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Ring test
Polar pesticides in quinoa
P2318-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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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 in quinoa. Eight laboratories across five countries (Austria, Germany, Italy, Spain, and Switzerland) took part in the proficiency test.

The proficiency test consists of a basic module with the parameters chlorate, perchlorate, phosphonic acid, glyphosate, and trimesium. Chlormequat and mepiquat as well as paraquat are offered as additional modules. It was up to the laboratories to quantify the full set of all parameters or a selection of it.

Organic quinoa is used for the preparation of the test materials and the blank materials. The whole seeds of the raw material are carefully homogenised in a lab blender. The homogenised seeds are tested for incurred residues thereafter. The raw material contains an incurred residue of phosphonic acid as well as trace levels of perchlorate of about 0.005 mg/kg, while it is free from all other parameters mentioned below.

The unspiked and non-milled quinoa seeds are provided as blank material upon request.

To prepare the test material, the raw material was spiked on the surface of the seeds without milling.
Spiked parameters are

chlorate, perchlorate, glyphosate, trimesium, chlormequt, mepiquat, and paraquat.

The incurred residue of *phosphonic acid* is also part of the ring test.

Seven out of eight labs reported 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 except phosphonic acid (incurred residue).
- 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 chlorate, perchlorate, phosphonic acid, and glyphosate. The comparability criterion is not applicable to trimesium, chlormequat, mepiquat, and paraquat due to the limited number of reported results.

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	0.15	0.136	91	7	7	6
Perchlorate	0.065	0.0660	102	7	7	7
Phosphonic acid	incurred	0.225	-	7	5	Not applicable
Glyphosate	0.037	0.0423	114	7	7	4
Trimesium	0.025	-	-	3	Not applicable	3
Chlormequat chloride	0.045	-	-	5	Not applicable	5
Mepiquat chloride	0.026	-	-	5	Not applicable	5
Paraquat	0.077	-	-	5	Not applicable	3

To summarise:

- Seven labs reported results. The laboratories were free to choose if they report results related to all eight parameters or a selection of it.
- All seven labs reported results related to chlorate, perchlorate, phosphonic acid, and glyphosate. Trimesium, chlormequat, mepiquat, and paraquat are analysed by a lower number of labs only.
- The overall performance of the laboratories is good. The parameters are well established in the labs.
- The most challenging parameters with respect to the trueness criterion are glyphosate and paraquat.