

Reference Material of
rolling proof 2025
Multi-method pesticides in banana

P2521-RMBa



Summary

Reference material P2521-RMBa is validated in the ring test P2521-RT. P2521-RT is part of the on-going scheme **rolling proof**. P2521-RT is organised, performed, and evaluated according to the requirements of DIN EN ISO/IEC 17043 and the “International Harmonized Protocol”. ISO 13528 is considered during the evaluation of the submitted results and during homogeneity testing. Details related to the applied statistics are summarised in the full specification, which is provided after purchase of the reference material.

Reference material P2521-RMBa consists of 120 g homogenised banana pulp, which is spiked with 33 pesticides, covered by common pesticide multi-residue methods. 31 pesticides are included in the specification (see table 1). Carbosulfan and thiodicarb are not included. Degradation was observed from carbosulfan to carbofuran, while thiodicarb was not detected in the material at levels > 0.01 mg/kg. Only the degradation product methomyl was detectable in traces.

The corresponding unspiked homogenate of banana pulp (120 g) is available as blank material P2521-BLBa. The blank material is free from pesticides covered by common pesticide multi-residue methods at levels > 0.01 mg/kg.

The reference material is validated in ring test P2521-RT with 11 laboratories. The spiked levels as well as the assigned values, which are calculated of the results of the participants of the ring test P2521-RT, are summarised in table 1. The accepted ranges are provided with respect to the comparability criterion ($|z\text{-scores}| \leq 2$) and the trueness criterion (70 to 120 % recovery of the spiked level).

Table 1. Spiked levels and assigned values

Parameter	Spiked level [mg/kg]	Assigned value [mg/kg]	Total number of results
Azoxystrobin	0.069	0.0705	11
Bifenox	0.035	0.0327	11
Bifenthrin	0.14	0.127	11
Chlorpyrifos-methyl	0.059	0.0583	11
Dicrotophos	0.12	0.113	11
Disulfoton (sum)	0.066	0.0644	10
Diuron	0.047	0.0477	10
EPN	0.023	0.0220	11
Ethoprophos	0.037	0.0360	11
Fenprovidin	0.16	0.148	11
Fenpropi-morph	0.031	0.0306	11
Fluquinconazole	0.077	0.0764	11
Hexaflumuron	0.022	0.0222	10
Imazalil	0.27	0.238	11
Imidacloprid	0.055	0.0531	11
Metazachlor	0.059	0.0583	11
Myclobutanil	0.13	0.123	11
Phorate	0.024	0.0221	10
Pirimiphos-methyl	0.036	0.0357	11
Propachlor	0.060	0.0588	11
Propoxur	0.014	0.0139	11
Prothiofos	0.037	0.0365	11
Pyriproxyfen	0.26	0.244	11
Quinalphos	0.041	0.0365	11
Spirotetramat (sum)	0.23	0.240	11
Tebuconazole	0.099	0.0948	11
Tetramethrin	0.032	0.0321	11
Thiabendazole	0.19	0.161	11
Triadimefon	0.022	0.0228	11
Triazophos	0.073	0.0677	11
Triflumizole	0.037	0.0364	11