

Ring test
Polar pesticides
in papaya
P2616-RT



Summary

The entire report is available to participants only.

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

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The report is approved by

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PROOF-ACS is a DAkkS accredited proficiency testing provider according to DIN EN ISO/IEC 17043:2023 (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.

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The proficiency test evaluates the performances of laboratories with respect to their ability to quantify polar pesticides and bromide in papaya. 20 laboratories across five countries (Germany, Greece, Italy, Netherlands, and Spain) took part in the proficiency test.

The test material is prepared of organic papaya, which is homogenised in a Robot Coupe R20 V.V.. The unspiked material is provided as blank material upon request. The blank material is tested for incurred residues. Incurred residues are detected of bromide and of TFA (at low levels).

To prepare the test material, the raw material is spiked with

- chlorate, perchlorate, ethephon, and phosphonic acid (basic module),
- morpholine, diethanolamine, and triethanolamine (module 1),
- diquat, and paraquat (module 2),
- the quaternary ammonium compounds BAC C-8, BAC C-10, BAC C-14, BAC C-18, DDAC C-8, DDAC C-10, and DDAC C-12 (module 3),
- difluoroacetic acid, and trifluoroacetic acid (module 4),

and the test material contains incurred residues of bromide (module 5).

The laboratories are free to choose to analyse all parameters within the scope of the test or a selection thereof.

20 labs took part in the test, reported results, and are considered for evaluation. All of them ordered the basic module, 12 labs ordered module 1, 8 labs ordered module 2, 8 labs ordered module 3, 14 labs ordered module 4, and 8 labs ordered module 5.

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 bromide.
- the *comparability* of the results. The evaluation of the comparability is based on the z-score model. The absolute values of z-score should be at least ≤ 2 . The comparability criterion is applied to the basic module, module 1, module 2, DDAC C-10 of module 3, and module 4.

A summary of the results of the participants is provided in the table below.

To summarise:

- The labs are familiar with the analysis of the polar pesticides of the basic module. 10 out of 20 labs reported satisfying results related to all parameters of the basic module.
- 3 out of 9 labs pass both criteria with respect to the three amino alcohols morpholine, diethanolamine, and triethanolamine.
- 6 out of 8 labs pass the comparability criterion and the trueness criterion for diquat and paraquat.
- 4 out of 7 labs quantified all QACs correctly.
- 7 out of 12 labs quantified DFA and TFA correctly with respect to the comparability criterion and the trueness criterion.
- Neither the comparability criterion nor the trueness criterion is applicable for evaluation. The level of bromide in the test material of about 0.3 mg/kg is below the reporting limit of 4 out of 8 labs.

Results:

Parameter	Spiked level [mg/kg]	Assigned value [mg/kg]	Assigned value in % of the spiked level	No. of results	No. of results with z-score ≤ 2	No. of results within 70-120 % of the spiked level
Chlorate	0.055	0.0550	100	18	16	15
Perchlorate	0.036	0.0418	116	19	16	14
Ethephon	0.16	0.151	95	18	18	17
Phosphonic acid	0.075	0.0743	99	18	18	14
Morpholine	0.050	0.0520	104	9	8	7
Diethanolamine	0.073	0.0821	112	9	8	5
Triethanolamine	0.084	0.0782	93	8	7	6
Diquat	0.035	0.0331	95	8	7	7
Paraquat	0.042	0.0418	100	8	7	6
BAC C-8	0.023	-	-	6	not applicable	6
BAC C-10	0.028	-	-	6	not applicable	5
BAC C-14	0.021	-	-	6	not applicable	6
BAC C-18	0.017	-	-	6	not applicable	5
DDAC C-8	0.018	-	-	6	not applicable	6
DDAC C-10	0.022	0.0204	93	7	7	7
DDAC C-12	0.024	-	-	6	not applicable	5
Difluoroacetic acid	0.036	0.0359	100	12	10	9
Trifluoroacetic acid	0.24	0.267	111	10	10	8
Bromide (inorg.)	incurred	-	-	8	not applicable	not applicable