WORLD BAMBOO CONGRESS
DAMYANG, KOREA

안녕하세요

17-22 September 2015

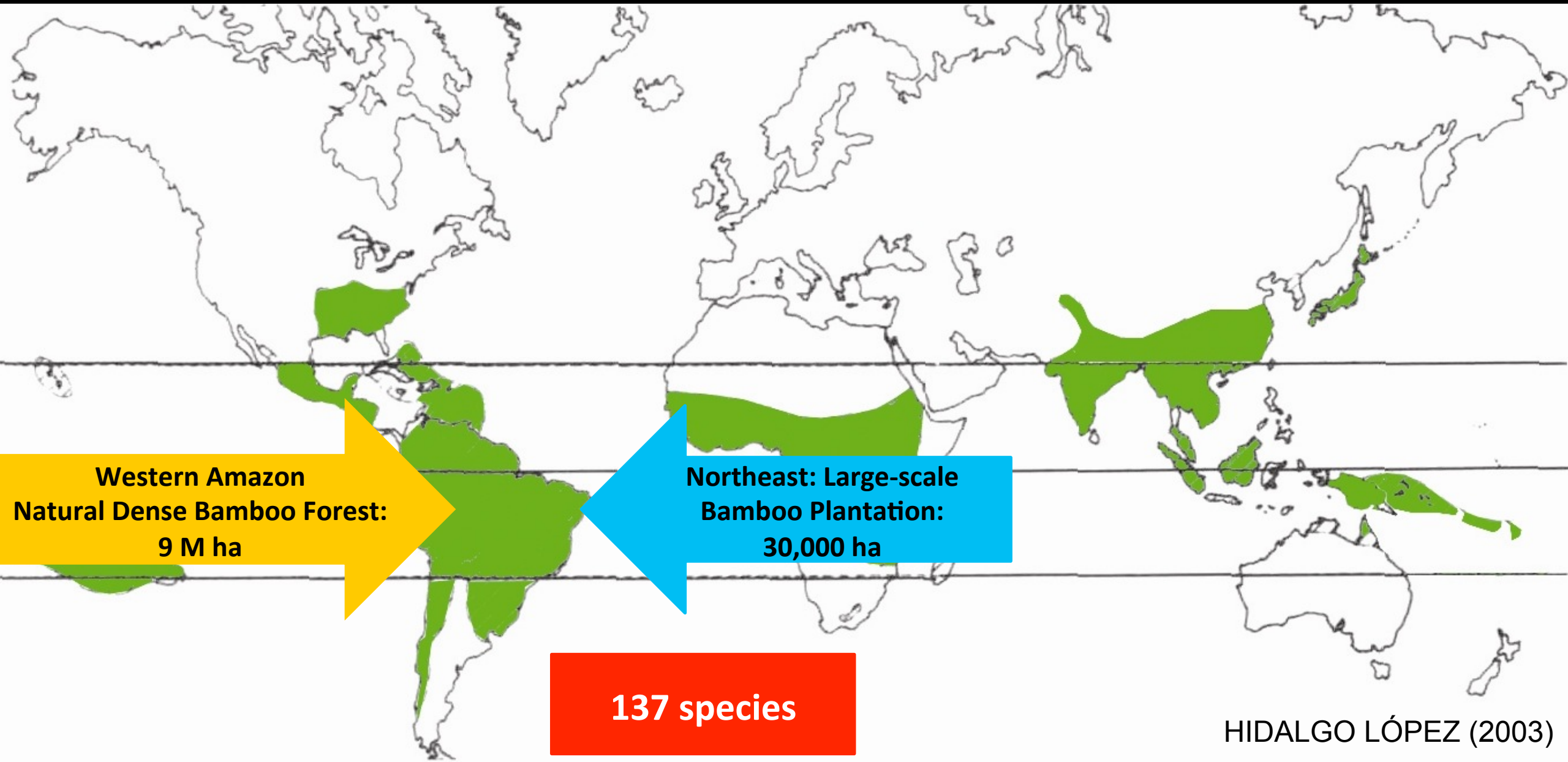
SURVIVAL AND CULM YIELD OF 6 BAMBOO SPECIES IN A 5-YEAR EXPERIMENTAL STAND IN SOUTHERN BRAZIL

Sanquetta, CR; Mognon, F; Dalla Corte, AP; Maas, GCB; Sanquetta, MNI
Federal University of Parana State - UFPR
Curitiba-PR, Brazil
sanquetta@ufpr.br; carlos_sanquetta@hotmail.com

OUTLINE

1. BAMBOO RESOURCES IN BRAZIL
2. RATIONALE
3. STUDY SITE
4. EXPERIMENTAL DESIGN
5. DATA COLLECTION
6. RESULTS AND DISCUSSION
7. FINAL REMARKS

BAMBOOS IN BRAZIL



HIDALGO LÓPEZ (2003)

RATIONALE

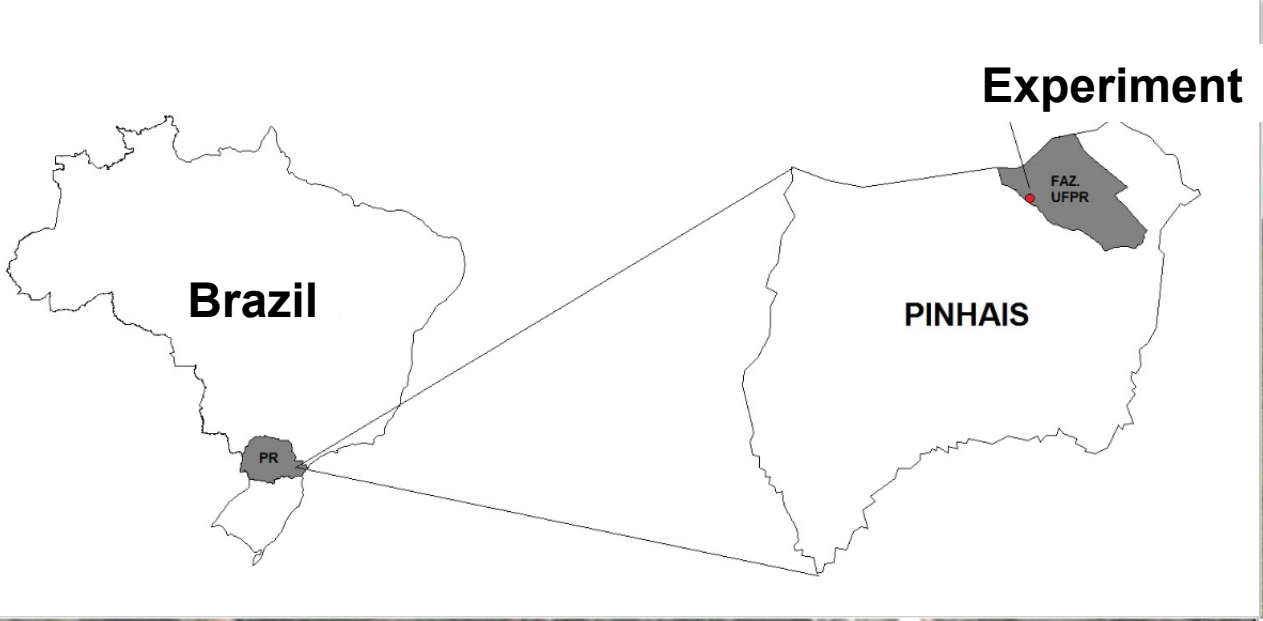
1. NATIONAL POLICY OF INCENTIVE TO BAMBOO SUSTAINABLE MANAGEMENT AND CULTIVATION (BRASIL 2011).
2. USE: EXTRACTION FROM NATURAL STANDS OR ISOLATED PLANTED CLUMPS, IN SMALL SCALE;
3. ONLY ONE LARGE-SCALE REFORESTATION INITIATIVE FOR PULP AND PAPER;
4. LACK OF BASIC DATA ON SPECIES YIELD PERFORMANCE: NO EXPERIMENT!

RATIONALE

OBJECTIVE:

- **ESTABLISH THE FIRST EXPERIMENTAL TEST OF BAMBOO SPECIES IN SOUTHERN BRAZIL;**
- **COLDER THAN THE REST OF THE COUNTRY: WARM-TEMPERATE TO SUBTROPICAL;**
- **USE OF A STATISTICALLY VALID EXPERIMENTAL DESIGN;**
- **NATIVE AND INTRODUCED SPECIES.**

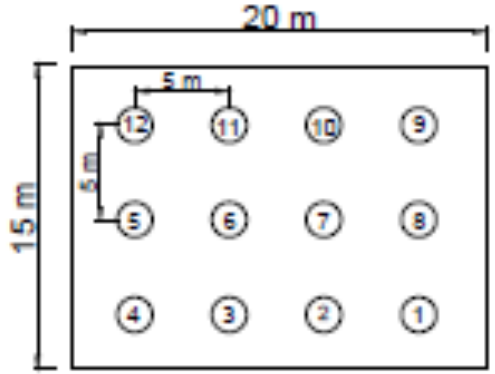
STUDY SITE



- Pinhais University Farm;
- Established December 2008;
- 25°23'30"S and 49°07'30";
- Subtropical Cfb;
- Monthly temperatures: 12.5 to 22.5°C;
- Altitude: 889 to 950 m asl;
- Soil classes: Sugamosto (2002).

EXPERIMENTAL DESIGN

Block 4	T1	T3	T4	T6	T2	T5
Block 3	T3	T1	T2	T5	T4	T6
Block 2	T6	T1	T2	T3	T5	T4
Block 1	T3	T5	T6			
	T4	T1	T2			



T1 *Guadua chacoensis*
T2 *Guadua angustifolia*
T3 *Merostachys skvortzovii*
T4 *Dendrocalamus asper*
T5 *Bambusa vulgaris*
T6 *Bambusa oldhamii*

pachymorph

EXPERIMENT INVENTORY

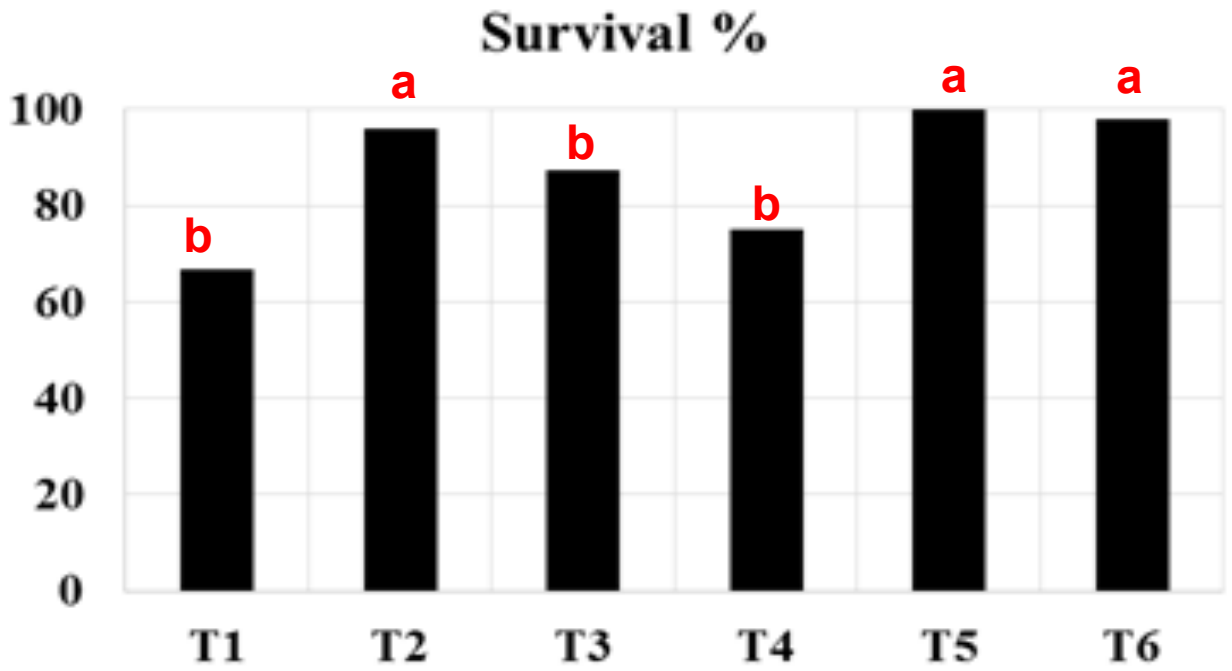
- Every year: from 2009 to 2014, in August;
- Mortality, re-sprouting, frost damage, other events;
- Measurement of all culms and new shoots;
- Base perimeter, coverage area, total height (length), culm density (number), base diameter, diameter at breast height (dhh);
- Other events.

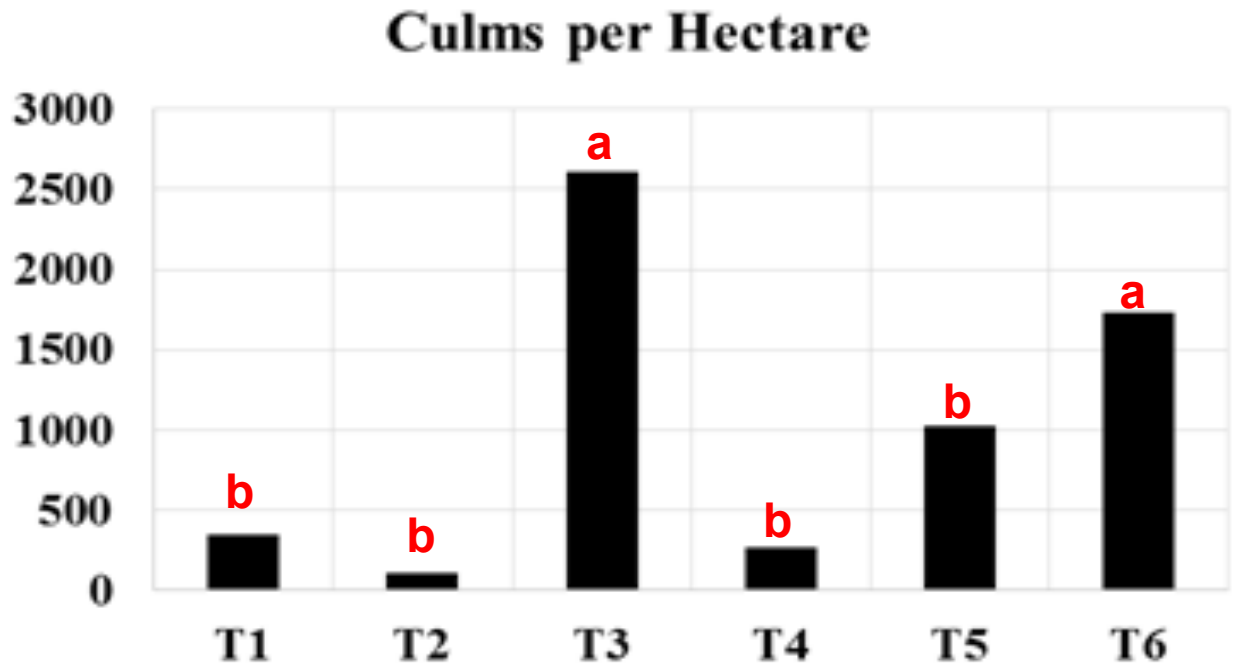
DATA ANALYSIS

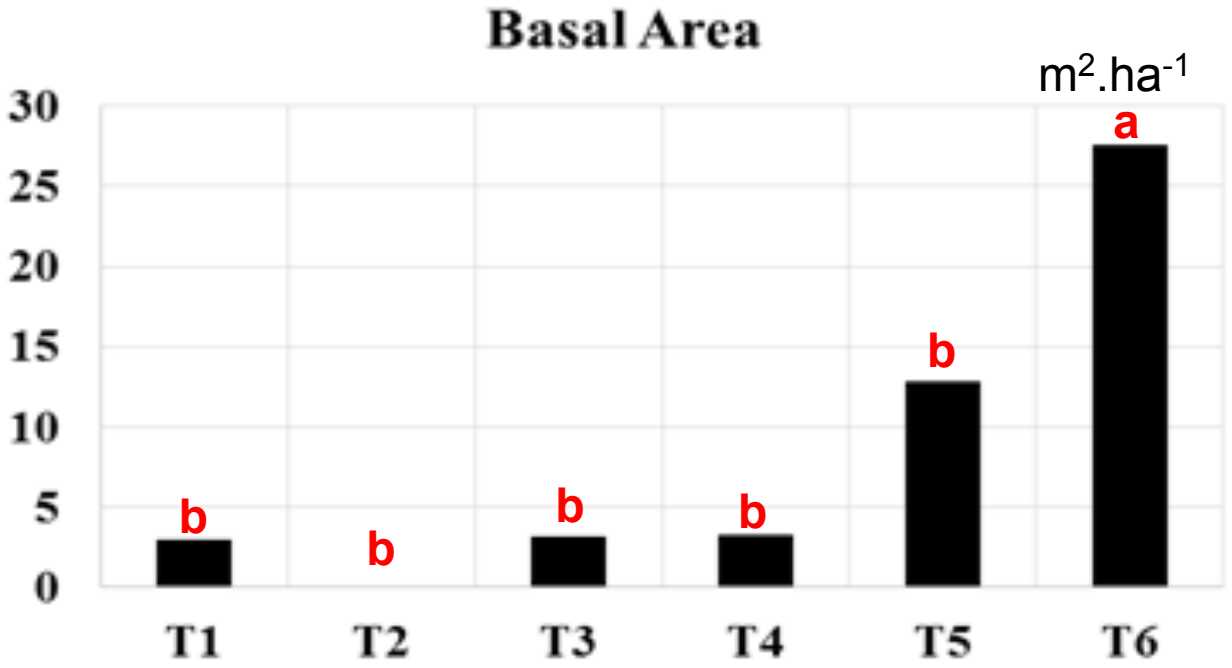
- Survival %;
- Culm density;
- Apparent basal area: calculated from dbh;
- Apparent volume;
- Biomass (dry mass);
- Carbon stock;
- Wood properties.

STATISTICAL ANALYSIS

- Descriptive stats;
- Normality;
- Homogeneity of Variance;
- Analysis of Variance;
- Test of Tukey at 0.05 probability;
- Modeling volume, biomass, carbon;
- Data Mining and AI approaches.







TREATMENTS

Native:

T1 - *Guadua chacoensis* Londoño & Peterson;

T2 - *Guadua angustifolia* Kunth;

T3 - *Merostachys skvortzovii* Sendulski;

Exotic:

T4 - *Dendrocalamus asper* (Schult. & Schult. F.) Backer ex k. Heyne;

T5 - *Bambusa vulgaris* Schrad. ex J.C. Wendl., and;

T6 - *Bambusa oldhamii* Munro.

RESULTS AND DISCUSSION

- **Survival: *Guadua angustifolia*, *Bambusa vulgaris* and *Bambusa oldhamii*;**
- **Culm density: *Merostachys skvortzovii* and *Bambusa oldhamii*;**
- ***Merostachys skvortzovii*: great sprouting capacity, but small-sized culms;**
- ***Bambusa oldhamii*: good sprouting, and large-sized culms;**
- **Apparent basal area: *Bambusa oldhamii*.**

RESULTS AND DISCUSSION

- **No published research on survival and growth of *Bambusa oldhamii* in Brazil;**
- **Most of the commercial plantations: *B. vulgaris (N & NE)*, pulp and paper industry (Cechinel Filho & Yunes 1998; Resende et al. 2011);**
- ***B. oldhamii*: better performance in terms of survival and growth in 5 years;**
- **Recommended for further studies: growth and use (biomass, wood properties, etc.).**

FINAL REMARKS

- ***Bambusa oldhamii*** **(T6): greatest growth performance - survival, density and basal area;**
- **Species resilient to the colder climate of Southern Brazil;**
- **Good sprouting: large-sized culms suitable for use;**
- ***Merostachys skvortzovii*** **(T3): native species for used in revegetation of degraded lands, due to its adaptation and capability to form dense clumps.**

FEDERAL UNIVERSITY OF PARANA
CURITIBA-PR, BRAZIL

고맙습니다
THANK YOU

Biomass and Carbon Sink Research Center

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