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Ring test
Polar pesticides, amino alcohols, QACs, and bromide in rice
P2415-RT

Summary

The entire report is available to participants only.

The ring test was designed, realised, evaluated, and authorised on behalf of PROOF-ACS GmbH by

Dr. Birgit Schindler
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Project coordinator

The report was approved by

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Participants with any comments or concerns related to this ring test are invited to contact:

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DAkkS Deutsche Akkreditierungsstelle D-EP-22211-01-00

PROOF-ACS is a DAkkS accredited proficiency testing provider according to DIN EN ISO 17043:2010 (D-EP-22211-01-00). This ring test is covered by the scope of accreditation.

PROOF-ACS GmbH does not have any analytical laboratory facilities of its own. Homogeneity testing and stability testing are subcontracted to laboratories, accredited according to DIN EN ISO 17025. The subcontracted laboratory may also participate in the ring tests. If so, the laboratory is treated in the same way as other participants and the same rules of confidentiality apply.

The proficiency test evaluates the performances of laboratories with respect to their ability to quantify polar pesticides, amino alcohols, quaternary ammonium compounds, and inorganic bromide in rice. 14 laboratories across six European countries (Belgium, Germany, Italy, Netherlands, Poland, and Spain) took part in the proficiency test.

The proficiency test consists of

- a basic module related to chlorate, perchlorate, glyphosate, AMPA, and phosphonic acid,
- an additional module related to the amino alcohols, morpholine, diethanolamine, and triethanolamine,
- an additional module related to quaternary ammonium compounds (BAC, DDAC),
- an additional module related to inorganic bromide.

The labs were free to order the basic module and any of the additional modules mentioned before.

12 labs reported result related to the basic module, 8 labs ordered the module amino alcohols, 5 labs ordered the module quaternary ammonium compounds (QACs), and 6 labs ordered the module related to inorganic bromide.

A spiked sample of rice flour was provided as test material. The rice flour was spiked with all parameters mentioned in the table below.

All labs kept the term of submission of results and are considered for evaluation.

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 trueness criterion is applied to all parameters.
- 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|. The comparability criterion is applied to all parameters except QACs and bromide.

Results

Parameter	Spiked level [mg/kg]	Assigned value [mg/kg]	Assigned value in % of the spiked level	No. of results	No. of results with a z-score ≤ |2|	No. of results within 70-120 % of the spiked level
Chlorate	0.039	0.0397	102	12	12	10
Perchlorate	0.024	0.0244	102	11	10	10
Glyphosate	0.068	0.0670	99	12	12	12
AMPA	0.032	0.0344	107	12	11	10
Phosphonic acid	0.45	0.520	116	11	11	6
Morpholine	0.095	0.0807	85	7	6	6
Diethanolamine	0.051	0.0647	127	7	6	3
Triethanolamine	0.079	0.0771	98	7	7	6
BAC C-8	0.018	-	-	5	not applicable	4
BAC C-12	0.022	-	-	5	not applicable	4
BAC C-16	0.019	-	-	5	not applicable	2
DDAC C-8	0.018	-	-	5	not applicable	4
DDAC C-10	0.026	-	-	5	not applicable	4
Bromide	12	-	-	6	not applicable	4

To summarise:

- The quantification of the polar pesticides of the basic module is well established in the labs. The overall performance is highly satisfying. The most challenging polar pesticide is phosphonic acid with overestimations by some of the labs.
- The quantification of the amino alcohols morpholine and triethanolamine is satisfying for almost all labs, while the correct quantification of diethanolamine is challenging.
- The labs identified all spiked QACs correctly. No false positive or false negative results are reported. Except for one lab with a systematic error, the labs report reliable and correct results related to QACs.

4 out of 6 labs reported satisfying results related to bromide, while the result of one of the labs seems to be a transcription error (wrong unit) and the result of another lab is significantly too low.