Public Health England

Protecting and improving the nation's health

Summary of Results

External Quality Assessment of Food Microbiology

Standard Scheme

Distribution Number: 308 **Sample Numbers: S0653, S0654**

Distribution Date:	**August 2018**
Results Due:	**07 September 2018**
Report Date:	**17 September 2018**
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For further information on the scheme please refer to:

Scheme Guide: https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide

Guide to Scoring and Statistics:
https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scoring-systems-and-statistics

General guidance for z-scores:

Participants' enumeration results are converted into z-scores using the following formula:

$$Z = \frac{(x_i - X_{pt})}{\sigma_{pt}}$$

x_i = participants' result (expressed as a $\log_{10}$ value)

X_{pt} = assigned value (participants' consensus median (expressed as a $\log_{10}$ value))

σ_{pt} = the fixed standard deviation for the examination (calculated by FEPTU)

The σ_{pt}-value expresses the acceptable difference between the individual participant's result and the participants' consensus median. The σ_{pt}-value used for calculating z-scores for all parameters in the Standard Scheme is 0.35. A guide to interpreting z-scores follows, although laboratories must interpret their scores in the context of their own laboratory situation:

z = -1.99 to +1.99	satisfactory
z = -2 to -2.99 or +2 to +2.99	questionable
z= < -3.00 or > + 3.00	unsatisfactory

It is usually recommended that z-scores exceeding +/-2 are investigated to establish the possible cause. As a general rule, PHE recommends that all questionable and unsatisfactory results are investigated.

FEPTU Quality control: To demonstrate homogeneity of the sample, a minimum of 10 freeze-dried vials, selected randomly from a batch, are tested in duplicate for parameters requiring enumeration and 10 freeze-dried vials are examined for pathogen detection.

To demonstrate stability of the sample, a minimum of six vials, selected randomly from a batch, are examined throughout the distribution period, either for enumeration or pathogen detection.

FEPTU results are determined using methods based on ISO methods and are included in the 'intended results' letters which provide guidance for participants regarding the assigned values.

The FEPTU results are used for guidance in the preliminary intended results notification, letters are posted on the website immediately after every distribution; electronic notification of their availability is sent to all participants

Refer to section 17.0 of the Scheme Guide if you have experienced difficulties with any of the examinations.
https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide

All participants are reminded that reporting an incorrect or incomplete identification of pathogens from food samples could have serious public health implications. Similarly, the levels of micro-organisms reported in the sample may affect the subsequent outcome for the product.

Participants are reminded that the purpose of scoring is to draw attention to incorrect or outlying results. The results, as summarised in the performance assessment sheet included in this report, provide a more effective indication of on-going problems with food microbiology examinations.

The bar charts in this report are compiled using the processes outlined in the Guide to Scoring Systems and Statistics for the allocation of PHE scores. Z-scores are included on the sample-specific pages only; the relevant sections will be left blank if a z-score does not apply.

Please contact FEPTU staff for advice and information:

Repeat samples	Carmen Gomes or Kermin Daruwalla
Data Analysis	Nita Patel or Manchari Rajkumar
Microbiological advice	Nita Patel or Zak Prior
General comments and complaints	Nita Patel or Zak Prior
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FEPTU's website

Accreditation: PHE Food EQA Scheme for Standard is accredited by the United Kingdom Accreditation Service (UKAS) to ISO/IEC 17043:2010.

UKAS PROFICIENCY TESTING
0006

Sample: S0653

Contents: *Bacillus cereus* 2.1x10³ (wild strain), *Staphylococcus aureus* 1.2x10⁴ (wild strain), *Listeria monocytogenes* 5.5x10⁴ (wild strain), *Listeria seeligeri* 3.0x10³ (wild strain), *Klebsiella pneumoniae* 2.3x10² (wild strain), *Micrococcus* sp. 3.6x10³ (wild strain)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

All levels are presented as colony forming units (cfu) per ml reconstituted sample

Expected Results:

Examination	Expected Result	Your Result	Score	Z-score
Presumptive *B.cereus*	5.0x10² - 5.0x10³ cfu g $^{-1}$			
Coagulase-positive staphylococci	3.2x10³ - 3.2x10⁴ cfu g $^{-1}$			
Listeria spp. (including *L.mono*)	1.0x10⁴ - 1.0x10⁵ cfu g $^{-1}$			
L.monocytogenes	1.1x10⁴ - 1.1x10⁵ cfu g $^{-1}$			
Aerobic colony count	1.8x10⁴ - 1.8x10⁵ cfu g $^{-1}$			
Coliform	60 - 6.0x10² cfu g $^{-1}$			

Presumptive *B.cereus*	
Total participants reporting for Presumptive *B.cereus*	120
Total participants enumerating Presumptive *B.cereus*	118
Assigned value (participants' median)	1.6x10³ cfu g^{-1} (3.2 $\log_{10}$)
Uncertainty of assigned value ($U(X_{pt})$=$\log_{10}$ cfu g^{-1})	0.02
No. of outlying counts	7 (5 low / 2 high)
Participants mean	1.5x10³ cfu g^{-1} (3.19 $\log_{10}$)
Standard deviation of participants results *	0.2 $\log_{10}$ cfu g^{-1}
FEPTU QC medians ▪ ISO 7932	2.1x10³ cfu g^{-1} (3.32 $\log_{10}$)

Coagulase-positive staphylococci	
Total participants reporting for Coagulase-positive staphylococci	147
Total participants enumerating Coagulase-positive staphylococci	145
Participants reporting a low censored value	1
Assigned value (participants' median)	1.0x10⁴ cfu g^{-1} (4 $\log_{10}$)
Uncertainty of assigned value ($U(X_{pt})$=$\log_{10}$ cfu g^{-1})	0.01
No. of outlying counts	12 (9 low / 3 high)
Participants mean	1.0x10⁴ cfu g^{-1} (4.01 $\log_{10}$)
Standard deviation of participants results *	0.12 $\log_{10}$ cfu g^{-1}
FEPTU QC medians ▪ ISO 6888-1	1.2x10⁴ cfu g^{-1} (4.06 $\log_{10}$)

Listeria spp. (including *L.mono*)	
Total participants reporting for *Listeria* spp. (including *L.mono*)	101
Total participants enumerating *Listeria* spp. (including *L.mono*)	92
Assigned value (participants' median)	$3.3x10^4$ cfu g^{-1} (4.51 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.03
No. of outlying counts	6 (6 low)
Participants mean	$3.1x10^4$ cfu g^{-1} (4.5 log_{10})
Standard deviation of participants results *	0.24 log_{10} cfu g^{-1}
FEPTU QC medians ▪ ISO 11290-2	$5.8x10^4$ cfu g^{-1} (4.76 log_{10})

L.monocytogenes	
Total participants reporting for *L.monocytogenes*	137
Total participants enumerating *L.monocytogenes*	126
Participants reporting a low censored value	1
Assigned value (participants' median)	$3.5x10^4$ cfu g^{-1} (4.54 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.03
No. of outlying counts	10 (8 low / 2 high)
Participants mean	$3.4x10^4$ cfu g^{-1} (4.53 log_{10})
Standard deviation of participants results *	0.25 log_{10} cfu g^{-1}
FEPTU QC medians ▪ ISO 11290-2	$5.5x10^4$ cfu g^{-1} (4.74 log_{10})

Aerobic colony count	
Total participants reporting for Aerobic colony count	122
Participants reporting a high censored value	1
Assigned value (participants' median)	$5.8x10^4$ cfu g^{-1} (4.76 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.03
No. of outlying counts	10 (6 low / 4 high)
Participants mean	$5.5x10^4$ cfu g^{-1} (4.74 log_{10})
Standard deviation of participants results *	0.22 log_{10} cfu g^{-1}
FEPTU QC median	$2.3x10^4$ cfu g^{-1} (4.35 log_{10})

Coliform	
Total participants reporting for Coliform	100
Participants reporting a low censored value	1
Assigned value (participants' median)	$1.9x10^2$ cfu g^{-1} (2.28 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.02
No. of outlying counts	10 (5 low / 5 high)
Participants mean	$1.8x10^2$ cfu g^{-1} (2.26 log_{10})
Standard deviation of participants results *	0.18 log_{10} cfu g^{-1}
FEPTU QC median	$2.3x10^2$ cfu g^{-1} (2.35 log_{10})

Total sent samples	161
Non-returns	3
Not examined	3

The fixed standard deviation value (σ_{pt} value) used for calculation of the z-scores is **0.35** for all parameters.

* Robust S^* based on median absolute deviation about the participants' median (*MADe*).

Sample: S0654

Contents: *Listeria welshimeri* 2.7x10⁴ (wild strain), *Escherichia coli* 5.4x10³ (wild strain), *Bacillus circulans* 7.2x10² (wild strain), *Lactobacillus buchneri* 1.6 x10⁴ (NCIMB 700448)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

All levels are presented as colony forming units (cfu) per ml reconstituted sample

Expected Results:

Examination	Expected Result	Your Result	Score	Z-score
Presumptive *B.cereus*	<10 cfu g $^{-1}$			
Coagulase-positive staphylococci	<10 cfu g $^{-1}$			
Listeria spp. (including *L.mono*)	8.8x10³ - 8.8x10⁴ cfu g $^{-1}$			
L.monocytogenes	<10 cfu g $^{-1}$			
Aerobic colony count	1.4x10⁴ - 1.4x10⁵ cfu g $^{-1}$			
Coliform	7.6x10² - 7.6x10³ cfu g $^{-1}$			

Presumptive *B.cereus*	
Total participants reporting for Presumptive *B.cereus*	97
Participants reporting correctly	96 (99%)

Coagulase-positive staphylococci	
Total participants reporting for Coagulase-positive staphylococci	124
Participants reporting correctly	118 (95%)

Listeria spp. (including *L.mono*)	
Total participants reporting for *Listeria* spp. (including *L.mono*)	95
Total participants enumerating *Listeria* spp. (including *L.mono*)	86
Participants reporting a low censored value	2
Assigned value (participants' median)	$2.8x10^4$ cfu g^{-1} (4.44 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.02
No. of outlying counts	4 (4 low)
Participants mean	$2.6x10^4$ cfu g^{-1} (4.42 log_{10})
Standard deviation of participants results *	0.17 log_{10} cfu g^{-1}
FEPTU QC medians ▪ ISO 16649-3	$2.7x10^4$ cfu g^{-1} (4.43 log_{10})

L.monocytogenes	
Total participants reporting for *L.monocytogenes*	114
Participants reporting correctly	110 (96%)

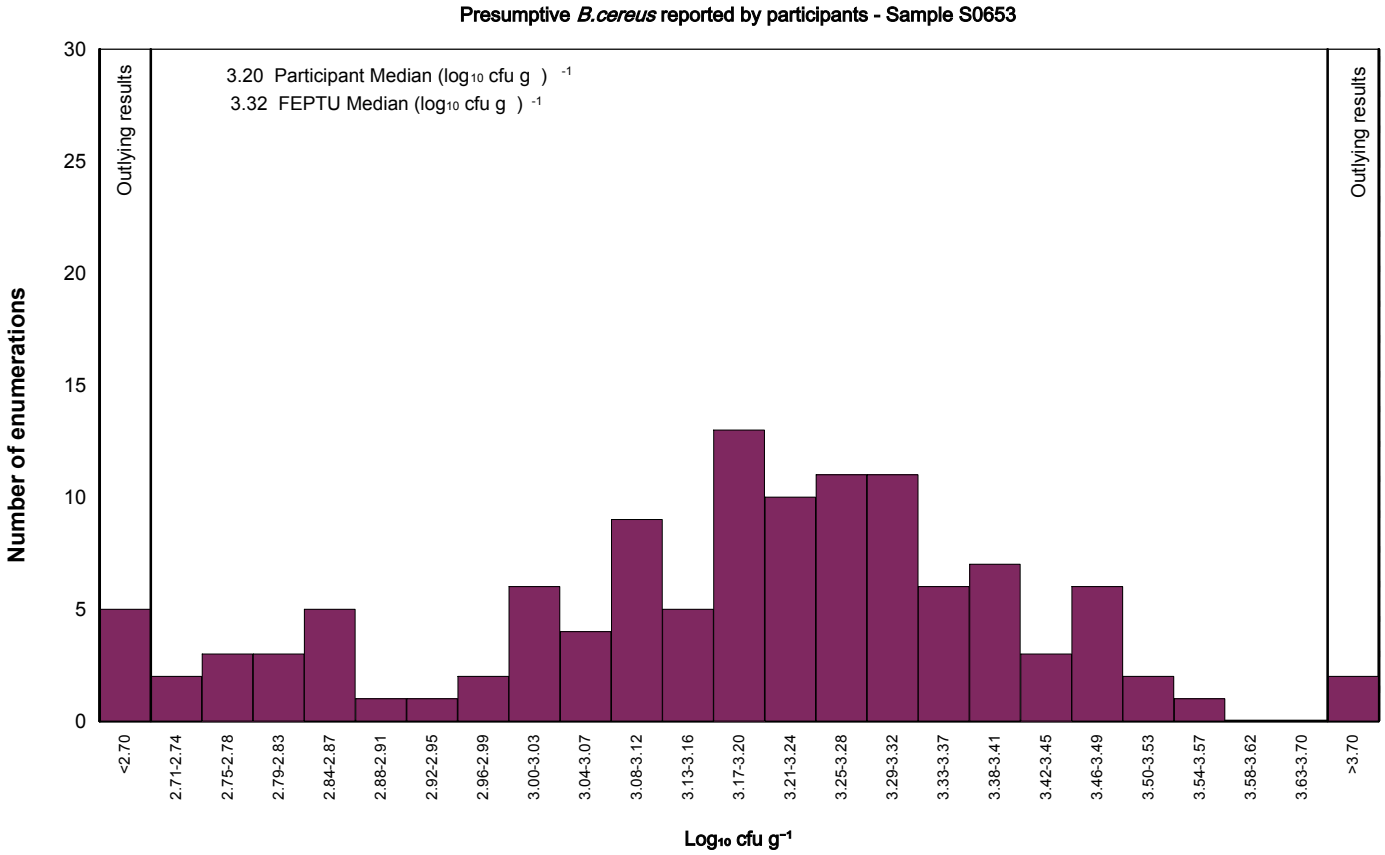
Aerobic colony count	
Total participants reporting for Aerobic colony count	122
Assigned value (participants' median)	$4.3x10^4$ cfu g^{-1} (4.63 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.02
No. of outlying counts	5 (2 low / 3 high)
Participants mean	$4.2x10^4$ cfu g^{-1} (4.62 log_{10})
Standard deviation of participants results *	0.17 log_{10} cfu g^{-1}
FEPTU QC median	$2.7x10^4$ cfu g^{-1} (4.42 log_{10})

Coliform	
Total participants reporting for Coliform	84
Participants reporting a low censored value	2
Assigned value (participants' median)	$2.4x10^3$ cfu g^{-1} (3.38 log_{10})
Uncertainty of assigned value ($U(X_{pt})$=log_{10} cfu g^{-1})	0.04
No. of outlying counts	8 (4 low / 4 high)
Participants mean	$2.5x10^3$ cfu g^{-1} (3.4 log_{10})
Standard deviation of participants results *	0.27 log_{10} cfu g^{-1}
FEPTU QC median	$5.4x10^3$ cfu g^{-1} (3.73 log_{10})

Total sent samples	161
Non-returns	3
Not examined	27

The fixed standard deviation value (σ_{pt} value) used for calculation of the z-scores is **0.35** for all parameters.

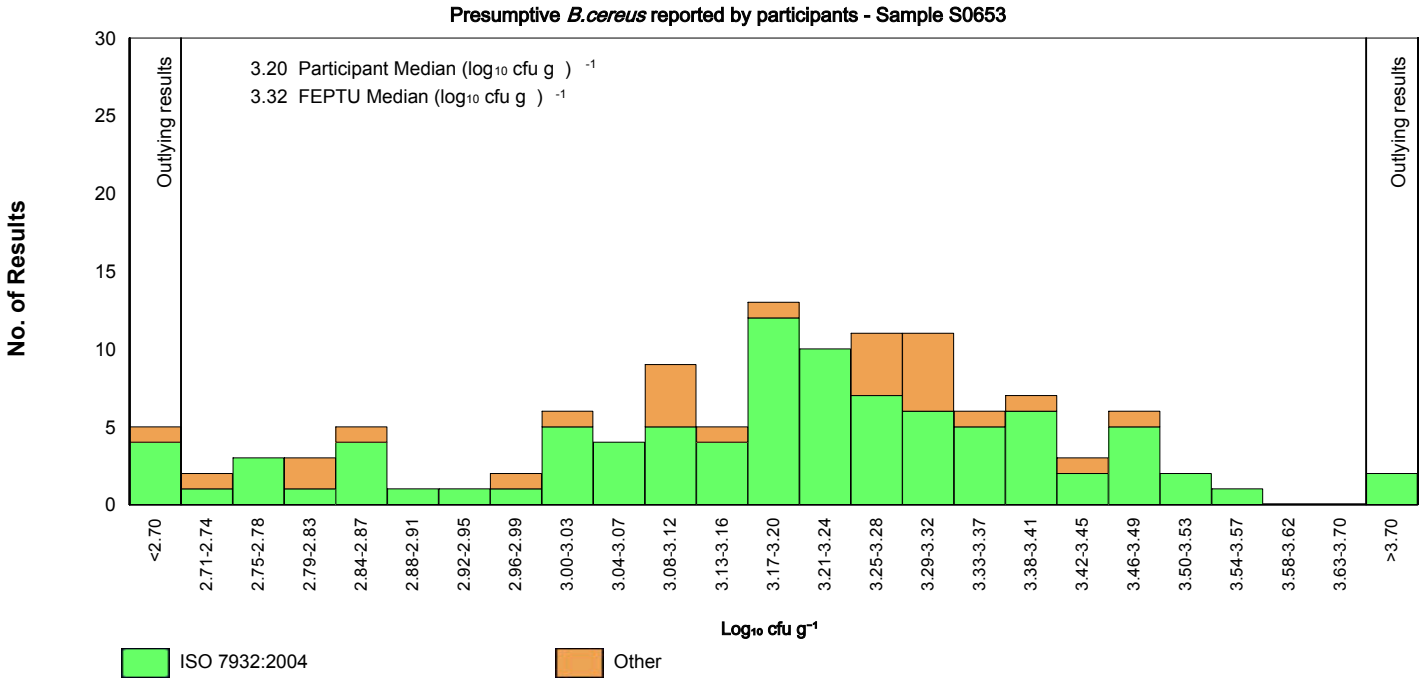
* Robust S^* based on median absolute deviation about the participants' median (*MADe*).

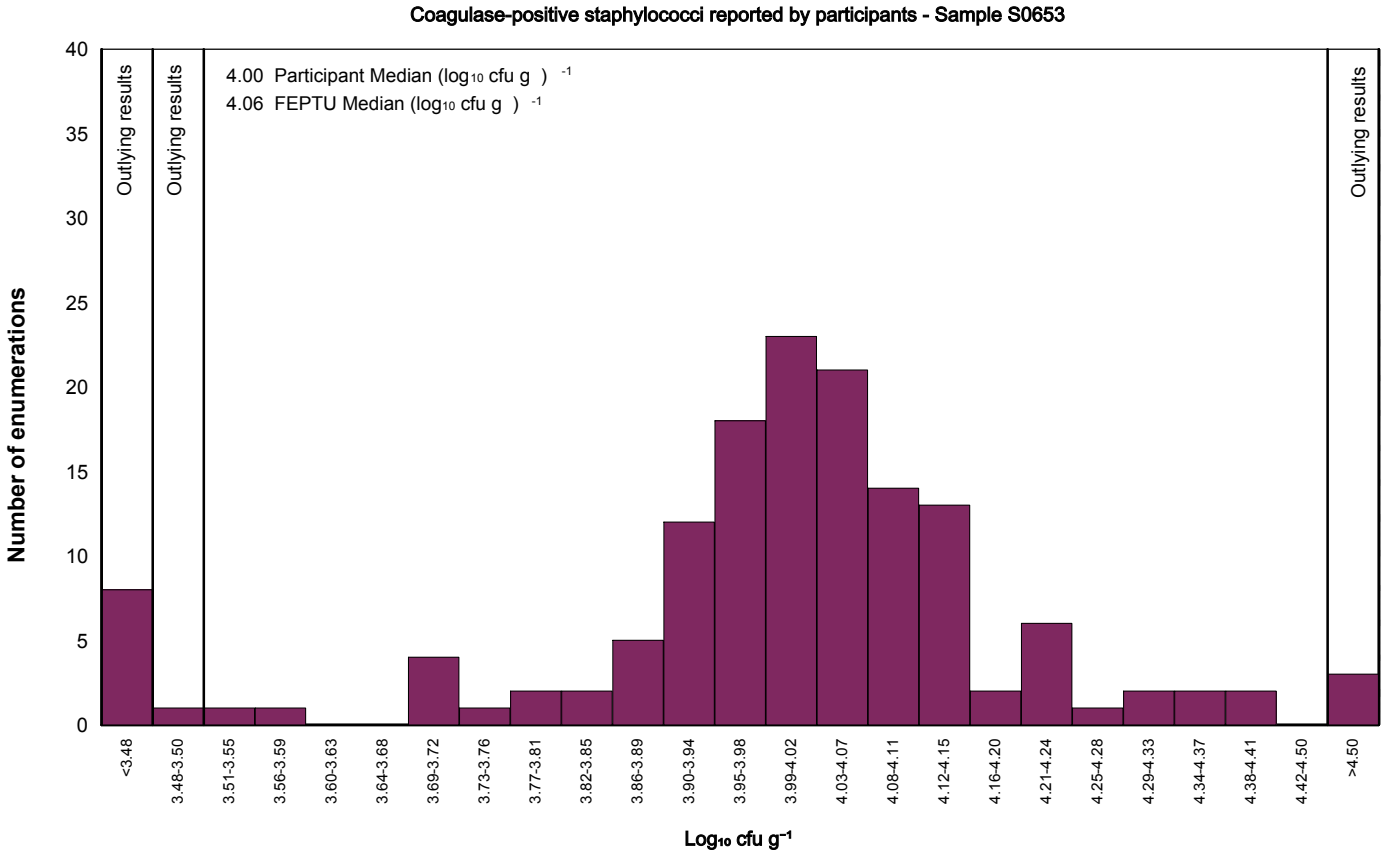


Method based presentation

S0653 : Presumptive *B.cereus* **FEPTU Method: ISO 7932:2004**

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust *S** (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 7932:2004	92	0	77	3.20	0.22	2.07 - 4.11
Other	26	0	22	3.22	0.17	2.62 - 3.48

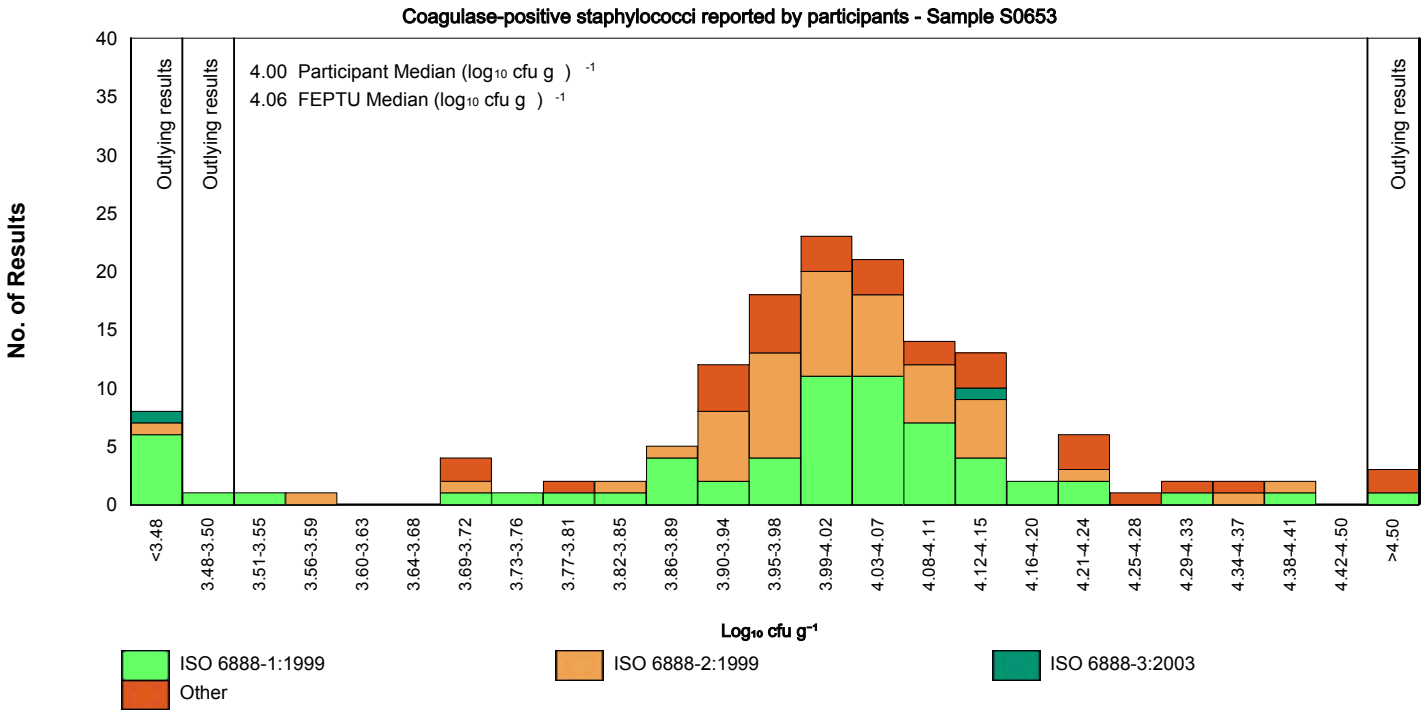


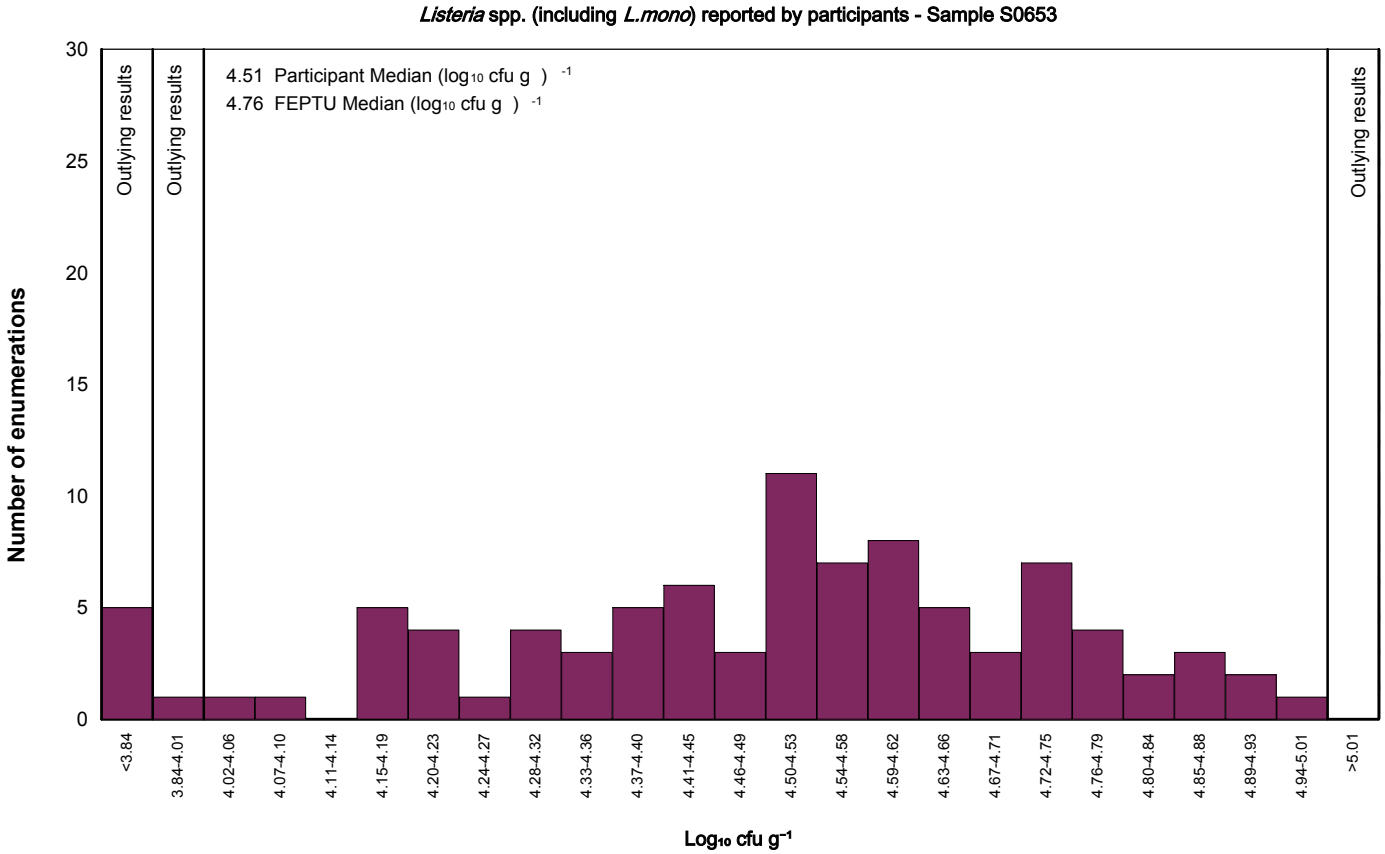


Method based presentation

S0653 : Coagulase-positive staphylococci **FEPTU Method: ISO 6888-1:1999**

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust *S** (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 6888-1:1999	62	1	43	4.00	0.13	3.04 - 5.26
ISO 6888-2:1999	49	0	34	4.00	0.09	2.69 - 4.38
ISO 6888-3:2003	2	0	1			-
Other	31	0	21	4.04	0.17	3.69 - 4.86

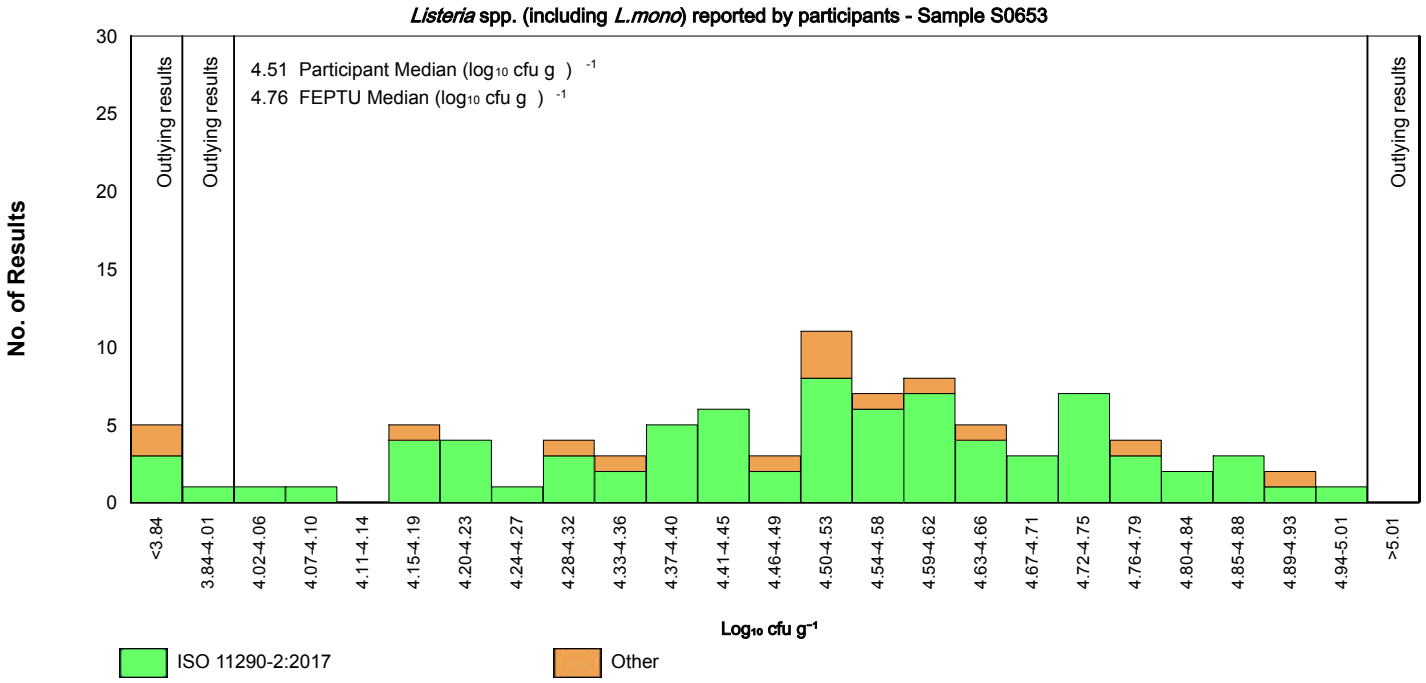


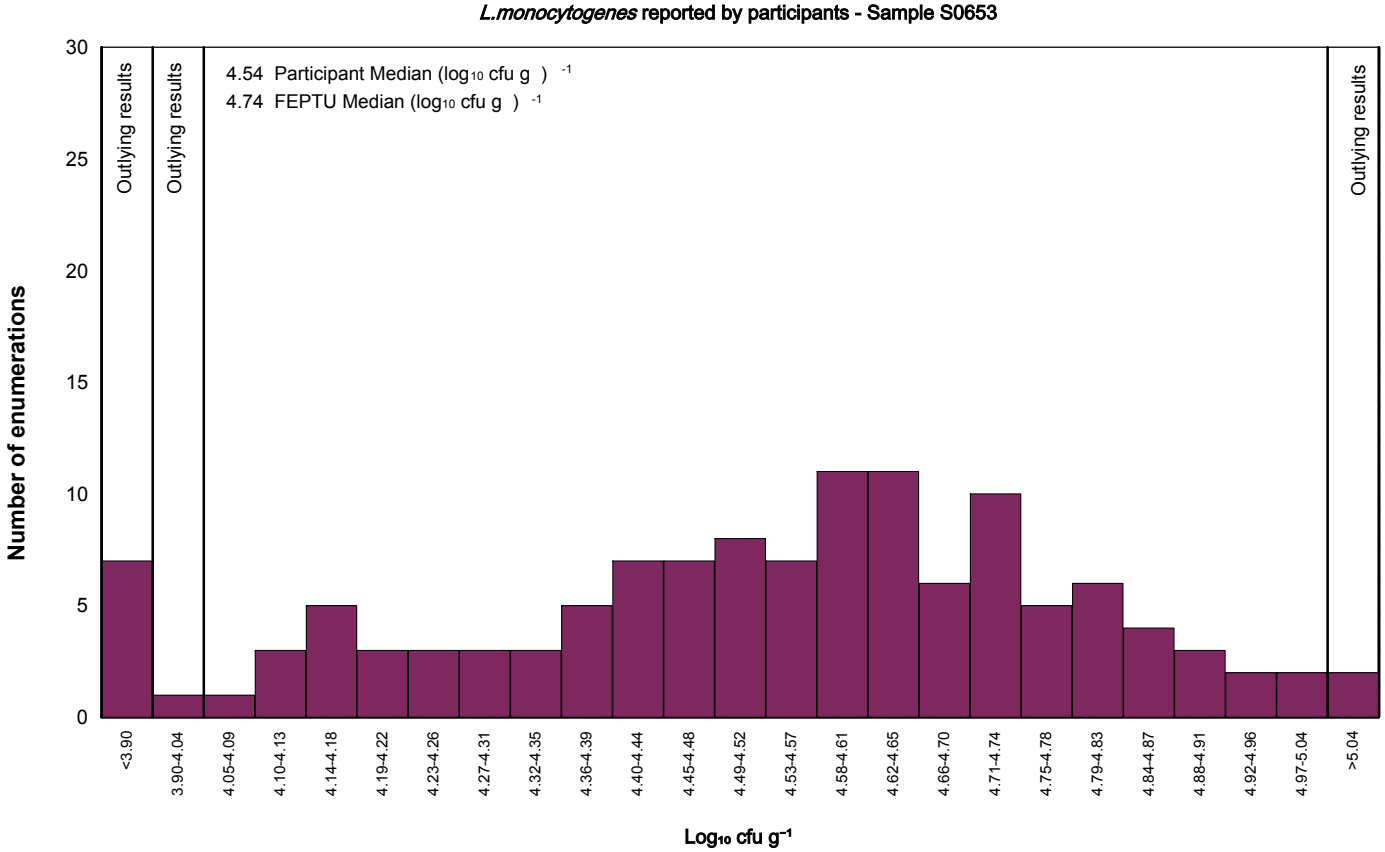


Method based presentation

S0653 : *Listeria* spp. (including *L.mono*) **FEPTU Method: ISO 11290-2:2017**

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust *S** (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 11290-2:2017	78	0	84	4.52	0.24	3.04 - 4.95
Other	14	0	15	4.51	0.26	3.54 - 4.90

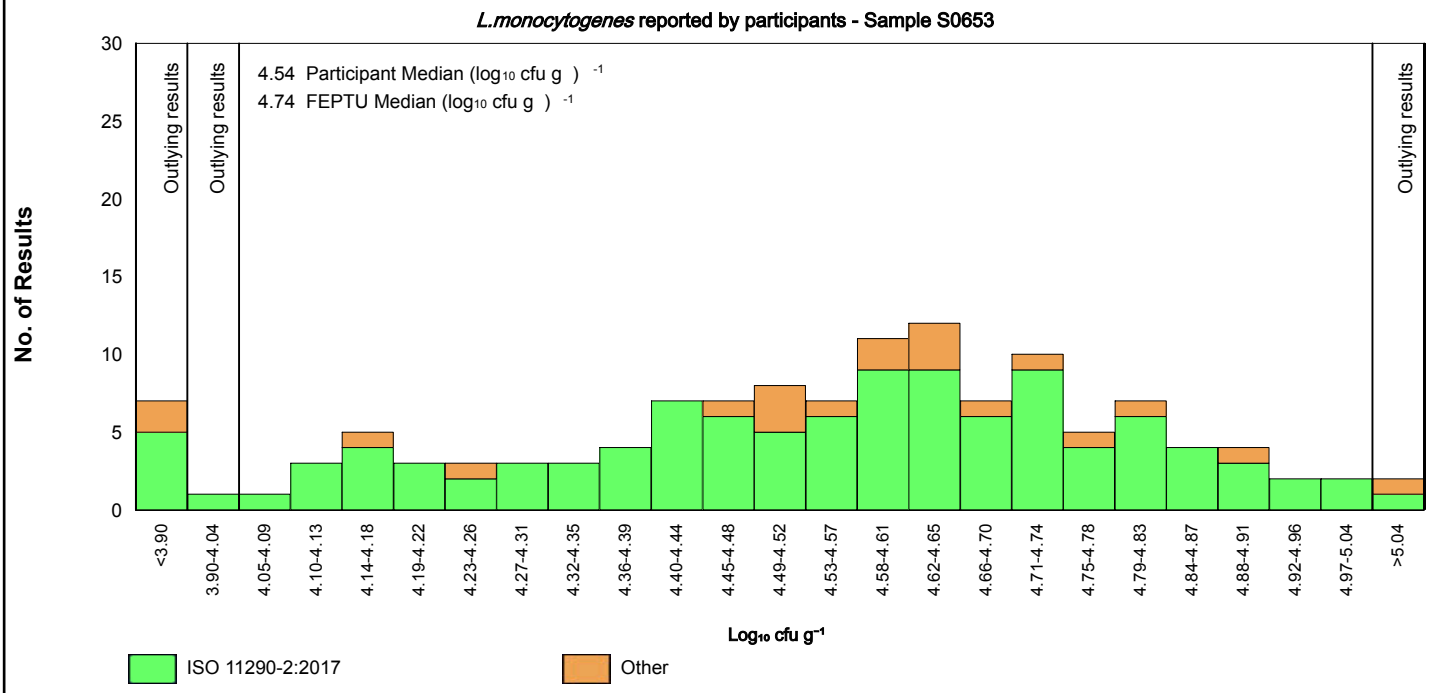


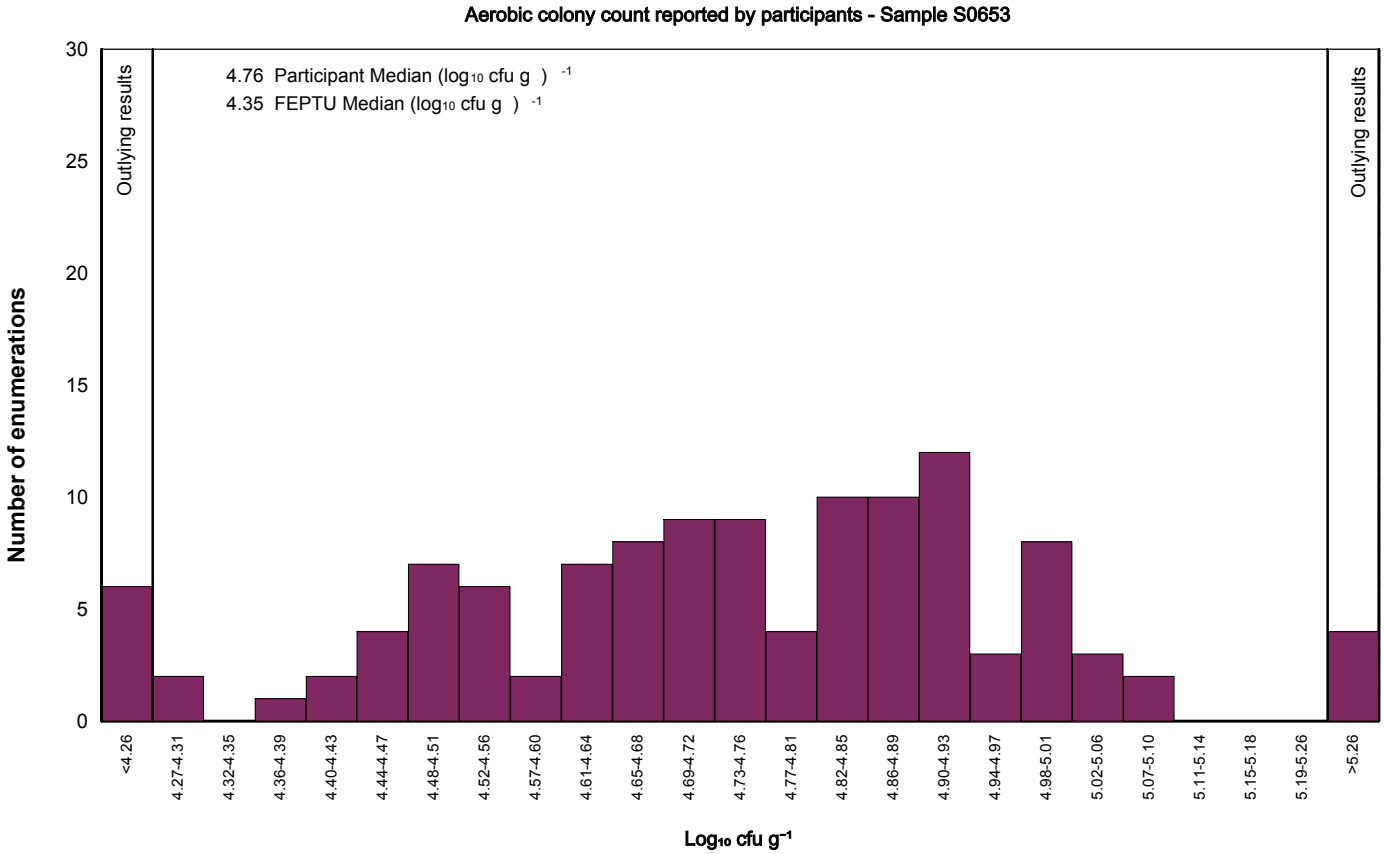


Method based presentation

S0653 : *L.monocytogenes* **FEPTU Method: ISO 11290-2:2017**

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust *S** (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 11290-2:2017	108	0	84	4.57	0.26	3.04 - 5.40
Other	20	0	15	4.58	0.17	3.54 - 5.07



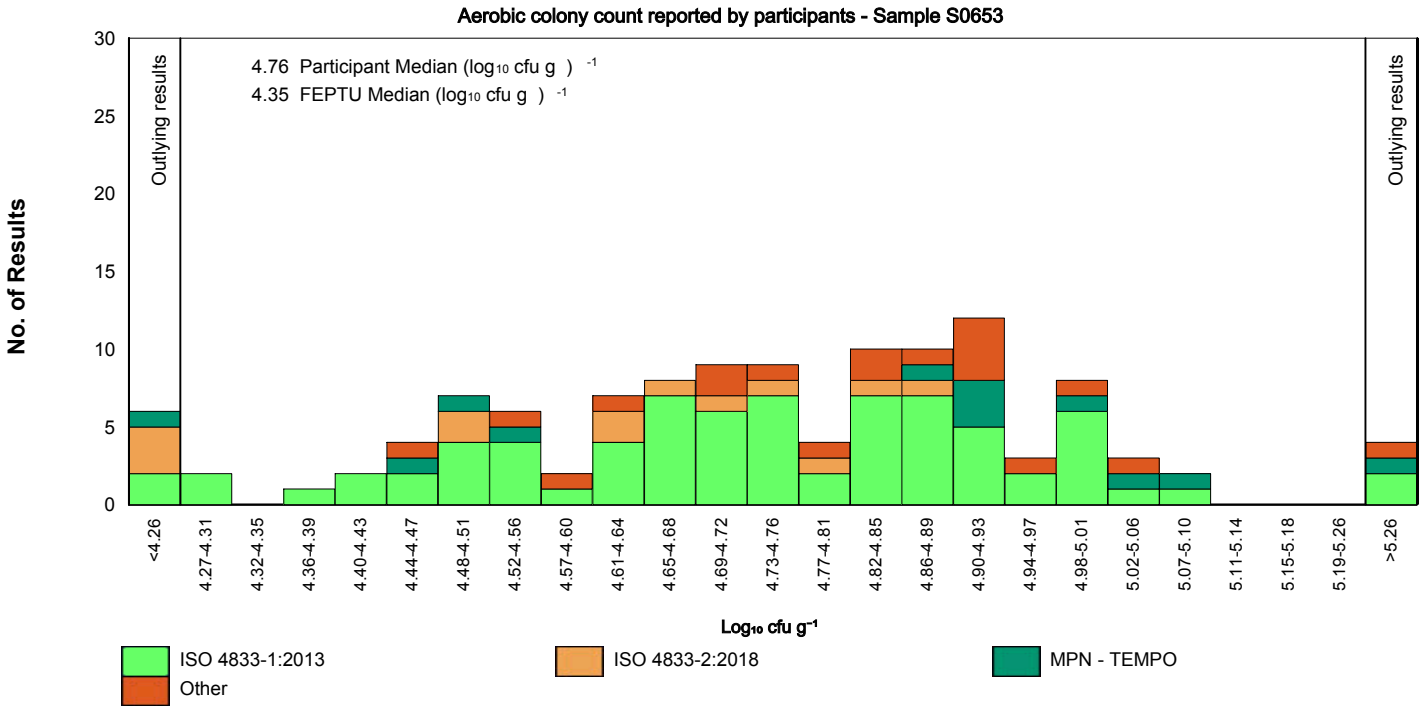


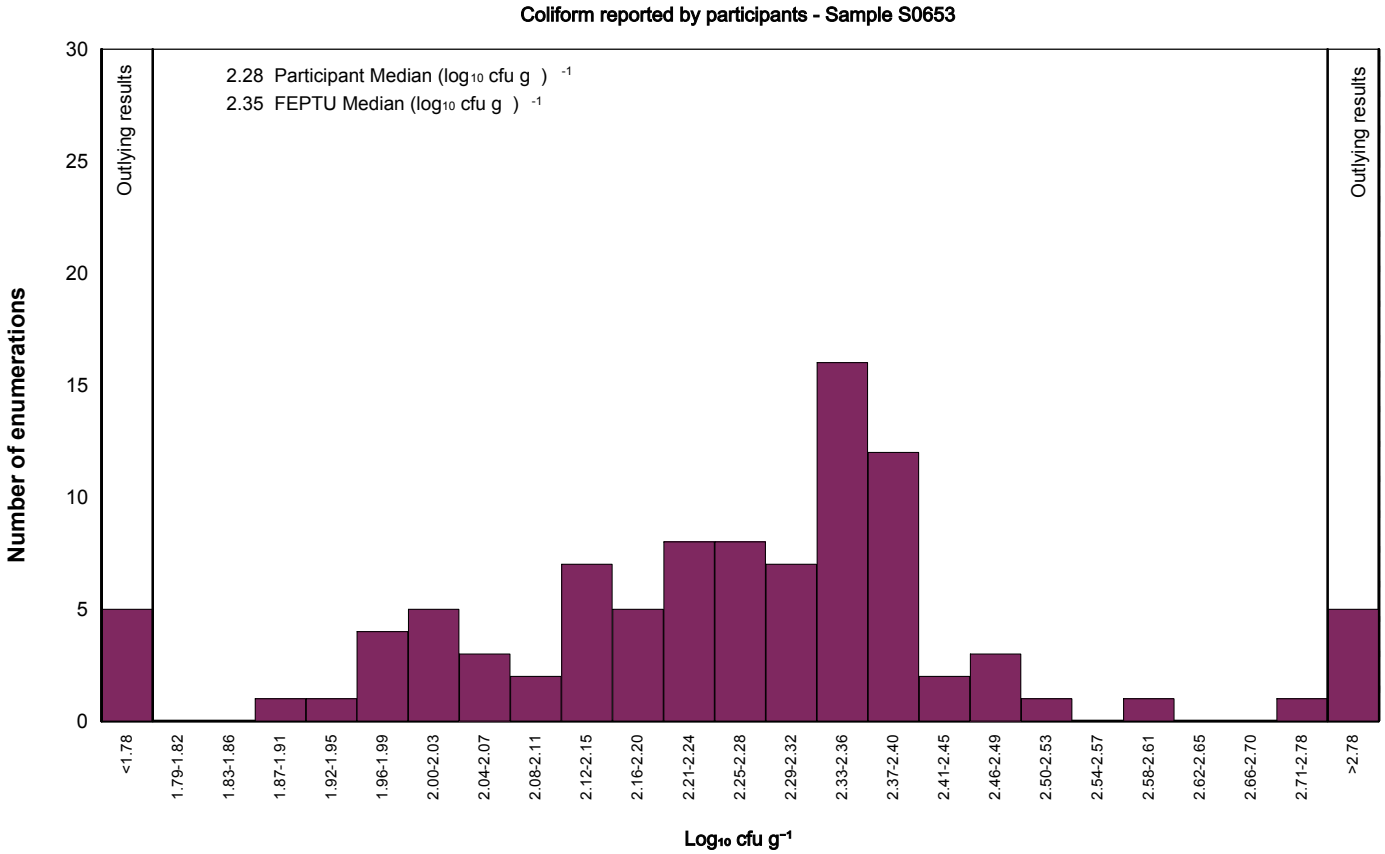
Method based presentation

S0653 : Aerobic colony count

FEPTU Method: ISO 4833-2:2018

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust S* (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 4833-1:2013	75	2	63	4.74	0.21	4.11 - 5.61
ISO 4833-2:2018	13	0	10	4.61	0.24	3.81 - 4.85
MPN - TEMPO	12	1	10	4.89	0.29	4.15 - 6.63
Other	19	0	15	4.84	0.18	4.45 - 5.86



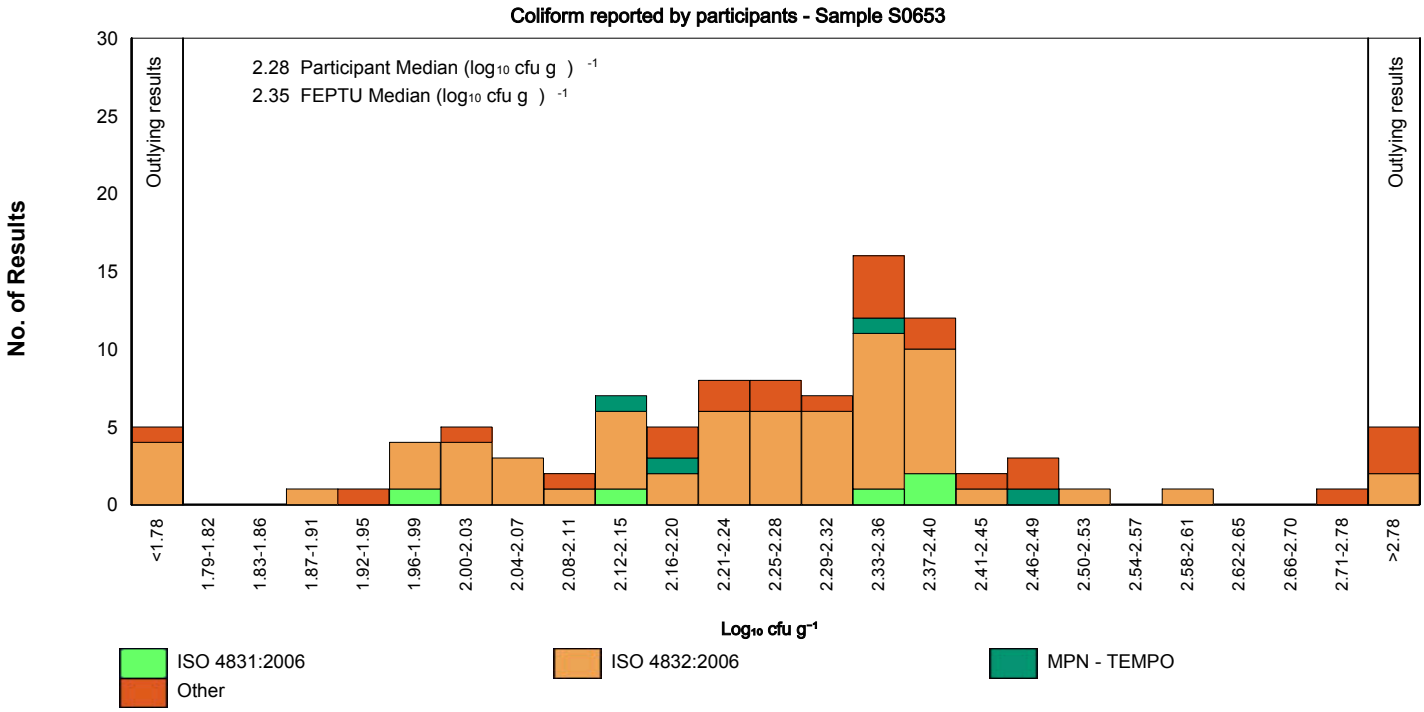


Method based presentation

S0653 : Coliform

FEPTU Method: ISO 4832:2006

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust S* (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 4831:2006	5	0	5			-
ISO 4832:2006	64	1	65	2.28	0.16	1.30 - 3.99
MPN - TEMPO	4	0	4			-
Other	24	0	24	2.35	0.22	1.62 - 3.46



Sample S0653

Presumptive *B.cereus* Method	Presumptive *B.cereus* Media	Presumptive *B.cereus* Incubation	Count reported	Count censored values
ISO 7932:2004	Bacillus cereus selective agar (MYP)	30ºC/18-48h	72	1
ISO 7932:2004	Bacillus cereus selective agar (MYP)	37ºC/18-48h	1	1
ISO 7932:2004	Bacillus cereus selective agar (PEMBA formulation)	30ºC/18-48h	10	0
ISO 7932:2004	Bacillus cereus selective agar (PEMBA formulation)	37ºC/18-48h	3	0
ISO 7932:2004	Chromogenic agar - please state	30ºC/18-48h	4	0
ISO 7932:2004	Other	30ºC/18-48h	2	0
Other	Bacillus cereus selective agar (MYP)	30ºC/18-48h	6	0
Other	Bacillus cereus selective agar (MYP)	Other	1	0
Other	Bacillus cereus selective agar (PEMBA formulation)	30ºC/18-48h	1	0
Other	Bacillus cereus selective agar (PEMBA formulation)	37ºC/18-48h	2	0
Other	Chromogenic agar - please state	30ºC/18-48h	4	0
Other	Chromogenic agar - please state	37ºC/18-48h	1	0
Other	Chromogenic agar - please state	Other	2	0
Other	Other	30ºC/18-48h	4	0
Other	Other	37ºC/18-48h	1	2
Other	Other	Other	4	0
Other; ISO 7932:2004	Bacillus cereus selective agar (PEMBA formulation)	30ºC/18-48h	0	1
Other; ISO 7932:2004	Bacillus cereus selective agar (PEMBA formulation); Chromogenic agar - please state	37ºC/18-48h	0	0

Sample S0653

Coagulase-positive staphylococci Method	Coagulase-positive staphylococci Media	Coagulase-positive staphylococci Incubation	Count reported	Count censored values
ISO 6888-1:1999	Baird – Parker medium (BPM)	37ºC/18-24h	2	0
ISO 6888-1:1999	Baird – Parker medium (BPM)	37ºC/24-48h	59	2
ISO 6888-1:1999	Baird – Parker medium (BPM)	37ºC/24-48h; 37ºC/18-24h	0	2
ISO 6888-1:1999	Other	37ºC/24-48h	1	0
ISO 6888-2:1999	Baird – Parker medium (BPM)	37ºC/18-24h	2	0
ISO 6888-2:1999	Baird – Parker medium (BPM)	37ºC/24-48h	5	0
ISO 6888-2:1999	Other	37ºC/24-48h	3	0
ISO 6888-2:1999	Rabbit plasma fibrinogen agar (RPF)	37ºC/18-24h	3	0
ISO 6888-2:1999	Rabbit plasma fibrinogen agar (RPF)	37ºC/24-48h	36	0
ISO 6888-3:2003	Baird – Parker medium (BPM)	37ºC/18-24h	0	1
ISO 6888-3:2003	Baird – Parker medium (BPM)	37ºC/24-48h	1	0
ISO 6888-3:2003	Rabbit plasma fibrinogen agar (RPF)	37ºC/24-48h	1	0
Other	Baird – Parker medium (BPM)	37ºC/18-24h	1	0
Other	Baird – Parker medium (BPM)	37ºC/24-48h	6	0
Other	Baird – Parker medium (BPM)	Other	3	0
Other	Chromogenic agar - please state	37ºC/18-24h	2	0
Other	Chromogenic agar - please state	37ºC/24-48h	1	0
Other	Chromogenic agar - please state	Other	1	0
Other	Other	37ºC/18-24h	9	1
Other	Other	37ºC/24-48h	3	0
Other	Other	Other	5	0

Sample S0653

Listeria spp. (including *L.mono*) Method	*Listeria* spp. (including *L.mono*) Media	*Listeria* spp. (including *L.mono*) Incubation	Count reported	Count censored values
		37ºC/24-48h	0	0
	Ottaviani and Agosti agar (ALOA); PALCAM Listeria selective agar		0	0
ISO 11290-2:2017	Brilliance Listeria agar	37ºC/24-48h	4	0
ISO 11290-2:2017	Chromogenic agar - please state	37ºC/24-48h	1	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	44	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Brilliance Listeria agar	37ºC/24-48h	0	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Chromogenic agar - please state	37ºC/24-48h	2	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar	37ºC/24-48h	14	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	0	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); PALCAM Listeria selective agar	37ºC/24-48h	8	0
ISO 11290-2:2017	Oxford Listeria selective agar	37ºC/24-48h	0	1
ISO 11290-2:2017	Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	1	0
ISO 11290-2:2017	Oxford Listeria selective agar; Chromogenic agar - please state	37ºC/24-48h	3	0
ISO 11290-2:2017	PALCAM Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	1	0
Other	Brilliance Listeria agar	37ºC/24-48h	3	1
Other	Brilliance Listeria agar; Other	37ºC/24-48h	1	0
Other	Chromogenic agar - please state	37ºC/24-48h	3	2
Other	Other	37ºC/24-48h	0	1
Other	Other	Other	0	3
Other	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	5	1
Other	Ottaviani and Agosti agar (ALOA)	Other	1	0
Other	PALCAM Listeria selective agar	37ºC/24-48h	1	0
Other	PALCAM Listeria selective agar; Chromogenic agar - please state	37ºC/24-48h	0	1

Sample S0653

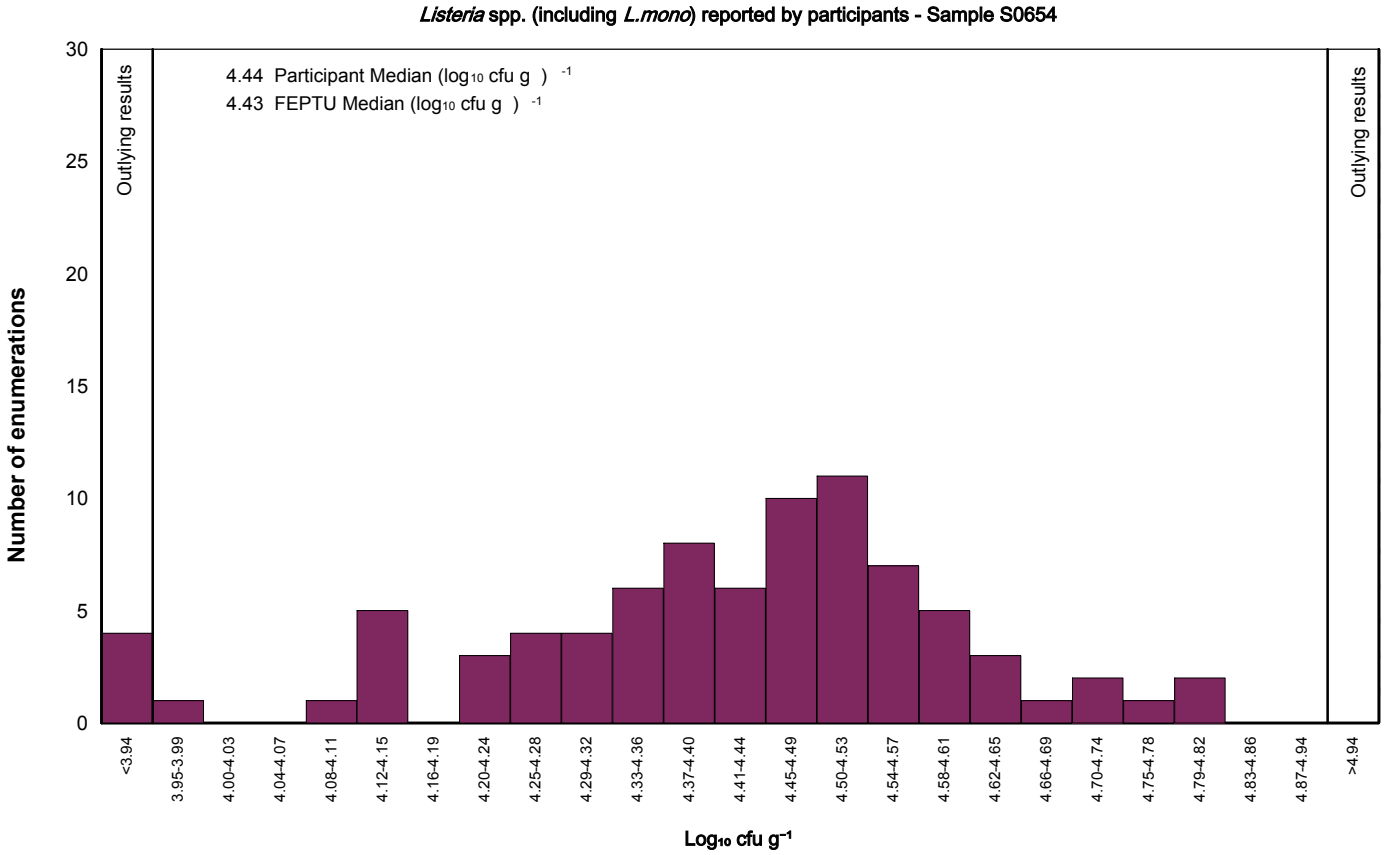
L.monocytogenes Method	*L.monocytogenes* Media	*L.monocytogenes* Incubation	Count reported	Count censored values
	Brilliance Listeria agar		1	0
ISO 11290-2:2017	Brilliance Listeria agar	37ºC/24-48h	3	0
ISO 11290-2:2017	Brilliance Listeria agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	0
ISO 11290-2:2017	Other	Other	1	0
ISO 11290-2:2017	Other chromogenic agar	37ºC/24-48h	3	0
ISO 11290-2:2017	Other chromogenic agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	1	0
ISO 11290-2:2017	Other; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	1	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	59	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Other chromogenic agar	37ºC/24-48h	1	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar	37ºC/24-48h	14	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); PALCAM Listeria selective agar	37ºC/24-48h	3	0
ISO 11290-2:2017	Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	1	0
ISO 11290-2:2017	Oxford Listeria selective agar; Brilliance Listeria agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	1
ISO 11290-2:2017	Oxford Listeria selective agar; Other chromogenic agar	37ºC/24-48h	3	1
ISO 11290-2:2017	Oxford Listeria selective agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	7	1
ISO 11290-2:2017	PALCAM Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	1	0
ISO 11290-2:2017	PALCAM Listeria selective agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	6	0
ISO 11290-2:2017; Other	Other; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	1	0
Other	Brilliance Listeria agar	37ºC/24-48h	2	2
Other	Brilliance Listeria agar; Other	37ºC/24-48h	1	0
Other	Other	37ºC/24-48h	1	0
Other	Other	Other	0	2
Other	Other chromogenic agar	37ºC/24-48h	2	3
Other	Other chromogenic agar	Other	1	0
Other	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	6	2
Other	Ottaviani and Agosti agar (ALOA)	Other	1	0
Other	Oxford Listeria selective agar	37ºC/24-48h	1	0
Other	Oxford Listeria selective agar	Other	1	0
Other	Oxford Listeria selective agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	1
Other	PALCAM Listeria selective agar	Other	0	1
Other	PALCAM Listeria selective agar; Other chromogenic agar	37ºC/24-48h	0	1
Other; ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	1	0
Other; ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Other	37ºC/24-48h	1	0
Other; ISO 11290-2:2017	Oxford Listeria selective agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	1	0

Sample S0653

Aerobic colony count Method	Aerobic colony count Media	Aerobic colony count Incubation	Count reported	Count censored values
	Other		0	0
ISO 4833-1:2013	Petrifilm TM	30ºC/48h	1	0
ISO 4833-1:2013	Petrifilm TM	30ºC/72h	3	0
ISO 4833-1:2013	Plate count agar	30ºC/48h	8	1
ISO 4833-1:2013	Plate count agar	30ºC/72h	63	1
ISO 4833-1:2013	Plate count agar	30ºC/72h; 30ºC/48h	0	0
ISO 4833-1:2013; ISO 4833-2:2018	Plate count agar	30ºC/48h	0	0
ISO 4833-1:2013; ISO 4833-2:2018	Plate count agar	30ºC/72h	0	0
ISO 4833-2:2018	Other	30ºC/72h	1	0
ISO 4833-2:2018	Plate count agar	30ºC/48h	6	0
ISO 4833-2:2018	Plate count agar	30ºC/72h	6	1
ISO 4833-2:2018	Plate count agar; Petrifilm TM	30ºC/48h	0	0
MPN - TEMPO	Other	30ºC/48h	7	1
MPN - TEMPO	Other	Other	5	0
Other	Other	37ºC/24h	1	0
Other	Other	Other	1	0
Other	Petrifilm TM	30ºC/48h	1	0
Other	Petrifilm TM	30ºC/72h	1	0
Other	Petrifilm TM	Other	2	0
Other	Plate count agar	30ºC/48h	2	0
Other	Plate count agar	30ºC/72h	6	0
Other	Plate count agar	Other	5	0
Other	Plate count agar; Milk plate count agar; Other	30ºC/48h; Other; 30ºC/72h	0	1
Other; ISO 4833-1:2013	Petrifilm TM	37ºC/24h; Other	0	1

Sample S0653

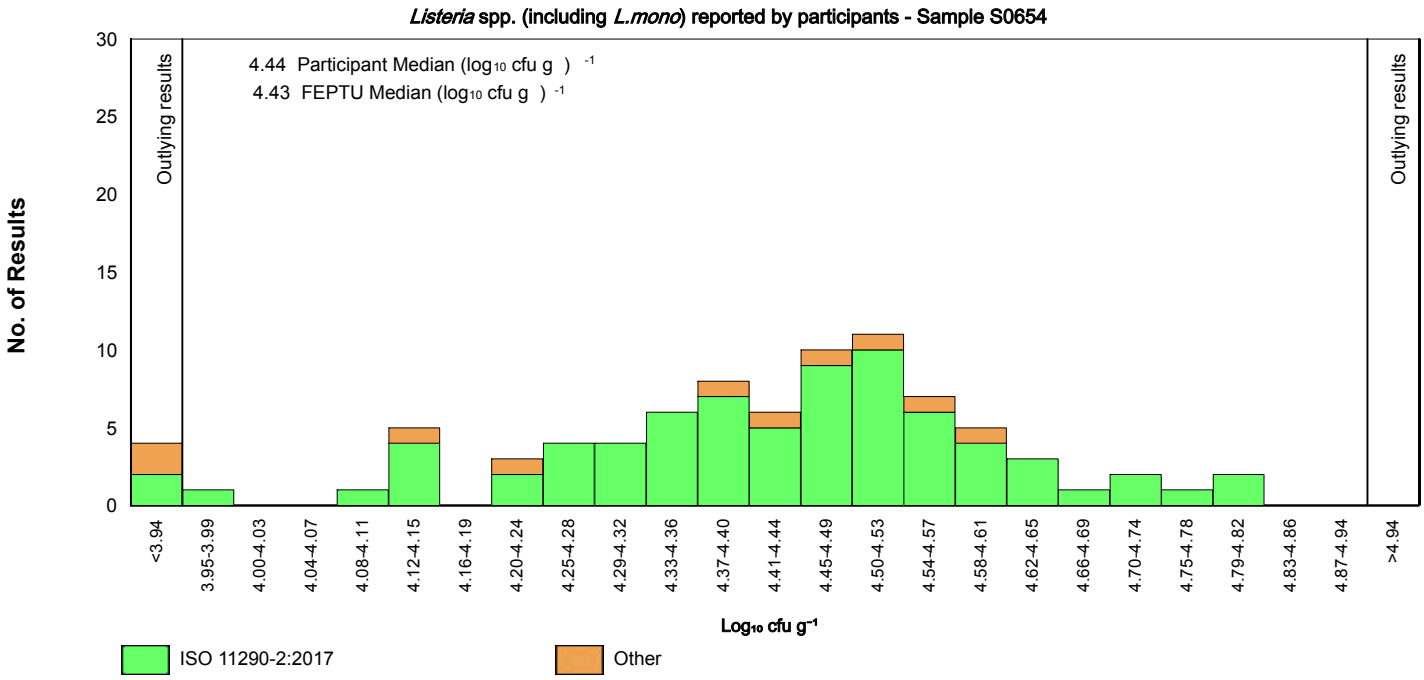
Coliform Method	Coliform Media	Coliform Incubation	Count reported	Count censored values
		30ºC/24h	0	0
		37ºC/24h	0	0
ISO 4831:2006	Chromogenic agar - please state	37ºC/24h	2	0
ISO 4831:2006	Petrifilm TM	37ºC/24h	1	0
ISO 4831:2006	Petrifilm TM	37ºC/24h; 30ºC/24h	0	0
ISO 4831:2006	Violet red bile agar (VRBA)	30ºC/24h	1	0
ISO 4831:2006	Violet red bile agar (VRBA)	37ºC/24h	1	0
ISO 4832:2006	Chromogenic agar - please state	30ºC/24h	1	0
ISO 4832:2006	Chromogenic agar - please state	37ºC/24h	3	0
ISO 4832:2006	Other	30ºC/24h	1	0
ISO 4832:2006	Other	37ºC/24h	1	0
ISO 4832:2006	Petrifilm TM	30ºC/24h	2	0
ISO 4832:2006	Petrifilm TM	37ºC/24h	0	1
ISO 4832:2006	Violet red bile agar (VRBA)	30ºC/24h	13	0
ISO 4832:2006	Violet red bile agar (VRBA)	37ºC/24h	43	2
MPN - TEMPO	Other	30ºC/24h	2	0
MPN - TEMPO	Other	37ºC/24h	1	0
MPN - TEMPO	Other	Other	1	0
MPN - TEMPO	Violet red bile agar (VRBA)	37ºC/24h	0	0
Other	Chromogenic agar - please state	37ºC/24h	6	0
Other	Other	30ºC/24h	1	0
Other	Other	37ºC/24h	1	1
Other	Other	Other	1	0
Other	Petrifilm TM	37ºC/24h	1	0
Other	Petrifilm TM	Other	4	0
Other	Petrifilm TM; Chromogenic agar - please state	37ºC/24h	0	1
Other	Violet red bile agar (VRBA)	30ºC/24h	3	0
Other	Violet red bile agar (VRBA)	37ºC/24h	6	0
Other	Violet red bile agar (VRBA)	Other	1	0
Other; ISO 4831:2006	Other	Other	0	1

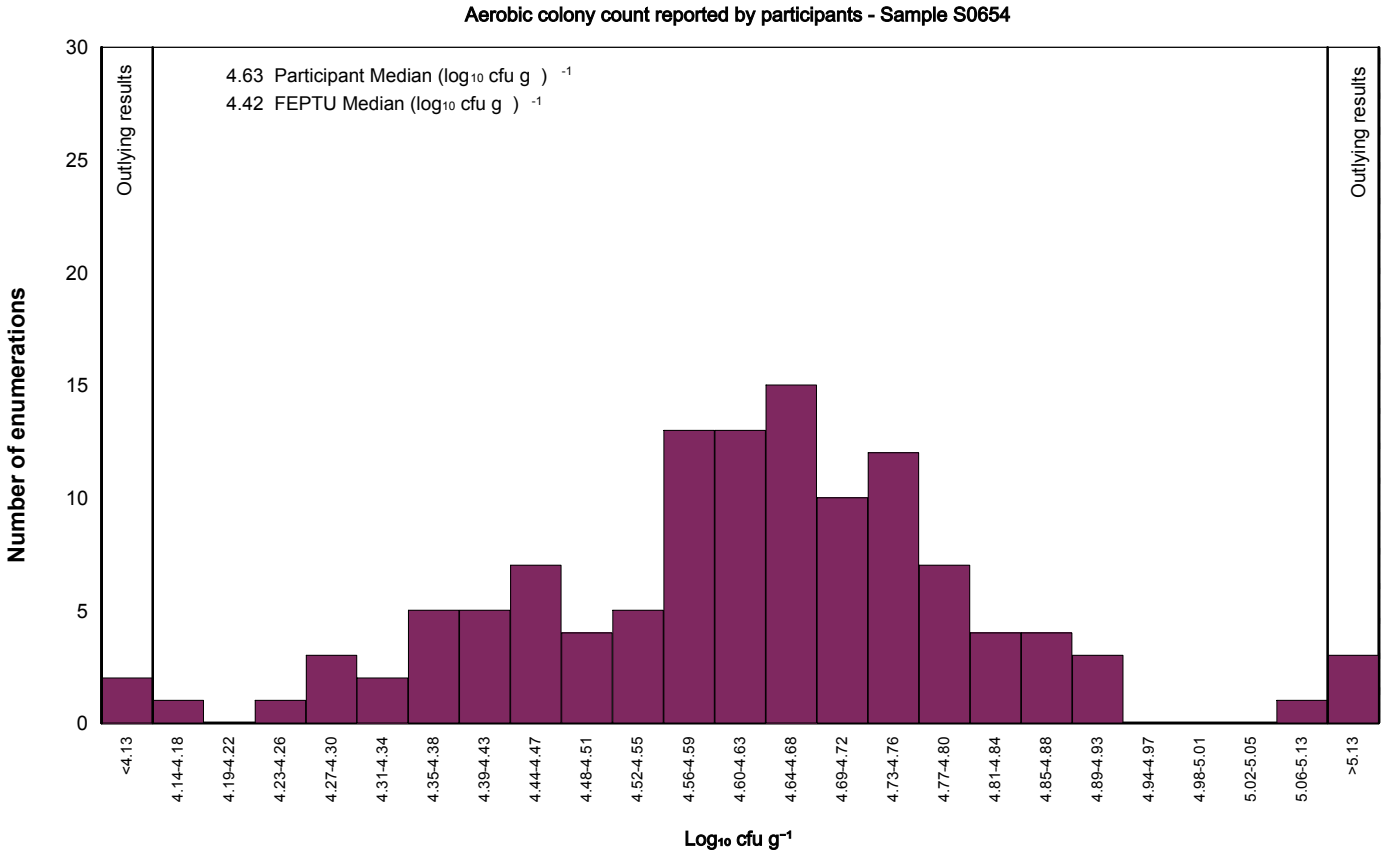


Method based presentation

S0654 : *Listeria* spp. (including *L.mono*) **FEPTU Method: ISO 11290-2:2017**

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust *S** (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 11290-2:2017	74	1	88	4.45	0.16	3.30 - 4.79
Other	10	1	11	4.40	0.25	3.45 - 4.58



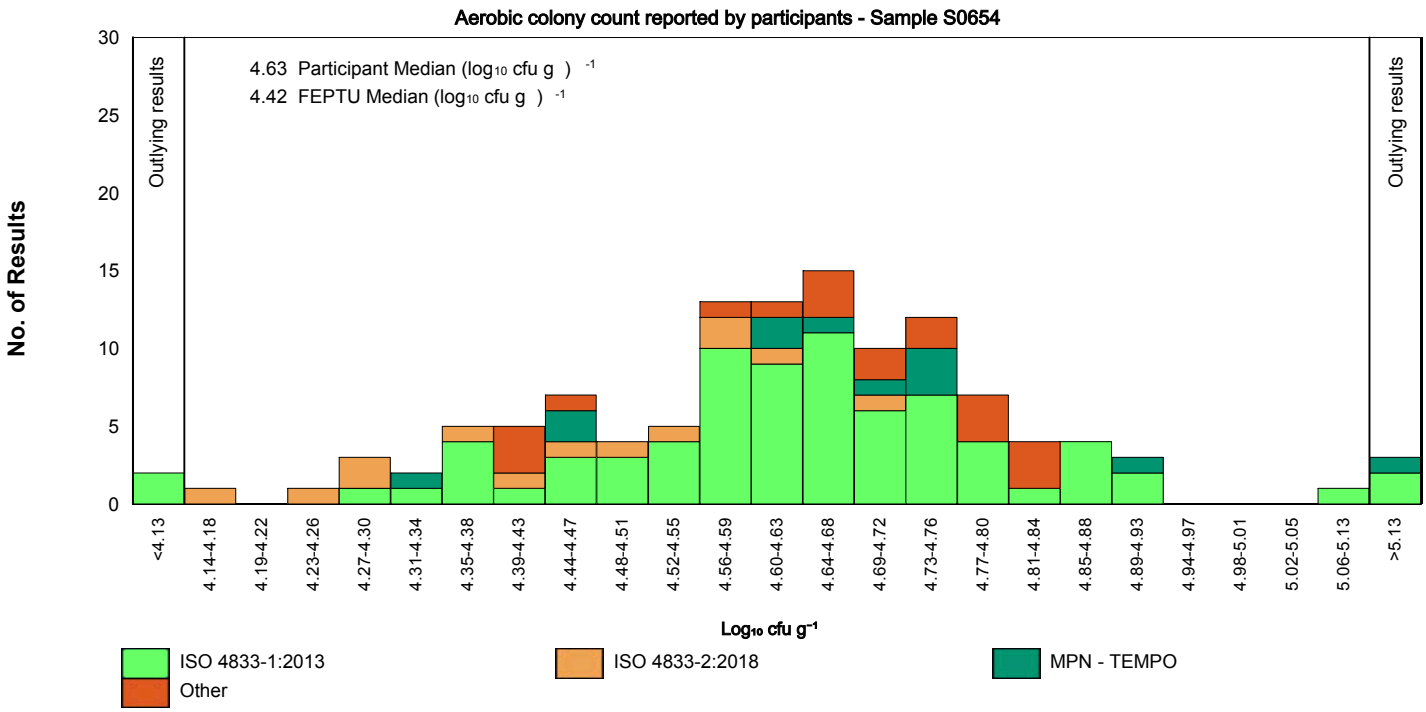


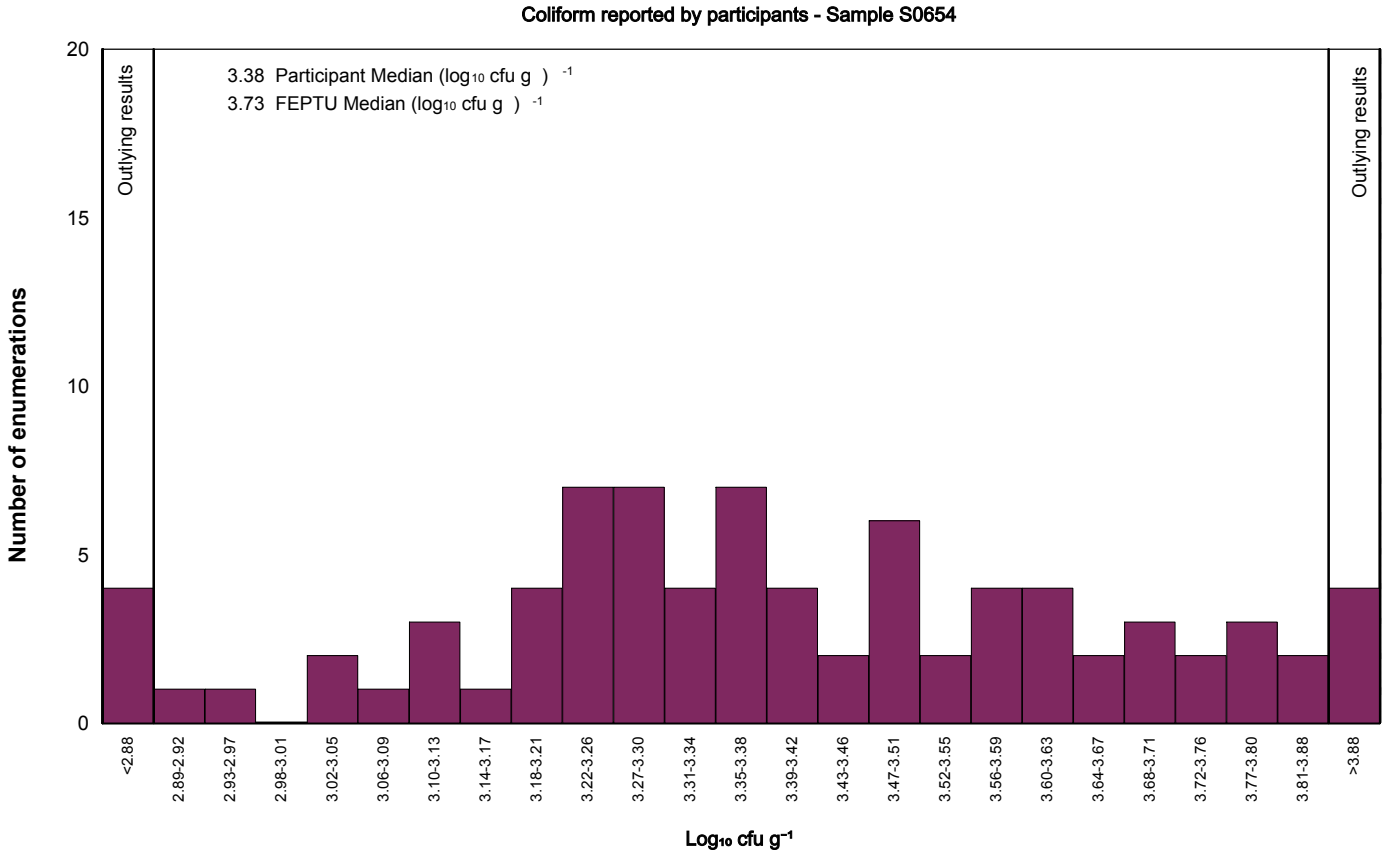
Method based presentation

S0654 : Aerobic colony count

FEPTU Method: ISO 4833-2:2018

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust *S** (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 4833-1:2013	76	1	63	4.64	0.15	3.08 - 5.70
ISO 4833-2:2018	13	0	10	4.44	0.18	4.15 - 4.68
MPN - TEMPO	12	1	10	4.67	0.15	4.32 - 5.48
Other	19	0	15	4.70	0.13	4.40 - 4.84



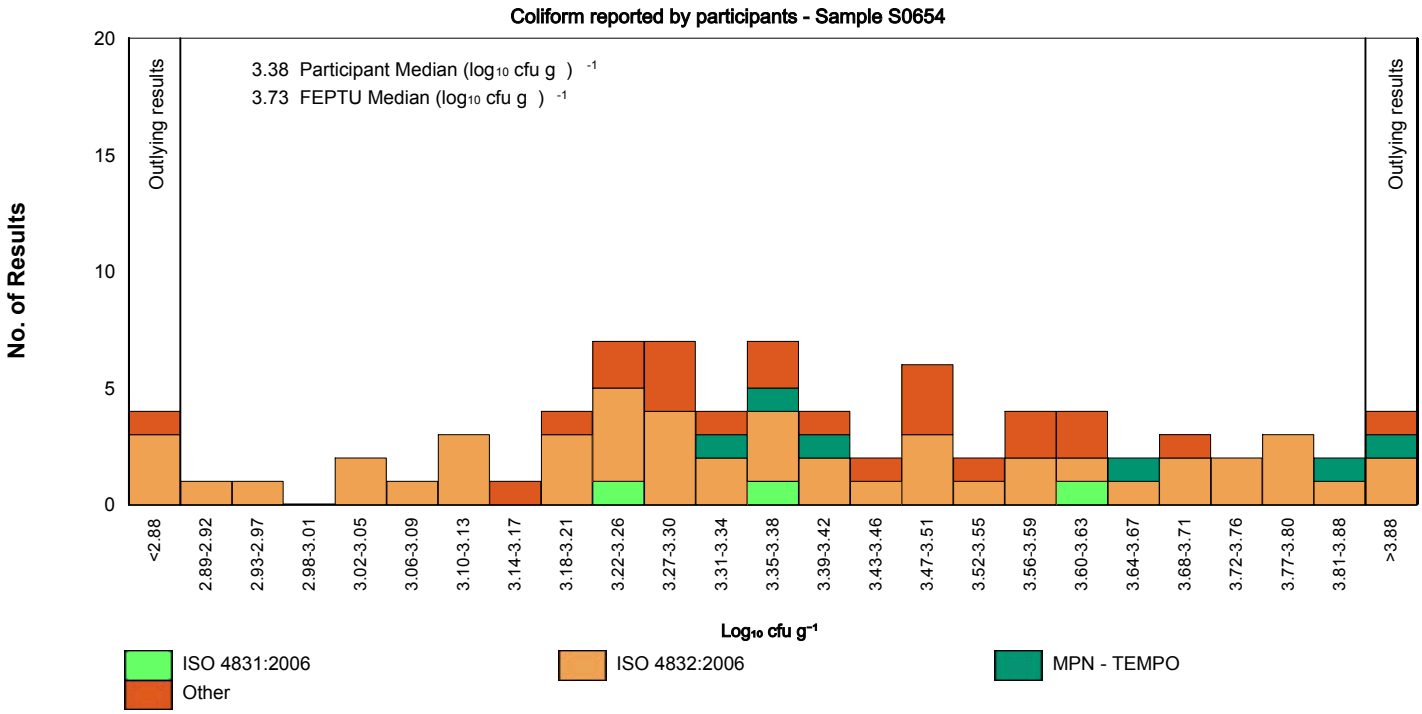


Method based presentation

S0654 : Coliform

FEPTU Method: ISO 4832:2006

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log_{10} cfu g^{-1})	Robust S* (Log_{10} cfu g^{-1})	Range Reported (Log_{10} cfu g^{-1})
ISO 4831:2006	3	1	3			-
ISO 4832:2006	48	1	60	3.35	0.32	2.45 - 4.44
MPN - TEMPO	6	0	7			-
Other	23	0	28	3.41	0.20	1.48 - 4.23



Sample S0654

Presumptive *B.cereus* Method	Presumptive *B.cereus* Media	Presumptive *B.cereus* Incubation	Count reported	Count censored values
ISO 7932:2004	Bacillus cereus selective agar (MYP)	30ºC/18-48h	6	46
ISO 7932:2004	Bacillus cereus selective agar (MYP)	37ºC/18-48h	0	2
ISO 7932:2004	Bacillus cereus selective agar (PEMBA formulation)	30ºC/18-48h	2	7
ISO 7932:2004	Bacillus cereus selective agar (PEMBA formulation)	37ºC/18-48h	0	2
ISO 7932:2004	Chromogenic agar - please state	30ºC/18-48h	0	4
ISO 7932:2004	Other	30ºC/18-48h	0	2
ISO 7932:2004; Other	Bacillus cereus selective agar (PEMBA formulation)	30ºC/18-48h	0	1
ISO 7932:2004; Other	Bacillus cereus selective agar (PEMBA formulation); Chromogenic agar - please state	37ºC/18-48h	0	0
Other	Bacillus cereus selective agar (MYP)	30ºC/18-48h	1	4
Other	Bacillus cereus selective agar (MYP)	Other	0	1
Other	Bacillus cereus selective agar (PEMBA formulation)	30ºC/18-48h	0	1
Other	Bacillus cereus selective agar (PEMBA formulation)	37ºC/18-48h	0	2
Other	Chromogenic agar - please state	30ºC/18-48h	1	3
Other	Chromogenic agar - please state	37ºC/18-48h	0	1
Other	Chromogenic agar - please state	Other	0	2
Other	Other	30ºC/18-48h	0	6
Other	Other	37ºC/18-48h	0	3
Other	Other	Other	0	3

Sample S0654

Coagulase-positive staphylococci Method	Coagulase-positive staphylococci Media	Coagulase-positive staphylococci Incubation	Count reported	Count censored values
ISO 6888-1:1999	Baird – Parker medium (BPM)	37ºC/18-24h	0	1
ISO 6888-1:1999	Baird – Parker medium (BPM)	37ºC/18-24h; 37ºC/24-48h	0	2
ISO 6888-1:1999	Baird – Parker medium (BPM)	37ºC/24-48h	12	40
ISO 6888-1:1999	Other	37ºC/24-48h	0	1
ISO 6888-2:1999	Baird – Parker medium (BPM)	37ºC/18-24h	0	3
ISO 6888-2:1999	Baird – Parker medium (BPM)	37ºC/24-48h	0	5
ISO 6888-2:1999	Baird – Parker medium (BPM); Rabbit plasma fibrinogen agar (RPF)	37ºC/18-24h; 37ºC/24-48h	0	0
ISO 6888-2:1999	Other	37ºC/24-48h	0	3
ISO 6888-2:1999	Rabbit plasma fibrinogen agar (RPF)	37ºC/18-24h	0	2
ISO 6888-2:1999	Rabbit plasma fibrinogen agar (RPF)	37ºC/24-48h	0	24
ISO 6888-3:2003	Baird – Parker medium (BPM)	37ºC/24-48h	1	1
ISO 6888-3:2003	Rabbit plasma fibrinogen agar (RPF)	37ºC/24-48h	0	1
Other	Baird – Parker medium (BPM)	37ºC/24-48h	1	4
Other	Baird – Parker medium (BPM)	Other	1	3
Other	Chromogenic agar - please state	37ºC/18-24h	0	2
Other	Chromogenic agar - please state	37ºC/24-48h	1	0
Other	Chromogenic agar - please state	Other	0	1
Other	Other	37ºC/18-24h	0	10
Other	Other	37ºC/24-48h	0	3
Other	Other	Other	1	4

Sample S0654

Listeria spp. (including *L.mono*) Method	*Listeria* spp. (including *L.mono*) Media	*Listeria* spp. (including *L.mono*) Incubation	Count reported	Count censored values
		37ºC/24-48h	0	0
	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	0
	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar		0	0
	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar	37ºC/24-48h	0	0
	Ottaviani and Agosti agar (ALOA); PALCAM Listeria selective agar		0	0
ISO 11290-2:2017			0	0
ISO 11290-2:2017	Brilliance Listeria agar	37ºC/24-48h	4	0
ISO 11290-2:2017	Chromogenic agar - please state	37ºC/24-48h	1	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	40	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Brilliance Listeria agar	37ºC/24-48h	0	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Chromogenic agar - please state	37ºC/24-48h	2	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar	37ºC/24-48h	13	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	0	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); PALCAM Listeria selective agar	37ºC/24-48h	8	0
ISO 11290-2:2017	Oxford Listeria selective agar	37ºC/24-48h	1	1
ISO 11290-2:2017	Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	1	0
ISO 11290-2:2017	Oxford Listeria selective agar; Chromogenic agar - please state	37ºC/24-48h	3	0
ISO 11290-2:2017	PALCAM Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	1	0
Other	Brilliance Listeria agar	37ºC/24-48h	2	1
Other	Brilliance Listeria agar; Other	37ºC/24-48h	1	0
Other	Chromogenic agar - please state	37ºC/24-48h	2	3
Other	Other	37ºC/24-48h	0	1
Other	Other	Other	0	3
Other	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	3	1
Other	Ottaviani and Agosti agar (ALOA)	Other	1	0
Other	PALCAM Listeria selective agar	37ºC/24-48h	1	0
Other	PALCAM Listeria selective agar; Chromogenic agar - please state	37ºC/24-48h	0	1

Sample S0654

L.monocytogenes Method	*L.monocytogenes* Media	*L.monocytogenes* Incubation	Count reported	Count censored values
	Brilliance Listeria agar		1	0
	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	0
ISO 11290-2:2017	Brilliance Listeria agar	37ºC/24-48h	0	3
ISO 11290-2:2017	Other	Other	0	1
ISO 11290-2:2017	Other chromogenic agar	37ºC/24-48h	0	3
ISO 11290-2:2017	Other chromogenic agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	6	47
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Brilliance Listeria agar	37ºC/24-48h	0	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Other	37ºC/24-48h	1	0
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Other chromogenic agar	37ºC/24-48h	0	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar	37ºC/24-48h	1	3
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	0	1
ISO 11290-2:2017	Ottaviani and Agosti agar (ALOA); PALCAM Listeria selective agar	37ºC/24-48h	0	5
ISO 11290-2:2017	Oxford Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	0	1
ISO 11290-2:2017	Oxford Listeria selective agar; Other chromogenic agar	37ºC/24-48h	0	4
ISO 11290-2:2017	Oxford Listeria selective agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	3	5
ISO 11290-2:2017	PALCAM Listeria selective agar; Brilliance Listeria agar	37ºC/24-48h	0	1
ISO 11290-2:2017	PALCAM Listeria selective agar; Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	5
ISO 11290-2:2017; Other	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	1
Other	Brilliance Listeria agar	37ºC/24-48h	0	3
Other	Brilliance Listeria agar; Other	37ºC/24-48h	0	1
Other	Other	37ºC/24-48h	0	1
Other	Other	Other	0	2
Other	Other chromogenic agar	37ºC/24-48h	0	5
Other	Other chromogenic agar	Other	0	1
Other	Ottaviani and Agosti agar (ALOA)	37ºC/24-48h	0	5
Other	Ottaviani and Agosti agar (ALOA)	Other	0	1
Other	Ottaviani and Agosti agar (ALOA); Oxford Listeria selective agar	37ºC/24-48h	0	1
Other	Oxford Listeria selective agar	Other	0	1
Other	PALCAM Listeria selective agar	Other	0	1
Other	PALCAM Listeria selective agar; Other chromogenic agar	37ºC/24-48h	0	1

Sample S0654

Aerobic colony count Method	Aerobic colony count Media	Aerobic colony count Incubation	Count reported	Count censored values
	Other		0	0
ISO 4833-1:2013	Other	30ºC/72h	1	0
ISO 4833-1:2013	Petrifilm TM	30ºC/48h	1	0
ISO 4833-1:2013	Petrifilm TM	30ºC/72h	3	0
ISO 4833-1:2013	Plate count agar	30ºC/48h	8	0
ISO 4833-1:2013	Plate count agar	30ºC/72h	63	1
ISO 4833-1:2013; Other	Petrifilm TM	Other; 37ºC/24h	0	1
ISO 4833-2:2018	Plate count agar	30ºC/48h	6	0
ISO 4833-2:2018	Plate count agar	30ºC/72h	7	1
ISO 4833-2:2018	Plate count agar; Petrifilm TM	30ºC/48h	0	0
ISO 4833-2:2018; ISO 4833-1:2013	Plate count agar	30ºC/48h	0	0
MPN - TEMPO	Other	30ºC/48h	7	1
MPN - TEMPO	Other	Other	5	0
Other	Other	37ºC/24h	1	0
Other	Other	Other	1	0
Other	Petrifilm TM	30ºC/48h	1	0
Other	Petrifilm TM	30ºC/72h	1	0
Other	Petrifilm TM	Other	2	0
Other	Plate count agar	30ºC/48h	2	0
Other	Plate count agar	30ºC/72h	6	0
Other	Plate count agar	Other	5	0
Other	Plate count agar; Milk plate count agar; Other	Other; 30ºC/48h; 30ºC/72h	0	1

Sample S0654

Coliform Method	Coliform Media	Coliform Incubation	Count reported	Count censored values
		37ºC/24h	0	0
ISO 4831:2006	Chromogenic agar - please state	37ºC/24h	1	1
ISO 4831:2006	Petrifilm TM	30ºC/24h; 37ºC/24h	0	0
ISO 4831:2006	Petrifilm TM	37ºC/24h	1	0
ISO 4831:2006	Violet red bile agar (VRBA)	30ºC/24h	1	0
ISO 4831:2006	Violet red bile agar (VRBA)	37ºC/24h	0	0
ISO 4831:2006; Other	Other	Other	0	1
ISO 4832:2006	Chromogenic agar - please state	30ºC/24h	1	0
ISO 4832:2006	Chromogenic agar - please state	37ºC/24h	3	0
ISO 4832:2006	Other	30ºC/24h	1	0
ISO 4832:2006	Other	37ºC/24h	1	0
ISO 4832:2006	Petrifilm TM	30ºC/24h	2	0
ISO 4832:2006	Petrifilm TM	37ºC/24h	0	1
ISO 4832:2006	Violet red bile agar (VRBA)	30ºC/24h	10	0
ISO 4832:2006	Violet red bile agar (VRBA)	37ºC/24h	30	2
MPN - TEMPO	Other	30ºC/24h	4	0
MPN - TEMPO	Other	37ºC/24h	1	0
MPN - TEMPO	Other	Other	1	0
MPN - TEMPO	Violet red bile agar (VRBA)	37ºC/24h	0	0
Other	Chromogenic agar - please state	37ºC/24h	6	0
Other	Other	37ºC/24h	1	1
Other	Other	Other	1	0
Other	Petrifilm TM	37ºC/24h	1	0
Other	Petrifilm TM	Other	4	0
Other	Petrifilm TM; Chromogenic agar - please state	37ºC/24h	0	1
Other	Violet red bile agar (VRBA)	30ºC/24h	3	0
Other	Violet red bile agar (VRBA)	37ºC/24h	6	0
Other	Violet red bile agar (VRBA)	Other	1	0

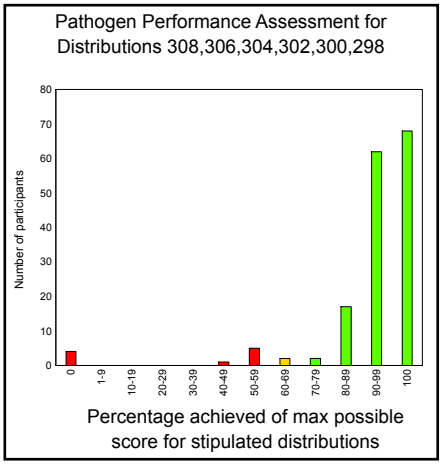
Performance Assessment Sheet

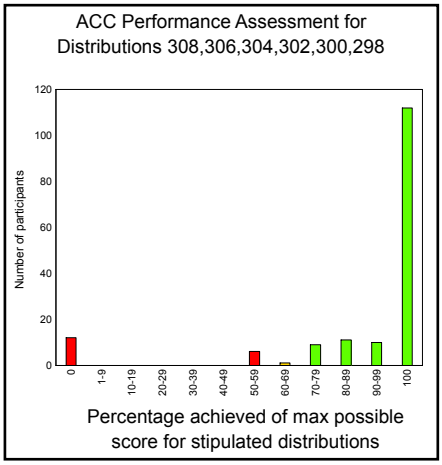
Participants are reminded that to take advantage of the performance assessment overtime tool provided in the reports they need to take part in more than one distribution a year.

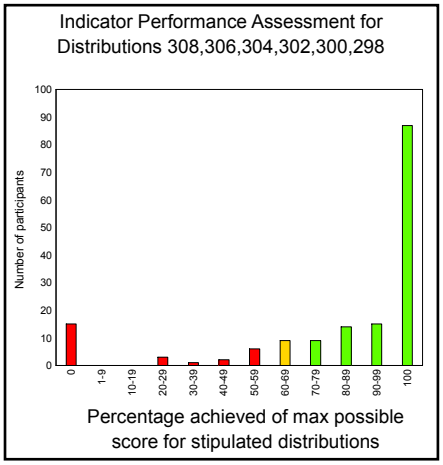
Performance assessments are designed to identify laboratories with on-going problems with their examinations and are undertaken after every distribution. Scores are allocated to results reported for every sample to help assess participants' performance.

Cumulative scores are calculated for every participant, for all examination types, for the current and previous five distributions. Participants' cumulative scores for each of the examination types are compared with the maximum possible scores after every distribution.

Distribution	Sample	Examination	Your score	Your %	Sample	Examination	Your score	Your %
308	S0653	Pathogen			S0654	Pathogen		
	S0653	ACC			S0654	ACC		
	S0653	Indicator			S0654	Indicator		
306	S0649	Pathogen			S0650	Pathogen		
	S0649	ACC			S0650	ACC		
	S0649	Indicator			S0650	Indicator		
304	S0645	Pathogen			S0646	Pathogen		
	S0645	ACC			S0646	ACC		
	S0645	Indicator			S0646	Indicator		
302	S0641	Pathogen			S0642	Pathogen		
	S0641	ACC			S0642	ACC		
	S0641	Indicator			S0642	Indicator		
300	S0637	Pathogen			S0638	Pathogen		
	S0637	ACC			S0638	ACC		
	S0637	Indicator			S0638	Indicator		
298	S0633	Pathogen			S0634	Pathogen		
	S0633	ACC			S0634	ACC		
	S0633	Indicator			S0634	Indicator		







Performance Assessment Comment:

Laboratories that achieve less than 70% of the maximum possible score are likely to be experiencing significant problems with their examinations and are advised to

a) refer to the relevant sample reports for specific comments

b) refer to the website guidance documents:
https://www.gov.uk/government/collections/external-quality-assessment-eqa-and-proficiency-testing-pt-for-food-water-and-environmental-microbiology

c) contact the organisers for advice.

General distribution comment:

Participants are reminded if you do not examine a specific parameter you must return your results as 'Not examined' as this impacts the overall scores awarded.

General comments on methods:

Participants that did not provide information on the method and testing conditions, their data is not included in the method graphs and tables. This information is useful; therefore participants are encouraged to complete these details.

Method based presentation tables for enumeration results:
Participants are advised if less than 10 laboratories report an enumeration result for a method, no data is shown for the Median, Robust SD and the Range Reported. Numbers shown in the 'Excluded Results' column are laboratories that reported a censored value.

Method, media and enrichment/incubation tables:
Participants are asked to note:

- **that for pathogen detection parameters, the data presented in the tables on the specific method used, is only shown when five or more laboratories have reported a result for that specific method**

- **that the count shown in the 'Count reported' or 'Count censored values' column includes data from those laboratories that reported:**
  - **a censored value**
  - **a result reported as detected or not detected**
  - **method data with no results reported.**

Participants are reminded that the method data presented in this way has some limitations and seeks to identify trends in the results rather than assess specific method details.

Trend analysis:

Plotting your PT results over a period of time can help to identify potential problems. Download the updated trend analysis spreadsheet one week after this report has been issued:
https://www.gov.uk/government/publications/standard-scheme-trend-analysis

End of report