Federal Agency for the Safety
of the Food Chain

Microbiological surveillance of carcasses and meat in Belgium

Scientific exploitation of databases

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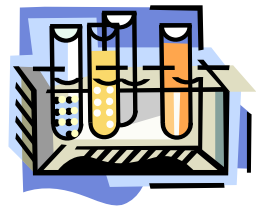
Illustration

- NRL food microbiology (animal origin) for AFSCA / FAVV (ULg)
- Surveillance of zoonosis in carcasses and meat:
  - *Salmonella*, *Campylobacter*, STEC O157, indicators
  - Carcasses and meat beef, pork, poultry

Belgian surveillances

- 1997-1999: introductive study
  - Various parameters and matrixes
  - Different dilutions of the same samples
- **2000-2003**
  - **Representative sampling**
  - **Choice of dilutions**
  - **Follow up of contamination**
- 2003-2006 and after
  - Integration in the global food safety surveillance
  - Based on risk analysis
  - …



INTRODUCTION

- Materials and methods

UTILISATION OF DATABASES

- Assessment of process hygiene criteria for indicators
- Assessment of process hygiene criteria for pathogens
- Risk assessment of *Campylobacter* in poultry meat preparation

INTRODUCTION

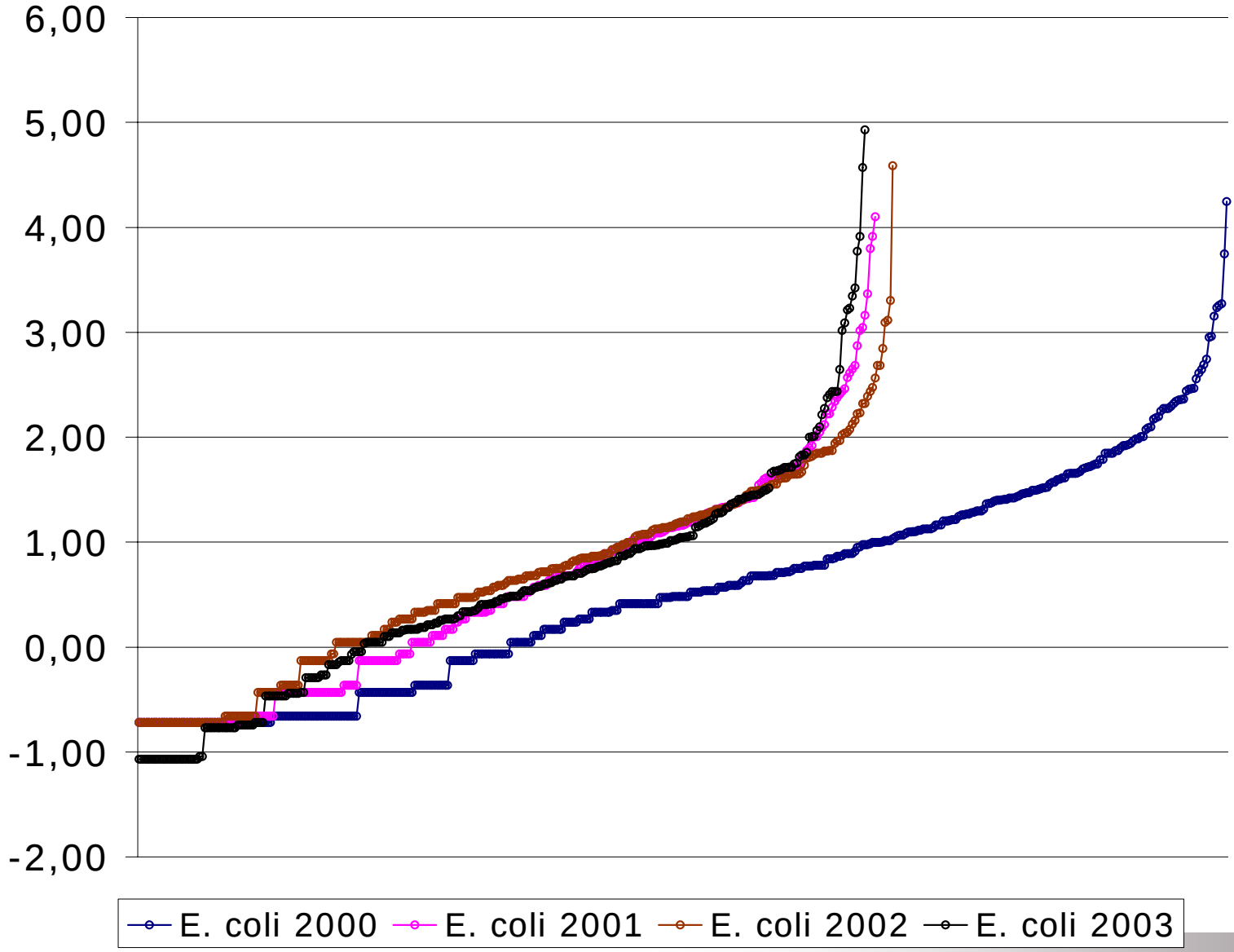
REPRESENTATIVENESS OF SAMPLING

- 2000 - 2003 (10 -11 months / year)
- Establishments
- Samples
- Sampling method
- Laboratory analysis

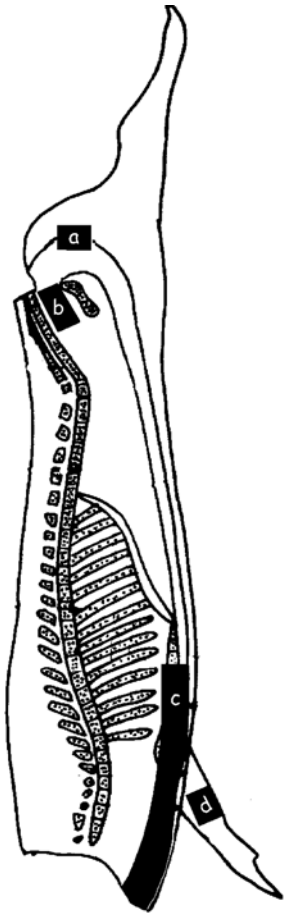
Introduction: microorganisms

- Microorganisms:
  - Pathogenic:
    - *Salmonella, Campylobacter*,
    - *Listeria monocytogenes, E. coli* O157
    - *Yersinia enterocolitica*
  - Indicators
    - *E. coli*, ACC, Enterobacteriaceeae
  - Introductive study:
    - dilution
    - microorganisms and samples
- databases
  - Registration of data
  - According to the objectives
  - Counts: cfu/cm2 -> log
  - Values < detection limit

Results: pork carcasses (log cfu/cm^2)

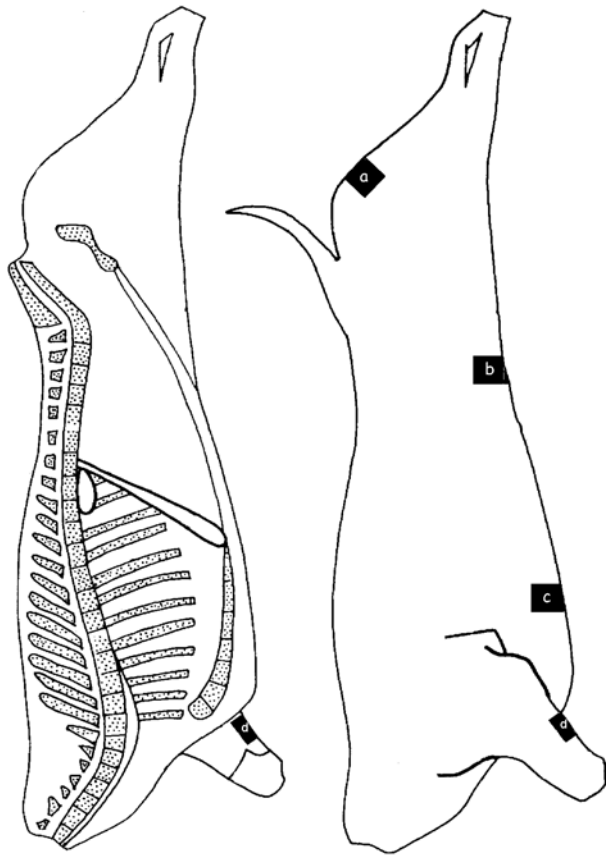


1. Assessment of process hygiene criteria



Pig and beef carcasses

- Abattoir:
  - Cooling room
  - 2-4h after slaughter



1. Process hygiene criteria: Belgian application for indicators (counting method)

Pig & beef carcasses

a. Dec. 2001/471/EC

$\Rightarrow$ adaptation of AR/KB 4/7/1996 (2002)

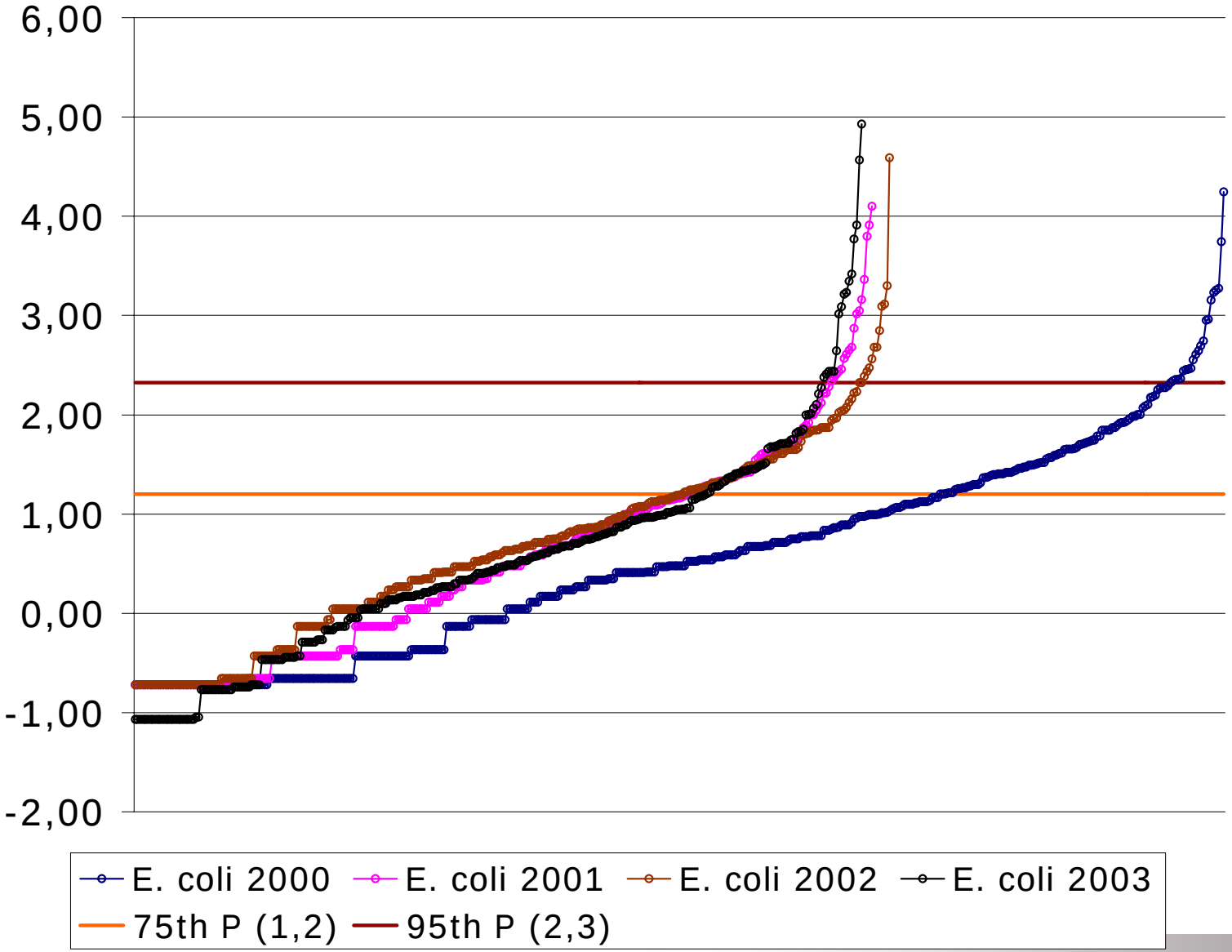
b. Reg. (EC) n°2073/2005

1a. Process hygiene criteria: adaptation of AR/KB 4/7/1996 (2002)

Pig & beef carcasses

- *E. coli*:
  - Indicator of faecal contamination
  - Indicator of a possible presence of pathogenic microorganisms of faecal origin
- Aerobic colony counts:
  - Indicator of general hygiene
- 75th P $\Rightarrow$ m (level of satisfaction)
- 95th P $\Rightarrow$ M (limit of acceptability)

Results: pork carcasses (log cfu/cm^2)



Results: pork carcasses (log cfu/cm^2)

E. coli	**2000-2003**		**AR 4/7/1996**
75th P	**1,20**	m	**1,49**
95th P	**2,32**	M	**2,38**

Results: pork carcasses (log cfu/cm^2)

ACC	**2000-2003**		**AR 4/7/1996**
75th P	**3,67**	m	**4,08**
95th P	**4,74**	M	**4,92**

1b. Process hygiene criteria: Belgian application of Reg. (EC) n°2073/2005

Pig & beef carcasses

- *Enterobacteriaceae* & ACC
- Sampling method to be assessed by MS:

DESTRUCTIVE ⇔ SWABS

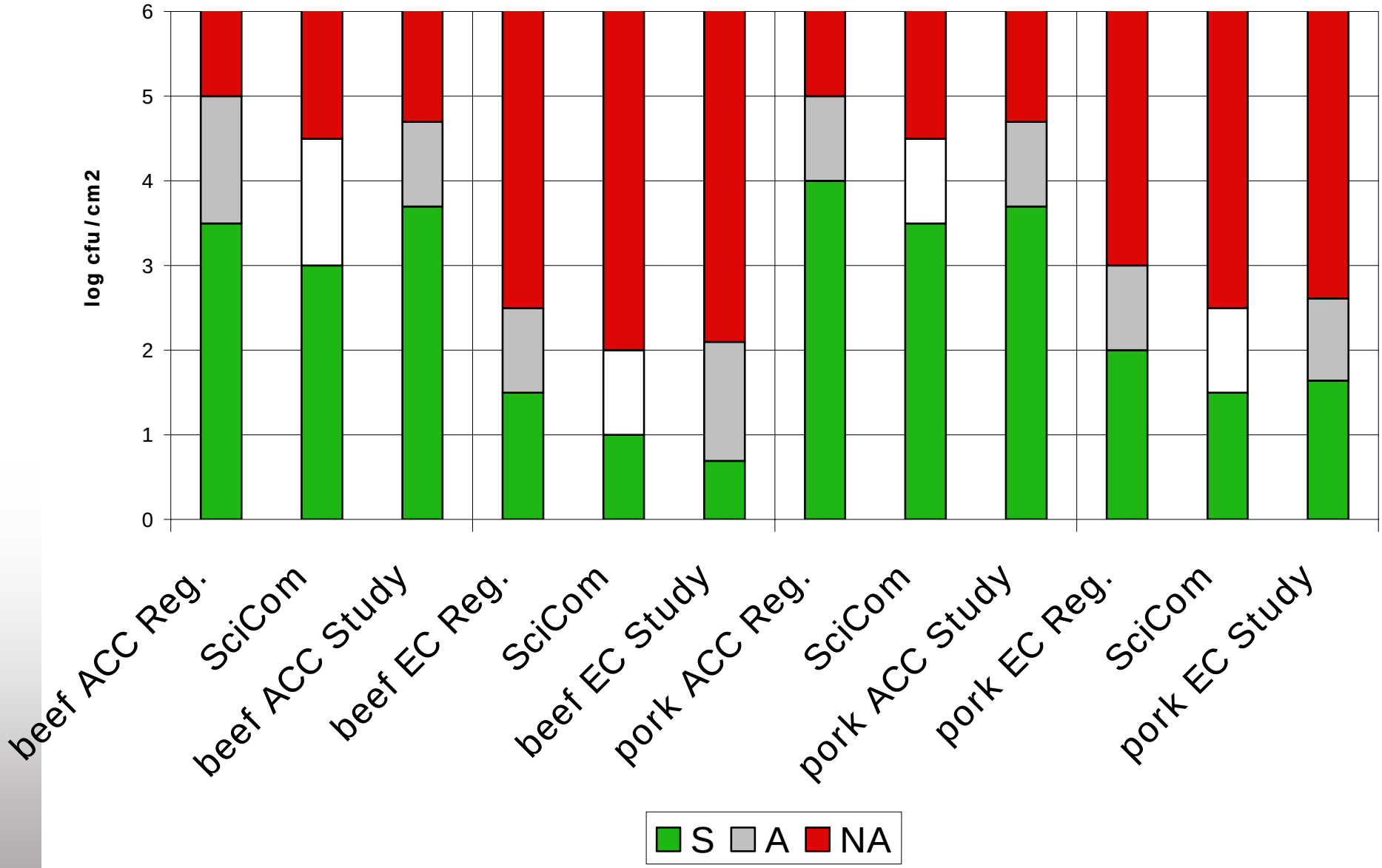
Reference ⇔ Belgian

Before cooling

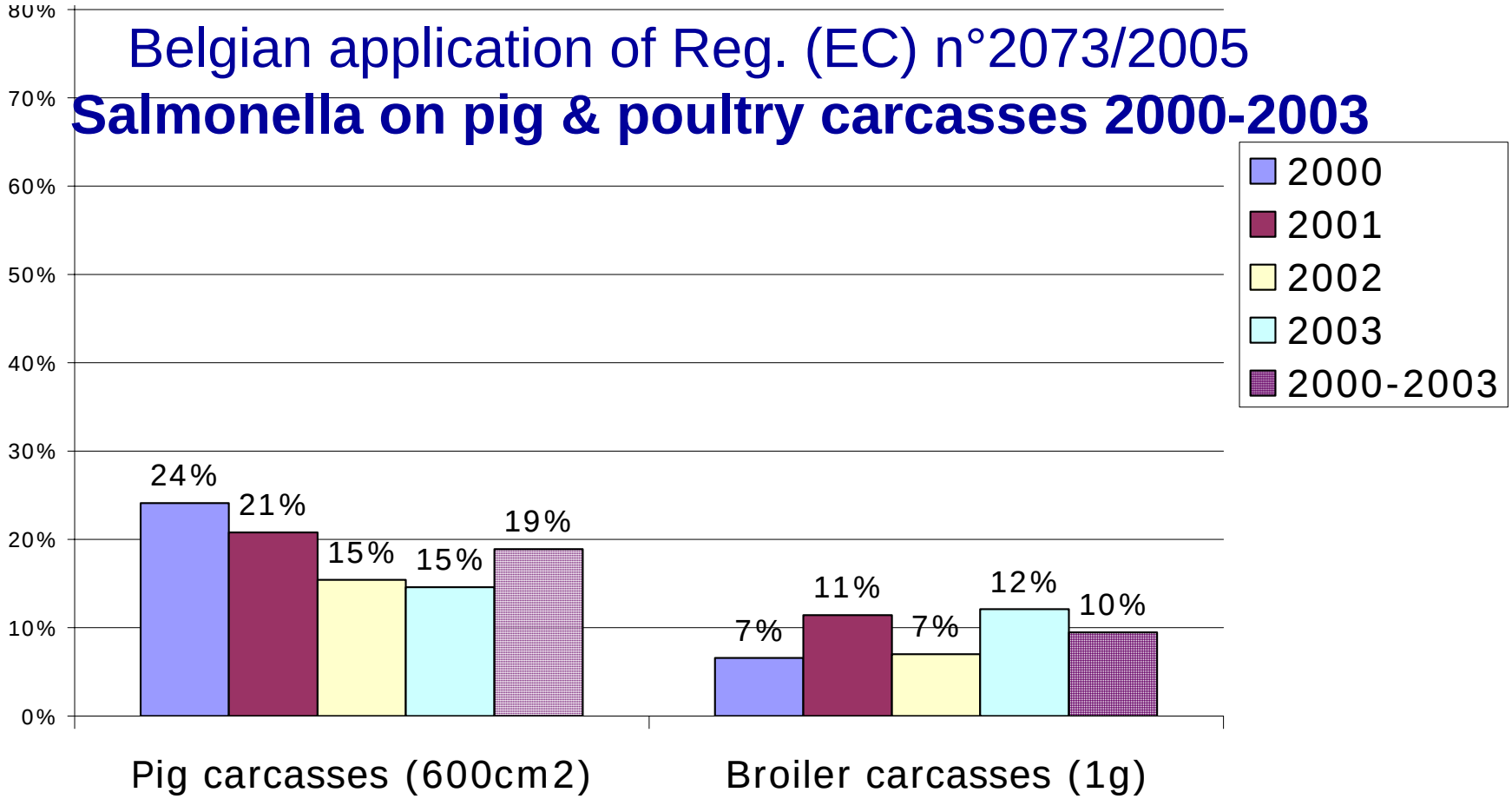
SciCom AFSCA/FAVV

- Sampling: destructive or not-destructive method
- Recuperation of microorganisms

  -0,5 log (20-50%) in comparison with destructive method


log cfu / cm 2
0
1
2
3
4
5
6
beef ACC Reg.
SciCom
beef ACC Study
beef EC Reg.
SciCom
beef EC Study
pork ACC Reg.
SciCom
pork ACC Study
pork EC Reg.
SciCom
pork EC Study
S
A
NA

2. Process hygiene criteria: pathogenic agents (P/A)

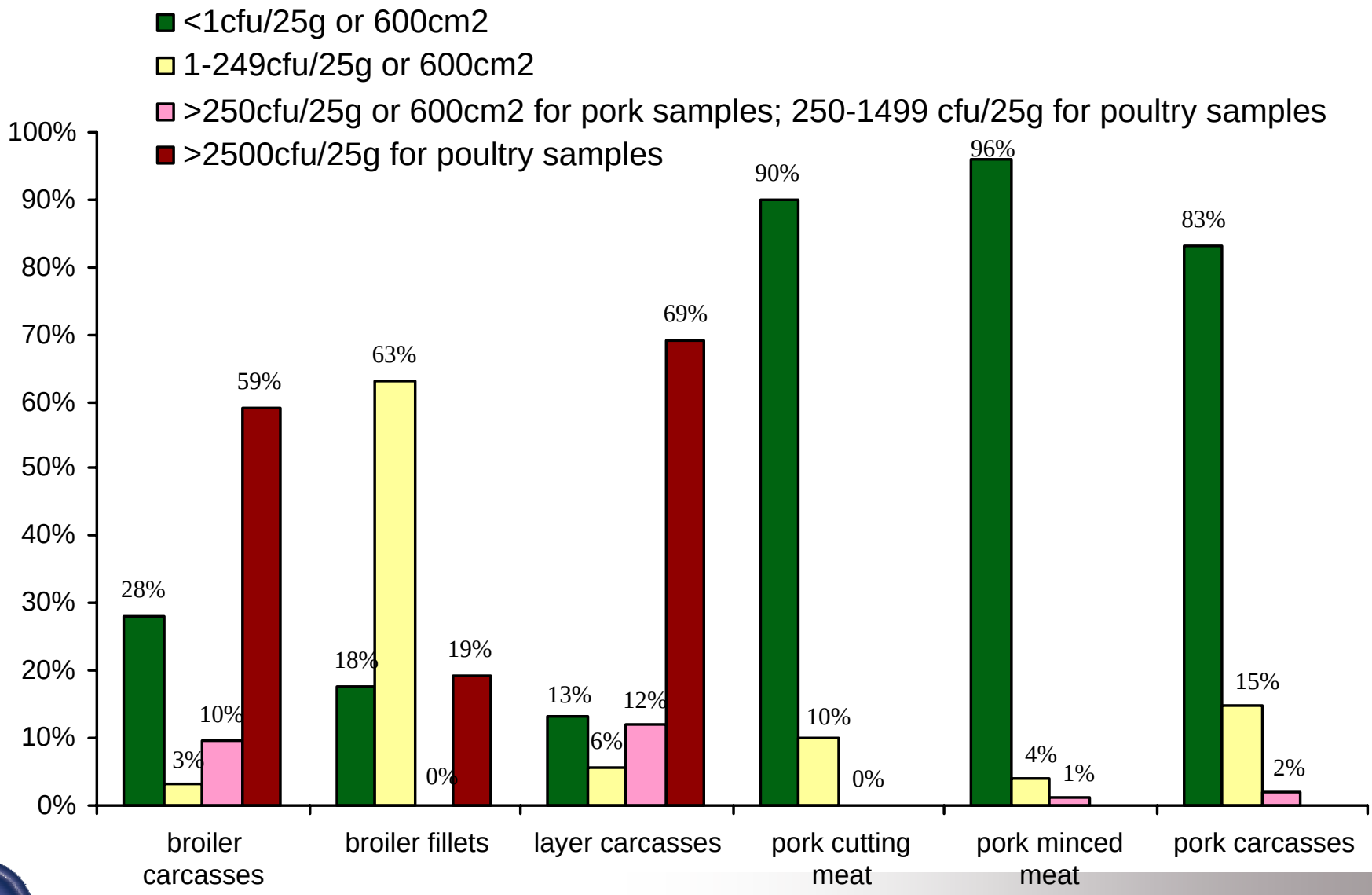


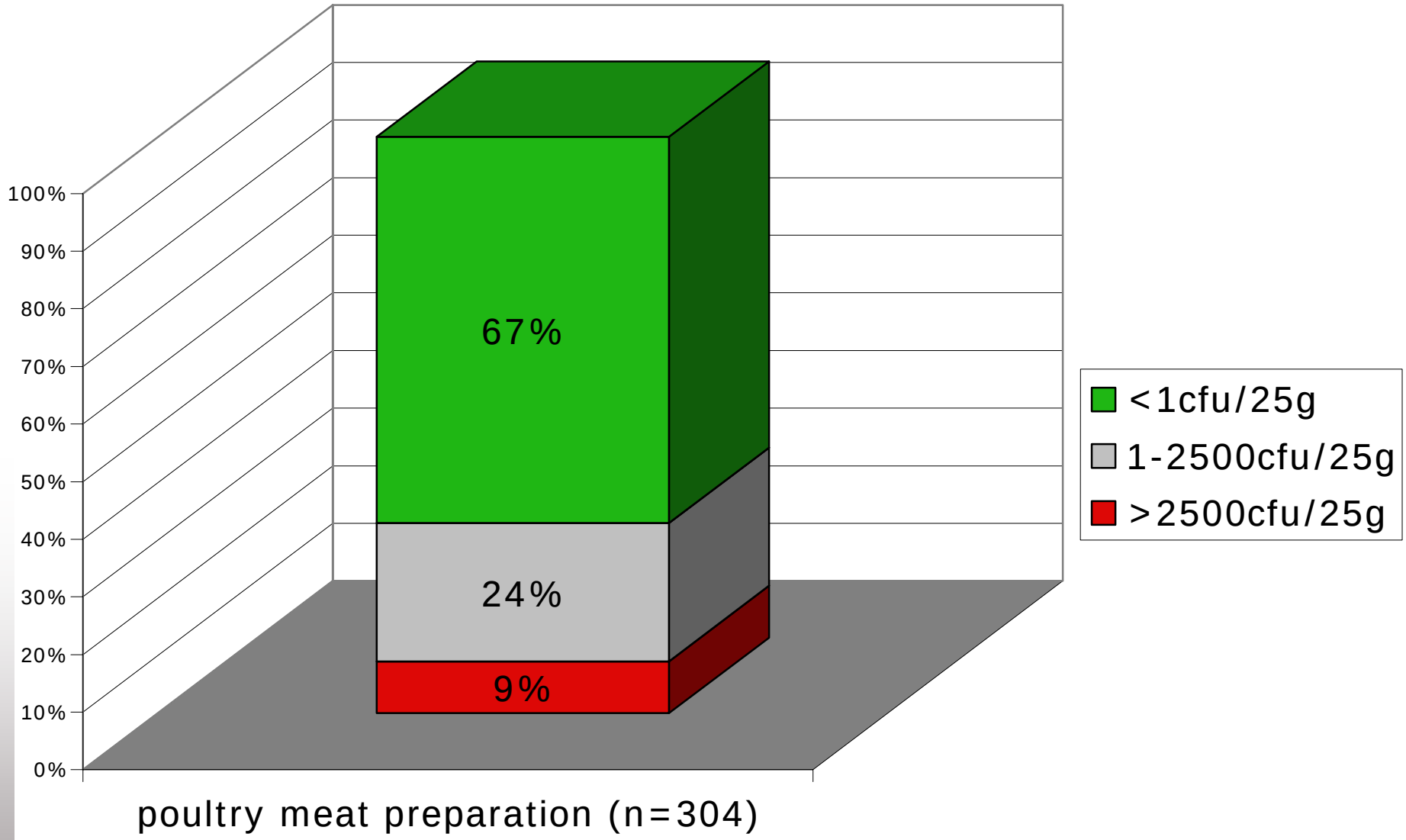
Salmonella on pig & poultry carcasses

	Pig carcasses (/swabbed area)		Poultry carcasses	
	R2073/2005	BE 2000-2003	R2073/2005 (/25g)	BE 2000-2003 (/1g)
n	**50**	**50**	**50**	**50**
c	**5**	**7,5**	**7**	**5**

3. Semi-quantative estimation of *Campylobacter* prevalence: Poultry meat preparation

- 25g samples + 225 ml broth (1/10th)
- homogenisation
- Dilutions: 10ml (1g), 1ml (0,1g), 0,1ml (0,01g) -> in 9 or 90 ml of broth
- Incubation & analysis


<1cfu/25g or 600cm2
1-249cfu/25g or 600cm2
>250cfu/25g or 600cm2 for pork samples; 250-1499 cfu/25g for poultry samples
>2500cfu/25g for poultry samples
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
28%
3%
10%
59%
18%
63%
0%
19%
13%
6%
12%
69%
90%
10%
0%
96%
4%
1%
83%
15%
2%
broiler carcasses
broiler fillets
layer carcasses
pork cutting meat
pork minced meat
pork carcasses
Samples


100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
67%
24%
9%
<1cfu/25g
1-2500cfu/25g
>2500cfu/25g
poultry meat preparation (n=304)

Risk assessment of *Campylobacter* in poultry meat preparation:

Superior Health Council

- Elimination of highly contaminated samples
  - > 1000 Campylobacter / g
  - > 100 Campylobacter / g
- Good cooking of poultry meat

Conclusion

Importance of surveillance system & data collection

- Determination of limits
- Take into account the Belgian situation
- Risk assessment

Thanks for your attention