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Overview of Generalized PPPs' Application Patterns from regional to EU level

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1. Overview and highlights of the Deliverable Report D5.2

Within the goals of the SPRINT Toolbox (Milestone 7 – M7)¹ and of WP5 of the SPRINT project, it was planned to estimate the inputs (emissions) into the European environment for the active substances (a.s.) of Plant Protection Products (PPP). The first appraisal related to the specific PPP data needed for these estimations was presented in Milestone 8 (M8)². As presented in M8, among the major data that are used for the SPRINT Toolbox estimations and predictions are:

- Data inputs from the national PPP-registers – national data on registered PPP (i.e., authorized according to EC Regulation 1107/2009) – defining application patterns for each a.s.: crop, pest, application rate, frequency, and time.
- The general EU list of the approved and non-approved active substances (a.s.) as the most comprehensive database of pesticides' properties.
- The annual usages of the a.s. for specific crops for the countries of smaller regions (e.g., NUTS3).
- Geographically referenced data on the specific crop occurrences at sufficient resolution (field) for each year.
- Pesticide properties and other necessary data.

In this Report, the **Generalised Application Patterns (GenAP)** of authorized PPP were estimated following a thorough search and analysis of authorization data from the PPP-registers of European countries. **Generalized Application Patterns are the tables/databases containing all possible authorized uses (crop specific application rates, time, and number of applications per year) of active substances in the country.**

Results are exemplified for four Member States of the European Union (EU MSs) selected based on specific criteria and approach. Because the selected countries represent all three PPP authorization zones and within the zones the portfolio of PPP is usually very similar, the GenAP might represent the typical situation on PPP in EU.

PPP data (national PPP-registers) are the most challenging data to collect and harmonize. An overview of these data in European countries and their parameters (metadata) were described in Chapter 2 of M8. In D5.2 it was presented how to explore in more detail the resolute data of the national PPP-registers of the 27 EU MSs. For four data-rich EU MSs (Czechia, Austria, Portugal, and Estonia) the structure, content, and properties of these data were explored to represent the central, northern, and southern zones of Europe (**Figure 1c** of the report). The Czech PPP-register was considered as a reference model (prototype), and it was translated to the data warehouse (DWH) enabling flexible

¹ Hofman et al. 2021. Structure, functionality, data inputs and outputs of the Toolbox. Report of Milestone 7, Work Package 5, SPRINT Project.

² Hofman et al. 2022. Database of relevant European data for upscaling – collected and harmonized database. Report of Milestone 8, Work Package 5, SPRINT Project.



analysis by SQL scripts. A similar strategy was followed for the other three data-rich EU MSs as was described in the chapters of the report.

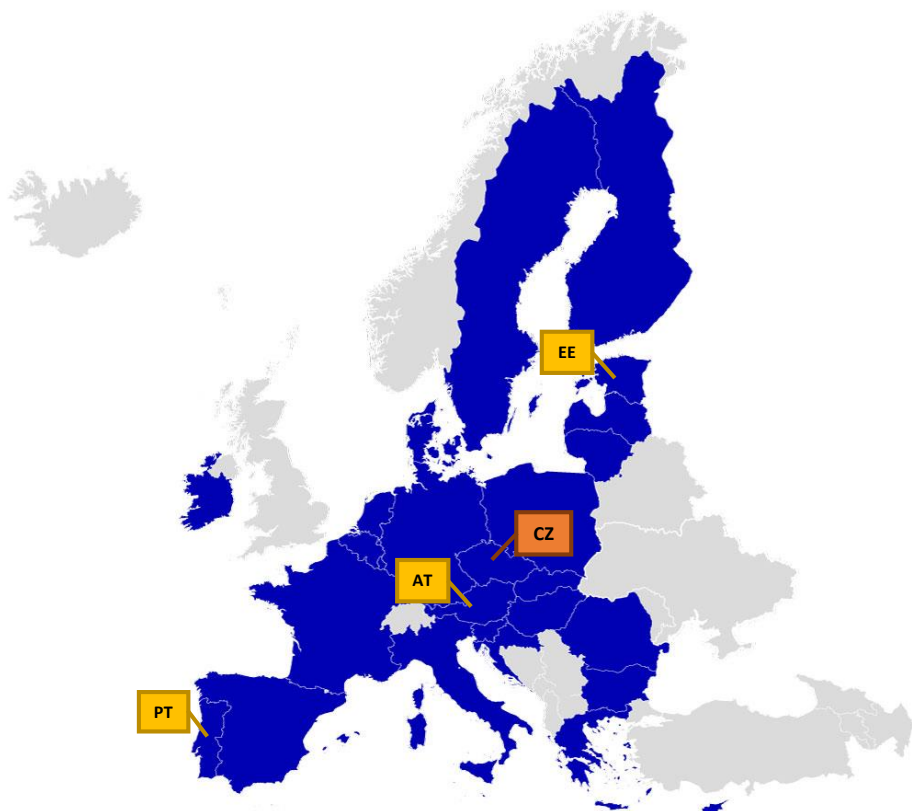


Figure 1c. Selected EU Member States for PPP Generalized Application Patterns. Czech Republic (CZ) is marked with red colors to indicate that CZ is the reference model (**prototype**) in the study design of Generalized Application Patterns of PPP.

The compilation of databases was achieved through contacts with the national authorities on data-structure reorganization, clarifications on methods of data collection or estimates, provision of information not available online, and unfolding data aggregation into comprehensive datasets. The followed strategy was described regarding analyzing the quality and types of data, its retrieval, and processing, explaining also filtering and selections, that were applied during the process. The potential and power, the faced challenges and limitations, and implications for a short- and long-term utilization of data and tools are discussed.

It is clearly demonstrated that the tools (e.g., SQL) pose very high predictive value regarding the PPP strategies and decisions.



2. List of the generalized GenAPP-output documentation

Nr	Title	Description
1	Gen_APP_PATT CZ (Output of GenAP for Czech Republic (CZ))	The results of the extracted generalised application patterns for the Czech Republic (CZ) as document of Excel format.
2	Gen_APP_PATT AT (Output of GenAP for Austria (AT))	The results of the extracted generalised application patterns for Austria (AT) as document of Excel format.
3	Gen_APP_PATT PT (Output of GenAP for Portugal (PT))	The results of the extracted generalised application patterns for Portugal (PT) as document of Excel format.
4	Gen_APP_PATT EE (Output of GenAP for Estonia (EE))	The results of the extracted generalised application patterns for Estonia (EE) as document of Excel format.



3. Acknowledgements

Table of Acknowledgements per EU MS listing the Institutions/Organisations that retrieved/shared open data and provided valuable clarifications to the repositories of the national PPP-registers for the selected four EU MSs of the current research presented in this Report.

Nr.	EU MS	EU regulatory zone	Institution/Organization	Contribution type
1	Estonia	North	PTA Plant Protection and Fertilisers Department Agriculture and Food Board www.pta.agri.ee	Data provision and links; clarifications
2	Czech Republic	Central	EAGRI Ministry of Agriculture of the Czech Republic https://eagri.cz/public/web/mze/ UKZUZ Central Institute of Supervising and Testing in Agriculture https://eagri.cz/public/web/en/ukzuz/portal/	Database provision and links; clarifications; changes in the XML export
3	Austria	Central	Department for Plant Protection Products Authorization Institute for Plant Protection Products Division for Food Security AGES - Austrian Agency for Health and Food Safety www.ages.at	Database provision; clarifications
4	Portugal	South	DGAV Direção-Geral de Alimentação e Veterinária Plant Protection Products Management and Authorization Unit Directorate for Health Protection Means https://www.dgav.pt/	Data links and clarifications



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