Agriculture Update
ARGENTINA

Karina García
GMI Agriculture Subcommittee Meeting
Vancouver, Canada, 13 March 2013

Global Methane Initiative

Ministerio de Agricultura, Ganadería y Pesca
Presidencia de la Nación

INTA

is a public decentralized body subordinated to the Ministry of Agriculture, Livestock and Fisheries with operative and financial autarchy.

MISSION

"To carry out and foster actions addressing the innovation of agricultural and livestock, agro-food and agro-industrial sectors to contribute to the competitiveness of agro-industrial chains, environmental health and sustainability of productive systems, social equity and territorial development, through research, technological development and extension".
(2005-2015 Institutional Strategic Plan)

INTA

NATIONAL STRUCTURE

- Central office B.A.
- 15 Regionales centers
- 47 Experimental stations
- 4 Research centers
- 13 Research institutes
- 240 Extension units
- 9 Innovation parks
- INTA group members:
- Foundation ArgenINTA

  Private company INTEA S.A

7300 EMPLOYEES

Year budget 300 M dollars/year

http://www.inta.gov.ar

Agriculture

- Argentina has a consolidated agricultural and agro-industrial sector.

- Generation of large amounts of manure and residues of agro-industrial process.

Global Methane Initiative

Agriculture

- During the last decade, there has been a great tendency to intensification in all productions, mainly poultry, swine and cattle (beef and dairy).

- Stock of pigs: 3,15 million head, of which 275.000 are mothers.

  There are 2.000 swine farms in Argentina

Global Methane Initiative

Agriculture

- **Stock beef cattle:** the annual slaughter is over 10 million heads.
  High variations in the beef market due to system characteristics (animal confinement period, feed type availability, etc.).
- **Stock dairy cattle:** 2,2 million milking cows distributed in 10.000 dairy farms. The main system is based on pastures (alfalfa) managed under grazing. Actually there is a tendency to use strategic confinement for feeding.

Global Methane Initiative

Agriculture

- Increasing number of successful cases of AD application as treatment for the agro-industrial residues.

- AD is commonly use in different agro-industries: brewing, citrus, wine, yeast, syrups, corn products refining, slaughterhouse, etc.

Global Methane Initiative

Methane Reduction, Recovery, and Use Initiatives

It has been developed and assessed different models of biodigesters at laboratory and pilot scale. The aim has been to obtain adequate information for several types of wastes from agricultural activities in Argentina.

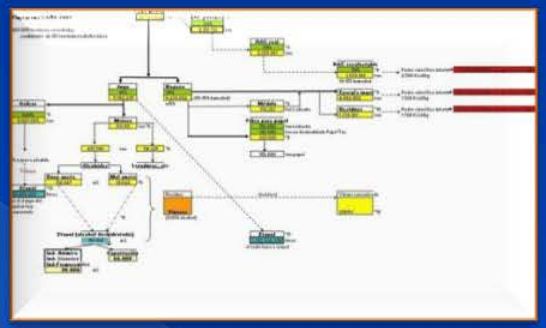
Global Methane Initiative

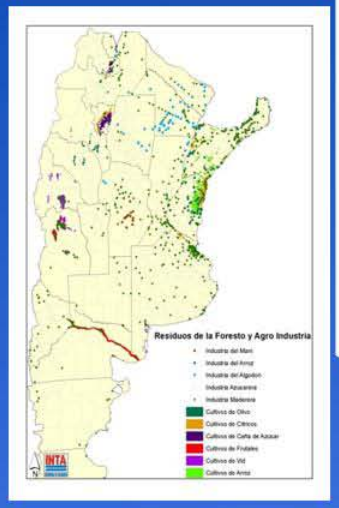
METHODOLOGY

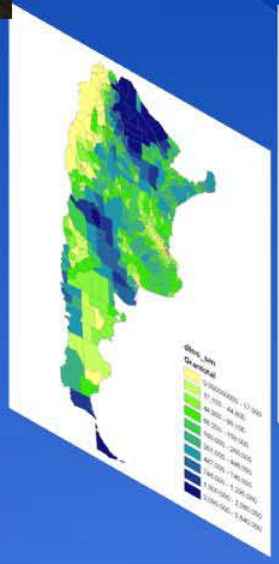
IDENTIFICATION OF MATERIAL SUITABLE FOR AD

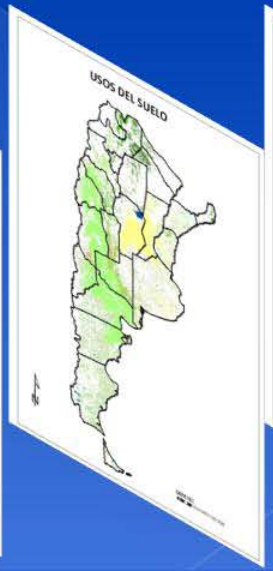
SPECIFIC STUDIES OVER AGRICULTURAL AND AGROINDUSRY CHAINS

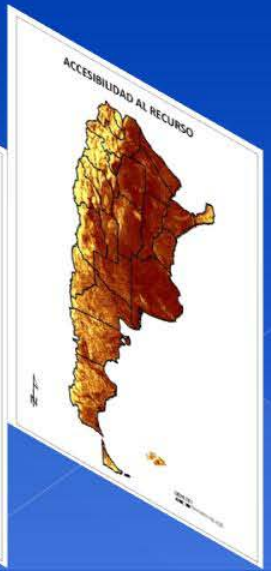
SPACIAL DISTRIBUTION OF INFORMATION GIS







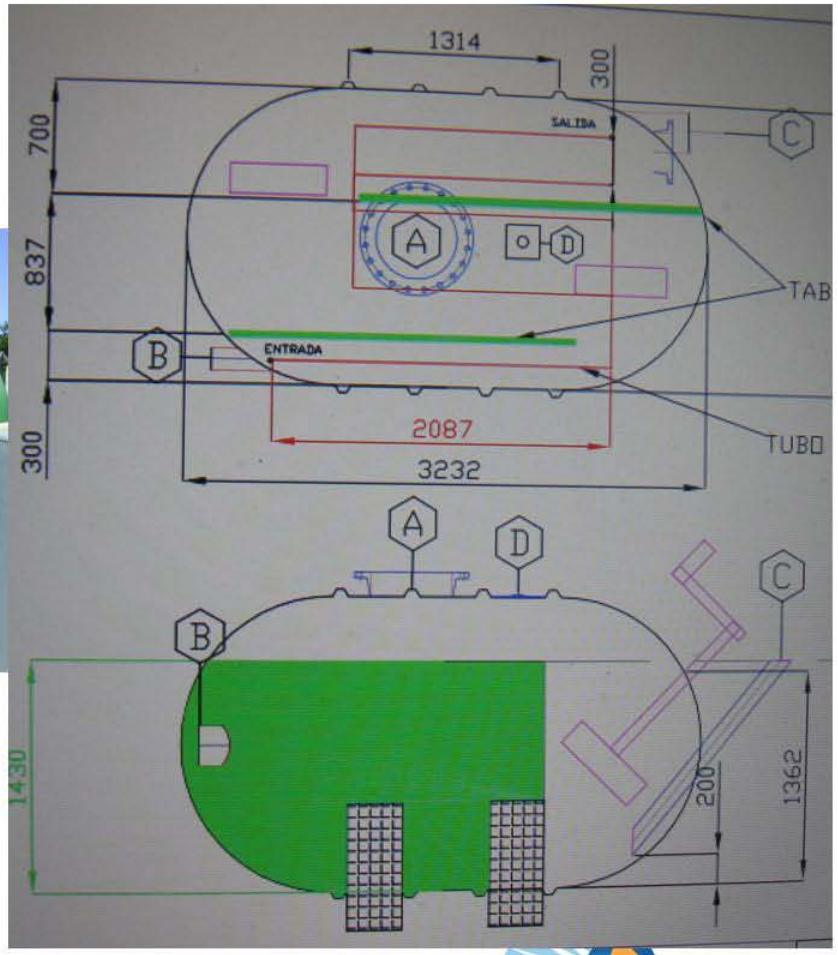




Pilot Biodigester for food waste in INTA Castelar

Global Methane Initiative

Pilot Biodigester for dairy farm in INTA Castelar



Global Methane Initiative

Pilot Biodigester for dairy farm in INTA Rafaela Experimental Station

- **Digester development:**

Dairy farm loaded, problems with crust and lack of mixing device.

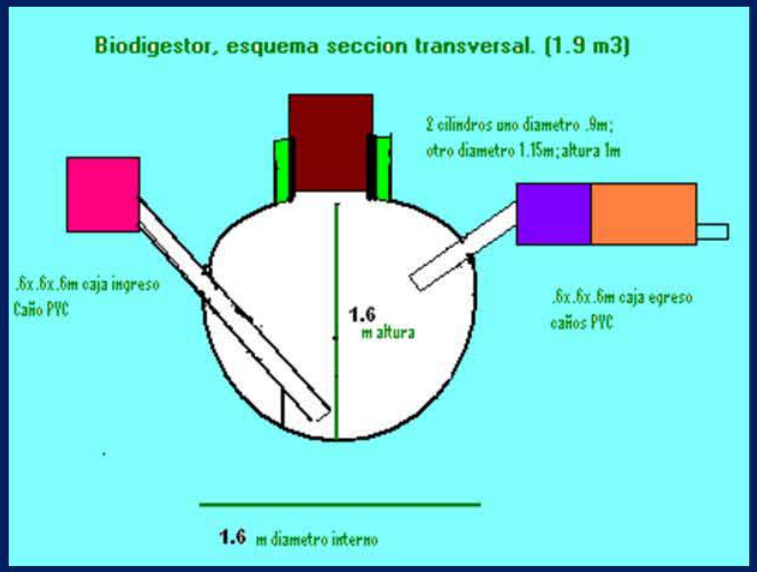
day 10

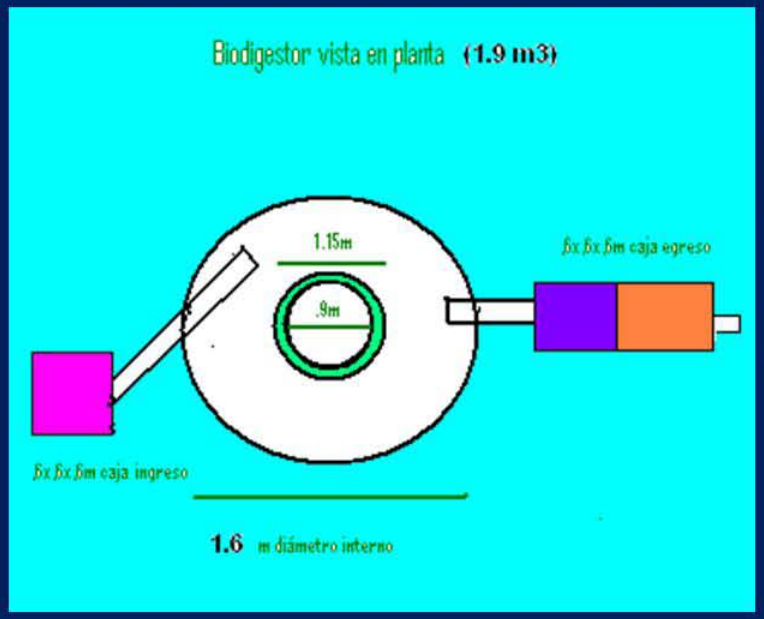
day 30

OUT OF SERVICE DUE TO MIXING PROBLEMS AND BAG FAILURE

Pilot Biodigester for pigs in INTA Marcos Juarez Experimental Station

Local Models for dairy farms, pigs and food wastes
INTA Reconquista Experimental Station





Local Models for dairy farms, pigs and food wastes
INTA Reconquista Experimental Station

Pilot Biodigester for pigs in INTA Las Breñas Experimental Station

OUT OF SERVICE DUE TO MIXING PROBLEMS AND BAG FAILURE

Pilot Biodigester for pigs in INTA Las Breñas Experimental Station

OUT OF SERVICE DUE TO MIXING PROBLEMS AND BAG FAILURE

Pilot Biodigester for pigs in INTA Las Breñas Experimental Station

OUT OF SERVICE DUE TO MIXING PROBLEMS AND BAG FAILURE

Pilot Biodigester for agroindustrial residues in University of Mendoza (CIM & INTA)

Methane Reduction, Recovery, and Use Initiatives

New big scale biogas plants in the Ag sector

Global Methane Initiative

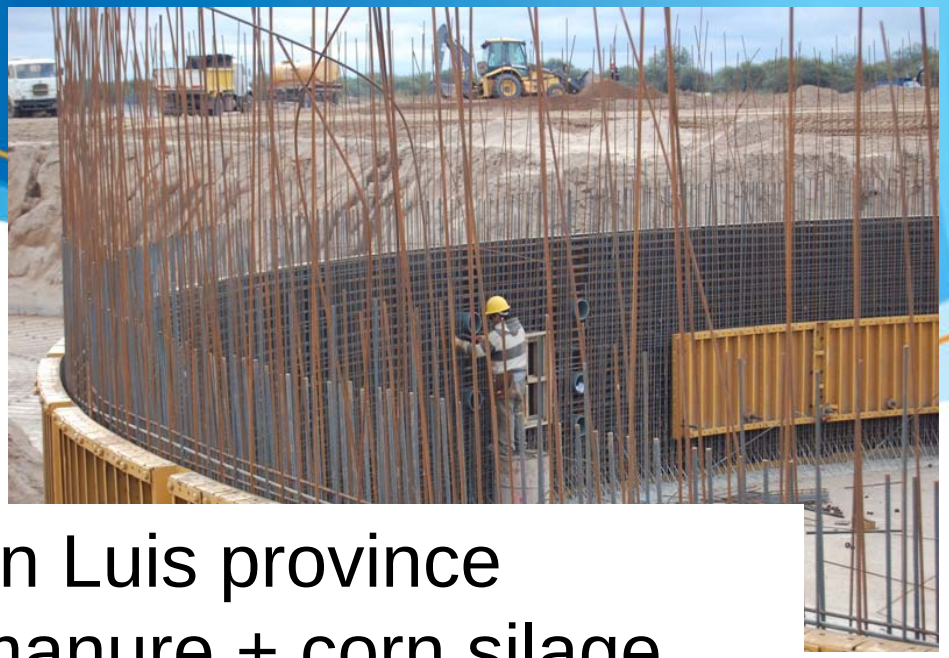
Swine farm in Hernando, Córdoba

Substrates: Pig manure

Volume biodigester: 2400 m3

HRT: 15 days

Production of biogas: 30-50 m3/h



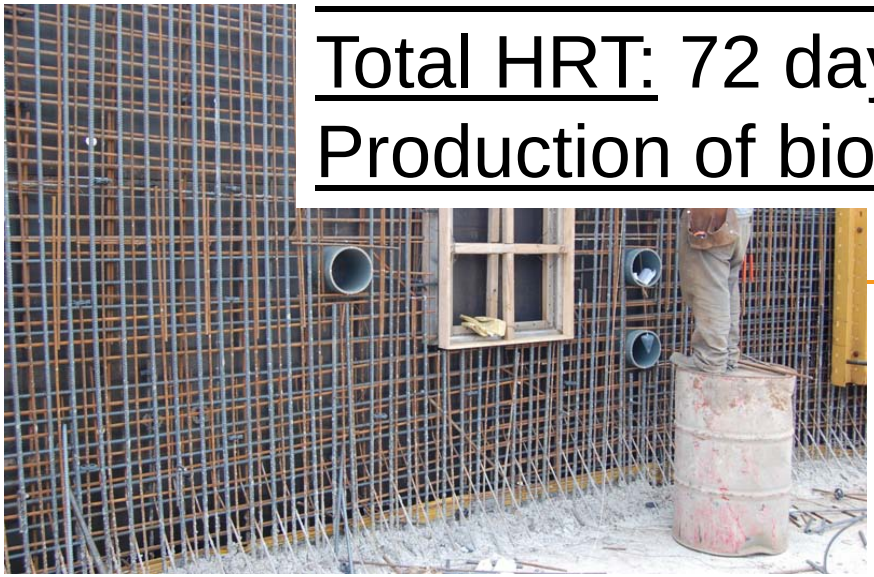
Swine farm in San Luis province

Substrates: Pig manure + corn silage

Total Volume biodigesters: 6500 m3

Total HRT: 72 days

Production of biogas: 13000 m3/day



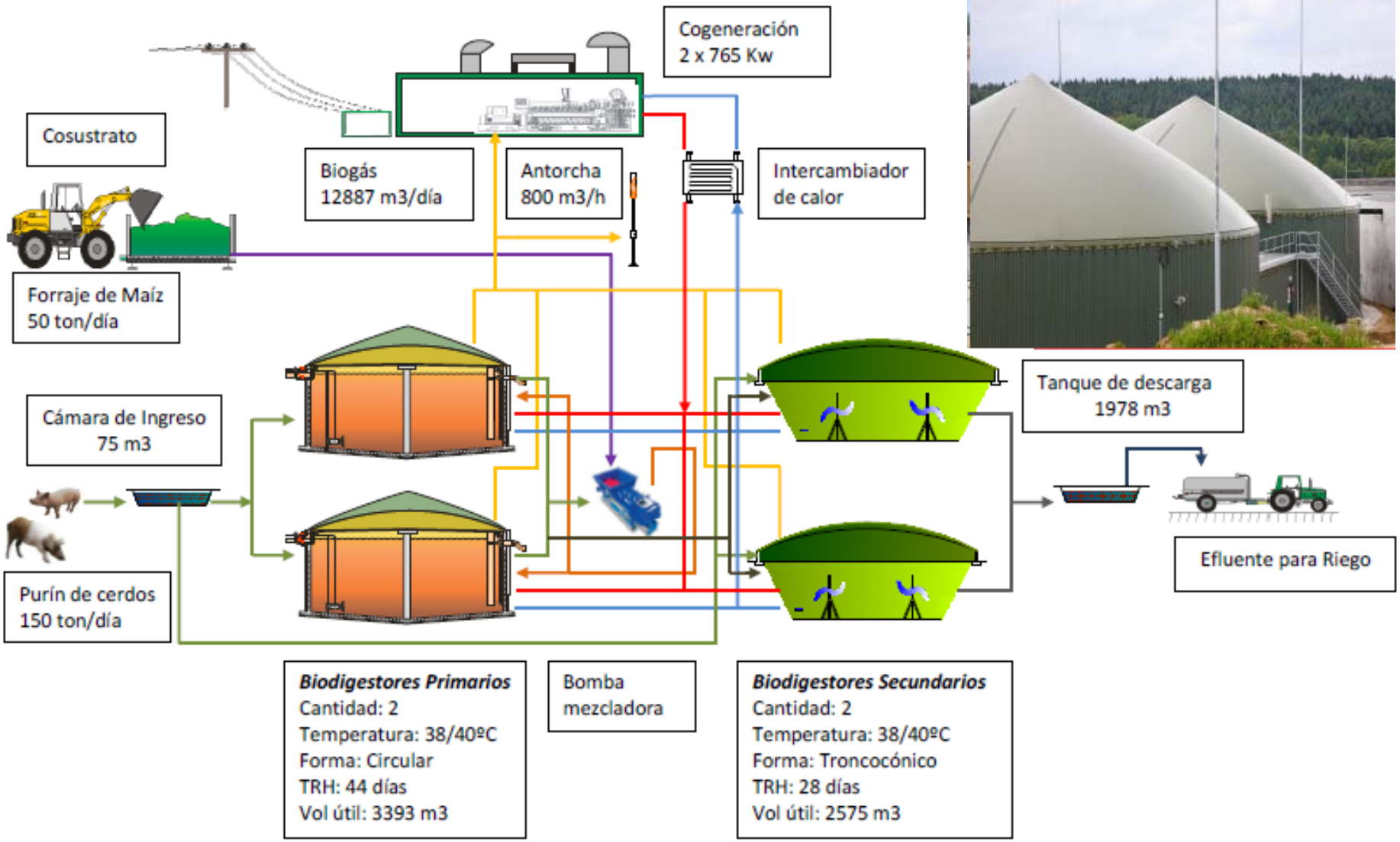
Residue management and electricity generation

TECNORED CONSULTORES S.A.

www.tecnoredconsultores.com.ar

Río Cuarto - Córdoba

Diagram of the plant



Swine farm in Salta province

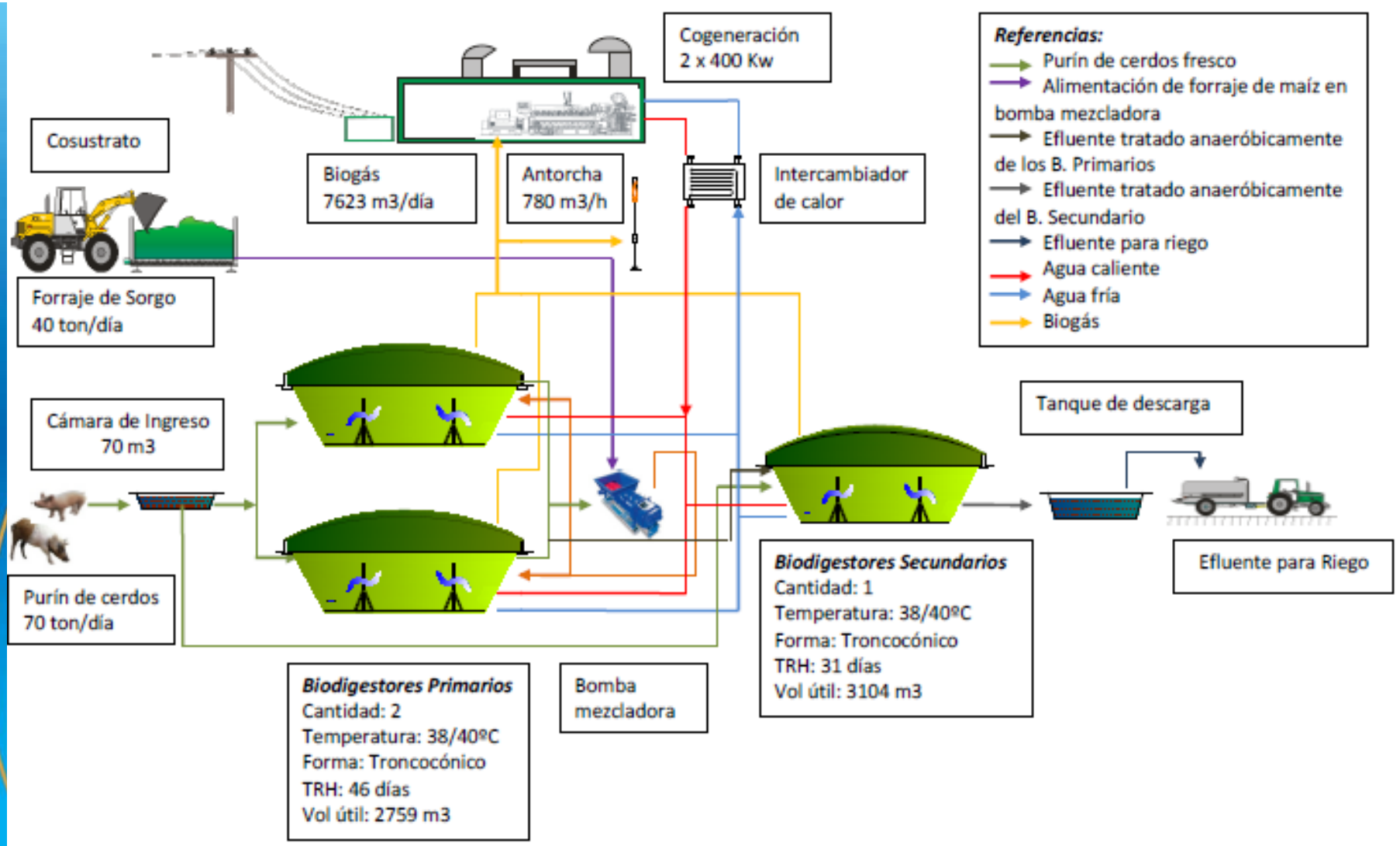
Substrates: Pig manure + sorghum silage

Total Volume biodigesters: 6500 m3

Total HRT: 77 days

Production of biogas: 7600 m3/day

Diagram of the plant (in construction)



Global Methane Initiative

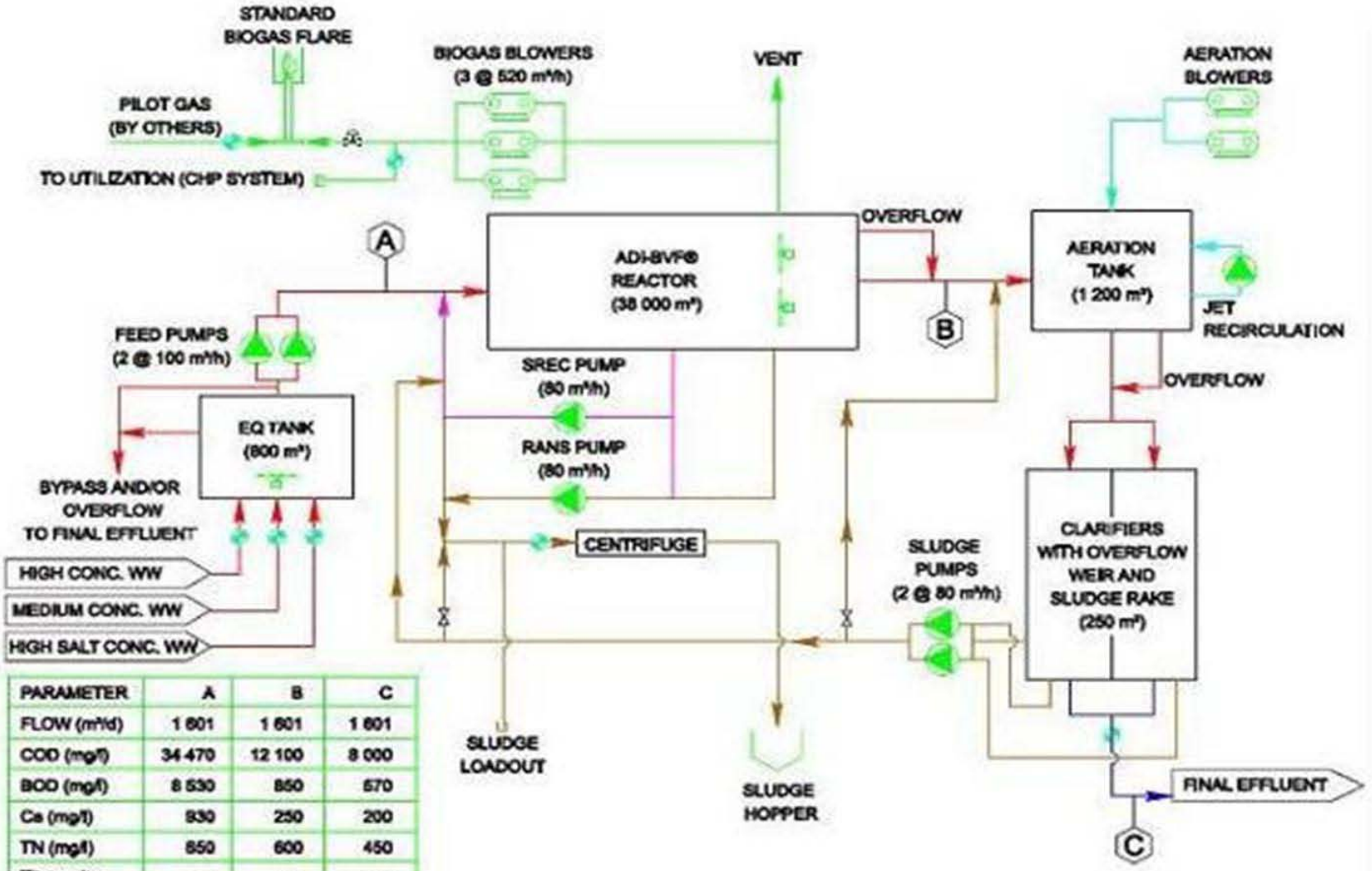
Yeast production industry in Tucuman province

Substrates: Industrial plant effluent

Volume biodigester (anaerobic lagoon): 38500 m3

Use of the biogas: Boiler operation

Diagram of the plant



PARAMETER	A	B	C
FLOW (m³/d)	1 601	1 601	1 601
COD (mg/l)	34 470	12 100	8 000
BOD (mg/l)	8 530	850	570
Ca (mg/l)	830	250	200
TN (mg/l)	850	600	450
TP (mg/l)	---	---	---
TSS (mg/l)	2 500	4 000	2 000
SO4 (mg/l)	2 200	---	---
TEMP (°C)	32	30	29

Citric production industry in Tucuman province
Substrates: Industrial plant effluent
Total Volume biodigesters: 50000 m3
Production of biogas: 46000 m3/day


P
R
MicroTel
WARNING
ATTENTION

Slaughterhouse in Salta province

<u>Substrates:</u> Industrial plant effluent

<u>Total Volume biodigesters</u>: 30 m3

Cereal plant in Buenos Aires province
Substrates: Industrial plant effluent
Total Volume biodigester: 1200 m3
Production of biogas: 6000-7500 m3/day

Digester volume 1200 cubic meters
Biogas production 6000 a 7500 m3/day
Methane concentration 72 %

Chicken Slaughterhouse in Entre Ríos province
Substrates: Industrial plant effluent
Production of Biogas: 1500 m3/day

Citric production industry in Tucuman province (in construction)

Substrates: Industrial plant effluent

Total Volume biodigesters: 7200 m3

Production of biogas: 23500 m3/day

Global Methane Initiative

Barriers/Challenges to Methane Reduction, Recovery, and Use

Strengths	Weaknesses
• Utilization of unexploited resource (residue). • Good acceptance and interest of the public. • National network of researchers with expertise in the subject. • Preliminary studies of technology assessment at municipal, provincial and national level. • Existence of lines of funding for this technology.	• **Incomplete regulatory context.** • Heterogeneity in production units and the commercialization of renewable energy is not feasible for small projects. • Few developers of biodigesters and incipient technical development for the design and construction. • Dependence on importation of some building components.

Contact information

- Lic. (M.Sc.) Karina García
  - National Institute of Agricultural Technology (INTA)
  - Tel +54 03492 440121
  - Mail garcia.karina@inta.gob.ar

Ministerio de Agricultura, Ganadería y Pesca
Presidencia de la Nación

INTA

200 AÑOS BICENTENARIO ARGENTINO