# COMPARABLE AND RELIABLE DATA FROM LABORATORIES WITHIN GLOBAL SOIL RESEARCH

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## Objective

Good data are the basis for good science and are also used to advise farmers and to do risk assessments in case of soil pollution. Research moves from application of a laboratory analysis for a single site to application of the result in regional studies and even for global use. This increases the need that the laboratory results are correct and moreover comparable with data from other laboratories worldwide.

Already 60 years, WEPAL (Wageningen Evaluating Programmes for Analytical Laboratories) organises proficiency testing schemes that contribute to maintaining and improving the quality of laboratories worldwide. It has developed into a world-leading organiser of proficiency testing programmes in the fields of plants, soil, sediments, biomass and organic waste, with over 500 participants.

## Sample preparation and distribution

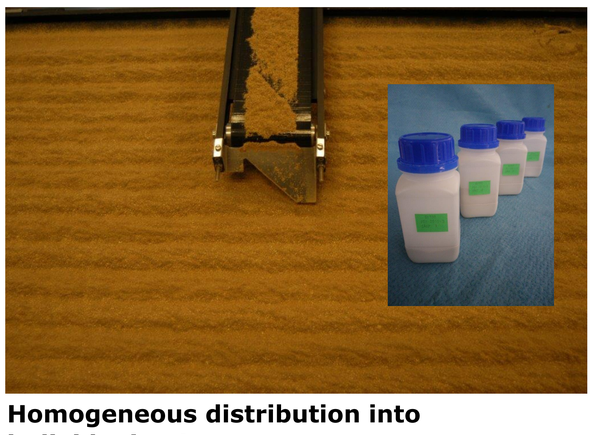
Wepal has developed a system that guarantees that all laboratories receive a sample with the same composition. Participating laboratories receive four times a year samples having a different origin.

**Matrices and parameters**.

| Determinant group | Soil | Sediment | Plant | Organic waste | Biomass |
|---|---|---|---|---|---|
| Characteristics | X | | X | X | X |
| Nutrients | X | | X | X | |
| Macro-elements | X | | X | X | X |
| Heavy metals | X | X | X | X | X |
| (Persistent) Organic Pollutants | | X | | | |

**Grinding of the sample**

**Bulk distributor to make homogeneous stock samples**



**Homogeneous distribution into individual pots**

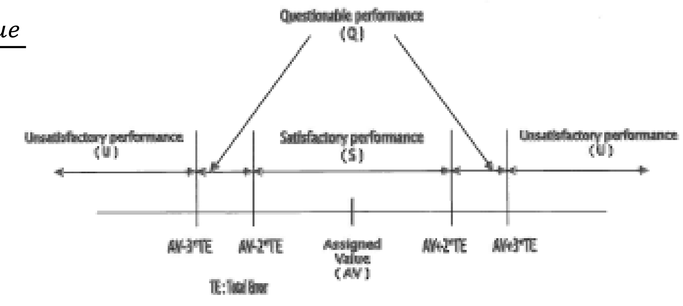
**Storage of stock and distributed samples**

## Data handling

Participants submit their results by a web based application and all results are statistical evaluated.
Up to 2009 an approach was used based on successively discarding outliers. After 2009, WEPAL switched to NDA the model already used in Quasimeme, which is based on an analogy with quantum chemistry (Cofino et al, CILS 53, 37, 2000). The model can be used using reported uncertainties or implemented in a way which can be classified as a robust analysis.

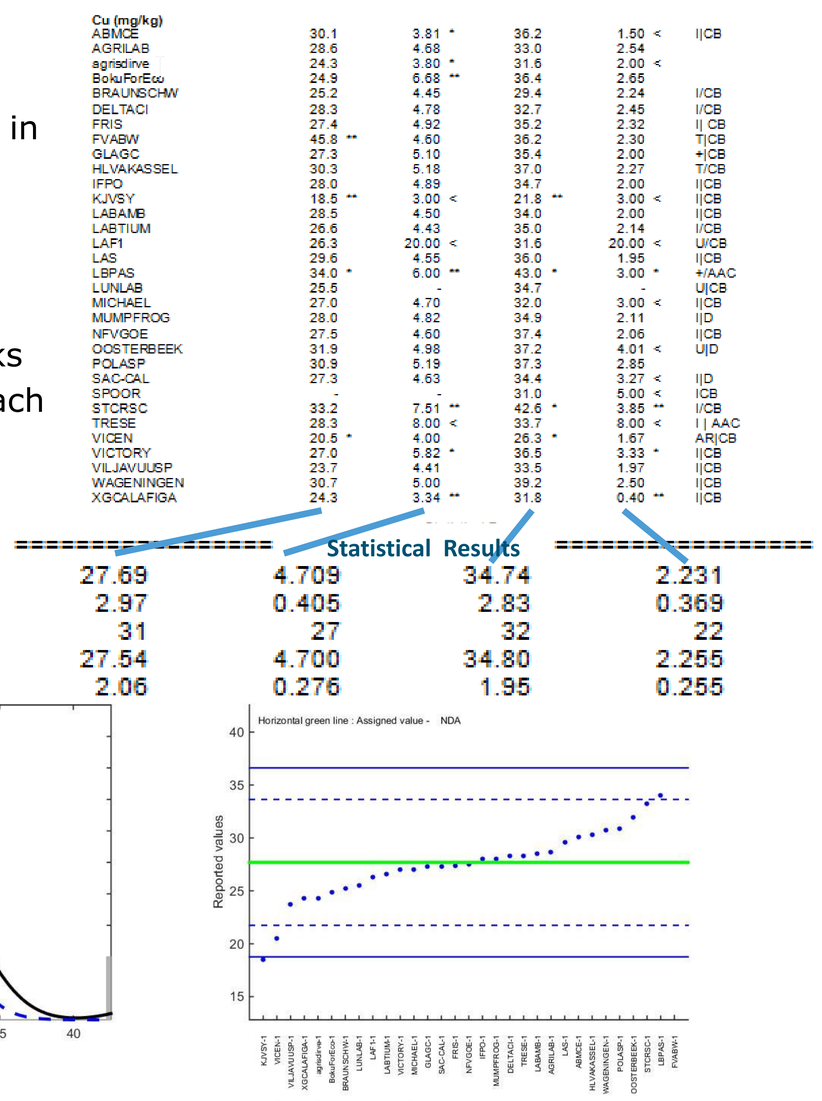
The model results in an Assigned Value and Total Error from which the performance of the laboratory can be derived using the Z score

$$Z = \frac{Laboratory\ Result - Assigned\ Value}{Total\ Error}$$




## Results: Copper in soil measured after digestion using Aqua Regia

Results from the PT schemes are published in quarterly and yearly reports available in a secured part of our website. Reports are available within 2 weeks after the deadline of each PT scheme.




**Histogram and model results**.

**Ranked overview**

## Organization

WEPAL and QUASIMEME work together. QUASIMEME (Quality Assurance of Information in Marine Environmental Monitoring) is focussed on seawater, sediment and biota.
WEPAL-Quasimeme is accredited for the organisation of PT programmes by the Dutch Accreditation Council (RvA) since 2000

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