



Benefit Risk analysis for bovine tuberculosis surveillance: Approach towards benchmarking

Sarah Welby¹, Virginie Roupie², Luc Vanholme³, Mickaël Cargnel¹, Hans Vandewiele³, Claude Saegerman⁴, Koen Mintiens⁵, David Fretin²
¹CODA-CERVA, Veterinary and Agrochemical Research Centre, Unit: Coordination Veterinary Diagnosis-Epidemiology and Risk Analysis (CVD-ERA), Brussels, Belgium
²CODA-CERVA, Veterinary and Agrochemical Research Centre, Unit: Bacteriology, Brussels, Belgium
³FASFC, Federal Agency for the Safety of the Food Chain, Section: Animal health, Brussels, Belgium
⁴Liège Veterinary University, Unit: Epidemiology & Risk Assessment, Liège, Belgium
⁵Boerenbond, Leuven, Belgium

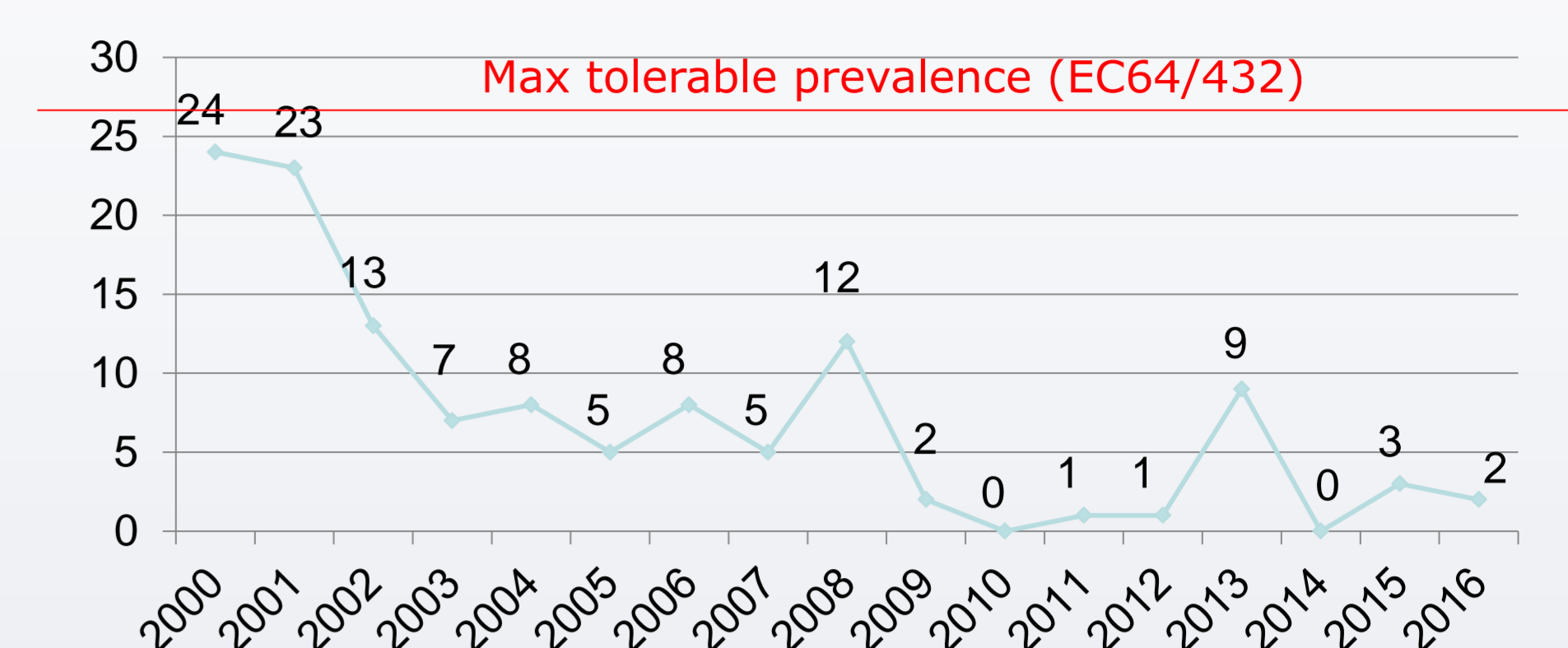


Belgium officially free since 2003 (EC Decision 2003/467/EC)

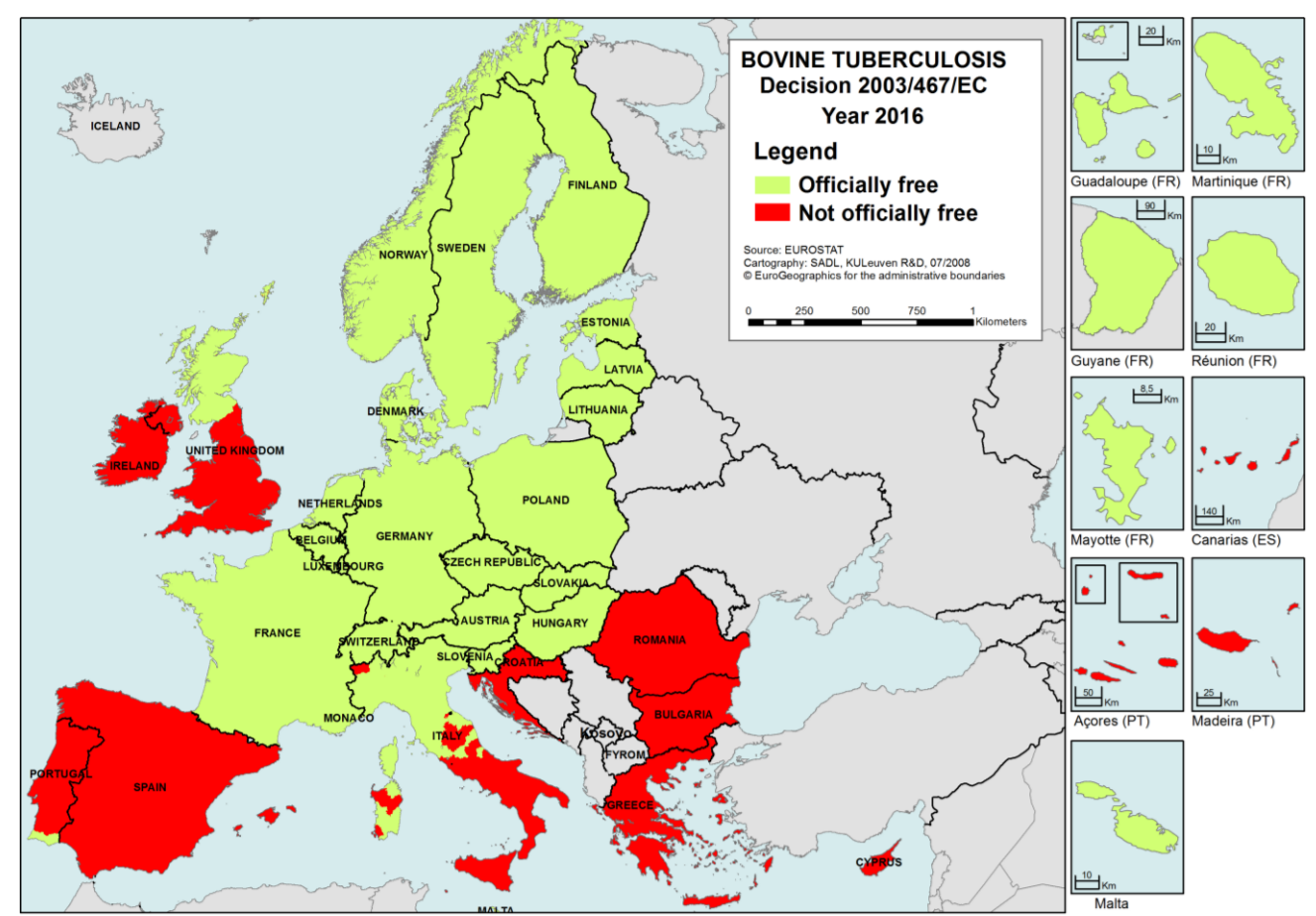
Are we bacteriology free?
 How can we better and sooner detect outbreaks?

Cattle population: 2.700.000
 Herd population: 26.000

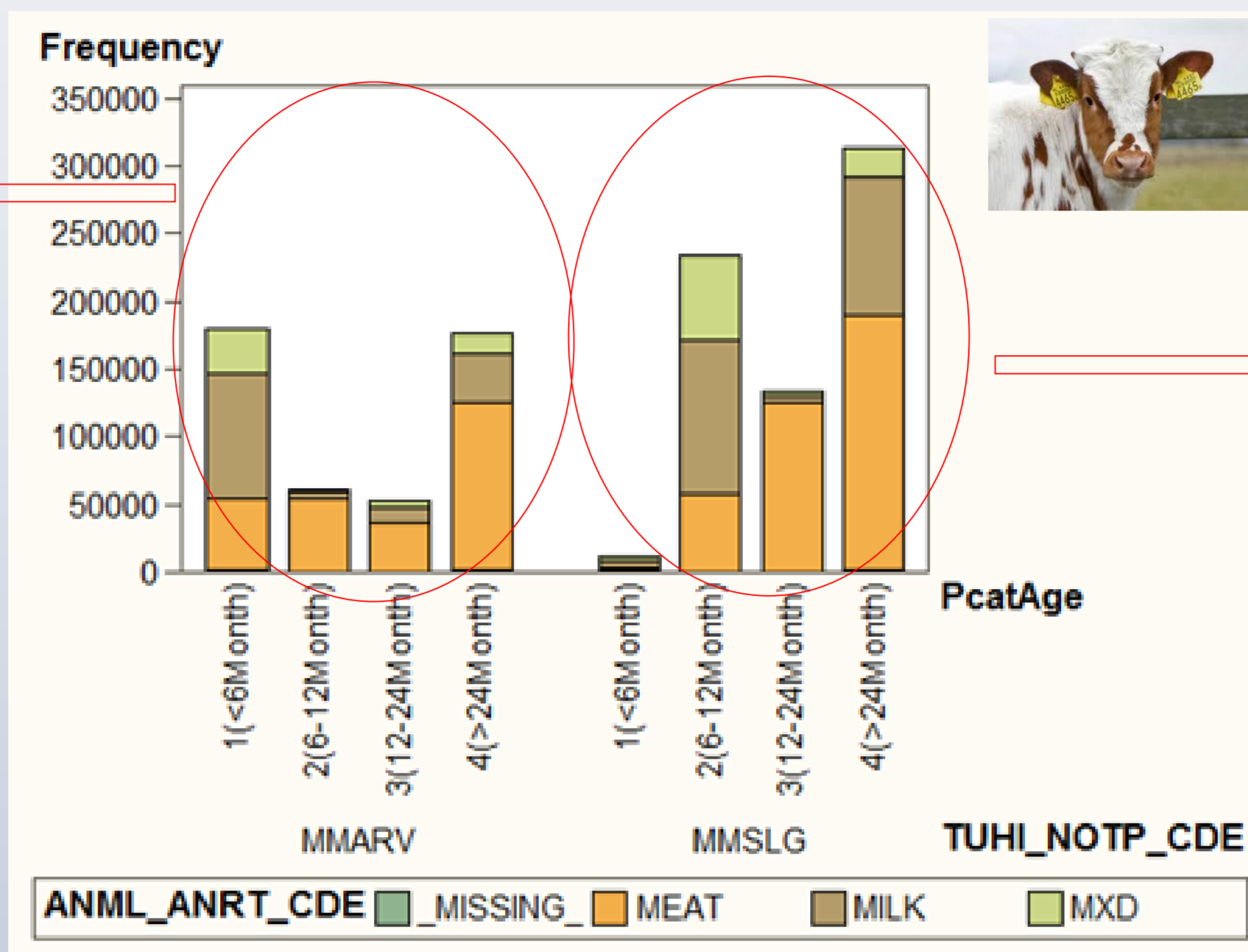
Tuberculosis outbreaks 2000 - 2016



FASFC data, 2017



Annual ADULT Slaughtered cattle: 490.179
 (460.097-509.320)
 Expected lesions: 0,025% (0,0%-0.1278%)
 Observed: 0,0002-0,0003%
 Cost: **35.485 €**

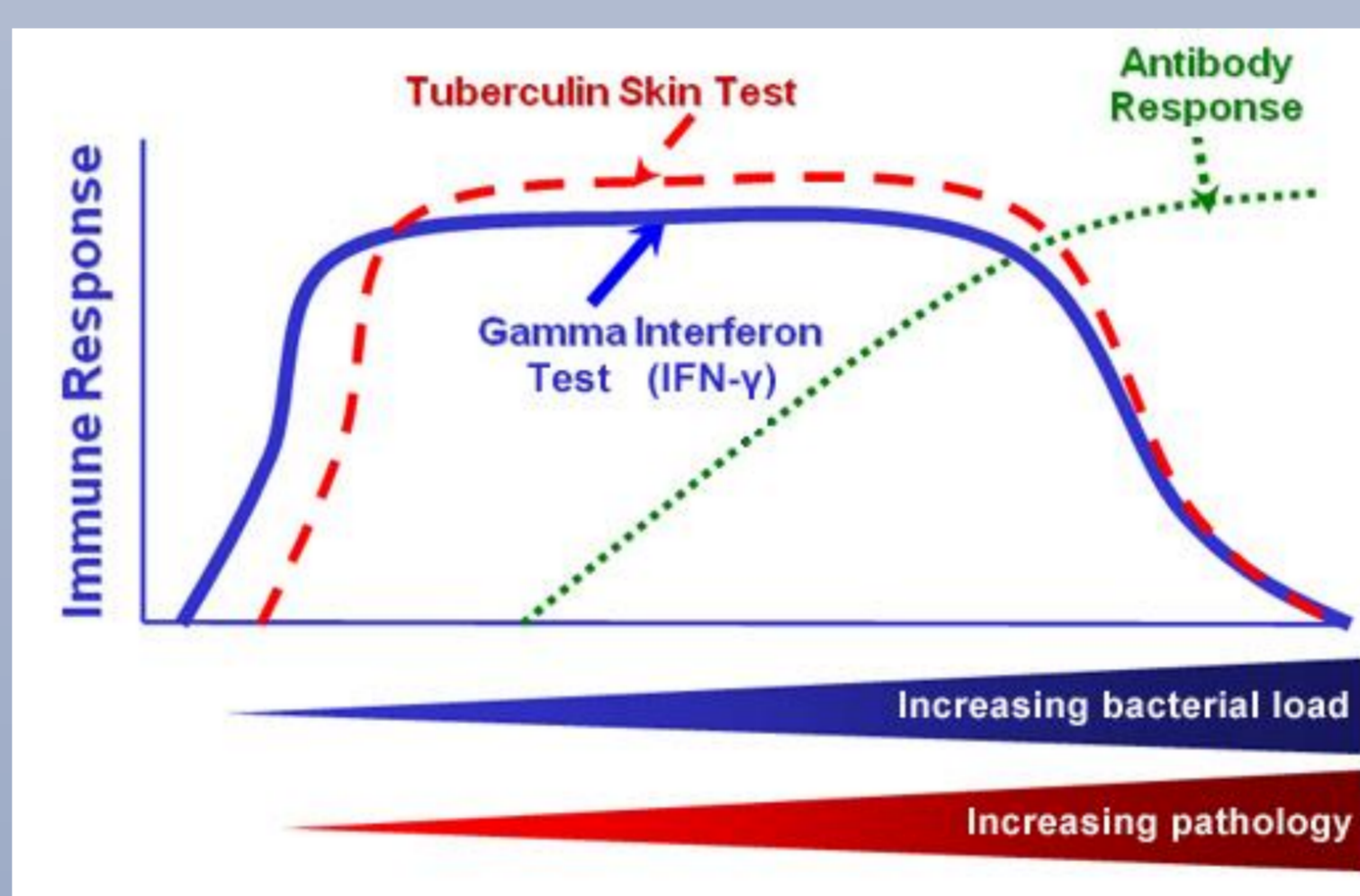


Sanitel data, 2016

=> Efficacy of BE surveillance components doubtful =>
 ?Emerging diagnostics, use in BE?

Field study:

Validation of ELISA and IFNg test sensitivity, specificity
 Stochastic scenario simulation model (@Risk) Cost Benefit and Risk evaluation



N Herds tested	215					
N Cattle tested	13.007 (1.773-29.489)					
Scenario	Interféron		Elisa		Interféron + Elisa	
Screening cost	240.613 (39.930-629.544)		58.507 (13.114-136.780)		292.803 (45.402-702.400)	
RISK	Disease+	Disease-	Disease+	Disease-	Disease+	Disease-
Test+	1 (0-3)	608 (31-3228)	0 (0-1)	43 (0-346)	1 (0-3)	692 (40-2.314)
Test-	0 (0-1)	12.399 (1.637-28.601)	1 (0-3)	12.963 (1.760-9.390)	1 (0-3)	12.357 (1.727-28.631)
Confirmation cost	51.430 (2.282-299.008)		3.686 (6-30.846)		58.369 (5.059-211.832)	
Total cost	292.043 (42.212-928.552)		62.193 (13.120-167.626)		351.172 (50.461-914.232)	

In Belgium, no outbreaks detected based on purchase testing over last 10 years, most outbreaks are discovered only at slaughterhouse or following tracing on and back.

Cost of false positives reaction due to poor specificity > higher > risk of false negative.

Based on this study, for a **most cost effective** surveillance (higher sensitivity, specificity and reduced cost) it is advisable to stop tuberculin testing at purchase and replace by **serological screening** for **earlier detection and substantiation of freedom**.

