CANE TECHNOLOGY CENTER
CTC - BRAZIL

DIBANET

Álcool combustível: mais vantagens sobre a gasolina.

With the support of the Seventh Framework Programme.

CANE TECHNOLOGY CENTER
CTC - BRAZIL

- Non-for-profit private organization - OSCIP
  (Organização da Sociedade Civil de Interesse Público) BRA
- Expenses for :
  - Agricultural research (R&D&I)
  - Processing research (R&D&I)

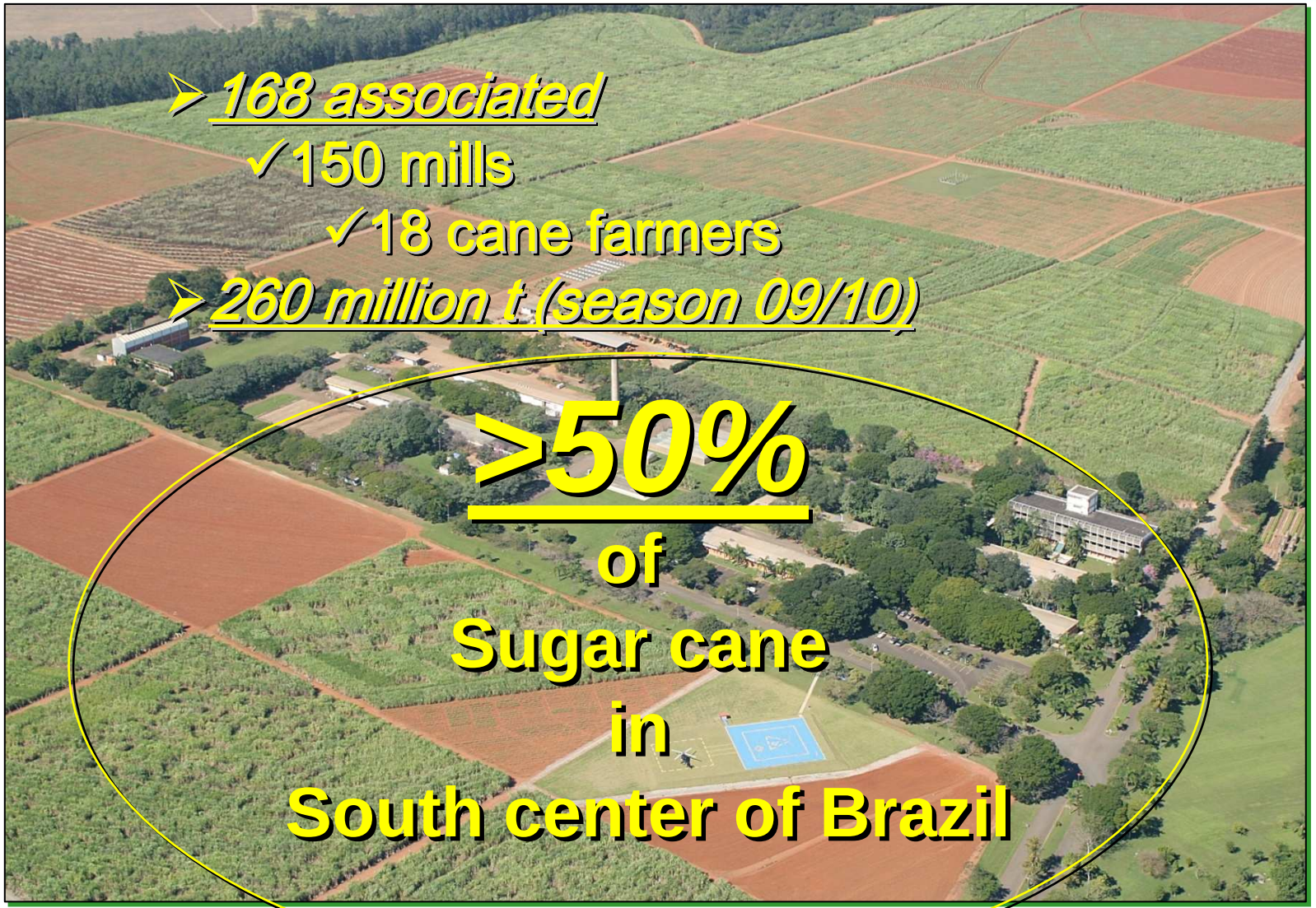
CTC Mission

Generate value for the associates developing and transferring technologies and innovations applied to the sugarcane value chain

Focus

High value R&D&I

CTC – Piracicaba - Brazil

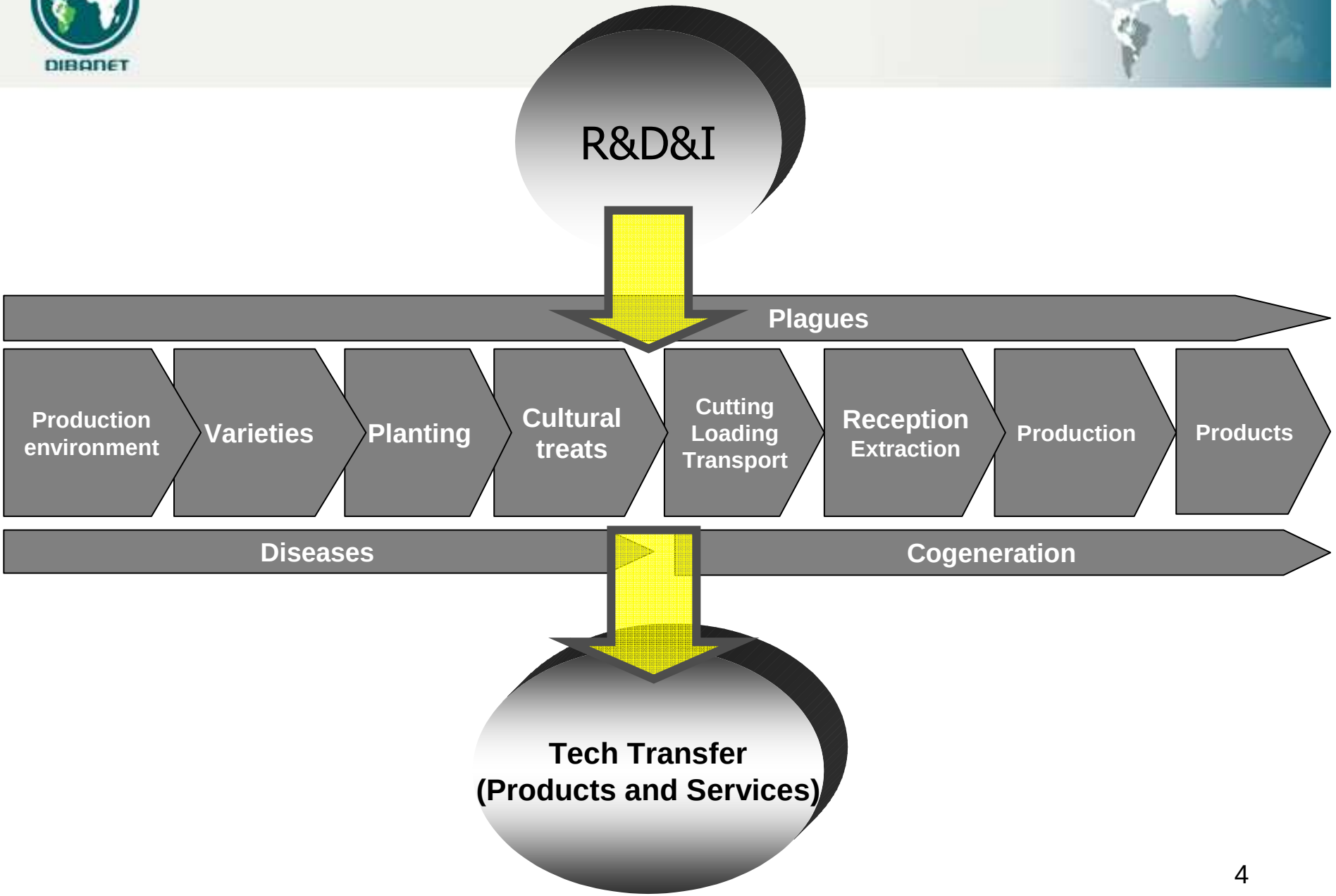


- ***168 associated***
  - ✓150 mills
  - ✓18 cane farmers
- ***260 million t (season 09/10)***

>50%

of
Sugar cane
in
South center of Brazil

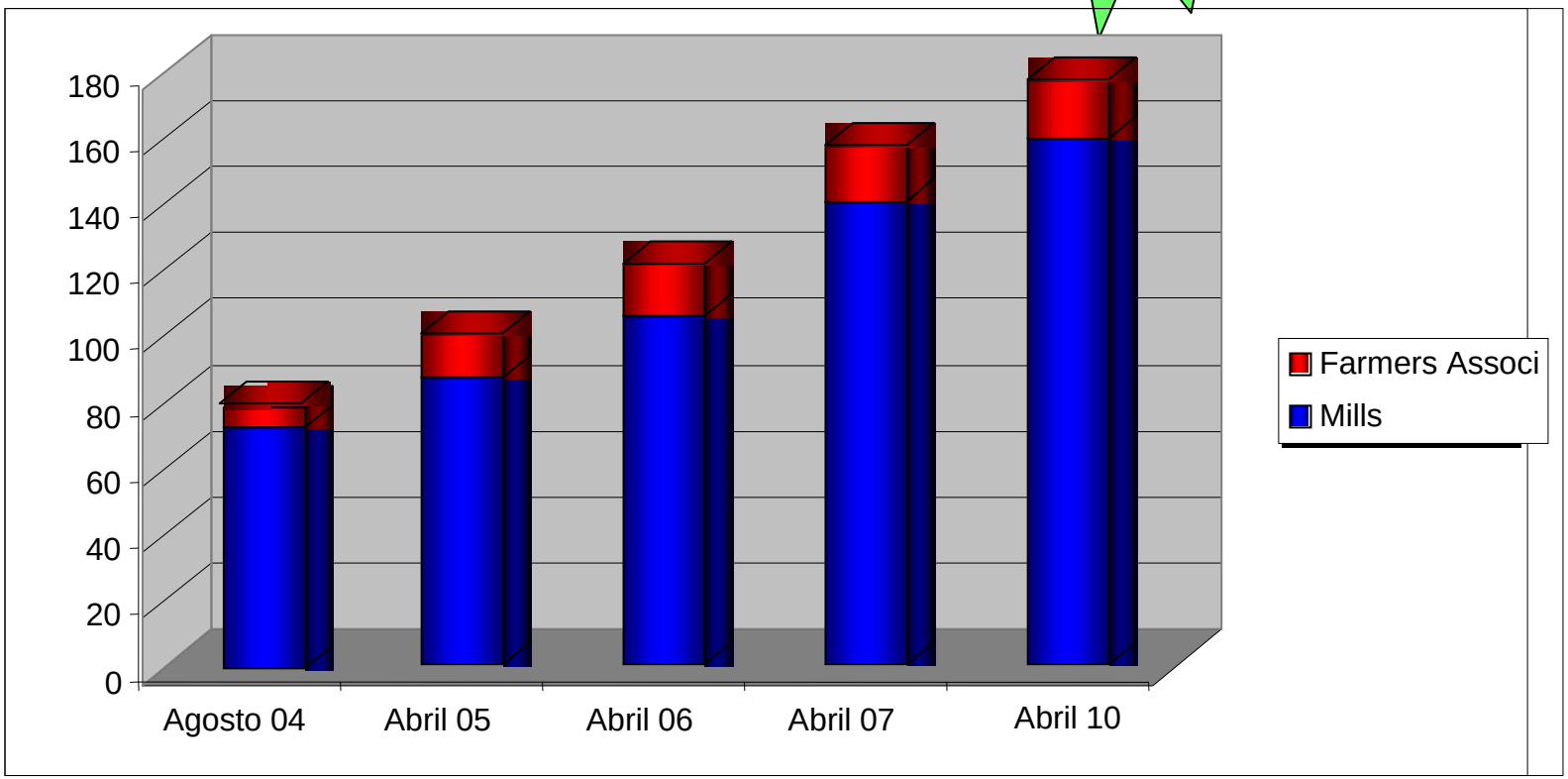
CTC: Acting in the whole value chain



Increasing the number of Associated Mills

2004 - 2010

168



SUGAR SECTOR IN NUMBERS

2009/2010

US$ 32 bilhões (Production of cane, sugar, ethanol and energy

2% of GDP

4.5 million of employes

72.000 farmers

Process 580 million tons of cane

33 million ton of sugar

29 billion liters of ethanol

165 million ton of bagasse

128 million ton of straw

20 million ton of sugar for exportation – US$ 9 billion

2 billion liters of ethanol for exportation – US$ 1 billion

US$ 8 billion of tax

US$ 4.5 billion of investment/year

400 mills (nearly)

Main Activities in this Project

WP2: Feedstocks for Levulinic Acid and Diesel-Miscible-Biofuel Production

- Detailed chemical and spectral characterisation of sugarcane bagasse and trash. Produce a comprehensive networked database for all participants.
- Develop predictive calibration equations for as many feedstock parameters as possible, using laboratory NIR and LF-NMR spectra. Validate these in preparation for online application.
- Integration of online NIR into a sugar mill for bagasse analysis and utilisation.
- Develop robust applications based on the online data, assess options such as payment systems, feedstock analysis, process monitoring and process control

Bagasse composition – bibliographic - CTC

Celulose	Hemicelulose	Lignin	Ashes	Author
(% dry matter basis)				
37	28	21	n.d.	Bon(2007)
26-47	19-33	14-23	1-5	Paturau(1989)
38	33	22	3	Trickett and Neytzell-de Wilde (1982)(*)
(*) work presented in (Walford, 2008)				

Authors	C	H	O	N	S	Ashes
Deerr(1925)	46,5	6,5	46,0			1,0
Tromp	44,0	6,0	48,0			2,0
Hugot(1972)	47,0	6,5	44,0			2,5
Chenú(1981)	46,4	6,4	44,2			3,0
Copersucar(1983)	49,5	6,2	44,3			
Wienese (2001)	44,3	5,7	42,0			4,0
Gabra et al.(2001)*	45,2	5,4	41,8	0,2	0,0	
US DOE(2006)*	48,4	6,0	41,6	0,2	0,0	
Average	46,4	6,1	44,0	0,2	0,0	2,5
Standard Deviation	1,9	0,4	2,2			1,1

*C = carbon; H = hydrogen; O = oxigen; N = nitrogen; S = sulfur e Ashes * (50% moisture)*

Bagasse utilization

- **The excess of bagasse has been used recently to generate electricity, sold to other companies to produce steam and in small quantities for animal feed.**
- **4.2% of Brazil electric energy is generate from bagasse.**

Trash utilization

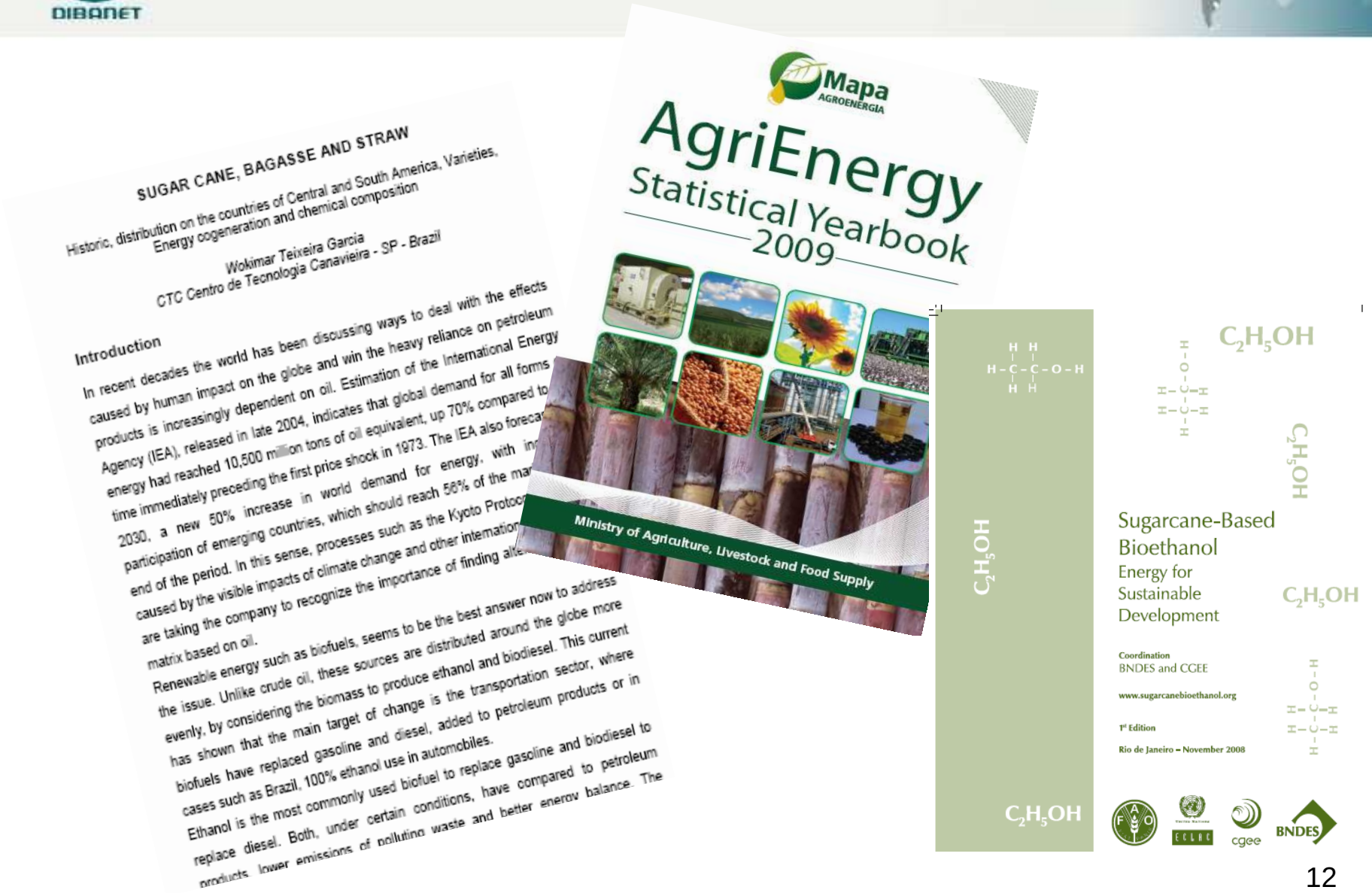
The trash is left on the field to keep the humidity, increase the organic material and to avoid erosion.

The CTC has been developed projects to use the straw to produce electric energy.

ACTIVITIES PERFORMED - 2010

- Report about sugarcane characteristics, including some information about bagasse and straw;
- Workshop participation in December 2009 – UL;
- Assembly of the exclusive Laboratory for the Dibanet, including NIR equipment;
- Standardization and adjustments of analytical methods and equipment for biomass characterization by HPLC;
- Collection of bagasse and straw samples in Mills;
- Sending samples for CERTH (Greek), Aston (England) and UL (Limerick)
- Translation of Dibanet website to Portuguese.

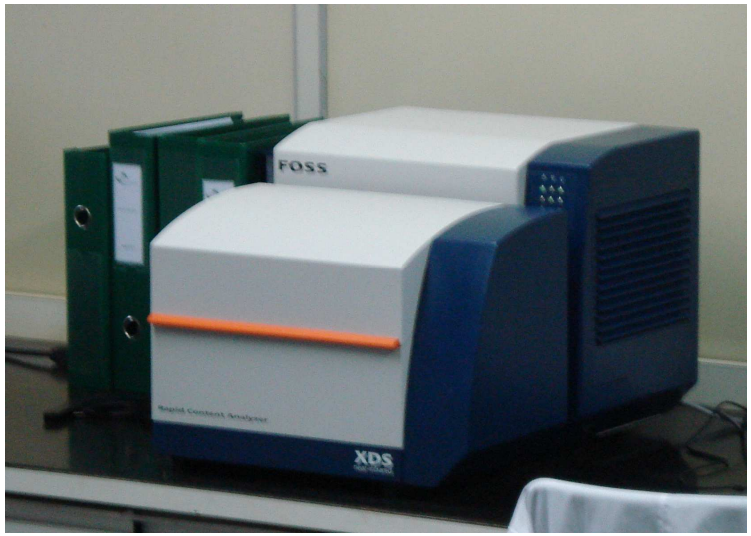
Reports, Publications and Book



Acquisition of NIR equipment

- Aquisition in December 2009 the equipament NIR-XDS;

Limerick University



CTC

- Trainning (data collection, software with Mr. Daniel Hayes);
- Began the data collection (bagasse, straw and other biomass from UNICAMP).

LABORATORY FOR DIBANET

Assembly of the exclusive Laboratory for the Dibanet

- Equipments acquisition and room prepare for the Dibanet Laboratory

LABORATORY FOR DIBANET

CTC – Cane Techonology Center

Collection of bagasse and straw samples in mills;

CTC – Cane Techonology Center

Dibanet time working at CTC

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CTC – Cane Techonology Center

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Gracias

Efharisto poli