AGENCE FRANÇAISE
DE SÉCURITÉ SANITAIRE
DES ALIMENTS

Salmonella contamination of slaughter pigs in farm and control options in France : From where do we start ? Where shall we go ?

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Reported salmonellosis cases in humans 2003-20071, and notification rate in 2007

EFSA 2009

Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed Cases	Cases/ 100,000	Confirmed cases		Cases	
France	C	5,510	5,510	8.7	6,008	5,877	6,352	6,199

No source attribution : role of pork meat unknow

Salmonella prevalence in France (Europe) in pig productions (EFSA, 2008 ; AFSSA, 2009)

	Salmonella spp.	S. Typhimurium	S. Derby
Lymph nodes	**18.1 % (10.3 %)**	**7.1 % (4.7 %)**	**6.5 % (2.1 %)**
Carcasses	**17.6 % (8.3%)**	**7.0 % (3.9 %)**	**5.9 % (2.6 %)**
Serology	**9.9 %*(NA)**	**/**	**/**
Breeders	**50,66% of farms 11,80% of samples**		
Fattening pigs	**38,97% of farms 9,89% of samples**		

Study of raw meat juices for a threshold value of 40%

NA: Not Available, measurements are not comparable between various Member States.

/: Not documented

Objectives of a control plan for Salmonella in pigs in France

- Considering the high prevalence, aiming eradication is not realistic

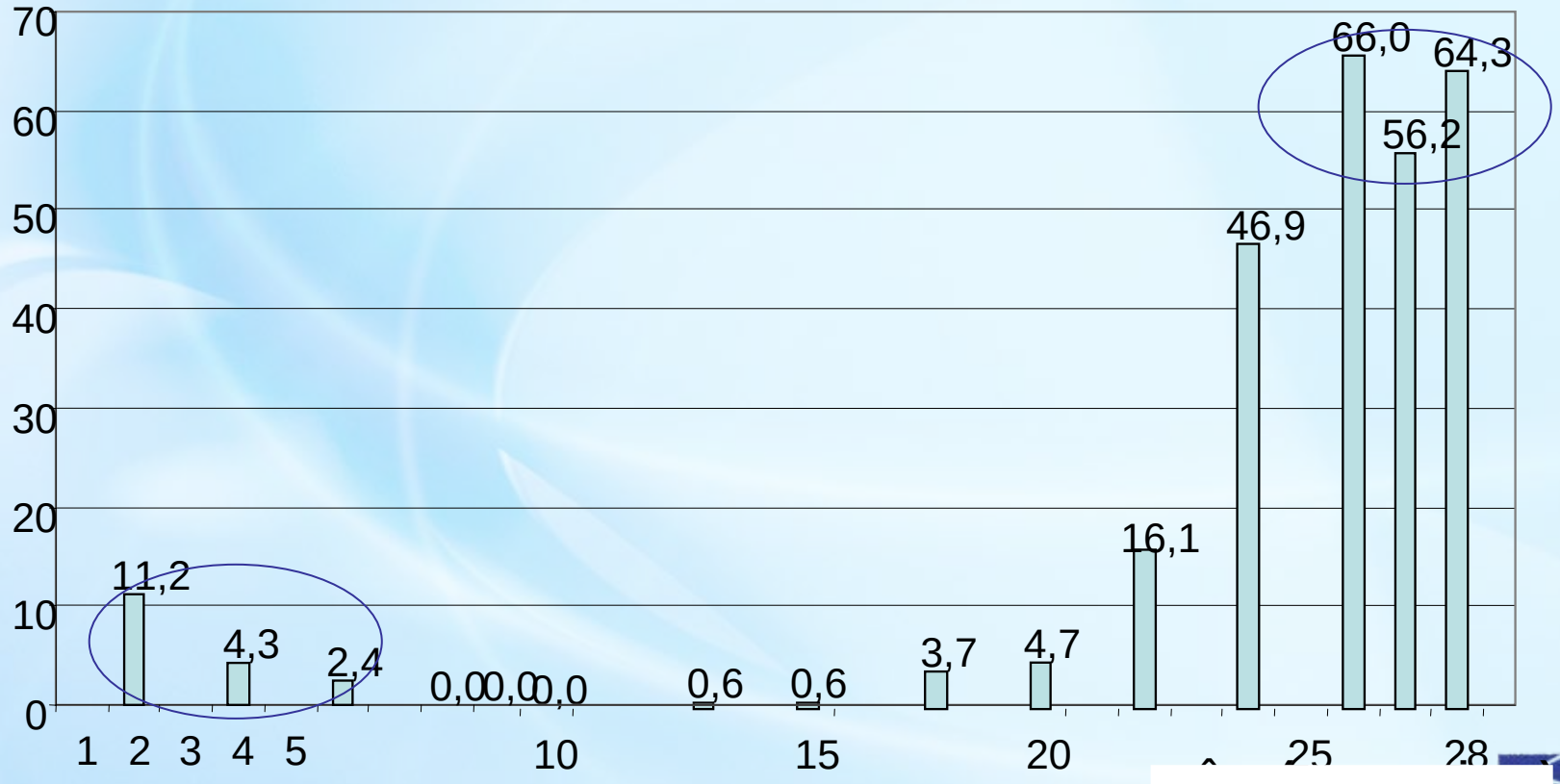
- Reducing the risk for the consumer is of great concern

Points to be stressed to reduce the risk of *Salmonella* in pigs

- High prevalence in breeders :
  - Positive sows : continuous source for the weaning/fattening production farms
  - The role of the sow in primary contamination of piglets is well known :
  - contamination during milking and reexcretion at the end of fattening

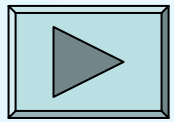
Serological response of a positive herd

% of seropositive pigs



Beloeil et al., 2002

Points to be stressed to reduce the risk of *Salmonella* in pigs

- High prevalence in breeders :
  - The essential role of biosecurity and general hygiene has been proved 

Risk factors for *Salmonella* excretion in fattening pigs (Beloeil et al., 2004)

Factors	% S+	RR (CI 90%)
Emptying of container under slotted floors after removal of the sows		
Yes	**24.3 %**	**1**
No	**42.6 %**	**1.9 (1.1-3.7)**
Frequency of removal of manure under the sows during lactation		
Twice per day or more	**26.9 %**	**1**
Once per day or less	**45.3 %**	**2 (1.2-3.1)**
Positive feed yard before loading of the batch followed		
Yes	**51.4 %**	**2 (1.2-3.2)**
No	**28.6 %**	**1**
Fattening food type		
Soup	**26.1 %**	**1**
Dry	**52.5 %**	**2 (1.2-3.2)**
Seroconversion to *Lawsonia intracellularis* during second half of fattening		
Yes	**48.4 %**	**2 (1.2-3.3)**
No	**31.1 %**	**1**
PRRS seropositivity at end of fattening period		
Yes	**47.9 %**	**2 (1.2-3.4)**
No	**26.3 %**	**1**

Reducing healthy carriage in breeder herds :

- Reinforced biosecurity
- Strict implementation of GHP
- Health status of the herd
- ⚠Use of antimicrobial therapy during fattening enhanced the risk of seropositivity (Beloeil, 2007) : RR: 2,4

Reducing the risk for the consumer :

- Reducing the number of *Salmonella* on the carcasses at the end of slaughtering :
  - Improving lairage hygiene
  - Improving evisceration
  - Promote double flaming of carcasses
  - Implementation of HACCP & GHP at the slaughterhouse

Monitoring the overall efficiency of the control plan : at the farm level

- Reinforced monitoring of breeder farms aiming performance objectives to be defined
- Monitoring of the mandatory implementation of a GHP guide in breeder herds (validated by the authority)
- Implementation of a GHP guide in production herds, transportation, feed plants.
- No way to classified production herds at present

Monitoring the overall efficiency of the control plan : at the slaughterhouse level

- Monitoring the reduction of *Salmonella* on carcasses :
  - Surface sampling by swabbing
  - Both detection and numeration (Fravalo, 2003) of *Salmonella* on carcasses
  - Use of *Salmonella* counts as an hygiene criteria
  - Performance objectives to be defined for the overall french production

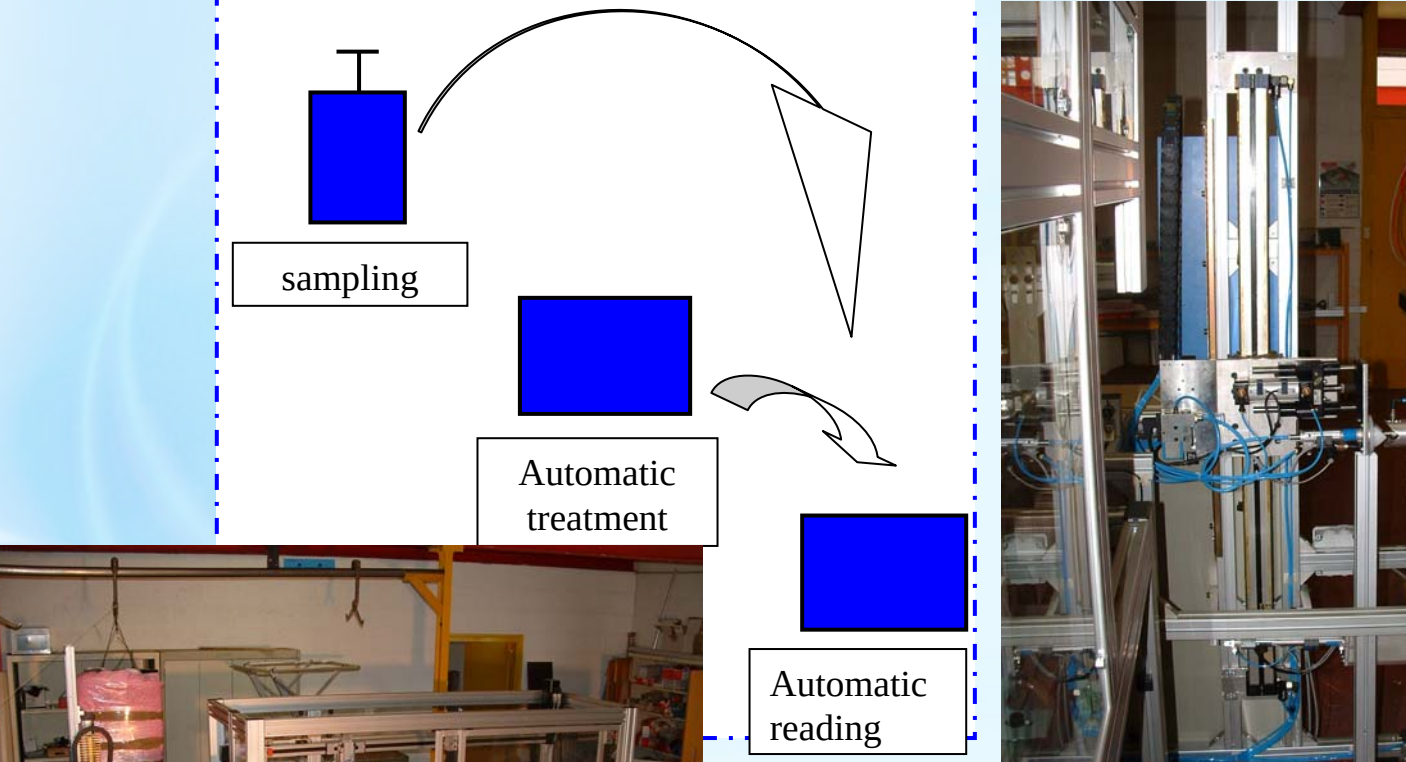
Near future : SalmOK

Rapid detection of Salmonella by immunostaining

Automatic sampling by impaction of carcasses with stainless steel blades

Results available in less than 4 hours (during chilling)

SALM-OK



Assessment of the risk for the consumer

Conclusion

- Control plan will have to be focused on two main points :
  - Reducing the primary source of contamination of the herds
  - Reducing the amount of *Salmonella* adressed to the consumer

Final objective is to reduce the foodborne diseases attributed to pork meat consumption