




How can Global Proficiency Testing improve food quality?

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Topics

- Overview of food quality
 - How a PT scheme works
 - Performance assessment
 - Advantages of global PT
 - Limitations of global PT
 - Summary
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Food quality

Consumer demands are greater than ever:

- Availability
- Quality
- Cost
- Safety
- Traceability

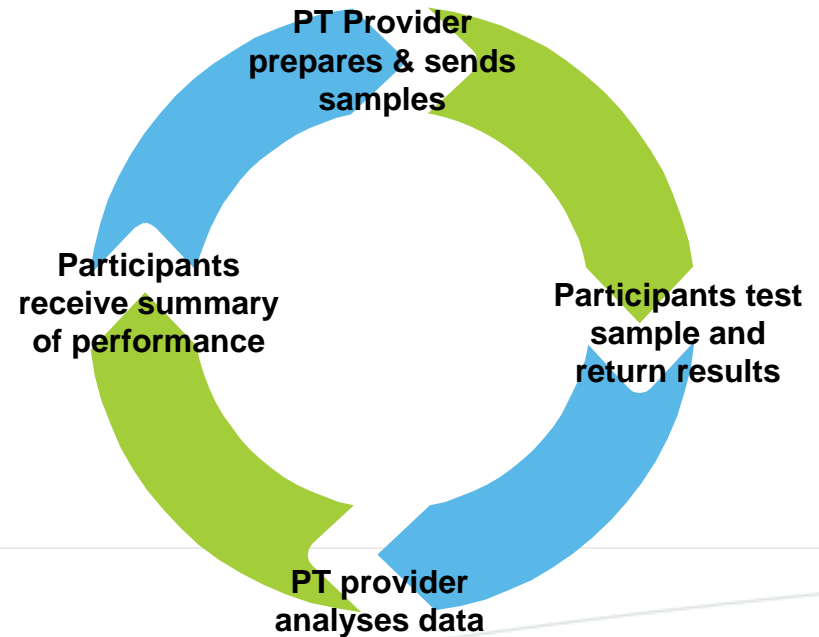


Food control measures:

- Legislation
- Risk assessment
- Process control
- Testing

Definition of PT

Proficiency testing is the regular distribution of test materials to participating laboratories in order to independently compare the accuracy of their analytical measurements.



Measuring Performance

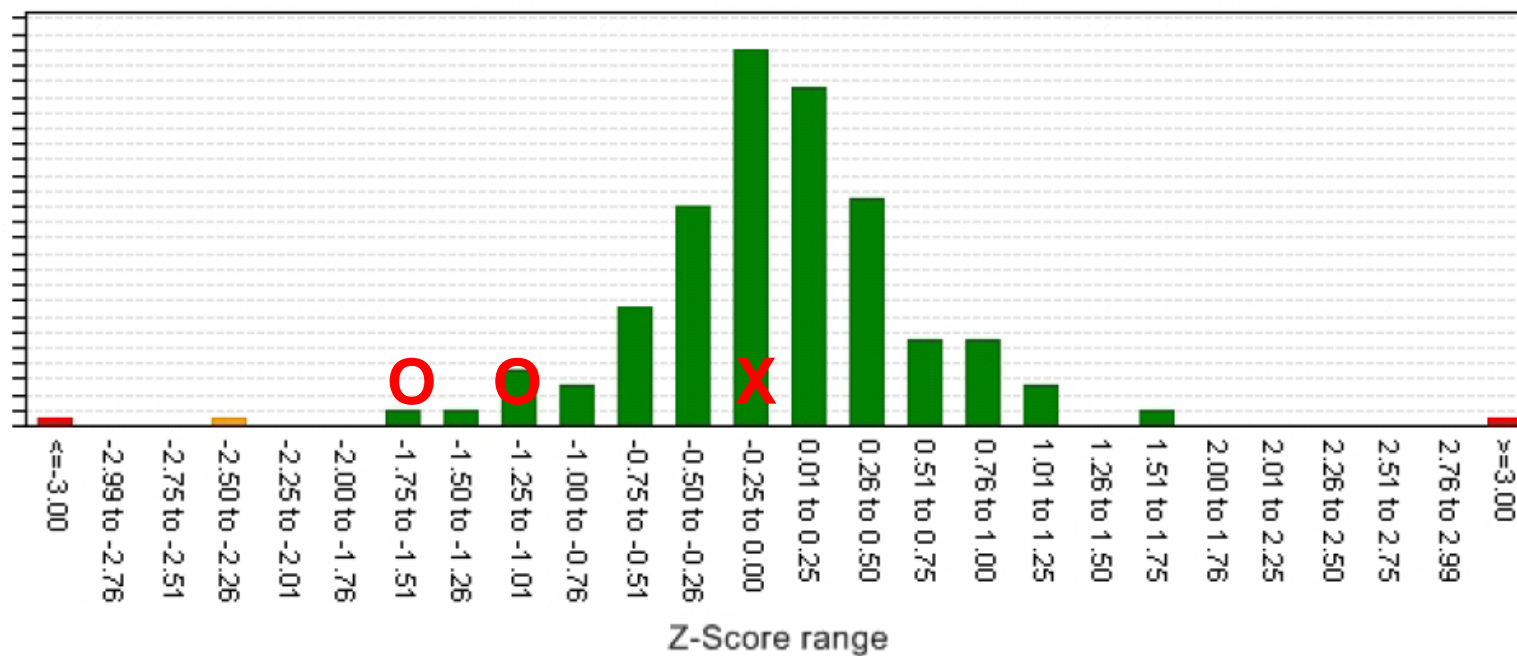
- Set an assigned value (x)
 - The best estimate of the true result
- Compare the 'Observed error'
 - difference between laboratory result (x) and assigned value (X)
- Set a 'Target range'
 - Using a standard deviation or uncertainty $\hat{\sigma}$

$$z \text{ score} = \frac{(x - X)}{\hat{\sigma}}$$

$ z \leq 2$	Satisfactory (95%)
$2 < z < 3$	Questionable (5%)
$ z \geq 3$	Unsatisfactory (0.3%)

How have I done?

Z-Score Histogram



- Compare with assigned value
- Compare with other results
- Compare over time

Performance comparisons

National schemes

Company schemes

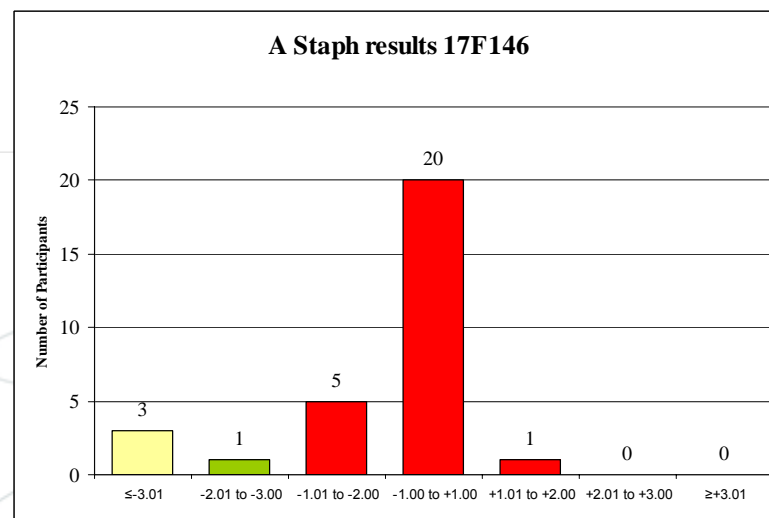
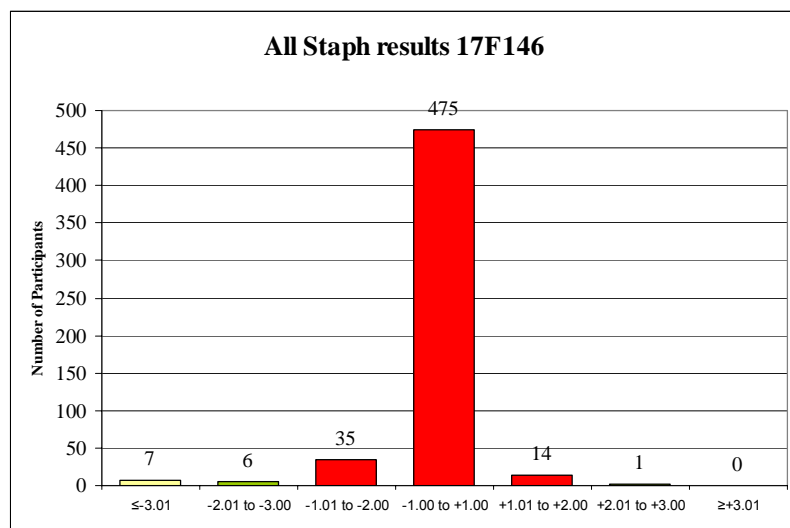
International schemes



Performance comparisons

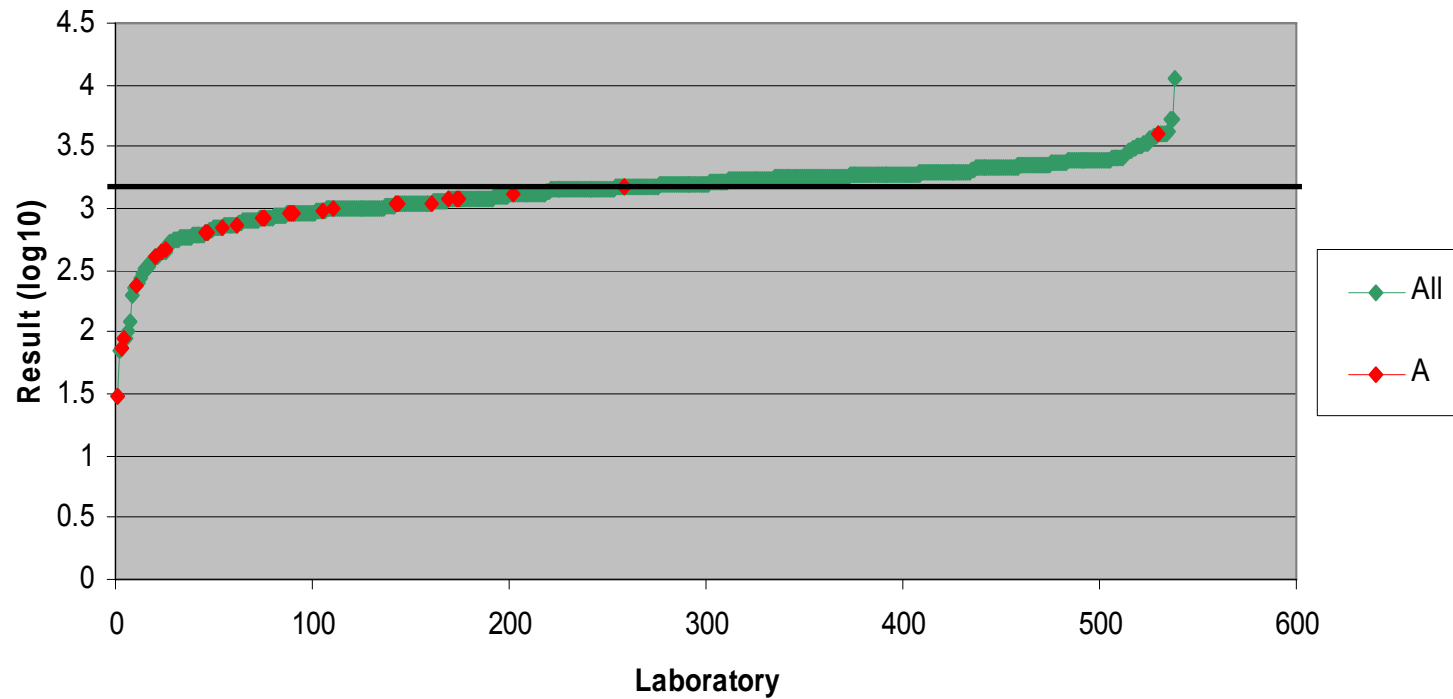
Sample 17F146
Staphylococcus aureus

RESULTS	All	Country A
Number of results	547	31
Mean	1356	925
Median	1500	900
Standard deviation	0.26	0.43
Reported present	99%	97%
Satisfactory	97%	84%



Performance comparisons

Staph results 17F146



International harmonisation

Food Quality

- Codex Alimentarius 1963
- World Trade Organisation 1995
- BRC Global Standard for food safety 1998

Lab testing & accreditation

- ISO/IEC 17025
- International methods
- Accreditation bodies & MLA
- International organisations

Proficiency Testing

- ISO/IEC 17043
- ISO 13528
 - EPTIS
- International organisations

International trade

- Governments can use PT to identify competent laboratories for regulatory, commercial or other purposes
 - e.g Official food testing laboratories
- International Laboratory Accreditation Cooperation (ILAC) aim is free-trade goal of ‘once tested, accepted anywhere’

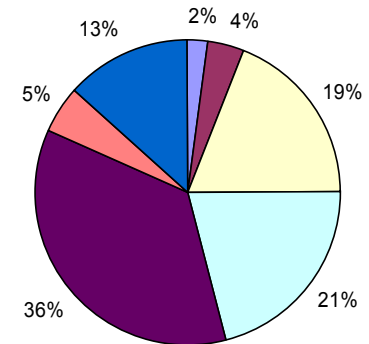
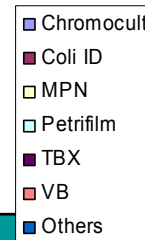


Information & education

Sample 16F

E.coli Test methods

Assigned value 1309 cfu/g




Methods	No	Median	SD
Chromocult	5	1200	0.56
Coli ID	9	1700	0.17
MPN	44	1150	0.85
Petrifilm	49	920	0.58
TBX	83	1600	0.23
VRBA	12	1700	0.31
Others	31	1400	0.77

Bigger can be better


- Global schemes likely to have more participants
 - Improves validity of statistics
 - Decreases production costs

- Global schemes more likely to be commercially viable
 - More stability
 - More frequent distributions
 - Wider range of sample types

Advantages of Global PT

- Provides increased confidence in performance comparison
 - Facilitates international harmonisation
 - Enables international trending
 - Supports international trade
 - May increase statistical confidence in performance scores
 - Economies of scale
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Limitations of Global PT

- PT is only one tool in the quality toolkit
 - PT participation not normally mandatory
 - Speed of response to 'new' tests
 - Participants may treat PT samples differently
 - Transport & language issues
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How can Global PT improve food quality.....?

- Valuable source of technical information
- Highlights quality issues
- Improves trust
- Increases confidence

