

**EXPERTISE AND SERVICE PROVISION
QUALITY OF LABORATORIES**

**EXTERNAL QUALITY ASSESSMENT
IN VETERINARY DIAGNOSIS**

DEFINITIVE GLOBAL REPORT

**Proficiency Testing in Veterinary Diagnosis
Classical Swine Fever**

SURVEY 2020/2

Sciensano/PT VET CSF/1-E

Expertise and service provision
Quality of laboratories
J. Wytsmanstreet, 14
1050 Bruxelles | Belgique

www.sciensano.be

COMMITTEE OF EXPERTS

Sciensano			
Secretariat		PHONE:	02/642.55.22
		FAX:	02/642.56.45
Name scheme coordinator	Bernard China	PHONE:	02 642 53 85
		e-mail:	Bernard.China@sciensano.be
Name alternate scheme coordinator	Arnaud Capron	PHONE:	
		e-mail:	Arnaud.Capron@sciensano.be
Experts	Institute		
Ann Brigitte Cay	Sciensano		
Marylene Tignon	Sciensano		
Name 3			
Name 4			

A preliminary version of this report was submitted to the National Reference Laboratory: 28/07/2020

Authorization to release the report:

By Bernard China, scheme coordinator, on
31/07/2020.

Bernard China 

TABLE OF CONTENTS

.....	3
INTRODUCTION	4
THE SAMPLES	4
SURVEY TIMELINE	5
RESULTS	6
1.1. <i>Results per sample</i>	6
1.2. <i>Results per method</i>	6
1.3. <i>Results per laboratory, per method and per sample</i>	6
ANNEXES	7
ANNEXE 1.....	7
<i>Quantitative Results for ELISA</i>	7
ANNEXE 2: ADDITIONAL INFORMATION.....	12
PRELIMINARY REPORT	12
GRAPHICAL REPRESENTATION	13

Introduction

This survey was dedicated to the detection of antibodies specific to CSF virus in swine sera using ELISA.

The samples

The samples were prepared by the National Reference Laboratory, Enzootic, vector-borne and bee diseases, Infectious diseases in animals Directorate, Sciensano.

Homogeneity

5 different samples were used

PT2020CSFSERNS1, PT2020CSFSERNS2, PT2020CSFSERPS1, PT2020CSFSERPS2, PT2020CSFSERPS3.

The homogeneity of the samples were tested by the NRL on several exemplars of each sample using ELISA: Herdchek CSFV Ab Test Kit (IDEXX).

ID PT 2020	Homogeneity (Ingenasa)										Mean	SD	CV (%)
	TEST 1	TEST 2	TEST 3	TEST 4	TEST 5	TEST 6	TEST 7	TEST 8	TEST 9	TEST 10			
PT2020CSFSERNS1*	-8.00	-13,00	-4,00								-8.33	4.51	54.11
	NEG	NEG	NEG								NEG		
PT2020CSFSERNS2*	1,0	-5,0	9,0								1.67	7.02	421.43
	NEG	NEG	NEG								NEG		
PT2020CSFSERPS3*	81.0	82.0	81.0								81.33	0.58	0.71
	POS	POS	POS								POS		
PT2020CSFSERPS2*	72	72	72								72	0	0
	POS	POS	POS								POS		
PT2020CSFSERPS1	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	91.0	92.0	91.10	0.32	0.35
	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS		

*: this samples were already used in previous surveys.
The samples were considered as homogeneous.

Target Values

The target value was determined by the NRL based on the homogeneity tests.
The samples PT2020CSFSERPS1, PT2020CSFSERPS2 and PT2020CSFSERPS3 were considered as positive. The sample PT2020CSFSERNS1 and PT2020XCFSERNS2 were considered as negative.

Stability

The stability was determined by comparison of the pre-survey results and the results obtained by the NRL during the survey. The samples were considered as stable.

The participants

5 laboratories participated to the CSF Serology survey:
Sciensano ; Arsia (Ciney) , DGZ (Torhout), LMVE (Luxemburg) and Hipra (Spain).

Randomisation and panel composition

Since a specific number has been assigned to each laboratory, the randomisation has been performed as follow:

Laboratory	impar	Par
Sample Order	PT2020CSFSERNS1	PT2020CSFSERPS1
CSF 2001	PT2020CSFSERNS2	PT2020CSFSERPS2
CSF 2002	PT2020CSFSERNS1	PT2020CSFSERPS1
CSF 2003	PT2020CSFSERNS2	PT2020CSFSERPS2
CSF 2004	PT2020CSFSERNS1	PT2020CSFSERPS1
CSF 2005	PT2020CSFSERNS2	PT2020CSFSERPS2
CSF 2006	PT2020CSFSERNS1	PT2020CSFSERPS3
CSF 2007	PT2020CSFSERNS2	PT2020CSFSERPS3
CSF 2008	PT2020CSFSERPS1	PT2020CSFSERPS2
CSF 2009	PT2020CSFSERPS2	PT2020CSFSERPS3
CSF 2010	PT2020CSFSERPS1	PT2020CSFSERPS3
CSF 2011	PT2020CSFSERPS2	PT2020CSFSERPS1
CSF 2012	PT2020CSFSERPS1	PT2020CSFSERNS2
CSF 2013	PT2020CSFSERPS2	PT2020CSFSERNS2
CSF 2014	PT2020CSFSERPS3	PT2020CSFSERNS2
CSF 2015	PT2020CSFSERPS3	PT2020CSFSERNS2
CSF 2016	PT2020CSFSERPS2	PT2020CSFSERNS1
CSF 2017	PT2020CSFSERPS3	PT2020CSFSERNS1
CSF 2018	PT2020CSFSERPS3	PT2020CSFSERNS1
CSF 2019	PT2020CSFSERPS1	PT2020CSFSERNS1
CSF 2020	PT2020CSFSERNS1	PT2020CSFSERPS1

The panel was constituted of 20 samples of 250 µl.

Survey Timeline

Transfer of the samples from NRL to QL: 24/04/2020

Randomization of the samples by QL: 24/04/2020

sending samples to participants: 27/04/2020. The samples were sent on dry ice.

Deadline for the results encoding: 28/05/2020

Preliminary report: 28/05/2020

Results

1.1. Results per sample

5 laboratories encoded results giving 5 datasets.

Table R1. Results per sample

Sample ID	Expected result	Number of repetitions (total results)	Observed result
PT2020CSFSERPS1	Positive	4 (20)	20 positive results
PT2020CSFSERPS2	Positive	4 (20)	20 positive results
PT2020CSFSERPS3	Positive	4 (20)	16 positive results 4 negative results
PT2020CSFSSENS1	Negative	4 (20)	20 negative results
PT2020CSFSERS2	Negative	4 (20)	20 negative results

Globally, on 100 encoded results, 96 (96%) were correct. Four false negative results were encoded by the same laboratory for the same sample .

1.2. Results per method

Table R2. Results per method

Method	Type	N	NR	NCR	%	FP	FN
Idexx Classical swine fever	Indirect	4	80	80	100	0	0
Hipra CSF	Indirect	1	20	16	80	0	4
Total		5	100	96	96	0	4

NR: number of results, NCR: Number of correct results, FP/ false positive, FN: false negative.

1.3. Results per laboratory, per method and per sample

Table R3. Results per laboratory

Participants						
		97505	97507	97508	97516	97518
Method						
		Idexx CSF	Idexx CSF	Idexx CSF	Idexx CSF	Hipra CSF
Batch number						
		P491	P491	S081	S081	CPP.1911001
Samples	REP	Results				
PT2020CSFSERPS1	REP1	POS	POS	POS	POS	POS
	REP2	POS	POS	POS	POS	POS
	REP3	POS	POS	POS	POS	POS
	REP4	POS	POS	POS	POS	POS
PT2020CSFSERPS2	REP1	POS	POS	POS	POS	POS
	REP2	POS	POS	POS	POS	POS
	REP3	POS	POS	POS	POS	POS
	REP4	POS	POS	POS	POS	POS
PT2020CSFSERPS3	REP1	POS	POS	POS	POS	NEG
	REP2	POS	POS	POS	POS	NEG
	REP3	POS	POS	POS	POS	NEG
	REP4	POS	POS	POS	POS	NEG
PT2020CSFSERNS1	REP1	NEG	NEG	NEG	NEG	NEG
	REP2	NEG	NEG	NEG	NEG	NEG
	REP3	NEG	NEG	NEG	NEG	NEG
	REP4	NEG	NEG	NEG	NEG	NEG
PT2020CSFSERNS2	REP1	NEG	NEG	NEG	NEG	NEG
	REP2	NEG	NEG	NEG	NEG	NEG
	REP3	NEG	NEG	NEG	NEG	NEG
	REP4	NEG	NEG	NEG	NEG	NEG

Rep: repetition; REP1= repetition 1; POS: positive; NEG: Negative

Interestingly, the 4 wrong results (red) were encoded by the same lab for the same sample. Due to the COVID crisis the shipment of the samples was complicated and this participant received the samples thaw.

ANNEXES

Annexe 1.

Quantitative results for ELISA

PT2020CSFSERPS1

Table A1 Normalized Quantitative results per replicate and per participant

	97505	97507	97508	97516	97518
Rep1	89.98	91.85	90.24	90.37	88.87
Rep2	91.21	91.99	89.46	90.52	85.83
Rep3	88.95	91.21	89.11	90.37	89.79
Rep4	80.19	93.48	88.54	90.21	78.60
Mean	87.58	92.13	89.34	90.37	85.77
SD	5.01	0.96	0.71	0.13	5.07
CV (%)	5.72%	1.04%	0.80%	0.14%	5.91%

Rep1= repetition 1-SD : standard deviation-CV : coefficient of variation

Normalized values (%)

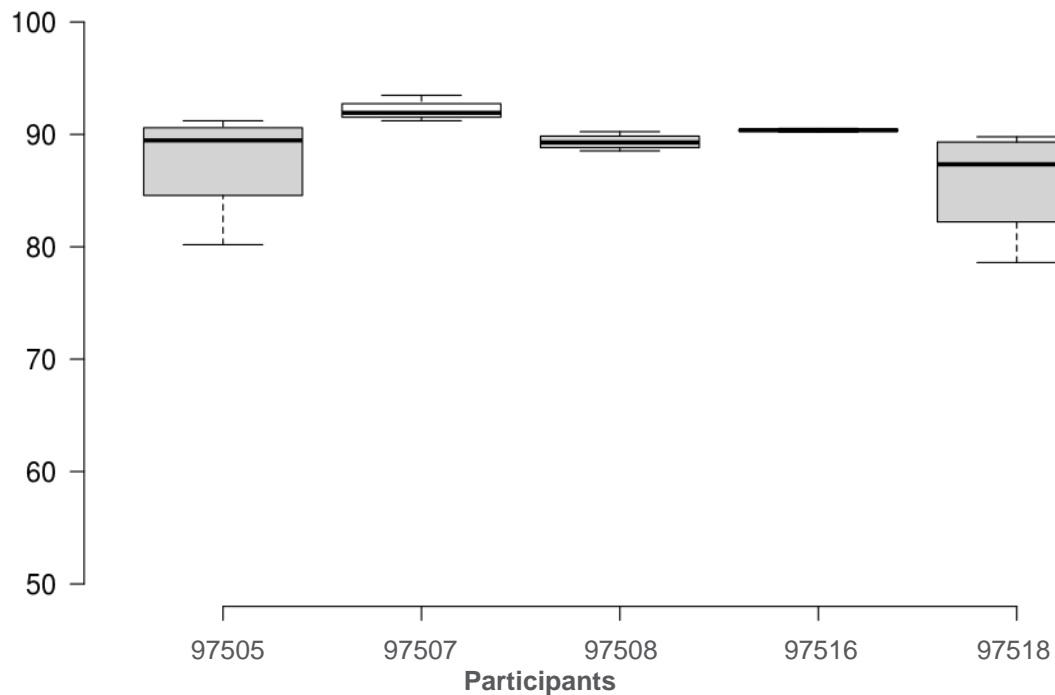


Fig. A1. Boxplot of the dispersion of the results per participant.

PT2020CSFSERPS2

Table A2. Normalized quantitative results

	97505	97507	97508	97516	97518
Rep1	75.97	72.86	70.72	73.25	136.74
Rep2	76.38	76.54	66.83	66.64	134.58
Rep3	74.77	72.57	64.50	67.28	120.80
Rep4	60.93	72.08	65.28	67.91	127.26
Mean	72.01	73.51	66.83	68.77	129.84
SD	7.42	2.05	2.77	3.03	7.27
CV (%)	10.3%	2.8%	4.1%	4.4%	5.6%

Normalized value (%)

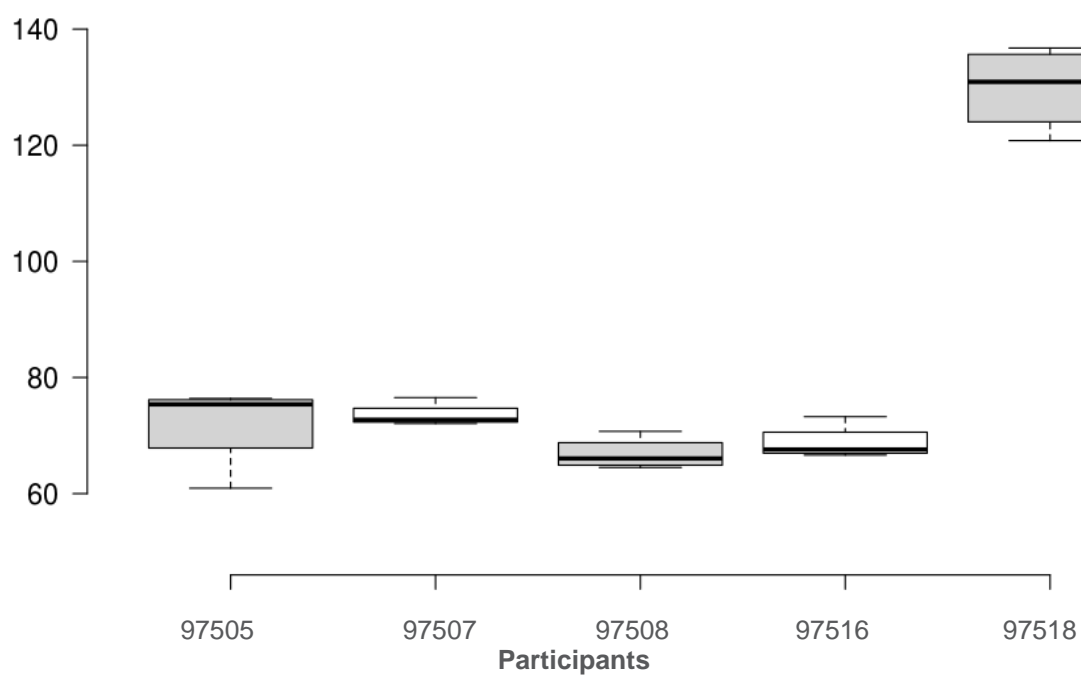


Fig. A2. Boxplot distribution of the results per participant.

PT2020ASFSESRPS3

Table A3. Normalized quantitative results

	97505	97507	97508	97516	97518
Rep1	81.53	79.23	79.14	79.14	4.87
Rep2	82.32	80.16	77.09	80.81	6.25
Rep3	81.57	79.52	77.02	78.66	2.46
Rep4	54.62	80.01	76.87	80.18	3.66
Mean	75.01	79.73	77.53	79.70	4.31
SD	13.60	0.43	1.08	0.98	1.62
CV (%)	18.13%	0.54%	1.39%	1.22%	37.72%

Normalized values (%)

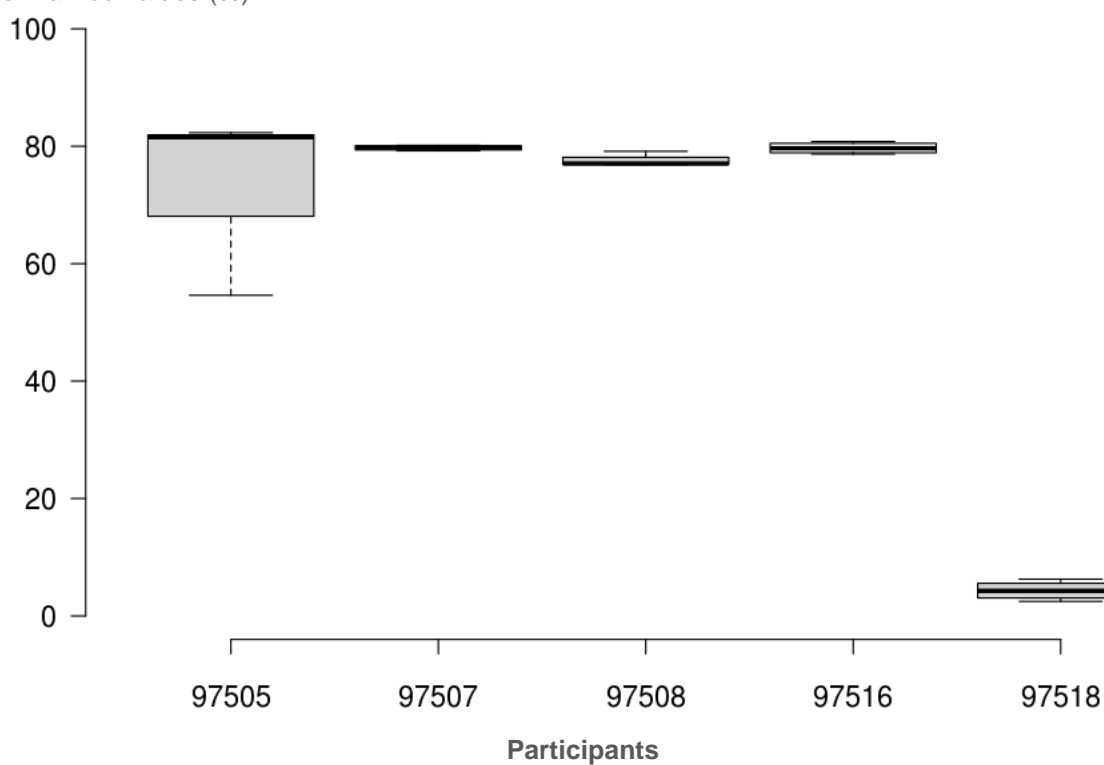


Fig. A3. Boxplot distribution of the results per dataset.

PT2020ASFSEERNS1

Table A4. Normalized quantitative results per participant

	97505	97507	97508	97516	97518
Rep1	-5.42	-14.74	-5.02	0.00	0.47
Rep2	-0.24	-10.35	-13.08	-9.71	-1.51
Rep3	3.05	-12.97	-10.68	-11.70	-1.85
Rep4	-4.63	-10.06	-1.48	-13.22	-1.85
Mean	-1.81	-12.03	-7.57	-8.66	-1.18
SD	3.96	2.23	5.28	5.95	1.12
CV (%)	-219.0%	-18.5%	-69.8%	-68.7%	-94.4%

Normalized values (%)

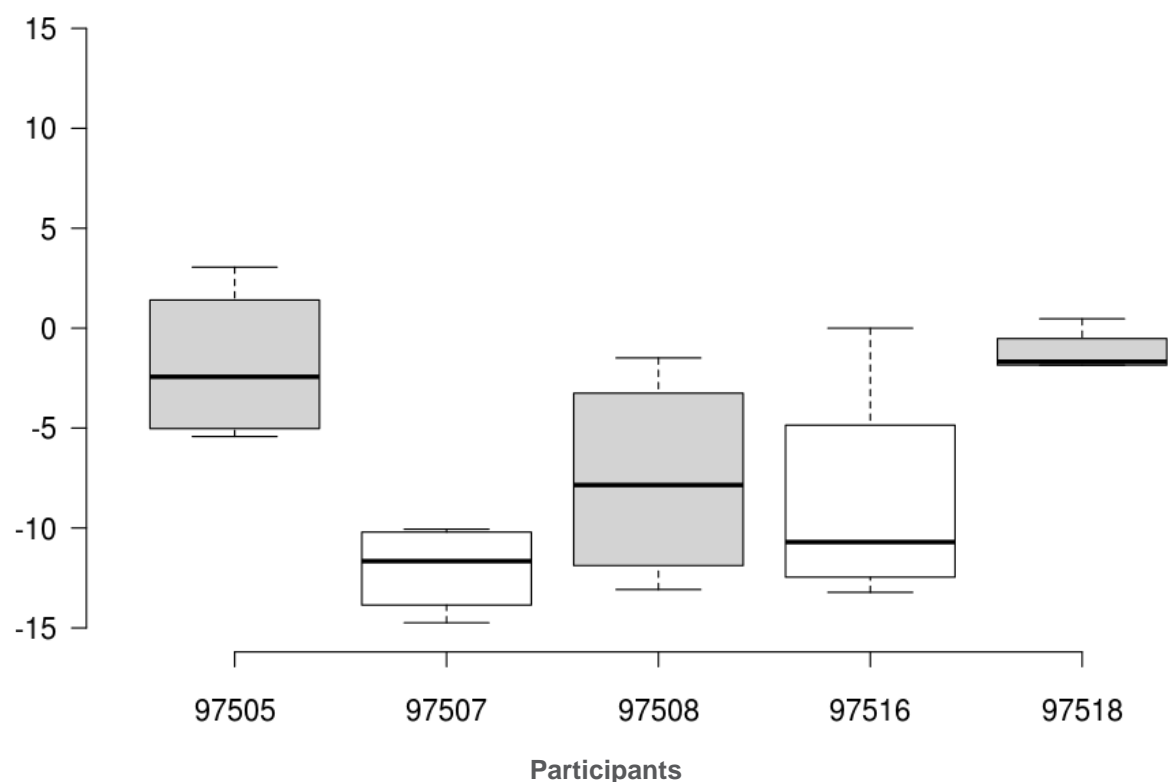


Fig. A4. Boxplot distribution of the results per participant

PT2020ASFSEERNS2

Table A5. Normalized quantitative results

	97505	97507	97508	97516	97518
Rep1	2.849	-4.536	3.324	1.592	-2.799
Rep2	7.930	-2.481	4.031	5.016	-3.488
Rep3	3.845	-2.268	1.768	5.096	-3.575
Rep4	-4.600	-2.410	2.122	5.096	-2.799
Mean	2.506	-2.923	2.811	4.200	-3.165
SD	5.222579	1.078516	1.05115	1.739076	0.424398
CV (%)	208.4%	-36.9%	37.4%	41.4%	-13.4%

Normalized values (%)

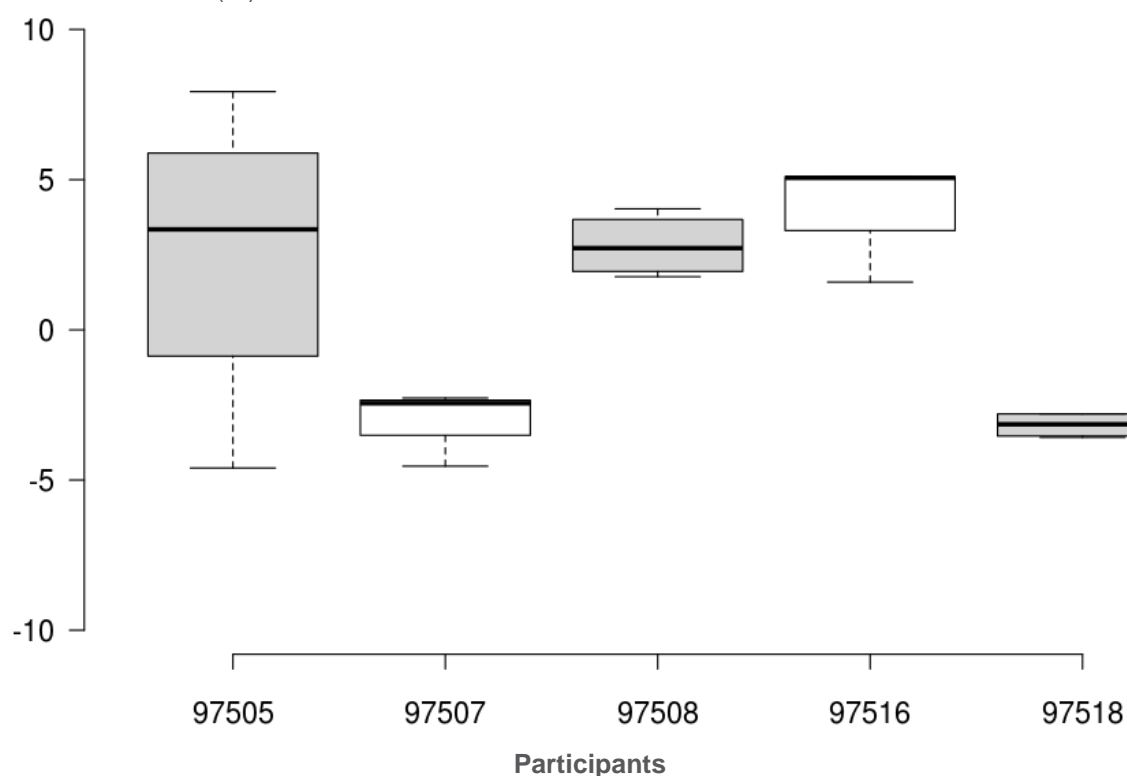


Fig. A5. Boxplot distribution of the results per participant

Annex 2: additional information

PRELIMINARY REPORT

The preliminary report of this survey is available on our website via the following links:

https://www.wiv-isp.be/QML/activities/PT%20VET/fr/originaux/rapports_annee.htm

https://www.wiv-isp.be/QML/activities/PT%20VET/nl/originaux/rapports_annee.htm

The calendar for Proficiency Testing in Veterinary diagnosis is available on our website:

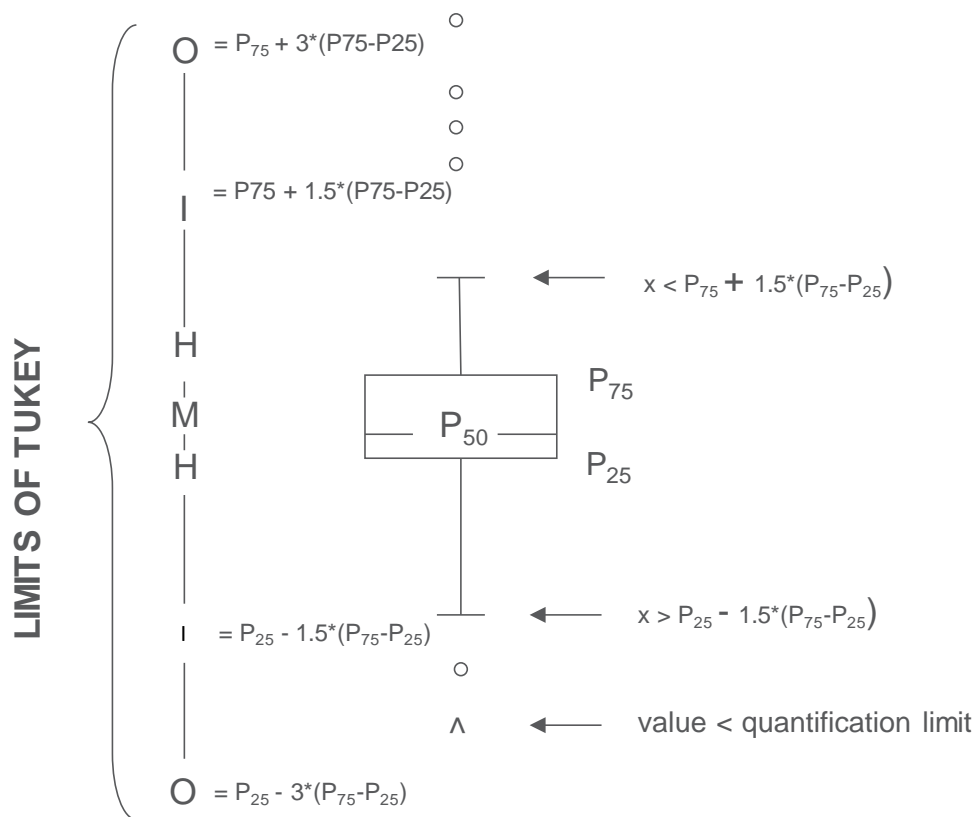
The link is:

https://www.wiv-isp.be/QML/activities/external_quality/calendar/calender_PT%20VET/fr/Calendrier_2020-PT%20VET%202.htm

Graphical representation

Besides the tables with the results a "Box and whisker" plot is added. It contains the following elements for the methods with at least 6 participants:

- a rectangle ranging from percentile 25 (P_{25}) to percentile 75 (P_{75})
- a central line representing the median of the results (P_{50})
- a lower limit showing the smallest value $x > P_{25} - 1.5 * (P_{75} - P_{25})$
- an upper limit representing the largest value $x < P_{75} + 1.5 * (P_{75} - P_{25})$
- all points outside this interval are represented by a dot.



Corresponding limits in case of normal distribution

© Sciensano, Brussels 2020.

This report may not be reproduced, published or distributed without the consent of Sciensano. The laboratories' individual results are confidential. They are not passed on by Sciensano to third parties, nor to members of the Commission, the committees of experts or the working group EQA.

END