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Version 1

Converting interview-based crop field histories into synthetic "cultivation practices" variables using R V.1

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Protocol status: Working

We use this protocol and it's working

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Keywords: Cultivation practices, Agricultural practices, crop field, fertilization, tillage, pesticides, cultivated diversity, rotation, harvested crop, cover crop, variables, indicators, Rmarkdown, automated, interview, belgium, based crop field history, crop field history, year cultivation history of crop field, farmer interviews in an excel file, year cultivation history, agricultural operation, crop during that period, cultivation practice, farmer interview, crop, years of data, converting interview, reference data, history, automated method

Abstract

This protocol proposes an automated method for converting ten years of data on agricultural operations in a crop field into a series of variables that synthesize the cultivation practices applied to the crop during that period.

The two attached files allow you to (i) store the ten-year cultivation history of crop fields collected from farmer interviews in an Excel file and (ii) automatically synthesize these histories into a series of "cultivation practices" variables using an RMarkdown script. Although the files were designed for the Belgian context of 2023, they can be adapted for other countries and years by modifying the reference data.

Attachments



[Cultivation_Practice...](#)

35KB



[AgriculturalOperatio...](#)

581KB

Materials

- Paper timeline for recording agricultural operations during farmer interviews: one paper sheet per year, with a table showing months as columns and types of operations (harvested crops, cover crops, fertilization, pesticides, soil tillage) as rows.
- The excel file "AgriculturalOperations.xlsx", for encoding data from the paper timeline.
- The Rmarkdown file "Cultivation_Practices_IndicatorCalculation.Rmd", for automatically synthesizing the data from the Excel file into a series of "Cultivation practices" variables.



Safety warnings

- ❗ The files were originally designed for the Belgian agricultural context of 2023, so **reference data** (like fertilizer compositions and authorized pesticide doses) **must be adapted** if the method is used in another context.

Ethics statement

This protocol was originally developed for use in Belgium, where it does not require formal IRB approval, as it involves no personal or sensitive data collection. It consists of retrospective interviews with farmers about crop management practices applied to specific fields over the past ten years.

Before applying this protocol, ensure that:

- Only technical information about field management is collected (e.g., crop types, sowing dates, tillage operations).
- No personal identifiers or sensitive data (e.g., names, addresses, financial information) are recorded.
- Participants are clearly informed of the purpose of the study and give their explicit, informed, and voluntary consent.
- Interview data is stored and processed in compliance with the General Data Protection Regulation (GDPR) if used within the European Union.
- Approval or consultation with your institution's ethics board or data protection officer is obtained, if required.

Before start

Precise guidelines are detailed in the "Data description" sheet of the Excel file "AgriculturalOperations.xlsx". **Read it completely before beginning interviews.**



General steps

- 1 Collect all the agricultural operations that happened in a crop field over the last ten years during a directed interview with the farmer cultivating it.
- 2 Encode these operations in the excel file "AgriculturalOperations.xlsx".
- 3 Run the Rmarkdown file "Cultivation_Practices_IndicatorCalculation.Rmd" to turn these operations into a series of "Cultivation practices" variables.

Acknowledgements

We would like to thank the master students who tested the early versions of this protocol for their master theses, and the 20 Belgian farmers who provided access to the cultivation histories of 60 crop fields to test this protocol between 2020 and 2023.

We also thank Manon Ferdinand (SYTRA research team, UCLouvain), who participated in the design of several "cultivation practice" indicators.