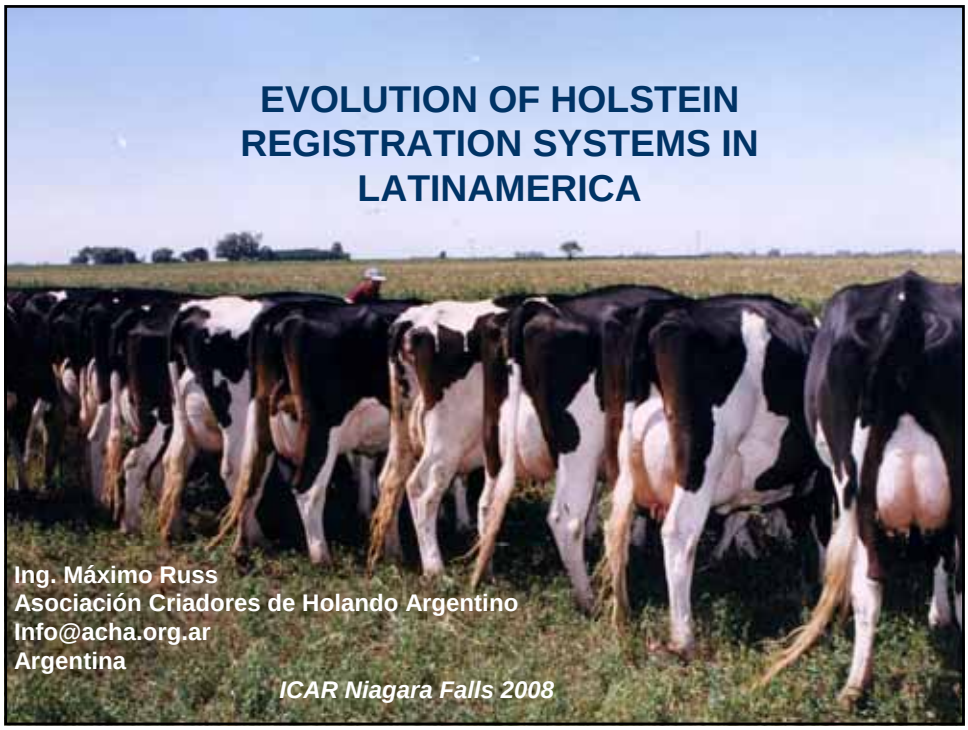
EVOLUTION OF HOLSTEIN REGISTRATION SYSTEMS IN LATINAMERICA



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Argentina

ICAR Niagara Falls 2008

IDENTIFICATION SYSTEMS

Country	Specifications	Government System
Argentina	Tag and tattoo with farm number and left side photo . Official buttom in right ear.	By laww in 2006 tag and buttom
Bolivia	Tag, photo and spots draw.	No
Brazil	Left side photo. Inviolable tags in 2005.	Yes
Colombia	Right side photo with farm number (nowadays, digital photos).	By law in 2006. No experience yet
Costa Rica	Left side photo.	No
Chile	Right and left side photos.	2004
Dominican Rep.	Right, left and front side photos.	No
Ecuador	Tag	Working on it
Mexico	Tag, spots draw and photo (two sides or left) Changing to the official system soon	2004
Panamá	-	No
Paraguay	-	No
Uruguay	Yellow tag with unique alphanumeric number (right ear). Official bottom in left	2006

REGISTER

Country	Open	Name	Since	Org. in charge
Argentina	Yes	Herd Book Argentino	1910	SRA (Soc. Rural Argentina)
		Registro de Crías	1946	ACHA (Asoc. Criad. Holando).
Bolivia (only Santa Cruz de la Sierra)	No	Herd Book	1989	Asocrale (Asoc.. Razas Lech.)
		Puro por Cruza	1989	Asocrale
Brazil	Yes	Puro de Origen	1984	ABCBRH
		Puro por Cruzamiento	1934	ABCBRH
		Femea Mestiça	1934	ABCBRH
Colombia	Yes	Puro	1942	Asoc. Holstein Colombia
		Holstein Colombiano	1996	Asoc. Holstein Colombia
Costa Rica	Yes	Libro de Registro	1989	Asoc. Holstein Costa Rica
Chile	Yes	Libro de Registro	1975	(n.a.)
Mexico	Yes	Libro Registro Regular	1959	Asoc. Holstein Mexico A.C.
		Registro Suplementario	1959	Asoc. Holstein Mexico A.C.
Dominican Rep.	Yes	RD	1995	Asoc. Holstein Dominicana
Uruguay (open in a near future)	Yes	Herd Book Uruguayo	1879	ARU (Asoc. Rural del Urug.)
		Selección Holando	1950	SCHU (Soc. Criad. Holando)

POSSIBLE CATEGORIES IN REGISTRATION. 1

Country	Registered	Grade
Argentina	5 Generations or RCD's offspring	"Registro de Crías": PB, CI, CL, CLT, (all 1, 2 y 3), then RCD (PP). Service: Pure sires.
Bolivia	5 Generations	Base Animals, GC1, GC2, GC3, PB (Pure Boliviano). Offspring: PB
Brazil	Imported animals or imported animal's offspring.	"Puro por cruzamiento": PCD (identified origin) 31/32 or PCC (non identified origin) 31/32. Always with official inspection. Service: pure sires. "Fêmea Mestiça": cross of breeds with different percentage of Holstein. Offspring of a 15/16 with PO sire becomes PC (15/16 with identified origin or 15/16 with an official inspection if the origin is non identified).
Colombia	5 Generations or Puro's offspring	"Vaca Fundadora", 1º Gen., 2º Gen.,3º Gen., "Holstein Puro por Pedigree". Service: Pure sires.

POSSIBLE CATEGORIES IN REGISTRATION. 2

Country	Registered	Grade
Costa Rica	5 Generations or Hato Fundación's offspring	-"Encastado" or "gradado", "Purificado", "Hato Fundación" and "Ganado puro". Service: pure sires.
Chile	(n.a.)	Any animal phenothypically Holstein with indication of the ancestry percentage.
Mexico	5 Generations or 2F's offspring	"Registro Regular": Class X, Class Y, Class 1F and Class 2F Service: pure sires.
Dominican Rep.	5 Generations or Puro Nativo's offspring.	-Pure or "hato fundación", 75% purebred, 87% purebred, 94% purebred and 100% purebred or "puro nativo". Service: pure sires.
Uruguay	5 Generations	Base (phenotypic view only), Gen. 1, Gen. 2 y Gen. 3. Service: pure sires.

REGISTRATION OF IMPORTED ANIMALS

Country	Herd Book	Procedure
Argentina	Yes	Correlative number with national products. No keeping of numbers of origin/international. Five generation Pedigree, DNA, certificate of any carriers of undesirable recessive.
Bolivia	Yes	Correlative number with national products. No keeping of numbers of origin/international.
Brazil	Yes	Correlative number with national products. No keeping of numbers of origin/international.
Colombia	Yes	Correlative number with national products. No keeping of numbers of origin/international.
Costa Rica	Yes	Correlative number with national products. Keeping of numbers of origin/international
Chile	Yes	Correlative number with national products. No keeping of numbers of origin/international
Mexico	Yes	Correlative number with national products. No keeping of numbers of origin/international.
Dominican Rep.	Yes	Keeping of origin number adding country and sex codes.
Uruguay	Yes	Correlative number with national products. No keeping of numbers of origin/international. Five generation Pedigree, blood type analysis (leaving it) DNA.

HERD BOOK REGISTRATIONS

	Registered (Males and females)		Grade (Males and females)		Imported (Males and females)
Country	**Total**	**Annual**	**Total**	**Annual**	**Annual**
Argentina	520,000	7,000	4,378,418 f.*	200,000 f.*	230
Bolivia	8,300 f.*				304 historic
Brazil	640,961	18,000	1,277,839	35,000	447 (without semen)
Colombia		1,800		1,800 f.*	150
Costa Rica	80,413 historic				4,750 historic**
Chile	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
Mexico	155,073	4,200	136,643 f.*	5,000	1,000
Dominican Rep.	650 annual aprox.				46 aprox.
Uruguay	(n.a.)	8,000	800,000 f.*	45,000 f.*	(n.a.)

* Females and with the last system
** Importation suspended

CLASSIFICATION OVERVIEW

Country	Classifies	Org. in charge	Annual Classifications
Argentina	Yes	ACHA	20,000
Bolivia	No		
Brazil	Yes	ABCBRH	7,200
Colombia	Yes	Asoc. Holstein de Colombia	11,000*
Costa Rica	Yes	Cattle Chambers; Associations	1,000*
Chile	Yes	Asoc. Hols. Chile (Hols.n USA/ CAN up to 2001 too)	600*
Ecuador	Yes	Holstein Association	10.000*
Mexico	Yes	Asoc. Holstein Mexico A.C.	3,700*
Dominican Rep.	Yes	Holstein Assoc.(Holstein USA before)	200*
Uruguay	Yes	SCHU	15,000*

GENETIC EVALUATION

Country	Evaluation	Org. in charge	Frequency
Argentina	Yes, sires and dams	ACHA – FCV	Twice a year since 1981
Bolivia	No		
Brazil	Yes, sires	EMBRAPA	Annual
Colombia	No		
Costa Rica	No		
Chile	No		
Mexico	Yes, sires and dams	Inst. Nac. de Inv. For., Agr. y Pecuarias	Annual
Dominican Rep.	No		
Paraguay	No		
Uruguay	Yes, Sires and dams	SCHU – ARU – INIA-INML – Fac. Agr.	Annual since 1994

GENERAL INFORMATION

* 2007

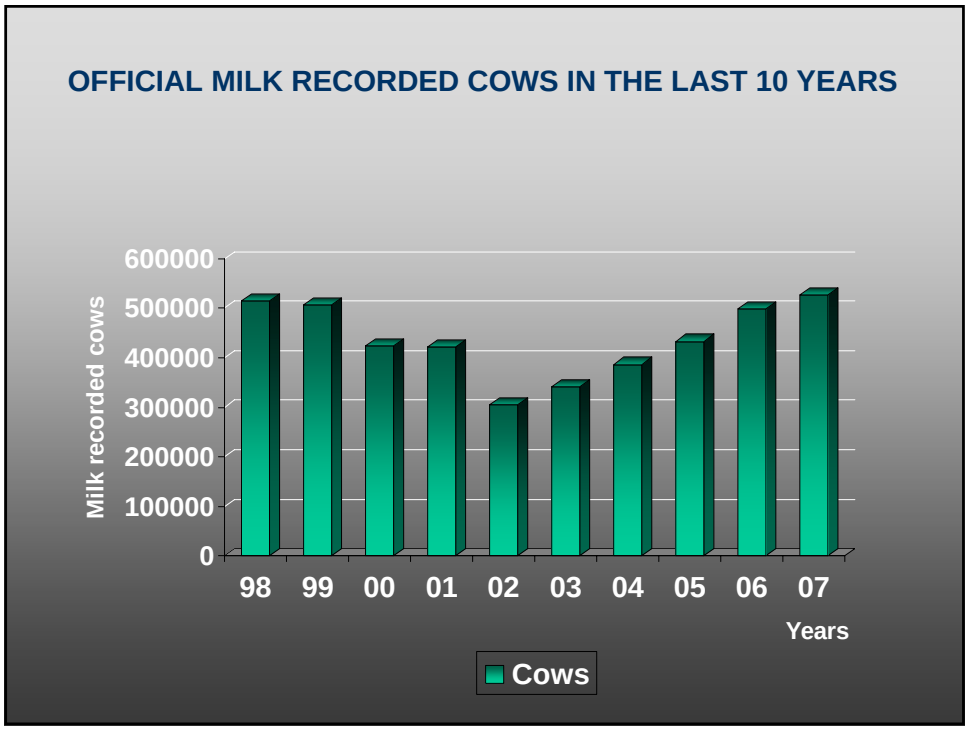
Country	Milk/Inh./year	Total Cows	Cows in MRS*	l/Cows/ 305d
Argentina	170 l	2.000.000	527,000	6,127
Bolivia	35 l	300,000	3,000	4,270
Brazil	150 ml	1,080,000	30,000	8,340
Colombia	136 l	560,000	15,000	6,200
Costa Rica	195 l	384,880	-	2,000
Chile	(n.a.)	650,000	65,000	(n.a.)
Mexico	100 l	2,140,130	45,000	4,426
Dominican Rep.	80 l	1,400,000		1,350
Uruguay	240 l	1,000,000	150,000	5,940

ACTIVITIES OF THE ASOCIACION CRIADORES DE HOLANDO ARGENTINO

ACHA

- ✓ OFFICIAL MILK RECORDING SYSTEM
- ✓ REGISTRATION
- ✓ TYPE CLASSIFICATION SYSTEM
- ✓ HOLSTEIN SHOWS
- ✓ GENETIC EVALUATIONS

✓ Official Milk Recording System



EVOLUTION OF THE ARGENTINE OFFICIAL MILK RECORDING SYSTEM

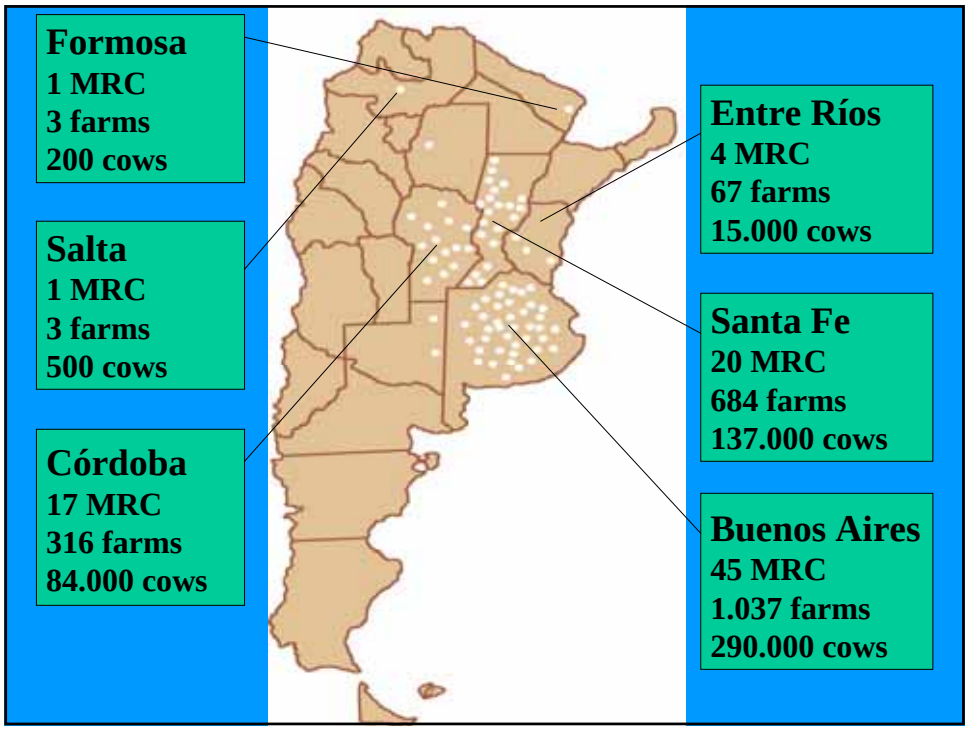
1998	2,502	515,110
1999	2,377	506,684
2000	1,900	424,627
2001	1,892	421,698
2002	1,330	305,536
2003	1,448	341,773
2004	1,619	386,398
2005	1,988	432,750
2006	2,057	498,639
2007	2,110	526,700

ACHA, 2008.

ARGENTINA DAIRY REGIONS

Regions	Farms	Milk recorded cows
Buenos Aires	1,037	290,000
Santa Fe	684	137,000
Córdoba	316	84,000
Entre Rios	67	15,000
Salta	3	500
Formosa	3	200
Total	2,110	526,700

Official Milk Recording System. ACHA. 2008

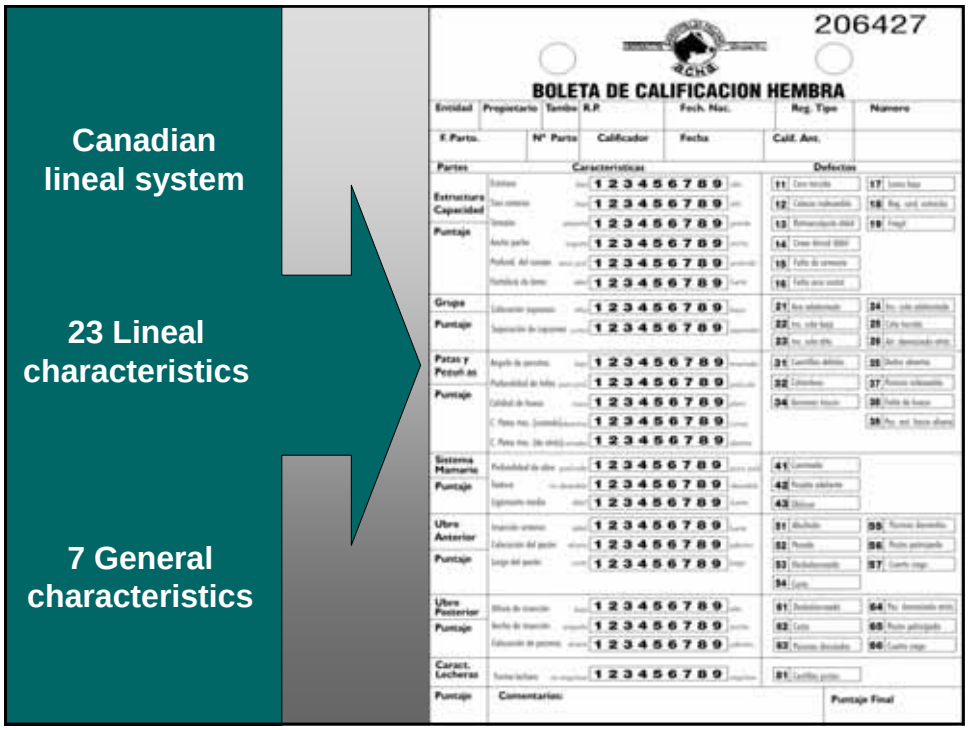


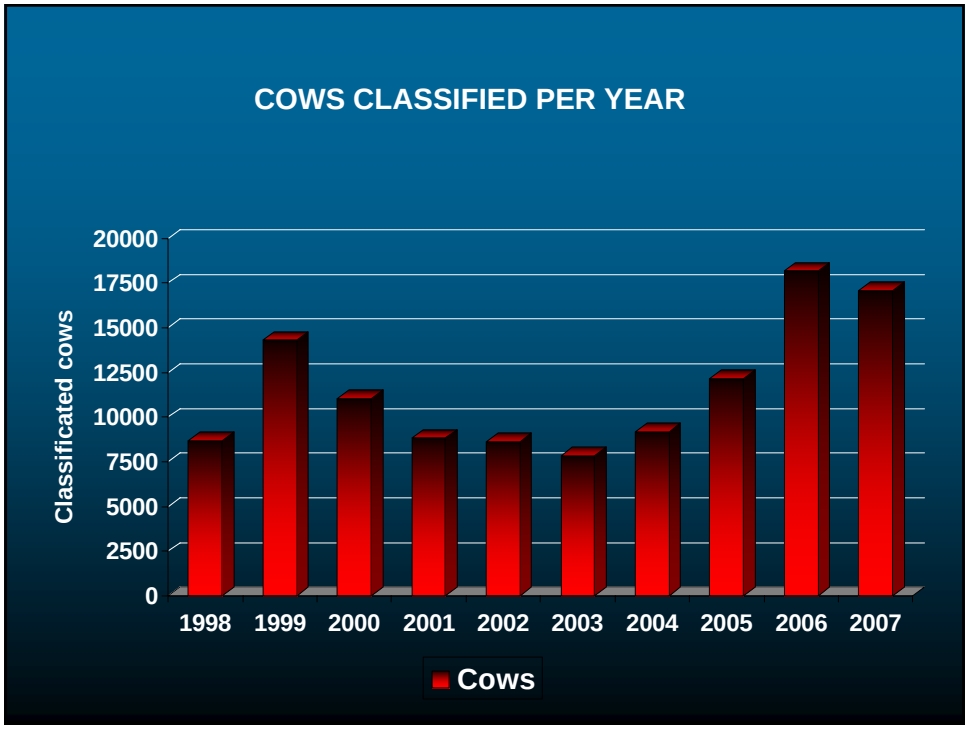
✓ Type Classification System

Canadian lineal system

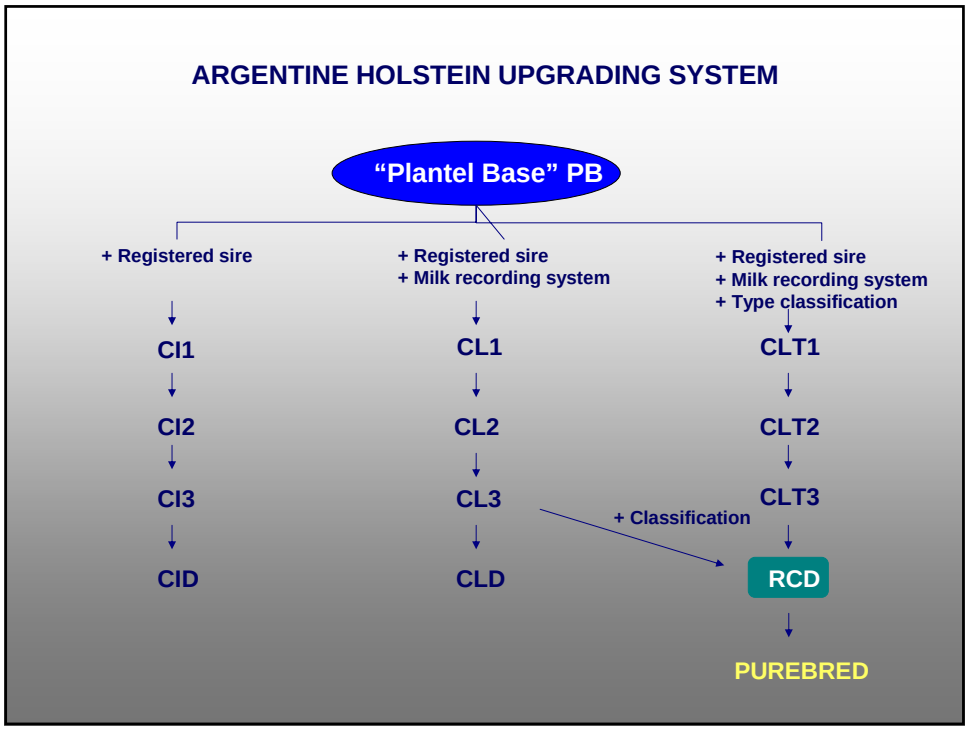
23 Lineal characteristics

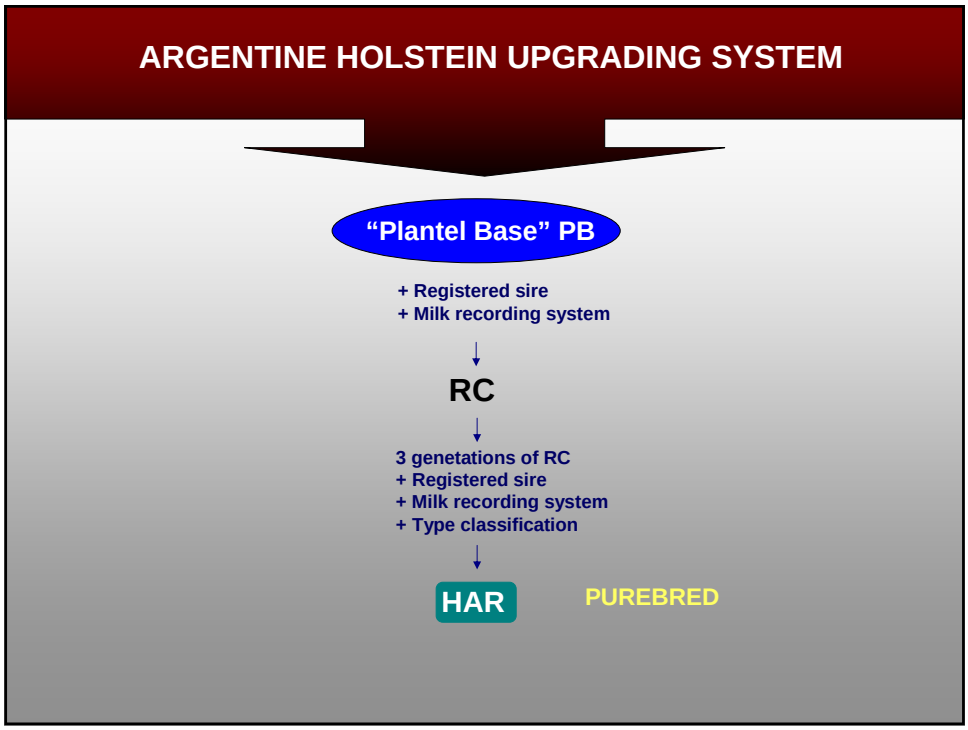
7 General characteristics

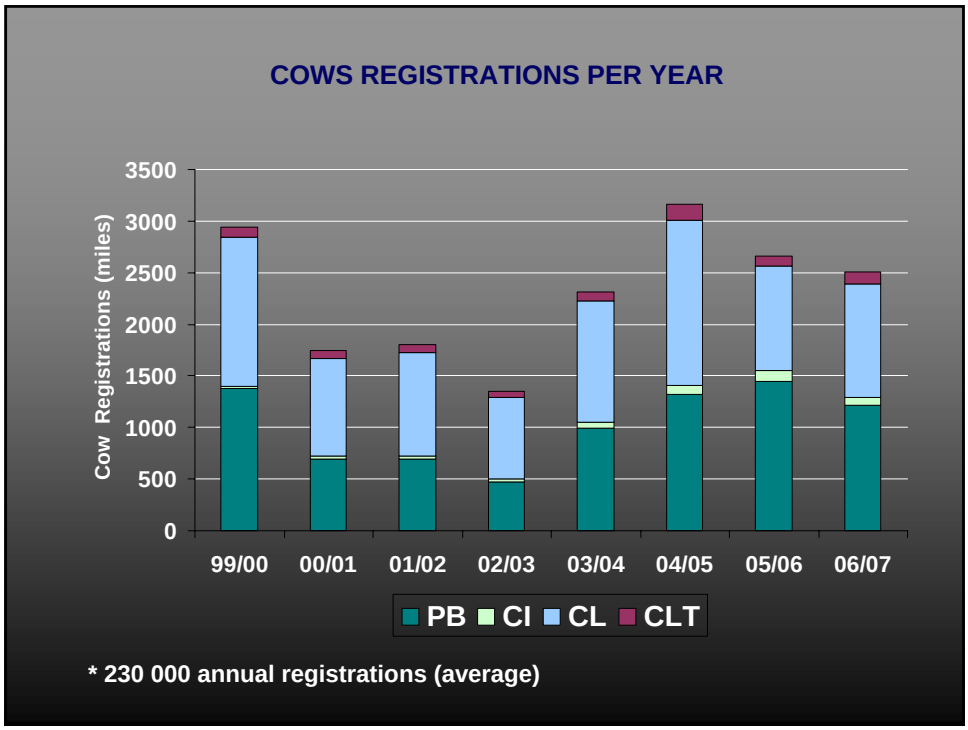


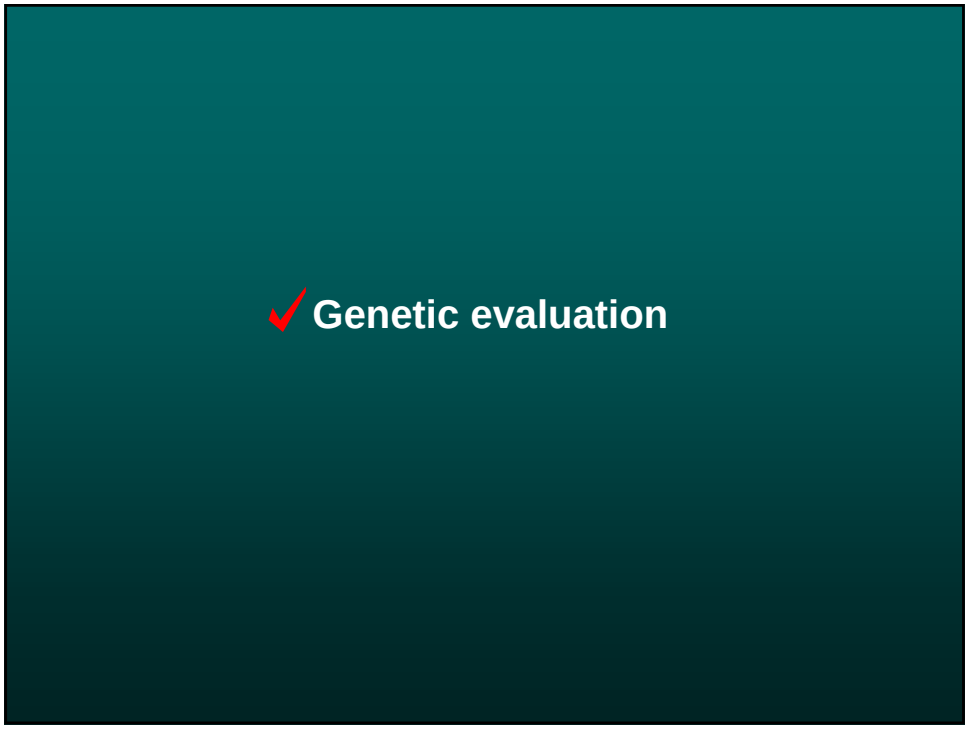


✓ Register


ARGENTINE HOLSTEIN UPGRADING SYSTEM
"Plantel Base" PB
+ Registered sire
+ Registered sire
+ Milk recording system
+ Registered sire
+ Milk recording system
+ Type classification
CI1
CI2
CI3
CID
CL1
CL2
CL3
CLD
CLT1
CLT2
CLT3
+ Classification
RCD
PUREBRED


ARGENTINE HOLSTEIN UPGRADING SYSTEM
"Plantel Base" PB
+ Registered sire
+ Milk recording system
RC
3 genetations of RC
+ Registered sire
+ Milk recording system
+ Type classification
HAR
PUREBRED


COWS REGISTRATIONS PER YEAR
Cow Registrations (miles)
3500
3000
2500
2000
1500
1000
500
0
99/00
00/01
01/02
02/03
03/04
04/05
05/06
06/07
PB
CI
CL
CLT
* 230 000 annual registrations (average)


Genetic evaluation

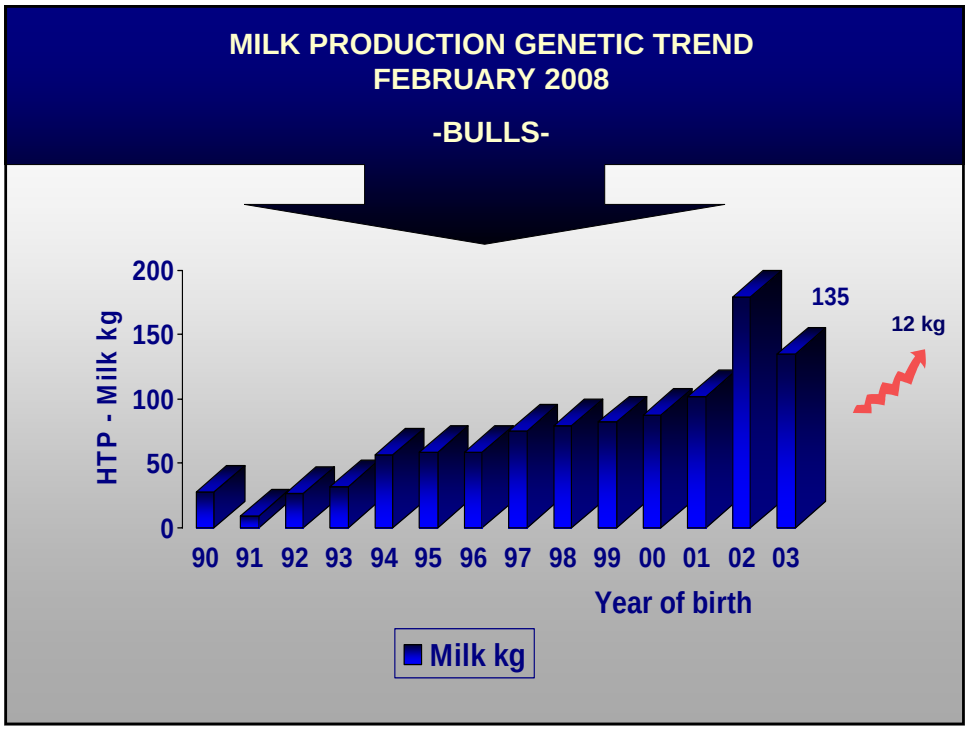
DESCRIPTION OF THE GENETIC EVALUATION

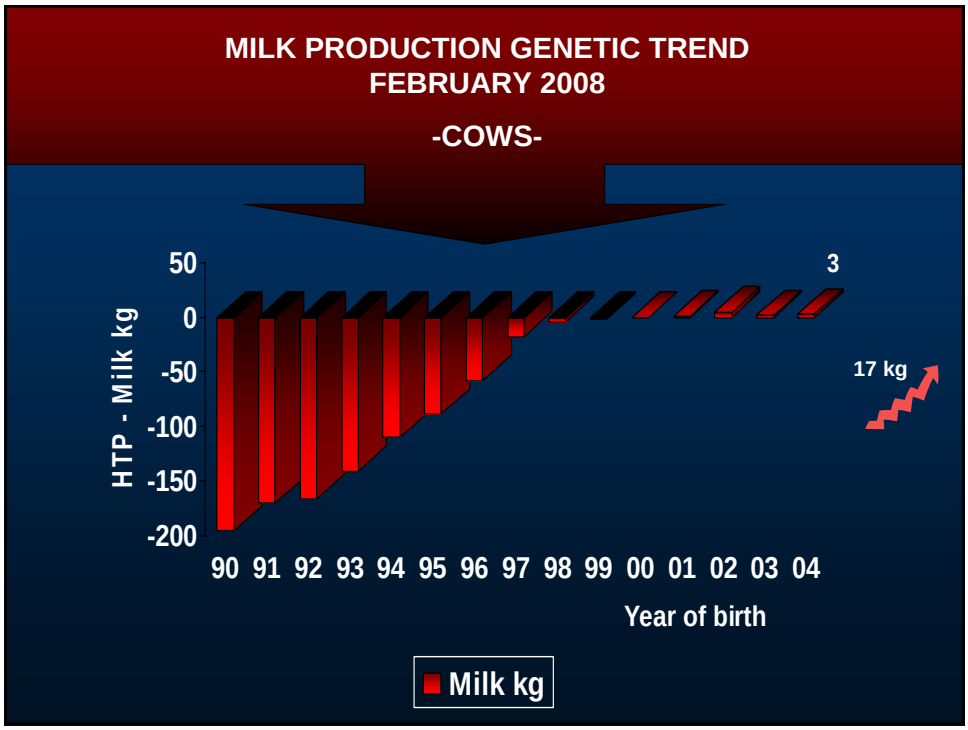
BLUP
ANIMAL MODEL
METHODOLOGY

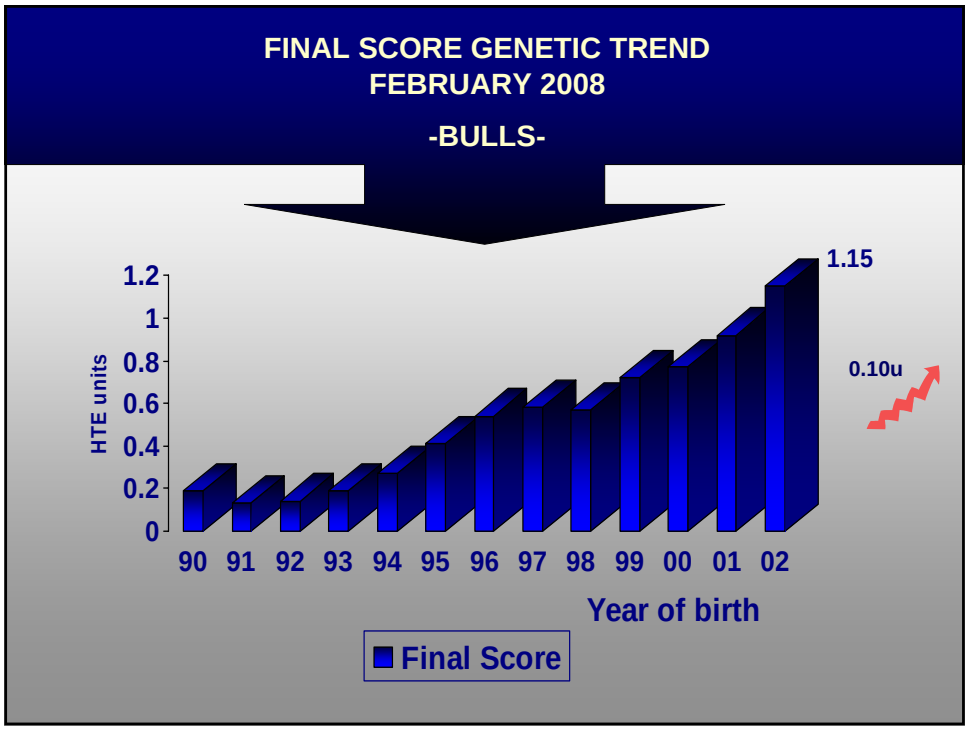
Production:
1,104,634 cows
9,534 bulls

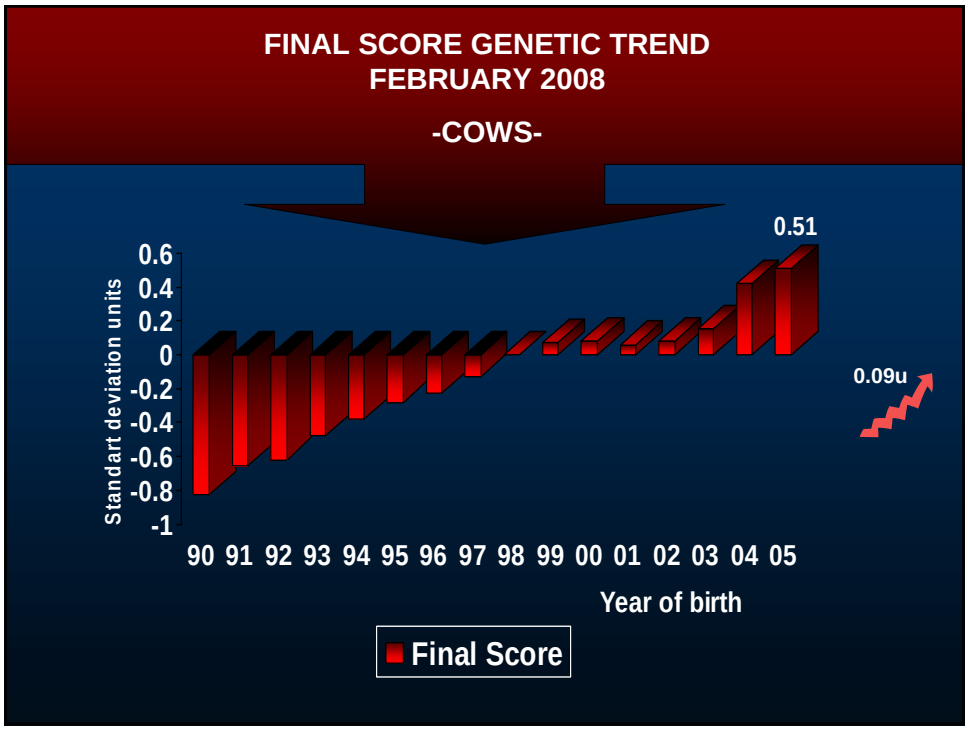
Type:
179,994 cows
5,694 bulls

✓ **Genetic trend**


MILK PRODUCTION GENETIC TREND
FEBRUARY 2008
-BULLS-
HTP - Milk kg
200
150
100
50
0
135
12 kg
90 91 92 93 94 95 96 97 98 99 00 01 02 03
Year of birth
Milk kg

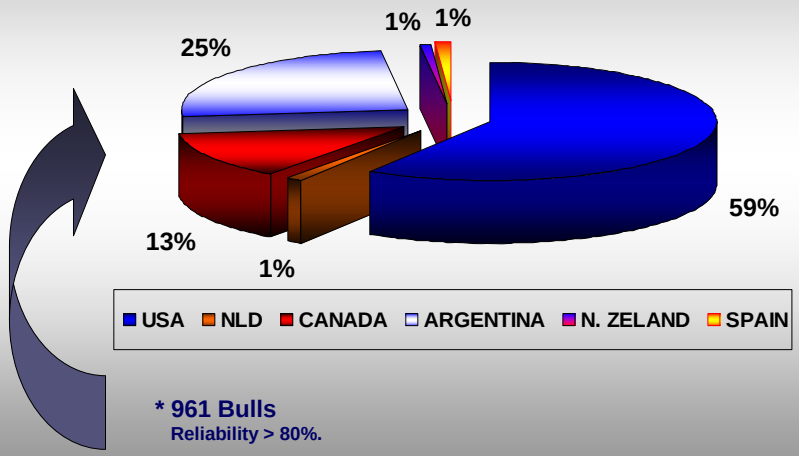

MILK PRODUCTION GENETIC TREND
FEBRUARY 2008
-COWS-
HTP - Milk kg
50
0
-50
-100
-150
-200
3
17 kg
90 91 92 93 94 95 96 97 98 99 00 01 02 03 04
Year of birth
Milk kg


FINAL SCORE GENETIC TREND
FEBRUARY 2008
-BULLS-
HTE units
1.2
1
0.8
0.6
0.4
0.2
0
1.15
0.10u
90 91 92 93 94 95 96 97 98 99 00 01 02
Year of birth
Final Score


FINAL SCORE GENETIC TREND
FEBRUARY 2008
-COWS-
Standart deviation units
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0.51
0.09u
90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05
Year of birth
Final Score

✓ **Bull genetic performance**

-MILK PRODUCTION-
ORIGIN OF THE BULLS USED IN ARGENTINA
BORN SINCE 1986*



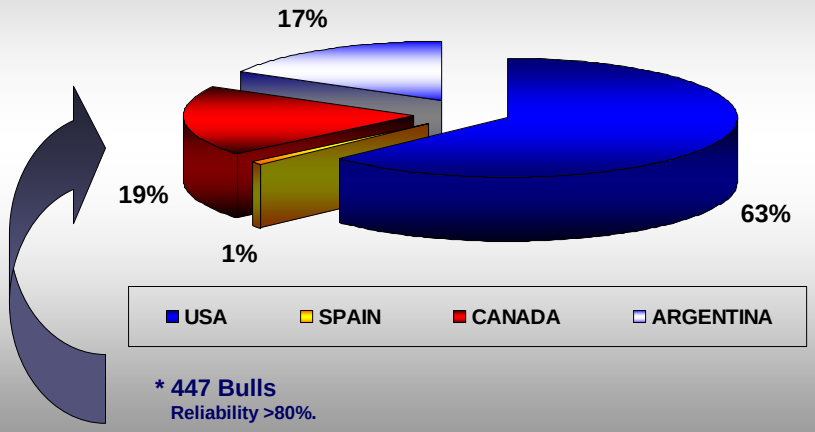
* 961 Bulls
Reliability > 80%.

BULLS BORN SINCE 1986* PER ORIGIN
(Genetic values of milk production)

Origin	N	Milk kg PTA average	Milk. Kg PTA min.	Milk kg PTA max.	Positives %
USA	573	158	-244	597	87
CAN	124	99	-191	454	83
NLD	11	167	-119	270	91
ESP	12	62	-123	394	58
NZL	5	-66	-282	155	40
ARG	236	11	-556	469	56

* 961 Bulls
Reliability >80%

-FINAL SCORE-
ORIGIN OF THE BULLS USED IN ARGENTINA
BORN SINCE 1986*



* 447 Bulls
Reliability >80%.

BULLS BORN SINCE 1986* PER ORIGIN
(Genetic values of final score)

Origin	N	Final Score STE average	Final Score STE Min.	Final Score STE Max.	Positives %
USA	281	0.52	-1.8	2.71	76
CAN	86	0.69	-1.4	1.97	86
ESP	3	1.14	0.58	1.74	100
ARG	77	0.16	-1.84	1.86	61

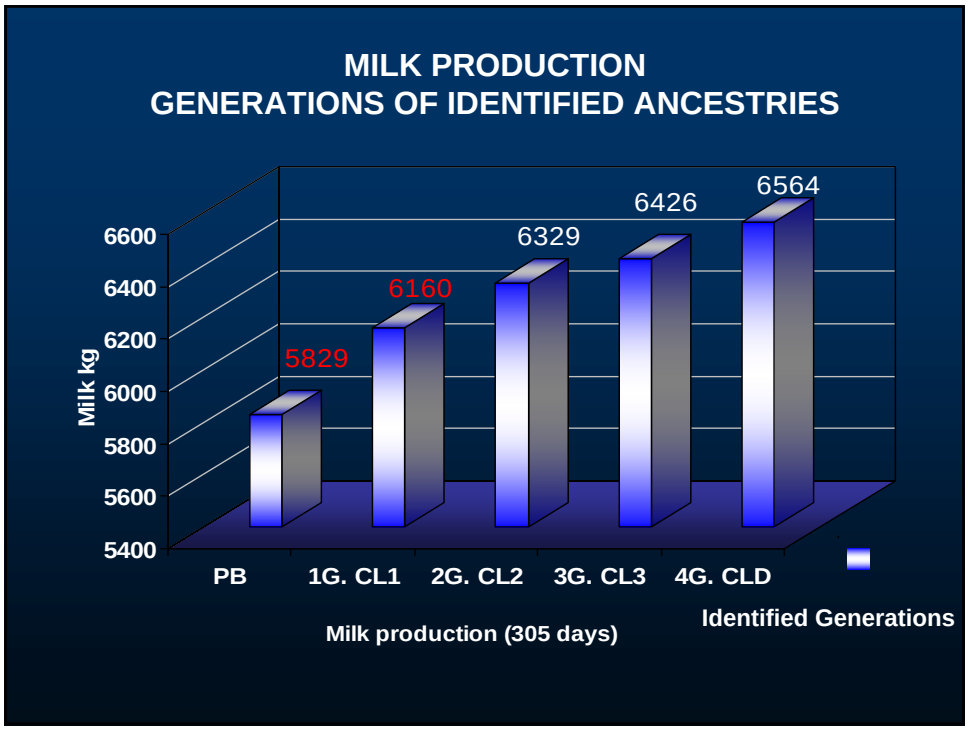
* 447 Bulls
Reliability >80%.

✓ **Genetic trend of the cow population**
(upgrading system)

COWS IN THE UPGRADING SYSTEM
Average genetic values per generations of identified ancestries

Generations	PTA Milk	PTA Protein	STE F. Score
Non identified G. - PB	-190	-3.8	-1.45
1st identified G. - CL1	-99	-1.8	-1.04
2nd identified - CL2	-38	-0.7	-0.69
3rd identified G. - CL3	3	0.1	-0.36
4th identified G. - CLD	33	1	-0.02
Trend	55	1	0.35

ACHA-FCV Genetic Evaluation.


MILK PRODUCTION
GENERATIONS OF IDENTIFIED ANCESTRIES
Milk kg
6600
6400
6200
6000
5800
5600
5400
5829
6160
6329
6426
6564
PB
1G. CL1
2G. CL2
3G. CL3
4G. CLD
Milk production (305 days)
Identified Generations


THANK YOU
FOR YOUR ATTENTION!
ASOCIACION CRIADORES DE HOLANDO ARGENTINO