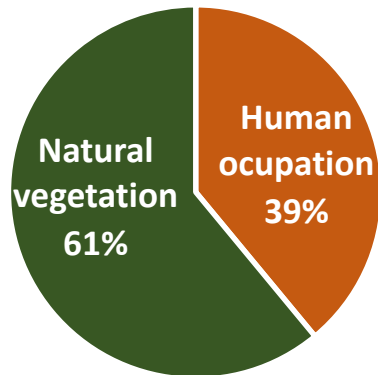


Could fertilizer BMPs for pastures help to mitigate deforestation in Brazil?



Eros Francisco, IPNI, Rondonópolis, Brazil
Max Padin, Rural Business Rondonópolis, Brazil
Luís Prochnow, IPNI Brazil, Piracicaba, Brazil

Land use in Brazil



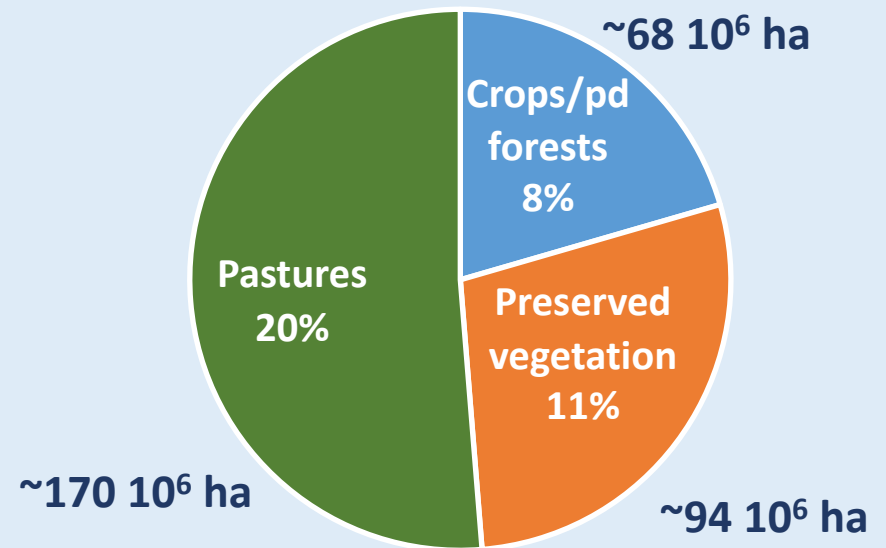
- ✓ 1,871 conservation units
- ✓ 600 Indian reservations
- ✓ 2,471 protected areas
- ✓ 68 military areas





Land use in Brazil:

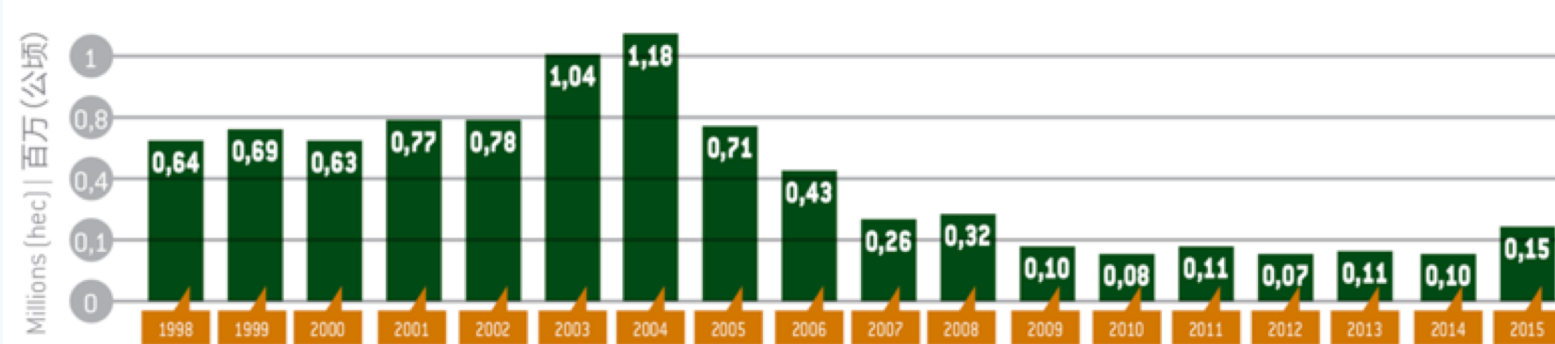
39% of human occupation



<http://www.aprosoja.com.br/storage/site/downloads/comunicacao/publicacoes/cartilha-de-sustentabilidade-em-ingles-e-mandarim58e3e27052fe6.pdf>

Deforestation is in very low pace

MATO GROSSO DEFORESTATION (HEC) | 马托格罗索州森林砍伐面积 (公顷)



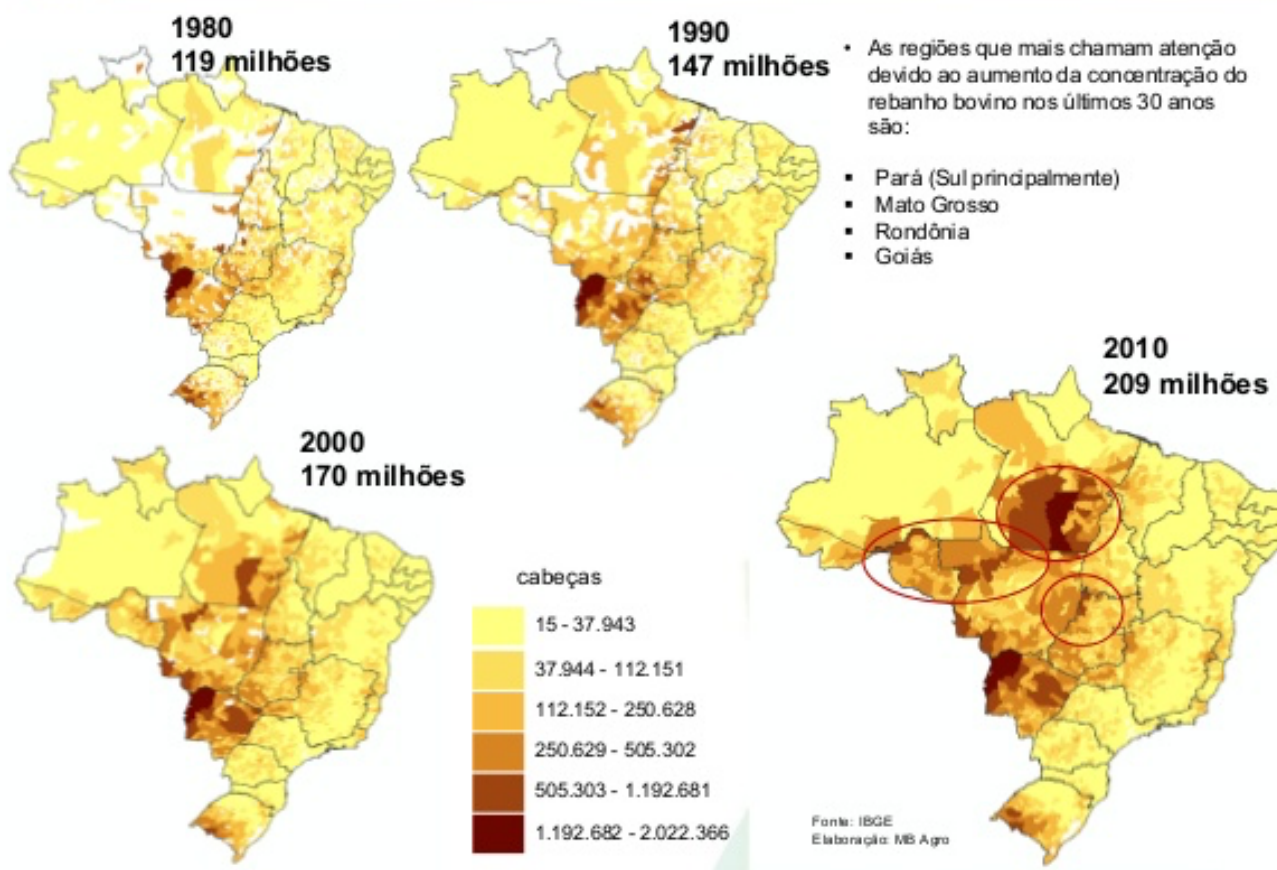
► Brazil has already reached the goal of reducing deforestation by 80% in 2009. The target was initially for 2020.
2009年, 巴西已经实现了减少80%森林砍伐的目标。最初计划到2020年才能实现上述目标。

Source: Science, Technology and Innovation Ministry (MCTI) – Proders | 来源: 巴西科技与创新部 (MCTI) – Proders

For further information, please visit:

<http://www.aprosoja.com.br/storage/site/downloads/comunicacao/publicacoes/cartilha-de-sustentabilidade-em-ingles-e-mandarim58e3e27052fe6.pdf>

Evolution of cattle herd in Brazil: *size and distribution*



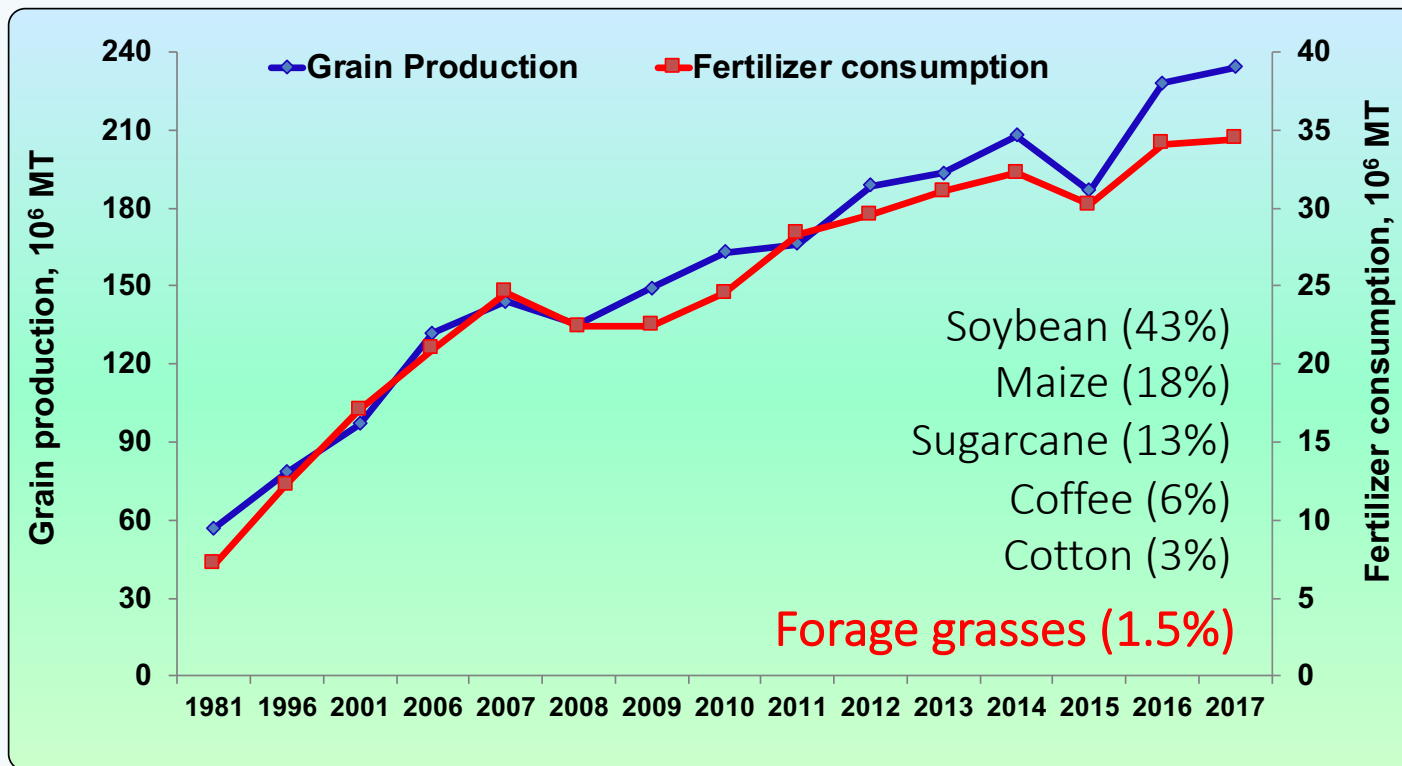
Livestock production
came first into the
Amazon region

Typical grassland system in most parts of Brazil

- ✓ Acidic and poor soils
- ✓ Low biomass production
- ✓ About 50% show some level of degradation
- ✓ At least 10 million ha are severely degraded

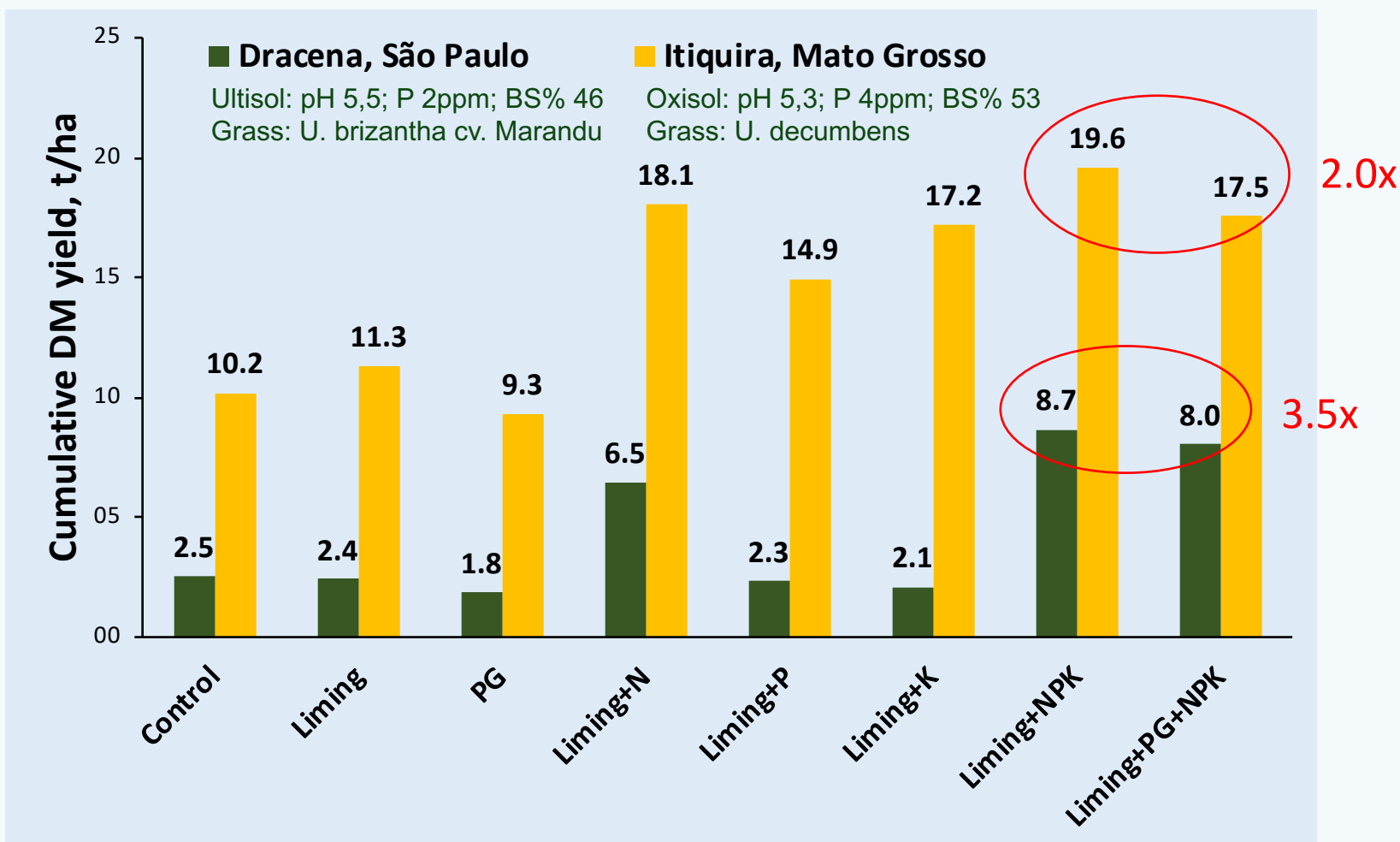
<1 head/ha
~75 kg beef/ha/year

Total grain production and fertilizer consumption in Brazil



Average of 3 kg fertilizer product/ha or
1 kg of nutrients/ha

Cumulative DM yield of *Brachiaria* grass in response to liming, phosphogypsum and nutrient applications in two different locations



Rates: liming (2 t/ha), PG (2 t/ha), N (100 kg/ha), P (45 kg/ha), and K (50 kg/ha).

Stocking rate (SR), average daily gain (ADG), beef productivity (BP), N use efficiency (NUE), and profit in response to N rates in a farm

N rate	SR	ADG	BP	NUE	Profit
kg/ha	AU/ha	kg/day	ton/ha	kg beef/kg N	US\$/kg N
0	1.4	0.64	0,25	-	-
42	2.2	0,41	0,26	6.2	6.8
166	3.4	0,68	0,61	3.7	4.2
222	4.1	0,76	0,70	3.2	3.5
280	4.8	0,64	0,86	3.1	3.5
304	4.9	0,78	1,05	3.5	3.8

- ✓ Significant increase in beef production
- ✓ Better use of land

Effect of post-grazing height on grazing efficiency

	Post-grazing height (cm)		
	20	30	50
Pre-grazing biomass (ton DM/ha)	17.5	21.0	20.1
Percentage of leaves, pre-grazing (%)	94%	86%	77%
Grazing efficiency (%)	72%	69%	51%



Adequate grazing management is crucial to maximum use of forage production

Comparasion of livestock production systems in Mato Grosso do Sul state

System	DM yield	Stocking rate	Average daily gain	Beef productivity	Cost	Operating Profit
	ton/ha/year	head/ha	kg/day	kg/ha/year	R\$/kg	R\$/ha/year
1	unknown	1.30	0.35	82.9	3.38	216
2	4.3	1.24	0.46	118.0	3.50	295
3	38.1	10.7	0.62	1,287	3.22	3,559

System 1: MS state average

System 2: low input cattle farm

System 3: high input cattle farm (liming, fertilization, and irrigation)

Ranchers can make more money than grain farmers

How could it be if BMPs were largely adopted?

	Current situation	How could it be
Herd size (million heads)	189	133
Output rate	22%	30%
Beef production (million ton)	9.1	9.1
Stocking rate (head/ha)	1.0	1.5
Required land (million ha)	158	89

69 million ha saved or available for other purposes as grain crops, planted forests, or natural reservations

In conclusion...

- Adoption of BMPs (adequate nutrient use and grazing management) can impact positively on beef productivity
- IPNI has been involved in several extension/scientific activities to educate farmers on how to benefit from fertilizer BMPs:
 - Partnering with national events on livestock systems (since 2014)
 - Organizing a symposium on FBMPs for forage grasses (2018)
 - Making available an online tool on liming and fertilizer recommendations for forage grasses in Brazil (2018)
 - Publishing a book on nutrient use for forage grasses (2019)

For more information, please visit:

brasil.ipni.net

Thanks for your attention!



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