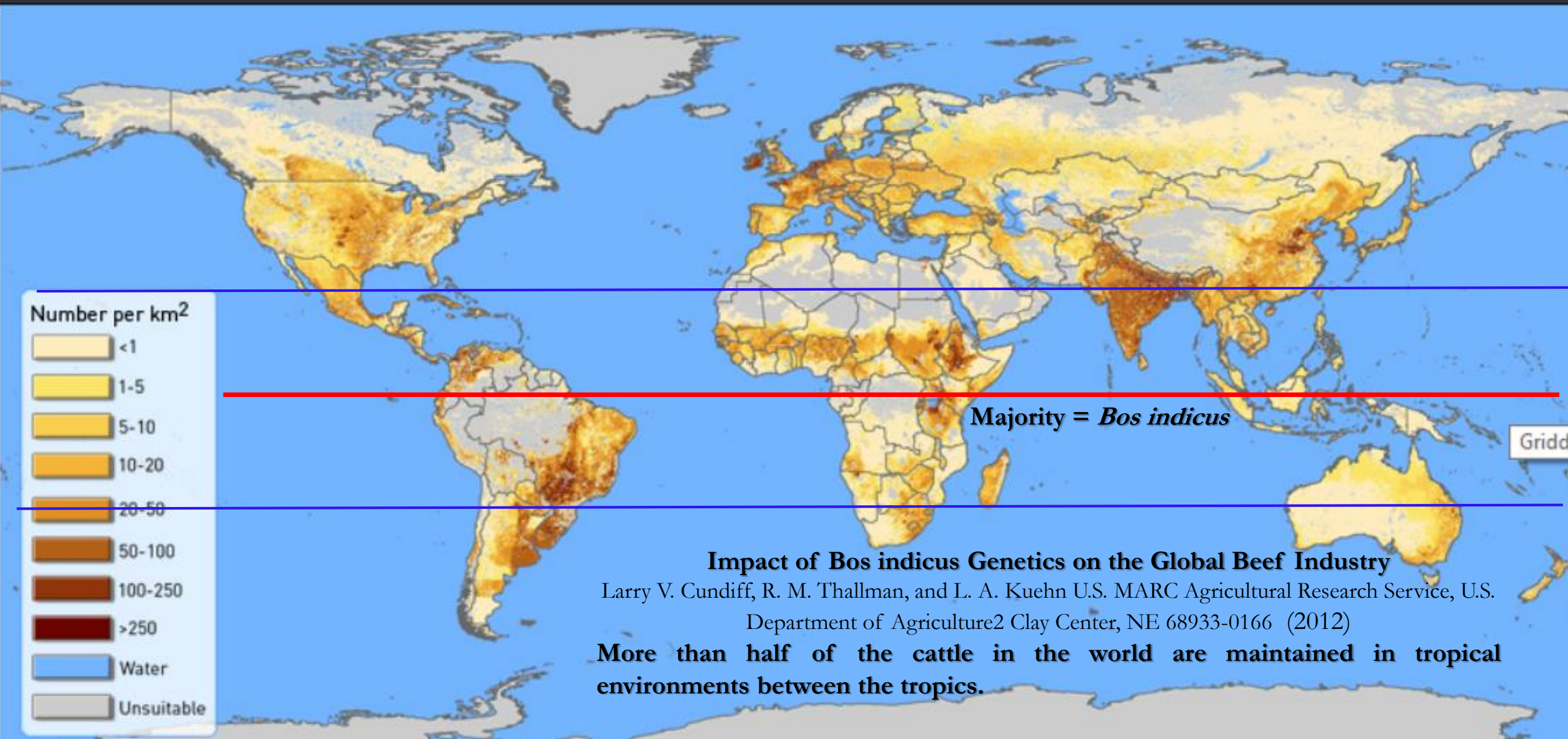




# Animal production in Brazil (and some information about South America)

Prof. Dr. José Bento Stermán Ferraz  
Research Center on Animal Breeding, Biotechnology and Transgenesis  
[jbferraz@usp.br](mailto:jbferraz@usp.br)



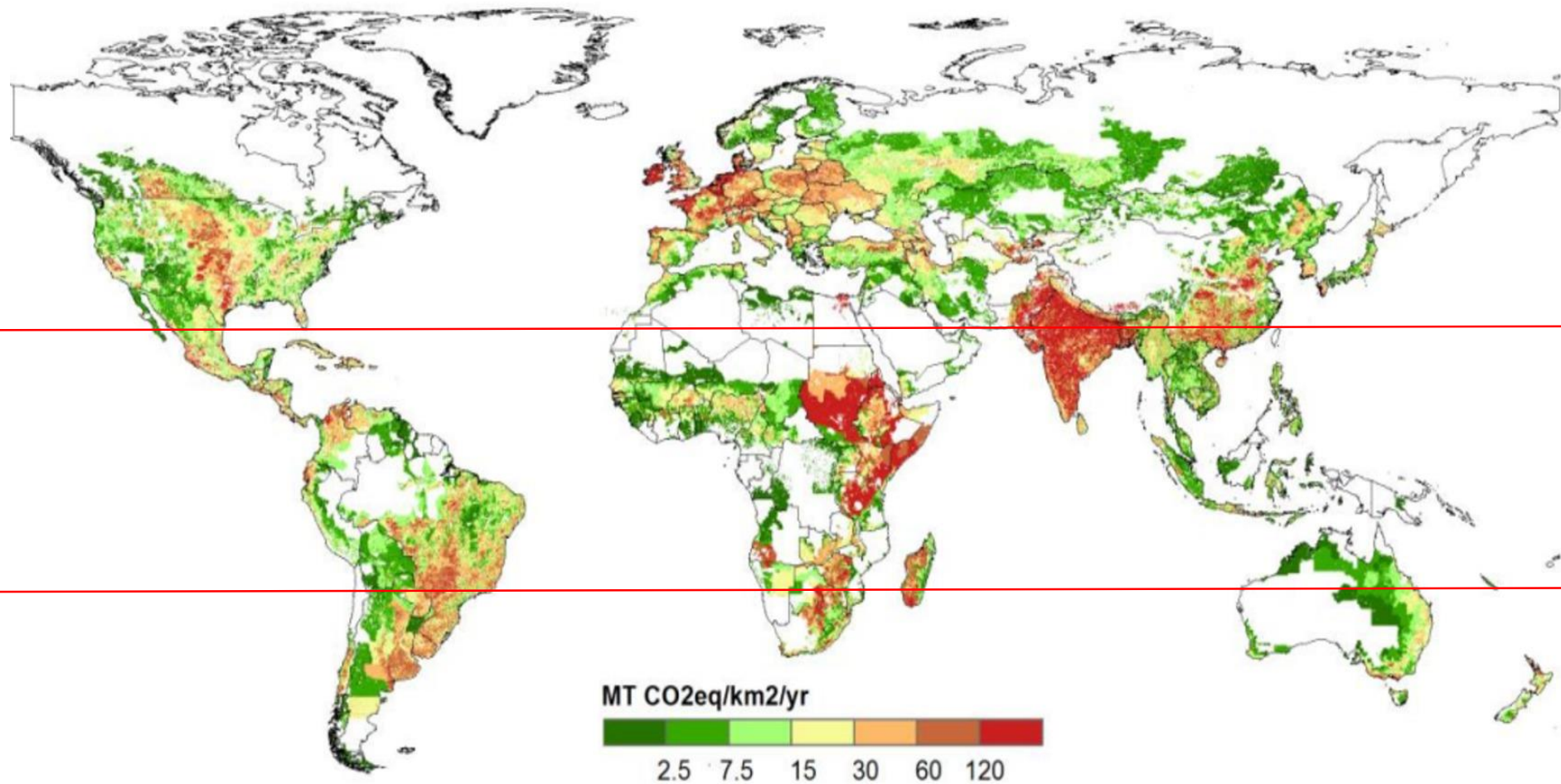
Majority = *Bos indicus*

### Impact of *Bos indicus* Genetics on the Global Beef Industry

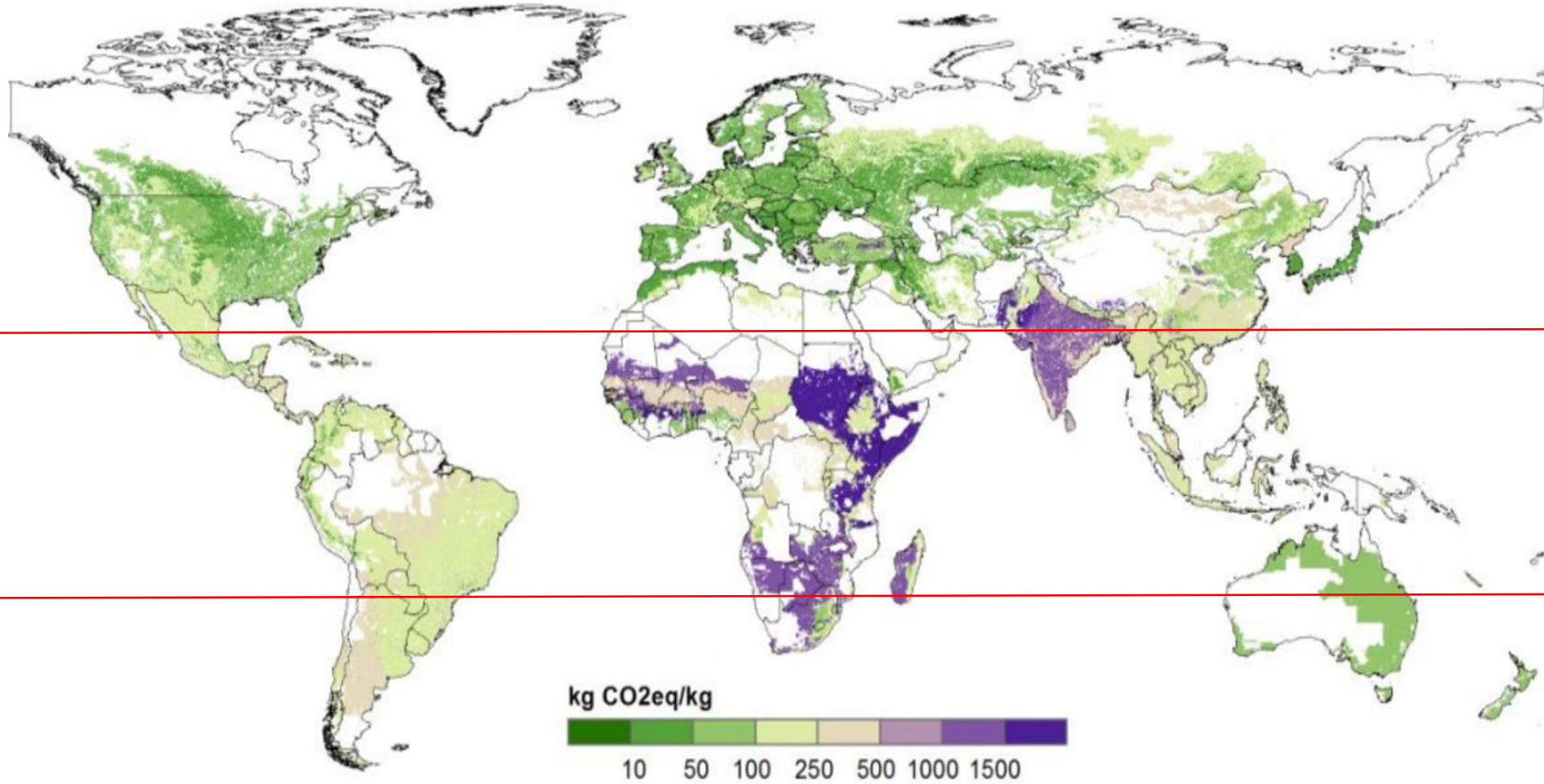
Larry V. Cundiff, R. M. Thallman, and L. A. Kuehn U.S. MARC Agricultural Research Service, U.S. Department of Agriculture  
2 Clay Center, NE 68933-0166 (2012)

**More than half of the cattle in the world are maintained in tropical environments between the tropics.**

# Emisión de Metano



# Emisión de gases de efecto estufa



CO<sub>2</sub> por grama de proteína

















## World Beef Imports: Ranking Of Countries

World		7,666,000	
Rank	Country	2016	% Of World
1	United States	1,370,000	17.87%
2	China	825,000	10.76%
3	Japan	715,000	9.33%
4	Russia	585,000	7.63%
5	South Korea	510,000	6.65%
6	Hong Kong	375,000	4.89%
7	European Union	370,000	4.83%
8	Egypt	340,000	4.44%
9	Canada	260,000	3.39%
10	Chile	240,000	3.13%
11	Malaysia	240,000	3.13%
12	Mexico	180,000	2.35%
13	Saudi Arabia	178,000	2.32%
14	Philippines	176,000	2.30%
15	Iran	155,000	2.02%
16	Taiwan	140,000	1.83%
17	Israel	118,000	1.54%
18	Algeria	88,000	1.15%
19	Brazil	65,000	0.85%
20	UAE	60,000	0.78%
21	Venezuela	55,000	0.72%
22	Kuwait	52,000	0.68%

# SOUTH AMERICA



# South America – some statistics

Rank ↕	Country (or dependent territory) ↕	July 1, 2015 projection <sup>[1]</sup> ↕	% of pop. ↕	Average relative annual growth (%) <sup>[2]</sup> ↕	Average absolute annual growth <sup>[3]</sup> ↕	Estimated doubling time (years) <sup>[4]</sup> ↕	Official figure (where available) ↕	Date of last figure ↕	Source ↕
1	 Brazil	204,519,000	49.36	0.86	1,750,000	81	208,303,000	October 23, 2017	<a href="#">Official population clock</a> <sup>[5]</sup>
2	 Colombia	48,549,000	11.64	1.16	555,000	60	49,442,000	October 23, 2017	<a href="#">Official population clock</a> <sup>[5]</sup>
3	 Argentina	43,132,000	10.41	1.09	463,000	64	43,590,368	July 1, 2016	<a href="#">Official estimate</a> 
4	 Peru	31,153,000	7.52	1.10	338,000	64	31,488,625	June 30, 2016	<a href="#">Official estimate</a> <sup>[5]</sup>
5	 Venezuela	30,620,000	7.39	1.37	414,000	51	31,028,637	2016	<a href="#">Official estimate</a> <sup>[5]</sup>
6	 Chile	18,006,000	4.35	1.05	187,000	66	18,191,884	2016	<a href="#">Official estimate</a> <sup>[5]</sup>
7	 Ecuador	16,279,000	3.93	1.57	252,000	44	16,870,800	October 23, 2017	<a href="#">Official population clock</a> <sup>[5]</sup>
8	 Bolivia	10,520,000	2.54	1.73	179,000	40	10,985,059	2016	<a href="#">Official estimate</a> <sup>[5]</sup>
9	 Paraguay	7,003,000	1.69	1.58	109,000	44	6,854,536	2016	<a href="#">Official estimate</a> 
10	 Uruguay	3,310,000	0.80	0.18	6,000	382	3,480,222	June 30, 2016	<a href="#">Official estimate</a> <sup>[5]</sup>
11	 Guyana	747,000	0.18	0.00	0	-	747,884	September 15, 2012	<a href="#">Preliminary 2012 census result</a> <sup>[5]</sup>
12	 Suriname	560,000	0.14	1.08	6,000	64	541,638	August 13, 2012	<a href="#">Final 2012 census result</a> <sup>[5]</sup>
13	 French Guiana	262,000	0.06	2.75	7,000	26	239,648	January 1, 2012	<a href="#">Official estimate</a> <sup>[5]</sup>
14	 Falkland Islands (UK) <sup>[5]</sup>	3,000	0.00	0.00	0	-	2,563	April 15, 2012	<a href="#">Final 2012 census result</a> <sup>[5]</sup>
	<b>Total</b>	<b>414,663,000</b>	<b>100.00</b>	<b>1.04</b>	<b>4,266,000</b>	<b>67</b>			

*South America – some statistics*

South American Rank	World Rank	Nation	2016 (IMF)
1	55	 Chile	\$23,969
2	59	 Uruguay	\$21,570
3	61	 Argentina	\$20,170
4	74	 Brazil	\$15,211
5	86	 Suriname	\$15,179
6	71	 Venezuela	\$15,102
7	82	 Colombia	\$14,161
8	83	 Peru	\$13,018
9	91	 Ecuador	\$11,036
10	110	 Paraguay	\$9,353
11	96	 Guyana	\$7,919
12	118	 Bolivia	\$7,190



## South America – some statistics

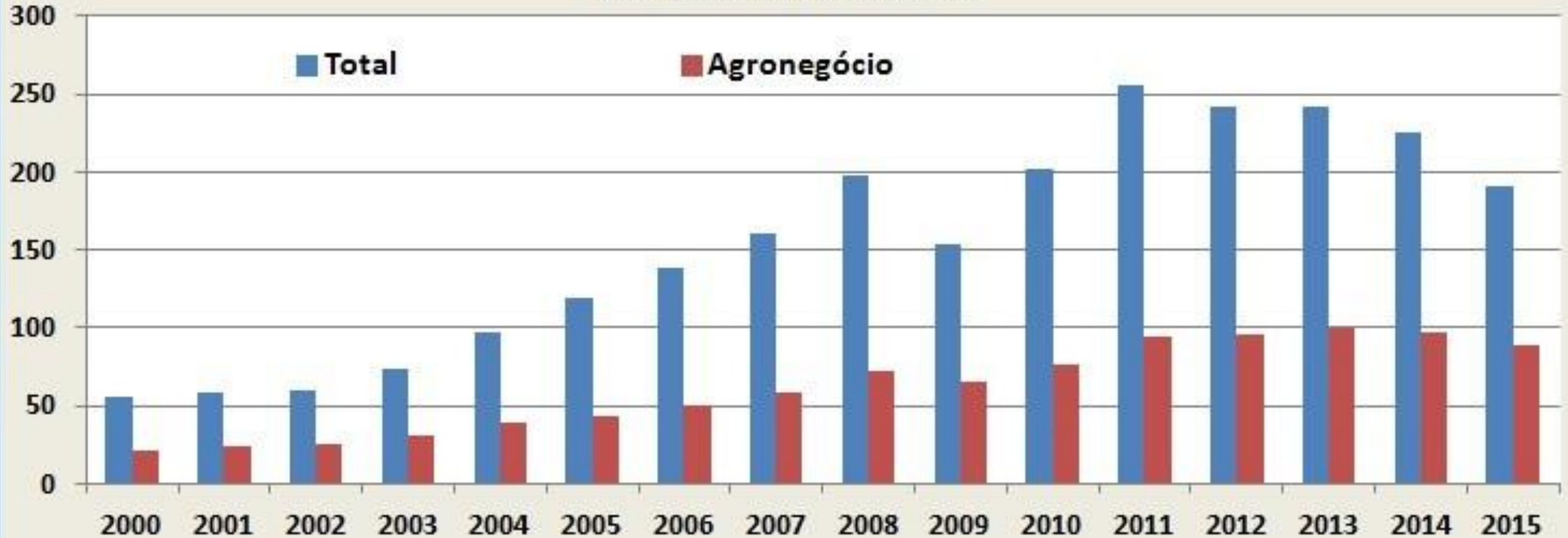
Region Rank 	World Rank 	Country 	2016 GDP (PPP)  billions of USD
—	—	<b>South America</b>	<b>6,376.8</b>
1	8	 Brazil	5,081
2	27	 Argentina	1,203
3	32	 Colombia	999
4	42	 Venezuela	799
5	45	 Chile	598
6	48	 Peru	598
7	66	 Ecuador	241
8	94	 Bolivia	78.35
9	96	 Uruguay	73.25
10	103	 Paraguay	64.67
11	162	 Suriname	8.547
12	169	 Guyana	6.093

## South America – some statistics

Country	Total	Beef	Pork	Poultry	Fish
	<b>consumption</b>				
	<i>(kg per caput)</i>	<i>(Percentage)</i>			
<b>Tropical Latin America</b>					
Bolivia	31.4	51.9	17.5	3.2	2.9
Brazil	38.0	50.8	19.7	13.9	3.4
Colombia	33.9	70.5	12.1	8.6	7.1
Costa Rica	26.6	70.7	12.4	6.0	10.9
Cuba	40.8	40.9	14.5	19.9	24.8
Dominican Republic	21.3	35.7	16.9	32.4	14.6
Ecuador	28.3	41.0	14.1	8.5	28.6
El Salvador	13.7	43.1	19.7	16.1	12.4
Guatemala	13.4	63.4	10.4	17.2	4.5
Guyana	44.4	16.0	6.1	29.1	47.1
Haiti	13.5	31.1	40.7	6.7	8.1
Honduras	12.8	57.0	13.3	25.8	3.9
Jamaica	49.7	23.3	8.0	38.0	27.4
Mexico	26.6	35.7	27.1	17.3	13.5
Nicaragua	35.1	63.2	14.0	8.3	12.3
Panama	42.1	66.7	8.6	13.5	10.5
Paraguay	64.7	56.0	34.3	5.9	1.5
Peru	35.7	18.9	10.4	22.4	33.9
Trinidad and Tobago	40.2	16.7	8.7	5.1	16.4
Venezuela	55.2	46.0	10.0	25.4	17.0
<b>Temperate Latin America</b>					
Argentina	140.5	66.8	7.3	6.2	0.6
Chile	42.1	54.6	7.6	10.0	19.5
Uruguay	107.7	75.3	5.2	4.9	3.8

# *Brazilian exports*

## EVOLUÇÃO DAS EXPORTAÇÕES BRASILEIRAS (EM BILHÕES DE DÓLARES)



Fonte: Ministério da Agricultura

# Brazilian exports - meats

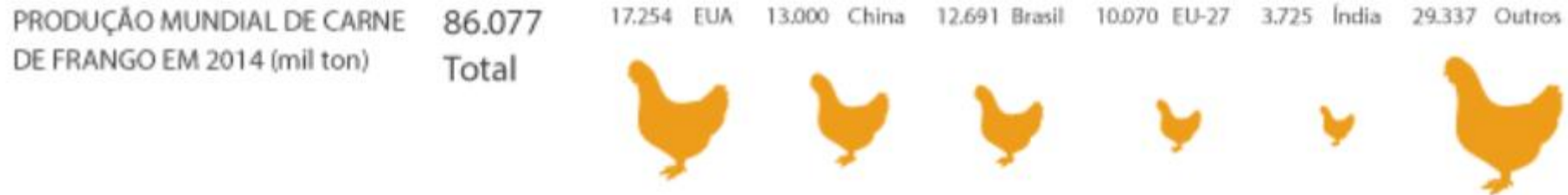
## Produção e exportação mundial de carne

Estimativa 2017. Em mil toneladas

Países	Produção			Exportação			Consumo doméstico		
	Beef	Pork	Chicken	Beef	Pork	Chicken	Beef	Pork	Chicken
EUA	11.808	11.739	18.690	1.193	2.449	3.128	11.845	9.811	15.661
Brasil	9.470	3.825	14.080	1.950	940	4.385	7.585	2.886	9.697
União Europeia	7.850	23.350	11.300	350	3.300	1.275	7.875	20.062	10.785
China	6.950	53.750	11.500			345	7.890	55.870	11.705
India	4.350		4.500	1.925			2.425		4.495
Argentina	2.700		2.165	235		190	2.465		1.979
Australia	2.015			1.325	35				
Mexico	1.910	1.448	3.335	275			1.825	2.348	4.178
Subtotal	47.053	94.112	65.570	7.253	6.724	9.323	41.910	90.977	58.500
Outros	14.265	16.899	24.878	2.443	1.905	2.049	17.491	19.713	29.910
Total	61.318	111.011	90.448	9.696	8.629	11.372	59.401	110.690	88.410

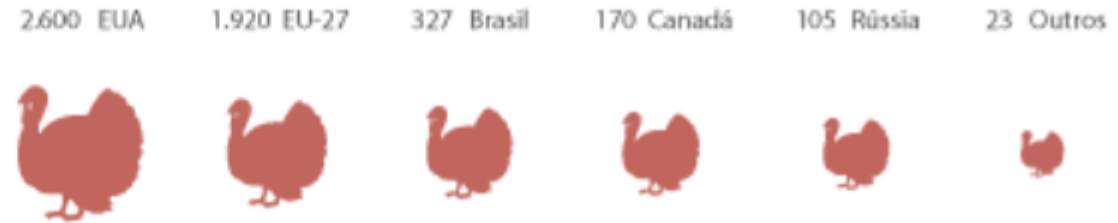
Fonte: USDA / FAS / Elaboração Blog O Cafezinho.

# International Market for chicken



# International Market for turkey

PRODUÇÃO MUNDIAL DE CARNE DE PERU EM 2014 (mil ton) **5.145 Total**



IMPORTAÇÃO MUNDIAL DE CARNE DE PERU EM 2014 (mil ton) **289 Total**



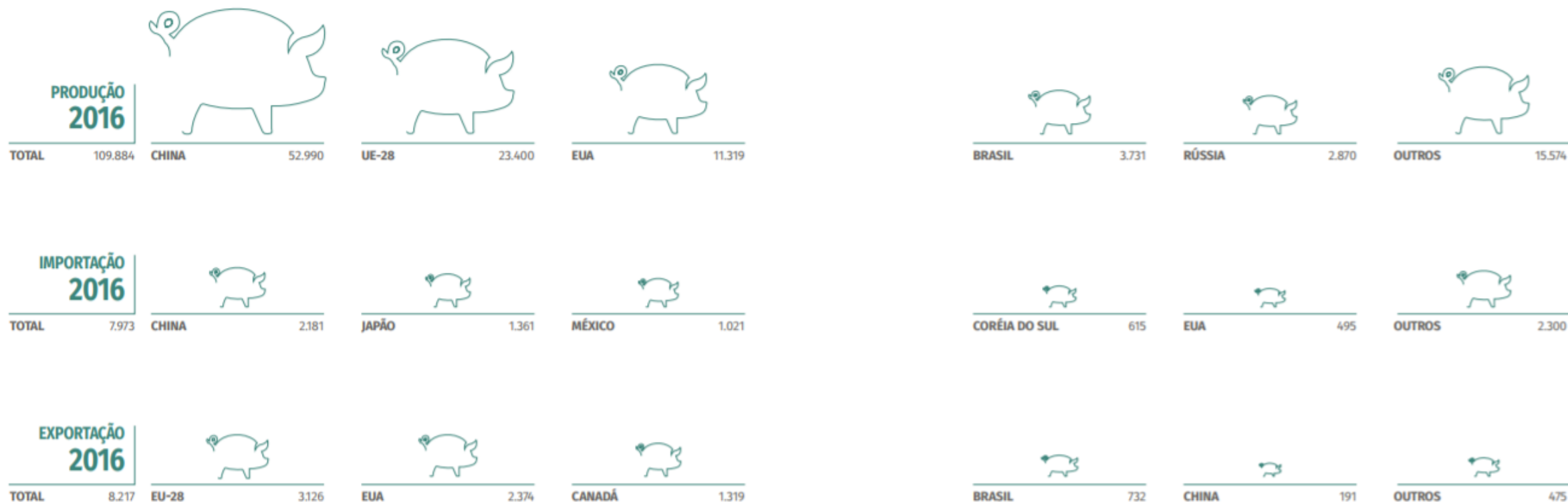
EXPORTAÇÃO MUNDIAL DE CARNE DE PERU EM 2014 (mil ton) **652 Total**



# International Market for pork

## MERCADO MUNDIAL

### MERCADO MUNDIAL DE CARNE SUÍNA (MIL TON)



## World Beef Exports: Ranking Of Countries

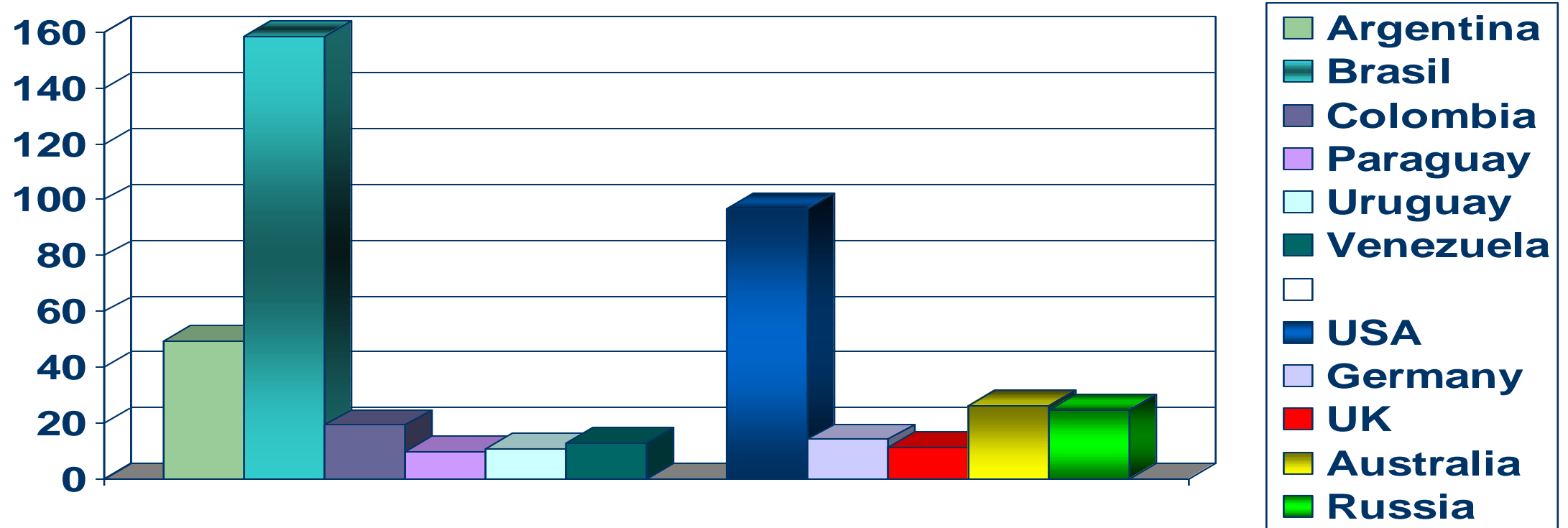
World		9,439,000	
Rank	Country	2016	% Of World
1	Brazil	1,850,000	19.60%
2	India	1,850,000	19.60%
3	Australia	1,385,000	14.67%
4	United States	1,120,000	11.87%
5	New Zealand	580,000	6.14%
6	Canada	430,000	4.56%
7	Paraguay	390,000	4.13%
8	Uruguay	385,000	4.08%
9	European Union	330,000	3.50%
10	Mexico	255,000	2.70%
11	Belarus	220,000	2.33%
12	Argentina	210,000	2.22%
13	Nicaragua	140,000	1.48%
14	Pakistan	85,000	0.90%
15	South Africa	60,000	0.64%
16	Ukraine	30,000	0.32%
17	China	22,000	0.23%
18	Costa Rica	20,000	0.21%
19	Colombia	16,000	0.17%
20	Chile	13,000	0.14%





*The beef cattle perspective*

# *Beef herd sizes in South America (million of heads)*



# Beef herd sizes in South America (million of heads)

**Table 2**

**Characteristics of South American beef production industries, among the major beef-producing countries**

Item	Brazil	Argentina	Uruguay	Paraguay
Cattle inventory (1,000 head)	197,550	49,297	11,412	10,574
Beef exports (1,000 MT CWE)	1,350	280	315	170
Cattle slaughter (1,000 head/year)	39,100	11,060	2,050	1,154
Percent of cattle inventory slaughtered/year	19.8%	22.4%	18.0%	10.9%
Export value (\$/T)	\$5,083	\$8,088	\$5,841	\$4,355
Percent of production exported	20-25%	10-20%	70-80%	50-55%
Human population (millions)	190.8	40.1	3.2	6.5
Cattle per human (ratio of head per person)	1.0	1.2	3.6	1.6
Number of farmers	1,800,000	232,000	35,300	225,054
Percent of population raising cattle	0.9%	0.6%	1.1%	3.4%
Cattle inventory/farm (head)	110	212	323	47
Beef slaughter plants	750	456	40	100
Beef slaughter age (months)	> 30	< 30	< 30	> 30
Carcass weight (lbs)	517	469	535	513

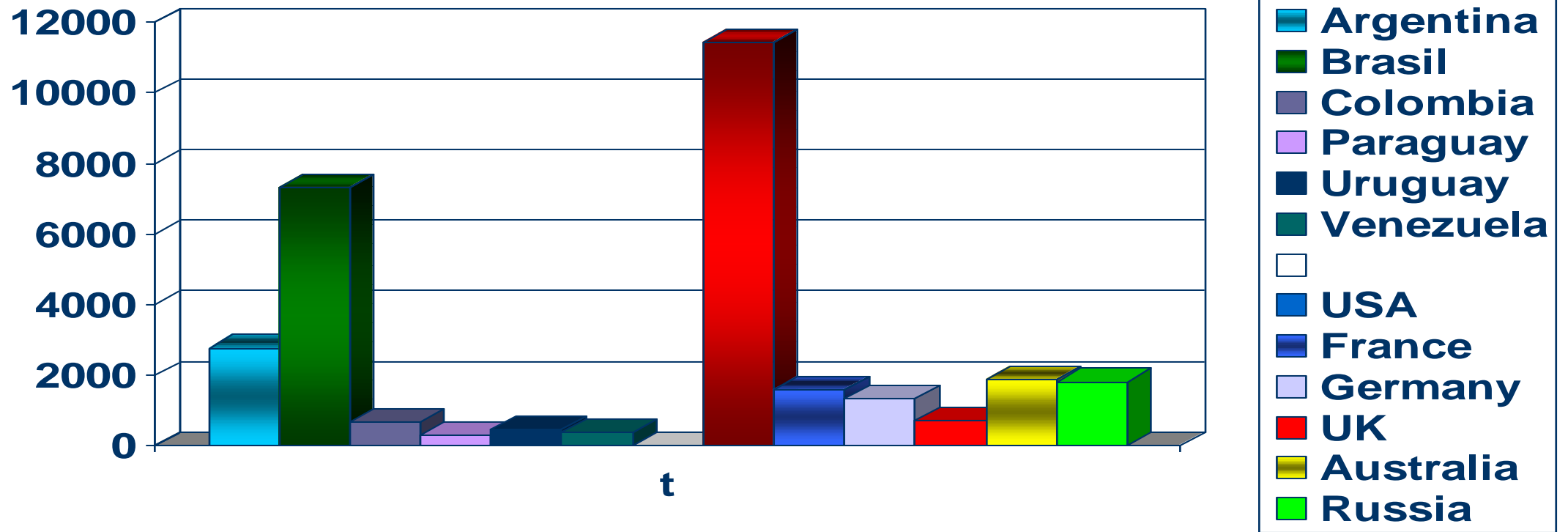
Source: Fabio Montossi, INIA, Uruguay.

## World Cattle Inventory vs. Human Population

World		998,313,000	7,400,000,000	0.13
Rank	Country	Cattle	Population	Per Capita
1	Uruguay	11,845,000	3,444,071	3.44
2	New Zealand	9,903,000	4,565,185	2.17
3	Argentina	53,515,000	43,847,277	1.22
4	Australia	27,750,000	24,309,330	1.14
5	Brazil	226,037,000	209,567,920	1.08
6	Belarus	4,320,000	9,481,521	0.46
7	Canada	12,100,000	36,286,378	0.33
8	United States	93,500,000	324,118,787	0.29
9	India	303,350,000	1,326,801,576	0.23
10	Turkey	14,047,000	79,622,062	0.18
11	European Union	89,250,000	507,416,607	0.18
12	Russia	18,430,000	143,439,832	0.13
13	Mexico	16,500,000	128,632,004	0.13
14	Ukraine	3,780,000	44,624,373	0.08
15	Egypt	6,995,000	93,383,574	0.07
16	China	100,085,000	1,382,323,332	0.07
17	South Korea	3,106,000	50,503,933	0.06
18	Japan	3,800,000	126,323,715	0.03

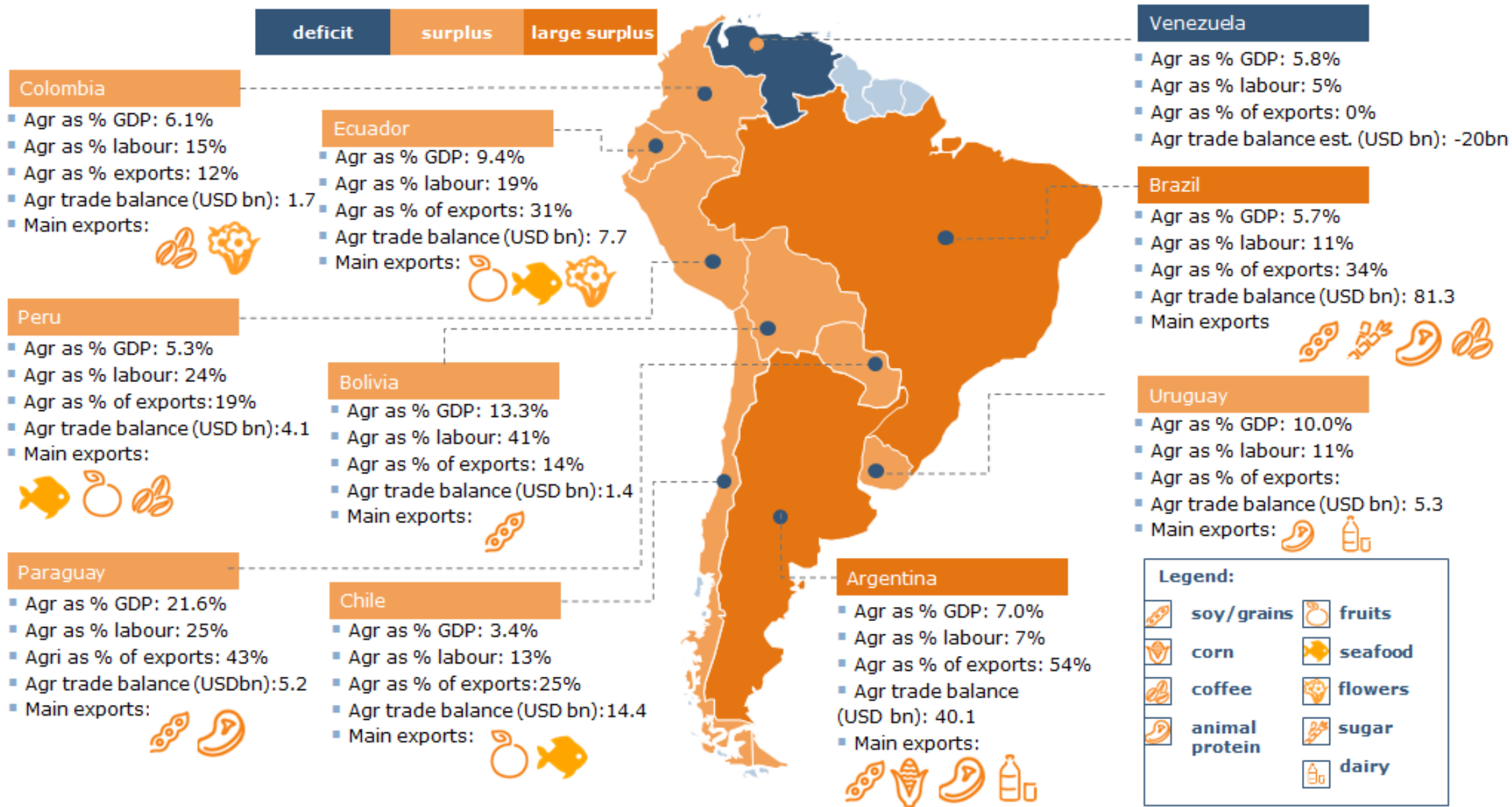
Source: FAS/USDA (head/people)

# *Beef production in South America (t of carcasses x 1000)*



# Beef exports in South America (t of carcasses x 1000)

## South America



Figures in *italics* represent averages for the period 2012 – 2013 or estimates; otherwise all figures represent average values for the period 2012 – 2014;

## World Beef Consumption By Country

World		129,472,923,360	7,432,663,275	17.4
Rank	Country	Consumption	Population	Per Capita
1	Uruguay	427,696,280	3,444,071	124.2
2	Argentina	5,269,041,800	43,847,277	120.2
3	Hong Kong	839,960,220	7,346,248	114.3
4	United States	25,714,687,680	324,118,787	79.3
5	Brazil	16,532,445,380	209,567,920	78.9
6	Paraguay	489,425,640	6,725,430	72.8
7	Australia	1,580,712,540	24,309,330	65.0
8	Canada	2,094,389,000	36,286,378	57.7
9	Kazakhstan	981,055,900	17,855,384	54.9
10	Chile	952,395,840	18,131,850	52.5
11	Israel	396,831,600	8,192,463	48.4
12	Switzerland	388,013,120	8,379,477	46.3
13	Turkey	3,571,484,400	79,622,062	44.9
14	New Zealand	178,574,220	4,565,185	39.1
15	Costa Rica	189,597,320	4,857,218	39.0
16	Colombia	1,834,243,840	48,654,392	37.7
17	South Africa	1,990,771,860	54,978,907	36.2
18	South Korea	1,728,422,080	50,503,933	34.2
19	Bosnia	121,254,100	3,802,134	31.9
20	Mexico	3,979,339,100	128,632,004	30.9
21	Kuwait	121,254,100	4,007,146	30.3
22	Lebanon	176,369,600	5,988,153	29.5
23	Russia	4,221,847,300	143,439,832	29.4
24	Gabon	46,297,020	1,763,142	26.3
25	Oman	116,844,860	4,654,471	25.1
26	Dom. Republic	238,098,960	10,648,613	22.4

27	Macedonia	46,297,020	2,081,012	22.2
28	Japan	2,645,544,000	126,323,715	20.9
29	Pakistan	3,672,896,920	192,826,502	19.0
30	Malaysia	579,815,060	30,751,602	18.9
31	Ukraine	831,141,740	44,624,373	18.6
32	UAE	167,551,120	9,266,971	18.1
33	Belarus	169,755,740	9,481,521	17.9
34	Egypt	1,536,620,140	93,383,574	16.5
35	El Salvador	97,003,280	6,146,419	15.8
36	Saudi Arabia	498,244,120	32,157,974	15.5
37	Peru	480,607,160	31,774,225	15.1
38	Jordan	114,640,240	7,747,800	14.8
39	Honduras	116,844,860	8,189,501	14.3
40	Taiwan	324,079,140	23,395,600	13.9
41	Singapore	77,161,700	5,696,506	13.5
42	Venezuela	407,854,700	31,518,855	12.9
43	Nicaragua	79,366,320	6,150,035	12.9
44	Philippines	1,294,111,940	102,250,133	12.7
45	Angola	324,079,140	25,830,958	12.5
46	Algeria	502,653,360	40,375,954	12.4
47	China	16,916,049,260	1,382,323,332	12.2
48	Guatemala	191,801,940	16,672,956	11.5
49	Iran	890,666,480	80,043,146	11.1
50	Libya	48,501,640	6,330,159	7.7
51	Vietnam	542,336,520	94,444,200	5.7
52	India	5,291,088,000	1,326,801,576	4.0
53	Congo	50,706,260	79,722,624	0.6

Source: FAS/USDA (pounds)



# Beef breeds used in South America

## Zebu - Nelore



# Beef breeds used in South America

## Zebu - Nelore



# Beef breeds used in South America

## Zebu – Nelore



# Beef breeds used in South America

## Zebu - Nelore



# Beef breeds used in South America

## Zebu - Nelore



# Beef breeds used in South America

## Zebu – Nelore



Bento AJ



CFM Unico

Beef breeds used  
in South America  
Zebu – Polled  
Nelore



# Beef breeds used in South America

## Zebu – Tabapuã





# Beef breeds used in South America

## Zebu – Indubrasil



# Beef breeds used in South America

## Zebu – Sindi



# Beef breeds used in South America

## Zebu – Brahman (all over, less in Brazil)



# Beef breeds used in South America Criollo type – Caracu (1945 bull)



# Beef breeds used in South America

## Criollo type - Caracu



# Beef breeds used in South America (Brazil) Synthetic Canchim (3/8 Zebu x 5/8 Charolais)



# Beef breeds used in South America (Brazil and Paraguay)

*B.taurus* x *B. indicus* multibred Composite Montana Tropical



# Beef breeds used in South America

## Criollo type – Romosinuano (Colombia, Venezuela)





# Beef breeds used in South America

Santa Gertrudis (3/8 Zebu x 5/8 Shorthorn)



# Beef breeds used in South America

Braford (3/8 Zebu x 5/8 Hereford)



# Beef breeds used in South America

Brangus (3/8 Zebu x Angus)



# Exotic beef breeds used in South America

## Senepol



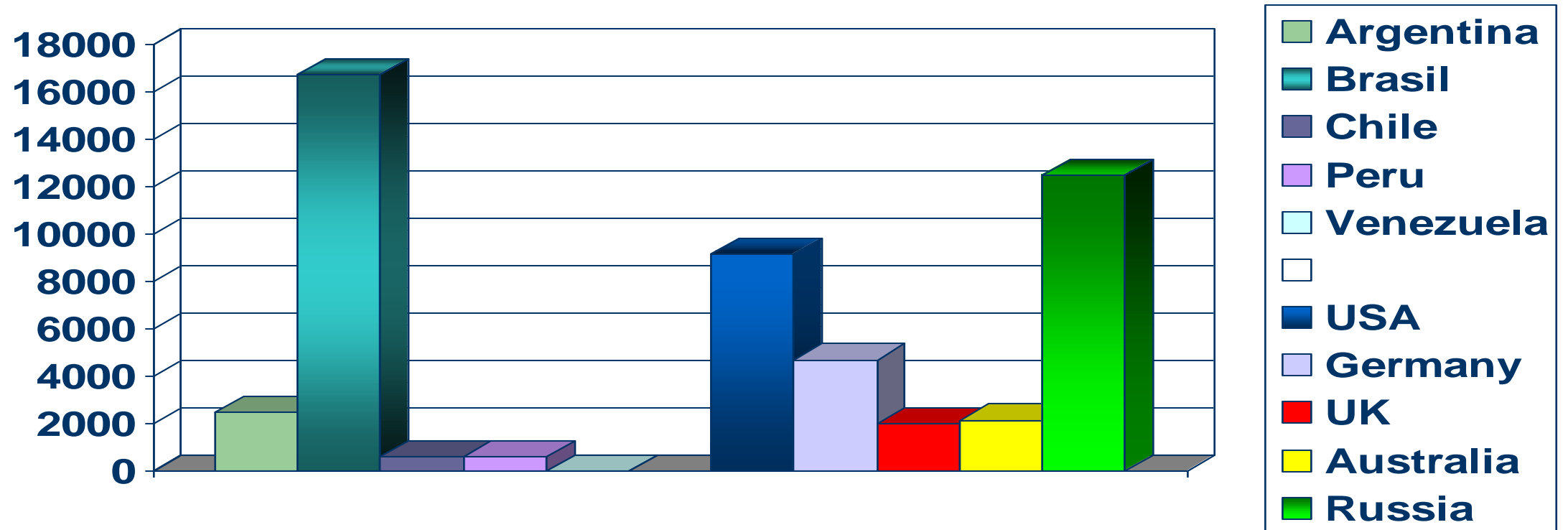
# Exotic beef breeds used in South America

## Bonsmara

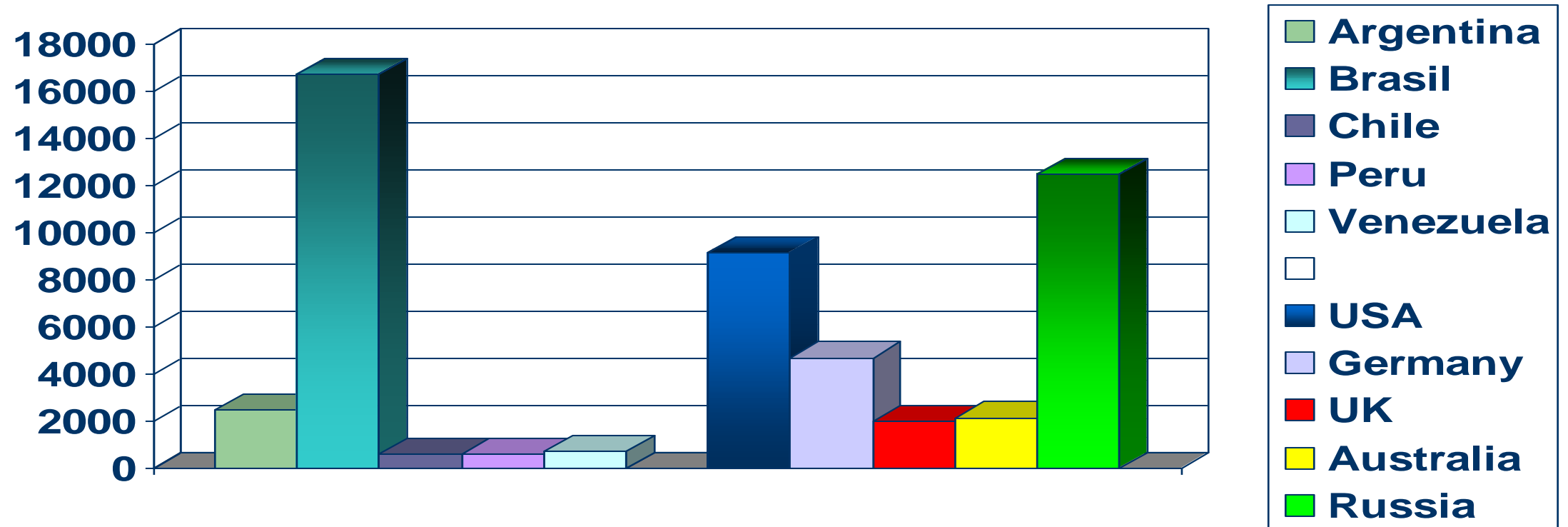


The dairy cattle perspective

# *Dairy herd sizes in South America (million of heads)*

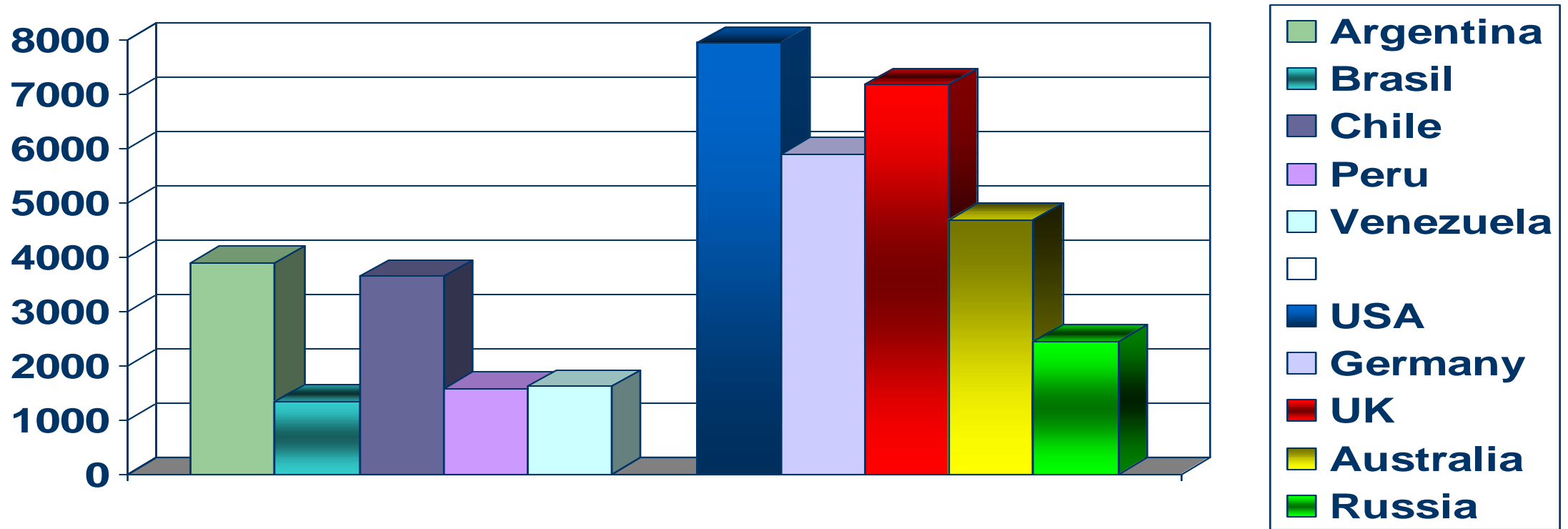


# *Milk production in South America* *(kg x 10<sup>6</sup>)*





# *Milk yield per cow (kg)*



# Beef breeds used in South America

## Zebu - Guzera



# Beef breeds used in South America

## Zebu - Gyr



# Beef breeds used in South America

## Zebu – Polled Gir



Fonte: ABS Pecplan

*Dairy breeds used in South America  
Criollo type - Caracu*



# *Dairy breeds used in South America*

## *Criollo type – Pé-Duro or Curraleiro*



Adapted to tropics, higher cheese yield, disease resistant

*Dairy breeds used in South America  
Girolando (3/8 Gir x 5/8 Holstein)*



# *Dairy breeds used in South America Pitangueiras (3/8 Zebu x 5/8 Red Poll)*



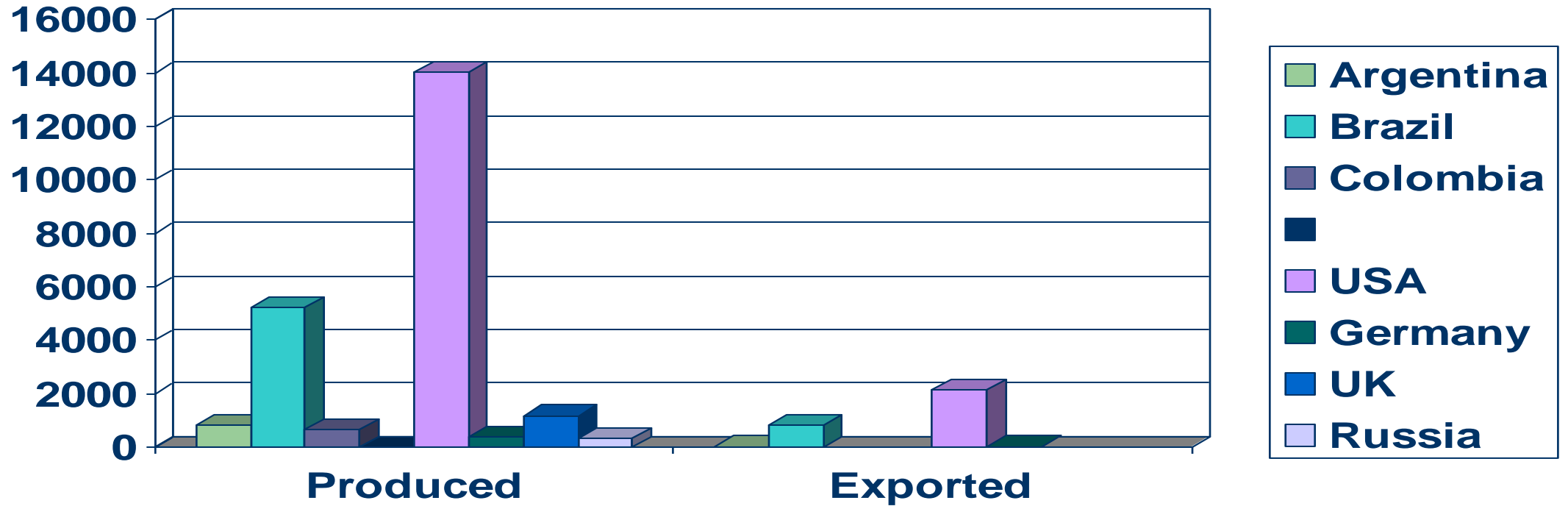


# *Water buffalo*

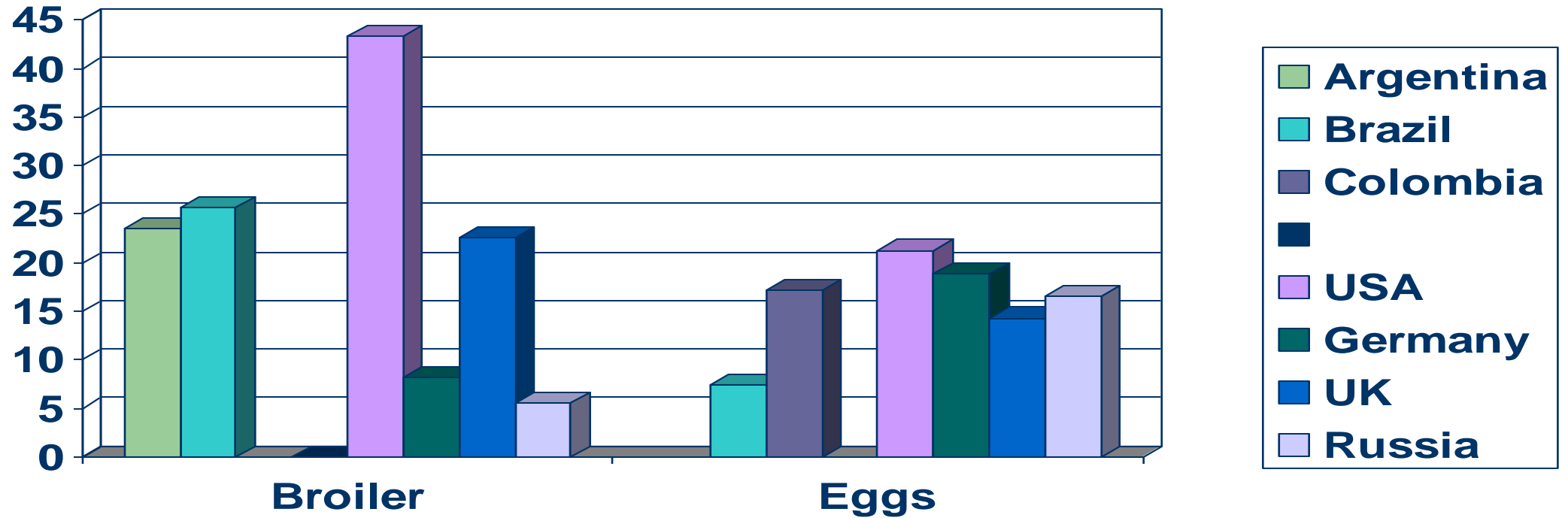


*Broiler and hen perspective*

# *Broiler production in South American countries (kg x 10<sup>6</sup>)*



*Broiler and egg per capita consumption in South American countries  
(kg or dozen)*



# *Broilers*

- 80% of genetics come from 3 companies
- Brazil has one genetic program (50% of market)
- Some research at 3 sites

# *Hens*

- Imported genetics

*A “brazilian” broiler (Embrapa)*



*Some “local” or adapted pig breeds  
Canastra*



*Some “local” or adapted pig breeds*  
*Piau*





*Some “local” or adapted pig breeds  
Pirapitinga*



*Some “local” or adapted pig breeds*  
*Tatu*



*Some goat and sheep breeds*  
*Canindé goat*



*Some goat and sheep breeds*  
*Canindé goat*



*Some goat and sheep breeds*  
*Moxotó goat*



*Some goat and sheep breeds*  
*Santa Inês sheep*



# *Morada Nova sheep*



# *Some horse breeds – Pantaneiro*

*(resistant to infectious anemia)*





## *Some horse breeds – Criolo*



# *Some horse breeds – Mangalarga*



# Some horse breeds – Mangalarga (Turbante & clone)



*Some horse breeds – Jumento Pêga*  
*Equus asinus*



# Mules & Donkeys



Project Mulas as recipient females

# Many thanks

