

EUROPEAN ROUND ROBIN STUDY FOR GLYPHOSATE RESIDUES IN SURFACE WATER AND GROUND WATER

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PURPOSE

The purpose of the round robin test was to assess the capabilities of analytical laboratories to determine residues of Glyphosate and AMPA in water of natural origin. Monsanto selected laboratories that were experienced in the analysis of Glyphosate and AMPA residues in ground and surface water. The labs were asked to use their appropriate analytical method.

PERFORMANCE

SGS INSTITUT FRESENIUS provided the surface and ground water samples, prepared the fortified samples for the round robin test, delivered the samples deep-frozen and checked the homogeneity and stability of the samples.

The analytical methods used in the round robin test can be roughly divided into the following groups (methods) – see Table 1.

RESULTS

1. The data gained during this study represent a reliable basis for the statistical evaluation.

2. Based on the results, some laboratories can be identified which need to improve the methods for routinely analysing Glyphosate and AMPA in surface and ground water.

3. All methods investigated are applicable for the analysis of

Glyphosate and AMPA in Surface water. However, only one type of method (type 1) was applicable for analysing Glyphosate in ground water used in this round robin study. 5 of 6 labs, which used this kind of method, were able to recover to a reasonable extent Glyphosate in the ground water (see Figure 1).

4. Glyphosate and AMPA were adequately detected by all detectors;

CONCLUSION

Only one type of method (ion-exchange clean-up combined with GC/MS or HPLC) was suitable for analysis of Glyphosate and AMPA in the selected water specimens. The results of the round robin test are comparable to the results of other studies regarding the uncertainty and the overall recovery for Glyphosate and AMPA (56 to 82 %). No false positive results were found.

ORGANISATION

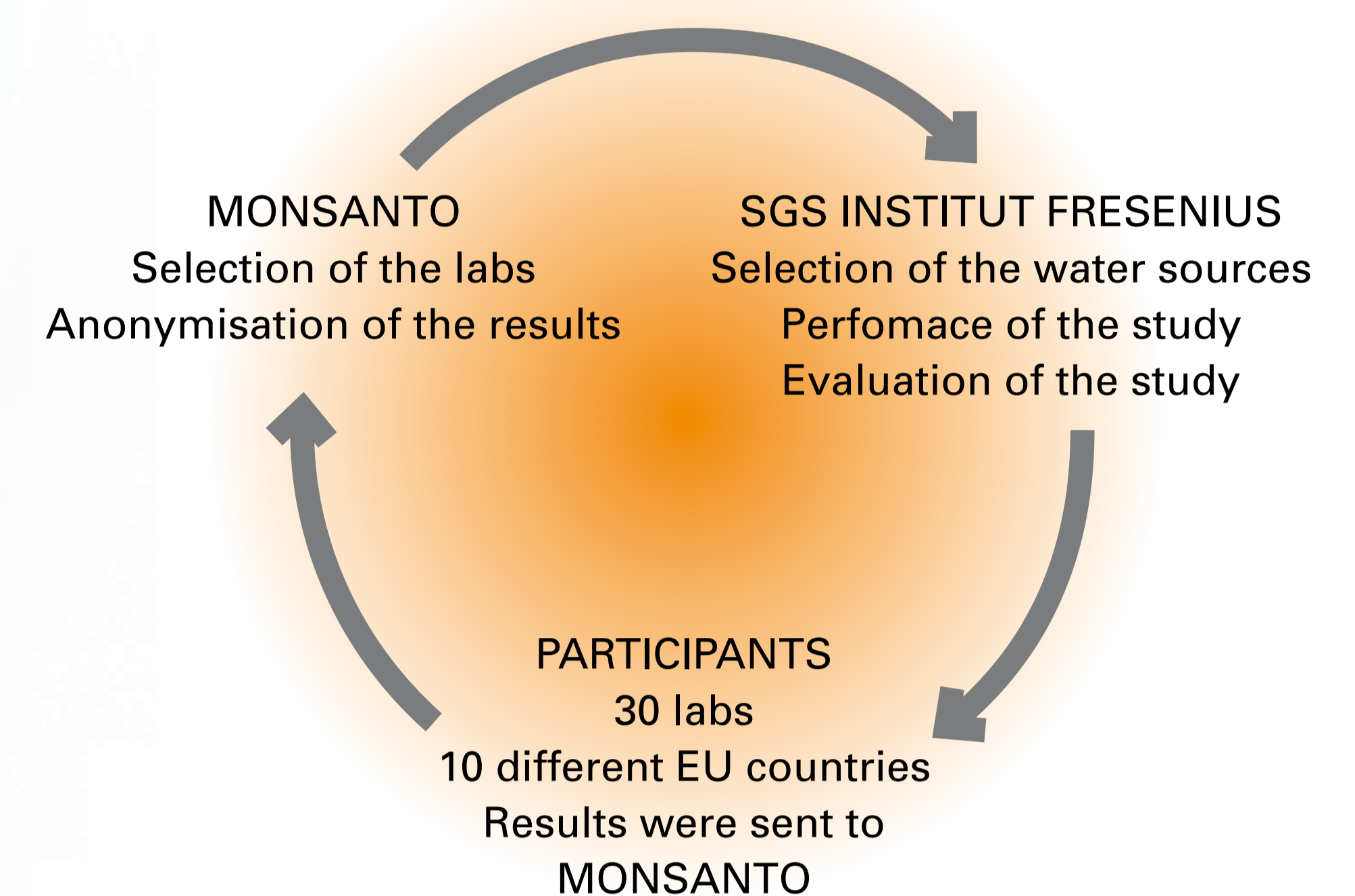


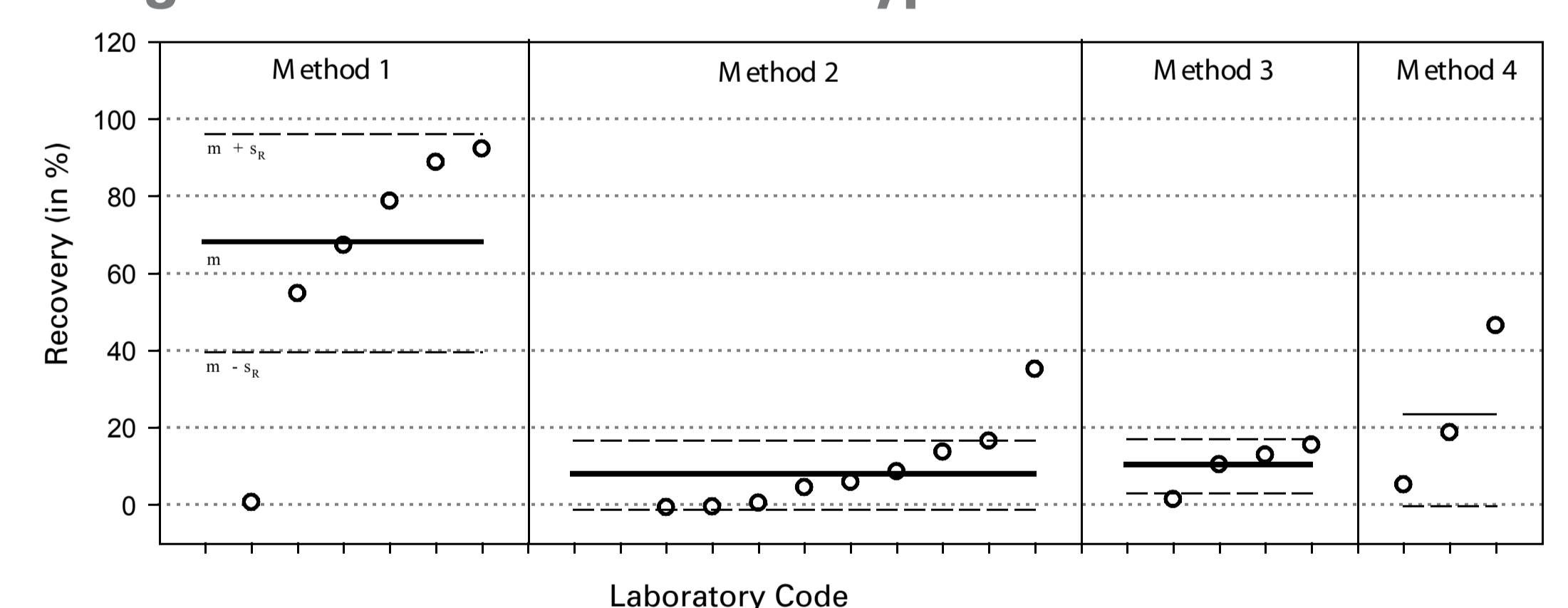
Table 1 : Different types of methods used in the study

No of Method Type	Clean-up	Measurement
1	Ion-exchange clean-up	GC/MS; HPLC (OPA)
2	Generally no clean-up	FMOCCI fluorescence
3	Generally no clean-up	FMOCCI LC-MS, LC-MS/MS
4	No Ion-exchange clean-up	GC/MS; HPLC (OPA)

OPA: o-phthalaldehyde, FMOCCI: (9-Fluorenylmethyl) chloroformate

this is a hint that the problems faced with the analysis of Glyphosate in ground water might be due to the work-up of the samples.

Figure 1: Ground Water Glyphosate



Recoveries for glyphosate in ground water, depending of the different method types.