relana®

relana®-Method Ring test
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Analysis of Pyrethroides

Report

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Summary

The method ring test was designed and organised exclusively for members of the relana® quality circle. It offers the relana® laboratories the opportunity to test their analytical performance with respect to the quantification of relevant pyrethroides in wheat flour and lettuce. The results of the method ring test are discussed in a subsequent relana® meeting and thus the relana® laboratories are offered the opportunity to exchange their knowledge and to identify current shortcomings and to further improve the applied analytical methods.

Eleven (11) relana® laboratories across six European countries took part in the method ring test.

Two test materials – wheat flour and lettuce - and the corresponding blank materials were provided to the participants. The test materials were prepared of organic wheat flour and lettuce, which were homogenised and spiked with the same 12 pyrethroides.

The report contains an assessment related to

- the trueness of the results. The trueness is expressed as the coverage of the spiked level in %. The coverage should be at least between 70 and 120 % of the spiked level.
- the comparability of the results. The evaluation of the comparability is based on the z-score model. The z-score should be at least ≤ |2|.

Summary of the results:

The overall result of this method ring test is “very good”.

From a total of 264 results (11 laboratories / 2 test materials / 12 results each) the laboratories reported:

- 245 correct results related to the trueness criteria (**93%**), and
- 262 correct results related to the z-score criteria (**99%**).
- None of the selected pyrethroides seem to be difficult to analyse in wheat flour resp. lettuce.
- The assigned values are always very close to the spiking levels (minimum 82%, maximum 96%). The robust standard deviations derived from the results of the participants are always below the expected target standard deviations. For details see tables 8 (wheat flour) and 15 (lettuce).
- The few deviations of results are randomly distributed.

Performance of the laboratories with respect to the matrix **wheat flour**:

Pesticide	spiked level [µg/kg]	assigned value [µg/kg]	assigned value in % of spike	total number of results	Correctly quantified z-score	Correctly quantified trueness
Acrinathrin	40	37,0	93	12	12	12
Bifenthrin	25	22,4	90	12	12	12
b-Cyfluthrin	35	30,3	87	12	12	11
l-Cyhalothrin	30	27,9	93	12	12	12
a-Cypermethrin	65	59,8	92	12	12	11
Deltamethrin	45	39,4	88	12	12	10
Fenpropathrin	45	43,2	96	12	12	11
Fluvalinat-tau	90	83,3	93	12	11	11
Permethrin	65	57,0	88	12	12	11
Tefluthrin	55	50,8	92	12	12	11
Tetramethrin	70	66,7	95	12	12	12
Transfluthrin	55	50,5	92	12	12	11

Performance of the laboratories with respect to the matrix **lettuce**:

Pesticide	Spiked level [µg/kg]	assigned value [µg/kg]	assigned value in % of spike	total number of results	Correctly quantified z-score	Correctly quantified trueness
Acrinathrin	40	34,9	87	12	12	12
Bifenthrin	25	23,1	92	12	12	12
b-Cyfluthrin	35	28,7	82	12	12	11
l-Cyhalothrin	30	26,7	89	12	12	12
a-Cypermethrin	65	56,7	87	12	12	11
Deltamethrin	45	39,6	88	12	12	11
Fenpropathrin	45	40,9	91	12	12	11
Fluvalinat-tau	90	85,4	95	12	11	10
Permethrin	65	57,7	89	12	12	11
Tefluthrin	55	52,2	95	12	12	12
Tetramethrin	70	66,3	95	12	12	11
Transfluthrin	55	49,9	91	12	12	10