

FACT SHEET

OECD MRL CALCULATOR

Setting Pesticide Maximum Residue Limits Based on Field Trial Data

The Organisation for Economic Cooperation and Development (OECD) offers a tool called the maximum residue limit (MRL) calculator on its website. The calculator is made up of an Excel spreadsheet which calculates a value based on the entered data points. That value is the proposed MRL.

Regulators worldwide can use this tool for setting their national and import MRLs (also known as MRLs and import tolerances). The goal is to globally standardise the method of calculating MRLs as much as possible. The expected outcome is that the same trial results will produce the same MRL. The residue trials on which the calculation is to be based may provide one or several data sets.

Two simple spreadsheet versions of the OECD MRL Calculator are available: one for single data sets and one for multiple data sets. It is simple to use; requiring only basic computer skills and no extensive statistical knowledge. OECD has also published a user guide and statistical white paper on the calculator to assist users. All documents are available on the internet for free.

Background

The calculator was developed over a period of two years by a group of experts drawn from regulatory authorities, industry and academia. It was designed to automatically calculate statistically-based pesticide limits using field trial data. The goal was to harmonise the calculation of MRLs in the EU and NAFTA in order to produce a tool for use across all OECD member countries.

During the development phase, other international bodies were consulted and actively participated in the further development. Finally the Joint Meeting on Pesticide Residues (a joint FAO /WHO panel of experts that evaluate pesticides for international Codex MRLs), having tested a final version of the calculator in 2010, agreed to utilise the newly developed "OECD MRL Calculator" to propose Codex MRLs during their annual evaluations. This extends the calculator's relevance beyond OECD and marks the calculator to be the internationally used method. It replaces the formerly used "NAFTA calculator" and thus helps the worldwide effort to harmonise MRLs.

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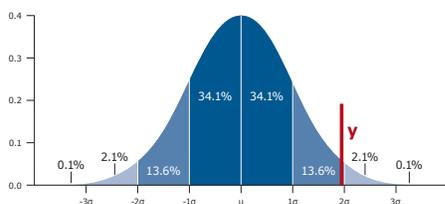
Also available is a "White Paper" description of the statistical basis of the calculator, and an instructional "User Guide".

How does it work and who can use it?

The calculator was purposefully designed as an easy-to-use tool that automatically calculates reliable, science-based MRLs. Everybody with a computer that can run Excel, with internet access to download the tool from the website and a set of measured residue levels at hand can use the calculator to get a proposed MRL based on the entered data. It is particularly useful for authorities that are responsible to set pesticide residue limits and have access to results from residue trials (data set).

Statistical basis

The statistical basis of the OECD MRL calculator, in common with previous methodologies, is to produce an MRL proposal in the region of the 95th percentile (see below) of the underlying residue distribution. The methodology used does not restrict the proposed MRL to be lower than the highest residue of the data set. For smaller data sets (i.e., less than 10 points), there is a possibility that the MRL proposal will exceed 2, or even rarely, 3 times the highest value of the residue data set. That is entirely justifiable considering the limited number of residue values and the inherent high variability found in residue data.



The 95th percentile is a widely used mathematical calculation. A distribution of residue levels found typically describe a bell shaped curve (also called normal distribution) and tend to cluster around a single mean value. The depicted curve illustrates that 95% of measured samples would be within the range of the mean value $\pm 2\sigma$.

If an MRL is set at value $y = \text{mean} + 2\sigma$, the 95th percentile says that in 98% of the samples, the residue level is at or below this value. Conversely, 2% of the samples exceed this level.