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Overview

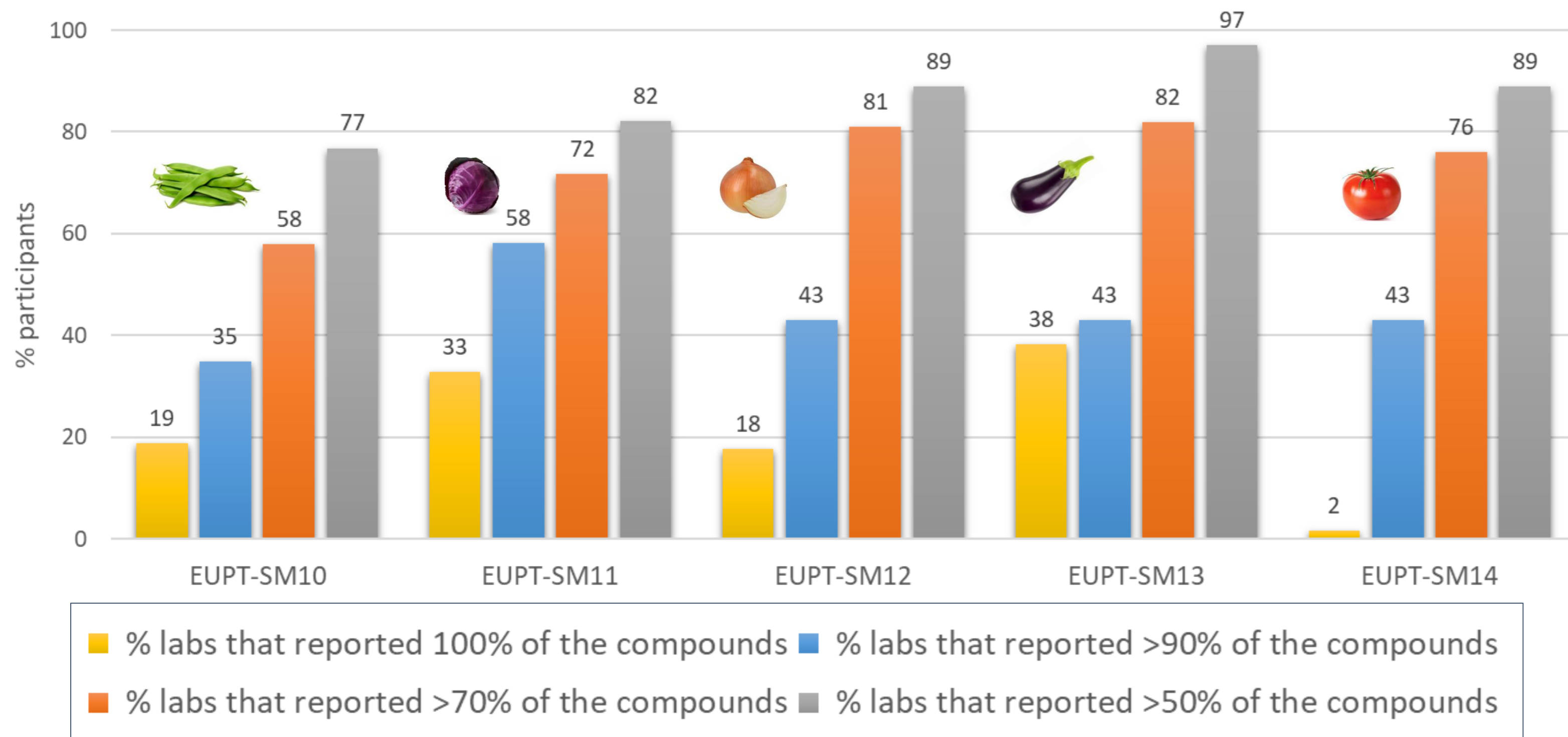
Screening methods provide additional value to the qualitative and quantitative multiresidue techniques used in routine analysis by increasing the analytical scope. For the past 15 years, the EURL-FV has been carrying out an ongoing evaluation of screening methods to support European official laboratories to offer them the possibility to demonstrate their reliability through participation in European proficiency tests (EPTs). Every year, around seventy laboratories from the European Union, the European Free Trade Association (EFTA), and the rest of the world have participated in these tests.

One of the peculiarities of these screening PTs is that they do not include a target list of compounds, so any compound can be present in the test item. A second characteristic is that laboratories must submit their results within 72 hours. Laboratories have to submit qualitative results, but they are also encouraged to report concentrations if they wish.

This poster presents the main results of the last 5 years of EPTs-SM, in terms of participation, performance of the laboratories and specific examples of interest.

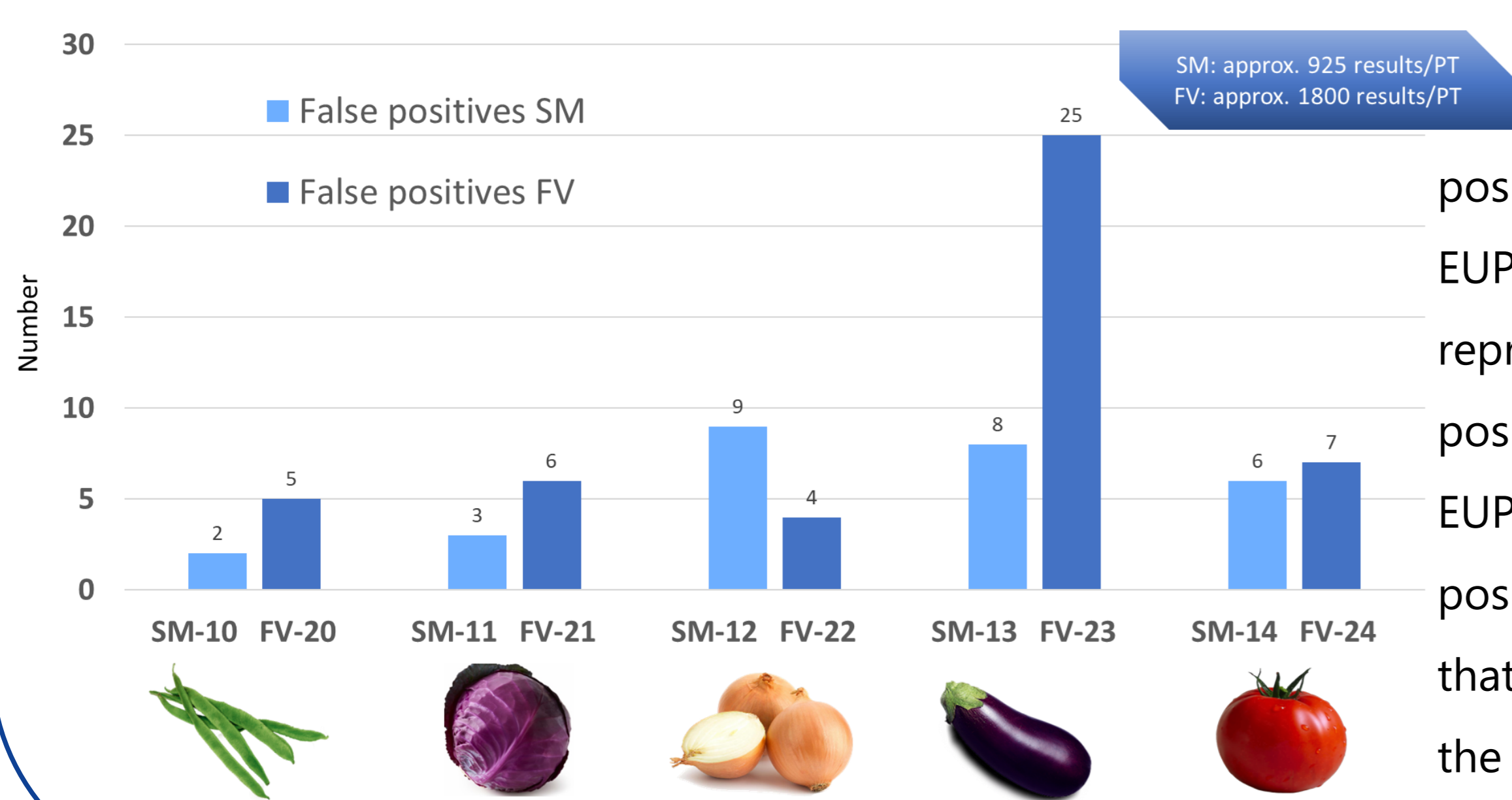
Performance

Performance of the EPT-SM participants



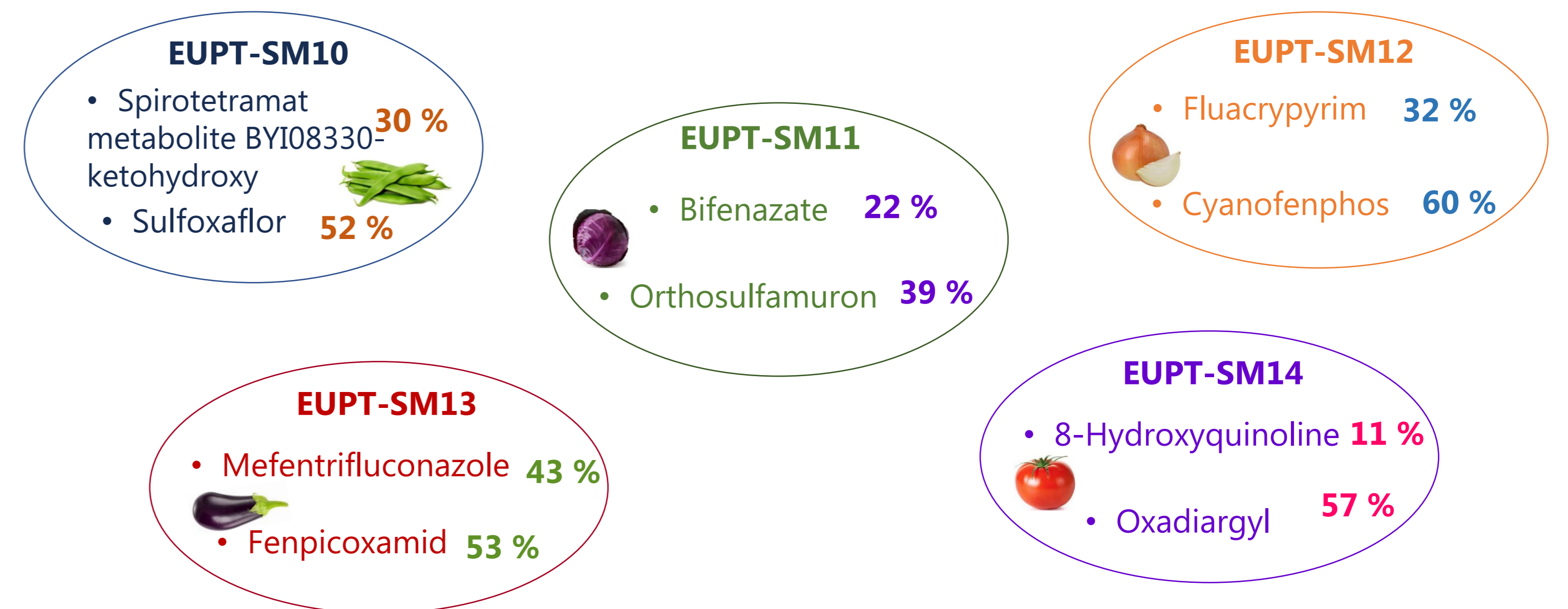
The overall performance of the EPT-SM participants in the last five years is presented in the above figure. On average, around 20 % of the labs were able to detect all the compounds evaluated (yellow bar). However, in some rounds (EPT-SM14, tomato), only 2 % of the participants detected 100% of the pesticides. The figure clearly shows how the percentage of laboratories that are able to detect 70% of the compounds (orange bars) increases over the years from 58 % to about 80 %. This shows the global improvement of the participating laboratories.

False positive rate of "good labs"



In EPTs-SM, the rate of false positives is similar to that of the EPTs-FV exercises. This figure represents the number of false positive results of EPTs-SM vs EPTs-FV, but considering only false positives reported by "good labs", that is, those that reported >70 % of the compounds in SM, or had a combined z score $AZ^2 < 2,0$.

Less detected compounds



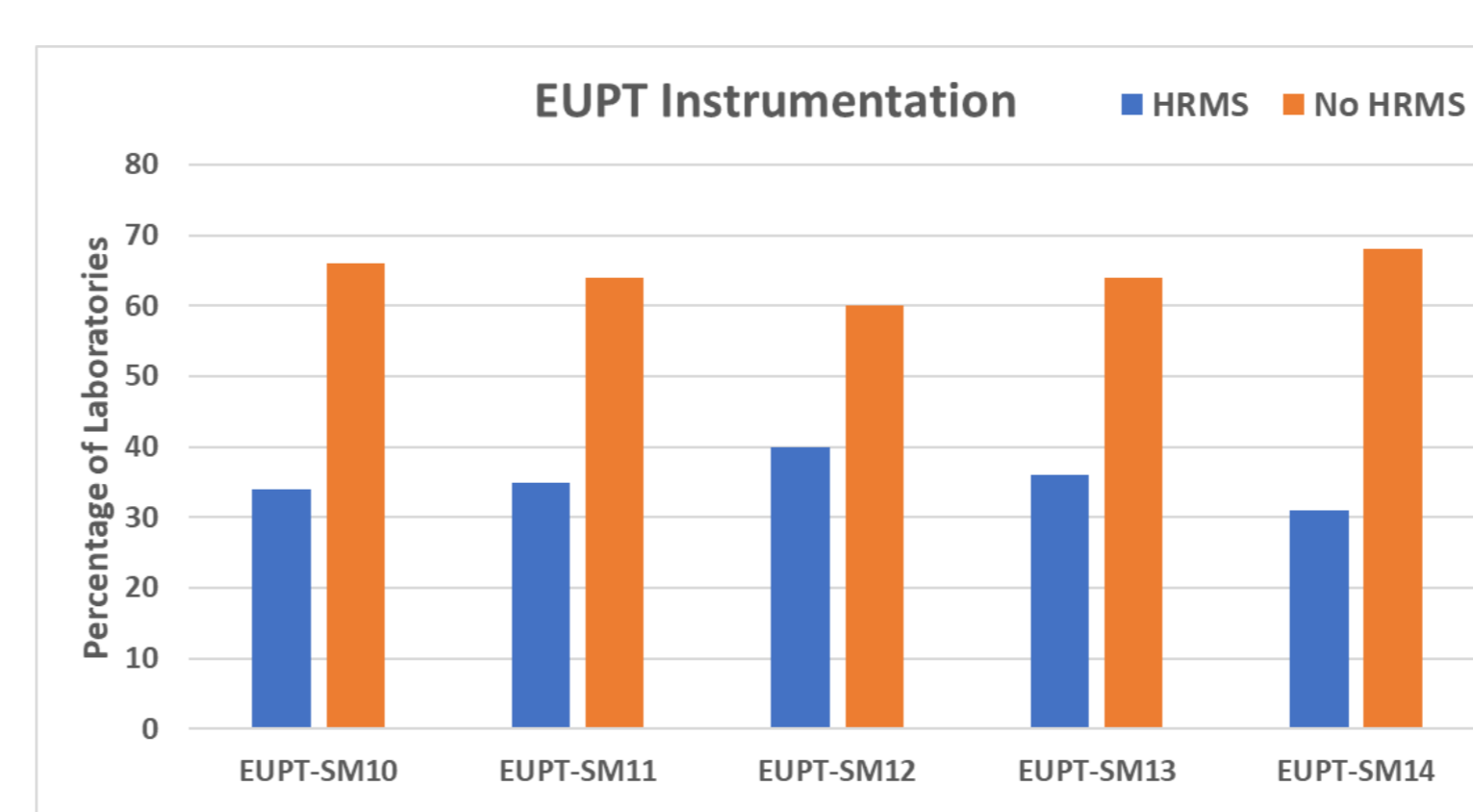
These were the two least detected compounds in each EPT-SM over the last five years. Altogether, the least detected compounds in the five rounds evaluated were 8-hydroxyquinoline, which was reported by only 11 % of the participants, and bifenazate, reported by 22 % of the laboratories.

Improvement of the labs over the years

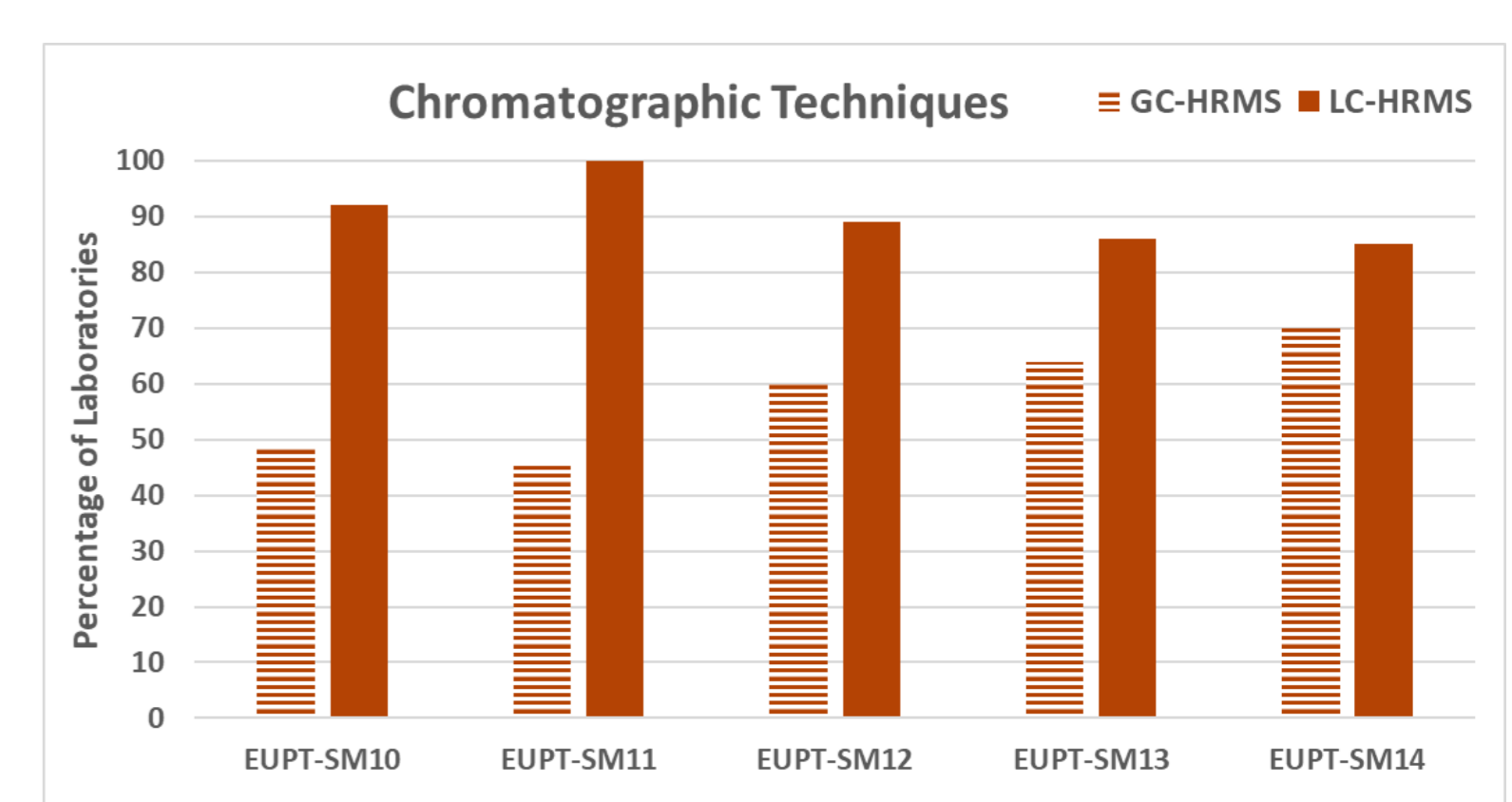
Pesticide	EPT	% labs that detected that compound
Fenpyrazamine	SM10	67 %
	SM11	78 %
Isoprothiolane	SM11	87 %
	SM13	97 %
Mefentrifluconazole	SM13	43 %
	SM14	65 %
Penflufen	SM10	57 %
	SM14	73 %
Penthiopyrad	SM10	74 %
	SM11	76 %
Sulfoxaflor	SM13	92 %
	SM10	52 %
	SM13	87 %

The inclusion of unusual pesticides in proficiency tests implies that some laboratories are not able to detect them. However, as can be seen in the table, when the same compound is repeated in subsequent years, the percentage of laboratories detecting that compound increases.

Instrumentation



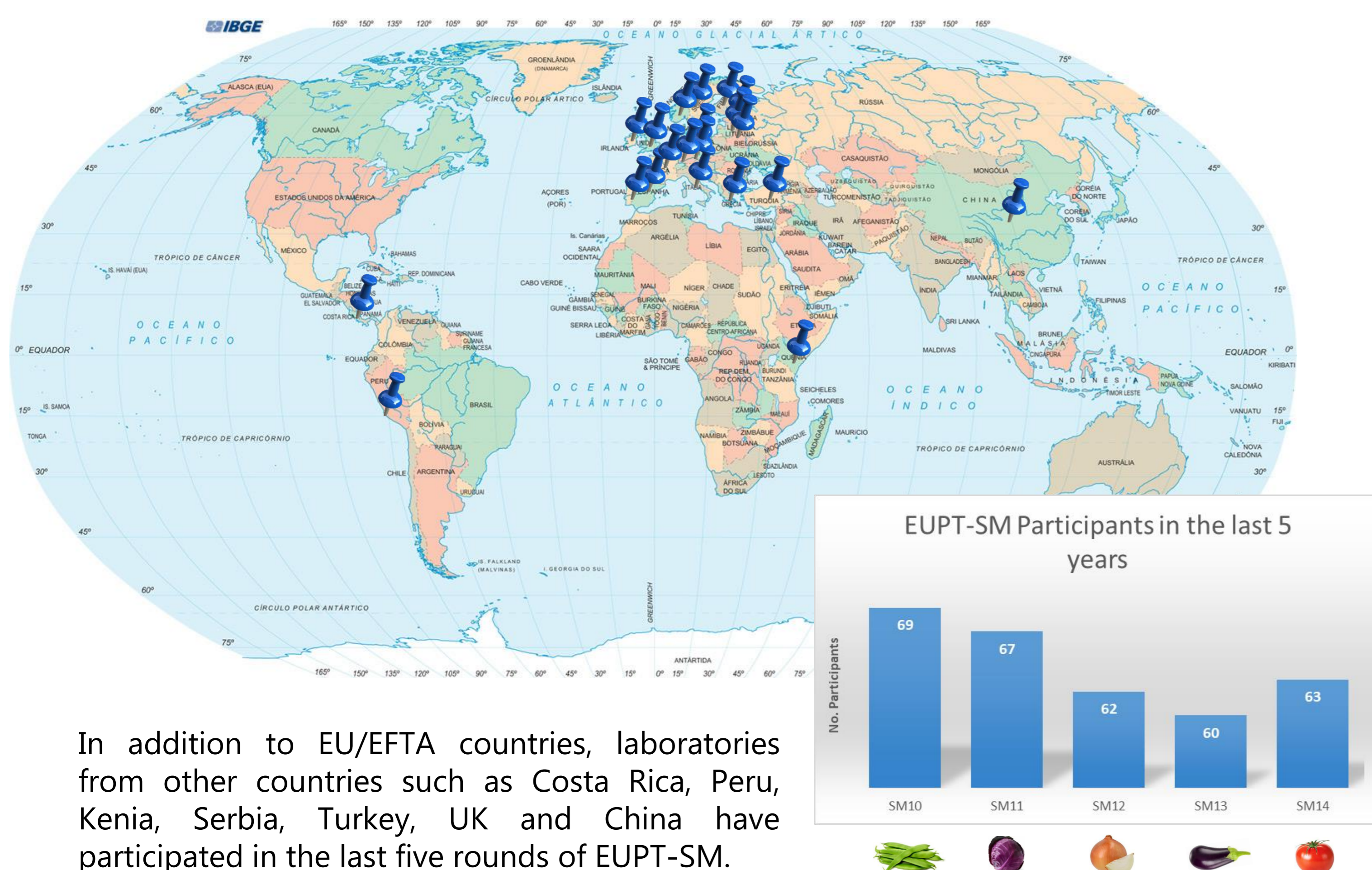
EPT methods used by the participants classified in HRMS analysis and non-HRMS.



Classification of chromatographic techniques in GC-HRMS or LC-HRMS reported by the participating laboratories for the analysis of the EPT-SM samples.

Conclusions

- The EU proficiency tests based on screening methods are an important quality control tool, and additionally, they allow the laboratories test their own analytical scopes.
- One third approximately of the participants use high resolution mass spectrometry techniques.
- Repeated participation in this type of proficiency tests shows that laboratories improve their results, especially in those cases when the same compound is used repeatedly in different rounds.



In addition to EU/EFTA countries, laboratories from other countries such as Costa Rica, Peru, Kenya, Serbia, Turkey, UK and China have participated in the last five rounds of EPT-SM.