Methane to Markets

The Kindersley Centre, Berkshire

November 29th & 30th 2006

defra

Department for Environment
Food and Rural Affairs

ANAEROBIC DIGESTION IN ARGENTINA

The type of technology has to be adapted to different regions

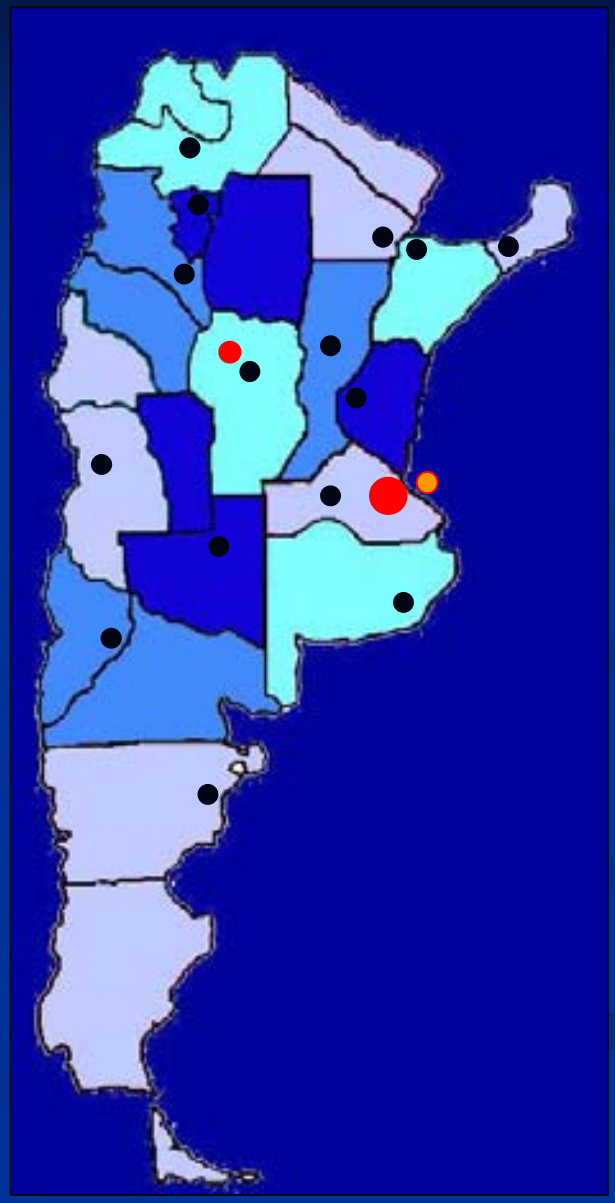
GOVERNMENTAL INSTITUTION

- Central office
- 15 Regionales centres
- 47 Experimental stations
- 3 Research Centrers
- 13 Research Institutes
- 240 Extensión units
- 9 Innovative Tecnology parks
- INTA Group:

  ArgenINTA foundation

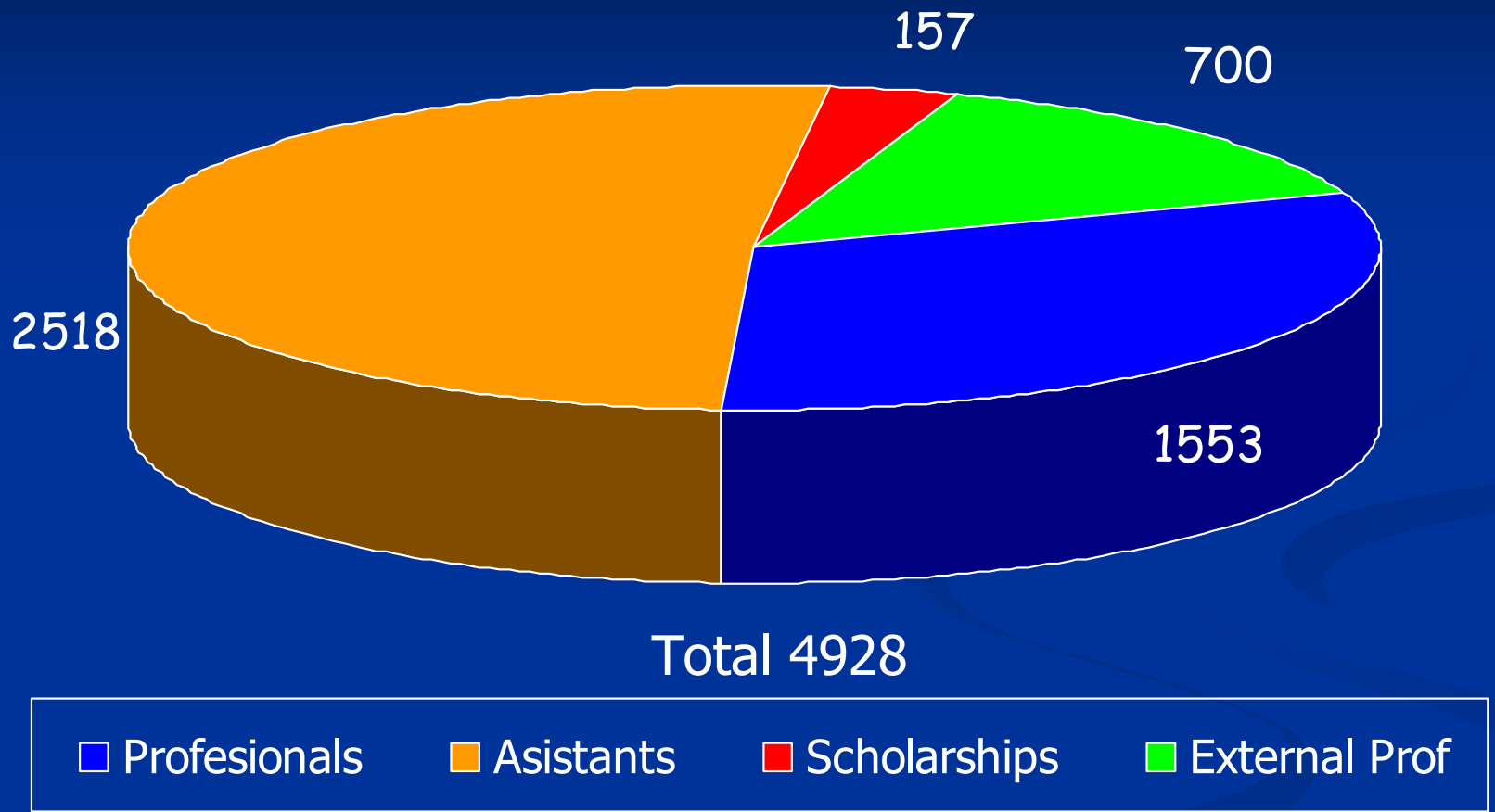
  INTEA S.A.

Asociaciones Cooperadoras



Datos a Abril 2005

HUMAN RESOURCES



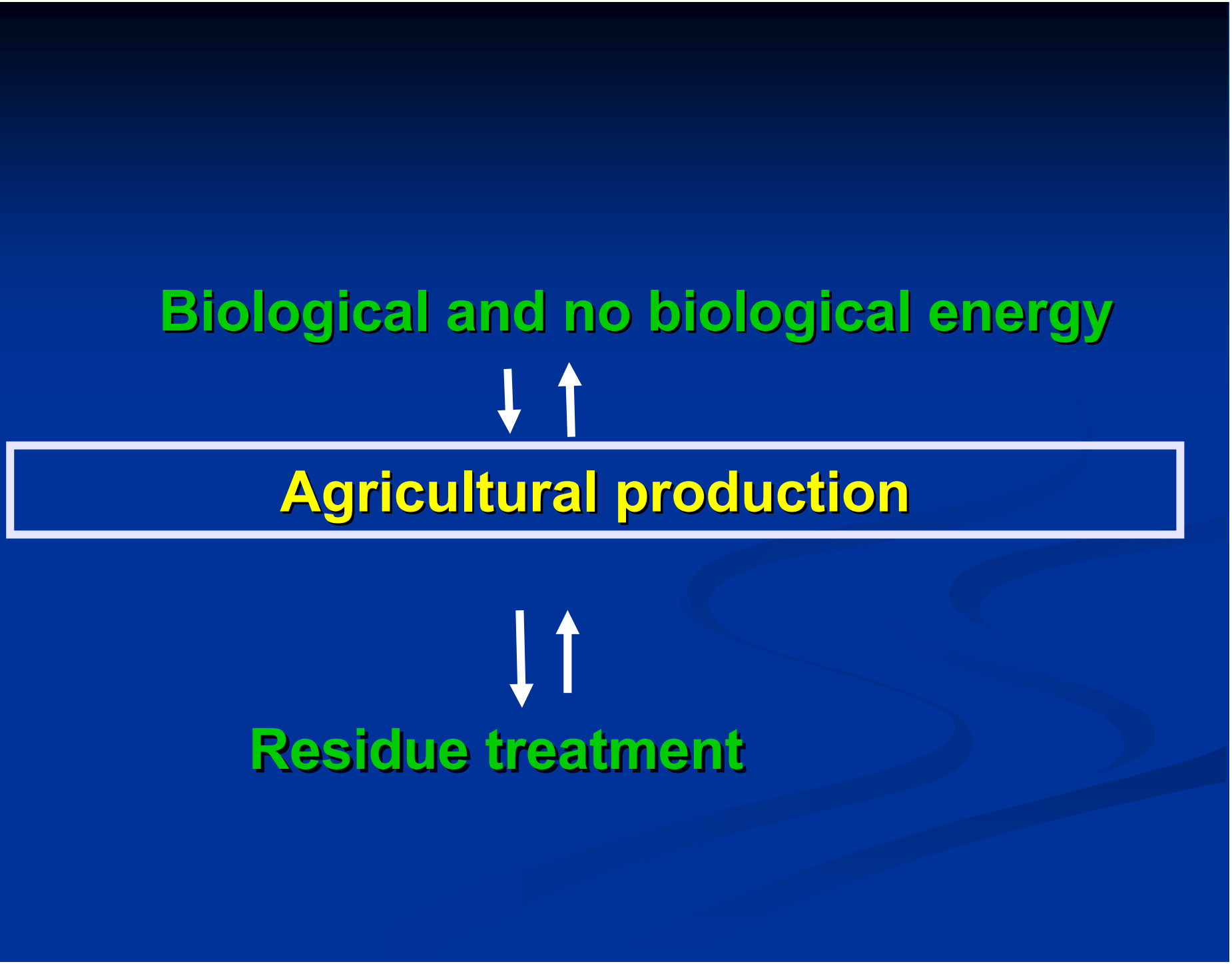
El 41% de los profesionales INTA posee nivel de postgrado (maestría/doctorado)

Datos a Abril 2005

NATIONAL NETWORK PROJECT

Energy production and final residue treatment.

(AEAI2)

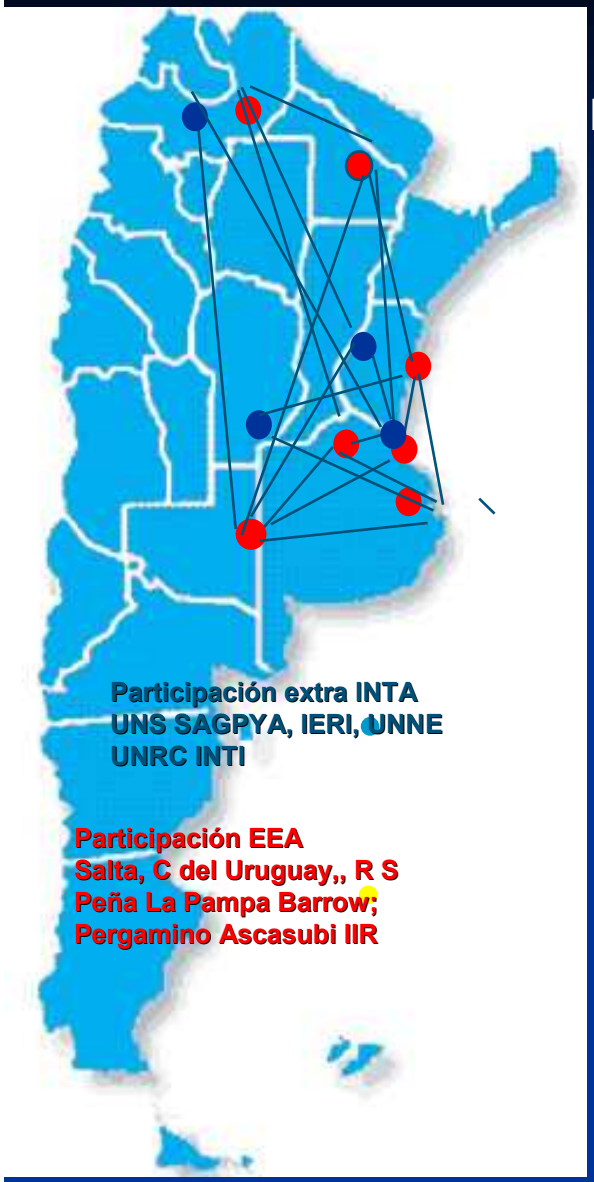

Biological and no biological energy
Agricultural production
Residue treatment

Principal problems to be achieved regarding sustentability

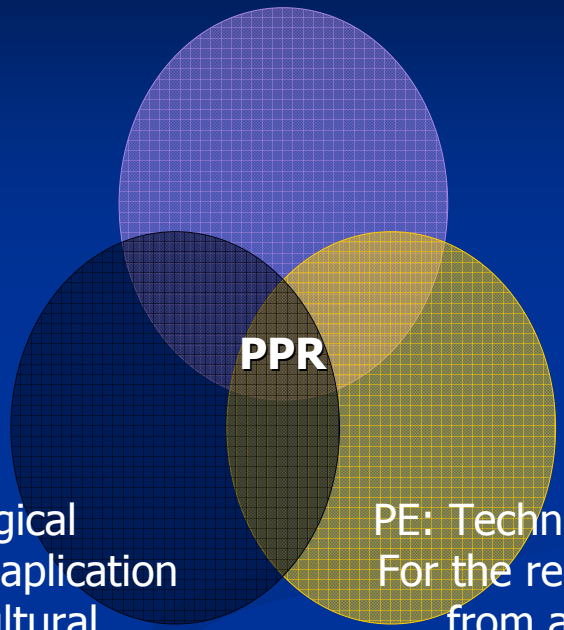
Degradation of soil and air: emisions

Energy production and residue treatment

Energy security: prices and available



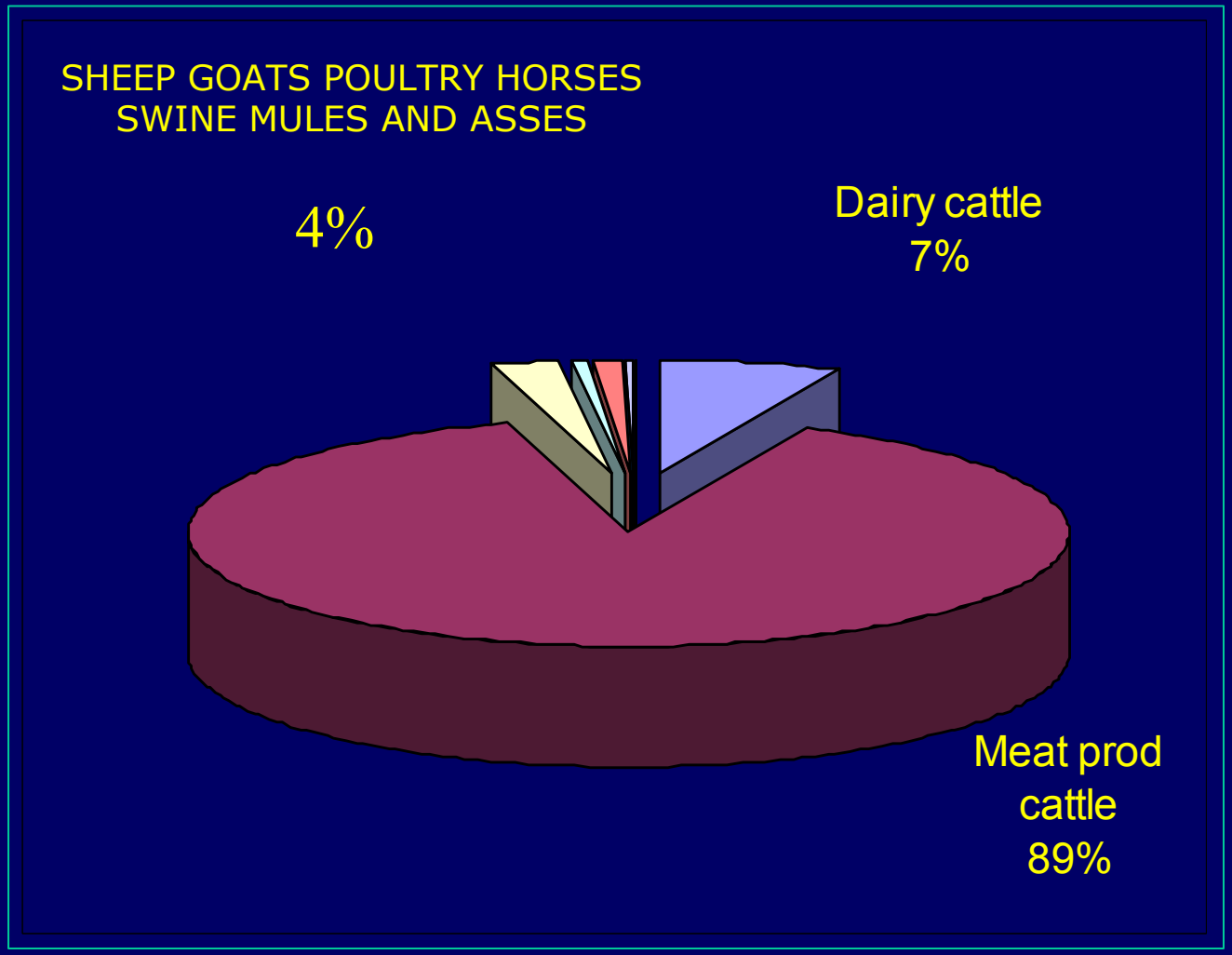
PE: Vegetable and animal resources use for the production of biofuels



PE: No biological renovable energy aplication For the agricultural and agroindustrial sector

PE: Technology development For the reduction of polution from agronomical and Agroindustrial activities

METHANE EMISSION FROM ENTERIC FERMENTATION - 2000



EMISSION CH_4 ENTERIC FERMENTATION 2000

CATEGORY	EMIS/ANIM kg/cab/año	ANUALPOPULATION (cab)	EMIS. CATEG. (Tn/año)
DAIRY CATTLE		2.000.000	183.575,172
Lactantes y gestantes	111,50	928.000	103.473,03
Lactantes y vacías	106,72	400.000	42.686,28
Secas y gestantes	58,42	272.000	15.889,22
Secas y vacías	53,82	400.000	21.526,63
NON DAIRY CATTLE		19.600.000	260.635,61
Lactantes y gestantes	73,17	7.350.000	537.806,26
Lactantes y vacías	68,44	3.675.000	251.521,19
Secas y gestantes	57,74	3.675.000	212.184,12
Secas y vacías	53,19	4.900.000	260.635,61
HEIFER		7.350.000	1.054.124,8
1 a 2 años recría	57,21	2.910.000	166.489,11
1 a 2 años invernada corta	52,81	1.500.000	79.218,78
2 a 3 años gestantes	72,52	1.800.000	130.539,21
2 a 3 años vacias	68,30	1.140.000	77.866,91
STEER		5.292.000	284.652,26
Invernada corta	55,80	2.000.000	111.602,15
Invernada larga	52,57	3.292.000	173.050,11
STEER Invernada larga	65,22	3.528.000	231.114,87
BULL	82,17	588.000	48.314,10
SMALL BULL	92,89	882.000	81.931,79
CALVES		11.760.000	167.420,74
Ternera Feddlot	34,43	630.000	21.695,25
Machos invernada corta	42,32	1.052.500	44.538,57
Machos invernada larga	38,78	866.250	33.595,94
Hembra recría	43,00	762.500	32.786,34
Hembra invernada corta	38,96	786.000	30.626.05
Ternero al pie	0,00	5.585.250	0
Ternero torito	53,92	77.500	4.178,59
		49.000.000	**2.712.270,2**

CH_4 and nitrogen oxide emitions

SHEEP GOATS POULTRY HORSES
SWINE MULES AND ASSES → **at field**

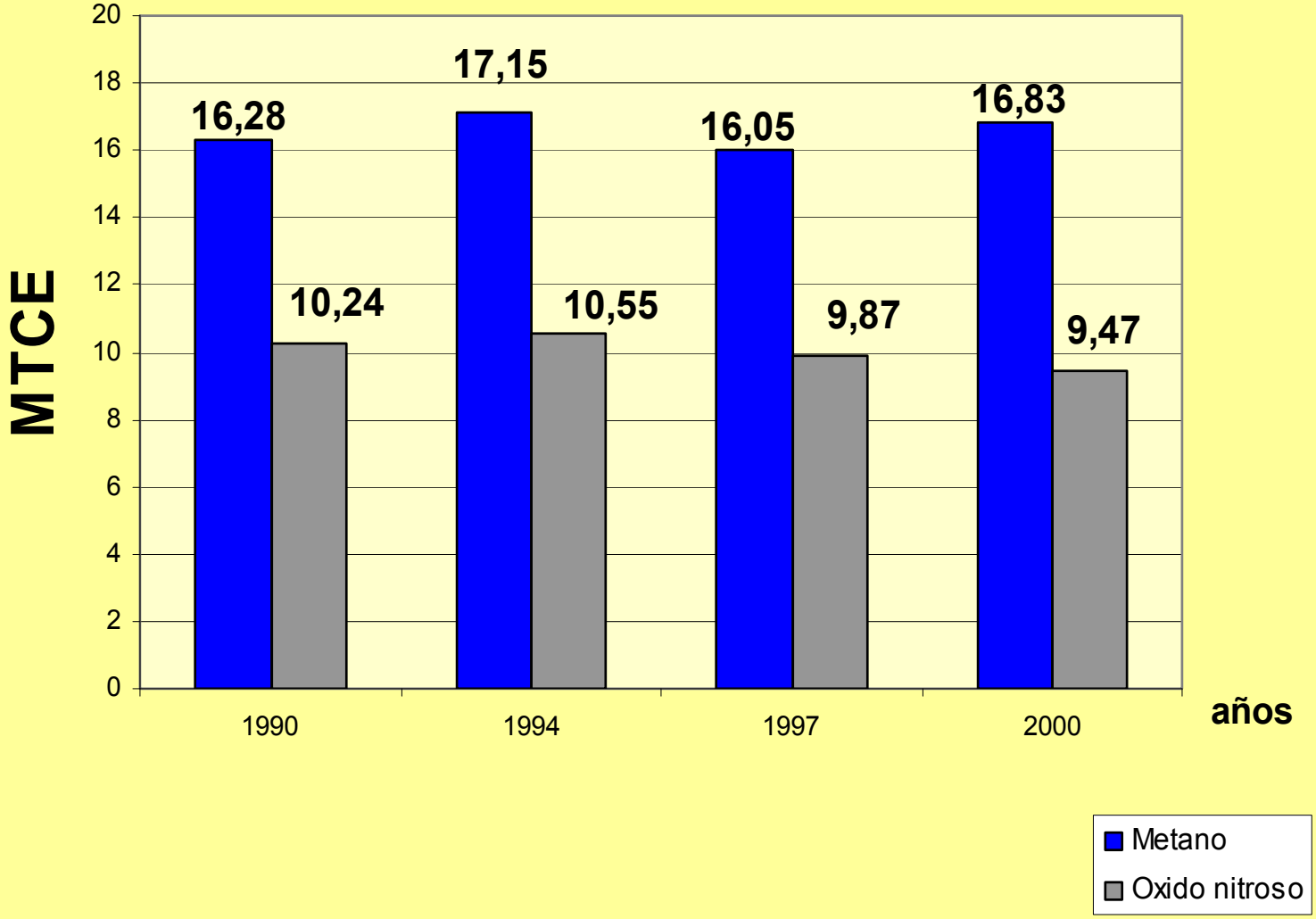
Dairy cattle → **70% field**
30% milking and waiting areas.
(Anaerobic lag)

Pigs → **25% field**
75 % confinament (anaer lag)

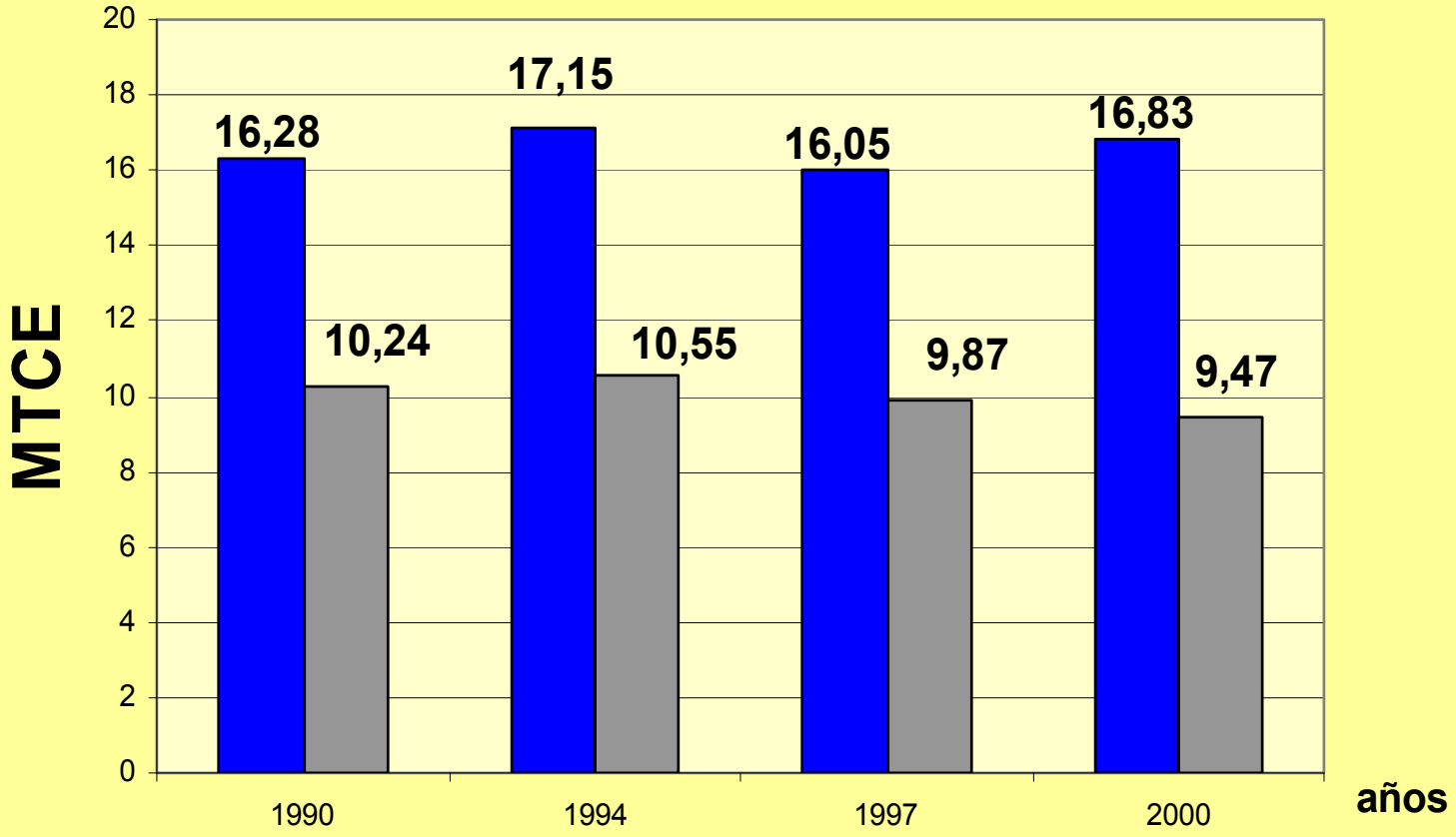
Poultry → **50% dry management**
50% wet systems (anaer lag)

EMISIONES DE Gases de efecto Invernadero

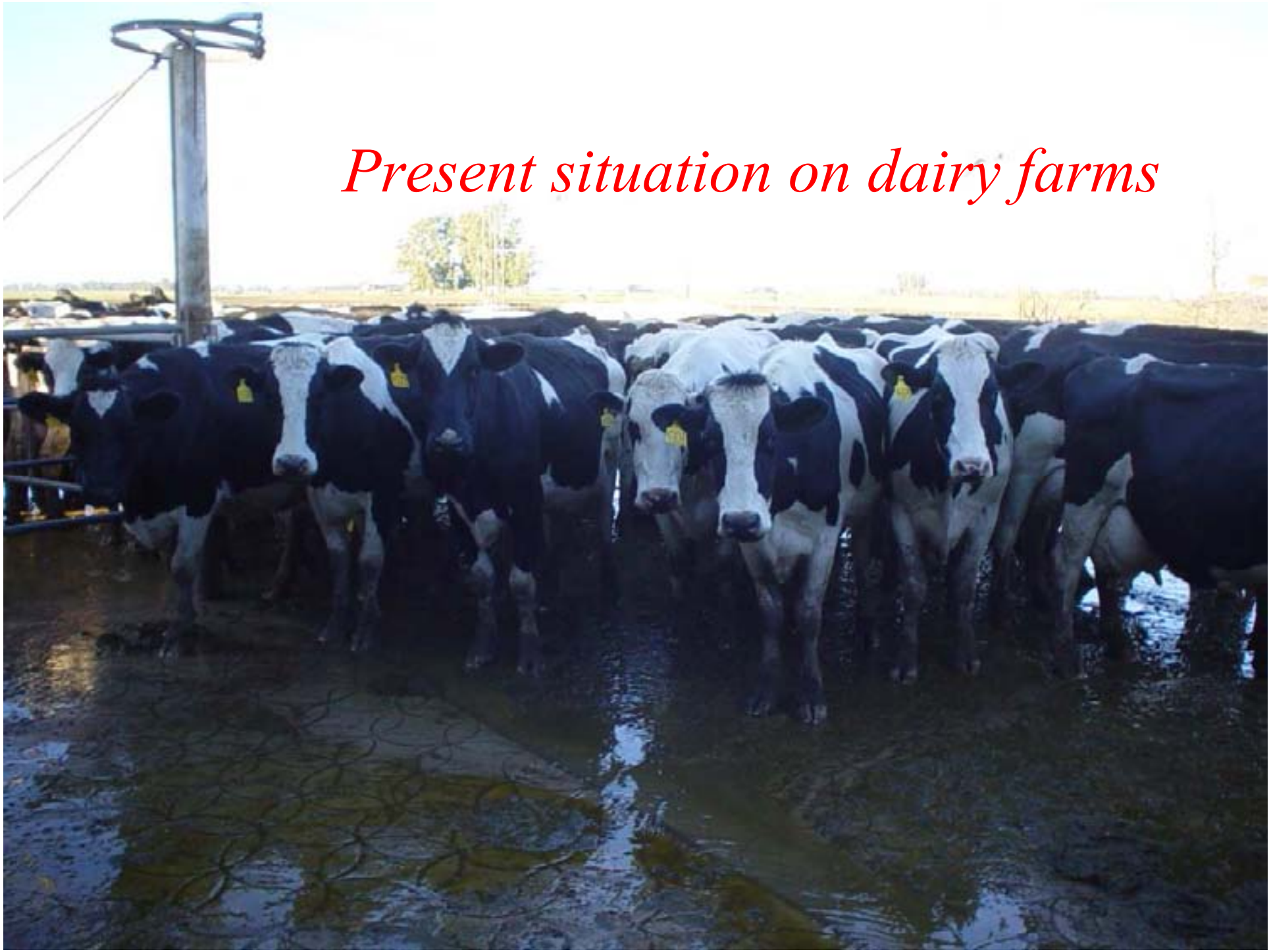
Metano y Oxido nitroso



Emitions develeopment- Greenhouse gases
1990 – 1994 – 1997 - 2000



Metano y Oxido nitroso

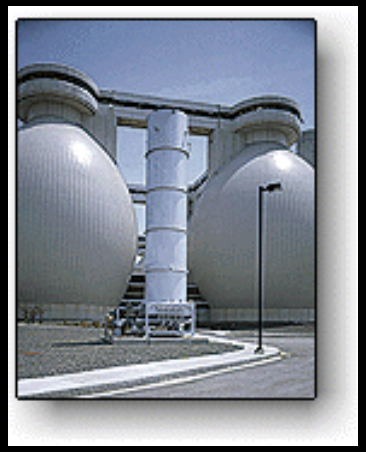

Present situation on dairy farms


Big deposits with atmospheric emission and pollution of small rivers

Present situation

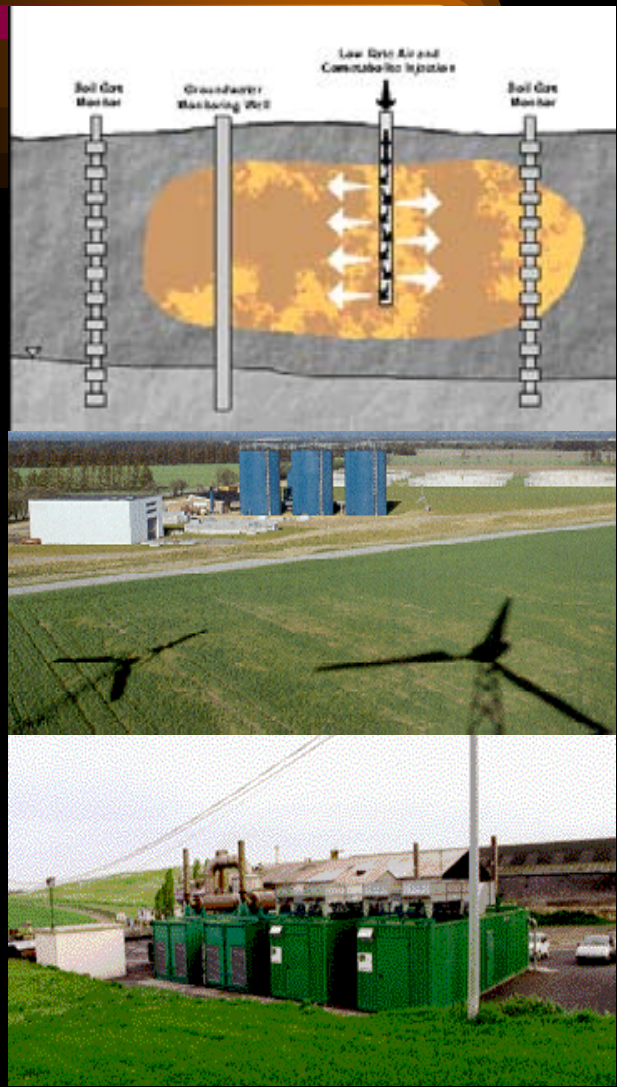
- Methane emission
- Underwater pollutionm
- Insects and pests

Anaerobic digestion in the new world scenario regarding energy and environment crisis has an important role to play

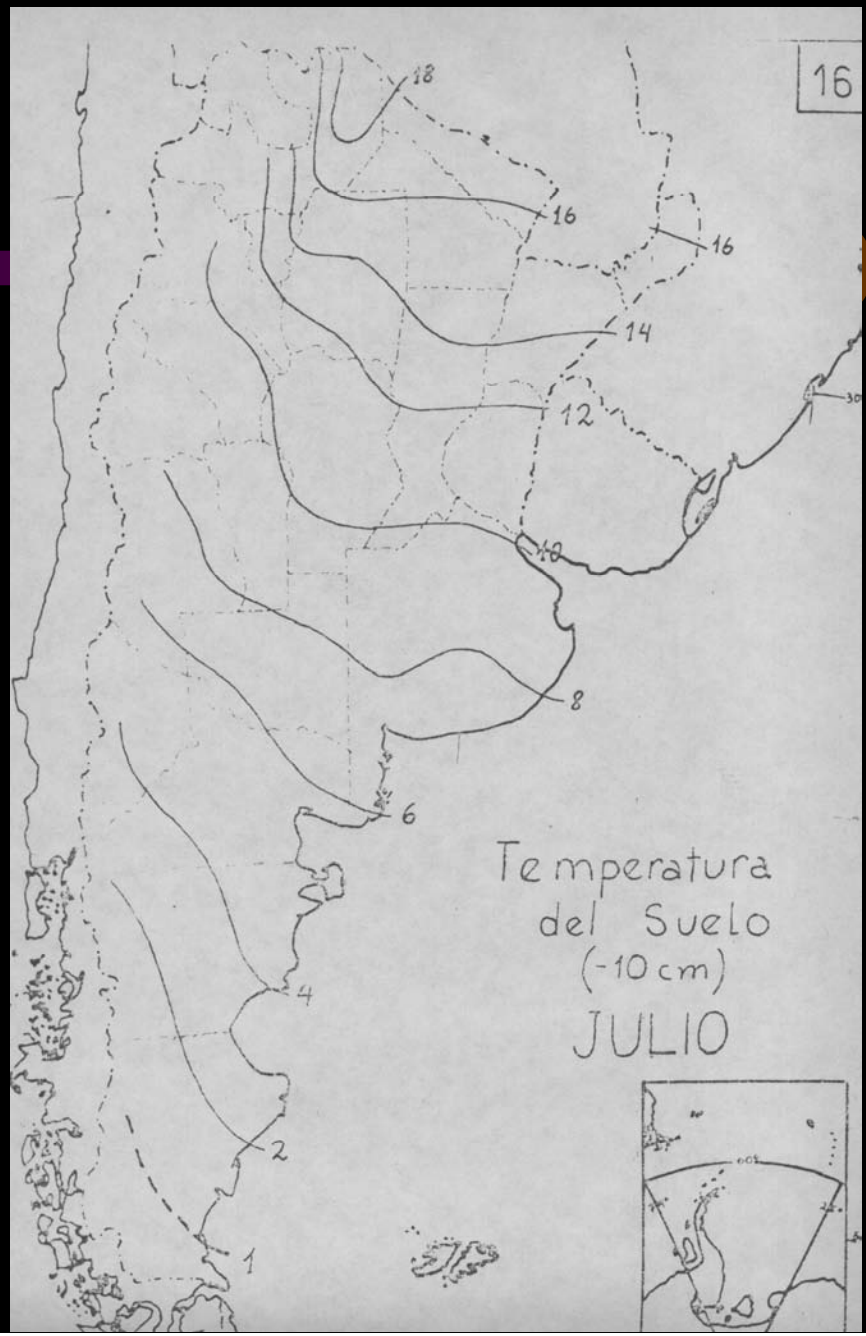


Fields

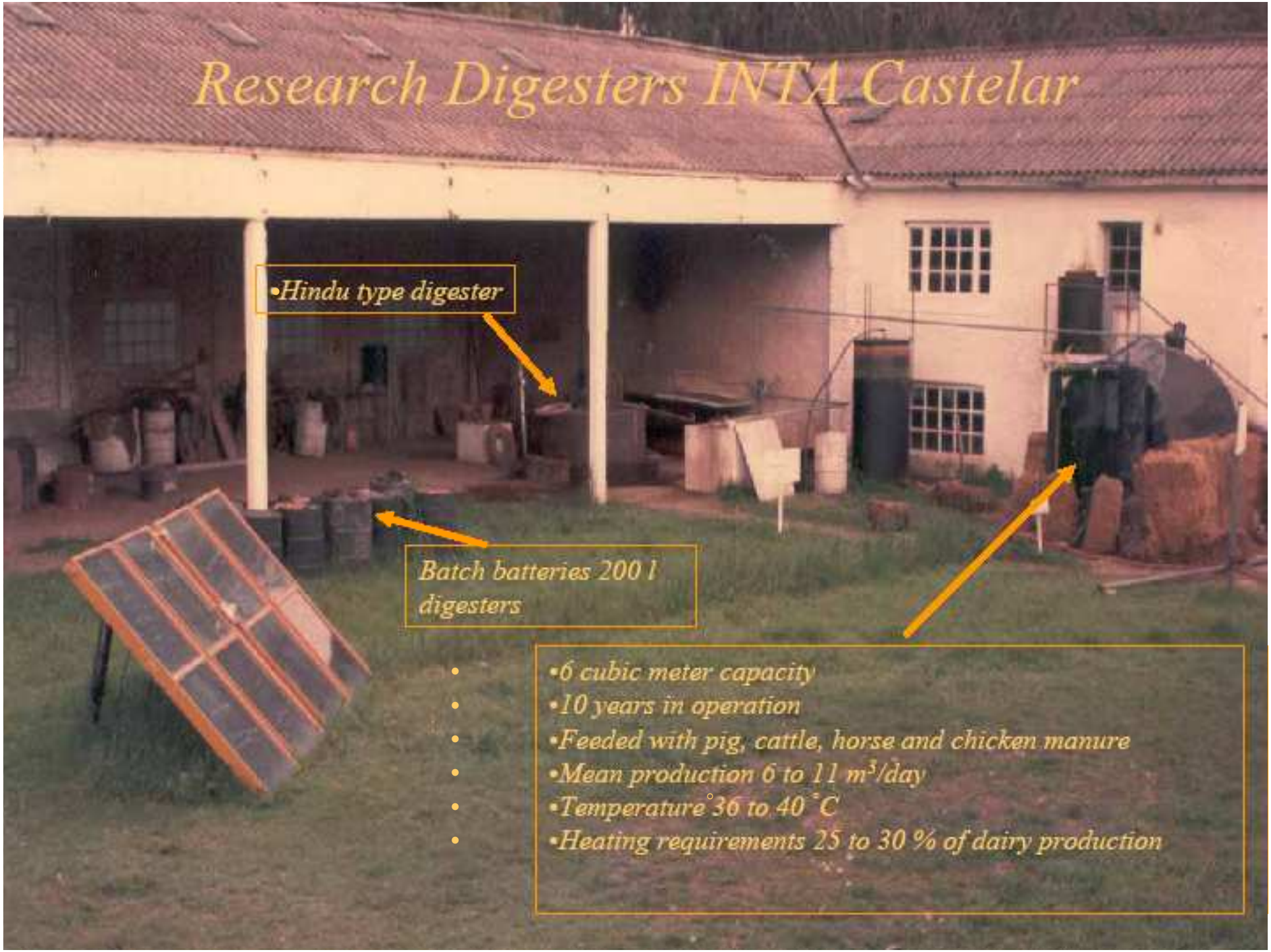
- City garbage treatments
- Agro industry
- Small rural plants
- Intensive agricultural productions
- Water treatment in cities



Temperature is one of the important factors to be considered



Research Digesters INTA Castelar

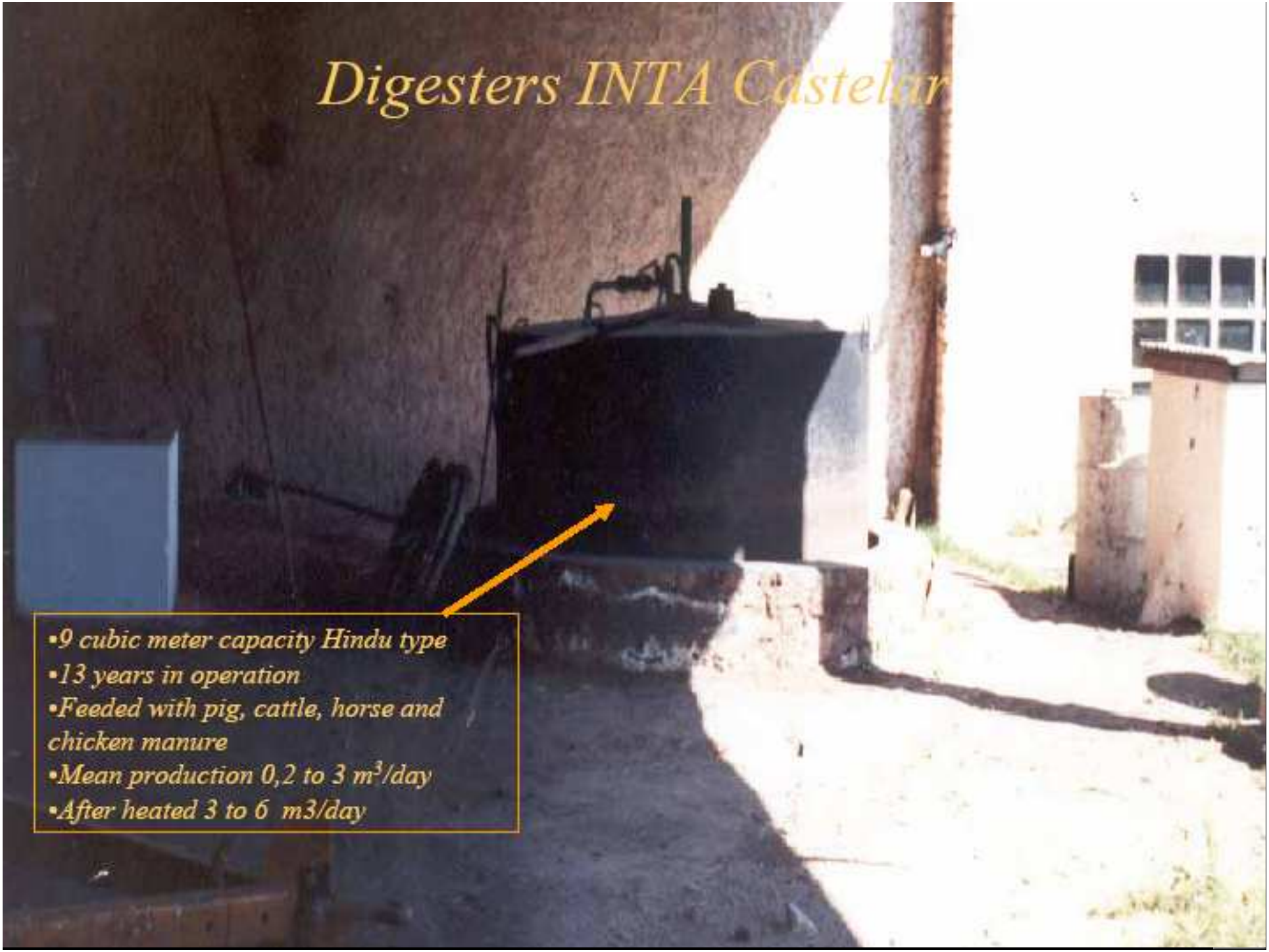


Digesters INTA Castelar

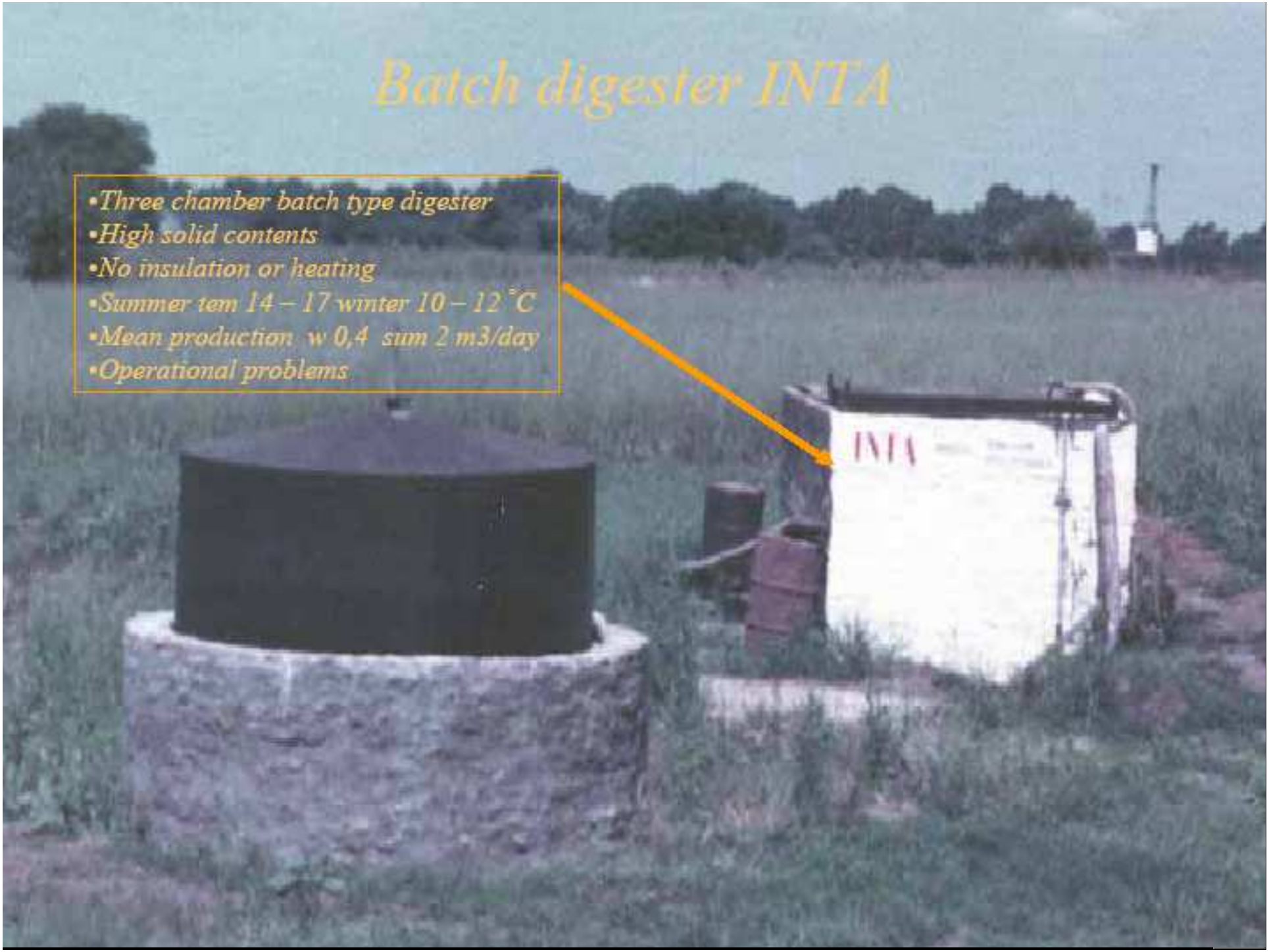
CONCERNS

- Insulation winter tem below 0 °C
- Feeding and agitation requirements

Digesters INTA Castelar

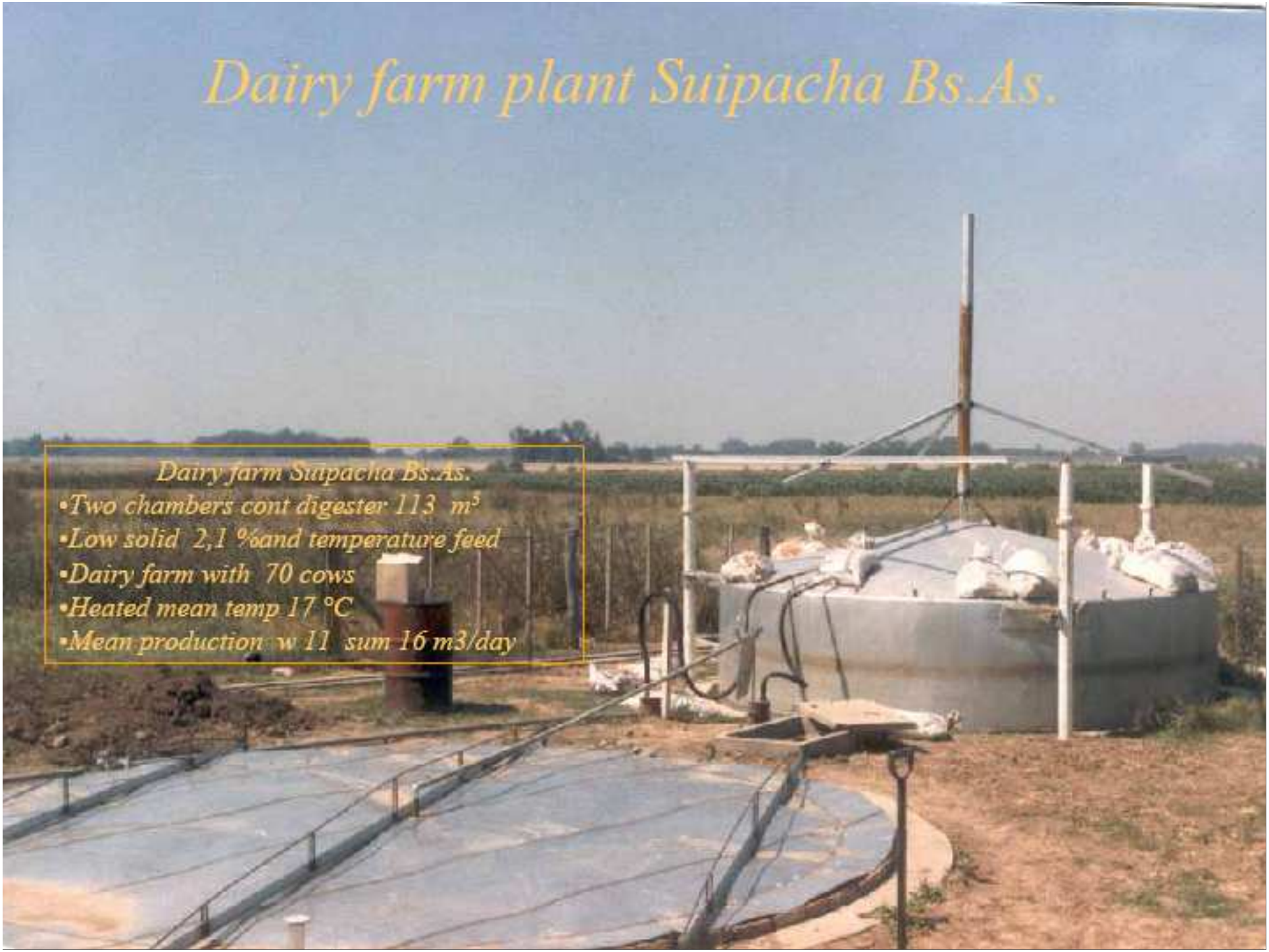


- *9 cubic meter capacity Hindu type*
- *13 years in operation*
- *Feeded with pig, cattle, horse and chicken manure*
- *Mean production 0,2 to 3 m^3/day*
- *After heated 3 to 6 m3/day*


Batch digester INTA
•Three chamber batch type digester
•High solid contents
•No insulation or heating
•Summer tem 14 – 17 winter 10 – 12 °C
•Mean production w 0,4 sum 2 m3/day
•Operational problems
INTA


INTA
BIOGAS
DIGESTOR
DISCONTINUO

Dairy farm plant Suipacha Bs.As.



FAO network digester agricultural school Chile

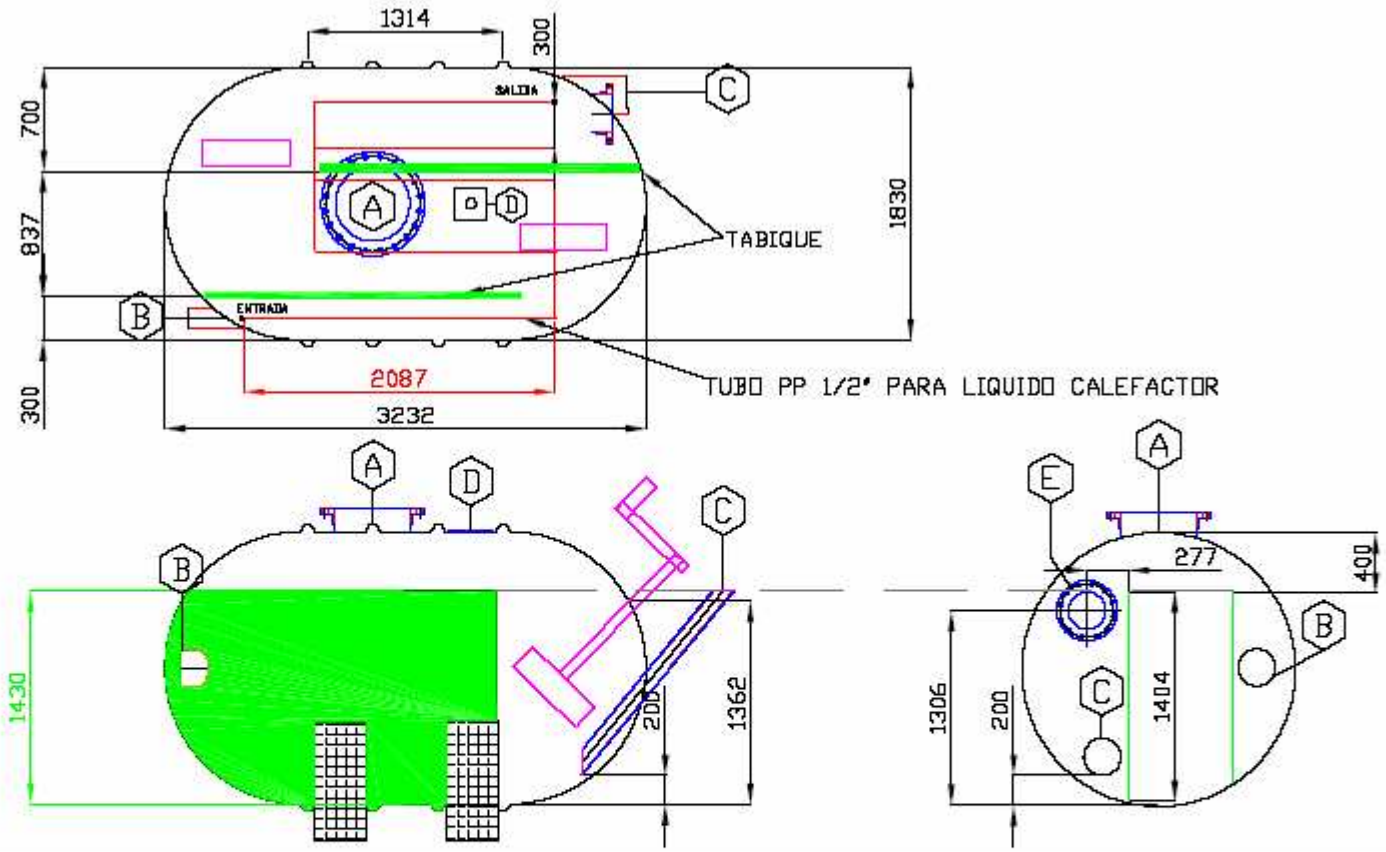
Agricultural School Chile FAO network

- *Cont digester 24 m^3*
- *Good insulation*
- *Dairy farm and pigs*
- *Heated by biogas internal exchanger*
- *Mean production 16 m3/day*

Treatment plants INTA Castelar 2006

- *Scope small rural town organic residues*
- *One chambers cont digester 12 m3*
- *Three internal chambers*
- *Electronic heating control*
- *High solid urban feed*

Reinforced plastic PHRVC digester for dairy farms



ESPECIFICACION DE CONEXIONES.

Denom.	Cant.	Diám.	SERIE	TIPO	SERVICIO
A	1	20"	---	---	BOCA DE INSPECCION CON BRIDA CIEGA
B	1	4"	PVC	BSP	ENTRADA DE PRODUCTO PVC
C	1	10"	PVC	BSP	SALIDA DE PRODUCTO PVC
D	1	2"	ROSC.	BSP	SALIDA DE GAS
E	1	10"	150#	FF	SALIDA DE LIQUIDO CON BRIDA CIEGA

Reinforced Plastic SA
REPSA

TANQUE PARED UNICA - CAPACIDAD 6M3

FECHA	07/06/06	DIBUJO: D.P.	APROBO: N.A.	Ppto N°: 737
ESCALA: S/E	CLIENTE: INTA			PLANO N°: SWT-6-737
				Revisión: F

Reinforced plastic PHRVC digester for dairy farms


Rural community treatment plant Emilia S.Fe Argentina 2003

Emilia Santa anaerobic treatment plant

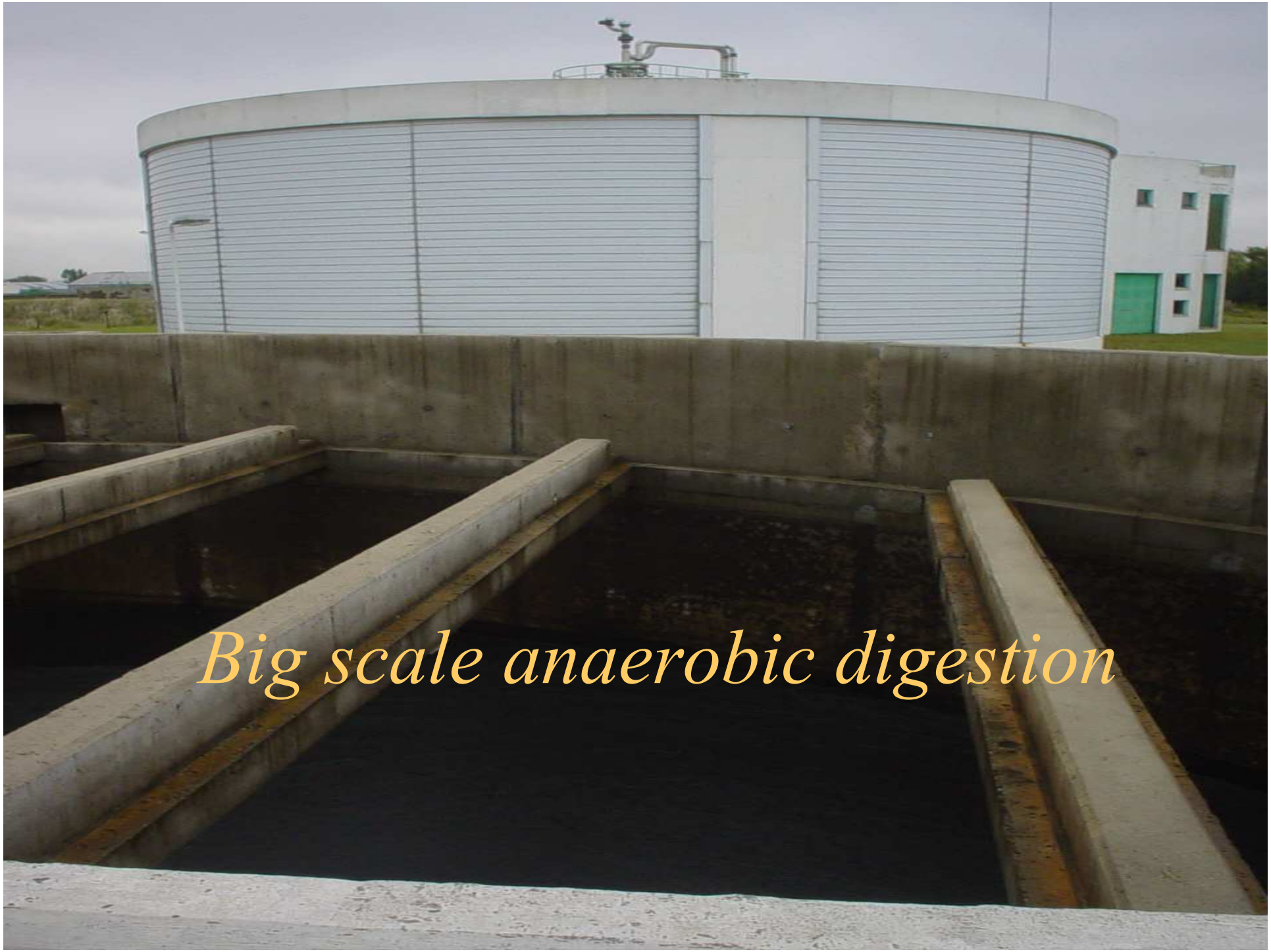
- Digester working on domestic organic waste.
- Horizontal plug flow design
- 700 a 800 kg per week mixed with 50 % of water..
- Feed chamber volume 1600 liters.
- Sólids 20 %.

Agro industrial sector

- Digester full mixed plant 1200 m^3
- Production140 m^3/hour.
- Feed 140 m^3/hour
- DQO 4000 ppm.
- Efficiency 1,2 m^3 per m^3 of sewage
- 15 % of energy needs

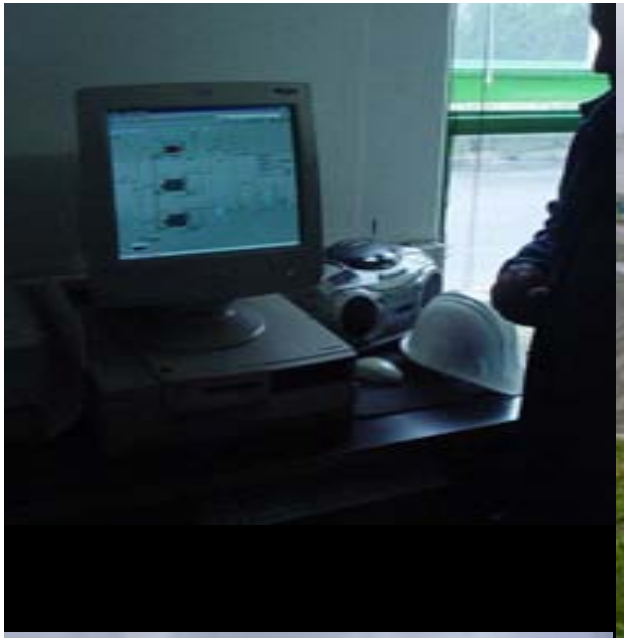

TOMA DE MUESTRA
MODULO A
CICSA
PUESTO DE
INCENDIO
5-51
CLASE
ABC-10

Milk industry whey treatment


Big scale anaerobic digestion

- Digester chamber volume 8500 m^3
- Daily feed 200 m^3 DBO 210 mg/l
- Gasometer 1100 m^3
- Daily biogas production 60 – 90 m^3
- Heated and neumaticaly agitatd
- Degremont Franch technology


LODOS
DIGERIDOS



New trends and opportunities of cooperation

- There are increasing number of projects related to biogas recovery in landfills
- There are several projects regarding anaerobic treatment of solid wastes in small rural towns.
- There is an increasing interest in the industry

Opportunities of cooperation

- Systems related with heat and electrical use of biogas
- Secondary fuels development from biogas
- Digesters technology appropriate for temperate and cold climates

Thank you !!!

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