

Version 5 – October 2021

Installation

Farmscoper v5 does not require installation. It is a series of Microsoft Excel workbooks and an Access database that can be located anywhere on the user's computer.

An icon is **not** created in the Windows Start Menu or included on the desktop.

The tool consists of four workbooks:

- 1 FARMSCOPERS5_Create**
This workbook is used to create a farm and generate the pollutant losses occurring on that farm.
- 2 FARMSCOPERS5_Evaluate**
This workbook is used to select the mitigation methods to implement and to determine their costs and impacts. A Create workbook must first be loaded into this workbook.
- 3 FARMSCOPERS5_Cost**
This workbook is used to create the cost data used within Farmscoper Evaluate. It details many of the assumptions about the mitigation method. It also functions as a standalone tool for the assessment of mitigation method cost.
- 4 FARMSCOPERS5_Upscale**
This workbook is used to generate multiple Farmscoper Creates and pass them through Farmscoper Evaluate, such that pollutant losses and mitigation impacts can be investigated for a whole catchment. Three separate copies of Upscale contain the data for: i) England, River Basin Districts, Management Catchments and Operational Catchments; ii) Water Framework directive waterbodies and iii) Natura 2000 sites with Diffuse Water Pollution Plans.

Detailed help is available within each of these workbooks. This is contained within a Help worksheet and can be easily accessed from the relevant sections of the tool by using the information icon. 

Macros must be enabled for the workbooks to function. Information on macros and how to enable them can be found in the Excel help system.

The workbooks may be stored in or copied to any folder, but a copy of the Farmscoper Database (FARMSCOPERS5_Database.mdb) must be included in any folder containing Farmscoper Create workbooks. The Farmscoper Evaluate workbook will only function on the machine on which the installation took place.

Multiple copies of each of the workbooks may be created. Each workbook should be renamed to aid identification of the farm or mitigation scenario they represent.

Quick Start Guide

This is a brief introduction to the Farmscoper tool and highlights the basic features available. For more information, see the help sections contained within each workbook.

- The steps within solid boxes are essential to the use of Farmscoper.
- The steps within dashed boxes are optional.
- [] The brackets refer to the relevant worksheets in the Farmscoper workbooks.

FARMSCOPER Create

1. Open "FARMSCOPER5_Create.xls"
2. [Control] Select Rainfall Zone
3. [Control] Select Soil Type
4. [Control] Select Drain Status
5. [Control] Select Farm Type

This determines the pollutant loads for the specified farm type and environment.

6. [Control] Click "Customise Farm"
7. [Farm] Edit livestock numbers, cropping and manure management
8. [Farm] Click "Build Farm"

This then determines the pollutants loads for the customised farm, with the environment as selected on [Control].

9. [Control] Click "Load Cost Data"

Browse to a copy of the FARMSCOPER_Cost.xls file. This updates the cost data for livestock and cropping for the time period selected in the cost file. Note that this is only required if changes have been made to the Cost workbook.

10. [Control] Click "Select Production System"
11. [Economics] Edit livestock system properties and percentage of land used to produce feed used on farm
12. [Farm] Click "Build Farm"

This updates the production values for the farm

13. [Control] Click "Set Field Operations"
14. [Field Operations] Edit the number of field operations and harvest properties for the different crop type
15. [Farm] Click "Build Farm"

This updates the energy use values for the farm

16. [Report] View a printable report
17. [Report] Click “Expand or compact report”

This shows the pollutant losses and information on the cropping and livestock for the farm.

18. Use the standard Excel Save As feature to save the file with a different name e.g. “FS5_CreateMyDairyFarm.xls”

There are additional features in FARMSOPER_Create to aid visualisation of the created farm and to investigate the drainage, pollutant losses and other outcomes predicted.

FARMSOPER Evaluate

1. Open “FARMSOPER5_Evaluate.xls”
2. [Control] Click “Load Data”

Browse to your modified copy of the FARMSOPER_Create.xls file. This loads the pollutant data and other information into this file.

3. [Control] Click “Load Cost Data”

Browse to a copy of the FARMSOPER_Cost.xls file. This updates the mitigation method cost data for the period selected in the cost file. Note that this is only required if changes have been made to the Cost workbook.

4. [Control] Click “Select Method Settings”
5. [Method Settings] Select pollutants or management types of interest.

This will select a range of appropriate mitigation methods to be investigated.

6. [Method Settings] Tick the box to reflect the prior uptake of mitigation methods.

This will set the current uptake of mitigation, based upon national survey data.

7. [Control] Click “Select Method List”

8. [Method List] Enables the fine tuning of the mitigation methods selected and the levels of prior method uptake

THEN EITHER

9. [Control] Click “Evaluate Methods Individually”

This determines the individual impact of each of the mitigation methods selected

10. [Graphs] View the results to quickly see the range of pollutant reductions
11. [Output] Look at the data

12. [Output] Filter the results for desired costs and pollutant reductions
13. [Output] Select cells with results of interest
14. [Output] Click “Create Report”
15. [Report] View a printable report

16. Use the standard Excel Save As feature to save the file with a different name e.g. “FS5_EvaluateMyDairyFarmIndividual.xls”

OR

17. [Control] Click “Evaluate Methods Together”

This determines the individual impact of all mitigation methods when applied together

18. [Output] View the percentage reductions for the different pollutants and costs of implementation

19. [Output] Click “Create Report”

20. [Report] View a printable report

21. Use the standard Excel Save As feature to save the file with a different name e.g. “FS5_EvaluateMyDairyFarmTogether.xls”

There are additional features in FARMSCOPER_Evaluate on the [Method List] sheet to allow for greater specification of the methods chosen such as maximum levels of implementation and which method to implement where they cannot be implemented at the same time. The Evaluate worksheet also allows for the optimisation of method selection. This produces a list of scenarios which contain the optimal combination of methods at a certain cost.

FARMSCOPER Cost

The FARMSCOPER_Cost workbook is designed to determine the cost coefficient data required for the mitigation methods contained within Farmscoper Evaluate. It can also act as a standalone tool to determine the total cost of method implementation. The Cost workbook contains a list of ‘unit cost’ data for multiple years – the user is able to select which of these years is to be used for the cost assessment. The Cost workbook also contains a worksheet for every mitigation method, which details all the assumptions made in order to calculate the cost of implementation, as well as the unit costs required for that calculation. To view the detail for any mitigation method, the user needs to know the numerical method ID from Farmscoper Evaluate – they can then browse to that worksheet within the Cost workbook, or use the selection feature available on the [Control] worksheet.

FARMSCOPER Upscale

1. Open "FARMSCOPER5_Upscale.xls"
2. [Control] Click "Set Working Folder"

This specifies where the output files from using Farmscoper Upscale will be saved.

3. [Control] Click "Set Location of Farmscoper Create"

This specifies the Farmscoper Create file that will be used to generate the farms. The values in this file on [Field operations] and [Economics] will be used for all farms.

4. [Control] Click "Set Location of Farmscoper Evaluate"

This specifies the Farmscoper Evaluate file that will be used for the assessment of mitigation methods. The active methods in this file on [Method List] will be applied to all farms, and if "Use Prior Implementation" is selected on [Method Settings] the appropriate values will be selected for each farm.

THEN EITHER

5. [Control] Click "Show Farm Type Names"
6. [Farm Names] Select which farm types to use
7. [Control] Click "View / Edit Census Data"
8. [Census Data] Select which catchments or areas to use

9. [Control] Ensure "Show Farm Practice Worksheets" is selected
10. [Manure] Edit the manure management preferences
11. [Fertiliser] Edit the fertiliser and pesticide application rates
12. [Weightings] Edit the weightings used to allocate the agricultural census data to different farm types

13. [Control] Click "View / Edit Census Data"
14. [Census Data] Edit the agricultural census data for the catchments
15. [Control] Click "View / Edit Location Data"
16. [Census Data] Edit the farm counts and locations
17. [Control] Click "Run from Census Data"

This runs the Create part of Farmscoper Upscale. Up to 10 farm types are generated for each catchment and then passed to the designated copy of Farmscoper Create for every permutation of soil, climate and NVZ as found in [Locations]. Multiple copies of Farmscoper Create are saved in the designated working folder.

18. [Output Create] View tabulated summary results for the catchment(s) from the multiple copies of Farmscoper Create.
19. [Create Graph] View apportionment and load graphs for the catchment(s) from the multiple copies of Farmscoper Create.

OR

20. [Control] Click “View / Edit Custom Data”
21. [Farm Results] Enter livestock, cropping and manure management values for up to 10 different farm types, along with the number of farms per climate and soil zone.

Note that it is possible to use the results from the last catchment as a template if “Run from Census Data” has been used.

22. [Control] Click “Run from Custom Data”

This runs the Create part of Farmscoper Upscale. The farm types are passed to the designated copy of Farmscoper Create for every permutation of soil, climate and NVZ specified. Multiple copies of Farmscoper Create are saved in the designated working folder.

23. [Output Create] View tabulated summary results for the catchment from the multiple copies of Farmscoper Create.
24. [Create Graph] View apportionment and load graphs for the catchment from the multiple copies of Farmscoper Create.

THEN

25. Use the standard Excel Save As feature to save the file with a different name e.g. “FS5_MyCatchmentCreate.xls”.
26. [Control] Click either “Evaluate Methods Together” or “Evaluate Methods Individually” to assess the impacts of the mitigation methods in the designated copy of Farmscoper Evaluate on all the farms that have been generated.

Note that the farm creation process produces a “FarmSummary.csv” file in the designated working folder. The evaluate process only applies to the farms listed in this file, so it is possible to edit this file and evaluate mitigation impacts on a subset of the created files.

27. [Output Create] View tabulated summary results for the catchment(s) from the multiple copies of Farmscoper Evaluate.
28. [Create Graph] View apportionment and load graphs for the catchment(s) from the multiple copies of Farmscoper Evaluate.
29. Use the standard Excel Save As feature to save the file with a different name e.g. “FS5_MyCatchmentEvaluate.xls”.