	3.79	87.00	113.00



Label	N	Mean	Std Dev	Minimum	Maximum
Somatic Cell Score	810	101.74	2.99	91.00	112.00
Herd Life	810	103.48	2.67	91.00	111.00
Mastitis Resistance	810	101.60	3.06	92.00	113.00
Metabolic Disease Resistance	809	98.63	2.83	89.00	107.00
Hoof Health Index	810	101.00	4.12	88.00	115.00
Lactation Persistency	810	99.56	3.12	88.00	108.00
Daughter Fertility	810	100.71	3.73	91.00	118.00



Label	N	Mean	Std Dev	Minimum	Maximum
Conformation	810	0.90	2.96	-33.00	8.00
Mammary System	810	1.50	3.07	-27.00	8.00
Feet & Legs	810	1.08	3.56	-9.00	12.00
Dairy Strength	810	-0.96	3.65	-35.00	9.00
Rump	810	-0.52	3.40	-11.00	8.00



Viking Genetics

Slanje prikupljenih uzoraka

- Broj poslanih uzoraka - **316**

IKG	N poslanih uzoraka
70025921	40
10205395	36
60024471	41
90238351	59
50172998	63
30177068	65
50010370	12

Učitavanje porijekla

Select file

Select data

Select columns

Check data

Complete

Selected file
prepare_ped_glavas.xlsx

Only Sire match for breed
All

Upload

#	cowid	birthDate	sireId	name_sire	mgslid	name_dam_s	breed	name	damId	damBirthDate
1	0201697221 0201697221	✓ 11/03/2024 11.03.2024	✓ VH Comply HOLDNKI HOLDNKM000000261	VH COMPLY	HOLDEUM000358925	BUENKO	Holstein HOL		8201453959 8201453959	19/02/2022 19.02.2022
2	0201697234 0201697234	✓ 06/05/2024 06.05.2024	✓ VH Comply HOLDNKI HOLDNKM000000261	VH COMPLY	VH Osmus HOLDNKI HOLDNKM000000253	OSMUS	Holstein HOL		8201477760 8201477760	14/06/2022 14.06.2022
3	0201697247 0201697247	✓ 29/06/2024 29.06.2024	✓ VH Nader HOLDNKI HOLDNKM000000260	NADER	VH Osmus HOLDNKI HOLDNKM000000253	OSMUS	Holstein HOL		4201477762 4201477762	16/06/2022 16.06.2022
4	0201825426 0201825426	✓ 13/08/2024 13.08.2024	✓ VH Comply HOLDNKI HOLDNKM000000261	VH COMPLY	VH Odense HOLDNKI HOLDNKM000000255	VH OPELL ODENSE	Holstein HOL		9201478072 9201478072	17/09/2022 17.09.2022
5	0201825439 0201825439	✓ 30/08/2024 30.08.2024	✓ VH Comply HOLDNKI HOLDNKM000000261	VH COMPLY	VH Allusio HOLDNKI HOLDNKM000000260	VH ALLUSIO	Holstein HOL		6201415922 6201415922	03/08/2021 03.08.2021
6	0201825442 0201825442	✓ 02/09/2024 02.09.2024	✓ VH Nader HOLDNKI HOLDNKM000000260	NADER	VH Lincoln HOLDNKI HOLDNKM000000255	VH LINCOLN	Holstein HOL		5200966039 5200966039	09/12/2017 09.12.2017
7	1201697202 1201697202	✓ 21/01/2024 21.01.2024	✓ VH Seo PRC HOLDEU HOLDEUM000770893	VH SEO PRC	VH Bowie HOLDNKI HOLDNKM000000252	BOWIE	Holstein HOL		1200888559 1200888559	21/09/2016 21.09.2016
8	1201697228 1201697228	✓ 29/04/2024 29.04.2024	✓ VH Seo PRC HOLDEU HOLDEUM000770893	VH SEO PRC	VH Osmus HOLDNKI HOLDNKM000000253	OSMUS	Holstein HOL		5201477756 5201477756	09/06/2022 09.06.2022
9	1201697231 1201697231	✓ 02/05/2024 02.05.2024	✓ VH Comply HOLDNKI HOLDNKM000000261	VH COMPLY	VH Osmus HOLDNKI HOLDNKM000000253	OSMUS	Holstein HOL		7201477763 7201477763	17/06/2022 17.06.2022
10	1201825423 1201825423	✓ 12/08/2024 12.08.2024	✓ VH Comply HOLDNKI HOLDNKM000000261	VH COMPLY	BBLBELM0001566789	MIRACLE	Holstein HOL		0201453539 0201453539	11/09/2021 11.09.2021
11	2201683523 2201683523	✓ 30/12/2023 30.12.2023	✓ VH Seo PRC HOLDEU HOLDEUM000770893	VH SEO PRC	PEAK BARKLEY-ET F HOLUSAM003131664	BARKLEY	Holstein HOL		9201415936 9201415936	19/08/2021 19.08.2021

Učitavanje uzoraka

VikMate Distributor's sires Herds Sample Center

Sires Import cows Edit cows Genomic tests Mating plan settings Mating plan

Last upload date 20/11/2024

Selected on top Breed Parity Show retired

Selected 40 / 40

<input checked="" type="checkbox"/>	Id	Result	Name	Breed	Use BEEF	Is heifer	Parity	NTM	Sire	MGS	MGDS	MGDDS	Birth date	Priority trait 1	Priority trait 2	Priority trait 3
<input checked="" type="checkbox"/>	0201552573			Holstein		Heifer		4	Crimson	VH Sully			15/06/2024			
<input checked="" type="checkbox"/>	0201552586			Holstein		Heifer		5	VH Sparky	Pharo			21/09/2024			
<input checked="" type="checkbox"/>	0201605231			Holstein									29/11/2023			
<input checked="" type="checkbox"/>	0201605587			Holstein									15/03/2024			
<input checked="" type="checkbox"/>	0201696505			Holstein									21/01/2024			
<input checked="" type="checkbox"/>	2201552577			Holstein									12/07/2024			
<input checked="" type="checkbox"/>	2201552580			Holstein									21/07/2024			
<input checked="" type="checkbox"/>	2201605581			Holstein		Heifer		4	VH Sparky				04/12/2023			
<input checked="" type="checkbox"/>	2201696509			Holstein		Heifer		4	VH Sparky	Balk			09/02/2024			
<input checked="" type="checkbox"/>	2201696538			Holstein		Heifer		10	VH Nader	VH Clark			29/06/2024			
<input checked="" type="checkbox"/>	2201833702			Holstein		Heifer		-7	TIP TOP RED P	DE-SU 527 SPUR-ET			14/09/2024			
<input checked="" type="checkbox"/>	3201605229			Holstein		Heifer		2	Praser	GARMOND			25/11/2023			
<input checked="" type="checkbox"/>	3201696535			Holstein		Heifer		7	Crimson	Rookie			11/06/2024			
<input checked="" type="checkbox"/>	3201696548			Holstein		Heifer		8	Praser	Kingboy			18/07/2024			

Select animals to genomic test

Order id

Product / Test kit

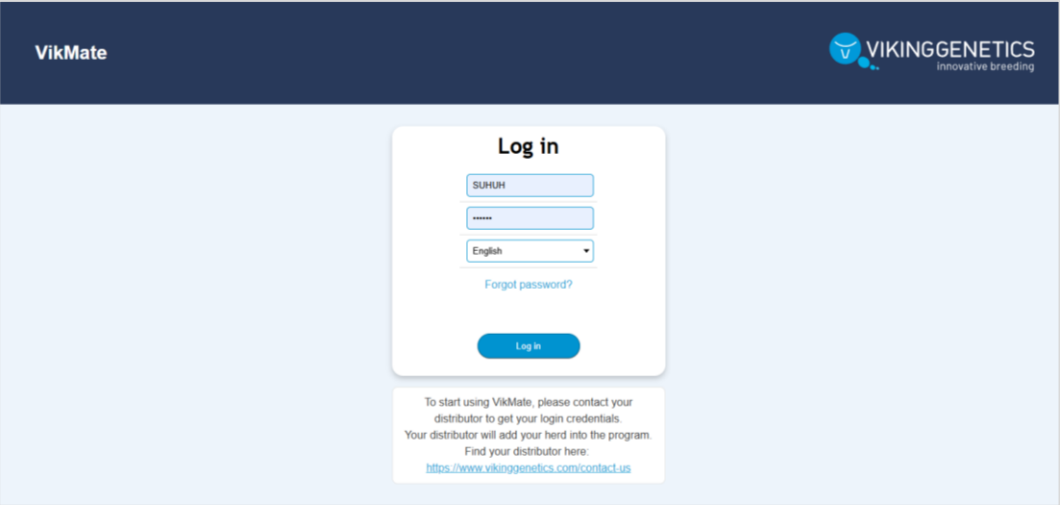
Selected animals / Allowed number of animals for product 40/40

Rezultati

- Broj dobivenih rezultata – **294**

IKG	N dobivenih rezultata	U testu	Pdg konflikti
70025921	39	1	
10205395	24	1	11
60024471	40	2	1
90238351	52	1	6
50172998	63		2
30177068	64	1	
50010370	12		

VikMate



VikMate VIKINGGENETICS innovative breeding

Log in

SURHUR

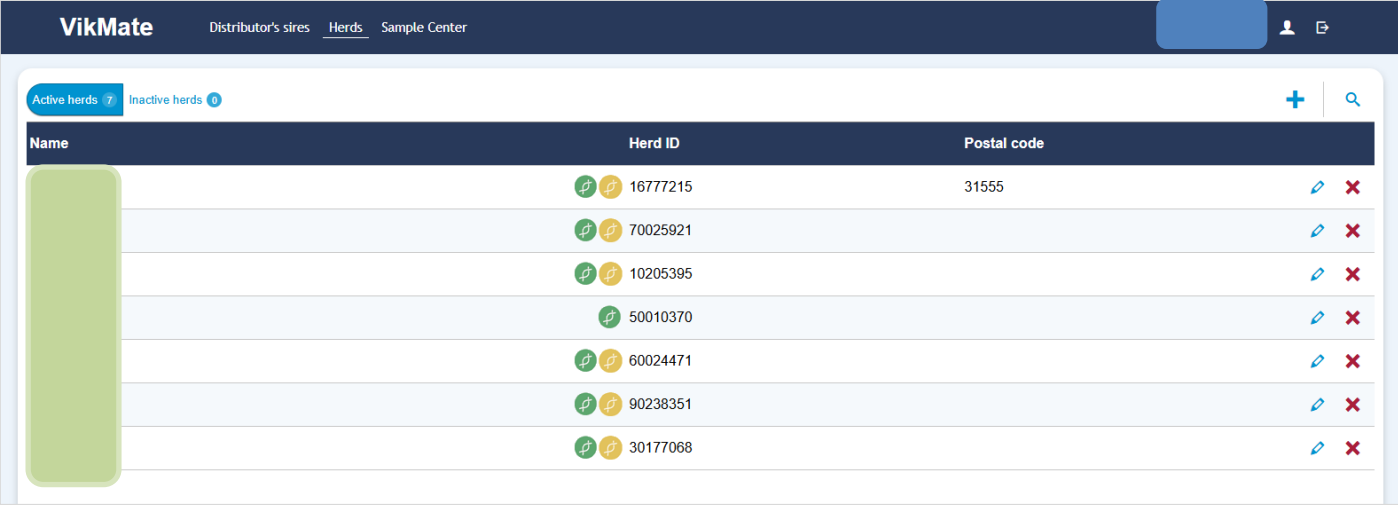
English

[Forgot password?](#)

Log in

To start using VikMate, please contact your distributor to get your login credentials. Your distributor will add your herd into the program. Find your distributor here: <https://www.vikinggenetics.com/contact-us>

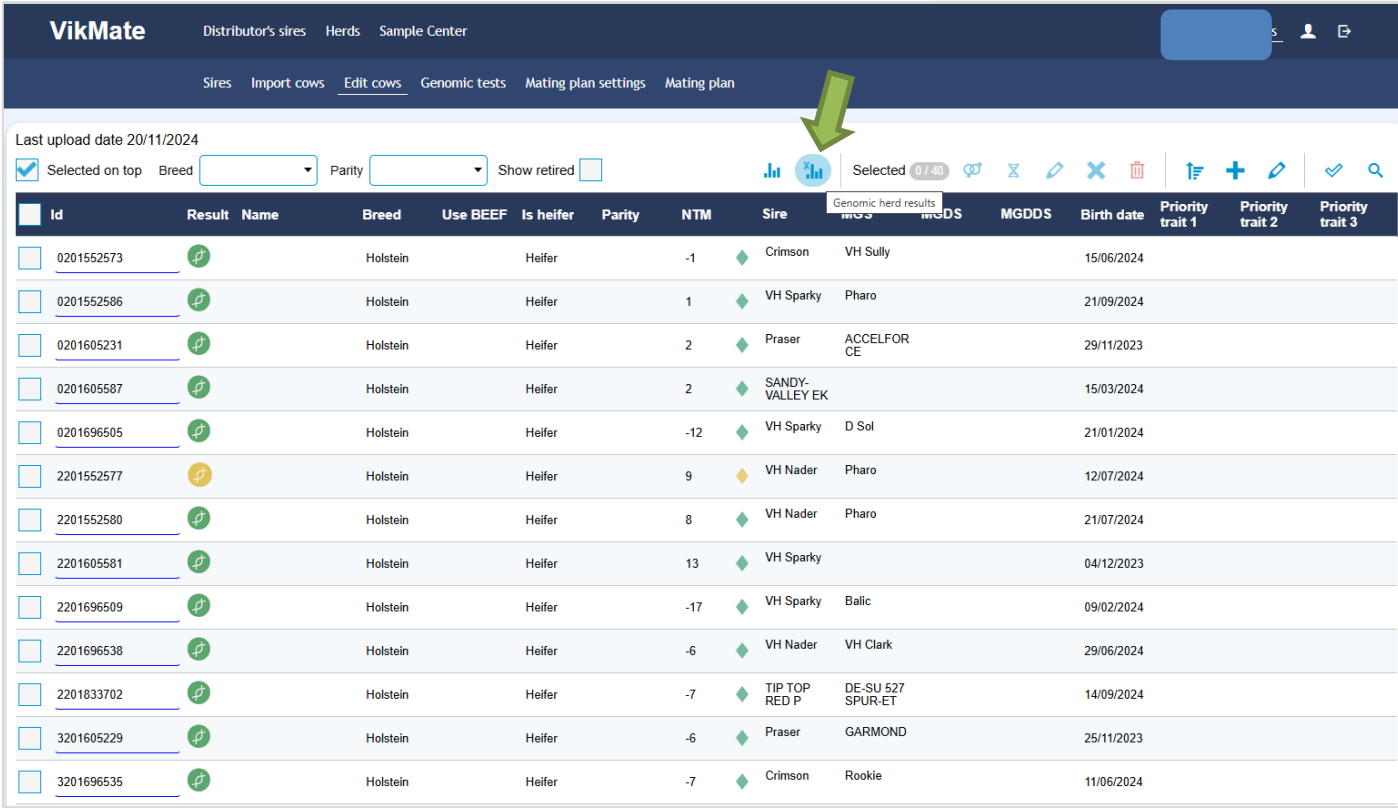
<https://vikmate.vikinggenetics.com>



VikMate Distributor's sires Herds Sample Center

Active herds 7 Inactive herds 0

Name	Herd ID	Postal code
	16777215	31555
	70025921	
	10205395	
	50010370	
	60024471	
	90238351	
	30177068	



VikMate Distributor's sires Herds Sample Center

Sires Import cows Edit cows Genomic tests Mating plan settings Mating plan

Last upload date 20/11/2024

Selected on top Breed Parity Show retired

Selected 0 / 40

Id	Result	Name	Breed	Use BEEF	Is heifer	Parity	NTM	Sire	MGDS	MGDS	MGDS	Birth date	Priority trait 1	Priority trait 2	Priority trait 3
0201552573	✓		Holstein		Heifer	-1	◆	Crimson VH Sully				15/06/2024			
0201552586	✓		Holstein		Heifer	1	◆	VH Sparky Pharo				21/09/2024			
0201605231	✓		Holstein		Heifer	2	◆	Praser ACCELFOR CE				29/11/2023			
0201605587	✓		Holstein		Heifer	2	◆	SANDY-VALLEY EK				15/03/2024			
0201696505	✓		Holstein		Heifer	-12	◆	VH Sparky D Sol				21/01/2024			
2201552577	⚠		Holstein		Heifer	9	◆	VH Nader Pharo				12/07/2024			
2201552580	✓		Holstein		Heifer	8	◆	VH Nader Pharo				21/07/2024			
2201605581	✓		Holstein		Heifer	13	◆	VH Sparky				04/12/2023			
2201696509	✓		Holstein		Heifer	-17	◆	VH Sparky Balic				09/02/2024			
2201696538	✓		Holstein		Heifer	-6	◆	VH Nader VH Clark				29/06/2024			
2201833702	✓		Holstein		Heifer	-7	◆	TIP TOP RED P DE-SU 527 SPUR-ET				14/09/2024			
3201605229	✓		Holstein		Heifer	-6	◆	Praser GARMOND				25/11/2023			
3201696535	✓		Holstein		Heifer	-7	◆	Crimson Rookie				11/06/2024			

VikMate Distributor's sires Herds Sample Center

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Herd result

Calculation date 2025-02-04

Animals				Genetic traits		
Total	With GEBV	In test	Ordered	Trait	Result	Animals
40	39	1	0	SMA	Free	40
				WE	PossibleFree	39
				CVM	Free	40
				BLAD	Free	40
				BetaCasein	BetacaseinA1A1	3
				BetaCasein	BetacaseinA1A2	13
				BetaCasein	BetacaseinA2A2	24
				HH1	Free	40
				HH3	Carrier	1
				HH3	Free	39
				JH1	Free	40
				BTA12	Free	40
				BTA23	Free	40
				PIRM	Free	40
				CDH	PossibleCarrier	1
				CDH	PossibleFree	38
				AMC	Free	40
				ArmC3	PossibleFree	39
				RP1	Free	40
				HH6	Free	40
				HH7	Free	40
				AH2	Free	40
				RC	45	1
				Polled	Horned	1

Pedigree and inbreeding	
Sires complete	Inbreeding-%
-	0.009351225

1 NTM

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GENOMIC TEST REPORT

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[Screenshot of report content]

GenReport_Agrobovis.pdf - Adobe Acrobat Pro 2020

Home Tools UnderstandingCan... GenReport_Agrobo... x Sign In

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[Screenshot of report content]

Herd result

Calculation date 2025-02-04



Animals	Birth date		
Total	With GEBV	In test	Ordered
40	39	1	0

Pedigree and inbreeding	
Sires complete	Inbreeding-%
-	0.009351225



Genetic traits		Animals
Trait	Result	
SMA	Free	40
WE	PossibleFree	39
CVM	Free	40
BLAD	Free	40
BetaCasein	BetacaseinA1A1	3
BetaCasein	BetacaseinA1A2	13
BetaCasein	BetacaseinA2A2	24
HH1	Free	40
HH3	Carrier	1
HH3	Free	39
JH1	Free	40
BTA12	Free	40
BTA23	Free	40
PIRM	Free	40
CDH	PossibleCarrier	1
CDH	PossibleFree	38
AMC	Free	40
ArmC3	PossibleFree	39
RP1	Free	40
HH6	Free	40
HH7	Free	40
AH2	Free	40
RC	45	1
Polled	Horned	1
KappaCasein	KappacaseinBB	1

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Clipboard Font Alignment Number Styles Cells Editing

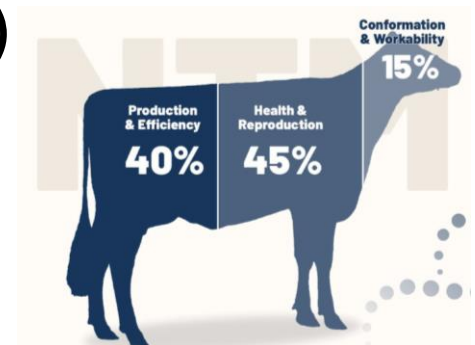
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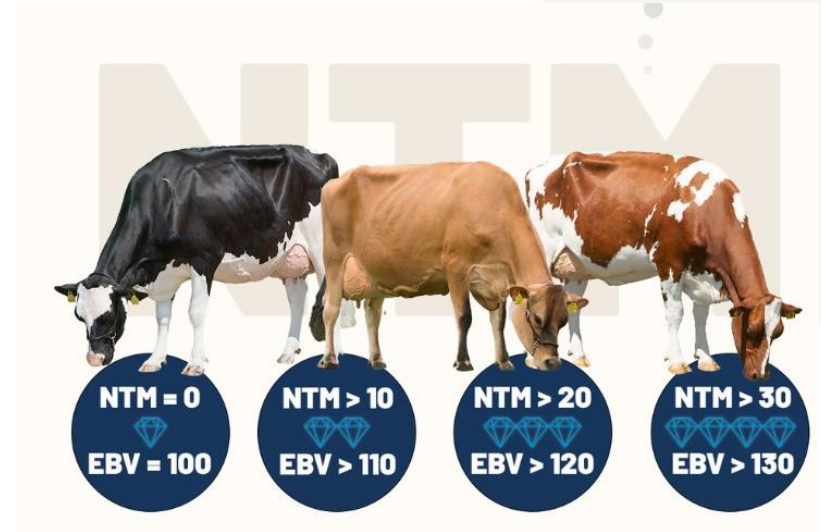
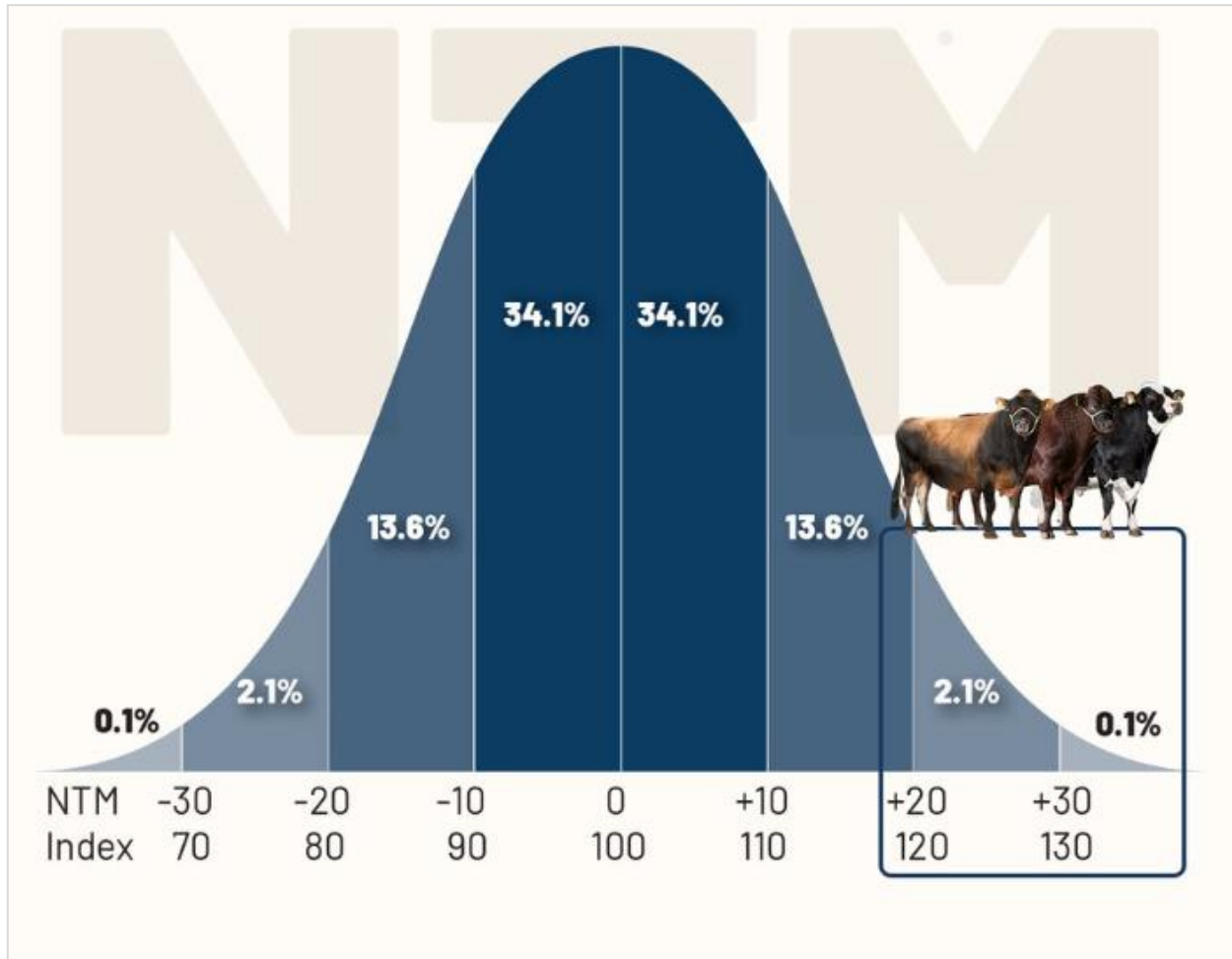
A1 Name

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	
1	Name	Cow id	Genotype date	IDNor	Sire	Dam Id	MGS	MGDS	MGDDS	MGDDDS	NTM	Yield	Milk	Protein	Fat	Growth	Fertility	Birth	Calving	UdderHea	GeneralH	Longevity	HoofHealt	Youngstoc	
2		2,02E+08	03.02.2025	HOLHRVF000000201552573	HOLUSAM003141494296	HOLHRVF009201453529	HOLDNKM000000253825					-1	99	108	104	97	117	97	99	100	101	112	104	95	95
3		2,02E+08	03.02.2025	HOLHRVF000000201552586	HOLDNKM000000257050	HOLHRVF005201464440	HOLUSAM003014562176					1	98	100	98	99	105	101	106	101	91	106	100	106	97
4		2,02E+08	03.02.2025	HOLHRVF000000201605231	HOLCANM000012283345	HOLHRVF001201453523	HOLUSAM003128043679					2	103	97	98	107	97	109	104	103	97	95	95	88	97
5		2,02E+08	03.02.2025	HOLHRVF000000201605587	HOLUSAM003148929298	HOLHRVF000507737874						2	107	103	106	107	87	101	99	94	88	86	101	94	103
6		2,02E+08	03.02.2025	HOLHRVF000000201696505	HOLDNKM000000257050	HOLHRVF008201251993	HOLDNKM000000250354					-12	86	78	82	87	101	106	102	95	96	113	101	106	97
7		2,2E+09	03.02.2025	HOLHRVF000002201552580	HOLDNKM000000260958	HOLHRVF003201478122	HOLUSAM003014562176					8	110	100	110	105	101	99	101	96	97	110	103	109	101
8		2,2E+09	03.02.2025	HOLHRVF000002201605581	HOLDNKM000000257050	HOLHRVF006201251685						13	96	99	95	98	103	120	105	109	100	111	109	109	107
9		2,2E+09	03.02.2025	HOLHRVF000002201696509	HOLDNKM000000257050	HOLHRVF000816502545	HOLDEUM000538587116					-17	91	118	101	91	98	92	99	93	98	90	99	97	96
10		2,2E+09	03.02.2025	HOLHRVF000002201696538	HOLDNKM000000260958	HOLHRVF008201219937	HOLDNKM000000253555					-6	93	99	100	87	96	106	103	98	92	98	102	99	101
11		2,2E+09	03.02.2025	HOLHRVF000002201833702	HOLBELM000664260825	HOLHRVF003201478371	HOLUSAM000066636663					-7	90	84	84	94	86	99	93	95	110	103	109	109	104
12		3,2E+09	03.02.2025	HOLHRVF000003201605229	HOLCANM000012283345	HOLHRVF007201219927	HOLNLDM000534868110					-6	96	90	87	104	111	108	103	89	92	101	96	85	108
13		3,2E+09	03.02.2025	HOLHRVF000003201696535	HOLUSAM003141494296	HOLHRVF003201297589	HOLUSAM000070625809					-7	97	110	98	102	96	103	101	101	97	98	104	85	100
14		3,2E+09	03.02.2025	HOLHRVF000003201696548	HOLCANM000012283345	HOLHRVF009201297947	HOLUSAM000072044077					9	102	98	99	104	101	112	104	102	96	107	100	94	103
15		4,2E+09	03.02.2025	HOLHRVF000004201552571	HOLUSAM003141494296	HOLHRVF006201453515	HOLUSAM003128043679					4	102	109	106	100	124	107	98	100	99	99	101	80	103
16		4,2E+09	03.02.2025	HOLHRVF000004201605226	HOLCANM000012283345	HOLHRVF002201297595	HOLUSAM000072044077					-4	92	95	90	96	101	116	99	98	99	108	102	94	105
17		4,2E+09	03.02.2025	HOLHRVF000004201605239	HOLCANM000012283345	HOLHRVF004201453906	HOLUSAM003128043679					12	103	98	100	104	108	123	103	96	95	102	99	93	107
18		4,2E+09	03.02.2025	HOLHRVF000004201696503	HOLDNKM000000257050	HOLHRVF001201296526	HOLUSAM003131131506					-4	86	94	87	88	94	114	105	103	98	108	100	113	98
19		4,2E+09	03.02.2025	HOLHRVF000004201696516	HOLUSAM003141494296	HOLHRVF007201070890	HOLFRAM003537299015					-2	106	102	104	106	114	93	96	97	94	100	101	90	101
20		5,2E+09	03.02.2025	HOLHRVF000005201552565	HOLCANM000012283345	HOLHRVF008201296907	HOLUSAM000070625809					3	106	90	95	113	100	108	102	103	95	95	88	93	101
21		5,2E+09	03.02.2025	HOLHRVF000005201552578	HOLCANM000012283345	HOLHRVF003201453886	HOLUSAM003014562176					13	113	108	113	110	110	99	99	102	106	101	93	93	102
22		5,2E+09	03.02.2025	HOLHRVF000005201605582	HOLUSAM003148929298	HOLHRVF009201296535	HOLUSAM003011538082					19	117	92	104	122	90	104	107	106	89	107	107	107	112
23		5,2E+09	03.02.2025	HOLHRVF000005201605595	HOLDNKM000000260958	HOLHRVF001201453620	HOLUSAM003014562176					8	97	88	92	100	80	109	105	99	107	110	112	106	103
24		5,2E+09	03.02.2025	HOLHRVF000005201696539	HOLDNKM000000260958	HOLHRVF007201297956	HOLUSAM000071303599					-5	90	107	98	87	97	100	102	100	103	104	111	114	99
25		6,2E+09	03.02.2025	HOLHRVF000006201552575	HOLDNKM000000260958	HOLHRVF006201453887	HOLUSAM003014562176					7	98	94	100	93	88	108	102	103	116	105	116	106	99
26		6,2E+09	03.02.2025	HOLHRVF000006201696536	HOLDNKM000000260958	HOLHRVF006201453874	HOLUSAM003128043679					22	111	103	109	110	103	121	102	97	100	110	107	93	99
27		6,2E+09	03.02.2025	HOLHRVF000006201696549	HOLDNKM000000260958	HOLHRVF001201453882	HOLUSAM003128043679					11	106	102	104	107	106	102	104	98	98	107	102	100	105
28		7,2E+09	03.02.2025	HOLHRVF000007201552572	HOLCANM000012283345	HOLHRVF005201453893	HOLUSAM003128043679					0	99	104	99	101	115	115	109	98	96	104	94	80	106
29		7,2E+09	03.02.2025	HOLHRVF000007201605230	HOLCANM000012283345	HOLHRVF003201453530	HOLUSAM003135087617					-4	101	96	101	99	101	103	103	101	89	98	93	85	104
30		7,2E+09	03.02.2025	HOLHRVF000007201696517	HOLDNKM000000257050	HOLHRVF009201219947	HOLDNKM000000253548					7	104	93	103	101	100	111	95	90	98	112	106	112	91
31		8,2E+09	03.02.2025	HOLHRVF000008201552579	HOLDNKM000000260958	HOLHRVF005201464437	HOLUSAM003128043679					-2	92	101	98	89	90	111	103	99	107	102	100	91	103
32		8,2E+09	03.02.2025	HOLHRVF000008201552582	HOLCANM000012283345	HOLHRVF006201478123	HOLUSAM000066636663					-6	97	101	101	93	97	97	103	99	92	101	97	106	104
33		8,2E+09	03.02.2025	HOLHRVF000008201605237	HOLCANM000012283345	HOLHRVF004201297968	HOLSWEM000000048202					-6	107	108	107	108	102	106	92	86	81	85	91	87	96
34		8,2E+09	03.02.2025	HOLHRVF000008201605583	HOLDNKM000000257050	HOLHRVF000449190641	HOLDNKM000000258649					15	105	77	96	103	104	111	96	93	112	107	99	109	104
35		8,2E+09	03.02.2025	HOLHRVF000008201696556	HOLDNKM000000257050	HOLHRVF000201297960	HOLSWEM000000048202					1	100	92	100	97	111	120	95	87	85	107	100	107	97
36		9,2E+09	03.02.2025	HOLHRVF000009201552576	HOLCANM000012283345	HOLHRVF000201464432	HOLUSAM003014562176					4	102	82	93	104	102	106	104	96	99	106	95	101	112

Svojstva u genomskom vrednovanju

- **N=41**
- **Nordic Total Merit Indeks (NTM)**
- **NTM = 40:45:15**
 - **40%** Produktivnost (indeks mliječnosti, količina mlijeka, m.m. i bjelančevina, prirast, učinkovitost konverzije hrane)
 - **45%** Zdravlje i reprodukcija (zdravlje vimena, plodnost, opći zdravstveni status, zdravlje papaka, lakoća teljenja (maternalna i paternalna komponenta), preživljavanje, dugovječnost)
 - **15%** Vanjština (vime, noge, mliječni temperament)



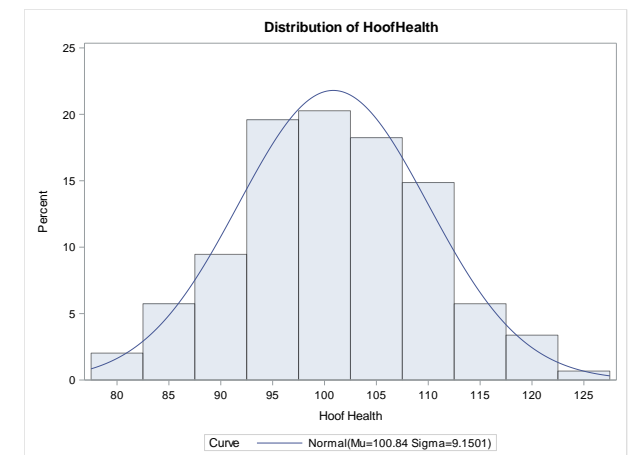
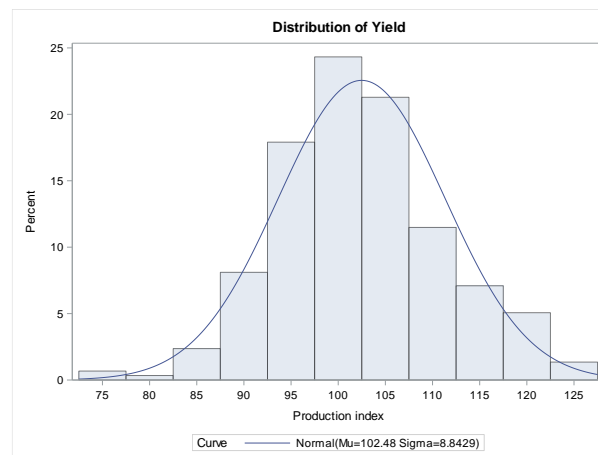
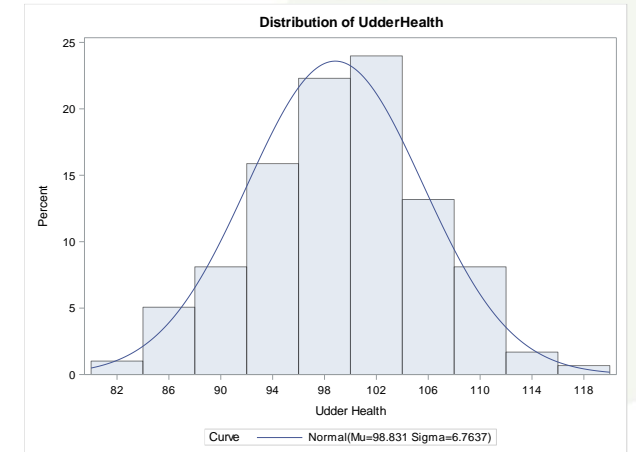
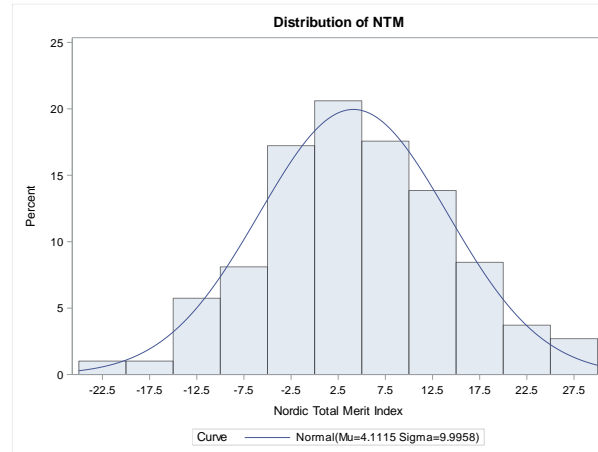


Prosjeci i distribucije gUV

Label	N	Mean	Std Dev	Minimum	Maximum
Nordic Total Merit Index	296	4.11	10.00	-22.00	29.00
Production index	296	102.48	8.84	75.00	127.00
Milk (kg)	296	99.07	10.30	68.00	127.00
Fat (kg)	296	101.40	9.71	74.00	127.00
Growth	296	99.45	9.28	75.00	135.00

Label	N	Mean	Std Dev	Minimum	Maximum
Daughter Fertility	296	104.78	7.98	79.00	127.00
Calving sire	296	100.83	3.60	92.00	111.00
Calving maternal	296	100.67	5.70	84.00	118.00
Udder Health	296	98.83	6.76	81.00	117.00
General Health	296	104.01	7.98	75.00	120.00
Longevity	296	102.72	7.43	78.00	122.00
Hoof Health	296	100.84	9.15	79.00	124.00
Youngstock Survival	296	100.06	6.37	83.00	116.00
Milkability	296	96.74	11.35	65.00	134.00
Temperament	296	100.18	6.90	81.00	122.00

Label	N	Mean	Std Dev	Minimum	Maximum
Frame	296	101.93	9.06	63.00	127.00
Feet and Legs	296	99.00	7.50	81.00	124.00
Udder	296	99.35	9.04	70.00	124.00



Hvala na pažnji



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