Energy cane selection in Northeast region of Brazil

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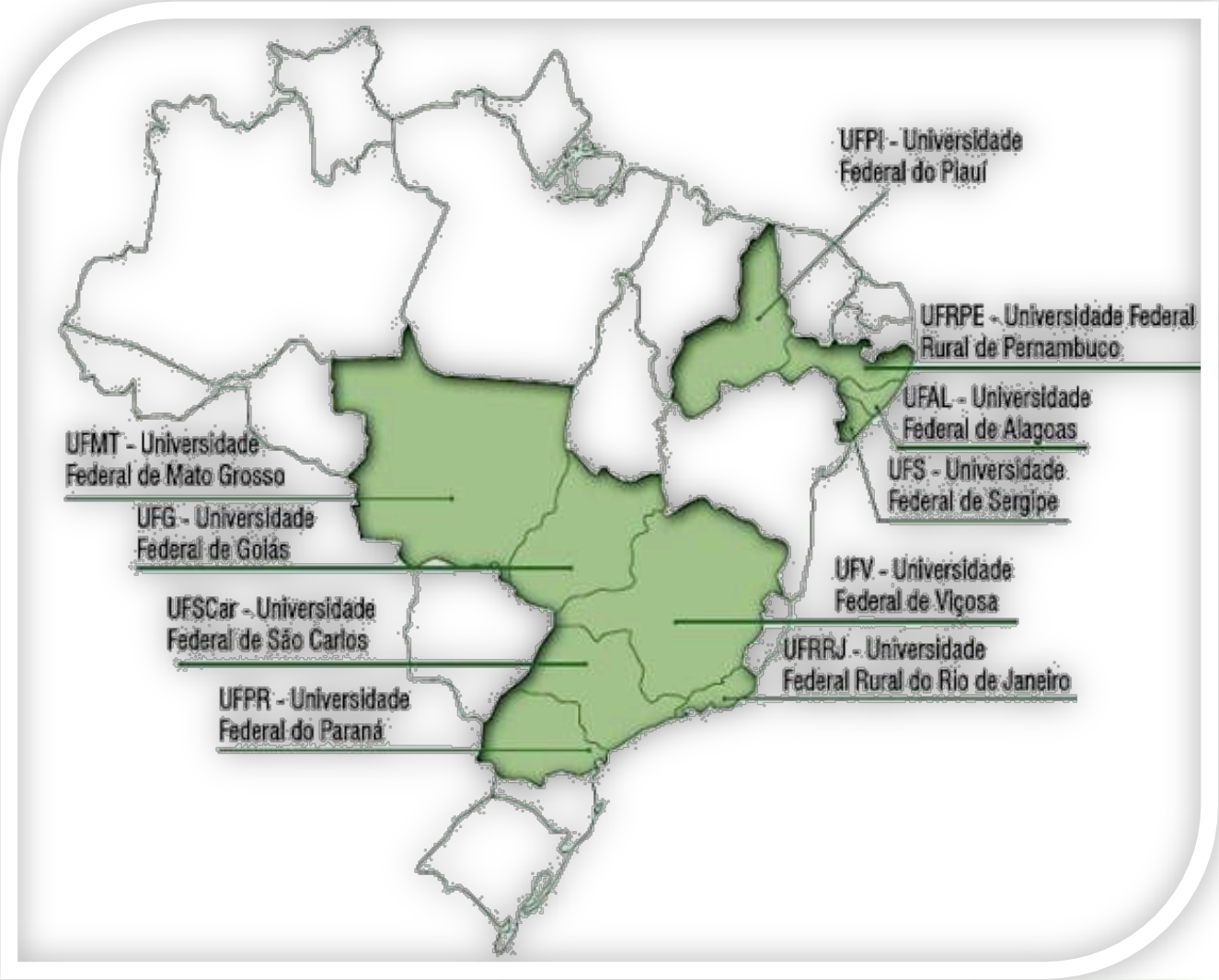
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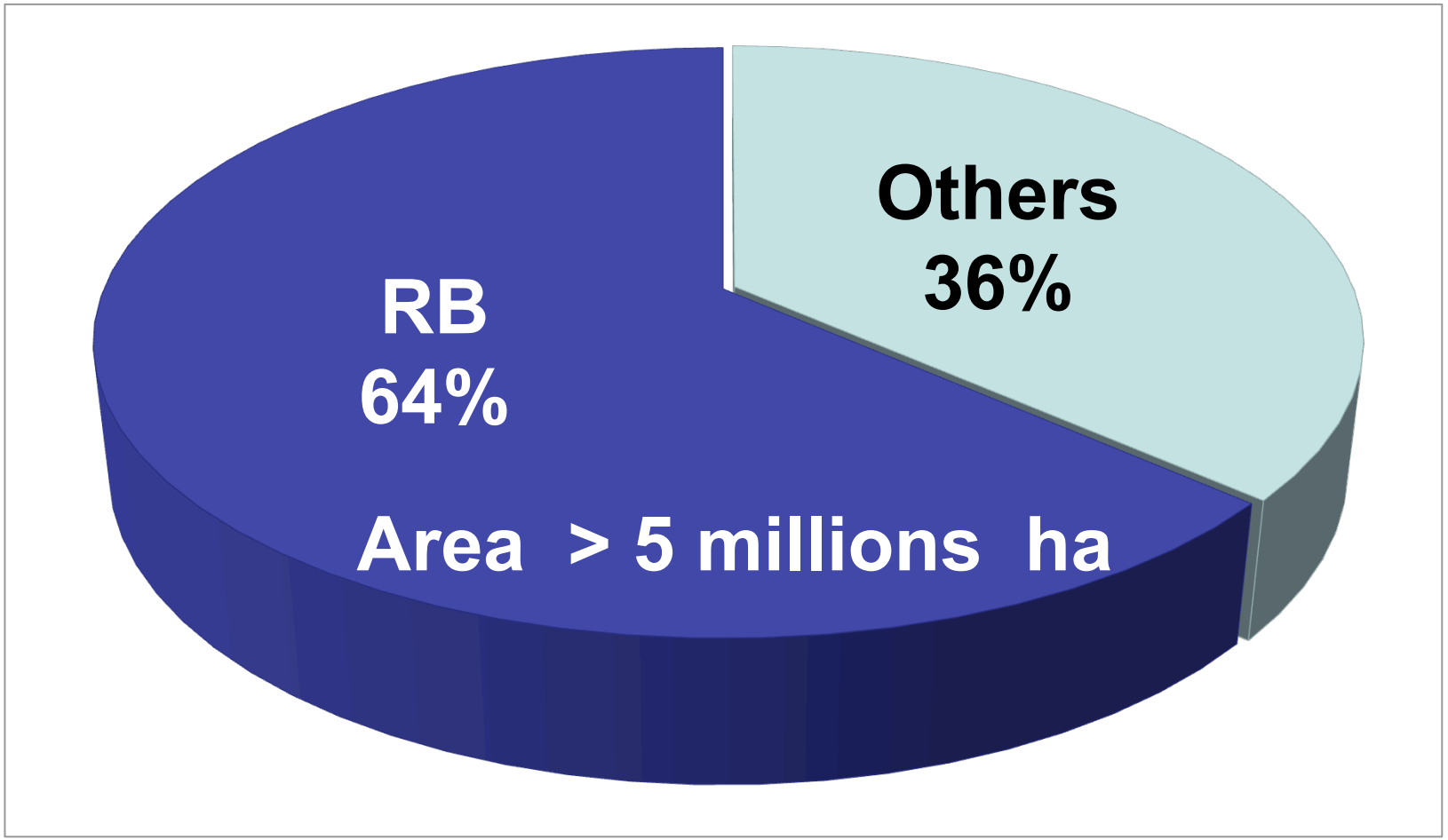


INTERUNIVERSITY NETWORK FOR THE DEVELOPMENT OF SUGARCANE INDUSTRY (RIDESA)



INTRODUCTION

RB varieties cultivated in Brazil (season 2013/2014)



Source: RIDESA, 2015


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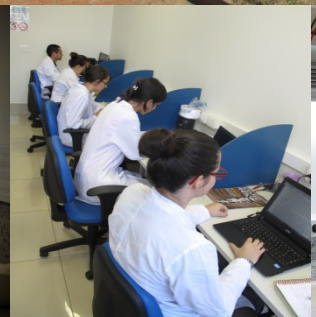
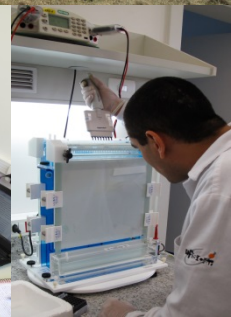






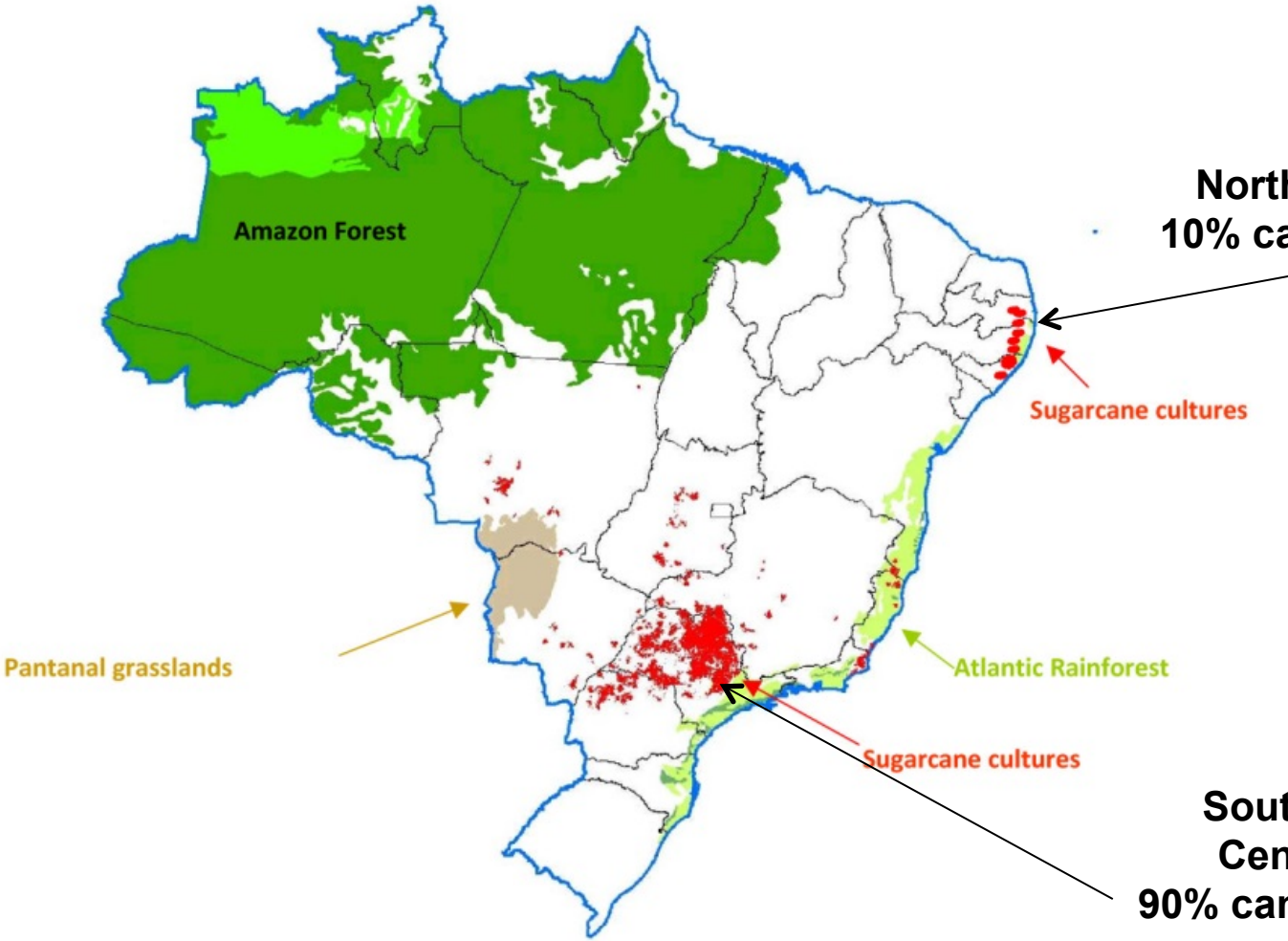




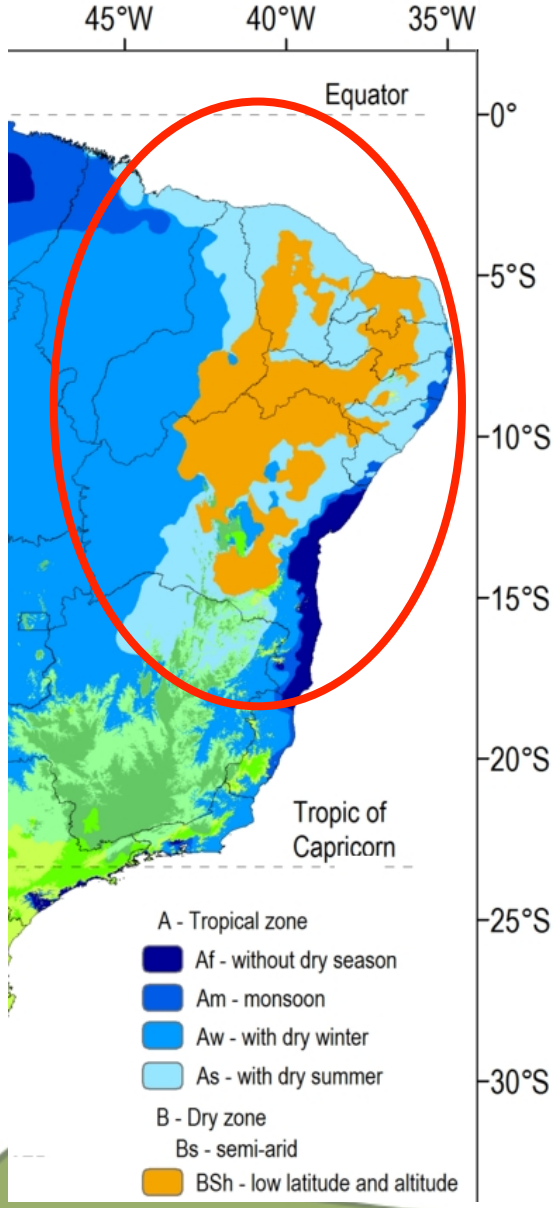




INTRODUCTION

Sugarcane in Brazil (9 millions ha)



INTRODUCTION



Northeast average climate for sugarcane production areas:

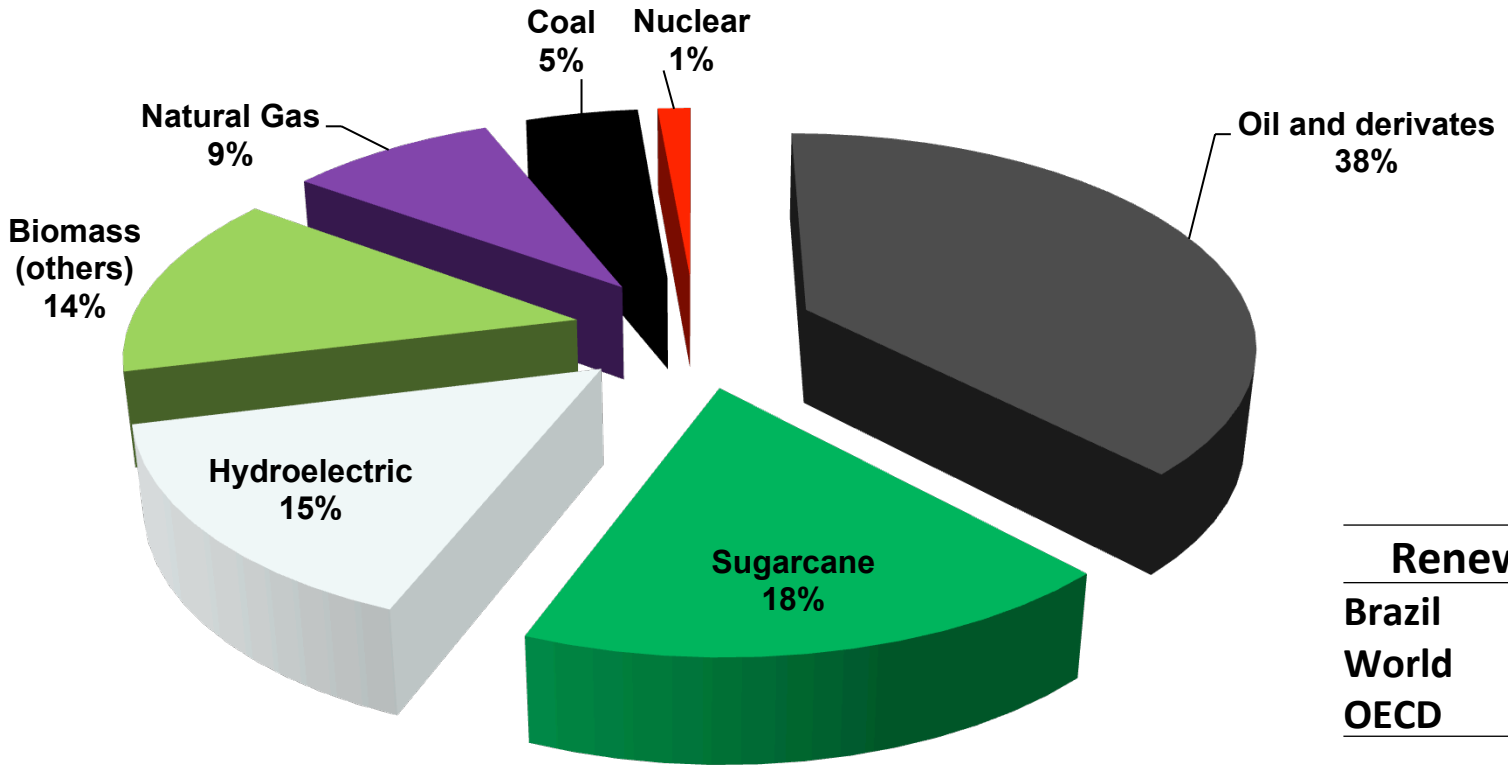
Tropical zone with a dry season in summer

Temperature varies from 24 to 30 degrees

Monthly precipitation varies from 33 mm (oct) to 280 mm (may)

INTRODUCTION

Brazilian energy matrix



Renewable	
Brazil	47,7%
World	12,7%
OECD	7,2%

Source: EPE/MME, 2010

INTRODUCTION

Brazil is in the limit of electricity generation, the current model must be updated

Hydroelectricity is no longer viable considering environmental issues

Oil use should be avoided for obviously reasons

Energy cane is part of the solution ?

INTRODUCTION

Trash management; from field to industry GranBio Plant in Alagoas, Brazil

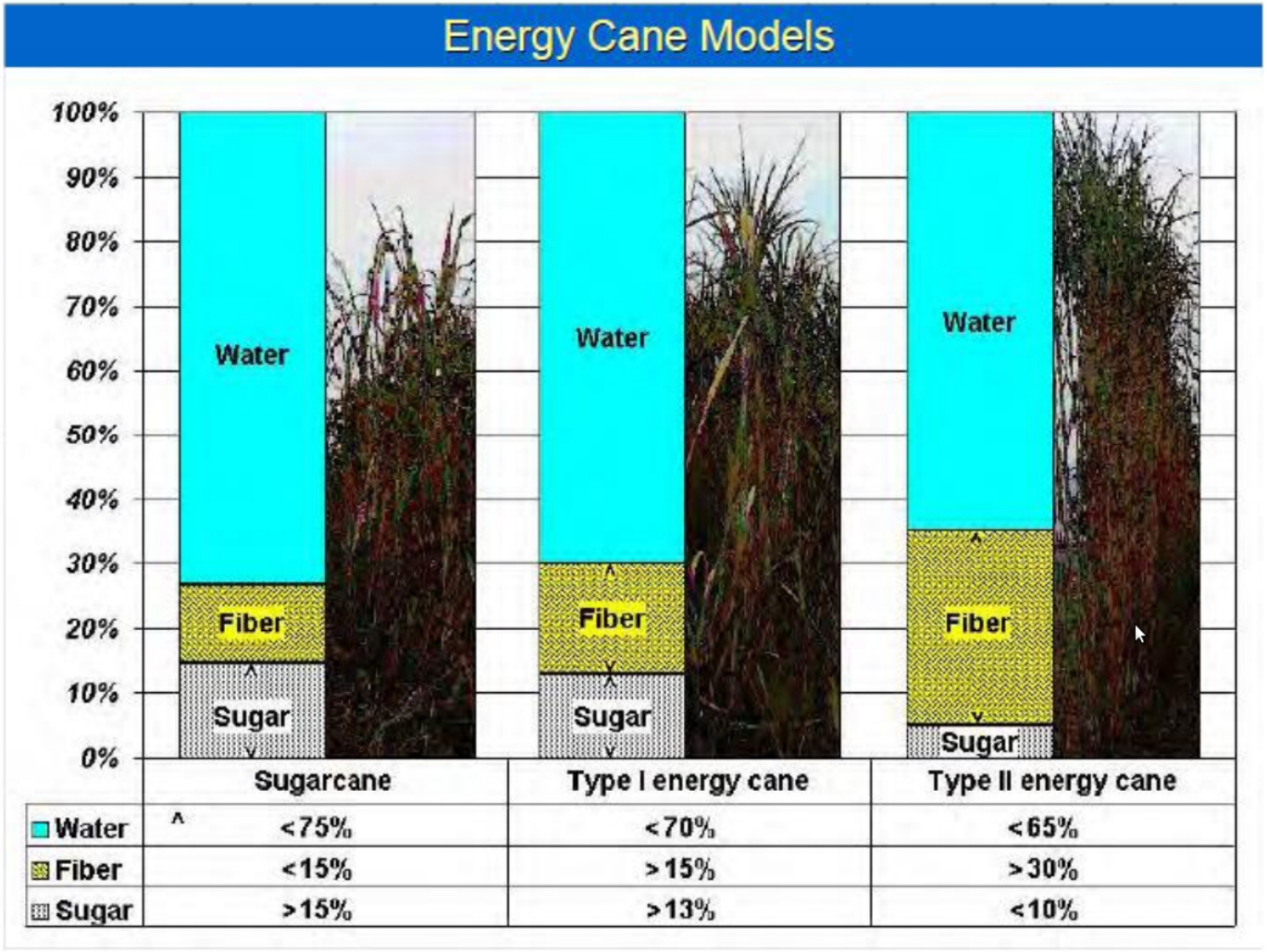






Source: Bressiani, 2014

INTRODUCTION



	Sugarcane	Type I energy cane	Type II energy cane
Water	<75%	<70%	<65%
Fiber	<15%	>15%	>30%
Sugar	>15%	>13%	<10%

(TEW; COBILL, 2008)

OBJECTIVE

- To study the yield potential of energy cane (type I) clones for northeast region of Brazil

CROSSING STATION

Serra do Ouro (Murici, Alagoas State , Brazil, 09°13‘ S, 35°50‘ W)







Source: RIDESA, 2015

GERMPLASM COLLECTION

Species / Hybrids	Access
Saccharum officinarum	45
Saccharum sinense	7
Saccharum robustum	9
Saccharum spontaneum	40
Saccharum barberi	6
Saccharum edule	1
Erianthus arundinaceus	6
Miscanthus	2
Hybrids: B^{67}, BJ^{15}, CR^{14} CL^{18}, CP^{152}, Co^{57}, CB^{151}, CTC^{23} , DB^{11}, F^{35}, H^{133}, IAC^{69}, $IANE^{15}$, L^{13}, $LAICA^{22}$, M^{17}, MEX^{23}, N^{12}, NA^{19}, POJ^{11}, PR^{23}, Q^{68}, R^{26}, $RB^{1,549}$, ROC^{11}, SP^{135}, TUC^{57}, TCP^{14}, US^{17}, others^{146}	2.923
Total	3.039

Source: RIDESA, 2015

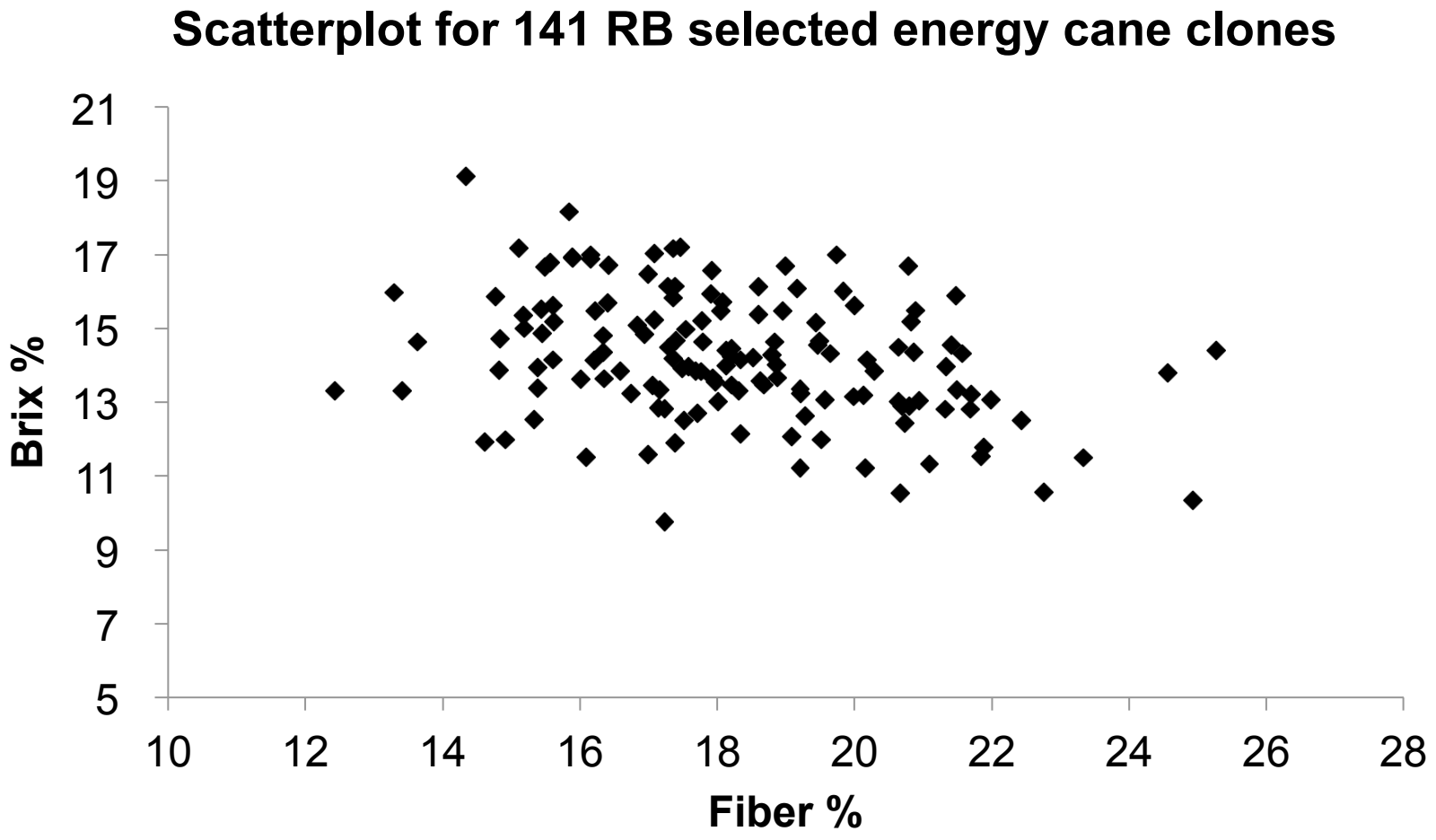
TRIAL EXPERIMENT INFORMATION

- **Location**: Caeté Mill, São Miguel dos Campos – Alagoas, Brazil (09°42'S, 36°06'W)
- **Breeding phase**: second selection stage
- **Evaluated clones**: 741
- **Standard sugarcane variety for comparison**: RB92579
- **Experimental Plot**: single line with 5 plants
- **Espacing**: 1,9 m between rows and 0,80 m between plants

EVALUATED TRAITS

- Pest and disease resistance (rusts, smut, leaf scald,...)
- Nº of stalks
- Weight of 30 stalks (kg)
- TCH (Cane yield per hectare), estimated
- Solids (Brix% and Fiber%)
- Visual Performance

RESULTS


Scatterplot for 141 RB selected energy cane clones
Brix %
21
19
17
15
13
11
9
7
5
10
12
14
16
18
20
22
24
26
28
Fiber %

RESULTS

Selected energy cane clone (physiological age: 6.5 months)



Source: RIDESA, 2014

RESULTS

Harvest of a selected energy cane clone with 214 tonns of cane per hectare (physiological age: 13 month)



Source: RIDESA, 2014

RESULTS

Comparison yield: Top 10 clones vs standart variety RB92579

Type	Values	Traits		
		TCH (t/ha)	Fiber%	Fiber+Brix (t/ha)
Top 10 clones Plant cane (12 months)	Min	167,35	21,68	57,08
	Average	192,09	23,07	62,66
	Max	229,90	25,27	74,56
Sugarcane standard variety (RB92579)	Average	74,04	14,38	24,77
Comparison between top 10 clones vs RB92579	%	159,43	60,88	153,03

CONCLUSIONS

Expectation from energy cane obtained by RIDESA

- ✓ Varieties with higher fiber content level and biomass (over than 200 t/ha of fresh weight)
- ✓ High propagation rate (1:30)
- ✓ Tolerance to drought stress and major pests and diseases
- ✓ Higher ratooning longevity (10 years)
- ✓ Higher benefit-cost ratio



Thank you