



Brazil Dairy Market Overview

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Significant growth in milk production

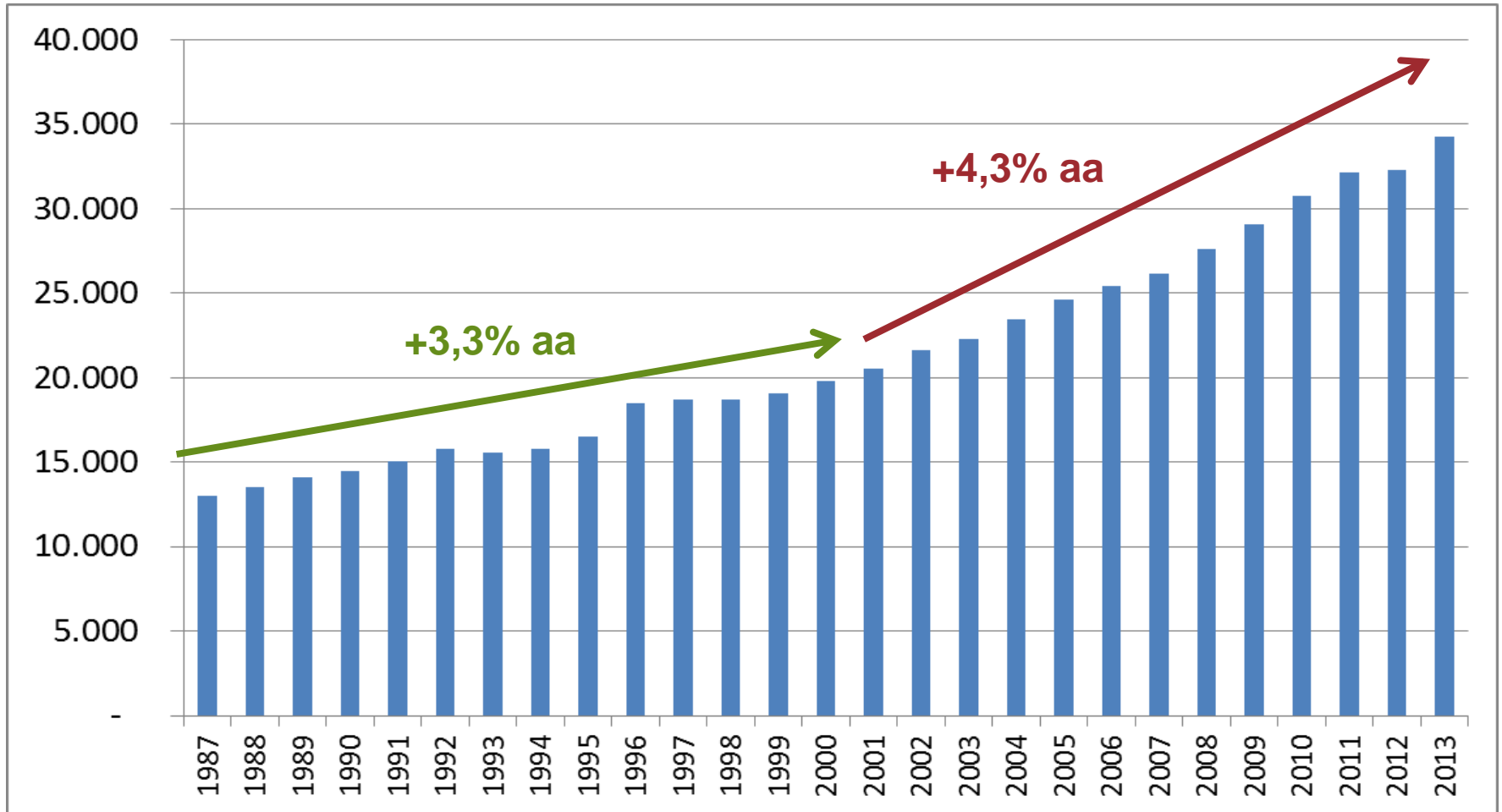
Top 15 milk producing countries in the world

World Rank	Country	Tonnes of milk	Percentage of world milk production
1	United States of America	87,461,300	14.6
2	India	50,300,000	8.4
3	China	36,036,086	6.0
4	Russian Federation	31,895,100	5.3
5	Brazil	31,667,600	5.3
6	Germany	29,628,900	4.9
7	France	23,301,200	3.9
8	New Zealand	17,010,500	2.8
9	United Kingdom	13,960,000	2.3
10	Turkey	12,480,100	2.1
11	Pakistan	12,437,000	2.1
12	Poland	12,278,700	2.0
13	Netherlands	11,631,000	1.9
14	Ukraine	10,977,200	1.8
15	Mexico	10,676,700	1.8
World		599,438,003	

Top 15 Dairy cow populations in the world

World Rank	Country	Number of dairy cows	Percentage of world dairy cow population
1	India	43,600,000	16.5
2	Brazil	22,924,900	8.7
3	Sudan	14,968,800	5.7
4	China	12,503,190	4.7
5	Pakistan	10,100,000	3.8
6	Kenya	9,350,000	3.5
7	United States of America	9,117,000	3.4
8	Russian Federation	9,022,000	3.4
9	Tanzania	6,900,000	2.6
10	Ethiopia	6,604,300	2.5
11	Colombia	5,300,000	2.0
12	New Zealand	4,680,100	1.8
13	Turkey	4,384,130	1.7
14	Germany	4,183,100	1.6
15	Bangladesh	4,047,000	1.5
World		264,470,504	

Significant growth in milk production



Source: PPM IBGE, developed by MilkPoint Inteligência

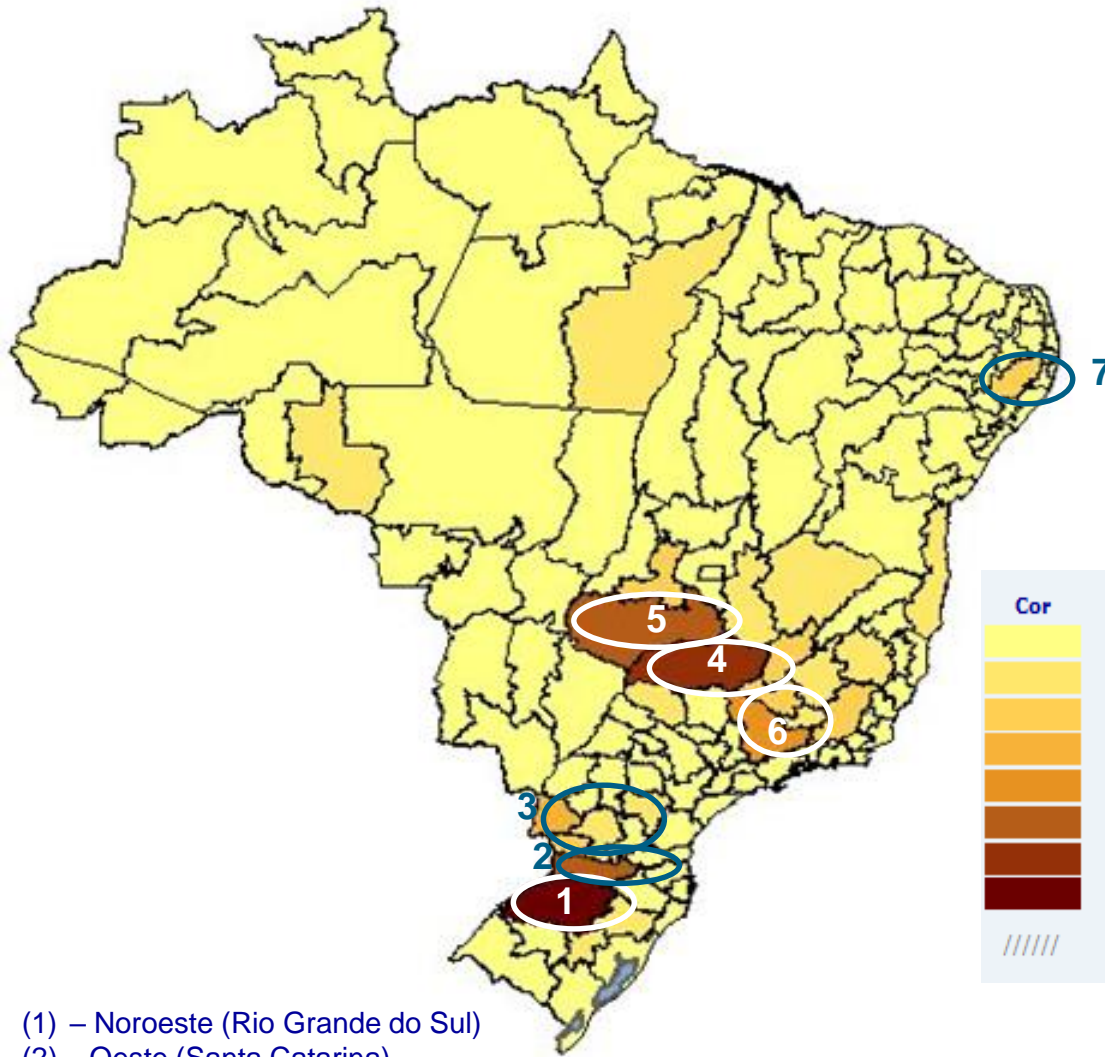
The Southern states presented higher growth

	1987	2013			Cresc. % ao ano
Brasil	13,0	34,3	Share 1987	Share 2013	4,0%
MG	3,9	9,3	30%	27%	3,5%
RS	1,2	4,5	9%	13%	5,5%
SC	0,6	2,9	5%	9%	6,4%
PR	1,1	4,3	8%	13%	5,8%
GO	1,1	3,8	8%	11%	5,2%
SP	2,0	1,7	15%	5%	-0,6%
Nordeste	1,6	3,6	13%	11%	3,2%
Norte	0,4	1,8	3%	5%	6,7%

Source: PPM IBGE, developed by MilkPoint Inteligência

Milk Production by region

Billion liters/year

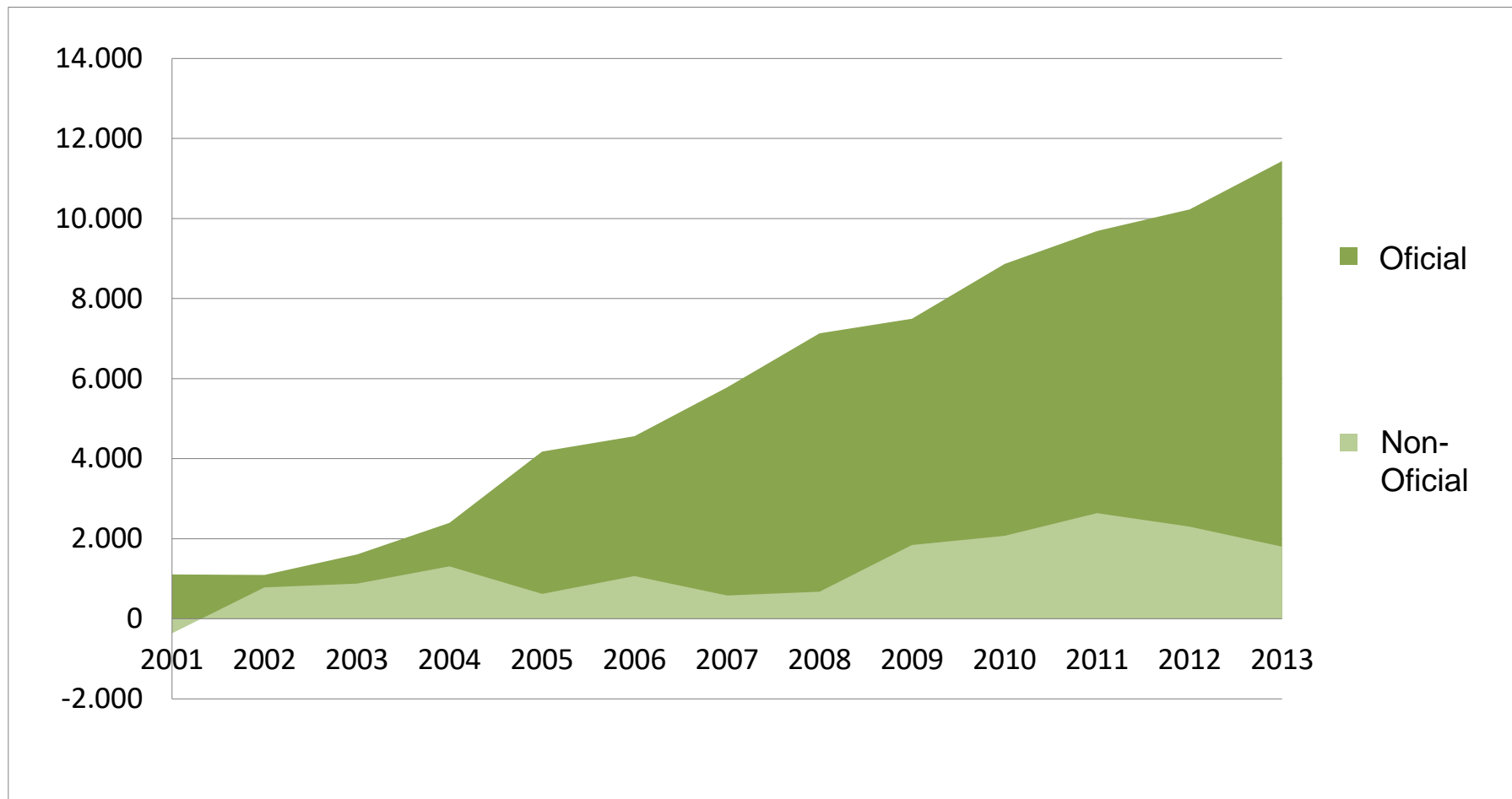


Cor	De	Até	Frequência	%
Lightest Yellow	180	322.588	112	81,8
Light Yellow	322.589	644.997	13	9,5
Yellow	644.998	967.406	6	4,4
Light Orange	967.407	1.289.815	1	0,7
Orange	1.289.816	1.612.223	1	0,7
Dark Orange	1.612.224	1.934.632	2	1,5
Brown	1.934.633	2.257.041	1	0,7
Dark Brown	2.257.042	2.579.450	1	0,7
//////	Ausência de dados, (-) ou valor desidentificado		0	0,0

- (1) – Noroeste (Rio Grande do Sul)
- (2) – Oeste (Santa Catarina)
- (3) – Oeste/Sudoeste (Paraná)
- (4) – Triângulo Mineiro/Alto Paranaíba (Minas Gerais)
- (5) – Sul (Goiás)
- (6) – Sul (Minas Gerais)
- (7) – Agreste (Pernambuco)

Source: IBGE, Pesquisa Pecuária Municipal

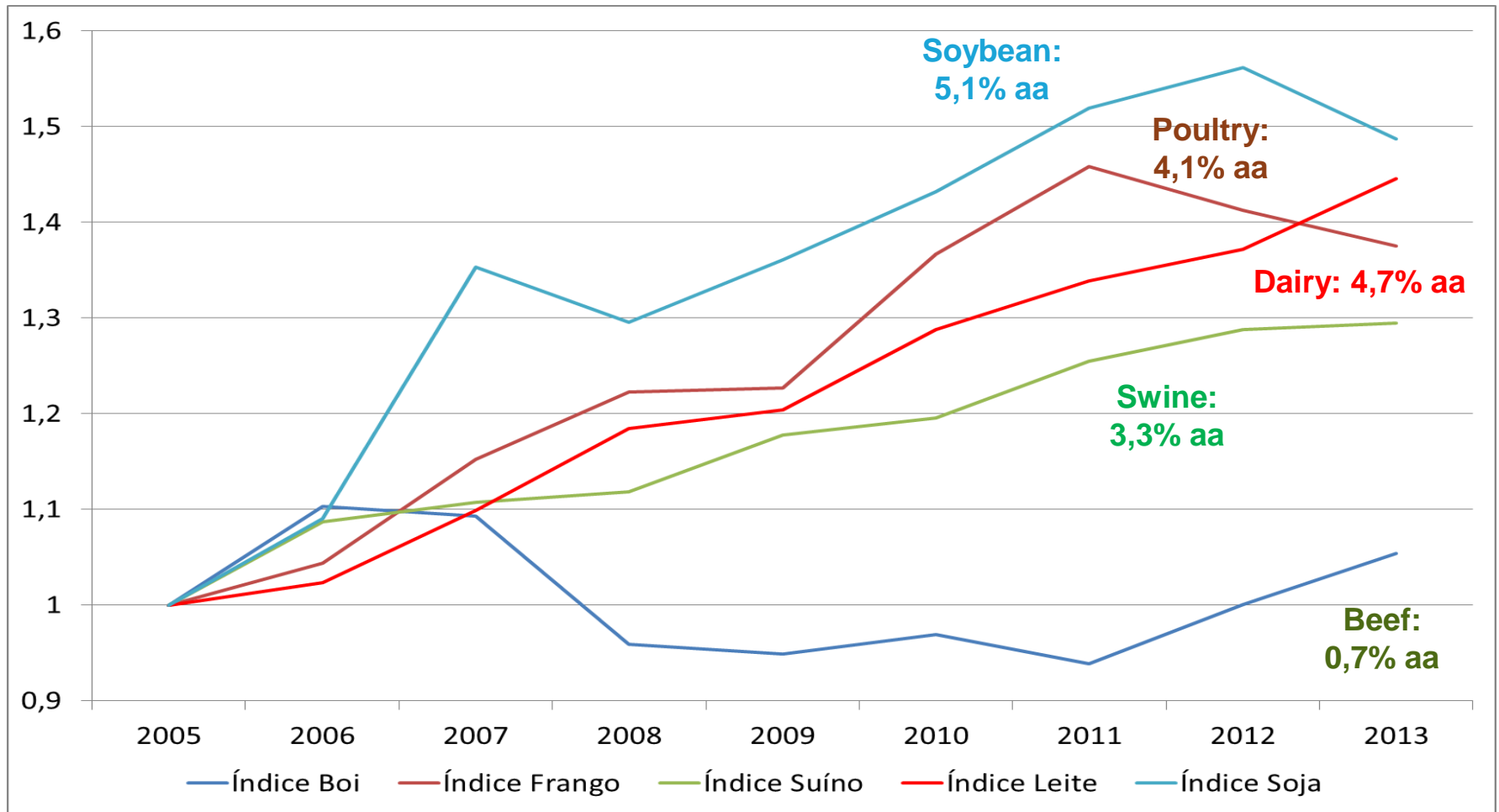
The official sector grew 6.5x more than the non-official sector



Source: PPM IBGE, developed by MilkPoint Inteligência

Dairy production growth VS. Other chains

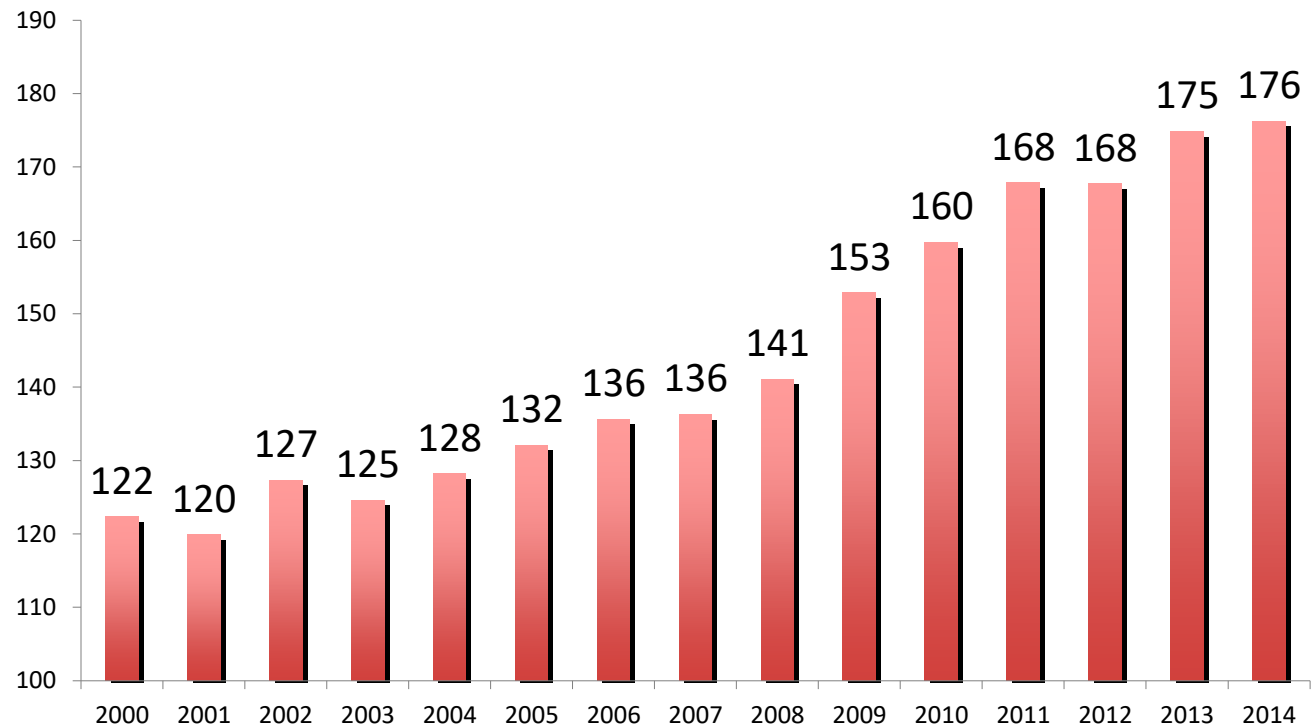
Source MilkPoint Inteligência. Original data resource - IBGE, Agroconsult and ABPA (Associação Brasileira de Proteína Animal).



The production sustained the great milk consumption increase (+40%)

Source: MilkPoint Inteligência

Individual Consumption (liters/person/year)



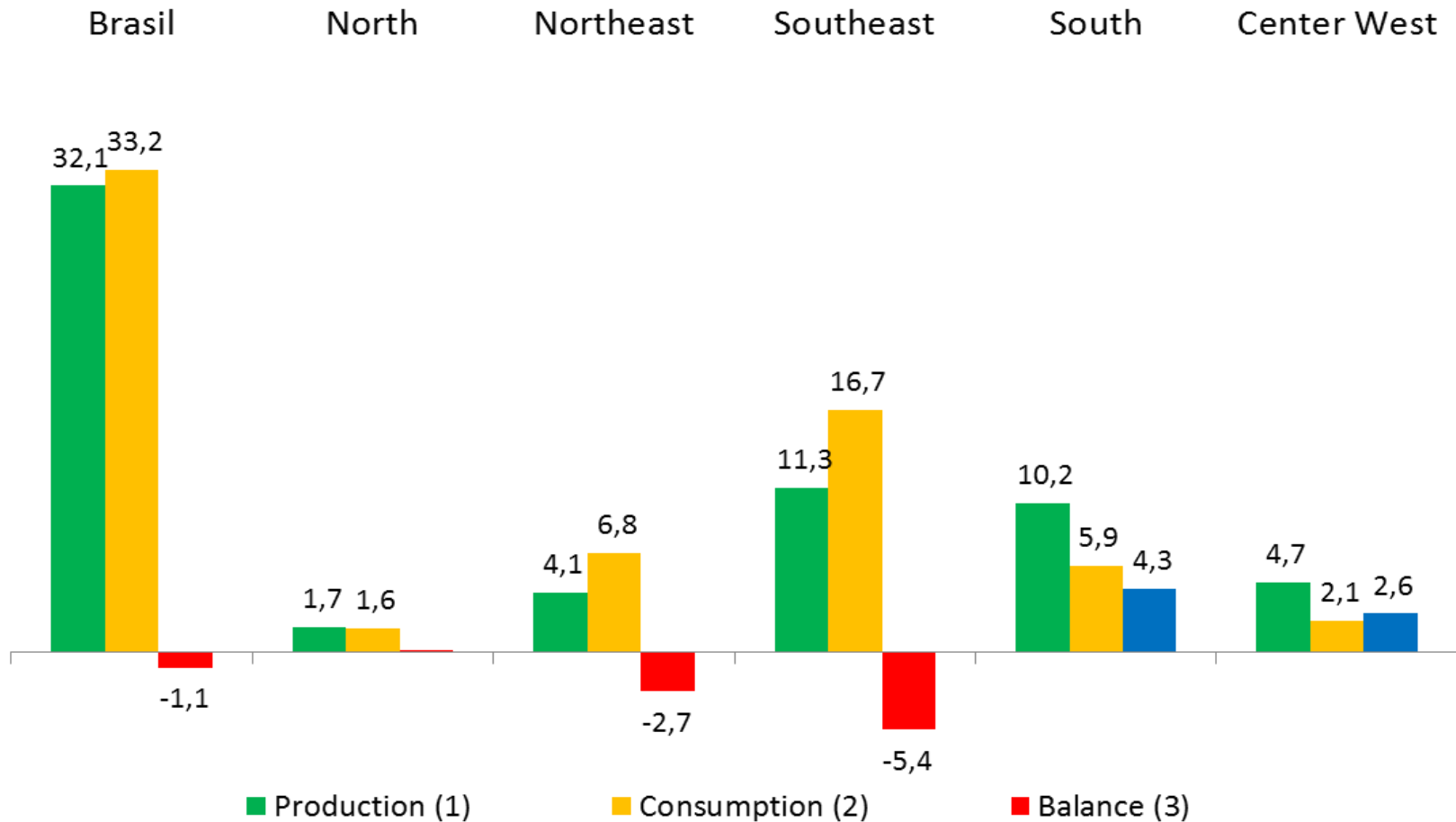
Total growth: +62% or +13 billion liters

**Per capita consumption
47%**

+

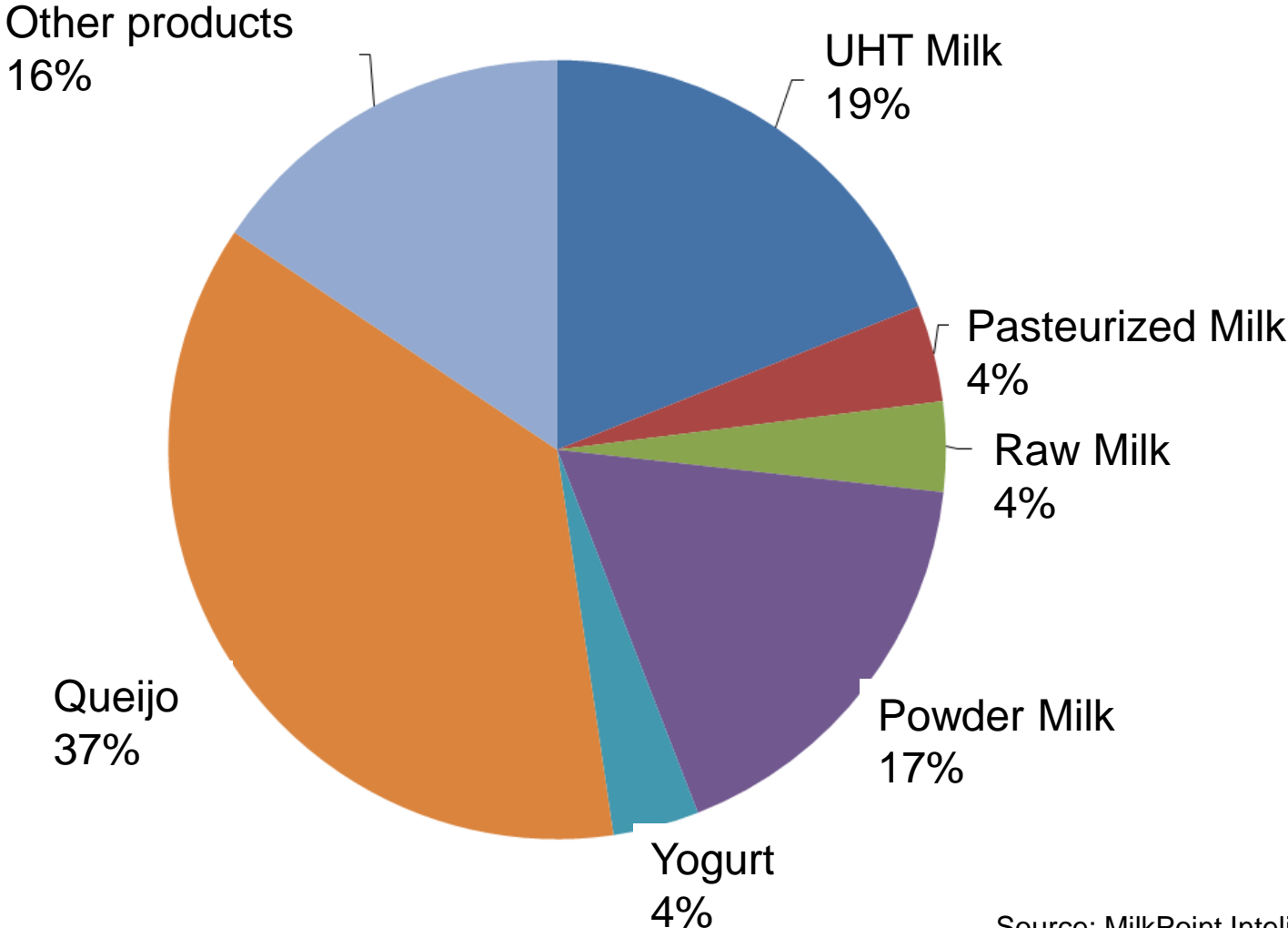
**28 million new
people**

Regional consumption VS. Production



Source: MilkPoint Inteligência

About 37% of original milk is processed into cheese



Source: MilkPoint Inteligência

IFCN top 20 milk processor by milk intake

Rank 2016	Company name	Origin & main operation countries	Milk intake in mill. t ME	Estimated turnover per kg milk, in USD	Market share in % of world milk production
1	Dairy Farmers of America	USA	28.1	0.5	3.6%
2	Fonterra	New Zealand/ others	22.1	0.6	2.8%
3	Groupe Lactalis	France/others	15.1	1.3	1.9%
4	Arla Foods	Denmark/Sweden/UK	14.2	0.8	1.8%
5	Nestlé	Switzerland/others	14.0*	1.9*	1.8%
6	FrieslandCampina	Netherlands/others	12.6*	1.0*	1.6%
7	Dean Foods	USA	10.3	0.8	1.3%
8	DMK (incl.DOC Kaas)	Germany/Netherlands	7.8	0.9	1.0%
9	Saputo	Canada/USA/others	7.7	1.1	1.0%
10	California Dairies	USA	7.7	0.5	1.0%
11	Danone	France/others	7.5	2.4	1.0%
12	Yili Group	China	6.8*	1.4*	0.9%
13	Amul (GCMMF)	India	6.5	0.8	0.8%
14	Müller	Germany/UK/others	6.3	1.2	0.8%
15	Glanbia Group	Ireland/USA/others	6.1	0.7	0.8%
16	Agropur	Canada/USA	5.8	1.0	0.7%
17	Land O' Lakes	USA	5.8*	0.7*	0.7%
18	Mengniu	China	5.8	1.4	0.7%
19	Groupe Sodiaal	France	5.2	1.1	0.7%
20	Schreiber foods	USA	4.5*	1.1*	0.6%
Sum of Top 20			200	1.0	25.4%

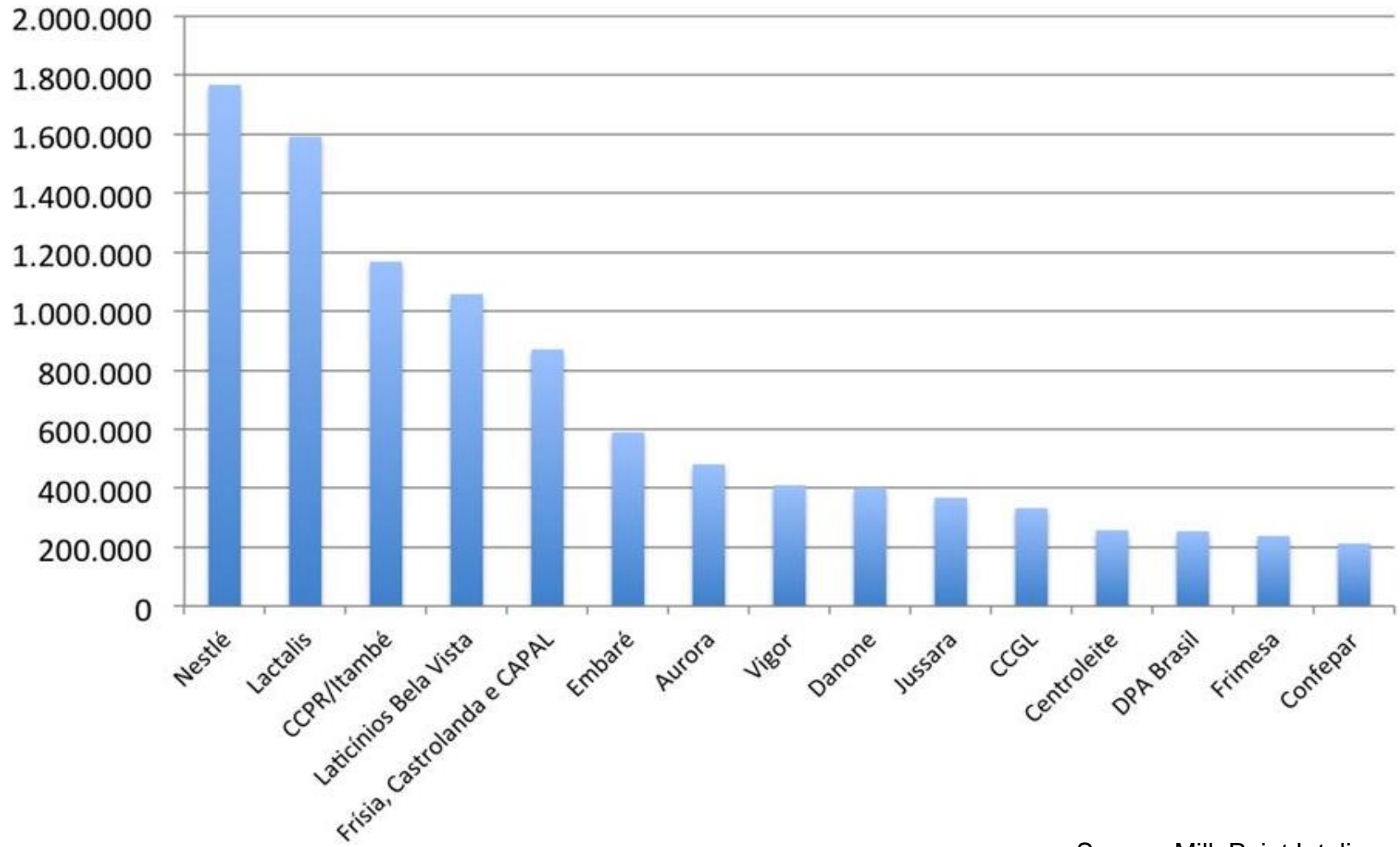
Source: IFCN, 2016

Rabobank Global Dairy Top 20, 2016

2016	2015	Company	Country of headquarters	Dairy turnover, 2015*	
				(USD billion)	(EUR billion)
1	1	Nestlé	Switzerland	25.0	22.5
2	2	Lactalis	France	18.3	16.5
3	3	Danone	France	16.7	15.1
4	▲ 5	Dairy Farmers of America	USA	13.8	12.4
5	▼ 4	Fonterra	New Zealand	13.1	11.8
6	6	FrieslandCampina	Netherlands	12.3	11.1
7	7	Arla Foods	Denmark/Sweden	10.5	9.4
8	▲ 10	Yili	China	9.3	8.4
9	▼ 8	Saputo	Canada	8.6	7.8
10	▼ 9	Dean Foods	USA	8.0	7.2
11	11	Mengniu	China	7.9	7.1
12	12	Unilever	Netherlands/UK	7.0**	6.3**
13	▲ 16	Kraft Heinz	USA	6.5	5.9
14	▼ 13	Sodiaal	France	5.7	5.1
15	▲ 20	Müller	Germany	5.6**	5.0**
16	▼ 14	DMK	Germany	5.5	5.0
17	17	Meiji	Japan	5.2	4.6
18	18	Schreiber Foods	USA	5.0**	4.5**
19	▼ 15	Savencia	France	4.9	4.4
20	▲ -	Agropur	Canada	4.6	4.1

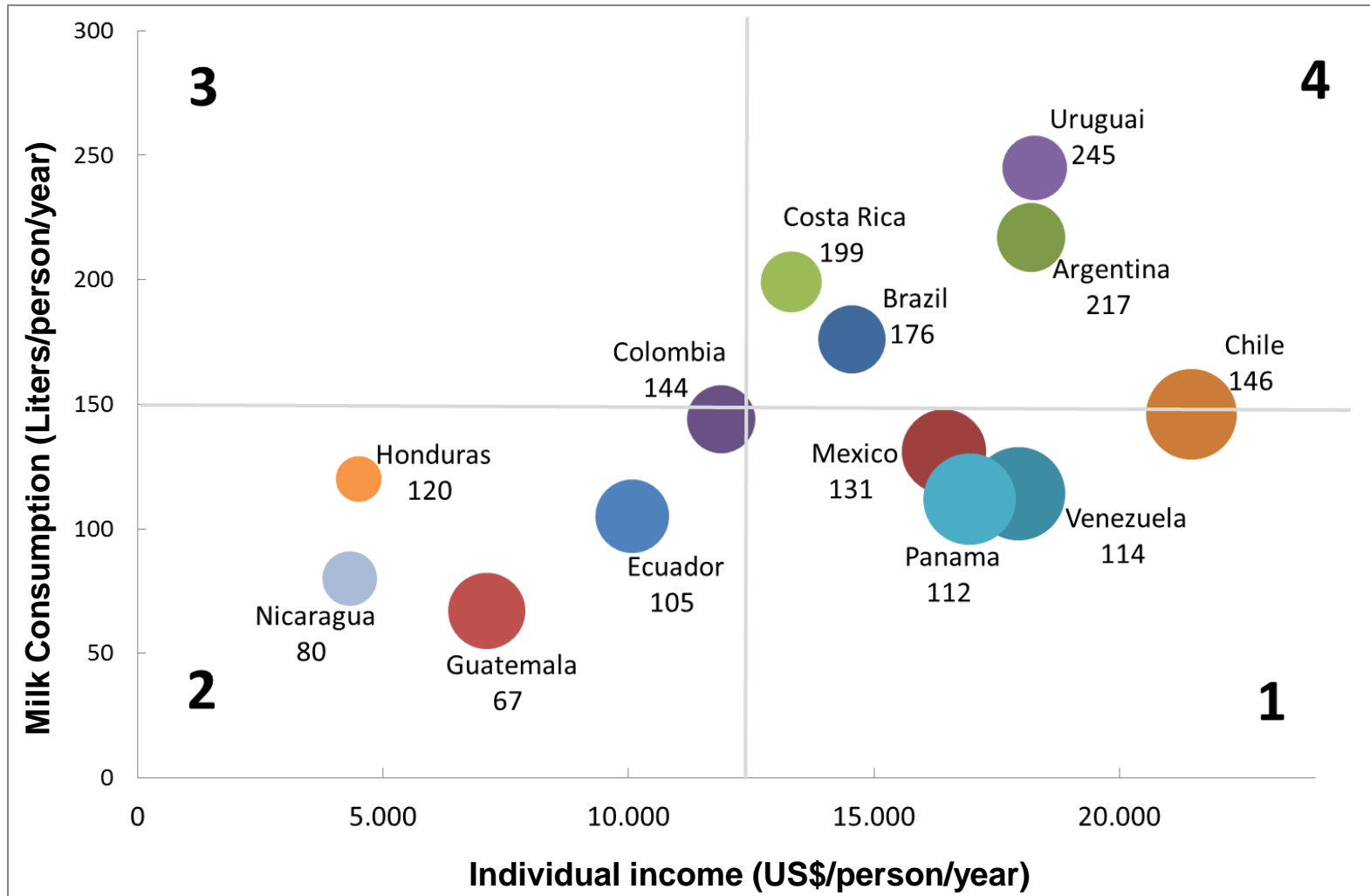
Source: Rabobank, Food & Agribusiness Research Advisory, 2016

Brazil total milk withdrawal (Thousand liters, 2016)



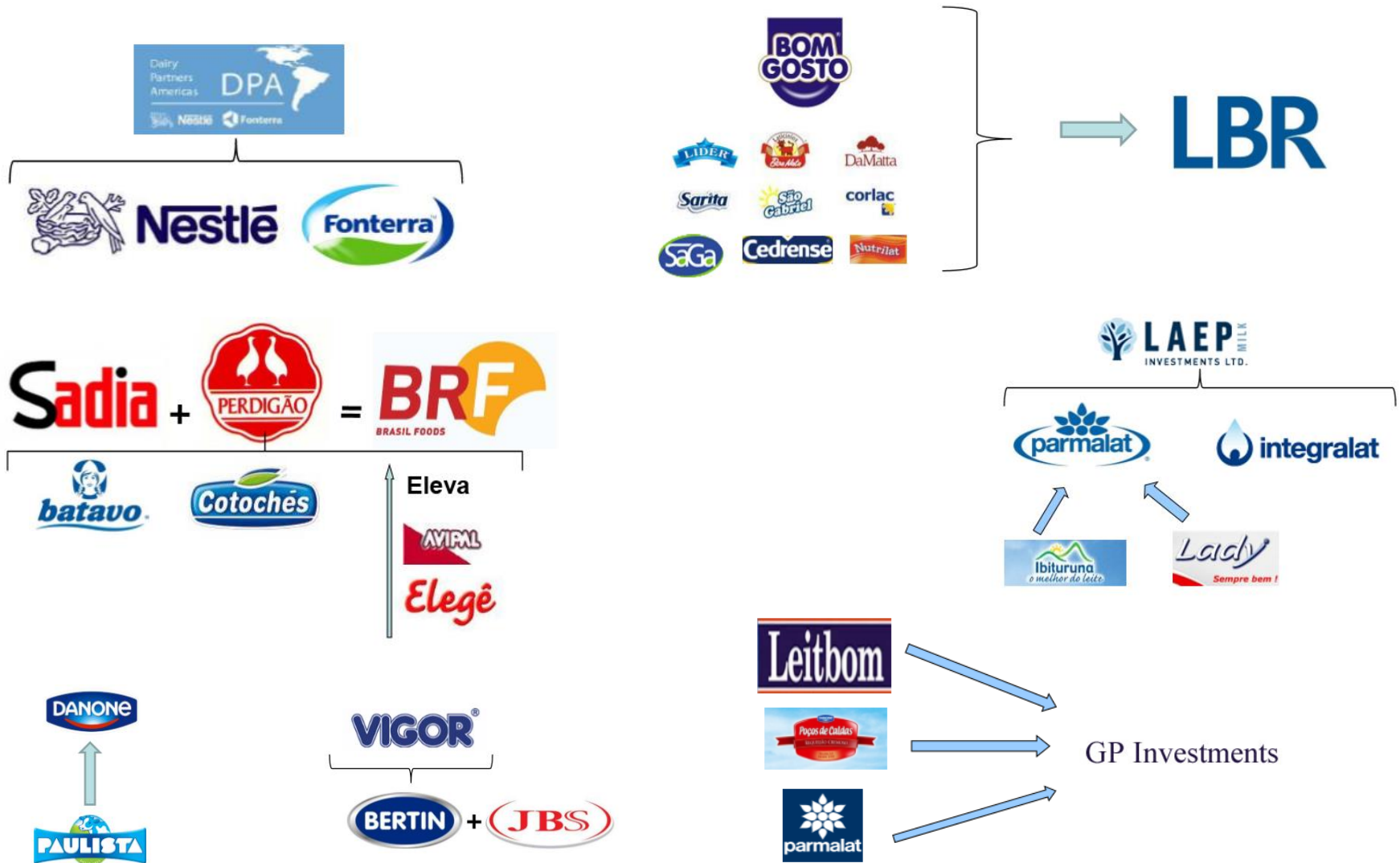
Source: Milk Point Inteligencia

Brazilians consumption is not small anymore



Source: Milk Point Inteligencia

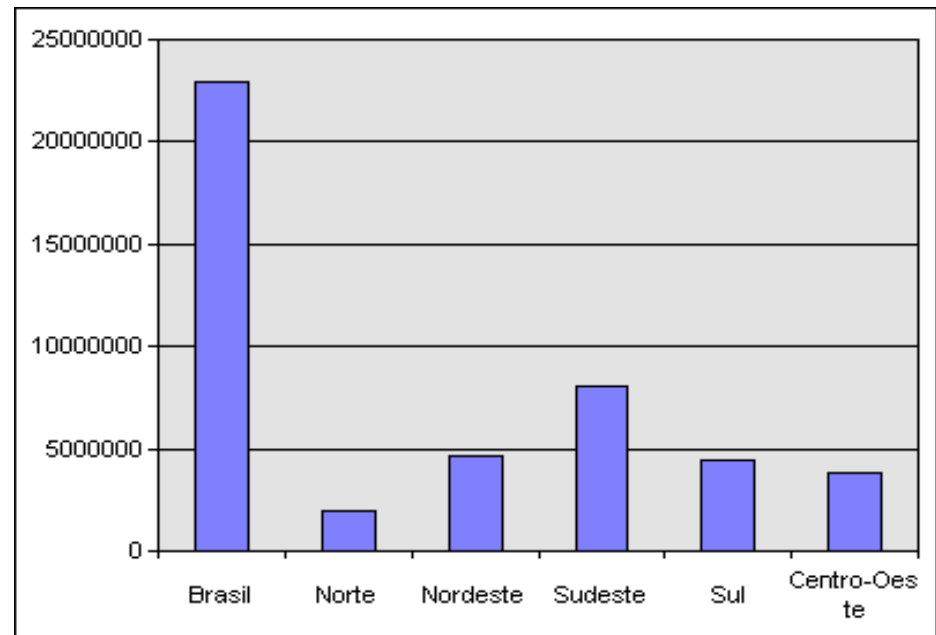
Crazy things are happening...



MILKED COWS - 2013

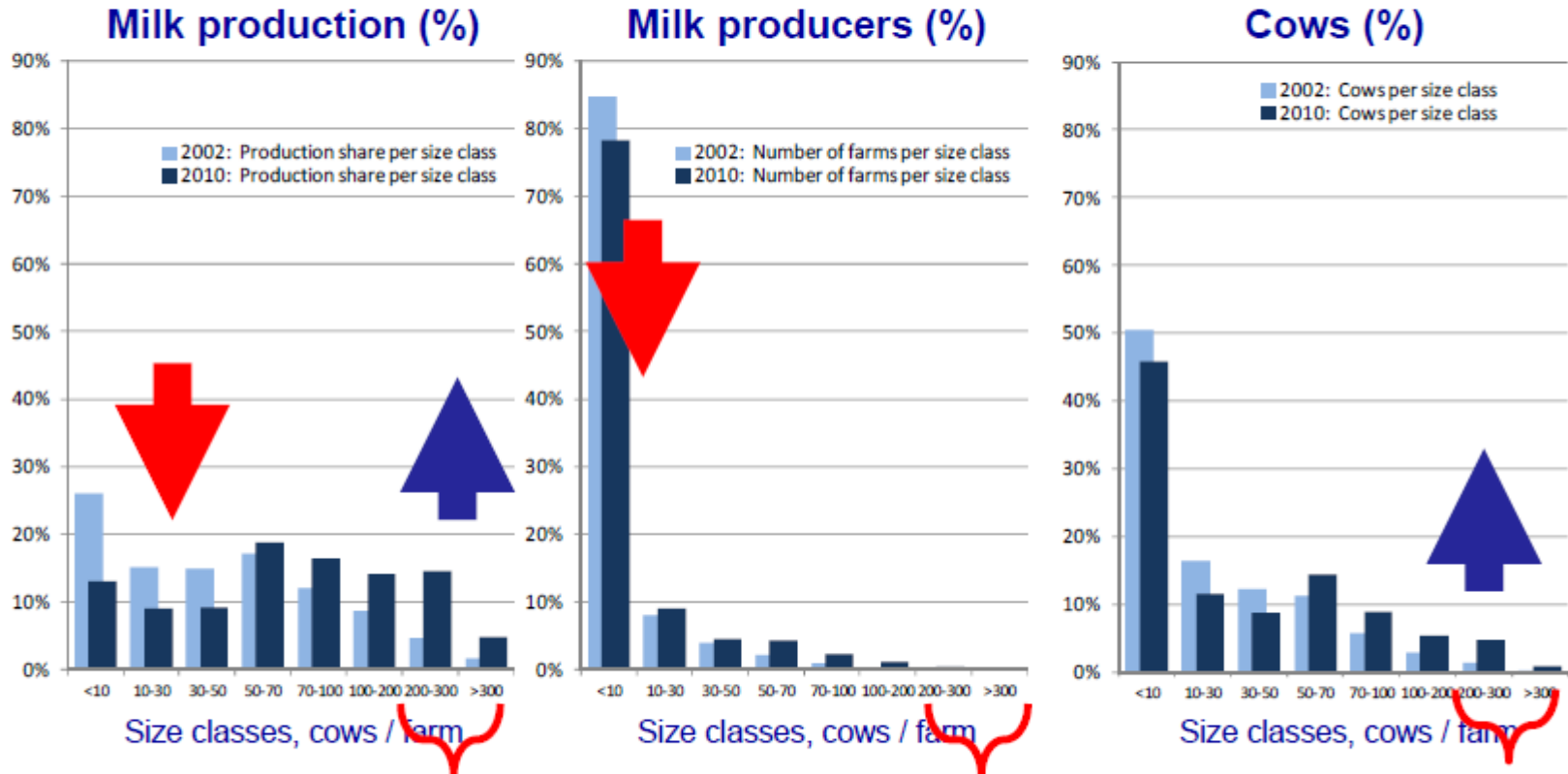
Tabela 94 - Vacas ordenhadas - Ranking descendente

Variável = Vacas ordenhadas (Cabeças)		
Ano = 2013		
#	Brasil e Grande Região	
1	Brasil	22.954.537
2	Sudeste	8.106.560
3	Nordeste	4.633.952
4	Sul	4.403.259
5	Centro-Oeste	3.834.697
6	Norte	1.976.069



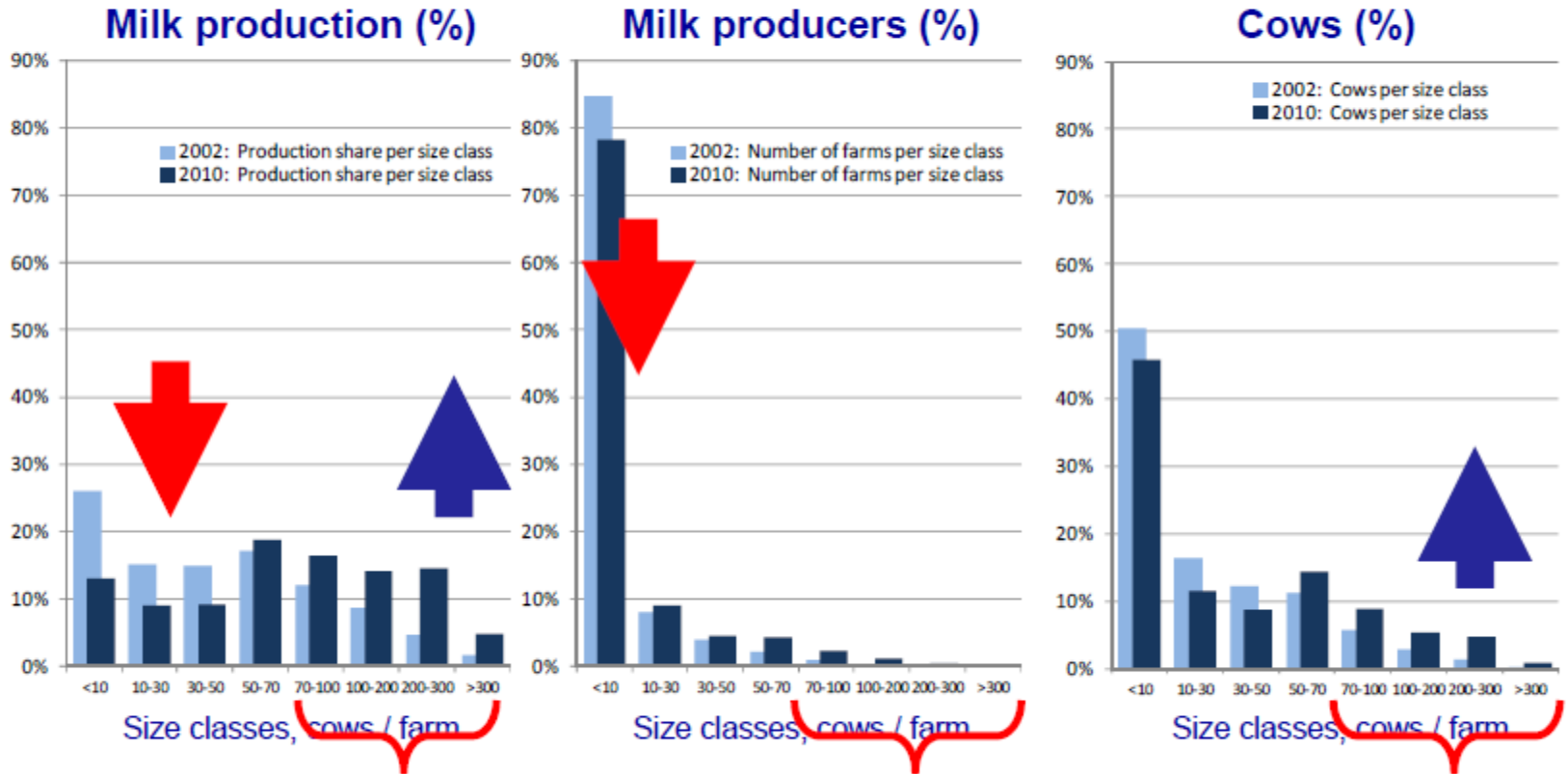
Fonte: IBGE Pesquisa Pecuária Municipal

Brazil - Farm structure



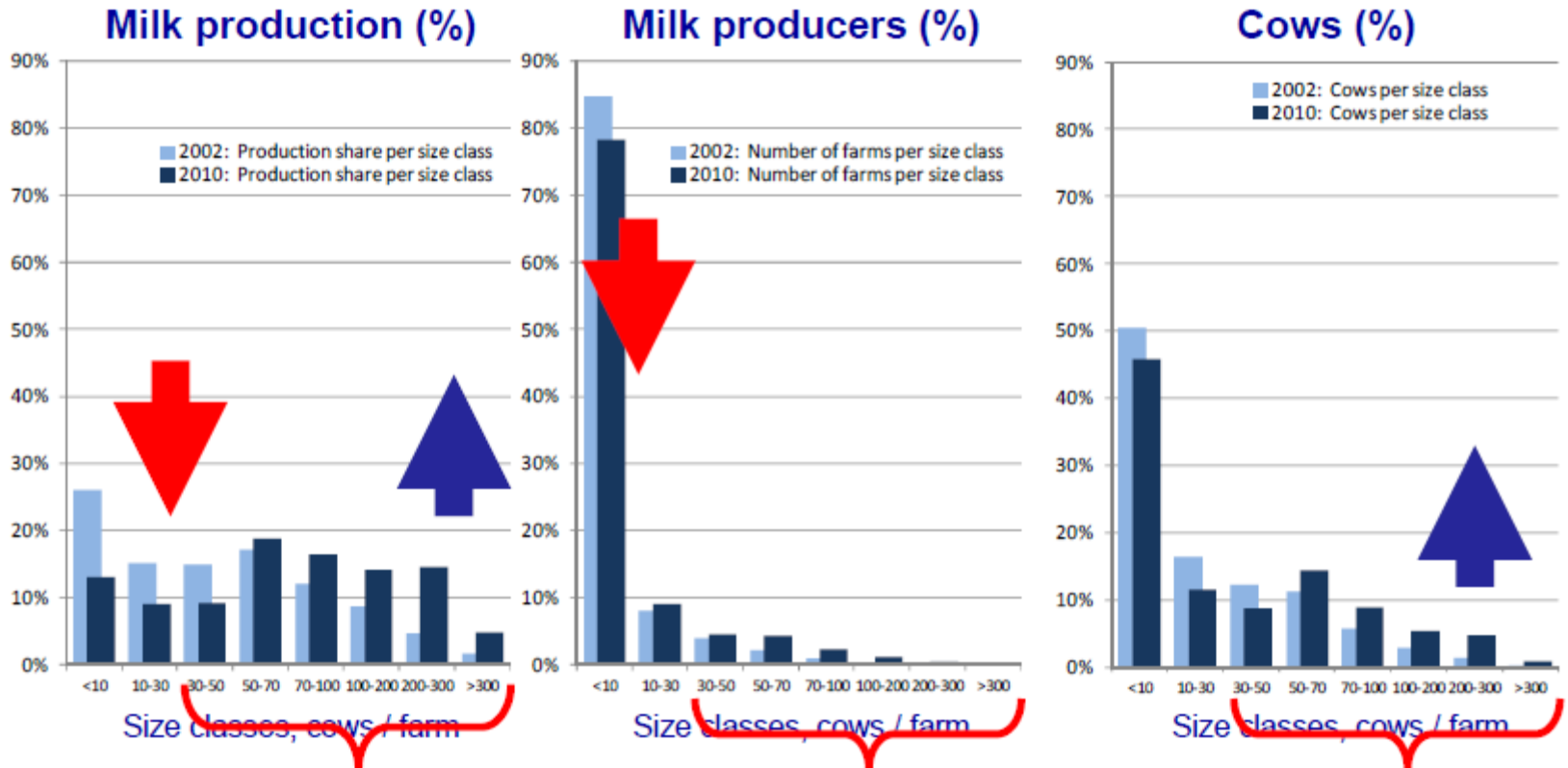
20% of the milk produced by 0.5% of the farms 6% cows
5 t/cow/year

Brazil - Farm structure



50% of the milk produced by 4% of the farms farms 20% cows
3.5 t/cow/year

Brazil - Farm structure



80% of the milk produced by **13%** of the farms farms **43%** cows
2.5 t/cow/year

IBGE: 5,2 million “farms”

1.350.809 (25%) “produce” some milk

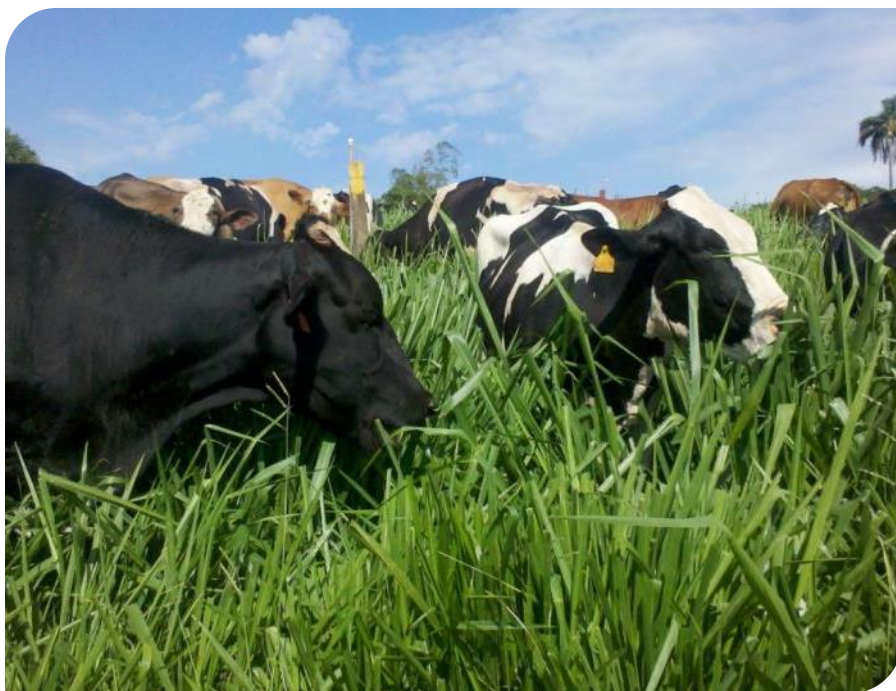
- 931.215 (69%) sold milk or took some advantage
- 419.594 (31%) didn't sell (less than 10kg/cow/d).

- Bovine Herd: 209.541.109 cabeças
 - 23 million milked cows
 - **Dairy Herd: 30.715.460 kg milk - 1.340 kg/cow/year.**

4.5 kg/milk/d cow – 305d lactation
7.4 kg/milk/d cow – 180d lactation

Grassfed

Brazil is a large tropical country with highly availability of land, light, temperature and rain during most part of the year



About 50%

Nutrient requirements are fulfilled by regular commercial grain ratio during milking process

Confinement

Allows cows to receive more nutritive forage sources, such as corn, alfalfa, rye and oats. Also offers more alternatives for comfort, soil and heat stress



100% TMR

To keep higher levels of performance and milk yield, cows receive complete feed in bunks 365d/yr

Part of the diet...



Part of the diet...



Stuck in the middle!

Girolando



Gyr x Holstein







MILKPOINT
APRESENTA

LEVANTAMENTO TOP 100 2018

OS 100 MAIORES PRODUTORES DE LEITE DO BRASIL



Fazenda Colorado, Araras - SP, 1ª colocada no Top 100 2018

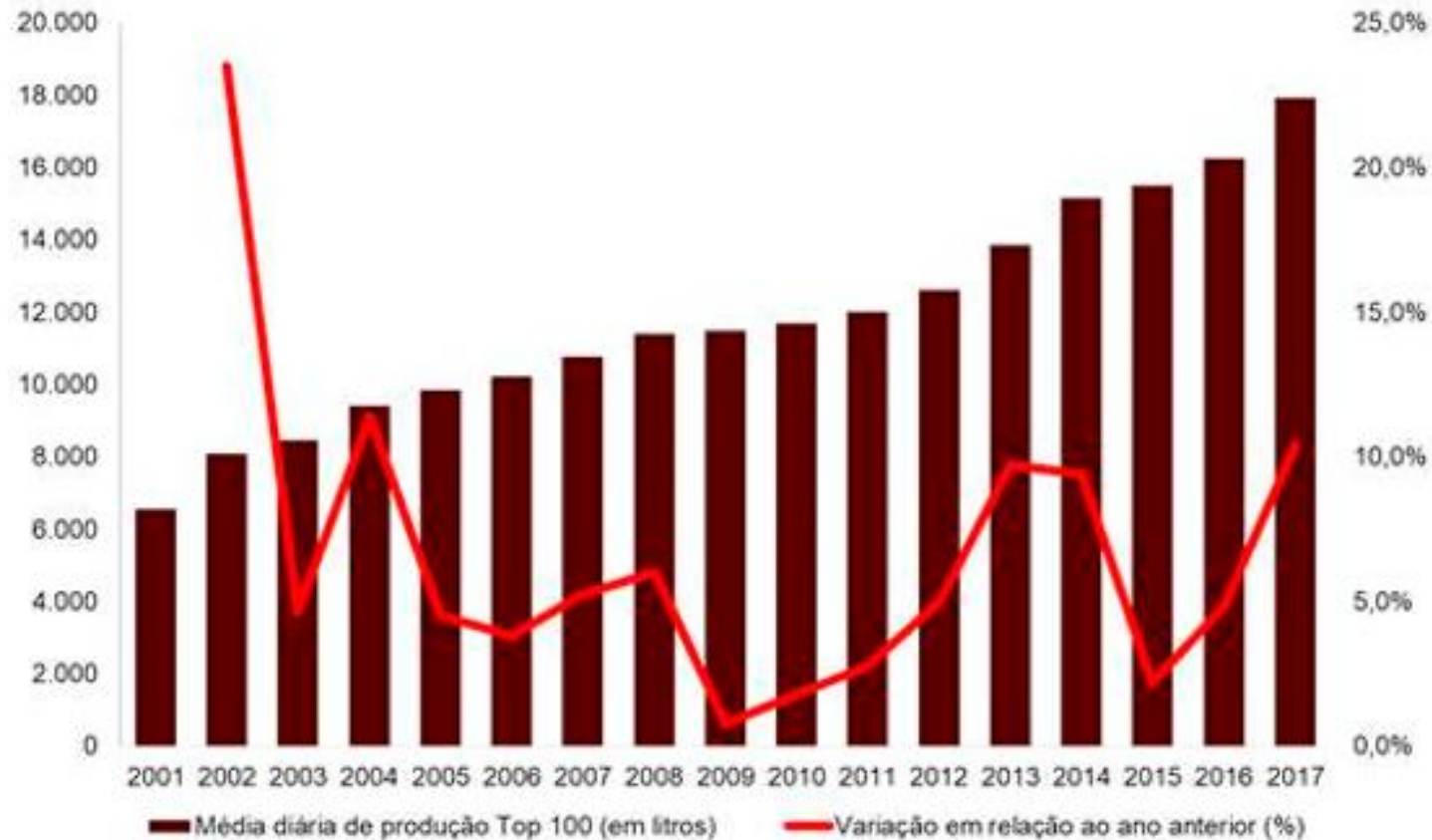


Grupo Melkstad, Carambeí - PR, 7º colocado no Top 100 2018



Fazenda Cobiça, Três Corações - MG, 21ª colocada no Top 100 2018

Average milk production Top 100 producer and annual growth rate

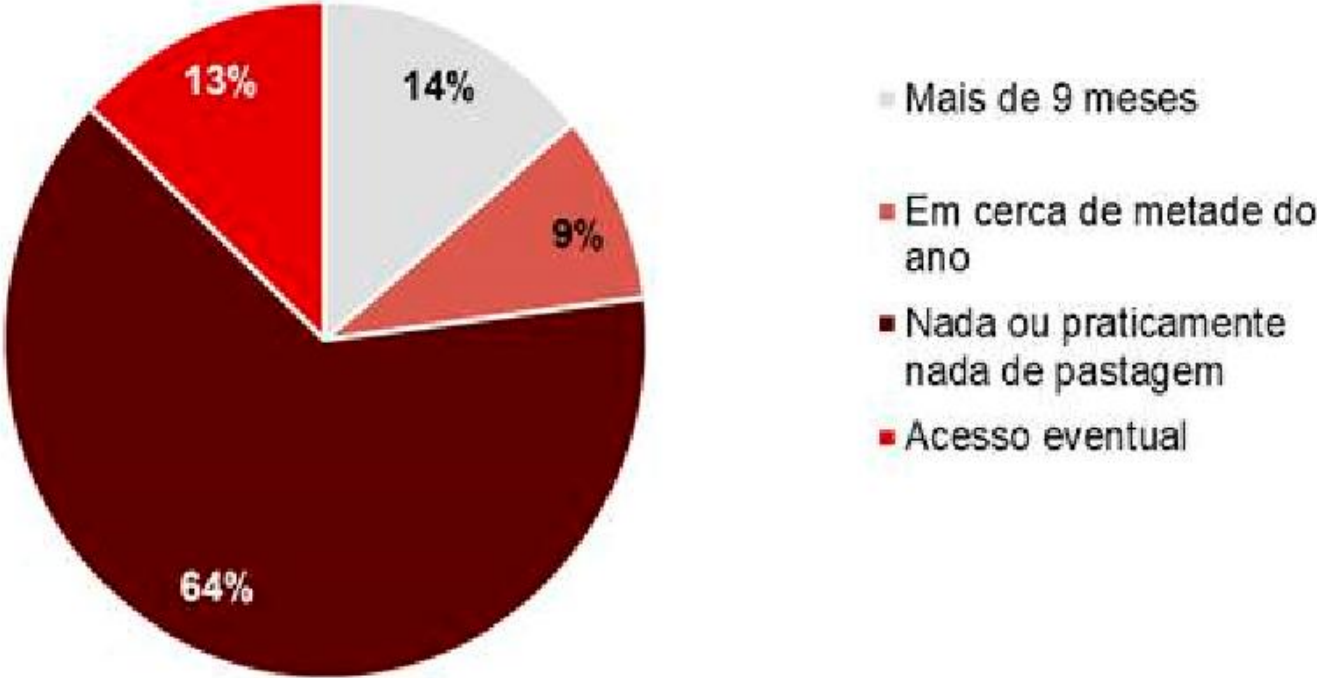


Where are all they?



Southeast	51
Minas Gerais	40
São Paulo	10
Espírito Santo	1
South	31
Paraná	21
Rio Grande do Sul	8
Santa Catarina	2
Middle-West	11
Goiás	10
Distrito Federal	1
Northeast	7
Ceará	4
Bahia	3

64% of the TOP 100 Dairy Producers do not provide any or little pasture access to their cows





Fazenda São Miguel, Areais - SP, 54ª colocada no Top 100 2018

Production Systems	% Dairy Farms
Free Stall	46
Compost Bedding Pack	22
Dry-Lot	8
No specific pens	7
Combined systems	8
Others	9



Fazenda da Chácara, Júlio de Castilhos - RS, 70ª colocada no Top 100 2018

Almost 80% of the Top 100 producers chose Holstein as major breed, 30% Girolando

Raças ou cruzamentos	Nº de propriedades
Holandesa	78
Girolando	30
Gir	8
Jersolanda	6
Jersey	5
Guzerá	2
Guzolando	1
Mais de uma raça	25

GIR



GIROLANDO



GUZERÁ



**SURVEY OF THE NUTRITIONAL RECOMMENDATIONS AND MANAGEMENT
PRACTICES ADOPTED BY DAIRY CATTLE NUTRITIONISTS IN BRAZIL**

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IN-PRESS
CANADIAN JOURNAL OF ANIMAL SCIENCE

Dairy cattle operation profile

When asked about the average daily milk production in dairy farms nutritionists serviced, 46.5% ($n = 20$) of the participants had clients that produce less than 1,000 kg daily, 27.9% ($n = 12$) had clients ranging from 1,001 to 3,000 kg and 25.6% ($n = 11$) assisted dairy farms with a capacity of more than 3,000 kg daily. The average daily milk production per cow in the dairy farms assisted by the nutritionists surveyed was 17.7 kg (minimum = 9.8 kg, maximum = 35.6 kg and mode = 16.0 kg).

When asked about the average herd size, most nutritionists surveyed ($n = 21$, 48.8%) had clients that have less than 100 dairy cows, whereas 19 (44.2%) had clients ranging from 101 and 300 dairy cows and only 3 (7.0%) of participants interviewed assisted operations with more than 300 dairy cow on average.

Brazilian dairy cattle systems, in general, consist of small operations, where reduced milk production per animal is a reality (the national average is 6 kg per animal per day; ANUALPEC, 2015). On the other hand, Kellogg et al. (2001) observed that the average daily milk production of Holstein and Jersey herds in American dairy farms was 36.62 kg and 24.23 kg, respectively.

Table 1. Quality parameters and milk processing methods adopted by dairy operations in Brazil according to consulting nutritionists surveyed.

Item	Mean	Minimum	Maximum	Mode
<i>Clients who receive bonus for milk quality</i>				
Yes (%)	67.2	0	100	100
No (%)	32.9	0	100	0
<i>Clients who process milk (n = 41)</i>				
Yes (%)	11.2	0	95	0
No (%)	88.9	10	100	100
		No. of responses		% of responses
<i>Primary milk quality parameter required by dairy factories (n = 38)</i>				
Somatic cells count		12	31.6	
Protein content (%)		10	26.3	
Total bacteria count		10	26.3	
Fat content (%)		6	15.8	
<i>Secondary milk quality parameter required by dairy factories (n = 41)</i>				
Fat content (%)		12	29.3	
Protein content (%)		10	24.4	
Somatic cells count		10	24.4	
Total bacteria count		9	22.0	
<i>Primary milk processing method (n = 16)</i>				
Cheese		11	68.8	
Pasteurization and packing		4	25.0	
Pasteurization		1	6.3	

Table 2. Selection criteria and animal trading in dairy cattle operations from Brazil according to consulting nutritionists surveyed.

Item	Mean	Minimum	Maximum	Mode
<i>Percentage of clients who trade animals</i>				
Trade, %	49.3	0	100	10
Do not trade, %	50.7	0	100	90
<i>Clients who use some criteria for animal's selection (n = 41)</i>				
Use, %	79.1	0	100	100
Do not use, %	20.9	0	100	0
		No. of responses		% of responses
<i>Primary criteria used for animals' selection by dairy cattle operations (n = 40)</i>				
Milk production		32	80.0	
Fertility (Reproduction)		4	10.0	
Breed		2	5.0	
Abnormal conformation (stifle and hock joints)		1	2.5	
Udder conformation		1	2.5	
<i>Primary criteria used for group formation (n = 36)</i>				
Milk production		34	94.4	
Age (lactation number)		1	2.8	
Lactation stage (early, mid, late)		1	2.8	
<i>Annual percentage of herd replacement (n = 40)</i>				
Less than 10%		20	50.0	
10 to 20%		18	45.0	
More than 20%		2	5.0	

Conclusions

Generally, the Brazilian system of milk production is characterized by dairy operations that own 100 cows or less, where the grazing system predominates and most of the cows' herds produce less than 1,000 kg of milk daily.

Most part of dairy farmers in Brazil do not have much funds for investing in better equipment and employee training, which seems to be one of the primary obstacles to improving starch utilization in

lactation diets and to reducing the incidence of mastitis. Based on this fact, about 39% of the clients of the nutritionists we surveyed did not mix the diet offered to the cows, and about 47% did not control the quantity of feed offered per pen or animal, which certainly is one of the limitations to increase the milk yield per cow in Brazil.

The most critical points identified by this survey was low milk yield, incidence of mastitis as the major health problem, lack of proper mixing and delivery of the rations, and destination of male calves.

The logo features a green, curved shape resembling a leaf or a drop above the word "Cargill". The word "Cargill" is written in a bold, italicized, black sans-serif font. A registered trademark symbol (®) is located at the top right of the word.

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