

This dataset supports the EFSA tender: Scenario Selection and Scenario Parameterisation for Permanent Crops and Row Crops on Ridges in Support of Predicting Environmental Concentrations of Plant Protection Products and Their Transformation Products in Soil (OC/EFSA/PRAS/2013/01)

EFSA commissioned a consortium consisting of Fera (UK), Arche Consulting (Belgium) and the Università Cattolica del Sacro Cuore (Italy) to develop scenarios for permanent crops and row crops grown on ridges to support the revision of the Guidance Document on Persistence in Soil. A database was compiled of the spatial distribution of permanent crops in the EU. A total of 2013 combinations of crop, soil and climate ('plots') were parameterised in GeoPEARL. The folder GeoPEARL contains the GeoPEARL generic crop dataset made of two main GeoPEARL files: the plot description file (.plo, Table 1), and the soil description file (.sol; Table 2).

Table 1. .plo file information content

Column 1	The plot ID
Column 2	Area (km ²)
Column 3	FOCUS district, corresponds with meteo stations in geo file
Column 4	The soil profile number
Column 5	The crop type (numbers as in crp file, in this case number of FOCUS zone)
Column 6	Correction factor for precipitation (-)
Column 7	Correction temperature (°C)
Column 8	Correction factor for evapotranspiration (-)
Column 9	Irrigation switch (0 = off, 2 = FOCUS method)
Column 10	Maximum ponding depth (m)
Column 11	Air boundary layer thickness (m)
Column 12	Dummy variable
Column 13	Soil textural class for ploughing option
Column 14	Macropore switch (0=No, 1=Yes)

Table 2. .sol file information content

Column 1	Soil profile number
Column 2	Soil horizon number
Column 3	Horizon thickness (m)
Column 4	Number of numerical soil compartments
Column 5	Sand fraction (kg.kg ⁻¹) as part of mineral soil
Column 6	Silt fraction (kg.kg ⁻¹) as part of mineral soil
Column 7	Clay fraction (kg.kg ⁻¹) as part of mineral soil
Column 8	Organic matter content (kg.kg ⁻¹)
Column 9	pH-KCl
Column 10	Saturated soil water content (m ³ .m ⁻³)
Column 11	Residual water content (m ³ .m ⁻³)
Column 12	Parameter alpha (dry) (cm ⁻¹)
Column 13	Parameter alpha (wet) (cm ⁻¹)
Column 14	Parameter n (-)
Column 15	Saturated hydraulic conductivity (m.d ⁻¹)
Column 16	Physical saturated hydraulic conductivity (m.d ⁻¹)
Column 17	Parameter L (-)
Column 18	Dispersion length (m)
Column 19	Sesqui-oxide content (mmol.kg ⁻¹)

Column 20	Pressure head at air entry
Column 21	Anisotropy factor

The shapefile EFSA_polygonsv3 contains the localization of the 2013 plots created by the intersection of the CORINE land cover map, European Soil DataBase and FOCUS zones. Its attribute table contains the following fields:

Table 3. Attribute table of EFSA_polygonsv3 shapefile

FID	Feature identification number (unique key)
SOIL20M_ID	user-assigned polygon identification number.
SMU	Soil Mapping Unit (SMU) identifying number to which the polygon belongs.
STU_DOM	Soil Typological Unit (STU) identifying number.
PCAREA	Percentage of the area of the Soil Mapping Unit (SMU) covered by the Soil Typological Unit (STU).
ID	CORINE Polygon identification number
code_06	Corine class
Corine	Corine version
Grid_Code	AGRI4CAST grid code
Reg_Zone	Regulatory Zone
Country	Country
Focus_Z	Focus Zone
Area_ha	Area of the feature (ha)
SMU_STU	SMU & "-" & STU_DOM
SMU_STU_RZ	SMU & "-" & STU_DOM & Reg_Zone & FOCUS_Z
plot	plot identification number

Soil and Climatic information have been stored in the file SoilClimatePropertiesV2.xlsx that contains the following information:

Table 4. SoilClimatePropertiesV2.xlsx structure

Plot	plot identification number (unique key).
SMU_STU_RZ	SMU & "-" & STU_DOM
SMU_STU	SMU & "-" & STU_DOM & Reg_Zone & FOCUS_Z
OC_TOP	Organic carbon content in the top soil (%)
sand_s	subsoil sand content (%)
silt_s	subsoil silt content (%)
sand_t	topsoil sand content (%)
silt_t	topsoil silt content (%)
clay_t	topsoil clay content (%)
clay_s	subsoil clay content (%)
Focus_Z	Focus Zone
Txt_cls_t	Topsoil texture class
gravel_t	topsoil gravel content (%)
txt_cls_s	subsoil texture class
Gravel_s	subsoil gravel content (%)
ph_top	topsoil pH
Prec_year	annual precipitation (mm)

tmean_year	annual mean temperature (°C)
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The file testemilia_686_750356910.zip in the folder “Agri4cast_test” contains an example of AGRI4CAST dataset that can be linked to the shapefile EFSA_polygonsv3.

Crop information has been stored in the table areasPermanentCrops.xlsx

Table 5. areas_crops.xls structure

Plot	plot identification number (unique key).
Grass	grassland area (ha)
Berries	berries area (ha)
Pome	pomefruit area (ha)
Stone	stonefruit area (ha)
Citrus	citrus area (ha)
Hops	hops area (ha)
Vines	vineyard area (ha)
Olives	olive grooves area (ha)

The table was produced according the procedure described in the EFSA report. Two EUROSTAT dataset provided the input: the farm structure survey (EF) and the orchard survey (ORCH). Those datasets report information at the NUTS2 level (regional level) and they can be easily linked to the European Administrative units / Statistical units published at GISCO (Geographical Information System at the Commission; <http://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units>). EF dataset requires NUT2010 version and ORCH dataset does NUTS2006.

The used ORCH dataset has been stored in the Nuts2006DatasetGISv3.xls (Table 6) and the EF dataset in Nuts2010DatasetGISv2.xls (Table 7).

The Commission Decision (EC) No 38/2002 amended the limits of production areas for the ORCH survey. In some case, the production limits were cluster of NUTS2 (Commission Decision Annex 1). For this reason the NUTS2006 dataset was edited introducing new features. Those new artificial polygons have been defined as NUTS level 5 (Table 8).

Table 6. Nuts2006DatasetGISv3.xls structure

STAT_LEVEL_	NUTS level
NUTS_ID	NUTS ID
NUTS_Name	NUTS Name
AreaHa	Nuts Area (ha)
orch_desapp	Table apple trees since 2002 (area in hectares)
orch_apothus	Cooking apple trees since 2002 (area in hectares)
orch_despear	Table pear trees since 2002 (area in hectares)
orch_pearothu	Cooking pear trees since 2002 (area in hectares)
orch_apricot	Apricot trees since 2002 (area in hectares)
orch_peachuc	Peach trees 'unspecified flesh' since 2002 (area in hectares)
orch_peachyf	Peach trees 'yellow flesh' since 2002 (area in hectares)
orch_peachwf	Peach trees 'white flesh' since 2002 (area in hectares)
orch_orange	Orange trees since 2002 (area in hectares)
orch_lemon	Lemon trees since 2002 (area in hectares)

orch_smcitrus	Small-fruited citrus trees since 2002 (area in hectares)
orch_desapp_D	Table apple trees since 2002 divided by NUTS area
orch_appothus_D	Cooking apple trees since 2002 divided by NUTS area
orch_despear_D	Table pear trees since 2002 divided by NUTS area
orch_pearothu_D	Cooking pear trees since 2002 divided by NUTS area
orch_apricot_D	Apricot trees since 2002 divided by NUTS area
orch_peachuc_D	Peach trees 'unspecified flesh' since 2002 divided by NUTS area
orch_peachyf_D	Peach trees 'yellow flesh' since 2002 divided by NUTS area
orch_peachwf_D	Peach trees 'white flesh' since 2002 divided by NUTS area
orch_orange_D	Orange trees since 2002 divided by NUTS area
orch_lemon_D	Lemon trees since 2002 divided by NUTS area
orch_smcitrus_D	Small-fruited citrus trees since 2002 divided by NUTS area
Country	country
Used	Selected NUTS
PomeF	Pomefruit area
StoneF	Stonefruit area
Citrus	Citrus area
PomeF_d	Pomefruit area divided by NUTS area
StoneF_d	Stonefruit area divided by NUTS area
Citrus_d	Citrus area divided by NUTS area

Table 7. Nuts2010DatasetGISv2.xls structure

touse	used NUTS
NUTS_ID	NUTS ID
NUTS_LVL	NUTS level
Area_ha	NUTS area (ha)
AGRAREA_HA	ha: Utilised agricultural area
B_1_HA	ha: Arable land
B_1_1_HA	ha: Cereals
B_1_1_1_HA	ha: Common wheat and spelt
B_1_1_2_HA	ha: Durum wheat
B_1_1_3_HA	ha: Rye
B_1_1_4_HA	ha: Barley
B_1_1_5_HA	ha: Oats
B_1_1_6_HA	ha: Grain maize
B_1_1_7_HA	ha: Rice
B_1_1_99_HA	ha: Other cereals
B_1_2_HA	ha: Pulses - total
B_1_3_HA	ha: Potatoes
B_1_4_HA	ha: Sugar beet
B_1_5_HA	ha: Fodder roots and brassicas
B_1_6_HA	ha: Industrial crops - total
B_1_6_1_HA	ha: Tobacco
B_1_6_2_HA	ha: Hops
B_1_6_3_HA	ha: Cotton
B_1_6_4_HA	ha: Rape and turnip
B_1_6_5_HA	ha: Sunflower
B_1_6_6_HA	ha: Soya

B_1_6_7_11_H A	ha: Other oil-seed or fibre crops
B_1_6_12_HA	ha: Aromatic, medicinal and culinary plants
B_1_6_99_HA	ha: Industrial crops not mentioned elsewhere
B_1_7_HA	ha: Fresh vegetables, melons, strawberries
B_1_7_1_HA	ha: Outdoor: Fresh vegetables, melons, strawberries
B_1_7_1_1_HA	ha: Open field: Outdoor: Fresh vegetables, melons, strawberries
B_1_7_1_2_HA	ha: Market gardening: Outdoor: Fresh vegetables, melons, strawberries
B_1_7_2_HA	ha: Under glass: Fresh vegetables, melons, strawberries
B_1_8_HA	ha: Flowers and ornamental plants
B_1_8_1_HA	ha: Outdoor: Flowers and ornamental plants
B_1_8_2_HA	ha: Under glass: Flowers and ornamental plants
B_1_9_HA	ha: Fodder crops - total
B_1_9_1_HA	ha: Fodder crops - temporary grass
B_1_9_2_HA	ha: Total: Other green fodder: Fodder crops
B_1_9_2_1_HA	ha: Green maize: Other green fodder: Fodder crops
B_1_9_2_2_HA	ha: Other fodder crops: leguminous plants: Fodder crops
B_1_10_HA	ha: Seeds and seedlings
B_1_11_HA	ha: Other crops on arable land
B_1_12_HA	ha: Fallow land - total (with and w/o subsidies)
B_2_HA	ha: Kitchen gardens
B_3_HA	ha: Total: Permanent grassland and meadow
B_3_1_HA	ha: Pasture and meadow: Permanent grassland and meadow
B_3_2_HA	ha: Rough grazings: Permanent grassland and meadow
B_3_3_HA	ha: Permanent grassland and meadow - not used for production, eligible for subsidies
B_4_HA	ha: Permanent crops
B_4_1_HA	ha: Fruit and berry plantations - total
B_4_1_1_HA	ha: Fruit species: Fruit and berry plantations
B_4_1_1_1_HA	ha: Fruit species of temperate climate zones
B_4_1_1_2_HA	ha: Fruit species of subtropical climate zones
B_4_1_2_HA	ha: Berry species : Fruit and berry plantations
B_4_1_99_1_H A	ha: Temperate climate: Fruit and berry plantations - until 2007
B_4_1_99_2_H A	ha: Subtropical climate :Fruit and berry plantations - until 2007
B_4_1_3_HA	ha: Nuts: Fruit and berry plantations
B_4_2_HA	ha: Citrus plantations
B_4_3_HA	ha: Olive plantations - total
B_4_3_1_HA	ha: Olive plantations - table olives
B_4_3_2_HA	ha: Olive plantations - oil production
B_4_4_HA	ha: Vineyards - total
B_4_4_1_HA	ha: Vineyards - quality wine
B_4_4_2_HA	ha: Vineyards - other wines
B_4_4_3_HA	ha: Vineyards - table grapes
B_4_4_4_HA	ha: Vineyards - raisins
B_4_5_HA	ha: Nurseries
B_4_6_HA	ha: Other permanent crops
B_4_7_HA	ha: Permanent crops under glass
B_5_HA	ha: Other land - Total
B_5_1_5_3_HA	ha: Unutilised agricultural land and other areas
B_5_2_HA	ha: Wooded area

B_5_2_1_HA	ha: Wooded area - with short rotation
B_6_1_HA	ha: Mushrooms
B_6_3_HA	ha: Energy crops
B_6_4_HA	ha: Genetically modified crops
TOTAREA_HA	ha: Total Area
AGRAREA_HA_D	Utilised agricultural area divided by NUTS area
B_1_HA_D	Arable land divided by NUTS area
B_1_1_HA_D	Cereals divided by NUTS area
B_1_1_1_HA_D	Common wheat and spelt divided by NUTS area
B_1_1_2_HA_D	Durum wheat divided by NUTS area
B_1_1_3_HA_D	Rye divided by NUTS area
B_1_1_4_HA_D	Barley divided by NUTS area
B_1_1_5_HA_D	Oats divided by NUTS area
B_1_1_6_HA_D	Grain maize divided by NUTS area
B_1_1_7_HA_D	Rice divided by NUTS area
B_1_1_99_HA_D	Other cereals divided by NUTS area
B_1_2_HA_D	Pulses - total divided by NUTS area
B_1_3_HA_D	Potatoes divided by NUTS area
B_1_4_HA_D	Sugar beet divided by NUTS area
B_1_5_HA_D	Fodder roots and brassicas divided by NUTS area
B_1_6_HA_D	Industrial crops - total divided by NUTS area
B_1_6_1_HA_D	Tobacco divided by NUTS area
B_1_6_2_HA_D	Hops divided by NUTS area
B_1_6_3_HA_D	Cotton divided by NUTS area
B_1_6_4_HA_D	Rape and turnip divided by NUTS area
B_1_6_5_HA_D	Sunflower divided by NUTS area
B_1_6_6_HA_D	Soya divided by NUTS area
B_1_6_7_11_HA_D	Other oil-seed or fibre crops divided by NUTS area
B_1_6_12_HA_D	Aromatic, medicinal and culinary plants divided by NUTS area
B_1_6_99_HA_D	Industrial crops not mentioned elsewhere divided by NUTS area
B_1_7_HA_D	Fresh vegetables, melons, strawberries divided by NUTS area
B_1_7_1_HA_D	Outdoor: Fresh vegetables, melons, strawberries divided by NUTS area
B_1_7_1_1_HA_D	Open field: Outdoor: Fresh vegetables, melons, strawberries divided by NUTS area
B_1_7_1_2_HA_D	Market gardening: Outdoor: Fresh vegetables, melons, strawberries divided by NUTS area
B_1_7_2_HA_D	Under glass: Fresh vegetables, melons, strawberries divided by NUTS area
B_1_8_HA_D	Flowers and ornamental plants divided by NUTS area
B_1_8_1_HA_D	Outdoor: Flowers and ornamental plants divided by NUTS area
B_1_8_2_HA_D	Under glass: Flowers and ornamental plants divided by NUTS area
B_1_9_HA_D	Fodder crops - total divided by NUTS area
B_1_9_1_HA_D	Fodder crops - temporary grass divided by NUTS area
B_1_9_2_HA_D	Total: Other green fodder: Fodder crops divided by NUTS area
B_1_9_2_1_HA_D	Green maize: Other green fodder: Fodder crops divided by NUTS area

B_1_9_2_2_HA_D	Other fodder crops: leguminous plants: Fodder crops divided by NUTS area
B_1_10_HA_D	Seeds and seedlings divided by NUTS area
B_1_11_HA_D	Other crops on arable land divided by NUTS area
B_1_12_HA_D	Fallow land - total (with and w/o subsidies) divided by NUTS area
B_2_HA_D	Kitchen gardens divided by NUTS area
B_3_HA_D	Total: Permanent grassland and meadow divided by NUTS area
B_3_1_HA_D	Pasture and meadow: Permanent grassland and meadow divided by NUTS area
B_3_2_HA_D	Rough grazings: Permanent grassland and meadow divided by NUTS area
B_3_3_HA_D	Permanent grassland and meadow - not used for production, eligible for subsidies divided by NUTS area
B_4_HA_D	Permanent crops divided by NUTS area
B_4_1_HA_D	Fruit and berry plantations - total divided by NUTS area
B_4_1_1_HA_D	Fruit species: Fruit and berry plantations divided by NUTS area
B_4_1_1_1_HA_D	Fruit species of temperate climate zones divided by NUTS area
B_4_1_1_2_HA_D	Fruit species of subtropical climate zones divided by NUTS area
B_4_1_2_HA_D	Berry species : Fruit and berry plantations divided by NUTS area
B_4_1_99_1_HA_D	Temperate climate: Fruit and berry plantations - until 2007 divided by NUTS area
B_4_1_99_2_HA_D	Subtropical climate :Fruit and berry plantations - until 2007 divided by NUTS area
B_4_1_3_HA_D	Nuts: Fruit and berry plantations divided by NUTS area
B_4_2_HA_D	Citrus plantations divided by NUTS area
B_4_3_HA_D	Olive plantations - total divided by NUTS area
B_4_3_1_HA_D	Olive plantations - table olives divided by NUTS area
B_4_3_2_HA_D	Olive plantations - oil production divided by NUTS area
B_4_4_HA_D	Vineyards - total divided by NUTS area
B_4_4_1_HA_D	Vineyards - quality wine divided by NUTS area
B_4_4_2_HA_D	Vineyards - other wines divided by NUTS area
B_4_4_3_HA_D	Vineyards - table grapes divided by NUTS area
B_4_4_4_HA_D	Vineyards - raisins divided by NUTS area
B_4_5_HA_D	Nurseries divided by NUTS area
B_4_6_HA_D	Other permanent crops divided by NUTS area
B_4_7_HA_D	Permanent crops under glass divided by NUTS area
B_5_HA_D	Other land - Total divided by NUTS area
B_5_1_5_3_HA_D	Unutilised agricultural land and other areas divided by NUTS area
B_5_2_HA_D	Wooded area divided by NUTS area
B_5_2_1_HA_D	Wooded area - with short rotation divided by NUTS area
B_6_1_HA_D	Mushrooms divided by NUTS area
B_6_3_HA_D	Energy crops divided by NUTS area
B_6_4_HA_D	Genetically modified crops divided by NUTS area
TOTAREA_HA_D	total area divided by NUTS area

Table 8. Additional polygons added to NUTS2006 shapefile

NUTS_ID	LVL	Territorial unit
DE_C	5	Germany, Mitte

DE_E	5	Germany, Ost
DE_N	5	Germany, Norden
DE_S	5	Germany, Süden
FR_L	5	France, Loire
FR_NAL	5	France, Other areas
FR_S_W	5	France, Sud-Ouest
GR_MAK	5	Greece, Makedonia
GR_OT92	5	Greece, Other areas, territorial division code 92
GR_OT93	5	Greece, Other areas, territorial division code 93
GR_OT94	5	Greece, Other areas, territorial division code 94
GR_OT95	5	Greece, Other areas, territorial division code 95
GR_OT96	5	Greece, Other areas, territorial division code 96
GR_OT97	5	Greece, Other areas, territorial division code 97
GR_OT99	5	Greece, Other areas, territorial division code 99
GR2EV	5	Greece, Kentriki Ellada Kai Evia
GR4A	5	Greece, Nisia Aigaiou
IT_TAA	5	Italy, Trentino Alto-Adige