

AGROECOLIST 1.0: A CHECKLIST TO IMPROVE REPORTING STANDARDS IN ECOLOGICAL RESEARCH IN AGRICULTURE



AgroEcoList 1.0 can be used as:

1. A guide to researchers for the data to collect when planning or conducting a study.
2. A memory aid to authors, reviewers, or editors for the variables that are relevant to ecological studies in agriculture.
3. A template to fill in and be included in a table format in publications (see source for spreadsheet format). This could be included in the supplementary information and would facilitate data extraction and reuse.

EXPERIMENTAL/SAMPLING SET-UP



Start & end date of study

Start & end dates of any interventions/treatments

Interventions/treatments refer to the comparison you are making. E.g. if you are studying flower strips, it is the date(s) they were put in. If you are comparing a tree crop across different ages, it is the dates the trees were planted.

Dates/frequency that measurements were taken

When you took your measurements (e.g. collecting samples).

Size & shape of experimental units (e.g. subplot/plot/field/farm)

A description of a single experimental unit, which would be at subplot/plot/field/farm level depending on your study.

Experimental/sampling designs (e.g. blocked/randomised, distance between plots)

How your single experimental units (described above) relate to each other. If this is very complicated, you can refer readers to the study site map.

Number of replicates

The number of experimental units in one treatment. E.g. if you are comparing four forest sites with four agricultural sites, you have four replicates.

SOIL



Soil type & soil system (e.g. USDA)

Soil type, example [here](#). Please provide depth of sampling if possible.

Soil texture (silt, sand, clay)

[Soil texture](#). Please provide depth of sampling if possible.

Soil pH

Please provide depth of sampling if possible.

Soil organic matter

Please provide depth of sampling if possible.

STUDY SITE



Co-ordinates & co-ordinate system (e.g. WGS84)

Please ensure that you are not sharing sensitive information that can identify individuals or organisations without their permission.

Country

Site map

State figure number.

Elevation

Include units (metres above sea level (masl) is the most common).

Slope & aspect

Slope is the angle from the ground in degrees (e.g. 12°). Aspect is the direction the plot is facing (e.g. North).

Weather during study period

Can include temperature, humidity, rainfall, wind, or any other relevant characteristics.

Extreme/atypical events (e.g. flooding, fire, pest outbreak)

Any information on extreme/atypical events (e.g. El Niño Southern Oscillation or a particularly bad pest outbreak) that you think is relevant to the study, or that may be relevant to people reinterpreting/reusing the data.

Farm/crop/livestock certification/scheme (e.g. organic)

Artificial structure (e.g. open vs polytunnel, barn vs field)

If it was an open field (i.e. not under a polytunnel or other artificial structure), then say "open". Otherwise, describe the artificial structure.

Landscape context (e.g. field-edge management, proximity to forest)

Any information on landscape context (e.g. hedgerow density, proximity to towns/roads/lakes/forests) that you think is relevant to the study, or that may be relevant to people reinterpreting/reusing the data. We recommend authors decide the relevant landscape elements based on their study.

Previous land use type & timing of transition (e.g. if converted from forest)

Any information on previous land use that you think is relevant to the study, or that may be relevant to people reinterpreting/reusing the data. We recommend authors decide the relevant timescales and information based on their study.



This project receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862480.



showcase-project.eu



CROP & GRASSLAND MANAGEMENT



Crop species & variety (including main crops, secondary crops & non-cash-crops)

List all crops and non-cash-crops in the rotation during the study. You can also list some prior to the study if you think it is relevant (depending on the context, it may be more relevant in "Previous land use type").

Crop planting density & arrangement (e.g. broadcast/inter-row)

Planting density and arrangement of each crop or non-cash-crop (e.g. 156 palms/ha, offset at 8m intervals).

Crop planting/harvesting timing (including rotations)

Include dates for all crops listed in "Crop species & variety".

Cultivation method, depth, & timing

Cultivation refers to any disturbance to the soil (e.g. ploughing). If possible, please include the type of cultivator (e.g. disc cultivator).

Mowing/topping method, height & timing

Any mowing/topping. For non-mowing/topping physical removal of weeds, see "Weeding method".

Weeding method & timing

Physical removal of weeds (e.g. hand weeding). For mowing see "Mowing/topping". For herbicides see "Crop protection chemicals".

Physical control of animal pests (e.g. trapping) method & timing

Physical control of animal pests (e.g. using rat traps). For biological control see "Biological control". For chemical control see "Crop protection chemicals".

Biological control agent species, release rate & timing

Includes things like beneficial plants (e.g. to attract parasitic wasps and increase pest predation) or vertebrate predators released to control rats.

Irrigation method, rate & timing

Fertiliser type, rate & timing (list all)

List all organic & inorganic fertilisers. If some (e.g. organic) are known and others are not (e.g. inorganic) state this as "Organic: X applied at X g/ha on X date. Inorganic: not recorded."

Crop protection chemicals type, rate & timing (list all)

List all insecticides, herbicides, fungicides, nematicides etc. If some (e.g. insecticides) are known and others are not (e.g. fungicides) state this as "Insecticides: X applied at X g/ha on X date. Fungicides: not recorded."

Other chemicals type, rate & timing

Any relevant chemicals not already described in previous categories: "Livestock agrochemicals", "Fertiliser type", "Crop protection chemicals."

LIVESTOCK MANAGEMENT



Livestock species & breed (including managed pollinators)

The species and breed of livestock. This includes managed pollinators (e.g. honeybees).

Livestock grazing management (including density, timing, rotations)

Number of livestock per area (e.g. ha). When the livestock were released into an area and when they were next moved. Only applies if you have livestock; if not, you can put "N/A". If there are multiple species, please give densities for each.

Livestock feeding regime (e.g. free grazing/supplemental)

How the livestock are fed (e.g. are they fed by grazing or do you supplement their diet, e.g. with pellets). If relevant, please give type, rate, and timing. Only applies if you have livestock; if not, you can put "N/A".

Livestock agrochemicals type, rate & timing (list all) (including medicines)

Any agrochemicals given to the livestock. List all of them. If some are known and others are not, state this (e.g. X dose of X chemical on X date. Other agrochemicals were not reported). Only applies if you have livestock; if not, you can put "N/A".

Livestock demography (e.g. lifestage/sex)

The age and sex of the livestock. Only applies if you have livestock; if not, you can put "N/A".

OUTPUTS



Yield

This can include non-cash-crops (e.g. biomass of cover crops if relevant).

Quality and/or Commercial grade

Quality can include things like protein or N content. The relevant measure will depend on the crop or non-cash-crop.

FINANCES



Any available costs/profits (e.g. interventions, management)

Please include any available information on costs/profitability as management decisions in agricultural landscapes are influenced by finances. Please ensure that you are not sharing confidential information.

SOURCE



Georgia M. Daykin, Marcelo A. Aizen, Luke G. Barrett, Lewis J. Bartlett, Péter Batáry, Lucas A. Garibaldi, Ali Güncan, Sridhar Gutam, Bea Maas, Jayalakshmi Mitnala, Flavia Montaño-Centellas, Tarirai Muoni, Erik Öckinger, Ode Okechalu, Richard Ostler, Simon G. Potts, David C. Rose, Cairistiona F. E. Topp, Hope O. Usieta, Obaiya G. Utoblo, Christine Watson, Yi Zou, William J. Sutherland, Amelia S. C. Hood, et al. (2023) AgroEcolist 1.0: A checklist to improve reporting standards in ecological research in agriculture. PLoS ONE 18(6): e0285478. <https://doi.org/10.1371/journal.pone.0285478>