

# Documentos

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**Girolando Breed Genetic  
Improvement Programa/ Sire  
Summary/ Progeny Test  
Results/ July 2015**



*Brazilian Agricultural Research Corporation  
Embrapa Dairy Cattle  
Ministry of Agriculture, Livestock and Food Supply*

# ***Documents 180***

## **Girolando Breed Genetic Improvement Program Sire Summary Progeny Test Results - July/2015**

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# Presentation

The successful history of Girolando, which was initialized with the first official registration of the breed in 1996 by the Ministry of Agriculture, is being outlined along with its development, and have been strongly supported by genetic improvement initiatives held by the Girolando Breeders Association and Embrapa Dairy Cattle. Those initiatives include the progeny test, established in 1997, and the Girolando Breed Genetic Improvement Program, established in 2007.

The partnership between Girolando Breeders Association and Embrapa Dairy Cattle, held in order to produce and release this summary in behalf of the Girolando breed, involves efforts of a staff composed of approximately one hundred people, working in several fields of animal production and science. Their work encompasses from registering field data, prospecting, organizing and managing partner herds, by the Girolando association; until treating, storing and analyzing data, as well as designing and publishing this present document. Hence, as a result of this work, the Girolando Sire Summary and Progeny Test Results contain a synthesis of several information that are greatly valuable for producers as well as for the community that shares interest in the Girolando breed.

This Sire Summary/Progeny Test Results document has innovative tools and resources, for breeders and/or other professionals. Those include information regarding molecular markers, the Girolando Linear Evaluation System (SALG) and the updated genetic evaluation of age at first calving. The methods for analysis were modified for this current evaluation and are detailed further in this document.

Still, in order to convert this work into effective benefit for the Girolando breed, it is important that producers and people working in the field apply, more and more, those results as a primary source of information to support managerial decisions for improvement of their herds.

*Paulo do Carmo Martins*  
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# **Girolando Breed Genetic Improvement Program Sire Summary Progeny Test Results - July/2015**

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## **1. Introduction**

The Girolando breed progeny test was established in 1997, as a result of the partnership between Girolando and Embrapa Dairy Cattle. In 2007, the *Programa de Melhoramento Genético da Raça Girolando – PMGG* (Genetic Improvement Program of the Girolando Breed) was implemented. Besides interacting with previously existing initiatives of the Girolando Breeders Association, such as the genealogical register service, the progeny test and the dairy control service, the PMGG launched the Linear Evaluation System (SLAG). The main objectives of the PMGG comprises identification of genetically superior individuals, the technically-oriented multiplication of genetics, the evaluation of economic traits and the promotion of sustainable dairy activities.

The Program's results are remarkable. Currently, Girolando has the most growing rates of semen production in Brazil. More than 774,000 semen doses from Girolando sires were produced in 2014, representing an increase of more than 100%, in comparison to 2013. The increased milk yield during the first three lactations of Girolando cows is another important achievement of this Program. The average milk yield in up to 305 days a year of Girolando cows was 3,700 kg in 2000 and, in 2013, reached 5,398 kg, representing a rise of 45.9%.

As a consequence of those and other factors, Girolando is achieving more recognition, nationally and internationally, and therefore, is being considered the preferable dairy breed in tropical regions. Because Girolando animals are capable to sustain an acceptable production level when raised in diverse types of management systems and environmental conditions, the breed is widely accepted in Brazilian dairy systems. In fact, 80% of the milk produced in the country originates from Girolando cows.

## **2. History of the Breed**

The first activities involving crossbreeding between Holstein and Gyr in Brazil emerged in the 40's. According to some older traditional dairy farmers, this crossing occurred mistakenly when a Gyr bull invaded a neighboring farm and mated Holstein cows. Nonetheless, the directed crosses were guided in order to generate offspring that would combine the high milk production capacity of the Holstein cattle and the rusticity of the Gyr breed. The crossbreds were noteworthy for excellent productivity, high fertility indexes and good vigor. Due to these advantages, the crossbreeding practice quickly spread around the entire country. Within a short period, Girolando became the predominant cattle breed on the majority of Brazilian dairy farms.

Over the years, dairy crossbred achieved great importance, and lead many research and rural extension institutions to study and apply the crossbred practice, with the objective of improving the quality of the products. Thus, in 1978, the *Programa de Cruzamento Dirigido – PROCRUZA* (Directed Crossbreeding Program) was created in order to select different dairy

and beef cattle crossbreeds. Under the leadership of the *Associação Brasileira de Criadores – ABC* (Brazilian Association of Breeders), the *Criadores de Gado de Leite do Triângulo Mineiro e Alto Paranaíba – ASSOLEITE* (Triângulo Mineiro and Alto Paranaíba Association of Dairy Cattle Breeders) was in charge of implementing PROCRUZA. In 1988, the Ministry of Agriculture determined the end of PROCRUZA, and in 1989 ASSOLEITE was registered under the Ministry and began managing the program for the formation of the Girolando breed. The association was since then named as *Associação Nacional dos Criadores de Girolando* (National Association of Girolando Breeders). In 1996, the Girolando breed became official, the entity took on the name *Associação Brasileira dos Criadores de Girolando – GIROLANDO* (Brazilian Association of Girolando Breeders), headquartered in Uberaba, Minas Gerais State, Brazil.

### 3. The Girolando Breed

The Girolando breed was conceived aiming the development an ethnic group that produces milk sustainably, in tropical and subtropical regions. The breed's background is the crossing of Holstein (HOL) and Gyr (G) breeds, ranging genetic compositions varying from 1/4 HOL + 3/4 G to 7/8 HOL + 1/8 G. However, matings are been directed in order to establish the breed's genetic composition at 5/8 HOL + 3/8 G. The ultimate goal is to generate productive and standardized cattle that meet the needs of dairy farmers. Animals resulting from mating between 5/8 HOL + 3/8 Gyr individuals are considered as Pure Synthetics (PS), which means the proper Girolando breed. In order to be registered as a definitive PS, besides being a product of such mate, an animal must have a positive genetic evaluation for the milk yield (PTA milk). This evaluation is based on an individual's own performance or on the performance of its parents. Other requirements are also demanded according to regulations from the Girolando Breed Genealogical Register, available on the Girolando site ([www.girolando.com.br](http://www.girolando.com.br)). The leading matings and crossbreeds practiced within the Girolando Program are presented below (Figure 1).

		MOTHER							
		Hostein	7/8	3/4	5/8 or PS	1/2	3/8	1/4	Gir
FATHER	Hostein	x	x	7/8 (87,5%)	x	3/4 (75%)	F ≈ 5/8 (68,75%)	5/8 (62,5%)	1/2 (50%)
	3/4	7/8 (87,5%)	13/16 (81,25%)	3/4 (75%)	x	5/8 (62,5%)	F ≈ 5/8 (56,25%)	1/2 (50%)	3/8 (37,5%)
	5/8 or PS	13/16 (81,25%)	3/4 (75%)	F ≈ 5/8 (68,75%)	PS (62,5%)	F ≈ 5/8 (56,25%)	1/2 (50%)	7/16 (43,75%)	5/16 (31,25%)
	Gir	1/2 (50%)	7/16 (43,75%)	3/8 (37,5%)	x	1/4 (25%)	x	x	x

Prepared by: Brazilian Association of Girolando Breeders, 2011.

Figure 1. Girolando breed crossbreed table.

In Figure 1 the fraction or percentage of Holstein breed composition is always read first. The genetic composition of the sire always comes before the dam. For the purpose of the register, only 5/8 or PS cows can be bred with 5/8 or PS bulls. Females with genetic composition between F≈5/8 will be controlled as 5/8. Males of F≈5/8 will not have their genetic composition rounded off to 5/8, maintaining the correct fraction according to the mating from which it arose. The cells marked with the X are products from crossbreeds of which Girolando does not turn official the genealogy.

The diagrams presented in Figures 2, 3, 4 and 5 show the leading strategies for the formation of Pure Synthetic (PS) Girolando. However, any combination between the breeds, Holstein, Gyr and its crossbreeds can be used for obtaining PS.

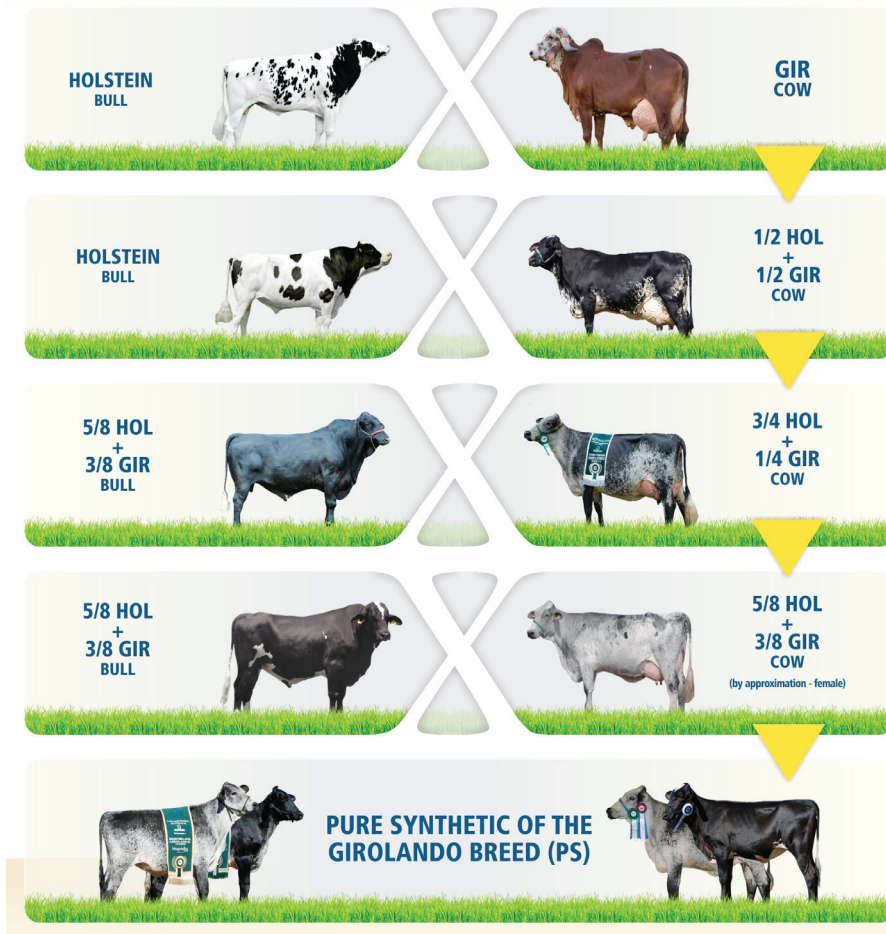


Figure 2. Crossbreed strategies for obtaining PS animals using Holstein breed bulls in the first two generations and a 5/8 Girolando bull in the following generations.

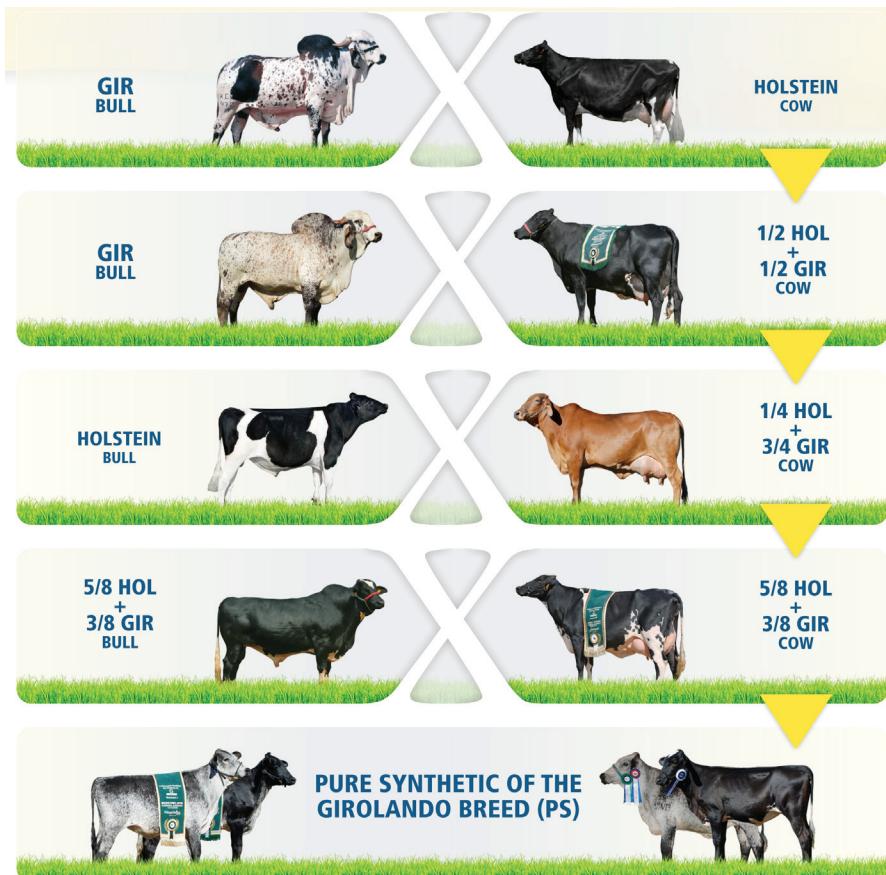


Figure 3. Crossbreed strategy for obtaining PS animals, using Gir and Holstein breed bulls in the first three generations and a 5/8 Girolando bull in the last generation.



Figure 4. Crossbreed strategy for obtaining PS animals, using Holstein breed bulls in the first generation, a 3/4 Girolando in the second generation and a 5/8 Girolando bull in the third generation.



Figure 5. Crossbreed strategy for obtaining PS animals, using a Gir bull in the first generation and a 5/8 Girolando bull in the last two generations.

Due to the greater availability of semen from Girolando bulls, the crossbreeding strategy using Girolando semen has become more viable. The main crossbreeding strategies using 5/8 of PS bulls are presented in Figure 6, and using 3/4 bulls are presented in Figure 7.

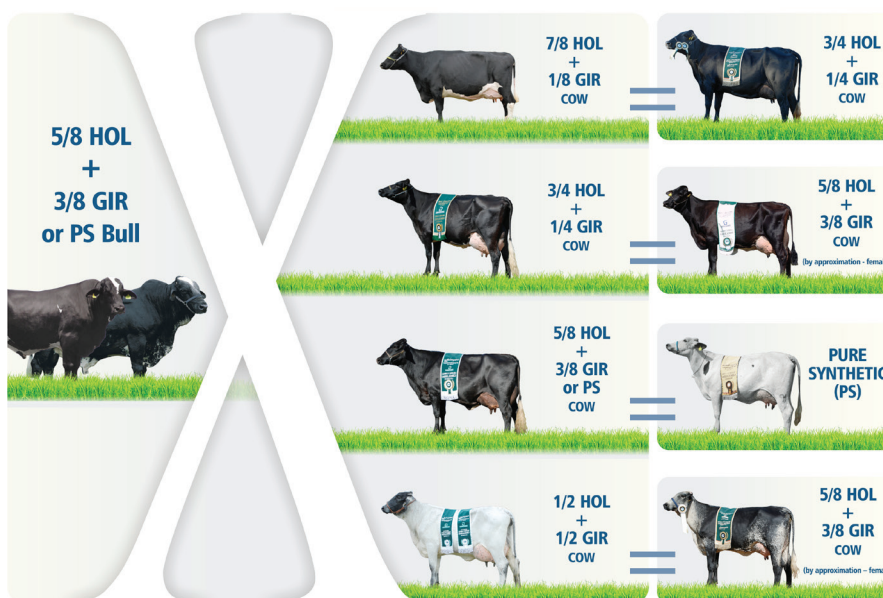


Figure 6. Most commonly used crossbreeds with Girolando 5/8 or PS bulls.



Figure 7. Most commonly used crossbreeds with Girolando 3/4 bulls.

## 4. Genotyping of Progeny Test Bulls

The evolution and recent advances achieved in the field of biotechnology allowed the use of molecular markers information for selection and mating programs. The knowledge about animal genotypes is of strategic importance and elevated economic value, as it allows for the identification of animals with greater potential for milk production, fat and protein milk content. Also this knowledge permits the identification of alleles linked to genetic diseases. With this information at hand, farmers can direct mating, choose semen, and therefore, apply the assisted selection through molecular markers for genetic improvement of Girolando breed.

### 4.1. Molecular Markers

**Kappa-casein (k-CN)** – The properties and quality of dairy are directly influenced by its protein content. The main proteins in milk are caseins, lactoglobulins and albumins. Molecular studies have identified that variants of Kappa-casein are strongly associated to a greater yield for cheese production. The BB-genotype animals produce more milk protein when compared to AA-genotype animals. The BB genotype is associated to superior cheese processing traits, such as less coagulation time and the formation of a denser coagulate. The production of BB animals are associated with yield 12% greater in terms of mozzarella and 8% for cheddar cheese in comparison to AA-genotype animals. AB animals have an intermediary yield comparing to BB and AA genotypes.

**β-lactoglobulin (β-LGB)** – This gene encodes a milk protein which corresponds to 50 to 55% of the proteins contained in whey. Twelve alleles have been identified for this gene, and A and B alleles are the most frequent in commercial herds. Allele A is the most favor-

able for milk production, while allele B is related to a larger percentage of fat and protein in milk. The milk from the animals with the AA genotype is recommended for in natura sale and milk from animals with the BB genotype is most recommended for the production of dairy, such as cheese.

**DGAT1** – The DGAT1 (diacylglycerol O-acyltransferase 1) gene is strongly associated to the percentage of fat in the milk. Two alleles of this gene were identified in bovines. The A allele, fixed in the majority of Zebu breeds, is associated to increased protein and milk production. The K allele, very common in European breeds, is associated with a reduction in protein production and an increase in the production of fat in milk.

**BLAD** – Bovine leukocyte adhesion deficiency (BLAD) is a genetic disorder common in Holstein breeds. This disease is caused by a recessive mutation of the CD18 gene. Animals which are homozygote for this mutation have retarded growth, tooth loss, immune system failure and premature death, generally driven by pneumonia. Heterozygote animals (carriers of the recessive allele) have normal development.

**DUMPS** – Deficiency of Uridine Monophosphate Synthase (DUMPS) is another important genetic disorder of Holstein breed. It is characterized by a recessive mutation in the UMPS gene, resulting in deficiency of the *UMPS*. This enzyme is part of the pyrimidine synthesis pathway, which comprises the process of RNA and DNA synthesis. Homozygote embryos for this mutation die around the 40<sup>th</sup> day, since pyrimidines are greatly needed during that embryonic stage. Heterozygote cows have elevated level of orotic acid in the urine and milk.

**CVM** – Complex vertebral malformation (CVM) is a syndrome that include congenital growth retardation, vertebral malformation and deformation of the ventricular septum. The syndrome is caused by a mutation in the *SLC25A53* gene, which encodes a protein that plays an important role in the formation of the vertebra. Similar to other recessive genetic diseases, such as DUMPS and BLAD, carrier animals develop normally, while recessive animals die shortly after birth.

**OPN (osteopontin)** – Studies with Holstein animals, showed that this gene is associated with milk yield and with fat and protein percentage in milk. Other studies also demonstrated that this marker is also associated with growth traits.

## 5. Zootechnical Performance

For the current evaluation, 162,305 records were used. Those included milk yield and genealogy data, originated from herds supervised by the Dairy Control Service, and provided by Girolando Breeders Association. The milk yield of first lactations (44,934) was edited for age at first calving (560 to 1,650 days), year of birth (1997 to 2013), year of calving (2000 to 2014), breed composition (2/8 to 7/8 HOL:G), causes of lactation termination, herd size and contemporary groups for herd-calving year. Lactations included in those analyses met the criteria of pertaining to a herd that had at least three controlled lactations and used at least two bulls in the same year.

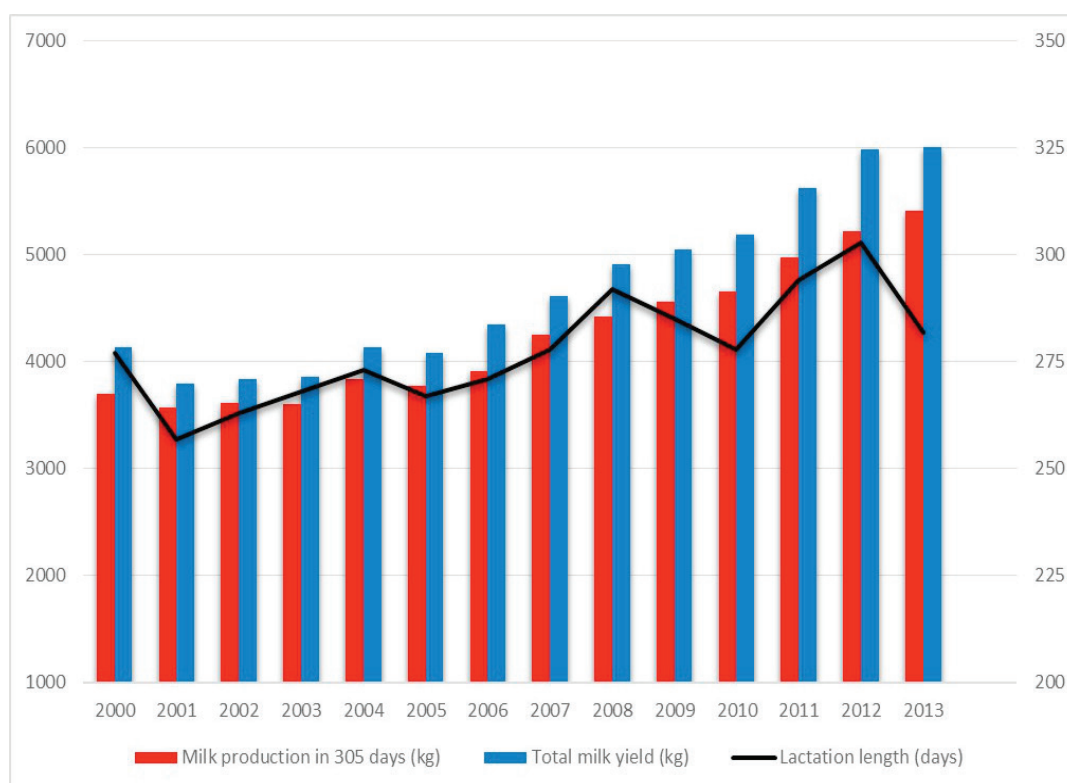
The productive performance at first lactation of 29,370 Girolando cows, controlled by this Program, pertaining from 727 collaborator herds, in the period from 2000 to 2014, is shown in Table 1 and Figures 8 and 9. The general average for milk yield in 305 days in the period was 4,629 kg, taking into account the first, second and third lactations. The average total milk yield and the average duration of lactation were 5,116 kg and 279 days, respectively. The average calving interval was 430 days and the average age at the first

calving was 1,080 days. It is important to highlight that the methods for sire evaluation in this current year (2015) has been altered, and it was described in item 6.

**Table 1.** Number of herds and lactations, average milk production 305 days and total milk yield of the third lactations, duration of lactation, calving interval and age at first calving of cows from the Girolando breed during the period from 2000 to 2014.

Calving year	Number of herds	Number of lactations	Milk yield (kg)		Lactation length (days)	CI <sup>1</sup> (dias)	Nº de Obs. CI	AFC <sup>2</sup> (dias)	Nº Obs AFC
			In 305 days	Total					
2000	48	643	3,703 ± 1,837	4,132 ± 2,486	277 ± 106	426 ± 91	369	1,007 ± 168	620
2001	64	1,162	3,575 ± 1,671	3,796 ± 1,929	257 ± 97	426 ± 88	575	1,040 ± 173	798
2002	77	1,397	3,615 ± 1,582	3,842 ± 1,872	263 ± 93	436 ± 95	684	1,038 ± 177	800
2003	85	1,775	3,608 ± 1,635	3,859 ± 1,913	268 ± 97	436 ± 98	860	1,024 ± 165	1,016
2004	103	1,911	3,844 ± 1,758	4,135 ± 2,083	273 ± 98	438 ± 91	832	1,053 ± 172	989
2005	119	2,081	3,778 ± 1,759	4,087 ± 2,116	267 ± 102	444 ± 93	806	1,109 ± 190	1,082
2006	135	2,169	3,913 ± 1,819	4,354 ± 2,215	271 ± 101	440 ± 89	771	1,106 ± 166	1,285
2007	134	2,094	4,257 ± 2,010	4,616 ± 2,452	278 ± 89	440 ± 86	827	1,130 ± 181	1,182
2008	139	2,408	4,424 ± 2,052	4,913 ± 2,693	292 ± 97	430 ± 89	1,038	1,145 ± 177	1,544
2009	191	3,228	4,562 ± 2,141	5,052 ± 2,745	285 ± 99	426 ± 92	1,408	1,115 ± 180	2,154
2010	213	4,366	4,655 ± 2,272	5,191 ± 3,018	278 ± 109	436 ± 101	1,764	1,091 ± 186	2,900
2011	266	5,158	4,976 ± 2,210	5,623 ± 2,925	294 ± 116	432 ± 98	1,905	1,062 ± 194	3,410
2012	278	6,312	5,217 ± 2,173	5,985 ± 2,998	303 ± 114	424 ± 86	2,048	1,071 ± 190	4,294
2013 <sup>3</sup>	295	6,960	5,410 ± 2,333	6,006 ± 2,984	282 ± 101	373 ± 48	560	1,064 ± 199	4,391
2014 <sup>4</sup>	219	3,270	4,723 ± 2,401	4,868 ± 2,593	223 ± 80	-	-	1,105 ± 230	1,780
<b>Geral</b>	<b>642</b>	<b>44,934</b>	<b>4,629 ± 2,199</b>	<b>5,116 ± 2,801</b>	<b>279 ± 105</b>	<b>430 ± 92</b>	<b>14,447</b>	<b>1,080 ± 191</b>	<b>28,245</b>

<sup>1</sup>Calving interval, <sup>2</sup>Age at first calving, <sup>3</sup>CI incomplete data, <sup>4</sup>Only lactations initiated up to October 2013 were included.



**Figure 8.** Average milk production in 305 days, total milk yield of the third lactation and lactation length of Girolando cows from 2000 to 2013.



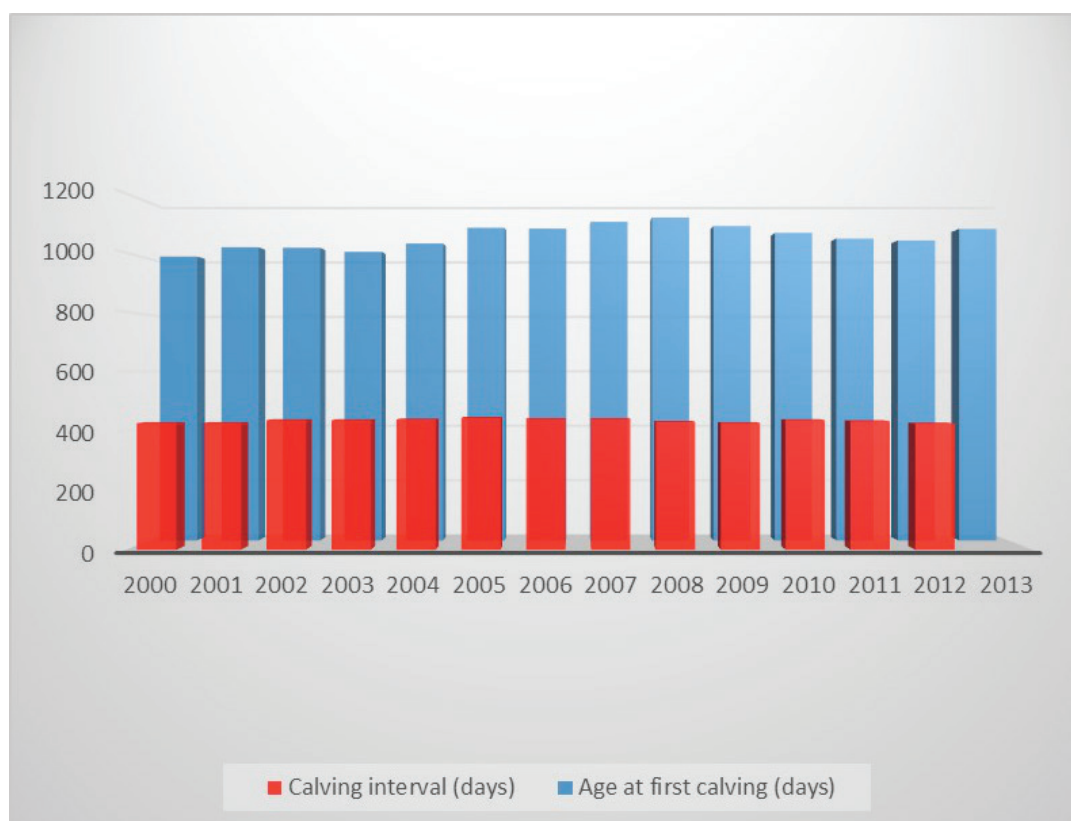


Figure 9. Average first calving interval (FCI) and age at first calving (AFC) of Girolando cows from 2000 to 2013.

## 6. Progeny Test and Genetic Evaluation of Bulls

The Girolando Breed Genetic Improvement Program (PMGG) has been underway for 17 years, under technical coordination of Embrapa Dairy Cattle. The PMGG is geared toward dairy control and the use of artificial insemination in the herds of breeders (Annex 3) for the conduction of the Girolando Bull Progeny Test. The progeny test started in 1997 and 57 sires of the first eight groups have already been tested. Six other groups that are currently under testing (Annex 1) and include 96 sires whose semen doses were distributed between 2008 and 2013 and 27 sires whose semen doses were distributed in 2014.

### 6.1. Distribution of Progeny Test Semen

For the Progeny Test to be conducted it is necessary that sires and dams are available to breeders. Sires must be of excellent genetic origin and be selected by a technical board. The criteria for selection are specified in the regulation for the participation of bulls in the Girolando Breed Progeny Test. The selected sires are divided into groups according to the year of registration. The dams to be inseminated with the coded semen from these bulls are called collaborative dams. For each group of bulls, the period from the distribution of the coded semen to the publication of the first results of the progeny test take in average six years. This is due to factors such as the period of distribution, use of semen by breeders, gestation period of the dams, age at first calving, lactation period of the bulls' daughters and time for analysis of dairy control and genealogy data (Table 2).

The average time estimated for the publication of the first results is 71 months, that is, 5 years and 11 months after the start of the distribution of semen to the collaborating herds. This period may be shorter or longer, according to the time necessary for the execution of each of the stages. The most relevant stages of the test are the use of the semen and the collection of data regarding age at the first calving for the bull's daughters. Another stage of high importance is the distribution of semen, as the faster this occurs, the less time is

necessary for the collaborative dams to be inseminated. The years of registration and semen distribution, as well as for the disclosure of the first results of each sire group of the Girolando progeny test are in Table 3.

**Table 2.** Time for the realization of the Progeny Test.

Stage	Duration (months)
Semen distribution	6
Use of semen in the herds	6
Gestation of collaborative matrixes	9
Average age at first calving	36
Average period of lactation of bulls' daughters	10
Data analysis	4
<b>Total Duration</b>	<b>71</b>

Results of the groups 10 to 16 may become available after five or six years, varying according to the performance of the collaborator herds and each individual animal. In 1998, 2000 and 2003, there was no semen distributed. This fact disrupted the timing of this phase and the disclosure of the first results of the other groups of sires.

**Table 3.** Years of registration and distribution of semen from sires pertaining to 15 groups of the Girolando Progeny Test.

Group	Registration	Distribution	Results
1	1996	1997	Available in 2004
2	1997	1999	Available in 2005
3	2000	2001	Available in 2007
4	2001	2002	Available in 2008
5	2003	2004	Available in 2009
6	2004	2005	Available in 2010 and 2011
7	2005	2006	Available in 2011
8	2006	2007	Available in 2013
9	2007	2008	Available in 2014
10	2008	2009	Available in 2015
11	2009	2010	Predicted for 2016
12	2010	2011	Predicted for 2017
13	2011	2012	Predicted for 2018
14	2012	2013	Predicted for 2019
15	2013	2014	Predicted for 2020
16	2014	2015	Predicted for 2021

## 6.2. Statistical Model and Analysis Methodology

The file containing the basis for the genetic evaluation included only the first three lactations of each cow, in accordance to the following rules:

- data from the second lactation was only included if the first lactation has been controlled;
- data from the third lactation was only included if the first and second lactation have been controlled.

From 2015, lactations that lasted more than 60 days were included in the evaluation, as long as the cause of the end of lactation was considered valid. In addition, the file also included the lactations of daughters produced from commercial semen, excepting those pertaining from the sire herd. Cows that had at least one controlled lactation performed during a milk yield contest were included in a specific contemporary group, according to the year of the initiation of lactation.

The model used for the genetic evaluation milk yield included the fixed effects of herd-year of calving, season and age of the cow at calving as covariates, with the linear and quadratic

components. Other effects included were the fixed cow breed composition (defined as the contribution of Holstein and Gyr breeds, in proportions varying from 2/8 to 7/8), and the random effects of the animal and experimental error. The predicted breeding values of each animal were obtained using the Best Linear Unbiased Prediction (BLUP) methodology within the software MTDFREML (1995). Table 4 contains the general information about the database, the values of the estimates of the variance components and heritability used in the model.

The breeding values of the bulls were expressed as the Predicted Transmitting Ability (PTA) in relation to the genetic base, defined as the average of the breeding values of 742 cows born in 2000.

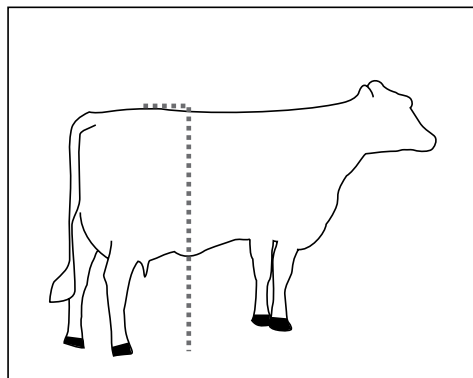
**Table 4.** Estimative of the heritability ( $h^2$ ) for milk yield in 305 days and age at first calving and the genetic correlation of those traits.

Trait	Heritability	Genetic correlation
Milk yield in 305 days	0.29	
Age at first calving	0.18	-0.60

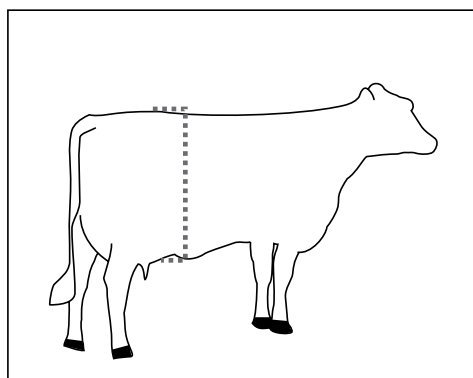
## 7. Girolando Linear Evaluation System – SALG

The aim of the Girolando Linear Evaluation System (SALG) is to measure and evaluate the conformation and handling traits of Girolando animals, and therefore, to generate highly reliable data that can be used for the prediction of breeding values for bulls in the progeny test. These predictions will be useful for breeders to select sires and dams, with the objective of improvement of economically important traits. This year, genetic values for an additional seven conformation traits were included in the Girolando sire report, totaling 12 evaluated traits. Below, the traits measured and evaluated through SALG are described briefly.

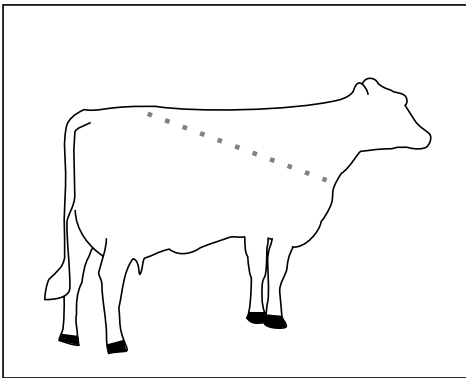
### 7.1. Body Capacity Measurements



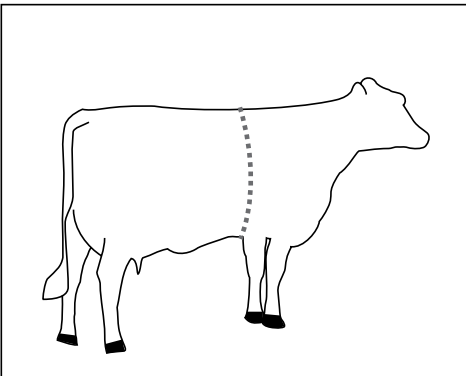
**7.1.1. Rump Height:** measured using a measuring stick. The device is placed above the rump, close to the hook bone, to the ground. Ideally, the rump should be high enough for the udder to be sufficiently far from the ground in order to reduce the risks of injuries and contamination.



**7.1.2. Body Depth:** measured using a measuring stick. The device is placed at the region immediately behind the rump, before the hooks (lumbar region), up to the lower line of the animal's belly, the cranial portion of the previous udder insertion. This trait is directly related to the animal's digestive and productive capacity. The body depth should be above the breed average.

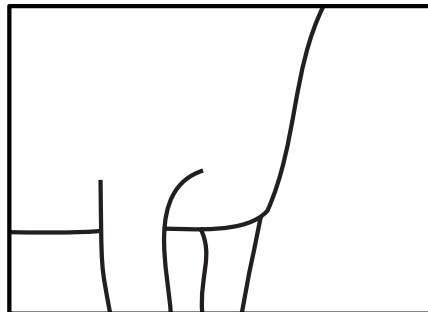
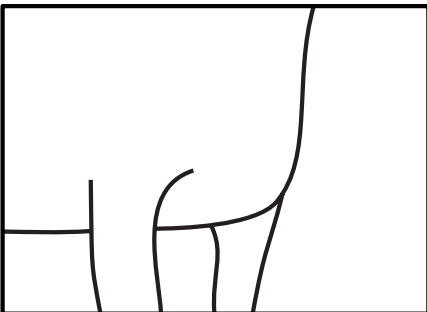


**7.1.3. Body length:** the measure is taken from the point of the scapula to the hook bone, using a measuring stick. It is related to the animal's respiratory, digestive and productive capacity. Body length should be above the breed average.

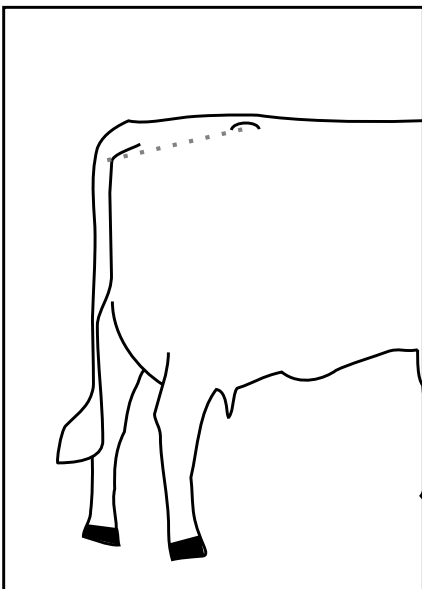


**7.1.4. Thoracic perimeter:** the circumference of the animal's thorax is measured using a measuring tape. It is strongly related to the cardiac and respiratory capacities. The thoracic perimeter should be above the breed average.

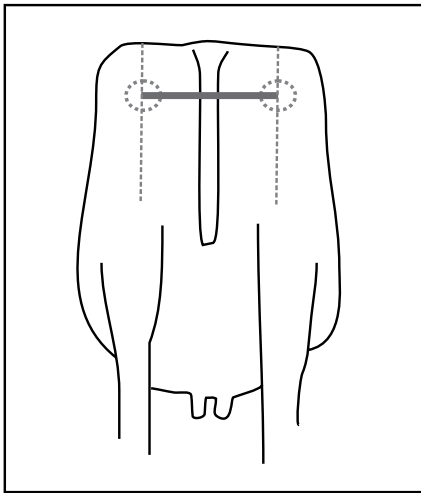
**7.1.5. Chest amplitude:** evaluated by means of a score. The distance between the back members is evaluated and refers to the animal's strength. The grades vary from 1 to 9: extremely closed chest is grades as 1, intermediary amplitude grades as 5 and an extremely ample chest is graded as 9.



## 7.2. Rump Measurements

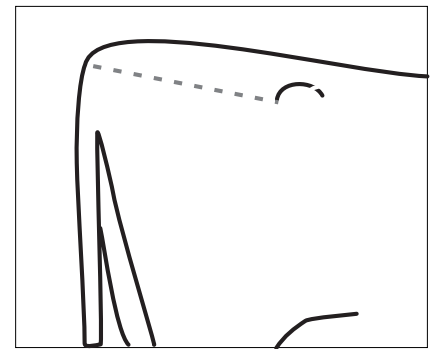
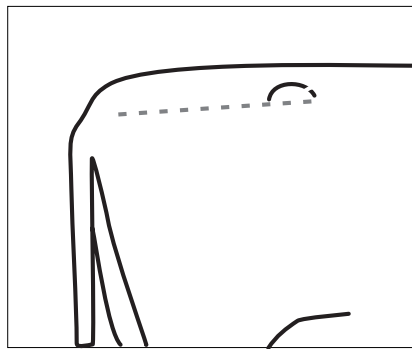
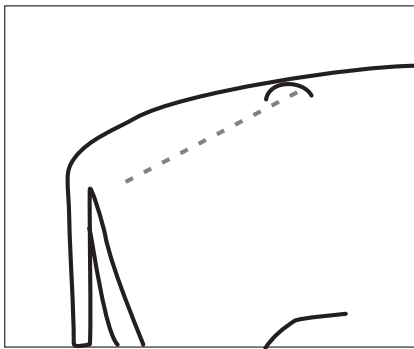


**7.2.1. Rump length:** is the distance between the point of the pin bone and the point of the hook bone, measured using a stick or tape. Rump length strongly influences the quality and the support of the mammary system, as it is the dorsal support of the udder. High values, above average, are favorable.



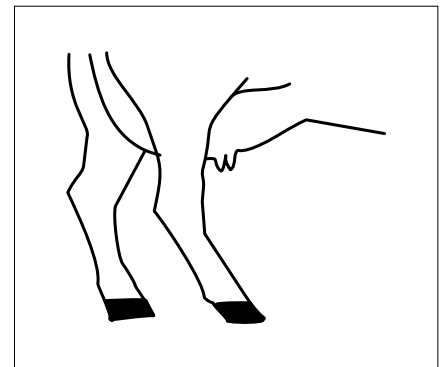
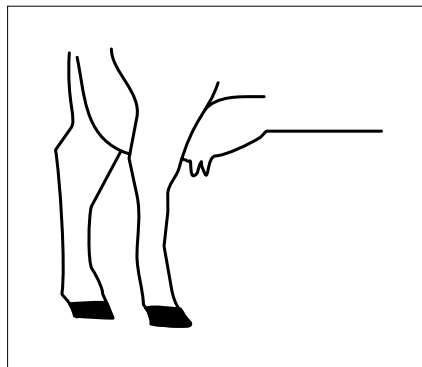
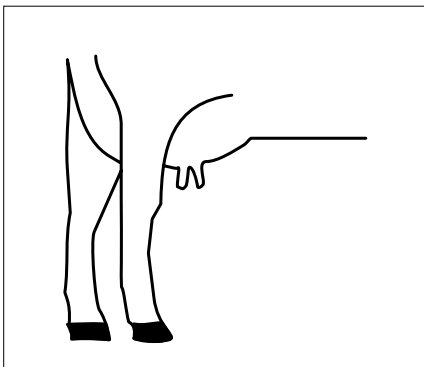
**7.2.2. Width between pin bones:** is the distance from the left point to the right point of the pin, measured using a measuring stick or tape. Higher values are related to greater calving facility for the animal and better dorsal support of the udder.

**7.2.3. Rump Angle/Inclination:** the angle of the rump is assessed by measuring the height of the hook bones, height of the pin bones and length of the rump. The inclination of the hook bone is calculated in relation to the pin bone. The value obtained can be either positive or negative. Above zero indicates a smooth rump. Below zero indicates an inverted rump, which leads to problems during calving and elimination of the placenta. The ideal value is as close to zero as possible.



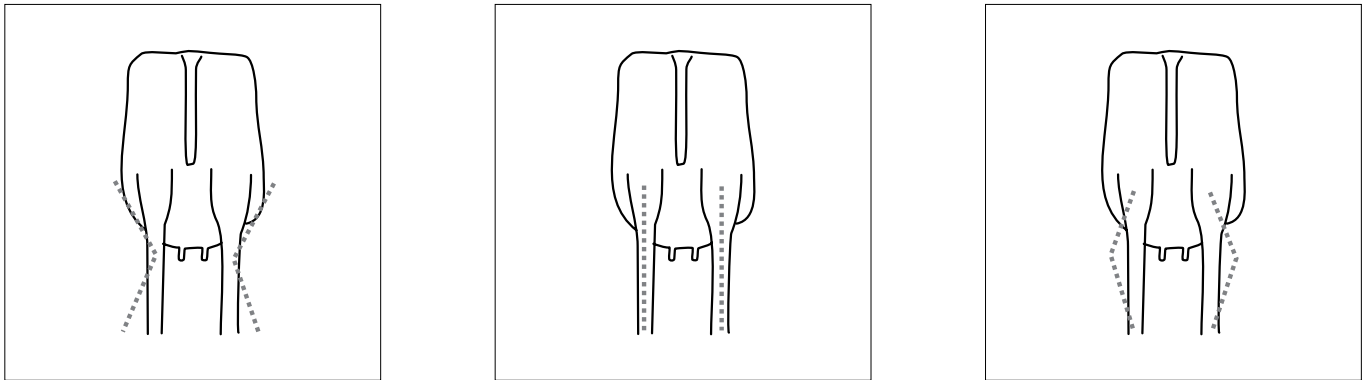
### 7.3. Legs and Feet

**7.3.1. Legs - side view:** the angle of the leg's curvature is evaluated through a score. Score 1 is given for very curved legs, 5 for intermediary legs (ideal) and 9 for extremely straight legs. At the height of the hock, the legs should have slight curvature, which should not be accentuated. Very curved legs may lead to wear of the hoof claws, making them cracked and very straight legs may cause mobility problems. The ideal score is close to 5.

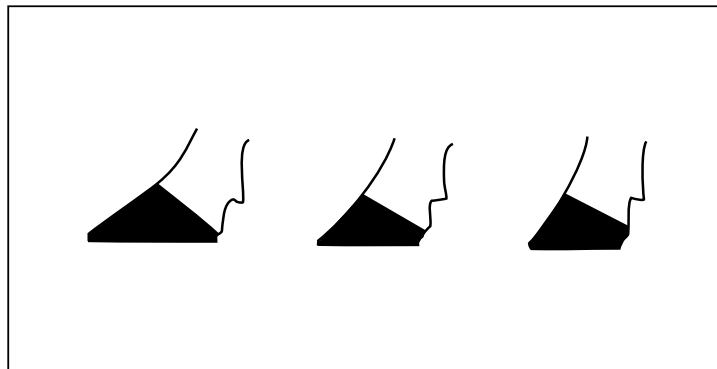


**7.3.2. Legs - rear view:** the position of the back legs is evaluated based on a score from 1 to 9. Score 1 is given for legs with very closed hocks, 5 for parallel legs (ideal) and 9 for

legs with open hocks. Legs with closed hocks may crush and reduce udder space, causing injury and increasing the occurrence of mastitis, while very open legs may cause mobility problems.

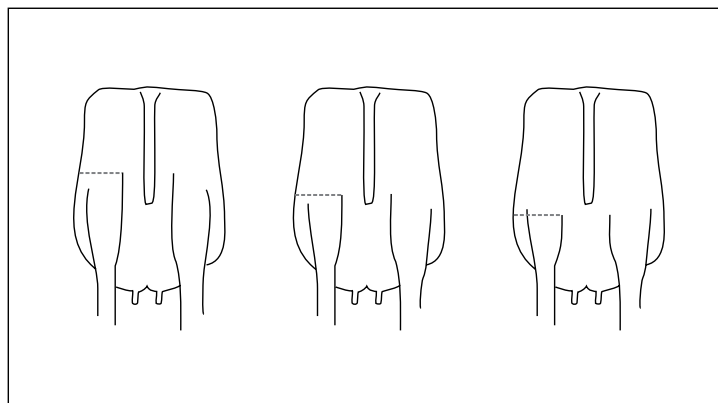


**7.3.3. Hoof angle:** is evaluated by means of a score. For good animal mobility, it is important that the hooves are strong and set at a good angle (close to 45°). Score 1 is given for very low angle hooves, 5 for hooves with an angle close to 45° (ideal) and score 9 for extremely steep angle hooves.

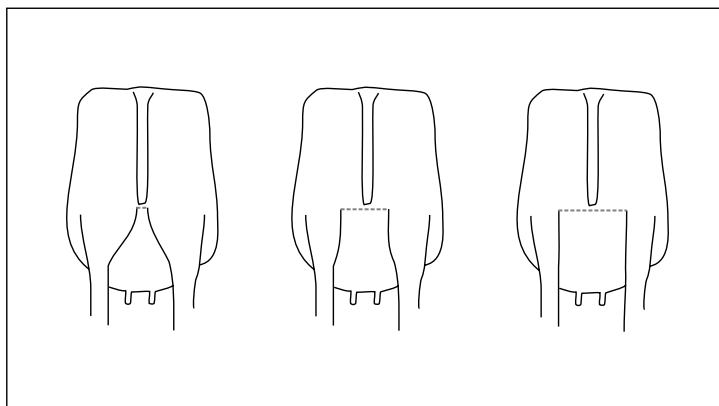


## 7.4. Posterior Udder

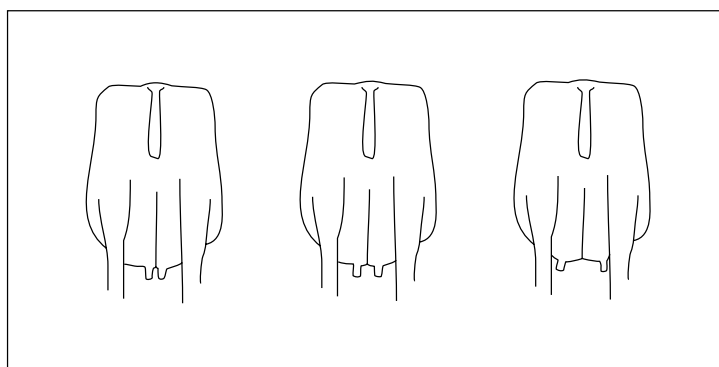
**7.4.1. Rear udder height:** is the distance between the base of the vulva to the fore udder insertion, in the perineal region. It is measured using measuring tape. It is related to the length and milk storage capacity of the fore udder. The higher, the better.



**7.4.2. Rear udder width:** is the distance between the left and right rear ligament of the udder. It can be measured with a measuring tape or ruler. It is strongly related to milk production and storage capacity.

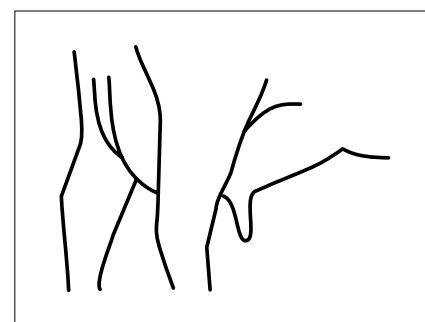
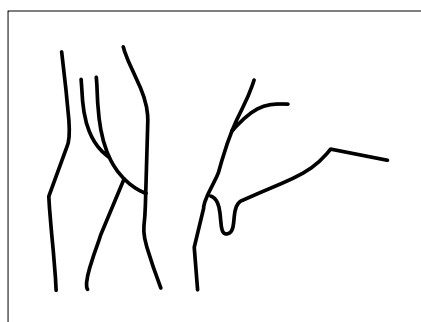
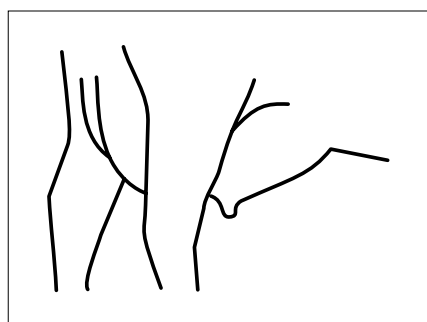


**7.4.3. Rear teat placement:** is evaluated based on a score from 1 to 9, 1 given for low quality placement, 5 for intermediary placement and 9 for extreme quality placement. The rear teats must be centered in the udder quarters. Values close to 9 are preferable, indicating more centralized teats than low values, which means open teats, placed on the sides of the quarters and which complicates mechanized milking.



## 7.5. Anterior udder

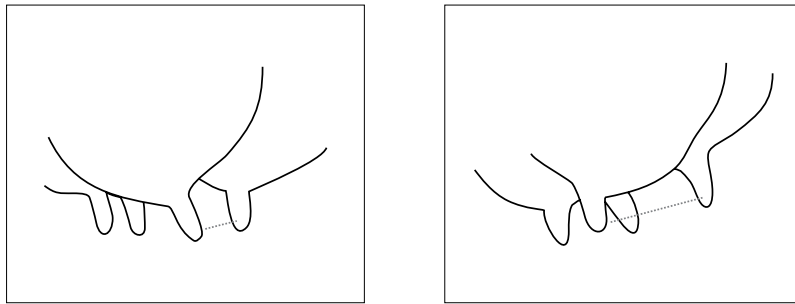
**7.5.1. Teat length:** the front teats of the animal are measured using a measuring tape or ruler. The ideal length of the teats is around 5 to 7 cm. Long teats are associated with inefficient colostrum nursing and mechanized milking. Also, they are related to increased incidence of teat loss and mastitis.



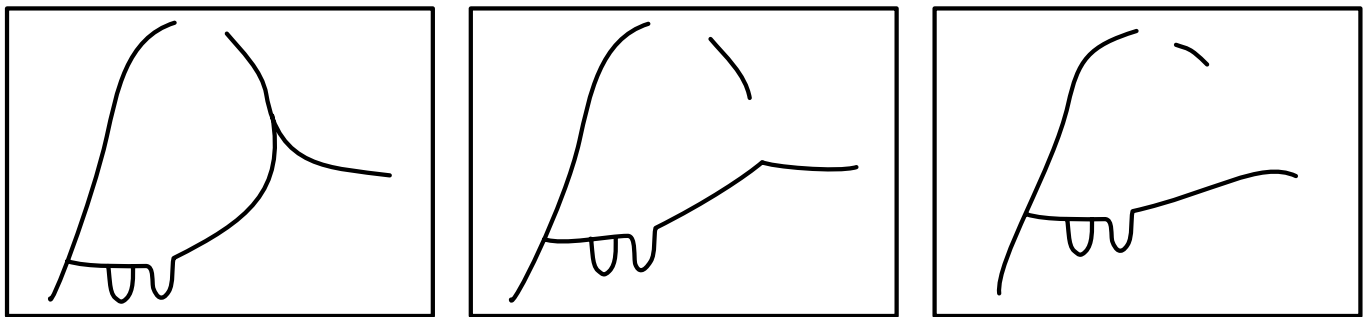
**7.5.2. Teat diameter:** is measured using a caliper, placed on the teat base. Wide teats are associated with inefficient colostrum nursing and mechanized milking. Also, they are related to increased incidence of teat loss and mastitis.

**7.5.3. Front teat placement:** the placement of the front teats is evaluated through a score. The score varies from 1 to 9: 1 is given for low quality placement, 5 for intermediary placement and 9 for extreme quality placement. The front teats must be centered in the

udder quarters. Values close to 9 are preferable, indicating more centralized teats than low values, which means open teats, placed in the sides of the quarters and which complicates mechanized milking.

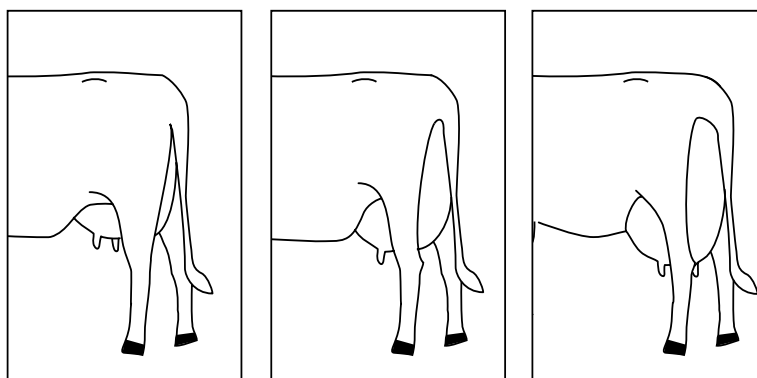


**7.5.4. Ligament:** the quality of fore udder insertion and support is assessed through visual evaluation (by means of a score). The evaluator can also press the area in order to feel the quality of the tissue. The fore udder must be firmly attached to the animal's ventral region, preventing the formation of swelling. This trait is of great importance, as it strongly influences the longevity of the mammary system. The score varies from 1 to 9: 1 is given for an extremely weak ligament and 9 for an extremely strong ligament.



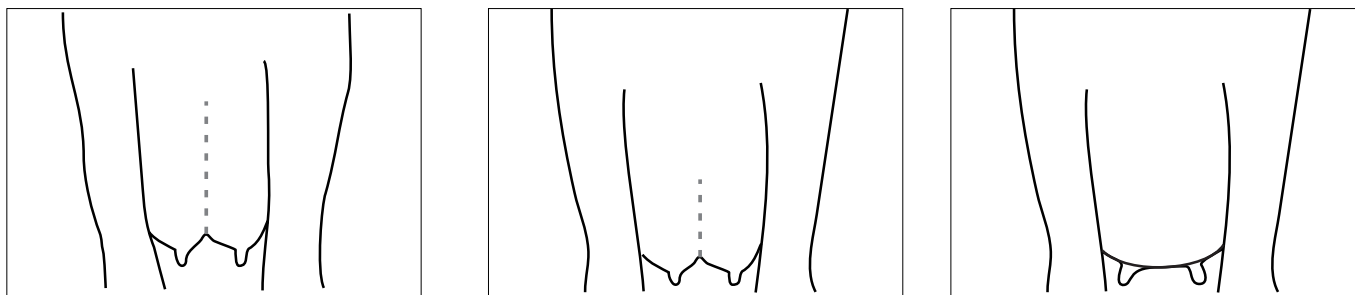
## 7.6. Mammary system

**7.6.1. Udder depth:** is the distance from an imaginary line traced from the level of the hocks to the base of the udder. It is measured using a measuring tape or ruler. This trait strongly influences the longevity of the mammary system and the quality of the fore, rear and central ligaments. The ideal udder has its base at approximately 10 cm above the hocks. Deep udders are subject to trauma.



**7.6.2. Central ligament:** the quality and support of the central ligament is evaluated visually. It is directly related to the longevity of the mammary system. The score varies from 1 to 9: 1 is given for an extremely weak ligament and 9 for an extremely strong ligament. It is one of them most important udder traits, as this ligament keeps the udder attached to the animal's abdomen. To support high production for a number of lactations, this ligament should be very strong. The more positive, the better.





## 7.7. Dairy Characterization

**7.7.1. Angularity:** the bone quality and dairy form of the animal is evaluated visually, considering the femininity and the angular form, also known as a wedge. The evaluation score ranges from 1 to 9: 1 given for extremely angular cows, 5 for intermediary angularity and 9 for extremely thickset cows.

## 7.8. Auxiliary Traits

**7.8.1. Temperament:** is evaluated by means of an animal docility score. More docile animals have better productive and reproductive performance. Scores vary between 1 and 9: 1 given for extremely aggressive animals and 9 for exceptionally docile animals.

**7.8.2. Milking ease:** is associated to the time and effort involved at the time of milking the animal. It is directly linked to milk production. Cows that are harder to milk tend to be more vulnerable to disease and to retain more milk (residual milk). For the evaluation of that trait, a score from 1 to 9 is given, very hard to milk cows are scored as 1 cows extremely easy to milk score a 9.

**7.8.3. Calving ease:** is related to the size of the calf and the need for assistance at the time of calving. Cows that calve easy resume post-partum estrus faster and, consequently, have better reproductive performance. This trait is evaluated by means of a score that varies from 1 to 9: 1 assigned to cows with extreme calving difficulty and 9 to cows with extreme facility in calving.

## 7.9. SALG results

The averages for the traits described above are presented in Table 5. The averages for daughters of Girolando bulls participating in the Progeny Test are described.

## 7.10. How to interpret the results

In order to understand better the results of the evaluations published in this report, an example of results obtained and their interpretations are presented below (Table 6). Right after the sire's registration number XXXXX, and its general classification by PTAL (XX<sup>o</sup> - in parenthesis) and its name, are the registration numbers and the names of the sire's father, mother, and the PTA for milk production (PTAL), followed by reliability (REL).

In the table, the results for productive traits are in the left and the genetic evaluations, STAs (standardized PTAs) for some of the evaluated conformation and management traits are in the right. STA is the standardized predicted transmitting ability (PTA) of the handling and conformation traits that allows comparison of the traits, even when they were measured in different units, as they are expressed as standard deviations. Thus, the breeder can evaluate a sire's ability to improve a specific trait, in case of the sire is bred with an average cow of the herd. STA values vary from -3 to 3 standard deviations.

The first column, under the title Traits, contains the names of the traits and under the name STA, are the traits' respective standardized predicted transmitting abilities (standard deviation values of -3 to 3). The line in front each of the traits indicates its confidence interval, a measure related to the average and the reliability of the STA estimation. The dot on the line corresponds to the STA estimate. The smaller the line, the greater the reliability of the STA value, and contrariwise. Furthermore, the line expresses the confidence for the estimated STA averages within these limits that is expected for future mating, in 95% of the cases. It is important to stress that this information must be used with the aim of complementarity in mating.

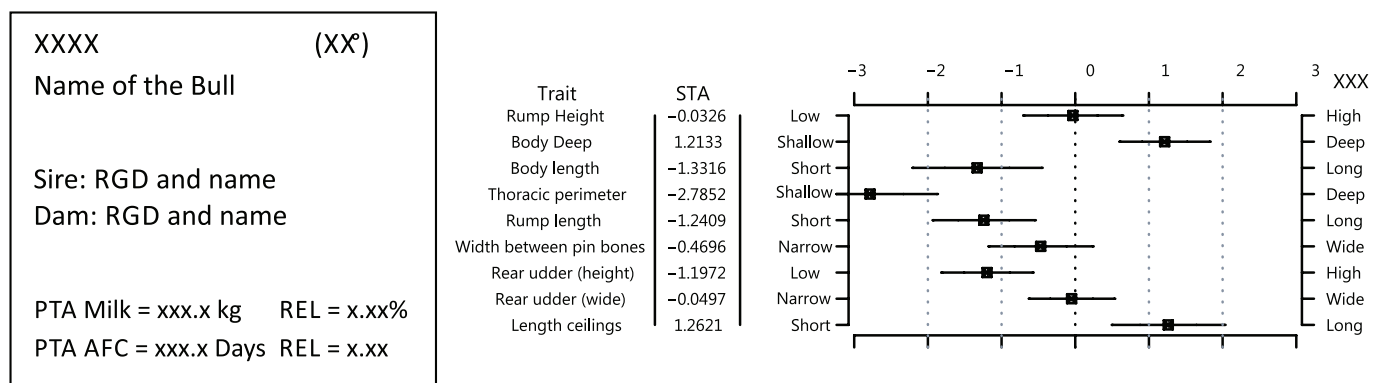
**Table 5.** Averages of conformation traits and handling of cows that are daughters of Girolando bulls, measured and evaluated through SALG.

	Trait	Number of Observations	$h^2 \pm SE^{**}$	Trait Average	Standard Deviation
<b>Body Capacity</b>	Height at the rump (cm)	965	0.37±0.14	138.7	6.8
	Body depth (cm)	741	0.34±0.15	71.0	5.6
	Body length (cm)	967	0.10±0.11	110.8	9.5
	Thoracic perimeter (cm)	869	0.01±0.07	186.4	13.9
	Chest amplitude (cm)	822	-	3.07	0.64
<b>Rump</b>	Rump length (cm)	968	0.32±0.14	48.0	3.6
	Width between pin bones (cm)	968	0.24±0.12	19.2	2.8
	Hook bone height (cm)	741	-	135.5	6.1
	Pin bone height (cm)	741	-	128.3	5.8
<b>Legs and Feet</b>	Legs - side view (*)	822	-	2.93	0.6
	Legs - rear view (*)	823	-	2.84	0.5
	Hoof angle (*)	823	-	2.8	0.6
<b>Posterior Udder</b>	Rear height (cm)	764	0.32±0.15	17.4	3.8
	Rear width (cm)	763	0.23±0.13	10.1	2.9
	Teat placement (*)	770	-	3.1	0.8
<b>Anterior Udder</b>	Teat length (cm)	704	0.08±0.10	5.8	1.7
	Teat placement (*)	769	-	3.4	0.7
	Ligament (*)	770	-	3.3	0.7
<b>Mammary System</b>	Udder depth (cm)	703	0.09±0.15	13.9	4.8
	Central ligament (*)	768	-	3.3	1.7
<b>Dairy characterization</b>	Angularity (*)	965	0.37±0.14	138.7	6.8
	Temperament (*)	741	0.34±0.15	71.0	5.6
<b>Auxiliary traits</b>	Milking ease (*)	967	0.10±0.11	110.8	9.5
	Calving ease (*)	869	0.01±0.07	186.4	13.9

\* Traits evaluated through scores.

\*\* Heritability ± Standard error.

**Table 6.** Example for interpretation of results.



It is important to highlight that this information should be used with the aim of achieving complementarity in breeding. The right or left deviations in conformation and management traits imply that there will be genetic progress in the selected direction. As an example, if a

cow has very large teats (above average), the ideal scenario includes mating this cow with a sire that has an STA close to zero for teat length, seeking to correct this problem in the next generation. The same rationale should be applied to other traits.

The publication of a graph containing one sire's characteristics will only occur if the following criteria is met:

- a) the sire must have a positive PTA for milk yield (Table 8);
- b) the sire's daughters must have measures within SALG enough to guarantee reliability of the results.

The results of the evaluation of conformation and management traits of sires 300, 452, 454, 455, 580, 621, 636, 639, 717, 734, 781, 880, 931, 945, 983, 997 e 1039 are in the following graphs.

### 7.11. STAs for Conformation

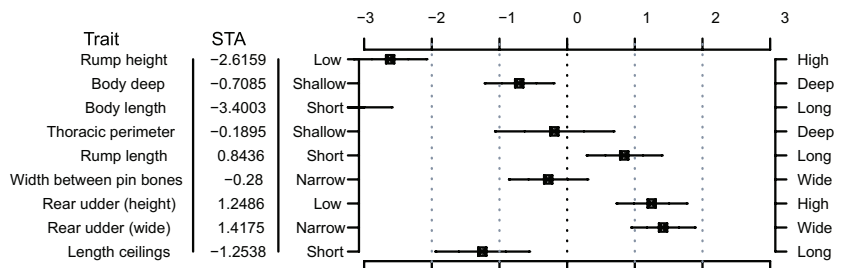
#### 0300 (17<sup>th</sup>) 110 Billy Fancy Paul Y

Sire: HBB/A-46275 Utag Valiant Fancy Paul - ET

Dam: D-3642 Panorama IY

PTA MILK = 195.17 kg CONF 94%

PTA AFC = 4.64 Days CONF 96%



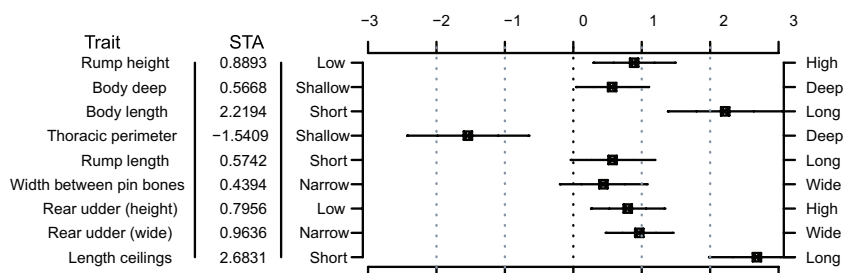
#### 0580 (21<sup>nd</sup>) Aristóteles Grandslam TE Sta Luccia

Sire: HBB/AX-98174 J-L-G Grandslam-ET

Dam: O-8353 Iracema LE

PTA MILK = 168.86 kg CONF 82%

PTA AFC = -30.38 Days CONF 89%



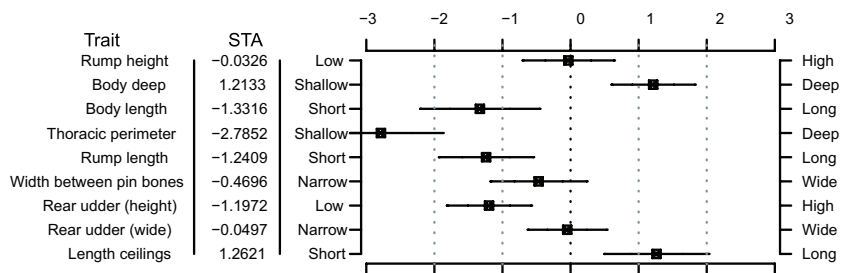
#### 0880 (18<sup>th</sup>) Àtila Irã da Cacá

Sire: Irã Urutu do Morro

Dam: Andorinha Spacey da Cacá

PTA MILK = 77 kg CONF 77%

PTA AFC = -13.1 Days CONF 72%



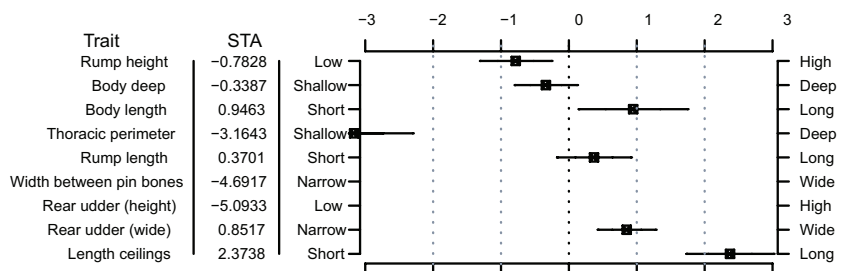
#### 0639 (42<sup>nd</sup>) Brutus das Arabias

Sire: Santa Cruz Zinabre Dynamic

Dam: Bailarina das Arabias

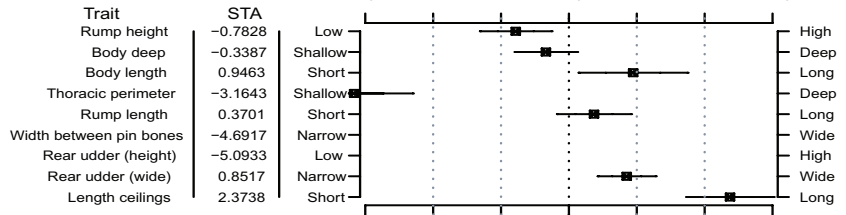
PTA MILK = 0.18 kg CONF 82%

PTA AFC = -6.89 Days CONF 89%



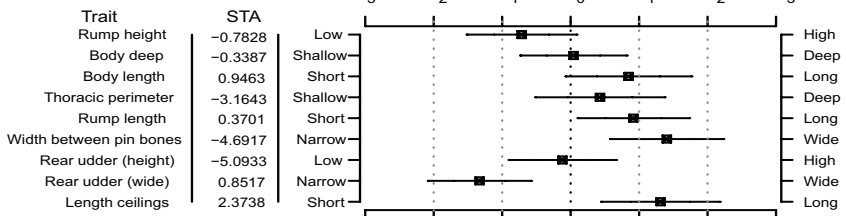
**0734 (35<sup>nd</sup>)  
Cowboy Addison Rancho Alegre**

Sire: HBB/AX-104811 Etazon Addison-ET  
Dam: 0640 Mágica Rancho Alegre  
**PTA MILK = 80.75 kg CONF 94%**  
**PTA AFC = -9.31 Days CONF 97%**



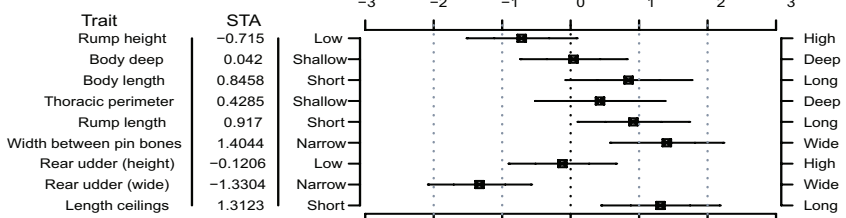
**0997 (40<sup>nd</sup>)  
Curimã III TE Alegre**

Sire: Curimatã das Três Passagens  
Dam: Arita Vertente  
**PTA MILK = 24.42 kg CONF 79%**  
**PTA AFC = -33.54 Days CONF 86%**



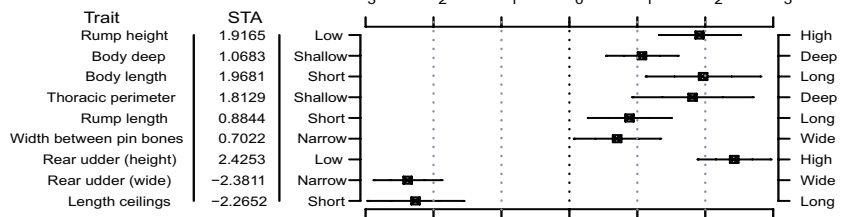
**0452 (26<sup>rd</sup>)  
Damião Bellwood 3E**

Sire: HBB/AX 80929 Maizefield Bellwood  
Dam: 1/4 (RF-0096) Maravilha 3E  
**PTA MILK = 121.40 kg CONF 86%**  
**PTA AFC = 23.78 Days CONF 91%**



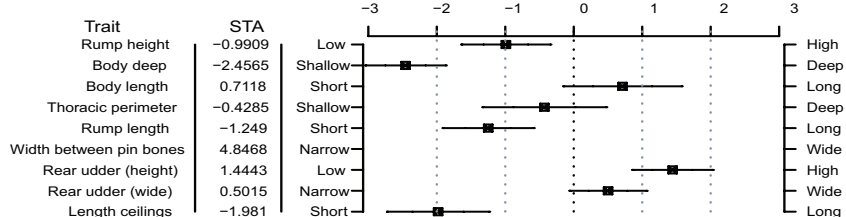
**0717 (30<sup>nd</sup>)  
Fausto Polo Itaúna**

Sire: HBB/A-61270 B-Hiddenhills Mark-O-Polo TL  
Dam: 1406 Bolacha Oásis Itaúna  
**PTA MILK = 107.94 kg CONF 92%**  
**PTA AFC = -9.15 Days CONF 96%**



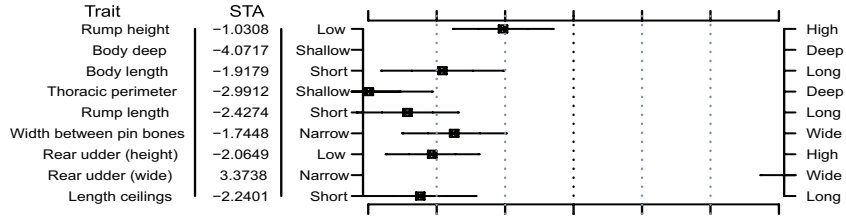
**1039 (25<sup>nd</sup>)  
Florin Mark Dom Nato**

Sire: HBB/AX-98819 Southland Mark-ET  
Dam: 0023 Famosa Oliveira  
**PTA MILK = 130.20 kg CONF 83%**  
**PTA AFC = 17.86 Days CONF 90%**



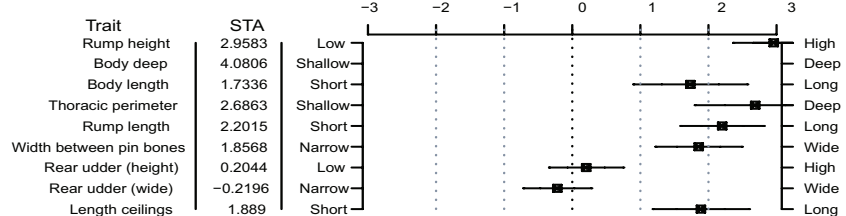
**0621 (9<sup>th</sup>)  
Kaïen Celsius Itaúna**

Sire: 528 Etazon Celsius-ET  
Dam: Emboaba Everest Itaúna  
**PTA MILK = 278.77 kg CONF 73%**  
**PTA AFC = 28.23 Days CONF 72%**



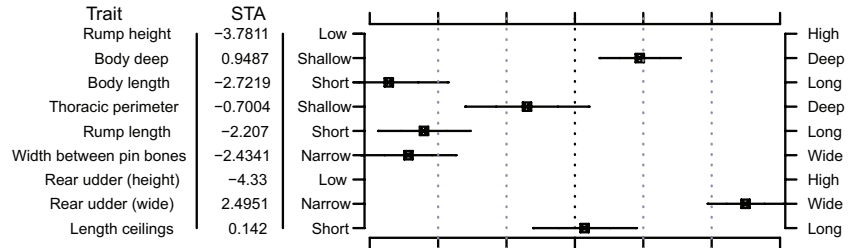
**0931 (12<sup>rd</sup>)  
Lion Império Itaúna**

Sire: 0604 Império Paviljon Itaúna  
Dam: 6098 Gama TE Mason Itaúna  
**PTA MILK = 209.46 kg CONF 82%**  
**PTA AFC = -3.04 Days CONF 88%**



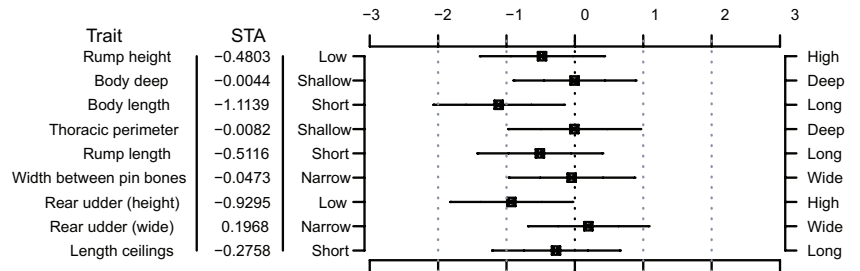
**0454 (15<sup>rd</sup>)  
Magical Mascot TE Rancho Alegre**

Sire: HBB/A-64978 Singing-Brook N-B Mascot-ET  
Dam: 0640 Mágica Rancho Alegre  
PTA MILK = 203.54 kg CONF 88%  
PTA AFC = 36.41 Days CONF 93%



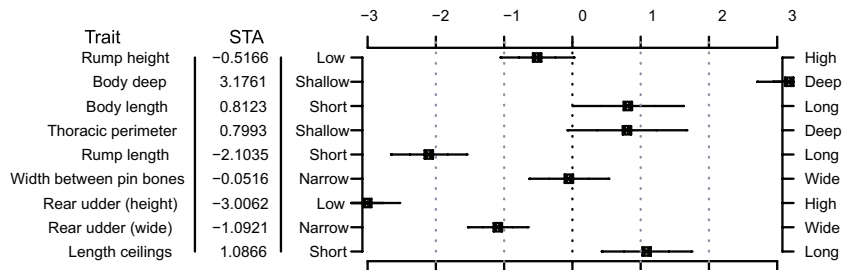
**0455 (41<sup>nd</sup>)  
Maguito Mascot TE Rancho Alegre**

Sire: HBB/A-64978 Singing-Brook N-B Mascot-ET  
Dam: 0640 Mágica Rancho Alegre  
PTA MILK = 12.17 kg CONF 90%  
PTA AFC = 40.21 Days CONF 63%



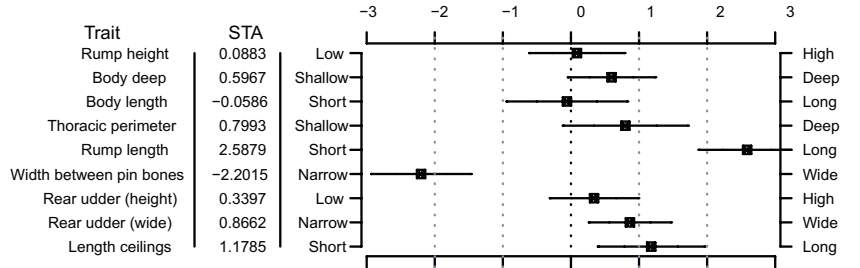
**0781 (24<sup>nd</sup>)  
Rincão Itaipu Y**

Sire: 0550 Itaipu Nobre Y  
Dam: D-5169 Beleza Y  
PTA MILK = 141.91 kg CONF 88%  
PTA AFC = 39.59 Days CONF 93%



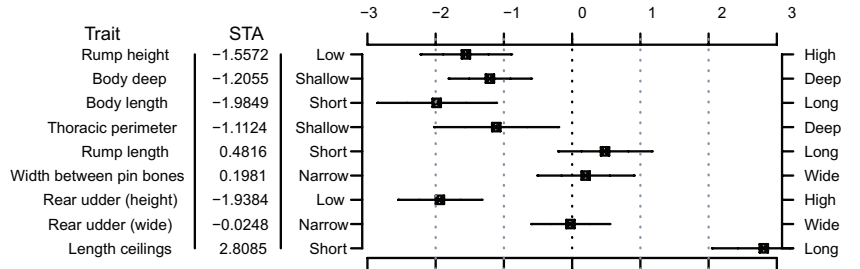
**0983 (8<sup>th</sup>)  
Tango Storm Renascer**

Sire: HPB (M1151) Mi-Bren Mathie Storm  
Dam: 1/4 (RF-0032) Morena Renascer  
PTA MILK = 273.62 kg CONF 84%  
PTA AFC = 13.71 Days CONF 91%



**0945 (7<sup>th</sup>)  
Turbante Touch das Arábias**

Sire: HBB/AX-80928 Dinomi Melwood Touch TL  
Dam: 1/4 (RF-0229) Maravilha das Arábias  
PTA MILK = 333.33 kg CONF 81%  
PTA AFC = 42.43 Days CONF 89%



## 8. PTAs for Milk Production and Age at First Calving

The results of the genetic evaluation of sires, pertaining to the 11 groups tested since 1997, are presented in Tables 7 and 8. Those contain the registration number, the genetic composition, and the name of each Girolando sire, the PTA for milk yield, the age at first calving (IFC), the reliability of each test, with the respective numbers of daughters and herds evaluated, as well as the sire's genotypes. These results are presented for sires used in at least three herds, with a minimum confidence interval of 60% for milk yield PTA.

Table 7 contains the results of the tests of five bulls from the tenth group and three 11<sup>th</sup> from the tenth group of the progeny test. The PTA for milk yield ranged from -126.25 kg to 752.07 kg, and seven sires had positive genetic values and one had negative values. Out of the positive PTA sires, two is a PS, four are 5/8 HOL:G and one are 3/4 HOL:G.

Table 8 contains the general results and the genotypes for all sires tested since 1997. The PTAs for milk ranged from -461.32 kg to 752.07 kg, and 42 sires had positive genetic values and 35 had negative values. Among the 42 sires that had a positive PTA for milk yield, three are PS, 27 are 5/8 HOL:G and 12 are 3/4 HOL:G. The PTA for age at first calving ranged from -60.80 to 66.58 days, positive values were observed in 37 sires and negative values were observed in 40 sires (Table 8).

The negative genetic correlation of milk yield in 305 days during the first lactation and age at first calving (Table 4) indicates that genes related to the former trait have an opposite effect under the later trait. It seems that daughters of sires that have a higher genetic value for milk yield in up to 305 days tend to have a more accelerated growth or earlier maturity. Hence, it can be concluded that selection for milk yield results also in earlier calving heifers. In this case, it should be stressed that sires that have a negative value for age at first calving (AFCPTA) are desirable, as daughters of a sire that has a AFCPTA of -10 days are prone to firstly calve 10 days earlier than daughters of sires that have AFCPTA equal to zero.

Table 7. Milk yield and genotypes results of the Girolando Breed Progeny Test of sires tested for the first time, ranked according to PTA milk in 2015.

Rank	Group	Test Code	Reg.	Genetic composition	Sire	N Daughter	N Herds	PTA milk (kg)	R. PTA Milk	PTA AFC1 (d)	R. AFC <sup>1</sup>	Molecular markers				Semen available AI Company		
												K-CM <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>		DUMPS <sup>6</sup>	CVM <sup>7</sup>
1	11	20095/8084	1338 5/8	5/8	Imperador FIV Ribeirão Grande	6	6	752.07	0.70	-22.81	0.75	AA	AA	AA	TL	TD	TV	ABS Pecplan
2	11	20093/4020	960 3/4	3/4	Torpedo Bolton Santa Luzia	24	16	594.27	0.79	-17.27	0.88	AA	AB	AA	TL	TD	TV	ABS Pecplan
3	11	20095/8090	1284 5/8	5/8	Diplomata Roy Santa Luzia	6	3	401.81	0.70	-10.33	0.78	AA	BB	KK	TL	TD	TV	Alta Genetics
4	10	20085/8070	1293 5/8	5/8	Jacuba Dark Bem Feitor Aaron	5	5	204.77	0.60	-23.29	0.68	AA	AB	AK	TL	TD	TV	Alta Genetics
5	10	20085/8069	0020 PS	PS	Potter Kaien Itaúna	8	6	174.23	0.65	-40.78	0.77	AB	AA	AK	TL	TD	TV	Alta Genetics
6	10	20085/8074	1294 5/8	5/8	Cacique Índio Sertão	3	3	93.26	0.68	12.22	0.76	AB	BB	KK	TL	TD	TV	Alta Genetics
7	10	20085/8072	0030 PS	PS	Baú das Arábias	7	4	83.14	0.71	25.65	0.82	AA	AA	AK	TL	TD	TV	ABS Pecplan
8	10	20085/8068	0010 PS	PS	Fergus TE Caxi Alegre	14	8	-126.25	0.71	-20.57	0.81	AA	AA	KK	TL	TD	TV	Alta Genetics

<sup>1</sup>AFC - Age at first calving (days).<sup>2</sup>Allele A - High yield for cheese, Allele B - low yield for cheese.<sup>3</sup>Allele A - High milk yield Allele B - High protein and fat milk content.<sup>4</sup>Allele A - Increase in milk and protein production, Allele K - Reduction in milk protein content and increase in milk fat content.<sup>5</sup>BL - Heterozygote animal - carrier of the allele for BLAD, TL - Homozygote animal - non-carrier of the allele for BLAD<sup>6</sup>DP - Heterozygote animal - carrier of the allele for DUMPS, TD - Homozygote animal - non-carrier of the allele for DUMPS<sup>7</sup>CV - Animal - Heterozygote animal - carrier of the allele for CVM, TV - Homozygote animal - non-carrier of the allele for CVM<sup>8</sup>Allele C - Associated to increased protein and fat milk content, Allele T - Associated to elevated weight gain.

Table 8. Milk yield and genotypes results of the Girolando Breed Progeny Test of sires from diverse tested groups, ranked according to PTA milk in 2015.

Rank	Group	Test Code	Reg.	Genetic composition	Sire	N Daughter	N Herds	PTA Milk (kg)	R.	PTA AFC' (d)	R	Marcadores Moleculares							Sêmen Disponível Central IA
												K-CM <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>	DUMPS <sup>6</sup>	CVM <sup>7</sup>	OPN <sup>8</sup>	
1	11	20095/8084	1338 5/8	5/8	Imperador FIV Ribeirão Grande	6	6	752.07	0.70	-22.81	0.75	AA	AA	AA	TL	TD	TV	CT	ABS Pecplan
2	11	20093/4020	960 3/4	3/4	Torpedo Bolton Santa Luzia	24	16	594.27	0.79	-17.27	0.88	AA	AB	AA	TL	TD	TV	CT	ABS Pecplan
3	8	20063/4014	780 3/4	3/4	Argeu Leduc Santa Luccia TE	18	11	556.67	0.77	-50.57	0.84	AA	AA	AA	TL	TD	TV	TT	Não disponível
4	10	20083/4019	806 3/4	3/4	Luter King TE Terra Vermelha	25	13	452.04	0.78	-19.00	0.87	AA	AA	AA	TL	TD	TV	TT	Sembra
5	9	20075/8064	1154 5/8	5/8	Jacuba Titânio Bem Feitor Celsius	9	7	424.55	0.67	-44.04	0.78	AA	AB	AA	TL	TD	TV	TT	Alta Genetics
6	11	20095/8090	1284 5/8	5/8	Diplomata Roy Santa Luzia	6	3	401.81	0.70	-10.33	0.78	AA	BB	AA	TL	TD	TV	CT	Alta Genetics
7	6	20045/8035	945 5/8	5/8	Turbante Touch das Arábias	39	15	333.33	0.81	-42.43	0.89	AA	AA	AA	TL	TD	TV	TT	Alta Genetics
8	7	20055/8039	983 5/8	5/8	Tango Storm Renascer	44	21	273.62	0.84	13.71	0.91	AA	AA	AA	TL	TD	TV	TT	Não disponível
9	5	20035/8028	621 5/8	5/8	Kaion Celsius Itaiúna	10	9	288.77	0.73	-28.23	0.82	BB	AA	AA	TL	TD	TV	CT	Não disponível
10	10	20085/8067	1248 5/8	5/8	Impacto FIV da Prata JAC	46	22	251.77	0.85	-4.50	0.91	AA	AA	AA	TL	TD	TV	CT	Alta Genetics
11	8	20063/4016	754 3/4	3/4	Diamante Billy da Cacá	10	9	219.42	0.68	28.36	0.78	AA	AA	AA	TL	TD	TV	CT	Alta Genetics
12	6	20045/8032	931 5/8	5/8	Lion Império Itaiúna	33	15	209.46	0.82	-3.02	0.88	AA	AA	AA	TL	TD	TV	TT	Não disponível
13	4	20013/4008	541 3/4	3/4	MBF 0246	6	4	207.65	0.60	-36.23	0.70	AA	AA	AA	TL	TD	TV	CT	Não disponível
14	10	20085/8070	1293 5/8	5/8	Jacuba Dark Bem Feitor Aaron	5	5	204.77	0.60	-23.29	0.68	AA	AB	AA	TL	TD	TV	TT	Alta Genetics
15	2	975/8011	454 5/8	5/8	Magical Mascot TE Rancho Alegre	65	40	203.54	0.88	36.41	0.93	AA	AA	AA	TL	TD	TV	TT	Não disponível
16	9	20073/4017	855 3/4	3/4	Garimpo Boss JGVA	22	15	198.12	0.76	-60.80	0.85	AA	BB	AA	TL	TD	TV	CT	Alta Genetics
17	1	963/404	300 3/4	3/4	110 Billy Fancy Paul Y	86	43	195.17	0.94	4.64	0.96	AA	AA	AA	TL	TD	TV	CC	Não disponível
18	9	20075/8062	0016 PS	PS	Notebook das Três Passagens	6	4	194.19	0.67	45.85	0.75	AA	AA	AA	TL	TD	TV	TT	Não disponível
19	10	20085/8069	0020 PS	PS	Porter Kaion Itaiúna	8	6	174.23	0.65	-40.78	0.77	AB	AA	AA	TL	TD	TV	TT	Alta Genetics
20	8	20065/8049	684 5/8	5/8	Nicolau Fausto Itaiúna	15	9	166.37	0.72	-16.89	0.81	AA	AA	AA	TL	TD	TV	TT	Alta Genetics
21	5	20033/4009	580 3/4	3/4	Aristóteles Grandslan TE Sta Luccia	34	15	165.86	0.82	-30.38	0.89	AA	AA	AA	TL	TD	TV	CT	Não disponível
22	3	20003/4006	476 3/4	3/4	Estand Luke HB	33	13	159.50	0.79	-4.58	0.87	AA	AA	AA	TL	TD	TV	CT	Não disponível
23	8	20065/8048	1065 5/8	5/8	Ocidente London do Morro	15	11	144.39	0.70	7.61	0.82	AA	BB	AA	TL	TD	TV	CT	CRI Genética
24	5	20035/8025	781 5/8	5/8	Rincão Itaipu Y	54	27	141.91	0.88	39.59	0.93	AA	AA	AA	TL	TD	TV	CT	Não disponível
25	7	20055/8045	1039 5/8	5/8	Florin Marker Dom Nato	42	21	130.20	0.83	17.86	0.90	AA	AA	AA	TL	TD	TV	TT	CRV Lagoa
26	2	975/8010	452 5/8	5/8	Danião Bellwood 3E	49	15	121.40	0.86	23.78	0.91	AB	AA	AA	TL	TD	TV	TT	Não disponível

(Continua...)



(Continuação...)

Rank	Group	Test Code	Reg.	Genetic composition	Sire	N Daughter	N Herds	PTA Milk (kg)	R.	PTA	AFC' (d)	R	Marcadores Moleculares							Sêmen Disponível Central IA
													K-CM <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>	DUMPS <sup>6</sup>	CVM <sup>7</sup>	OPN <sup>8</sup>	
27	7	20055/8042	880 5/8	5/8	Átila Irmã da Cacá	24	12	119.35	0.76	-24.27	0.83	AB	AA	KA	TL	TD	TV	TT	Sembra	
28	10	20083/4018	917 3/4	3/4	Abdu Lord Lily Santa Luz	17	4	113.29	0.80	-2.19	0.89	AA	AA	AK	TL	TD	TV	TT	CRV Lagoa	
29	7	20053/4013	636 3/4	3/4	RBC Redator	21	8	109.07	0.79	-44.31	0.86	AA	AA	KK	TL	TD	TV	TT	Não disponível	
30	4	20015/8023	717 5/8	5/8	Fausto Polo Itaina	104	50	107.94	0.92	-9.15	0.96	AA	BB	KK	TL	TD	TV	TT	Alta Genetics	
31	10	20085/8074	1294 5/8	5/8	Cacique Índio Sertão	3	3	93.26	0.68	12.22	0.76	AB	BB	KK	TL	TD	TV	TT	Alta Genetics	
32	6	20043/4011	563 3/4	3/4	Executivo Billy Beleza Y TE	36	17	92.72	0.83	-33.72	0.90	AB	AA	KA	TL	TD	TV	TT	Não disponível	
33	8	20065/8056	955 5/8	5/8	Índio Windstar Sertão	24	6	83.80	0.82	34.85	0.89	AB	AB	AK	TL	TD	TV	TT	Não disponível	
34	10	20085/8072	0030 PS	PS	Bau das Arábias	7	4	83.14	0.71	25.65	0.82	AA	AA	AK	TL	TD	TV	TT	ABS Pecplan	
35	5	20035/8024	734 5/8	5/8	Cowboy Addison TE	201	55	80.75	0.95	-9.31	0.97	AB	AA	KA	TL	TD	TV	TT	Não disponível	
36	9	20075/8060	1167 5/8	5/8	Globo Billy JAC	12	4	56.25	0.73	-4.13	0.82	AA	AA	AK	TL	TD	TV	CC	Alta Genetics	
37	6	20045/8031	928 5/8	5/8	Soberano Adonias Santa Luccia	39	16	50.40	0.79	19.51	0.88	AA	BB	AK	TL	TD	TV	CT	Não disponível	
38	9	20075/8059	973 5/8	5/8	Ébano Gordon da Limeira	49	17	44.07	0.86	7.07	0.93	AA	BB	AK	TL	TD	TV	TT	Não disponível	
39	7	20055/8041	752 5/8	5/8	Lama Preta Instrutor Cavalier	12	6	35.73	0.60	-27.65	0.69	AA	AA	KA	TL	TD	TV	CT	Não disponível	
40	7	20055/8036	997 5/8	5/8	Curimã III TE Alegre	25	17	24.42	0.79	-30.54	0.86	AA	AA	KA	TL	TD	TV	TT	Não disponível	
41	2	975/8012	455 5/8	5/8	Maguito Mascot TE	68	25	12.17	0.90	40.21	0.93	AB	AA	KA	TL	TD	TV	TT	Não disponível	
42	4	20015/8021	639 5/8	5/8	Brutus das Arábias	38	15	0.18	0.82	-6.89	0.89	AA	AA	KA	TL	TD	TV	TT	Não disponível	
43	1	965/809	216 5/8	5/8	Santa Cruz Zinabre Dynamic	22	12	-0.93	0.77	0.59	0.85	AB	AA	AA	TL	TD	TV	TT	Não disponível	
44	8	20065/8053	1066 5/8	5/8	Milagre das Três Passagens	28	9	-2.69	0.80	-27.53	0.88	AA	AA	KK	TL	TD	TV	CT	CRI Genética	
45	1	965/802	243 5/8	5/8	Dileto Balthazar Sonho	20	11	-6.39	0.72	56.88	0.81	AA	AA	AA	TL	TD	TV	TT	Não disponível	
46	5	20033/4010	566 3/4	3/4	Escote Royalist Curral Velho	21	11	-28.90	0.68	6.32	0.81	AA	AA	KK	TL	TD	TV	CT	Não disponível	
47	2	975/8014	410 5/8	5/8	Curimatã Três Passagens	261	79	-32.60	0.97	6.09	0.98	AB	AA	AA	TL	TD	TV	TT	Não disponível	
48	1	965/804	350 5/8	5/8	Doutor Bellinger Itaina	47	22	-34.89	0.87	-20.48	0.92	AB	AB	KA	BL	TD	TV	TT	Não disponível	
49	6	20045/8029	885 5/8	5/8	Jaguar das Três Passagens	66	33	-36.80	0.89	24.46	0.94	AA	AA	KA	TL	TD	TV	CT	Não disponível	
50	4	20013/4007	500 3/4	3/4	Chaplin Billy Fancy Paul Y	57	29	-46.30	0.87	10.99	0.92	AA	AB	KA	TL	TD	TV	CT	Não disponível	
51	3	20005/8015	667 5/8	5/8	Zimbo das Arábias	57	26	-69.96	0.88	4.33	0.93	AA	AA	KA	TL	TD	TV	TT	Não disponível	
52	2	975/8013	487 5/8	5/8	Baco das Arábias	55	26	-78.81	0.88	-1.26	0.93	AA	AA	AA	TL	TD	TV	CT	Não disponível	

(Continua...)

(Continuação...)

Rank	Group	Test Code	Reg.	Genetic composition	Sire	N Daughter	N Herds	PTA Milk (kg)	R.	PTA AFC <sup>1</sup> (d)	R	Marcadores Moleculares					Sêmen Disponível Central IA		
												K-CW <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>	DUMPS <sup>6</sup>		CVM <sup>7</sup>	OPN <sup>8</sup>
53	3	20003/4005	475 3/4	3/4	Millenium Hortência Alf Boa Fé	287	105	-79.71	0.96	7.78	0.98	AA	AA	KK	TL	TD	TV	CT	ABS Pecplan
54	4	20015/8020	470 5/8	5/8	Galã Fancy Paul Itaúna TE	44	16	-79.72	0.82	27.98	0.89	AA	AA	AA	TL	TD	TV	CT	Não disponível
55	5	20035/8022	657 5/8	5/8	Feticeiro Riacho da Serra	88	36	-84.11	0.90	28.55	0.95	AA	AA	KK	TL	TD	TV	TT	ABS Pecplan
56	9	20075/8057	797 5/8	5/8	Netuno Famoso Dona Beja	14	11	-119.23	0.70	7.27	0.81	AA	AB	KK	TL	TD	TV	TT	Alta Genetics
57	10	20085/8068	0010 PS	PS	Fergus TE Caxi Alegre	14	8	-126.25	0.71	-20.57	0.81	AA	AA	KK	TL	TD	TV	TT	Alta Genetics
58	2	973/4004	366 3/4	3/4	Nautilus Bandit Rancharia	26	11	-128.06	0.80	-9.54	0.88	AA	AA	KK	TL	TD	TV	CT	Não disponível
59	4	20015/8019	680 5/8	5/8	Famoso das Três Passagens	178	68	-133.34	0.95	31.25	0.97	AA	AB	AA	TL	TD	TV	CC	Alta Genetics
60	9	20075/8066	1204 5/8	5/8	Dillon Ito das Arábias	13	8	-136.80	0.71	-19.29	0.83	AA	BB	AA	TL	TD	TV	CT	Alta Genetics
61	7	20055/8040	555 5/8	5/8	Simbolo Swinger Cal	39	18	-144.79	0.83	-15.09	0.90	AA	AA	KA	TL	TD	TV	CT	Alta Genetics
62	8	20065/8047	999 5/8	5/8	Curimã I TE Alegre	30	17	-156.65	0.81	-35.69	0.88	AA	AA	AA	TL	TD	TV	TT	Não disponível
63	1	965/803	200 5/8	5/8	Azoto da Ouro Verde	44	22	-157.27	0.84	21.79	0.90	AA	AA	AA	TL	TD	TV	TT	Não disponível
64	7	20055/8046	559 5/8	5/8	Bátia Irã da Cacá	11	9	-188.76	0.67	-58.85	0.77	AB	AA	KA	TL	TD	TV	CT	Não disponível
65	8	20063/4014	632 3/4	3/4	Talento Millenium Boa Fé	24	16	-191.55	0.79	66.58	0.87	AA	BB	KK	TL	TD	TV	TT	ABS Pecplan
66	6	20045/8033	864 5/8	5/8	Império das Três Passagens	18	11	-197.23	0.76	6.35	0.84	AA	BB	AA	TL	TD	TV	CT	Não disponível
67	1	965/806	215 5/8	5/8	Santa Cruz Zape Elevation	16	10	-208.42	0.71	52.83	0.79	AA	BB	KA	TL	TD	TV	TT	Não disponível
68	5	20035/8027	619 5/8	5/8	Garboso Curimatã das Três Passagens	18	8	-216.11	0.72	-12.94	0.82	AA	AA	AA	TL	TD	TV	TT	Não disponível
69	2	973/4002	312 3/4	3/4	BR Granito Mandingo TE	25	10	-219.50	0.76	14.69	0.85	AA	BB	AA	TL	TD	TV	CT	Não disponível
70	6	20045/8026	871 5/8	5/8	Lama Preta Hércules	67	33	-222.44	0.88	0.08	0.93	AA	BB	AK	TL	TD	TV	CT	ABS Pecplan
71	9	20075/8065	0014 PS	PS	Twist-TE RBC Singelo	10	6	-224.89	0.74	24.96	0.83	BB	AB	AK	TL	TD	TV	CT	Não disponível
72	9	20075/8063	0007 PS	PS	Neon das Três Passagens	9	6	-234.95	0.71	44.07	0.79	AA	AA	AA	TL	TD	TV	CT	CRV Lagoa
73	8	20065/8050	1075 5/8	5/8	Vilão TE Alegre	176	67	-276.81	0.94	0.09	0.97	AB	AA	KK	TL	TD	TV	TT	Alta Genetics
74	3	20005/8018	345 5/8	5/8	Caxi OG	56	24	-279.38	0.90	-20.45	0.94	AA	AA	KA	TL	TD	TV	TT	Não disponível
75	2	973/4003	333 3/4	3/4	Senador S.W.D Santa Izabel	77	42	-294.48	0.88	-19.36	0.94	AA	AA	KA	TL	TD	TV	CT	Não disponível
76	3	20005/8017	604 5/8	5/8	Império Pavijon Itaúna	46	21	-424.70	0.89	-11.69	0.93	AA	AA	KA	TL	TD	TV	CT	Não disponível
77	3	20005/8016	479 5/8	5/8	Dedé Três Passagens	33	17	-461.32	0.85	27.56	0.91	AA	BB	AA	TL	TD	TV	CT	Não disponível

<sup>1</sup>AFC - Age at first calving (days).

<sup>2</sup>Allele A - High yield for cheese, Allele B - low yield for cheese.

<sup>3</sup>Allele A - High milk yield Allele B - High protein and fat milk content.

<sup>4</sup>Allele A - Increase in milk and protein production, Allele K - Reduction in milk protein content and increase in milk fat content.

<sup>5</sup>BL - Heterozygote animal - carrier of the allele for BLAD, TL - Homozygote animal - non-carrier of the allele for BLAD.

<sup>6</sup>DP - Heterozygote animal - carrier of the allele for DUMPS, TD - Homozygote animal - non-carrier of the allele for DUMPS.

<sup>7</sup>CV - Animal - Heterozygote animal - carrier of the allele for CVM, TV - Homozygote animal - non-carrier of the allele for CVM.

<sup>8</sup>Allele C - Associated to increased protein and fat milk content, Allele T - Associated to elevated weight gain.

## 9. Acknowledgments

We would like to thank all people that collaborated, directly or indirectly, with the Girolando Breed Genetic Improvement Program (PMGG). Acknowledgments are due to breeders, technicians, milk controllers, trainees, students and employees of the *Instituto Federal do Triângulo Mineiro* (IFTM), the Brazilian Association of Girolando Breeders and Embrapa Dairy Cattle that collaborated with data recording, provision, editing and processing, for the genetic evaluations and for publication of this report. We would also like to thank the collaborating herds, AI companies, associated institutions, the Ministry of Agriculture, Livestock and Supply and the Federal Government, who all believed in our work and supported the PMGG and the development of the Girolando breed in Brazil. Thank you very much.

## 10. Collaborators

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## 11. Glossary of Technical Terms

**Additive Genetic Variance** – The variation in the genetic values among animals of a population (breed), for a specific trait.

**Allele** – The alternative form of a specific gene located in the region of a homologous chromosome (locus). There are two alleles for each gene in diploid bovine cells, with and each allele passed down from a progenitor.

**Animal Model** – The procedure used to estimate genetic values or PTAs, using the registers records from the databases provided by breeder associations.

**BLUP (Best Linear Unbiased Prediction)** – Statistical method for data analysis, aiming to obtain solutions for the effects considered in a specific model. Among its statistical properties, the simultaneous estimation of equation solutions for fixed and random effects (genetic values) stands out as noteworthy. In practical ways, the genetic values (PTAs) are estimated simultaneously to the adjustment to the effects of the environment (contemporary herd-year groups, time, age at calving, genetic groups, etc.)

**Genetic Base** – The mean genetic value of cows born in a specific year, for each trait. Composed of the genetic merit reference of the breed for the comparison of bulls.

**Genetic Correlation** – The probability that two distinct traits are determined by the same group of genes. Positive values mean that the group of genes increase the value of both traits, and negative values mean that one trait is increased and the other is decreased in response of the activation of the genes.

**Genotype** – The allelic constitution of a homologous chromosome region. Example: AA, Aa or AA.

**Heritability** – The parameter that describes the proportion of total variance for a specific trait that is due to the genetic differences among the individuals of the population (breed).

**Heterozygote** – The individual or genotype carrier of different alleles in one locus. Example: Aa.

**Homozygote** – The individual or genotype that presents two copies of the same allele in one locus. Example: AA or aa.

**MTDFREML** – The abbreviation for the set of programs written in the Fortran language (Multiple Trait Derivative Free REML), which uses the Restricted Maximum Likelihood methodology with the algorithm that does not use derivatives for the estimation of variance components and the prediction of animals' genetic values, in accordance with the model applied in the analysis of a specific database.

**PTA (Predicated Transmitting Ability)** – The measurement of the bull's genetic value, obtained through the performance of its daughters and its relatives in different herds, expressed as the difference (superiority or inferiority) of the breed's genetic base. Example: a bull with a PTA equal to 100 kg means that its progeny, on average, has an expected production potential of 100 kg of milk greater than the breed average.

**Reliability (R)** – The measurement of the amount of information used in the estimation of the genetic value. It indicates (in percentage) the confidence that can be placed on the PTA estimated for each bull. The greater the reliability, the greater the certainty that the value of the estimated PTA represents the real genetic value of the bull.

Annex 1 . List and genotype of sires in test by the Girolando Progeny Test, ordered by group, breed composition and alphabetical order.

Sire name	Reg.	Genetic composition	Father	Mother	Molecular Markers <sup>1</sup>				Semen available - AI Company			
					K-CM <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>		DUMPS <sup>6</sup>	CVM <sup>7</sup>	OPN <sup>8</sup>
<b>11<sup>th</sup> Group - Results expected in 2016</b>												
Deflector Rendeira Vião FIV Boa Fé	0072 PS	PS	Vião TE Alegre	Rendeira Nica Millennium Boa Fé	AA	AB	AK	TL	TD	TV	CT	ABS Pecplan
Detective Feiticeiro FIV Boa Fé	0071 PS	PS	Feiticeiro Riacho da Serra	Rendeira Nica Millennium Boa Fé	AB	AB	AK	TL	TD	TV	CT	ABS Pecplan
Dólar Dabliu Delib	0064 PS	PS	Dabliu Curimatá Dom Nato	Tabitha Windstar El Rancho	AA	AA	AK	TL	TD	TV	TT	CRI Genética
Franco Feiticeiro Y	0143 PS	PS	Feiticeiro Riacho da Serra	Caroline de Mönaco Sharp Y	AA	AB	AK	TL	TD	TV	TT	Alta Genetics
IPA Bochecho	0075 PS	PS	Zimbo das Árábias	IPA Ociosa	AA	AB	AK	TL	TD	TV	TT	Alta Genetics
Atual Garimpo Zak TE	1098 5/8	5/8	Garimpo Boss JGVA	Estrela Tricordiana	AA	AB	AK	TL	TD	TV	TT	Indisponível
Imperor Bolton Santa Luzia	1211 5/8	5/8	Sandy Valley Bolton-ET	Laranja Santa Luzia	AA	AB	KK	TL	TD	TV	TT	CRV Lagoa
Jacuba Fax Bem Feitor Garter	1464 5/8	5/8	Welcome Garter-ET	Jacuba II Tais I	AA	BB	AK	TL	TD	TV	TT	CRI Genética
Jacuba Printer Bem Feitor Blitz	1465 5/8	5/8	Fustead Emory Blitz-ET	Jacuba II Natureza I	AA	TD	AK	TL	TD	TV	CT	ABS Pecplan
Netuno Astre Renascer	1662 5/8	5/8	Duregal Astre Starbuck	Morena Renascer	AA	AB	AK	TL	TD	TV	CT	CRV Lagoa
Ozias da Centrogen TE	1671 5/8	5/8	Sandy Valley Bolton-ET	Jenoca LH TE	AA	BB	KK	TL	TD	TV	CT	ABS Pecplan
Thor FIV da Prata JAC	1487 5/8	5/8	Jenny Lou Marshall Toystory-ET	Harmonia Terra Vermelha	AB	AB	AK	TL	TD	TV	CT	Semex
Alfy Cayuaba Mission Iridio TE	993 3/4	3/4	Seagull-Bay Mission-ET	Alfy Cayuaba Teatro Danda	AA	AB	AK	TL	TD	TV	TT	Alta Genetics
Charmoso Wildman Tannus	1021 3/4	3/4	Ladys Manor Wildman-ET	Aicachofra MAMJ	AA	BB	KK	TL	TD	TV	TT	Alta Genetics
Curio FIV Paramount JGVA	990 3/4	3/4	Delta Paramount	Patativa Markowicz	AA	AA	AK	TL	TD	TV	CT	CRV Lagoa
Imperador Toy Story FIV Gama	1022 3/4	3/4	Jenny Lou Marshall Toystory-ET	Beidade MAMJ	AB	BB	AK	TL	TD	NG	CT	CRI Genética
Jordan Goldwyn DLS	823 3/4	3/4	Braedale Goldwyn	Teteia OG	AB	AB	AK	TL	TD	TV	CT	ABS Pecplan
JPZ Bulgart Millennium Lia Santa Luccia	1111 3/4	3/4	Millenium Hortência Alf Boa Fé	Lia Terra Vermelha	AA	AB	AK	TL	TD	TV	CC	ABS Pecplan
RBC Barão	987 3/4	3/4	Ricecrest Touchdown-ET	Cajamanga AAO	AB	AA	AK	TL	TD	TV	CT	ABS Pecplan
<b>13<sup>th</sup> Group - Results expected in 2018</b>												
Bambu FIV Rincão da Tropical	0045 PS	P/S	Rincão Itaipu Y	Rendeira Nica Millennium Boa Fé	AA	AB	AK	TL	TD	TV	CT	CRV Lagoa
Boticário da Olaria	0197 PS	P/S	Fausto Polo Itaipu	Ficção Olaria	AA	BB	AK	TL	TD	TV	TT	CRV Lagoa
IPA Cajano	0076 PS	P/S	Magical Mascot TE Rancho Alegre	IPA Selada	AA	AB	AK	TL	TD	TV	CT	Sembra
Júpiter FIV Rincão São Marcos	0207 PS	PS	Rincão Itaipu Y	363 Urik Vista Alegre	AA	AA	AK	TL	TD	TV	TT	Alta Genetics
Magu Zimbo das Árábias	0313 PS	PS	Zimbo das Árábias	Angel Touch das Árábias	AA	BB	AK	TL	TD	TV	TT	ABS Pecplan
Apolo FR Recreio	1590 5/8	5/8	Regancrest JR Defender-ET	Jacutinga FR Recreio	AA	AB	AK	TL	TD	TV	CT	CRI Genética
Duque FIV Shottle da Medalha Milagrosa	1470 5/8	5/8	Picston Shottle-ET	Lama Preta Opala Brilhante	AB	AA	AK	TL	TD	TV	CT	ABS Pecplan
General Millennium FIV TS da Muquém	1750 5/8	5/8	Millenium Hortência Alf Boa Fé	Viola Esteio Valiant LE	AA	AB	AK	TL	TD	TV	CT	CRV Lagoa

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(Continuação...)

Sire name	Reg.	Genetic composition	Father	Mother	Molecular Markers <sup>1</sup>				Semen available - AI Company			
					K-CN <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>		DUMPS <sup>6</sup>	CVM <sup>7</sup>	OPN <sup>8</sup>
Imperador Baxter Volta Fria	1459 5/8	5/8	Emerald-ACR-SA T-Baxter	Felipeta Cenoura Bazuah Volta Fria	AA	BB	KK	TL	TD	TV	CT	Alta Genetics
Imperador Jocko FIV WTF da Estiva	1600 5/8	5/8	Jocko Besn	Zumira 982 WTF da Estiva	AA	AB	AK	TL	TD	TV	TT	CRV Lagoa
Jacuba Master Benfeitor Shottle	1762 5/8	5/8	Picston Shottle-ET	Jacuba II Natureza I	AA	AB	AK	TL	TD	TV	CC	ABS Pecplan
Labirinto Don FAC	1526 5/8	5/8	Gem-Hill Amel Don-ET	Carol Paladino FAC	AA	BB	AK	TL	TD	TV	CT	CRI Genética
Minister da Prata JAC	1560 5/8	5/8	Mr. Minister	Harmonia Terra Vermelha	AA	AB	AK	TL	TD	TV	CT	Alta Genetics
Pavão Olympic IA da Terra Sagrada	1640 5/8	5/8	Delta Olympic	Fazendona da Terra Sagrada	AB	AB	AK	TL	TD	TV	CT	CRV Lagoa
Projeto Leitegen	1594 5/8	5/8	Stouder Morty-ET	Paloma Estância Correa	AA	BB	AK	TL	TD	TV	TT	CRV Lagoa
RBC Caratê	1485 5/8	5/8	Riccrest Touchdown-ET	Padaria Retiro da Barra	AA	BB	AK	TL	TD	TV	CT	ABS Pecplan
Rei Shottle da Centrogen FIV	1671 5/8	5/8	Picston Shottle-ET	Opera da Centrogen TE	AA	AB	AK	TL	TD	TV	CT	ABS Pecplan
Rocky Goldwyn FIV RDMS	1731 5/8	5/8	Braedale Goldwyn	Laranja Santa Luzia	AB	AB	KK	TL	TD	TV	CT	Alta Genetics
Tajmahal Wildman JSM	8080-D 5/8	5/8	Lady-Manor Wildman	Rubi Indiano OG	AA	AB	KK	TL	TD	TV	CT	Sembra
Tufão Flora Toystory Itauna	1675 5/8	5/8	Jenny Lou Marshall Toystory-ET	Flora 4 Nobre Itauna	AB	AB	AK	TL	TD	TV	CT	CRI Genética
Atual Wildman Thor TE	747 3/4	3/4	Lady-Manor Wildman	Estrela Tricordiana	AA	AB	AK	TL	TD	TV	TT	Alta Genetics
Galanteio XA	409 3/4	3/4	Mr. Minister	Cançaço XA	AA	AB	AK	TL	TD	TV	CC	ABS Pecplan
Gold Goldwyn RPM da Santo Antônio	1122 3/4	3/4	Braedale Goldwyn	Romana Barbante RPM Santo Antônio	AA	AB	KK	TL	TD	TV	CC	Alta Genetics
JPZ Basileu Argeu Linda FIV	1203 3/4	3/4	Argeu Leduc Santa Luccia TE	Linda do SPA	AA	AB	AK	TL	TD	TV	CC	CRV Lagoa
Napolitano TE Terra Vermelha	487 3/4	3/4	Doolhof December	Quartinha Terra Vermelha	AA	AB	KK	TL	TD	TV	CT	CRV Lagoa
<b>14<sup>th</sup> Group - Results expected in 2019</b>												
Barreto Maskey Felicia Fausto FIV	3841-H PS	PS	Fausto Polo Itaúna	Felicia Riberao Grande TE	AA	BB	AK	TL	TD	TV	TT	Semex
Diamante Valinhos	0040 PS	PS	Fausto Polo Itaúna	Imagem Valinhos	AA	BB	AK	TL	TD	TV	TC	Semex
Dionisio FR Recreio	9999-H PS	PS	Tango Storm Renascer	Leopoldina FR Recreio	AB	AA	AK	TL	TD	TV	TT	CRI Genética
Golias Fausto da Mu Mu	0580-D PS	PS	Fausto Polo Itaúna	Dolores Dabliu da Mu mu	AA	BB	AK	TL	TD	TV	TT	Alta Genetics
Luti Florin Dom Nato	0580-G PS	PS	Florin Marker Dom Nato	Rendeira Nica Millenium Boa Fé	AA	AA	AK	TL	TD	TV	TT	ABS Pecplan
Mark Fausto TE São Marcos	8080-I PS	PS	Fausto Polo Itaúna	363 Urik Vista Alegre	AA	BB	AK	TL	TD	TV	TC	CRI Genética
Meteoro Florim JEBR	0039 PS	PS	Florin Marker Dom Nato	Macieira JEBR	AA	AA	AK	TL	TD	TV	TC	Alta Genetics
Recanto da Baronesa Bonitão	8470-K PS	PS	Fausto Polo Itaúna	Liz Luke TE Mutum	AA	BB	AK	TL	TD	TV	TC	Alta Genetics
Albatroz Laverna Aftershok Nova Terra	1652 5/8	5/8	MS AHees SHT Aftershock-ET	Lama Preta Laverna Rajkot	AA	AB	AK	TL	TD	TV	TC	ABS Pecplan
Axxor Avalon RPM da Santo Antônio	1734 5/8	5/8	Farnear- TBR Altaavalon-ET	Geleia Sansão RPM Santo Antônio	AB	AA	AK	TL	TD	TV	TT	Alta Genetics
Bond Choral Felicidade	7000-J 5/8	5/8	Emerald-ACE-VA Choral ET	Lama Preta Nuvem Meteoro	AB	AA	AK	TL	TD	TV	TT	Alta Genetics
Gênio das Árábias	8686-F 5/8	5/8	Bomaz Shtl Kolton 692-ET	Semente das Árábias	AA	AB	AK	TL	TD	TV	TT	CRI Genética
Jacuba GM Kyoto Bem Feitor Planet	1769 5/8	5/8	Encenada Taboo Planet-ET	Jacuba I Bela I	AA	BB	AK	TL	TD	TV	TT	ABS Pecplan
Jaguço IV FIV Shottle Alegre	1733 5/8	5/8	Picston Shottle-ET	Colonia Sansão OG	AA	AB	AK	TL	TD	TV	TC	Alta Genetics
JPZ Calisto FBI Laranja FIV	1681 5/8	5/8	Gillette Brilea FBI	Laranja Santa Luzia	AA	BB	AK	TL	TD	TV	TC	Semex
Quantao Planet FIV FZD	1187 5/8	5/8	Encenada Taboo Planet-ET	Parabolica Everest 3E	AB	AB	AK	TL	TD	TV	TC	CRV Lagoa
Tesouro Dengo Toystory Itauna	1682 5/8	5/8	Jenny-LOU Marshall Toystory-ET	Dengosa 6 Nobre Itauna	AB	AB	AK	TL	TD	TV	TC	CRV Lagoa
Brazão Bixia Toystory Nova Terra	1105 3/4	3/4	Jenny-LOU Marshall Toystory-ET	Engenho da Rainha Bixia	AB	AA	AK	TL	TD	TV	TC	ABS Pecplan

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(Continuação...)

Sire name	Reg.	Genetic composition	Father	Mother	Molecular Markers <sup>1</sup>				Semen available - AI Company			
					K-CM <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>		DUMPS <sup>6</sup>	CVM <sup>7</sup>	OPN <sup>8</sup>
Delegado Homestead FIV GRF M. Milagrosa	1800-D 3/4	3/4	Bomaz Homestead-ET	Calha Castelo Boa Fé	AB	AA	AK	TL	TD	TV	TC	ABS Pecplan
Galático 4365 Megaton NF Irmãos	3984-H 3/4	3/4	ShadyCrest-H Megaton-ET	Elegancia 4365 Gameta NF Irmãos	AB	AA	AK	TL	TD	CV	TT	ABS Pecplan
Icaro Super RBR	1209 3/4	3/4	Charlesdale Superstition ET	Volga Bem Feitor RBR	AA	BB	AK	TL	TD	TV	TC	CRI Genética
Oludum Sadona FIV	1170 3/4	3/4	Millenium Hortencia ALF Boa Fé	Kayene TE Sadona	AB	BB	AK	TL	TD	TV	TC	CRI Genética
Rege Blitz da Garden S Buck	0911-E 3/4	3/4	Fustead Emory Blitz-ET	Maravilha Rolex Fela	AA	AA	AK	TL	TD	TV	TT	Sembra
<b>15<sup>th</sup> Group - Results expected in 2020</b>												
Alado Blitz FIV JM Monte Alverne	1206	3/4	Fustead Emory Blitz-ET	Botique JM Monte Alverne	AA	AB	AK	TL	TD	TV	NG	CRV Lagoa
Alfy Cayuaba Impacto Kamy IV	190	5/8	Impacto FIV da Prata JAC	Alfy Cayuaba Cacique Halina	AA	AA	AK	TL	TD	TV	NG	Alta Genetics
Caique Goldwyn FIV F. Congonhas	6827-P	5/8	Braedale Goldwyn	Neves da CA Boa Vista	AA	AB	AK	TL	TD	TV	NG	Semex
Capiu FIV Florin da Tropical	1010-M	PS	Florin Marker Dom Nato	Celeste Durham Santa Luzia	AA	AA	AK	TL	TD	TV	NG	CRV Lagoa
Castelo de Uberaba Goldwyn Fube	7114-R	5/8	Braedale Goldwyn	Castanhola Herdeiro MAMJ	AA	AA	KK	TL	TD	TV	NG	Alta Genetics
Corel FIV Fausto da Tropical	1020-M	PS	Fausto Polo Itauna	Rendeira Nica Millenium Boa Fe	AA	BB	AK	TL	TD	TV	NG	Alta Genetics
Dragao FIV Wildman da Tropical	1000-M	5/8	Ladys-Manor Wildman-ET	Pitanga Sansão OG	AA	BB	AK	TL	TD	TV	NG	Alta Genetics
Ebalco Magnetim FIV da Medalha Milagrosa	6833-P	5/8	Mister Magnetism-ET	Lama Preta Opala Brilhante	AA	AB	AK	TL	TD	TV	NG	ABS Pecplan
Evoque Morty Gil Giv São Marcos	7120-R	5/8	Stouder Morty-ET	Gil São Marcos	NG	NG	NG	NG	NG	NG	NG	CRV Lagoa
Farroq FIV Corrêgo Branco	1232	3/4	Torpedo Bolton Santa Luzia	Mexerica Santa Luzia	AA	AB	AK	TL	TD	TV	NG	CRV Lagoa
Febo FR Recreio	6300-N	3/4	Standro More	Lapaz FR Recreio	AA	AA	AK	TL	TD	TV	NG	CRV Lagoa
Groman FIV Blitz Santa Luzia	1795	5/8	Fustead Emory Blitz-ET	Castanhola Herdeiro MAMJ	AA	BB	AK	TL	TD	TV	NG	Semex
Hugo Fever da Murnu	6829-P	5/8	Crackholm Fever	Eureka I FIV Teatro Delib	AA	AA	KK	TL	TD	TV	NG	Semex
ICH K85 Canela Shottle	4230-K	3/4	Picston Shottle-ET	ICH Canela Teatro	AA	AB	AK	TL	TD	TV	NG	ABS Pecplan
Jacuba Ping Impressor Freddie	1765	5/8	Badger Bluff Fanny Freddie	Jacuba I Brenda II	AB	AA	AK	TL	TD	TV	NG	ABS Pecplan
Jaguço VIII FIV Shottle Alegre	6839-P	5/8	Picston Shottle-ET	Colonia Sansao OG	AA	AA	AK	TL	TD	TV	NG	Alta Genetics
Natan Mandel Dom Nato	8738-J	5/8	Lutz-Meadows e Mandel-ET	Gioconda Napolitano Dom Nato	AA	AB	AK	TL	TD	TV	NG	CRV Lagoa
Pierrro FIV Morada Corinthiana	2386-Q	5/8	Impacto FIV da Prata JAC	Jalita Tutti Morada Corinthiana	AB	AB	AK	TL	TD	TV	NG	Alta Genetics
Porto Real Da Terra Vermelha	1799-D	3/4	Picston Shottle-ET	Quarinha Terra Vermelha	AA	AA	AK	TL	TD	TV	NG	ABS Pecplan
Queops Planet FIV 3S FZD	1188	5/8	Ensenada Taboo Planet	Raina Quilate do Fazendão	AA	AA	AK	TL	TD	TV	NG	Alta Genetics
Querubin FIV Terra Vermelha	2254-J	5/8	Mountfield Altaeacter	Lailia TE Terra Vermelha	AB	AB	AK	TL	TD	TV	NG	Semex
RBC Farol Paramount FIV	2820-I	5/8	Delta Paramount	Laranja Santa Luzia	AA	AB	AK	TL	TD	TV	NG	CRV Lagoa
Templo Raro das Arabias II	78	PS	Raro das Arabias	Bailarina das Arabias	AA	AA	KK	TL	TD	TV	NG	Alta Genetics
Vesúvio Avalon Itaúna	6836-P	5/8	Farnear-TBR Altaavalon-ET	Norma Jarro de Ouro Itaúna	AA	AB	AK	TL	TD	TV	NG	Alta Genetics
Vulcano Avalon Itaúna	6838-P	5/8	Farnear-TBR Altaavalon-ET	Laranja Limogenes Itaúna	AB	AB	AK	TL	TD	TV	NG	Semex
<b>16<sup>th</sup> Group - Results Expected in 2021</b>												
Batuque Diamante Java	5127N	PS	Diamante Valinhos	Lama Preta Kamuela Lheros	NG	NG	NG	NG	NG	NG	NG	Semex
Destaque FIV Fausto Morada Corinthiana	5383W	PS	Fausto Polo Itauna	Jalita Tutti Morada Corinthiana	NG	NG	NG	NG	NG	NG	NG	Alta Genetics
Poderoso Fausto OG	1000P	PS	Fausto Polo Itauna	Esparta Windstar OG	NG	NG	NG	NG	NG	NG	NG	CRV Lagoa
Surfista FIV das Arábias II	6637S	PS	Turbante Touch das Arábias	Bailarina das Arábias	NG	NG	NG	NG	NG	NG	NG	CRV Lagoa

(Continua...)

(Continuação...)

Sire name	Reg.	Genetic composition	Father	Mother	Molecular Markers <sup>1</sup>				Semen available - AI Company		
					K-CM <sup>2</sup>	B-LGB <sup>3</sup>	DGAT 1 <sup>4</sup>	BLAD <sup>5</sup>		DUMPS <sup>6</sup>	CVM <sup>7</sup>
Turbo das Arábias	0079	PS	Turbante Touch das Arábias	Preta Jewel das Arábias	NG	NG	NG	NG	NG	NG	Accelerated Genetics
Arpoador Lamina Aftershock FIV NT	5753J	5/8	MS Atlees SHT Aftershock	Lama Preta Lamina Pioneiro	NG	NG	NG	NG	NG	NG	Alta Genetics
Brooklin Rancho Tunin	5385W	5/8	Gillette Windbrook	Olinda Terra Vermelha	NG	NG	NG	NG	NG	NG	Semex
Caligula Aftershock FIV da Xapetuba	5654R	5/8	MR Atlees SHT Aftershock	Harmonia Terra Vermelha	NG	NG	NG	NG	NG	NG	Alta Genetics
Cantor Wildman IA da Xapetuba	6831P	5/8	Lady's-Manor Wildman-ET	Iguana Palma	NG	NG	NG	NG	NG	NG	CRV Lagoa
Deano FIV Goldwyn da Tropical	7640S	5/8	Braedale Goldwyn	Pitanga Sansão OG	NG	NG	NG	NG	NG	NG	Accelerated Genetics
Destino Jayven FIV F. Congonhas	7900Q	5/8	Stouder Jayven-ET	Neves da C.A Boa Vista	NG	NG	NG	NG	NG	NG	ABS Pecplan
Detetive Jayven FIV F. Congonhas	7901Q	5/8	Stouder Jayven-ET	Bibiana FIV Sansão da Tropical	NG	NG	NG	NG	NG	NG	Alta Genetics
Eldorado FIV da Prata JAC	0583Q	5/8	Gen-Mark Stmatic Sanchez	Harmonia Terra Vermelha	NG	NG	NG	NG	NG	NG	CRV Lagoa
Logan FIV Rio do Leite	5300U	5/8	Picston Shottle-ET	Laranja Santa Luzia	NG	NG	NG	NG	NG	NG	N/D
Quincas da Terra Vermelha	2253J	5/8	Mountfield Altaeaxter	Lailia TE Terra Vermelha	NG	NG	NG	NG	NG	NG	Alta Genetics
Raroa Reitor Sansão Gerard	8700K	5/8	Schilview Oman Gerard	Franca TE Sansao RPM Santo Antonio	NG	NG	NG	NG	NG	NG	ABS pecplan
RBC Florentino Shottle	5220U	5/8	Picston Shottle-ET	RBC Colcheia	NG	NG	NG	NG	NG	NG	Semex
Romano Jocko FIV WTF da Estiva	1763	5/8	Jocko Besne	Zumira 982 WTF Da Estiva	NG	NG	NG	NG	NG	NG	Select Sires
Valente FIV da Prata JAC	0584Q	5/8	Picston Shottle-ET	Harmonia Terra Vermelha	NG	NG	NG	NG	NG	NG	Alta Genetics
Apolo FIV Extreme RC do Morro	4986M	3/4	MR Andis Altaextreme	Legítima Ravena das Três Passagens	NG	NG	NG	NG	NG	NG	Alta Genetics
Elino FIV Shottle da Tropical	3240G	3/4	Picston Shottle-ET	Espanhola Fiasco MAMJ	NG	NG	NG	NG	NG	NG	Alta Genetics
Horizonte FIV Xa	8803J	3/4	Hornland Jayz-ET	Balada X.A	NG	NG	NG	NG	NG	NG	CRV Lagoa
ICH Lupi Aftershock	4228K	3/4	MR Atlees SHT Aftershock	ICH Canela Teatro	NG	NG	NG	NG	NG	NG	ABS Pecplan
JPZ Olimpio Argau Linda FIV	5381W	3/4	Argau Leduc Santa Luccia	Linda do SPA	NG	NG	NG	NG	NG	NG	Alta Genetics
Oásis da Divisa Luxo Aftershock	2837J	3/4	MR Atlees SHT Aftershock	Botique JM Monte Alverne	NG	NG	NG	NG	NG	NG	Alta Genetics
Rústico FIV Santa Luzia	1566S	3/4	Gillette Jordan	Aduana DF	NG	NG	NG	NG	NG	NG	ABS Pecplan

<sup>1</sup>NG - Not genotyped, <sup>2</sup>Allele A - High yield for cheese, Allele B - low yield for cheese. <sup>3</sup>Allele A - High milk yield Allele B - High protein and fat milk content. <sup>4</sup>Allele A - Increase in milk and protein production, Allele K - Reduction in milk protein content and increase in milk fat content. <sup>5</sup>BL - Heterozygote animal - carrier of the allele for BLAD, TL - Homozygote animal - non-carrier of the allele for BLAD, <sup>6</sup>DP - Heterozygote animal - carrier of the allele for DUMPS, TD - Homozygote animal - non-carrier of the allele for DUMPS. <sup>7</sup>CV - Animal - Heterozygote animal - carrier of the allele for CVM, TV - Homozygote animal - non-carrier of the allele for CVM. <sup>8</sup>Allele C - Associated to increased protein and fat milk content, Allele T - Associated to elevated weight gain.



Annex 2. Pedigree information of Girolando sires of the 2015 Report, ordered by general ranking classification.

Rank	Group	Reg.	Sire	Father	Mother	Paternal Grandfather	Maternal Grandfather	Owner
1	11	1338 5/8	Imperador FIV Ribeirão Grande	Sandy-Valley Bolton-ET	Laranja Santa Luzia	Lexvold Luke Hershel-ET	Caju de Brasília	Alessandro Maia Soares
2	11	960 3/4	Torpeda Bolton Santa Luzia	Sandy-Valley Bolton-ET	Quartinha Terra Vermelha	Lexvold Luke Hershel-ET	Red Fever Oakland-ET	José Coelho Vitor
3	8	780 3/4	Argeu Leduc Santa Luccia TE	Lystel Leduc-ET	Iracema LE	Juniper Rotata Jed-ET	Lonte Blackstar Jewel TL	CondominioJPZ Jorge Papazoglu e outro
4	10	806 3/4	Luter King TE Terra Vermelha	Regancrest Elton Durham-ET	Quartinha Terra Vermelha	Enprise Bell Elton	Red-Fever Oakland-ET	Marta de Azevedo Bernardes
5	9	1154 5/8	Jacuba Triânio Bem Feitor Celsius	528 Etazon Celsius-ET	Jacuba I Novena I	How-El-Acres K Bellman-ET	Bem Feitor Raposo da Cal	Roberto Pimentel de Mesquita
6	11	1284 5/8	Diplomata Roy Santa Luzia	Roylane Jordan-ET	Laranja Santa Luzia	Ked Juror-ET	Caju de Brasília	José Coelho Vitor
7	6	945 5/8	Turbante Touch das Árábias	Dinomi Melwood Touch TL	Maravilha das Árábias	Arlinda Melwood-ET	N/D*	Ricardo Miziara Jreige
8	7	983 5/8	Tango Storm Renascer	Mi-Bren Mathie Storm	Morena Renascer	Paradise-r Cleitus Mathie	N/D*	João Diário Ribeiro
9	5	621 5/8	Kaïen Celsius Itaúna	528 Etazon Celsius-ET	Enboaba Everest Itaúna	How-El-Acres K Bellman-ET	C. A. Everest	Valério Machado Guimarães
10	10	1248 5/8	Impacto FIV da Prata JAC	Cinita Zack Frederick-ET	Harmonia Terra Vermelha	Chance Southwind LB Zack-ET	C.A.Quero-Quero	José Antônio da Silva Clemente
11	8	754 3/4	Diamante Billy da Cacá	110 Billy Fancy Paul Y	Lira Boagy da Caca	Uttag Valiant Fancy Paul-ET	Sherryhill Cubby Boagy-ET	José Mascarenhas T.Jr/Cassio R.B.Paiva
12	6	931 5/8	Lion Império Itaúna	Império Paviljon Itaúna	Gama TE Mason Itaúna	Etazon Paviljon	Shoremar Mason-ET	Valério Machado Guimarães
13	4	541 3/4	MBF 0246	Etazon Wallace	MBF Redação	Singing-Brook N-B Mascot-ET	Clover Mist Dandana-ET	Maria Dias Barretto Figueiredo
14	10	1293 5/8	Jacuba Dark Bem Feitor Aaron	Dixie-Lee AARON-ET	Jacuba II Sara I 1/4	Norrielaque Cleitus Luke-TW	Benteitor Raposo da Cal	Roberto Pimentel de Mesquita
15	2	454 5/8	Magical Mascot TE Rancho Alegre	S-Brook N-B Mascot-ET	Mágica Rancho Alegre	Whittier-Farms Ned Boy	Beguaba Gil	Hilton da Cunha Peixoto
16	9	855 3/4	Garimpo Boss JGVA	Bosside Ruben-ET	Fineza Urânio JGVA	Ked Juror-ET	Uranio TE da Silvânia	José Geraldo Vaz Almeida
17	1	300 3/4	110 Billy Fancy Paul Y	Uttag Valiant Fancy Paul-ET	Panorama IY	SWD Valiant	N/D*	Renato da Cunha Oliveira
18	9	0016 PS	Notebook das Três Passagens	Magical Mascot TE Rancho Alegre	Favela Feição das Três Passagens	Singing-Brook-B Mascot -ET	Feição das Primaveras	Ricardo Catão Ribeiro
19	10	0020 PS	Potter Kaïen Itaúna	Kaïen Celsius Itaúna	Gama TE Mason Itaúna	528 Etazon Celsius-ET GM	Shoremar Mason-ET	Valério Machado Guimarães
20	8	684 5/8	Nicolau Fausto Itaúna	Fausto Polo Itaúna	Java Gaiato Itaúna	B-Hiddenhills Mark-O-Polo TL	Gaiato Mason Itauna	Valério Machado Guimarães
21	5	580 3/4	Aristóteles Grandslam TE Santa Luccia	J-L-G Grandslam-ET	Iracema LE	Exrango Thor	Lonte Blackstar Jewel	Jorge Papazoglu
22	3	476 3/4	Estand Luke HB	Norrielaque Cleitus Luke	Chaleira HB	Bis-May Tradition Cleitus	N/D*	Hélcio Borges Barbosa
23	8	1065 5/8	Ocidente London do Morro	Londontale Lman Magnum-ET	Sevilha Ocidente do Morro	Rothrock Tradition Leadman	Ocidente	Olavo de Resende Barros Júnior
24	5	781 5/8	Rincão Itaipu Y	Itaipu Nobre Y	Beleza Y	Nobre Fancy Paul Y	N/D*	Renato da Cunha Oliveira
25	7	1039 5/8	Florin Marker Dom Nato	528 Southland Marker-ET	Famosa Oliveira	Singing-Brook N-B Mascot-ET	N/D*	José Donato Dias Filho
26	2	452 5/8	Damião Bellwood 3E	Maizefield Bellwood	Maravilha 3E	Arlinda Melwood-ET	N/D*	Antônio de Souza Salgueiro
27	7	880 5/8	Átila Irã da Cacá	Irã Urutu do Morro	Andorinha Spacey da Cacá	Santa Cruz Urutu Relógio	N/D*	João Augusto Junqueira Reis
28	10	917 3/4	Abdu Lord Lily Santa Luz	Etazon Lord Lily-ET	Independência Santa Luzia	To-Mar Blackstar-ET	N/D*	José Coelho Vitor
29	7	636 3/4	RBC Redator	Regancrest RBK Die-hard-ET	RBC Parainfa	Paradise-r Roebuck	N/D*	Roberto Antônio Pinto Melo de Carvalho
30	4	717 5/8	Fausto Polo Itaúna	B-Hiddenhills Mark-O-Polo	Bolacha Oásis Itaúna	Walkway Chief Mark	Santa Cruz Oásis Hábil	Valério Machado Guimarães
31	10	1294 5/8	Cacique Índio Sertão	Índio Windstar Sertão	Madame Sertão	Dupasquier Windstar	Ipu Haley Briggitta Black ET	Nazareth Dias Pereira

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Rank	Group	Reg.	Sire	Father	Mother	Paternal Grandfather	Maternal Grandfather	Owner
32	6	563 3/4	Executivo Billy Beleza Y TE	110 Billy Fancy Paul Y	Beleza Haden CF	Utag Valiant Fancy Paul-ET	N/D*	Renato da Cunha Oliveira
33	8	955 5/8	Índio Windstar Sertão	Dupasquier Windstar	Angra Sertão	Duregal Astre Starbuck ET	N/D*	Nazareth Dias Pereira
34	10	0030 PS	Bau das Árábias	Brutus das Árábias	Roxona II das Árábias	Santa Cruz Zinabre Dynamic	Lonte Blackstar Jewel-ET	Maria Beatriz Costa Gomes
35	5	734 5/8	Cowboy Addison TE Rancho Alegre	Etazon Addison-ET	Mágica Rancho Alegre	Bis-May E-L Mountain-ET	Beguaba Gil	Hilton da Cunha Peixoto
36	9	1167 5/8	Globo Billy JAC	110 Billy Fancy Paul Y	Gemada Decal II JAC	Utag Valiant Fancy Paul-ET	Vir-Clair Enchantin Decal	Jair Alves Camargos/José Alves Camargos
37	6	928 5/8	Soberano Adonias Santa Luccia	Adonias Progress Santa Luccia TE	Ametista Caju Santa Luccia TE	Duncan Progress-ET	Caju de Brasília	Jorge Papazoglu
38	9	973 5/8	Ébano Gordon da Limeira	Delika Juror Gordon	2244 Matoso HG	Ked Juror-ET	Reinador da Epamig	José Márcio de Simone Silveira
39	7	752 5/8	Lama Preta Instrutor Cavalier	Ca-Lill Standout Cavalier	Fartura OG	Sunnyside Standout	Mongol da Pontal	Arpoador Agropecuária e Promoções Ltda.
40	7	997 5/8	Curimatã III TE Alegre	Curimatã das Três Passagens	Arita Vertente	Twist Astronaut	Richlawn Simon Dustin	Nelson Ariza
41	2	455 5/8	Maguito Mascot TE Rancho Alegre	S-Brook N-B Mascot-ET	Mágica Rancho Alegre	Whittier-Farms Ned Boy	Beguaba Gil	Hilton da Cunha Peixoto
42	4	639 5/8	Brutus das Árábias	Santa Cruz Zinabre Dynamic	Bailarina das Árábias	Caernavon Rotate Dynamic	Peticote Boda-ET	Ricardo Miziara Jreige
43	1	216 5/8	Santa Cruz Zinabre Dynamic	Caernavon Rotate Dynamic	Reliquia Oásis Santa Cruz	Arlinda Rotate	Santa Cruz Oásis Hável	José João Salgado dos Reis
44	8	1066 5/8	Milagre das Três Passagens	Imperio Paviljon Itaua	Goiabada das Três Passagens	Etazon Paviljon	Peticote Lance TL	Marco Paulo Lemos Ferreira
45	1	243 5/8	Dileto Balthazar Sonho	Conductor Balthazar	Azurita FR	Wapa Arlina Conductor	N/D*	Mário Lúcio Barros Borges
46	5	566 3/4	Escote Royalist Curral Velho	Startmore Royalist-ET	Malvina Curral Velho	Madawaska Aerostar	N/D*	Renildo Neides Alves
47	2	410 5/8	Curimatã das Três Passagens	Twist Astronaut	Belaiba Sonho	Flamengo da GB	GRF Máximo Twin Chief	Carlos Eduardo Ferreira
48	1	350 5/8	Doutor Bellringer Itaua	Tiho Bellringer-ET	Mansinha Itaúna	Carlin-M Ivanhoe Bell	Santa Cruz Oriente Morcego	RYG Emp. Part. e Adm. S/A
49	6	885 5/8	Jaguar das Três Passagens	Famoso das Três Passagens	Gata das Três Passagens	Curimatã das Três Passagens	J-L-G Grandslam-ET	Carlos Eduardo Ferreira
50	4	500 3/4	Chaplin Billy Fancy Paul Y	110 Billy Fancy Paul Y	Cancela Y	Utag Valiant Fancy Paul-ET	SS Juazeiro Berlin	Renato da Cunha Oliveira
51	3	667 5/8	Zimbo das Árábias	Santa Cruz Zimbo Elevation	Bailarina das Árábias	Três Irmãos Elevation	Peticote Boda-ET	Ricardo Miziara Jreige
52	2	487 5/8	Baco das Árábias	Lutz Meadows Blackstar Miles	Gemada das Árábias	To-Mar Blackstar	N/D*	Ricardo Miziara Jreige
53	3	475 3/4	Millenium Hortência Alf Boa Fé	Alvoor Elton Alf	Hortência Boa Fé	Emprise Bell Elton	N/D*	Agropecuária Boa Fé Ltda.
54	4	470 5/8	Galã Fancy Paul Itaúna TE	Utag Valiant Fancy Paul-ET	Mansinha Itaúna	SWD Valiant	Santa Cruz Oriente Morcego	José Henrique Pastore
55	5	657 5/8	Feiticeiro Riacho da Serra	Ked Juror-ET	Cajuina Riacho da Serra	To-Mar Blackstar	N/D*	Álvaro Vasconcelos/Marcos Costa
56	9	797 5/8	Netuno Famoso Dona Beja	Famoso das Três Passagens	363 Urík Vista Alegre	Curimatã das Três Passagens	Jatoba Urík Persistent Rima	Rubens Belchior da Cunha
57	10	0010 PS	Fergus TE Caxi Alegre	Caxi OG	Arita Vertente	Feitico das Primaveraes	Richlawn Simon Dustin	Nelson Ariza
58	2	366 3/4	Nautilus Bandit Rancharia	Hanoverhill Bandit-ET	Sapeca Astro M-4	Rockalli Son of Bova	Capucho da Carnig	Aldir Henrique Silva
59	4	680 5/8	Famoso das Três Passagens	Curimatã das Três Passagens	Capivara Três Passagens	Twist Astronaut	B-Hiddenhills Mark-O-Polo	Carlos Eduardo Ferreira
60	9	1204 5/8	Dillon Ito das Árábias	Barbee-M Juror Ito-ET	Semente das Árábias	Ked Juror-ET	Caju de Brasília	Maria Beatriz Costa Gomes
61	7	555 5/8	Símbolo Swinger Cal	Delta Swinger-ET	Diatema Cal	528 Etazon Celsius-ET	N/D*	Olavo de Resende Barros

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Rank	Group	Reg.	Sire	Father	Mother	Paternal Grandfather	Maternal Grandfather	Owner
62	8	999 5/8	Curimã TE Alegre	Curimatã das Três Passagens	Arita Vertente	Twist Astronaut	Richlawn Simon Dustin	Nelson Ariza
63	1	200 5/8	Azoto da Ouro Verde	Caldas Supremo TE	Araponga da Ouro Verde	Pawnee Farm Afíndia Chief	N/D *	Francisco Geraldo Megale
64	7	599 5/8	Bátia Irã da Cacá	Irã Urutu do Morro	Andorinha Spacey da Cacá	Santa Cruz Urutu Relógio	N/D *	José Mascarenhas Torres Junior
65	8	632 3/4	Talento Milenium Boa Fé	Millenium Hortência Alf Boa Fé	Lancha Agrauna Booster	Alvoor Elton Alf	Fustead Tesk Booster-ET	Enos Toledo Yan Hsin Ma
66	6	864 5/8	Império das Três Passagens	Dedé Três Passagens	Cocaina Três Passagens	Twist Astronaut	Bis-May Tradition Cleitus	Carlos Eduardo Ferreira
67	1	215 5/8	Santa Cruz Zape Elevation	Três Irmãos Elevation	Idade MEF Santa Cruz	Round Oak Rag Aple Elevation	Maravilha Expoente Faizão	José João Salgado dos Reis
68	5	619 5/8	Garboso Curimatã das Três Passagens	Curimatã das Três Passagens	Cereja das Três Passagens	Twist Astronaut	Lee-Gin Chris Bell	Bráulio Conti Júnior
69	2	312 3/4	BR Granito Mandingo TE	Fisher Place Mandingo Twin	Fortaleza BR	SWD Valiant	N/D *	Bruno Regis Borges da Costa
70	6	871 5/8	Lama Preta Hércules Twist-TE	Twist Astronaut	Cocaina Três Passagens	Flamengo da GB	Bis-May Tradition Cleitus	Arpoador Agrop. Prom. Ltda.
71	9	0014 PS	RBC Singelo	Curimatã Três Passagens	RBC Proveta	Curimatã das Três Passagens	Oitavo Retiro da Barra	Roberto Antônio P. Mielo Carvalho
72	9	0007 PS	Neon das Três Passagens	Famoso das Três Passagens	Jandira das Três Passagens	Curimatã das Três Passagens	Caxi OG	Olavo de Resende Barros Júnior
73	8	1075 5/8	Vilão TE Alegre	Caxi OG	Ambição Lindy Reata	Feição das Primaveraes	Mineirão Lindy Roma TE	Nelson Ariza
74	3	345 5/8	Caxi OG	Feição das Primaveraes	Montanha da OG	Combo Criss	N/D *	Vilmar Pereira Pires
75	2	333 3/4	Senador S.W.D. Santa Izabel	SWD Valiant	Miss da GB	Pawnee Farm Afíndia Chief	N/D *	José de Freitas Amaral
76	3	604 5/8	Império Paviljon Itauna	Etazon Paviljon	Bolacha Oásis Itauna	To-Mar Wister-ET	Santa Cruz Oásis Hábil	RYG Emp. Part. e Adm. S/A
77	3	479 5/8	Dedé Três Passagens	Twist Astronaut	Ativa das Três Passagens	Flamengo da GB	Mainsteam Hotshot	Carlos Eduardo Ferreira

\*N/D - Not determined.

**Annex 3. Girolando Breed Genetic Improvement Program Participating Herds.**

<b>Owner</b>	<b>Farm</b>	<b>City/State</b>
Hélvio Queiroz dos Santos	Fazenda Shangrilá	Abadia de Goiás/GO
César Corrêa de Sousa	Fazenda Boa Vista	Abaeté/MG
Marco Antônio de Oliveira	Fazenda São Sebastião da Morada	Abaeté/MG
Marcio Moraes Sampaio	Fazenda Morro Grande	Aiuoroca/MG
Antônio Sancho de Souza Neto	Faz. Retiro da Esperança	Altair/SP
Higo Carlos de Freitas	Sítio Carvalho	Altair/SP
José Geraldo Vaz de Almeida	Fazenda Belo Horizonte	Amargosa/BA
Rodrigo Mota	Fazenda Mangueira	Apiacá/ES
Fundação Univ. Estadual de Mato Grosso do Sul (UEMS)	Faz. Cera	Aquidauana/MS
Rodrigo Bernardo Silva	Faz. Taquara Preta	Aracitaba/MG
João Monteiro da Gama	Fazenda São Pedro São Paulo	Arandú/SP
Antônio Francisco Chaves Neto	Estância Três Irmãos	Arapongas/PR
Irineu Borges de Jesus	Faz Rio Preto	Arcos/MG
Jamil Veloso Borges	Faz Vargem Grande	Arcos/MG
Juarez Veloso Borges	Faz Vargem Grande	Arcos/MG
César Júnior de Faria Andrade	Fazenda Boa Vista	Arcos/MG
Fábio da Silva Rodrigues	Fazenda Boa Vista	Arcos/MG
José Francisco de Faria	Fazenda Capoeira do Café	Arcos/MG
André Luis de Oliveira	Fazenda Cristais	Arcos/MG
Lécio Alves Veloso	Fazenda Reserva	Arcos/MG
Adilson José do Couto	Fazenda São Domingos	Arcos/MG
Sebastião dos Reis Primo	Fazenda São Domingos	Arcos/MG
Leandro Geraldo Fonseca	Fazenda São Domingos dos Carneiros	Arcos/MG
Emanuel Alves do Couto	Fazenda Sobradinho/Capoeirão	Arcos/MG
Anselmo Verçosa de Oliveira	Fazenda Vargem dos Servos	Arcos/MG
Deibson José Mendonça	Fazenda Varjao	Arcos/MG
Centro Fed. de Educ. Tec. de Bambuí	Fazenda Varginha	Bambuí/MG
Luiz José Simon Vilella	Sítio Morro Redondo	Barão de Monte Alto/MG
Roberto Antônio Guimarães	Sítio Sapecá	Barão de Monte Alto/MG
Angelo André Bosi	Fazenda Dourada	Barra de São Francisco/ES
Joaquim Justino Sobrinho	Fazenda Santa Cruz	Barra de São Francisco/ES
Jackson Martins Pereira	Fazenda Vovô Mel	Barra de São Francisco/ES
Celso Antonio Fagundes	Sítio Fagundes	Barra de São Francisco/ES
Devair da Silva Paiva	Sítio Paiva	Barra de São Francisco/ES
Agnaldo Calinsliki	Sítio Silva	Barra de São Francisco/ES
Francisco Rangel de Queiroz	Fazenda San Francisco	Belo Horizonte/MG
Antônio Olímpio Mendes de Souza	Fazenda Caiçara	Biquinhas/MG
Renivaldo Brandão Tenório	Fazenda Lagoa do Cassiano	Bom Conselho/PE
Geraldo Magela de Araujo	Faz Cedro	Bom Despacho/MG
Pedro Ivo de Araujo	Faz Extrema	Bom Despacho/MG
Luiz Carlos Araujo Gontijo Junior	Faz Grota D´água	Bom Despacho/MG
Luiz Henrique Teixeira Pereira Melo	Faz Guariba	Bom Despacho/MG
Emanuel Luiz	Faz Limeira	Bom Despacho/MG
Roberto Jose de Araujo	Faz Retirinho	Bom Despacho/MG
Thiago Luciano de Araujo	Faz Saco de Cipó	Bom Despacho/MG
Bruno Eduardo de Oliveira Menezes	Faz Vô Zico	Bom Despacho/MG
Marco Túlio R. A. Castanheira	Fazenda Bocaina	Bom Sucesso/MG
Duílio Mata de Souza Lima	Fazenda Pedra do Urubú	Bom Sucesso/MG
Luiz Fernando Lara Martins	Fazenda Ponte Torta	Bom Sucesso/MG
Ataílio Geovane dos Santos	Fazenda São Geraldo	Bom Sucesso/MG
Carlos Henrique Guimarães Lopes	Fazenda São Sebastião	Bom Sucesso/MG
Diego da Mata Guimarães	Fazenda Zeringota	Bom Sucesso/MG
Bonanza Indústria Agrícola Ltda	Fazenda Bonanza	Cachoeira/BA
Danilo Alves Ribeiro Paes Leme	Fazenda Ribeirão das Paulas	Cachoeira Alta/GO
Ataíde José Légora	Fazenda Pedra Branca	Cachoeiro do Itapemirim/ES
Mauro Sebastião Guimarães	Fazenda Baú	Caçu/GO
Tiago Guimarães Assis	Fazenda Baú	Caçú/GO
Marcelo Rocha Ferreira	Caldas Novas	Caldas Novas/GO
Thiago Emilio Franco	Faz. Borda da Mata	Campestre/MG
Luiz Antônio Franco	Fazenda Borda do Mato	Campestre/MG
Udelson Nunes Franco	Faz. Angico	Campina Verde/MG
Adão José de Assunção	Faz. Boa Esperança	Campo Florido/MG
Márcio Gleik Garcia Borges	Faz. Sta Teresinha	Campo Florido/MG

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Owner	Farm	City/State
Silvio Feliciano	Faz. Sta Teresinha	Campo Florido/MG
Olavo Gonçalves	Fazenda Santo Inácio	Campo Florido/MG
Marilza Ribeiro de Sousa Castro	Fazenda Santo Inácio I	Campo Florido/MG
Reinildo Antônio da Silva	Sítio Três Lagoas	Campo Florido/MG
Flávio Eduardo Buainain	Faz. Vista Alegre	Campo Grande/MS
Antônio de Souza Salgueiro	Fazenda Fazendão	Campo Grande/MS
Ronan Rinaldi de Souza Salgueiro	Fazenda Fazendão	Campo Grande/MS
Rubens Belchior da Cunha	Fazenda São Marcos	Campo Grande/MS
Rodipa Agropecuária Ltda	Reinaldo Vilela de Moura Leite	Campo Grande/MS
Antônio Carlos Guimarães Brandão	Fazenda Córrego Raso	Candeias/BA
Osmano José Ramos	Sítio Piquiá	Candeias do Jamari/RO
Fernando Rogério de Souza Magalhães	Sítio Primavera	Candeias do Jamari/RO
Cesar Almeida	Fazenda Rancho do Fundo	Carmo da Mata/MG
Fabio Campos	Faz Cantaduvras	Carvalhos/MG
Carlos Magno Varginha dos Reis	Faz. Boa Vista	Carvalhos/MG
Valter Moreira Campos	Faz. Oliveira	Carvalhos/MG
Roberto Antônio Pinto de Melo Carvalho	Faz. Retiro da Barra	Cássia/MG
Robson Silveira Garcia Filho	Fazenda Araponga	Cássia/MG
Jaime Rossato	Fazenda Bonfim	Cássia/MG
Samira Pinto Fernandes	Fazenda Formiga	Cássia/MG
Antônio Aparecido Arantes	Fazenda Guanabara	Cássia/MG
Gilberto Natal Delfino	Fazenda Retiro da Ponte	Cássia/MG
Ricardo Mendes Geraldo	Fazenda Santa Inês	Cássia/MG
Manoel Teixeira Pires	Fazenda Santa Tereza	Cássia/MG
Jovenal Vieira da Silva	Faz. Estância Grasiela	Castanheira/MT
Ronilton de O. Rios	Faz. Piracicabana	Castanheira/MT
Mario ramos	Sítio 3 Irmãos	Castanheira/MT
Carlos Antônio Procópio	Sítio Pingo de Mel	Castanheira/MT
Cesar de Almeida Alves	Sítio Santa Lucia	Castanheira/MT
Nelson Wagner Vargens	Sítio Tigre	Castanheira/MT
Roberto Vargem Tigre	Sítio Três Corações	Castanheira/MT
Jaidson Peretti	Estância dos Araças	Chopininho/PR
Diones Rafael Boshi	Fazenda Boshi	Chopininho/PR
Amarildo Antônio Balico	Sete Arroio	Chopininho/PR
Euclides Forlin	Sítio 3 Pinheiros	Chopininho/PR
Rogério R. Ambrosio	Sítio Ambrosio	Chopininho/PR
Aguinaldo Manhezzo Junior	Fazenda Dona Zita	Cláudia/MT
José Caetano Amaral	Sítio Amaral	Cláudia/MT
José Luiz de Andrade	Sítio São João 100	Cláudia/MT
Aparecido João Florêncio Rodrigues	Sítio Santo Antônio	Colorado/PR
Fabricio Eduardo Oliveira Silva	Fazenda São Mateus	Comendador Gomes/MG
Raphael Ferreira Barcelos	Fazenda São Mateus	Comendador Gomes/MG
Márcio Rodrigues Rocha	Faz. Boa Vista	Conceição das Alagoas/MG
Luciano Sene Sousa	Fazenda Boa Vista	Conceição das Alagoas/MG
Abelardo Martins de Mello	Fazenda Mello	Conceição de Macabu/RJ
Agropecuária Boa Fé Ltda	Fazenda Boa Fé	Conquista/MG
Luiz Carlos Rodrigues	Fazenda Nova Terra	Conquista/MG
Clovis Henrique Feltran	Faz. Boa Esperança	Corguinho/MS
Flavio Lucio Chaves de Resende	Fazenda Mãe não me Chore	Coronel Xavier Chaves/MG
Silverio Augusto de Paula	Faz. Angolinha	Corrego Danta/MG
Jenilson Carvalho Rosa	Faz. Boa Esperança I	Corrego Danta/MG
Francisco José Rosa	Faz. Boa Esperança II	Corrego Danta/MG
Edgar de Souza Bento	Fazenda Agua Benta	Corrego Danta/MG
Jacarias Rafael Dutra	Fazenda Cancã	Corrego Danta/MG
José Maria de Oliveira	Fazenda Corrego Danta	Corrego Danta/MG
José Maria Marcilino	Fazenda Jatobá	Corrego Danta/MG
João Silverio dos Santos	Fazenda Limoeiro	Corrego Danta/MG
Carlos Eduardo Vieira de Carvalho	Fazenda Paraíso	Corrego Danta/MG
Daniel Elias de Matos	Fazenda Tetais	Corrego Danta/MG
Elias Pereira Chaves	Fazenda Tetais	Corrego Danta/MG
João Batista da Cruz	Fazenda Tetais	Corrego Danta/MG
Geraldo Elias de Matos	Fazenda Tetais II	Corrego Danta/MG
Gerson Antônio Pereira	Fazenda Vereda	Corrego Danta/MG

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Owner	Farm	City/State
José Rosa Primo	Fazenda Vereda	Corrego Danta/MG
Vicente Vitorio de Fátima Mesquita	Fazenda Vereda	Corrego Danta/MG
Luiz de Matos Filho	Limoeiro Olhos D'Água	Corrego Danta/MG
Geraldo Anselmo Salgado Pereira	Sítio da Cotia	Corrego Danta/MG
Osmar Benevenuto Silva	Fazenda Santiago	Córrego Danta/MG
Queijaria São Marcos Ltda (Agrop. São Marcos)	Fazenda São Marcos	Costa Rica/MS
Leonardo Alvarenga Diniz	Sítio São Camilo (Ipê)	Cruzília/MG
Juraci Luis da Cunha	Sítio do Atalho	Delfinópolis/MG
Luiz Gualberto Ribeiro Ferreira	Fazenda Nossa Sra de Fátima	Delta/MG
Newton Pereira Portes	Fazenda Boa Sorte	Divino/MG
Gersony Ruda de Oliveira	Fazenda Recanto	Divino das Laranjeiras/MG
João Teodoro Sobrinho	Sítio das Flores	Divino das Laranjeiras/MG
Marjorie Gonçalves de Souza Comparim	Faz. São João Batista	Dois Irmãos do Buriti/MS
André Costa Gaspar	Fazenda Boa Esperança	Doresópolis/MG
Adriano Garcia Mendes	Capel	Ecoporanga/ES
Mario Dal'Col	Colibrí	Ecoporanga/ES
Djalma de Sá Oliveira Filho	Fazenda Cachoeira Comprida	Ecoporanga/ES
Henrique Bianchini Junior	Fazenda Estrela	Ecoporanga/ES
Edimar Caetano de Souza	Fazenda Fortaleza	Ecoporanga/ES
Sebastião Vieira de Junqueira	Fazenda J. F.	Ecoporanga/ES
Elcio de Oliveira Alvim	Fazenda Naná	Ecoporanga/ES
Leandro Almeida Santos	Fazenda Palmeira	Ecoporanga/ES
Marcos Dal'Col	Fazenda Primavera	Ecoporanga/ES
Antonio Carlos de Siqueira	Fazenda São Paulo	Ecoporanga/ES
Edimar Monteiro de Barros	Fazenda Sayonara	Ecoporanga/ES
Antônio Rodrigues Lima	Fazenda Vista Alegre	Ecoporanga/ES
Luiz Alves de Freitas Neto	Fazenda Vista Alegre	Ecoporanga/ES
José Carlos Tavares de Souza	Sítio do José Carlos	Ecoporanga/ES
Sândalo Tavares Souza	Sítio do Sândalo	Ecoporanga/ES
José Laurindo Pimenta	Sítio Senhor do Bonfim	Ecoporanga/ES
Alvaro Dal'Col	Sítio Três Irmãos	Ecoporanga/ES
Vanessa Silva Lobato Moura	Fazenda Vitória	Edeia/GO
José Ailton de Andrade	Faz. Ribeirão de Estiva	Estiva/MG
Jesus Santos Pereira	Sítio da Toca	Estiva/MG
Romildo Aparecido Alvarenga	Sítio São Jorge - Itaim	Estiva/MG
Donizete Felipe Justino	Sítio São José - Pantano das Rosas	Estiva/MG
Antônio Luiz Landert	Sítio Sertãozinho	Estiva/MG
Luiz Carlos Guarlideli	Sítio São Carlos	Extrema/MG
José Gomes de Oliveira	Sítio São José	Extrema/MG
Central de Ensino e Des. Agrário de Florestal	Escola Fazenda	Florestal/MG
Pedro Fernandes Lima	Faz Facão	Formiga/MG
Luis Augusto Goncalves do Couto	Faz Garcias	Formiga/MG
José Geraldo da Silva	Fazenda Albertos	Formiga/MG
Waldemar José Borges	Fazenda Baiões	Formiga/MG
Marcelo da Cunha Ferreira	Fazenda Baiões de Baixo	Formiga/MG
Bráz Donizete Gonzaga	Fazenda Boa Esperança	Formiga/MG
Waldemar José Borges	Fazenda do Alto	Formiga/MG
Geraldo Gonçalves Pinheiro	Fazenda Garcias - Gonçalves	Formiga/MG
Osmar Gonçalves do Couto	Fazenda Gonçalves	Formiga/MG
Gilson Modesto de Souza	Fazenda Mamona	Formiga/MG
Liege de Sá Ribeiro	Fazenda Morro Cavado	Formiga/MG
Lailton Antônio de Castro	Sítio Beira Córrego	Formiga/MG
Hermelano Antonio de Souza	Fazenda Recanto das Palmeiras	Fronteira/MG
Fabiano Rodrigues Lopes	Faz. Mato Preto	Frutal/MG
Daniel Catuta de Rezende Ferreira	Fazenda Buritizal	Frutal/MG
Luciano de Carvalho Pontes	Estância Mana	Guaçara/SP
Trajano Pinheiro	Fazenda Corrego da Fatura ou Ipê	Guanhaes/MG
Roberto Almeida Oliveira e outros	Estância Sto Antônio	Guapiaçú/SP
Rômulo Duarte Cunha	Fazenda Botija	Guarabira/PB
Jose Marcio Casarin Henriques	Agrop. Novo Horizonte	Guarani/MG
Waldir Toledo Furtado	Faz. Boa Vista da Estiva	Guarani/MG
Marcio Luiz Mendonça Alvim	Monte Alverne	Guarani/MG
Auta Elizabeth Baesso Pereira	Sítio Grota da Nascente	Guarani/MG

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Owner	Farm	City/State
Ricardo de Souza Lima Pereira	Sítio São João	Guarantã/SP
Valdir Carlos Koetz	Estancia Mirante da Serra	Guarantã do Norte/MT
Ricardo Furlaneti Bachieri	Estancia Penápolis	Guarantã do Norte/MT
Fabio Andre Fogaça dos Santos	Estancia Vale da Serra	Guarantã do Norte/MT
Cleiton Taret	Faz. Pirassununga	Guarantã do Norte/MT
Valmir José Garcia	Sítio Buriti	Guarantã do Norte/MT
José Aparecido Cássia	Sítio Cássia	Guarantã do Norte/MT
Paulo Cesar Prudente	Sítio dos Lagos	Guarantã do Norte/MT
Alisson Salathiel Kalinke	Sítio Ouro Branco	Guarantã do Norte/MT
Edmar Sehn	Sítio Planalto	Guarantã do Norte/MT
Lutero Siqueira da Silva	Sítio Por do Sol	Guarantã do Norte/MT
João Mendonça	Sítio Salem	Guarantã do Norte/MT
Airton Pereira	Sítio Santa Inês	Guarantã do Norte/MT
Leila Barboza Garbinato	Sítio São Lourenço	Guarantã do Norte/MT
Luiz Carlos Zampieri	Sítio São Luis	Guarantã do Norte/MT
João José Rodrigues	Sítio Sonho de Criança	Guarantã do Norte/MT
Antonio Cesar Pelho Vale	Sítio Três Irmãos	Guarantã do Norte/MT
Paulo Henrique Alves de Souza	Fazenda Sítio Velho	Ibia/MG
Heli Alves Junior	Faz. Retiro Velho	Ibiá/MG
José Carlos/Wellington Guerreiro	Fazenda Nova Era	Ibiraci/MG
Delfino Vieira	Agropecuária Viva	Ibitirama/ES
Gilson Peixoto da Silva	Fazenda Água limpa	Ibitirama/ES
Antônio de Oliveira	Faz. Oliveira	Icem/SP
Marcileino Andrade Martins	Faz. Patrimônio	Igaratinga/MG
Luciano Teixeira de Melo	Fazenda do Curtume	Inhaúma/MG
Jorge Papazoglu	Fazenda Santa Luccia	Inhaúma/MG
Diego José Spirlandelli	Fazenda Nossa Senhora de Fátima	Ipanema/GO
Pedro Alves Rodrigues Neto	Fazenda Figueira	Ipanema/MG
Antônio Carlos Rodrigues de Paula	Fazenda Limoeiro	Ipanema/MG
Vanone Luiz Andrade	Fazenda São Mateus	Itapagipe/MG
Gleidison Antonio Lopes	Faz Barreiro	Itapecirica/MG
Ronaldo Silva	Faz Candonga	Itapecirica/MG
Pedro Henrique Correa Siqueira	Faz Três Lagoas	Itapecirica/MG
Paulo Roberto D'Anello	Sítio Jaboticaba	Itaperuna/RJ
Moacyr Azevedo de Oliveira	Sítio Palmital	Itaperuna/RJ
José Miranda Alves de Paiva	Estancia Paraíso	Itapetininga/SP
Luiz José Machado	Chacara Nova Esperança	Itarumã/GO
Leandro Alves de Freitas	Faz. Baú	Itarumã/GO
Danilo Fernandes Valle	Faz. Cabrito	Itarumã/GO
Antônio Virgilio Faria	Faz. Felicidade	Itarumã/GO
Plinio Borges Assis	Faz. Primavera	Itarumã/GO
Nelson Borges de Freitas Junior	Faz. Rio Solar	Itarumã/GO
Rubens Assis Freitas	Fazenda Barreiro	Itarumã/GO
Athos Marques Borges	Fazenda Ribeirão do Meio	Itarumã/GO
João Antônio Borges	Fazenda Ribeirão do Meio	Itarumã/GO
Murilo Freitas Lima	Fazenda São Pedro	Itarumã/GO
Itamir Faria Valle	Fazenda Serrinha I	Itarumã/GO
Valério Machado Guimarães	Fazenda Engenho	Itaúna/MG
Sergio Divino Marques	Faz. Maiara	Ituiutaba/MG
Jair/José Alves Camargos	Fazenda Córrego do Açude	Ituiutaba/MG
José Jacinto Júnior	Fazenda Felicidade	Ituiutaba/MG
Marcus Novais Costa	Fazenda Olhos D'água	Ituiutaba/MG
Kenyti Okano	Fazenda Santo Antônio	Ituverava/SP
Alexandre Lopes Lacerda	Fazenda Mirai	Jaboticatubas/MG
ETEC Cônego José Bento	Escola Agrícola	Jacarei/SP
Nelson Jesus Sabóia Ribas	Rancho do Bom Jesus	Jaguapitã/PR
Edmarcio Doná	Sítio Santa Maria	Jaguapitã/PR
Renato Prado Medrado	Estancia Paraíso	Jaraguari/MS
Aurora Trefzger Cinato Real	Vale da Rondinela	Jaraguari/MS
Sidney Filizzola Borges	Faz. Braz Filizzola	Jataí/GO
Geraldo José de C. Neto	Faz. Lagoa	Jataí/GO
Paulo Fernando Zaiden Rezende	Faz. Santa Lúcia Pombalinho	Jataí/GO
Univ. Federal de Goias	Faz. Santa Rosa do Rochedo	Jataí/GO

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Owner	Farm	City/State
Lázaro Henrique de Oliveira	Faz. Santo Mé	Jataí/GO
Leandro Oliveira Silva	Faz. Santo Mé	Jataí/GO
Leni Ferreira Carvalho Lima	Fazenda Boa Vista do Rio Claro	Jataí/GO
Vilson Vilela de Assis	Fazenda Bom Jardim	Jataí/GO
Fernando Inácio Cardoso	Fazenda Ponte Alta	Jataí/GO
Sandro Borges Almeida	Fazenda Rio Verde	Jataí/GO
José Abadia da Silva	Sítio Divino Pai Eterno - Lote 42	Jataí/GO
Sergio Martins Castro	Sítio Manancial	Jataí/GO
Sebastião Lucio do Prado	Sítio Nova Esperança - Lote 27	Jataí/GO
João Vilson Damazio Silveira	Sítio São Francisco - Lote 124	Jataí/GO
Hudson Alves Guimarães	Sítio São Judas Tadeu	Jataí/GO
Alexandre Augusto Corteze	Fazenda Santo Antônio	José Bonifácio/SP
Gaspar Joaquim Dornelli	Faz. Patos de Minas	Juína/MT
Antônio do Nascimento Souto	Faz. Vista Alegre	Juína/MT
Marcos André Freitas Souza	Fazenda Restia do Sol	Juína/MT
Fernando José Ferreira Nunes	Sítio Santa Rita	Juína/MT
Antônio Carlos Chiquita	Sítio São José	Juína/MT
Anderson Santos Senna	Chácara Senna	Junqueirópolis/SP
Alberto de Azevedo Porpino	Fazenda Apoá do Rio	Lagoa do Carro/PE
Wagner de Freitas Hott	Fazenda Hott	Lajinha/MG
Moacir Pereira Lima Júnior	Rancho Indaiá	Lajinha/MG
Homero N. De Paiva	Sítio Santo Antonio	Lavrinhas/SP
Júlio César Brescia Murta	Estância Leblou	Leandro Ferreira/MG
Célio Alves da Luz	Fazenda Diamante	Lins/SP
Waldir Junqueira de Andrade	Fazenda Santana	Lins/SP
João Dário Ribeiro	Fazenda Estiva/Renascer	Luz/MG
João Domingos Gomes dos Santos	Fazenda São Domingos	Luziânia/GO
Álvaro José do Monte Vasconcelos	Fazenda Alto Verde	Maceió/AL
Francisco Danilo Araújo Mendes	Sítio Pasto da Olaria do Açude	Madre de Deus/MG
Marcio Jose Caldeira Rodes	Fazenda Nossa Senhora Das Graças	Manhuaçu/MG
José Antônio Pena	Fazenda Recanto do Coqueiro	Manhuaçu/MG
Valter Cesar Dutra	Fazenda Santa Helena	Manhuaçu/MG
Clovis Marques Tozzi (Antonio Floriano)	Estancia Santa Maria	Maringá/PR
Henrique Alves Pires Franco	Fazenda Paraíso	Maripotaba/GO
Múcio de Freitas Gonçalves	Faz. Campo Alegre	Martinho Campos/MG
Alberto Fernandes Gaspar da Silva	Faz Joana Darc	Miguel Pereira/RJ
José Donato Dias Filho	Fazenda São Roque	Miguel Pereira/RJ
João Carlos Barreto	Fazendas Reunidas VB Ltda.	Mimoso do Sul/ES
JORGE LUIS PEREIRA DE SOUZA	Fazeda Oasis da Divisa	Miracema/RJ
Jorge Luis Pereira de Souza	Oásis da Divisa	Miracema/RJ
Espólio Fernando Barros de Carvalho	Faz. Alegria	Miradouro/MG
Aparecido dos Santos	Estância Nossa Senhora Aparecida	Mirassol D' Oeste/MT
Pedro Odair Roncoleta	Estância Nossa Senhora Aparecida	Mirassol D' Oeste/MT
Luis Antonio de Carvalho	Sítio 3 Palmeiras	Mirassol D' Oeste/MT
Mauro Corte Marina	Sítio Agua Doce	Mirassol D' Oeste/MT
Oziel de Moura Alves	Sítio Castelo Branco	Mirassol D' Oeste/MT
Adilson Dutra de Assis	Sítio Coração de Jesus	Mirassol D' Oeste/MT
Donizete da Costa Alves	Sítio Estrela Guia	Mirassol D' Oeste/MT
Adilson Garcia da Silva	Sítio Flor do Campo	Mirassol D' Oeste/MT
Francisco Alves Rodrigues	Sítio Morada da Serra	Mirassol D' Oeste/MT
Claudinei Xavier Ribeiro	Sítio Nossa Senhora Aparecida	Mirassol D' Oeste/MT
Antonio Ivo Leite	Sítio Nossa Senhora de Fátima	Mirassol D' Oeste/MT
Cezário Lemos da Silva	Sítio Paraíso da Serra	Mirassol D' Oeste/MT
José Adão Coutinho dos Santos	Sítio Santa Luzia	Mirassol D' Oeste/MT
Antônio Fernando Barbosa Gonsaga	Sítio Santo Antônio	Mirassol D' Oeste/MT
Oliveiros Candeias Maria	Sítio São Benedito	Mirassol D' Oeste/MT
José Euclides da Silva	Sítio Sol Nascente	Mirassol D' Oeste/MT
Aparecido Pereira da Silva		Mirassol D' Oeste/MT
José Carlos Raimundo de Carvalho		Mirassol D' Oeste/MT
José Genevaldo Vitoria		Mirassol D' Oeste/MT
Milton da Silva Cobra		Mirassol D' Oeste/MT
Márcio Barretto Ribeiro	Fazenda Boiada	Mococa/SP
Cláudio Bataglin	Sítio São Sebastião	Mococa/SP

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Owner	Farm	City/State
Eugênio Deliberato Filho	Sítio Beira Rio	Mogi das Cruzes/SP
Daniel da Silva	Fazenda Valinhos	Monte Alegre de Minas/MG
José Aparecido Augusto	Fazenda Santos Reis	Monte Sto de Minas/MG
José Giolo Neto	Sítio Flamboyant	Monte Sto de Minas/MG
José Renato Chiari	Fazenda São Caetano	Morrinhos/GO
Evaristo Ernesto Pereira de Carvalho Neto	Fazenda Boa Sorte	Muriaé/MG
Júlio Maria Costa Francisco	Fazenda Campo Formoso	Muriaé/MG
Sônia Schueler de Aquino	Fazenda Gameleira	Muriaé/MG
Nacib Soib Abi Habib	Fazenda Monte Libano	Mutum/MG
Sebastião Lourenço Filho	Fazenda São José	Mutum/MG
Luiz Carlos Bandoli Gomes	Fazenda Monte Alto	Natividade/RJ
Luiz Roberto Rodrigues	Faz. Kikinando	Nova Andradina/MS
Antonio Carlos Martins Alves	Fazenda Nossa Senhora de Fátima	Nova Canaã do Norte/MT
Frutuoso Roberto Lima Filho	Estância Paineiras	Nova Granada/SP
Moacir Jakson Perin	Sítio Perin	Nova Guarita/MT
Humberto Neves	Fazenda Varginha	Nova Ponte/MG
Marcelo Pimenta	Sítio Pimentel	Nova Santa Helena/MT
Gladistone Soares Lopes da Silva	Fazenda Santiago	Nova Xavantina/MT
Héber Barcellos	Faz. Saudade	Novo Cruzeiro/MG
Walter Alves de Queiroz	Fazenda Sabarú	Novo Gama/GO
Washington de Carvalho Costa	Sítio Carvalho	Novo Mundo/MT
Isac Ap. Souza Mosca	Sítio Novo Horizonte	Novo Mundo/MT
Giovani Magnani	Sítio União	Novo Mundo/MT
Emater Oliveira- Evandro	Faz Diversas	Oliveira/MG
Olavo de Resende Barros Júnior	Faz. Morro da Mandioca	Oliveira/MG
Júlio Nonato Lopes Silveira	Fazenda Córrego Fundo	Oliveira/MG
Rodolfo César de Paulo Barezani	Fazenda da Lagoa	Oliveira/MG
Sebastião Donizete Quirino	Fazenda Dona Tita	Oliveira/MG
Marco Antônio Castro Viglioni	Fazenda Esteio	Oliveira/MG
André Nogueira Junqueira	Fazenda Jacaré	Oliveira/MG
Antônio Rodrigues Filho	Fazenda Rancho Alegre	Oliveira/MG
Marcio Eugenio Leite de Castro	Fazenda Rancho da Paz	Oliveira/MG
Constantino Colhado Stacanelli	Sítio do tante	Oliveira/MG
Lamarque Luis de Lisboa	Sítio Rosa Vermelha	Oliveira/MG
Lourenço Olívio Barbosa Munhoz	Estância Bela Vista	Orindiuva/SP
Marly Terezinha Leme as Silva	Estância Sete Estrela	Orindiuva/SP
Carlos Alberto Luiz de Almeida	Faz. Bacuri	Orindiuva/SP
Luiz Antonio de Almeida	Faz. Barreirão	Orindiuva/SP
João Lazaro Pereira	Faz. Cachoeira	Orizona/GO
Francisco Antonio Hudinik	Faz. Campo Verde	Orizona/GO
José Correia Pereira	Faz. Capão Comprido	Orizona/GO
Junior Brito	Fazenda São Carlos	Ouro Verde de Goiás/GO
Junior Brito	Fazenda São Carlos	Ouro Verde de Goiás/GO
Fernando Rodrigues Ferreira Leite	Faz. São Pedro da Barra	Padre Bernardo/GO
Afonso Celso Vieira de Queiroz	Fazenda Mamão	Padre Bernardo/GO
Rúbio Fernal Ferreira e Sousa	Fazenda Salto	Padre Bernardo/GO
Osvane Homem de Faria	Faz. Taquara Preta	Paiva/MG
Fabricao Siqueira	Faz. Capão das Orfãs	Paracatu/MG
Oswaldo Luiz Xavier	Faz. Manoel Joaquim	Paracatu/MG
Luciano Oliveira Campos	Faz. Monjolos	Paracatu/MG
Luis Antônio de Oliveira Campos	Faz. Pereirinha	Paracatu/MG
Marcio Arede Vasconcelos	Faz. Santa Lucia	Paracatu/MG
Marcos Pereira Camargos	Faz. São José	Paracatu/MG
Antônio Carlos Mariano de Almeida	Faz. Vereda do Galo	Paracatu/MG
Geraldo de Carvalho Borges	Fazenda Paraíso	Paracatu/MG
Rafael Santos Faria	Faz Maria Andrade	Paraibuna/SP
Renato Pazzini	Faz. Do Espirito Santo	Paraibuna/SP
Marcelo Rodolfo de Oliveira	Faz. Espirito Santo	Paraibuna/SP
Sergio Luiz Neves de Oliveira Andrade	Faz. São Francisco	Paraibuna/SP
Eneas Rodrigues Brum	Fazenda Monastério	Paraibuna/SP
Joao Geraldo Ribeiro Lobato	Sítio JM	Paraibuna/SP
Orlando Vaz	Fazenda Santa Izabel	Paraopeba/MG
José Ricardo Monteiro Rocha	Haras Ponta Negra	Paraopeba/MG

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Owner	Farm	City/State
Alessandro Maia Soares	Fazenda Bonsucesso	Passos/MG
João Reis Soares	Fazenda Bonsucesso	Passos/MG
José Márcio De Simoni Silveira	Fazenda Limeira	Passos/MG
José Roberto Bernardes	Fazenda Marinheiro	Passos/MG
José Coelho Victor	Fazenda Santa Luzia	Passos/MG
Antônio Carlos de Meireles	Faz. Água Quente	Paulo de Faria/SP
José Carlos de Oliveira	Sítio Camadam	Paulo de Faria/SP
Darlei Queiroz de Oliveira	Sítio Santos Reis	Paulo de Faria/SP
Giovani Nunes de Miranda	Sítio Elielda	Peixoto de Azevedo/MT
Ricardo Rezende Barbosa	Fazenda Primavera	Pequi/MG
Gustavo Carvalho Fernandes	Fazenda Atalaia	Perdões/MG
Amair Freire de Carvalho	Fazenda Cristal Branco	Perdões/MG
Juliano Neves Cardoso	Fazenda Engenho	Perdões/MG
Marcelo Bastos Alvarenga Silva	Sítio Esperança	Perdões/MG
Waldemar de Brito Cavalcanti Filho	Fazenda Catolé	Pesqueira/PE
Nilson Francisco dos Santos	Fazenda São Sebastião	Pesqueira/PE
Luiz Carlos Tostes Pinto	Fazenda do Serrote	Piau/MG
Depto de Descent. do Desenv. - APTA	Polo Reg. Do Vale do Paraíba	Pindamonhangaba/SP
Reginaldo Cafalloni da Rosa	Rancho Cafalloni	Pindamonhangaba/SP
Adolfo José Leite Nunes	Faz. Santa Rita da Boa Vista	Piranga/MG
Aluísio Aguiar Pereira	Fazenda Bauzinho	Pires do Rio/GO
Maria Abadia Ferreira da Silva	Fazenda Sto Inácio	Planura/MG
Ernesto Fonseca da Cunha	Faz do Banco	Porciuncula/RJ
José Alberto Paiffer Menk	Fazenda Santo Antônio	Porto Feliz/SP
Alexandre Pereira da Costa	Fazenda Santa Isabel	Potirendaba/SP
Paulo Luiz Brant de Carvalho	Faz. Esperança	Prata/MG
Fernando Luiz Brant de Carvalho	Faz. Lagoa Dourada	Prata/MG
Eire Enio de Freitas	Fazenda Medalha Milagrosa	Prata/MG
Aisson Neri Barboza	Estância Espelho D'Água	Presidente Epitácio/SP
Gilberto Ricardo Gomes	Estância Gegi - Lote 81	Presidente Epitácio/SP
Miguel Batista dos Santos	Sítio 3 Pinheiros	Presidente Epitácio/SP
Erick Luciano dos Santos	Sítio Boa Fé	Presidente Epitácio/SP
Antônio Alixandre dos Santos	Sítio Dias	Presidente Epitácio/SP
Agnaldo Alves Lirio	Sítio Duas Estrelas - Lote 62	Presidente Epitácio/SP
José Carlos Lima	Sítio Esperança	Presidente Epitácio/SP
Celso Souza de Oliveira	Sítio Porto Esperança	Presidente Epitácio/SP
José Eduardo Soares da Silva	Sítio Santo Antônio	Presidente Epitácio/SP
Nilza Duarte Fernandes	Sítio São Gabriel Lote 12	Presidente Epitácio/SP
João de Andrade	Sítio São João	Presidente Epitácio/SP
Heitor Hirai	Sítio São Judas Tadeu	Presidente Epitácio/SP
Paulo Lima de Santana	Sítio Três Irmãos	Presidente Epitácio/SP
Beiro Rio Agropecuária Ltda	Fazenda Beira Rio	Rafael Jambeiro/BA
IPA - Instituto Agronômico de Pernambuco	Estação Arco Verde	Recife/PE
Cristiano Nobrega Malta	Fazenda Avimalta	Recife/PE
Fabiola Rodrigues Lemos	Fazenda Mirim do Vale	Recife/PE
Fernando Antônio Brasileiro Miranda	Fazenda Uberaba	Recife/PE
Eriberto de Queiroz Marques	Fazenda Zombaria	Recife/PE
Evaldo Gonçalves da Silva	Fazenda Nossa Senhora Aparecida	Resende Costa/MG
Carlos Jacob Wallauer	Faz. Belas Artes	Rio Brilhante/MS
Osanan Pereira Caixeta	Faz. Pedacinho do Céu	Rio Paranaíba (São Gotardo)/MG
Instituto Fed. Sudeste MG	Campus Rio Pomba	Rio Pomba/MG
José da Silva Ferras Filho	Fazenda Bom Retiro	Rio Preto/MG
Universidade de Rio Verde	Fazenda Fonte do Saber	Rio Verde/GO
Carlos Lania de Araújo	Fazenda Rio Preto	Rio Verde/GO
Luiz Fernando reis	Fazenda da Fulôre	Ritópolis/MG
Afonso Celso de Resende	Fazenda Segredo	Ritópolis/MG
Tiago Soares Mortimer	Faz São Joao de Guanhaes	Sabinópolis/MG
Jose Nazareno de Pinho	Sítio Voswald	Sabinópolis/MG
Antônio Carlos Mourão	Fazenda Cantagalo	Sabinópolis/MG
Ronaldo Pereira Ferreira	Fazenda Lageado	Sabinópolis/MG
Cedro Agronegócios Ltda	Fazenda Varginha	Sacramento/MG
Francisco Henrique Duque Machado	Fazenda São Miguel	Santa Bárbara do Monte Verde/MG
Valmir Costa	Sítio Carolina	Santa Bárbara do Monte Verde/MG

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Owner	Farm	City/State
Rogério Miguel	Sítio São José	Santa Branca/SP
Sindicato Rural de Santa Rita do Passa Quatro	Fazendas Diversas	Santa Rita do Passa Quatro/SP
Schumann Joubert Camargo e outros	Sítio Estância Colina	Santa Rita do Passa Quatro/SP
Roberto Patrão Ribeiro	Fazenda Boiadeira	Santa Vitória/MG
Andreia de Freitas Brito	Fazenda Bela Fama	Santana do Manhuaçu/MG
Romildo Ferreira de Souza	Fazenda Manoel Bernado	Santana do Manhuaçu/MG
Embrapa Arroz e Feijão	Núcleo Regional Arroz e Feijão	Santo Antônio de Goiás/GO
Clovis de Andrade Junior	Santa Terezinha Agropecuaria Ltda	Santo Antonio do Monte/MG
Luiz Eugênio Resende	Faz. Prudenciana	São Gotardo/MG
João Eduardo Benine Reis	Sítio São Paulo	São Joaquim da Barra/SP
João Eduardo Benini Reis	Sítio São Paulo	São Joaquim da Barra/SP
Mila de Carvalho Laurindo e Campos	Fazenda Recreio	São José de Ubá/RJ
Haroldo Carvalho Fernandes	Fazenda Mato Grosso	São Pedro de Rati/ES
Antero Araújo Ferreira Vasconcelos	Fazenda Araras	São Pedro do Suaçuí/MG
Antônio Adilson Vilarino Leal	Fazenda Capão	São Pedro do Suaçuí/MG
Gilberto Alves	Fazenda Dallas	São Pedro do Suaçuí/MG
Gilberto Alves	Fazenda Dallas	São Pedro do Suaçuí/MG
Rui Coelho Vieira	Fazenda Ponches	São Pedro do Suaçuí/MG
Marystela Martins Resende	Faz. São Sebastião	São Tiago/MG
Décio Leone de Paula	Fazenda Pau da Bandeira	São Tiago/MG
Everton Nascimento São Julião	Faz. Coqueiros	São Tomas de Aquino/MG
Roberto Campos Meirelles	Faz. Engenho de Serra	São Vicente de Minas/MG
João Batista Araujo de Souza	Fazenda Barreiro Alto	Sete Lagoas/MG
Embrapa Agrossilvipastoril		Sinop/MT
Bráulio Conti Júnior	Fazenda Sobrama	Socorro/SP
Pedro Paulo Silveira Motta e Outra	Fazenda Bom Jesus	Sta Rita do Passa Quatro/SP
Eloi Chaves de Oliveira	Faz. São Luis	Taipu/RN
Agrop. Laffranchi Comércio e Ind. Ltda	Agropecuária Laffranchi	Tamarana/PR
Haendel Brasilio Camargo	Estancia Zilah	Tambaú/SP
Joaquim Carlos Carneiro Siqueira	Faz Açude	Tambaú/SP
Anezio Luiz Assunção e Souza	Fazenda Capão Escuro	Tapira/MG
Elio René Borges	Fazenda Forquilha	Tapira/MG
Selmo Antonio das Neves	Fazenda Forquilha	Tapira/MG
José Vicente Nunes	Fazenda Furquilha	Tapira/MG
Mario César Bertoli	Sítio São João	Taubate /SP
Adão Paes Sandin	Faz. Agua Limpa	Terenos/MS
Denílson Lima de Souza	Faz. Cachoeirinha	Terenos/MS
Antonio do Nascimento Miguel	Faz. Kata	Terra Nova do Norte/MT
Luiz Henrique Antunes	Faz. Onça Parda	Terra Nova do Norte/MT
Ademar da Silva Rafael	Faz. Por do Sol	Terra Nova do Norte/MT
Valdemir Moreira	Miraguai	Terra Nova do Norte/MT
Nilmar João Guarenti	Sítio Água Branca	Terra Nova do Norte/MT
Ederson Pereira	Sítio Alvorada	Terra Nova do Norte/MT
Claudinei Guizelini	Sítio Apucarana	Terra Nova do Norte/MT
Moacir Jacó Talini	Sítio Cajueiro	Terra Nova do Norte/MT
Valmor Gebien	Sítio da Serra	Terra Nova do Norte/MT
Imerio Lorenzini	Sítio Lorenzini	Terra Nova do Norte/MT
Elci Machado	Sítio Machado	Terra Nova do Norte/MT
Gilberto Bartole	Sítio Nossaa Senhora Aparecida	Terra Nova do Norte/MT
Dener Lima Silva	Sítio Novo Mundo I	Terra Nova do Norte/MT
Allan Junior Patel	Sítio Paraíso	Terra Nova do Norte/MT
Elizeu Pereira Machado	Sítio São Roque	Terra Nova do Norte/MT
Valmir Carlos Roveda	Sítio São Roque	Terra Nova do Norte/MT
Carlos Zanovello	Sítio Zanovello	Terra Nova do Norte/MT
DF Agrop. Faria Lemos	Fazenda Cascata	Tombos/MG
José Luiz Teixeira	Fazenda 4 de Novembro	Tumiritinga/MG
Rogério Carneiro da Silva	Faz. Cruzeiro do Sul	Uberaba/MG
Guilherme Marquez de Rezende	Faz. Palo Alto da Sta Gertrudis	Uberaba/MG
Maria Inez Cruvinel Rezende	Fazenda Cedro do Campo	Uberaba/MG
Fundagri-Fund. Des. C. Agrárias	Fazenda Escola	Uberaba/MG
Ana Lucia Nogueira Borges	Fazenda Matinha	Uberaba/MG
Ana Lúcia Nogueira Borges	Fazenda Matinha	Uberaba/MG
Centro Fed. de Educ. Tec. de Uberaba	Fazenda Santa Rosa	Uberaba/MG

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<b>Owner</b>	<b>Farm</b>	<b>City/State</b>
João Jesus da Cunha	Fazenda Serra Morena	Uberaba/MG
Nilton Cezar Barcelos	Fazenda Velha de Baixo	Uberaba/MG
Júlio A Moura Neto	Território Rural	Uberaba/MG
Délcio Vieira Tannus	Faz. dos Machados	Uberlândia/MG
Adão Francisco dos Santos	Sítio Nova Aurora	Uberlândia/MG
Jerônimo Gomes Ferreira	Fazenda Morada Corinthiana	Uberlândia/MG
Tales Humberto Alves Macedo	Fazenda Santa Terezinha	Uberlândia/MG
José Carlos Reis	Fazenda São Luiz Velho	Valença/RJ
Delmo Bastos Lopes	São José da Cachoeira	Valença/RJ
Miguel Bruno Conceição	Sítio Guimarães	Valença/RJ
José Valter Lima Monteiro	Sítio São José	Valença/RJ
Humberto Cavalheiro Andrade	Fazenda Boa Esperança	Vargem Grande do Sul/SP
José Roberto de Lacerda	Fazenda Estância JR	Veríssimo/MG
Clayvert S. Abreu	Faz. Nova Esperança	Volta Grande/MG
Márcio Moraes	Faz. Santa Rita	Volta Grande/MG
Rodrigo Reis Ferraz	Faz. São Francisco	Volta Grande/MG
José Rogério Reis Junqueira	Fazenda Pedra Branca	Volta Grande/MG

## Brazilian Association of Girolando Breeders

### EXECUTIVE BOARD AND COMMITTEES– 2014/2016 TRIENNIUM

**President:**Jônadan Hsuan Min Ma

**1<sup>st</sup> Vice-President:**Magnólia Martins da Silva

**2<sup>nd</sup> Vice-President:**Nelson Ariza

**3<sup>rd</sup> Vice-President:**João Domingos Gomes dos Santos

**4<sup>th</sup> Vice-President:**Olavo de Resende Barros Júnior

**1<sup>st</sup> Administrative Director:**José Antônio da Silva Clemente

**2<sup>nd</sup> Administrative Director:**Jorge Luiz Mendonça Sampaio

**1<sup>st</sup> Financial Director:**Luiz Carlos Rodrigues

**2<sup>nd</sup> Financial Director:**Odilon de Rezende Barbosa Filho

**Institutional and Commercial Relations:**Ronan Rinaldi de Souza Salgueiro

#### **Audit Committee**

##### **Holders**

Thiago Bianchi Silveira

Alexandre Honorato

Ricardo Miziara Jreige

##### **Substitutes**

Afonso Celso de Resende

Eire Ênio de Freitas

Roberto Almeida Oliveira

#### **Advisory Board**

##### **Holders**

Everardo Leonel Hostalácio

Renato Cunha Oliveira

José Geraldo Vaz Almeida

Roberto Antônio Pinto de Melo Carvalho

Marcelo Machado Borges

##### **Substitutes**

Aurora Trefzger Cinato Real

Silvío de Castro Cunha Júnior

Leonardo Xavier Gonçalves

José Ricardo Fuiza Horta

Guilherme Marques de Resende

### Board of State Representatives

AL - Domicio José Gregorio A. Silva  
AL - Marcos Ramos Costa  
BA - Ângelo Lucciola Neto  
BA - Luiz Hage Rebouças (REP)  
BA - Valdemir Acácio Osório (REP)  
CE - Francisco Teógenes Sabino  
DF - César Mendes  
DF - Geraldo de Carvalho Borges  
DF - Rúbio Fernal Ferreira e Souza  
DF - Walter Alves de Queiroz  
ES - Elimário Perterle Fiório  
GO - Itamir Antônio Fernandes Vale  
GO - Luiz Fernando Della Corte  
GO - Thiago Araujo Dias da Costa  
MG - Ângelo André Fernandes Júnior  
MG - Breno Barbosa Costa  
MG - Emílio Afonso França Fontoura  
MG - Fabiano Rodrigues Lopes  
MG - Fabrício Siqueira  
MG - Fernando Peres Nunes  
MG - Gustavo Frederico Burger Aguiar  
MG - Horácio Moreira Dias  
MG - João Machado Prata Júnior  
MG - Jorge Papazoglu  
MG - José Afonso Mota Ronzani  
MG - Luciano Gouveia Fulgueiras  
MG - Luiz Fernando Reis  
MG - Luiz Paulo Levate  
MG - Márcio Luiz Mendonça Alvim  
MG - Maria Cristina Alves Garcia  
MG - Minoro Hélio Maurício Yamamoto Júnior  
MG - Paulo Henrique Machado Porto  
MG - Paulo Melo Salomão Gonçalves  
MG - Paulo Roberto Andrade Cunha  
MG - Plácido Borges Campos  
MG - Rodrigo Ribeiro Inácio  
MS - Adão Paes Sandim  
MS - Anísio Manoel da Silva  
MS - Nilo Alves Ferras  
MT - Aylon Neves (REP)  
MT - João Nilson Pinto de Barros  
MT - Luciano Lacerda Nunes  
PA - José Luiz Dantas  
PE - Alexandre Saraiva de Moraes  
PE - Gustavo Alberto Concentino de Miranda  
PE - José Adilson da Silva  
PE - Waldemar de Brito Cavalcanti Filho  
PR - Ronald Rabbers  
RJ - Jean Vic Mesabarba  
RJ - José Gabriel Souza Machado  
RJ - Roberto Pimentel de Mesquita  
RS - Carlos Jacob Wallauer  
SP - Danilo Carvalho Michelin  
SP - Eduardo Lopes de Freitas (REP)  
SP - Frutuoso Roberto de Lima Filho  
SP - Guilherme Ribeiro Meirelles  
SP - João Carlos de Andrade Barreto  
SP - João Eduardo Reis Benini  
SP - Lauro Texeira Pena  
SP - Mateus Ribeiro Abdal  
SP - Miltom Okano  
SP - Paulo Yamamoto  
SP - Virgílio Pittom  
SP - Waldir Junqueira de Andrade









**Embrapa**

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**Dairy Cattle**