**GenTORE**

***Genomic management Tools to Optimise Resilience and Efficiency***

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**H2020 - Research and Innovation Action**

**Deliverable number: 1.2**

***Database and model for prediction of main environmental challenges to resilience and efficiency in cattle production systems at regional resolution submitted to WP4 and WP6***

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**Workpackage concerned:** WP1

**Concerned workpackage leader:** Florian Leiber

**Lead Beneficiary:** FiBL

**Dissemination level:**

**X PU:** Public (must be available on the website)

**🞎 CO:** Confidential, only for members of the consortium (including the Commission Services)

* **Cl:** Classified, as referred to in Commission Decision 2001/844/EC

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1. Summary

To enable a thorough analysis of the efficiency and resilience of the European cattle sector a dairy and a beef database combining FADN and AGRI4CAST data variables were constructed. The two databases provide a summary of European cattle systems, with averaged data variables summarised at varying aggregation scales of European basic farm types through to differing farm types at NUTS2 regional level. The database has allowed multiple analysis to be completed, as well as the practical use of FADN cattle enterprise level data system in models within WPs4 and 6, and potential use beyond the GenTORE project. A simplified version of each database (covering years 2011-2013)has been uploaded to a public data store, whilst the full dataset remains confidential to the project partners (under FADN rules).

1. Introduction

The need for resilient animal production systems is clear and increasingly urgent. However, in order to achieve an optimal trade-off between resilience and efficiency, tailored solutions appropriate at a regional scale are necessary to optimize resilience and efficiency. The differing local livestock systems have social, economic and ecological characteristics, functions and dependencies, within which they display resilience and efficiency in various definitions. Therefore to help identify current and future challenges, the varying cattle systems in Europe they needed to be identified from accessible databases available at an EU scale. Therefore a combined farm characterisation database was constructed using two major data sources, the Farm Accountancy Data Network (FADN), and the Gridded Agro-Meteorological Data in Europe (AGRI4CAST). The database initially constructed was further enhanced through the addition of forage and crop yield data from the Food and Agriculture Organization of the United Nations (FAO) and the International Institute for Applied Systems Analysis (IIASA) developed Agro-Ecological Zones (AEZ) methodology database (FAO, 2012). The data was processed and is presented in D1.2 as two databases (dairy and beef), as averages for a wide range of variables at basic or detailed farm types, and at NUTS2 regional scale.

1. Method

Detailed FADN data (anonymised individual farm data) was requested for all ruminant and mixed farm types, over 10 years and the most recent data available at request (2004-2013). Following receipt of the data (~250k farms) this has been compiled into two consistent datasets, one for dairy (141,961) farms and one for beef farms (54,417). Each dataset comprises some values directly from the FADN data, but also a large number of calculated variables, to identify dairy or beef enterprise performance at per animal, per output product unit or per hectare. These values were calculated according to the respective dairy and beef enterprise allocation methodologies described by FADN, and further economic and structural variables have been calculated as necessary, as described in GenTORE Deliverable 1.1 (Quiédeville et al., 2019).

For each farm within the dataset, the structural, production and economic data from the FADN data is supplemented with the addition of regional meteorological data. The daily meteorological data was downloaded from the AGRI4STAT database web portal at a NUTS2 scale. For each NUTS2 region data was available for a number of weather stations. This large dataset was processed through scripts in STATA software to generate annual values for a wide range of climatic variables, including a Temperature Humidity Index (THI), and indicators of drought and seasonality of weather. Furthermore, the altitude values per weather station allowed for a sub-grouping of weather station data by altitude zone (aligned with values available in the FADN dataset).

Using a Latent Class Analysis process, the meteorological data was analysed to identify consistent environmental regions in Europe. Selected climatic variables, together with altitude zone, were utilised to statistically identify differing zones, and to cluster each NUTS2 region to a zone, resulting in 6 lowland zones and 3 upland zones (above 600m) The LCA process enhanced an earlier method of manually overlaying the Metzger et al. (20054) pedo-climatic zone allocation, but closely correlates. Therefore for each farm in the dairy and beef datasets, meteorological and environmental zone data was allocated on a NUTS2 by altitude zone basis and this dataset has been subsequently utilised for the assessments undertaken and submitted as papers; Quiédeville et al., (submitted May 2020) and Grovermann et al. (submitted May 2020).

The GAEZ forage and crop yield data was downloaded from the GAEZ data portal as baseline and two future climate prediction periods: Baseline (1961-2000), 2020s (2011-2040), and 2050s (2041-2070), for the Hadley CM3 model and IPCC scenario A (the most extreme scenario). See: [http://www.fao.org/nr/gaez/about-data-portal/agro-climatic-resources/en/#](http://www.fao.org/nr/gaez/about-data-portal/agro-climatic-resources/en/)). A zonal statistics was applied to the GAEZ layers to aggregate the data to NUT2 region and altitude zone (0-300m, 300-600m, 600m+) with raster package in R. The result is an average yield[[1]](#footnote-2) for varying forages and crops for each altitude zone in each nuts2, for both the baseline and the future climate scenario. This data allows further analysis of the future impacts on cattle farming at both a regional scale, but also by farm type or system, which may be affected differently (Moakes et al. in preparation).

All variable processing from FADN data is shown in the Annex, as performed in Stata software.

1. Results

The databases were set up and functioning within the project since January 2019 (MS6), and have now been formalised and uploaded to a data repository as public versions, that respect the FADN data confidentiality rules. These databases comprise farm data for the years 2011-2013:

# Dairy database (DOI:   <https://dx.doi.org/10.5281/zenodo.3860704>)

The dairy database comprises a maximum sample size of 42,079 farms (2011-2013), with average values for a wide range of variables (110 or 119), available in 4 worksheets: BasicFarmType (18 rows), DetailedFarmType (10 rows), ClimateClass+BasicFarmType (100 rows), NUTS+DetailedFarmType (1452 rows). Data are omitted when the sample size (n) is below 15, as per the confidentiality agreement under FADN data use rules.

# Beef database (DOI:   <https://dx.doi.org/10.5281/zenodo.3860718>)

The beef database comprises a maximum sample size of 18,303 farms (2011-2013), with average values for a wide range of variables (93 or 118), available in 3 worksheets, and is further differentiated into All Beef, Breeders and Fatteners: ClimateClass+BasicFarmType (270 rows), NUTS1+BasicFarmType (2074 rows), DetailedFarmType (75 rows). Data are omitted when the sample size (n) is below 15, as per the confidentiality agreement under FADN data use rules.

1. Conclusions

The two databases provide a summary of European cattle systems, with averaged data variables summarised at varying aggregation scales of European basic farm types through to differing farm types at NUTS2 regional level. The database allows the practical use of FADN cattle enterprise level data system in models within WPs4 and 6, as well as beyond the GenTORE project.

1. Partners involved in the work

FiBL: Sylvain Quiédeville, Simon Moakes, Florian Leiber, Catherine Pfeifer (FAO-GAEZ data processing)

1. References

FAO (2012) Global Agro-Ecological Zones data portal. <http://gaez.fao.org/Main.html> (Accessed, 27/05/2020)

Grovermann, C., Quiédeville, S., Muller, A., Leiber, F., Stolze, M., Moakes, S. (submitted May 2020) Does organic certification make economic sense for dairy farmers in Europe? - A latent class counterfactual analysis. Journal of Rural Studies

Moakes, S., Quiédeville, S., Pfeifer, C., Leiber, F. (in preparation). Characteristics and future production expectations under climate change. Agricultural Systems

Quiédeville, S., Grovermann, C., Leiber, F., Cozzi, G., Lora, I., Moakes, M., Eory V. (submitted May 2020) Influence of climate stress on technical efficiency and economic downside risk exposure of EU dairy farms. Land Use Policy

Quiédeville, S., Moakes, S., Leiber, F., Burns, J., Casasús, I., Cozzi, G. (2019). Deliverable 1.1 Expected challenges to the resilience and efficiency of cattle farming in various European regions – stakeholder views and analysis. GenTORE – GA n° 727213. <https://dx.doi.org/10.5281/zenodo.3860683>

1. Annex

(Variable definitions and rules as performed in Stata software package)

|  |  |  |  |
| --- | --- | --- | --- |
| **Description** | **New variable** | **FADN code/formula** | **Done in Stata?** |
| **ONLY FOR DEFINING FARM TYPE: keeping only the last three year of the dataset (2011,2012,2013)**  **As it is defined at the beginning of the “**Descrip\_gen&dair” script; this also applies for beef | \*\*\* | **drop if year==2004; drop if year==2005**  **drop if year==2006; drop if year==2007**  **drop if year==2008; drop if year==2009**  **drop if year==2010** | Descrip\_gen&dair |
| Altitude below or above 600 meters  0\_600  or  600\_plus  When the altitude defined by FADN was “4”; the value at nuts2 level (average) was taken into consideration | alt\_met | gen alt\_met =.  replace alt\_met = "0\_600" if altitude==1  replace alt\_met = "0\_600" if altitude==2  replace alt\_met = "600\_plus" if altitude==3bysort nuts2: egen Nuts2\_alt\_met = mean (altitude)  replace alt\_met = "0\_600" if Nuts2\_alt\_met<=2 & altitude==4  replace alt\_met = "600\_plus" if Nuts2\_alt\_met>2 & altitude==4 | Descrip\_gen&dair |
| Introduction of the full name of nuts2 regions | name\_nuts2 | Merging using "csv\_3/nuts2\_names.csv" | Descrip\_gen&dair |
| Introduction of the full name of country acronyms | name\_country | Merging using "csv\_3/country\_names.csv" | Descrip\_gen&dair |
| Revised calculation of the UAA | UAA\_calc | crop\_area + maize\_area + other\_fodder\_area + grassPP\_RG\_area + tempgrs\_area | Descrip\_gen&dair |
|  |  |  | Descrip\_gen&dair |
|  |  |  | Descrip\_gen&dair |
|  |  |  | Descrip\_gen&dair |
|  |  |  | Descrip\_gen&dair |
|  |  |  | Descrip\_gen&dair |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Type of farm (specialist dairying, etc) | FarmType | A30 | Descrip\_gen&dair |
| Milk production (cows+sheep+goat), in litre | Milk\_Prod | (k162qq + k164qq + k165qq)\*1000\*0.97 | Descrip\_gen&dair |
| Milk production only for cows, in total and expressed in litre | Milk\_Prod\_cow | k162qq\*1000\*0.97 | Descrip\_gen&dair |
| Milk production per cow, expressed in litre | Milk\_Prod\_cow\_ut | Milk\_Prod\_cow/dairycow\_av | Descrip\_gen&dair |
| Milk price per ton of milk, only for cows | MilkPrice\_Cow\_t | k163tp/k162qq | Descrip\_gen&dair |
| Own surface (not rented surface) | Surf\_Ownld | UAA-se030 | Descrip\_gen&dair |
| Check if the farm has land (score=1 if yes) | uaacheck | generate uaacheck=.  replace uaacheck = 1 if UAA>0 | Descrip\_gen&dair |
| Area of temporary grass | tempgrs\_area | k147aa | Descrip\_gen&dair |
| Percentage of temporary grass / UAA | perc\_tempgrs\_area | (tempgrs\_area/UAA\_calc)\*100 | Descrip\_gen&dair |
| Area of meadow and permanent pasture | meadow\_pp\_area | k150aa | Descrip\_gen&dair |
| Percentage of meadow and permanent pasture / UAA | perc\_meadow\_pp\_area | (meadow\_pp\_area/UAA)\*100 | Descrip\_gen&dair |
| Check if the farm has livestock units (score=1 if yes) | lucheck | generate lucheck=.  replace lucheck = 1 if se080>0 | Descrip\_gen&dair |
| Calculating the number of observations per nuts2, nuts1 and country  And **deleting regions/country** where necessary:   * **Nuts2<15** * **Nuts1<100 (deactivated)** * **Country<400 (deactivated)**   Done at the very beginning of the stat coding | Nb\_obs\_nuts2 | gen no = 1  bysort nuts2 year: egen Nb\_obs\_nuts2 = total (no)  **drop if Nb\_obs\_nuts2<5**  bysort nuts1 year: egen Nb\_obs\_nuts1 = total (no)  **drop if Nb\_obs\_nuts1<100**  bysort country year: egen Nb\_obs\_country = total (no)  **drop if Nb\_obs\_country<400** | Descrip\_gen&dair |
| Nb\_obs\_nuts1 |
| Nb\_obs\_country |
| Calculating the number of observations per nuts2, nuts1 and country  And **deleting regions/country** where necessary:   * **Nuts2<15** * **Nuts1<100 (deactivated)** * **Country<400 (deactivated)**   Done just before calculating regional average for land rent | Nb\_obs\_nuts2\_2  Nb\_obs\_nuts1\_2  Nb\_obs\_country\_2 | bysort nuts2 year: egen Nb\_obs\_nuts2\_2 = total (no)  **drop if Nb\_obs\_nuts2\_2<5**  bysort nuts1 year: egen Nb\_obs\_nuts1\_2 = total (no)  **drop if Nb\_obs\_nuts1\_2<100**  bysort country year: egen Nb\_obs\_country\_2 = total (no)  **drop if Nb\_obs\_country\_2<400** | Descrip\_gen&dair |
| Check if Total Output minus coupled subsidies is negative  **Observation dropped if negative**  **(inserted before saving the file that will be also used for beef)** | TOcheck1 | TOcheck1 = 0  replace TOcheck1 = 1 if se131-Milk\_renewal\_cts-Spe\_forage\_cts\_dair <0  *\* 131 observations out of 334,752 have a value lower than 0* **drop if TOcheck1 ==1** | Descrip\_gen&dair |
| Check if Total Output minus coupled subsidies is null  **Observation dropped if yes**  **(inserted after saving the file that will be also used for beef)** | replace TOcheck1 = 1 if se131-Milk\_renewal\_cts-Spe\_forage\_cts\_dair =0  **drop if TOcheck1 ==1**  ***\*\*No values concerned*** | Descrip\_gen&dair |
| Check if Total Output is strictly positive  **Observation dropped if not strictly positive**  **(inserted before saving the file that will be also used for beef)** | TOcheck2 | gen TOcheck2 = 0  replace TOcheck2 = 1 if TO<=0  *\** *2 additional observations out of 3334'621 have a value lower than 0*  **drop if TOcheck2 ==1** | Descrip\_gen&dair |
| Check is Total output is higher than Milk output  **Observation dropped if not true OK**  **(inserted before saving the file that will be also used for beef)** | TOcheck3 | gen TOcheck3 =0  replace TOcheck3 =1 if TO<MO  *\** *989 additional observations concerned out of 334,619*  **drop if TOcheck3 ==1** | Descrip\_gen&dair |
| Check if Total Output minus coupled subsidies is higher than Milk output minus subsidies  **Observation dropped if not true**  **(inserted before saving the file that will be also used for beef)** | TOcheck4 | gen TOcheck4 = 0  replace TOcheck4 = 1 if se131-Milk\_renewal\_cts-Spe\_forage\_cts\_dair <Cowmilk\_outp\_value  *\* 1'488 observations out of 333,630 concerned*  **drop if TOcheck4 ==1** | Descrip\_gen&dair |
| Dropping variables when the share of the milk output value from Ewes and goats is higher than 66.66% (out of the total milk output value) | \*\*\*\*\*\*\* | drop if PercEwesgoats\_Milk\_value>66.66 | Descrip\_gen&dair |
| perc of milksales on MO (milk from cows, goats and ewes)  perc of milksales on MO should be greater than 50% | Perc\_Milksa\_Milkout (not used at the moment) | gen Perc\_Milksa\_Milkout =((k162sa+k163sa+k164sa+k165sa+k167sa+k168sa)/Milk\_outp\_value)\*100  gen Check\_Perc\_Milksa\_Milkout = 0  replace Check\_Perc\_Milksa\_Milkout = 1 if Perc\_Milksa\_Milkout<50 | Descrip\_gen&dair |
| perc of milksales on MO (milk from cows only)  perc of milksales on MO should be greater than 50%  **Observation dropped if not true** | Perc\_Milksa\_Milkout2  Check\_Perc\_Milksa\_Milkout2 | gen Perc\_Milksa\_Milkout2 =((k162sa+k163sa)/Cowmilk\_outp\_value)\*100  gen Check\_Perc\_Milksa\_Milkout2 = 0  replace Check\_Perc\_Milksa\_Milkout2 = 1 if Perc\_Milksa\_Milkout2<50  **drop if Check\_Perc\_Milksa\_Milkout2 ==1** | Descrip\_gen&dair |
| struct spe rate should be greater than 40%  **Observation dropped if not true (deactivated)** | Stuct\_Spe\_rate  Check\_Stuct\_Spe\_rate | gen Stuct\_Spe\_rate = (Milk\_outp\_value/(se131-Milk\_renewal\_cts-Spe\_forage\_cts\_dair))\*100  gen Check\_Stuct\_Spe\_rate =0  replace Check\_Stuct\_Spe\_rate =1 if Stuct\_Spe\_rate<40  **drop if Check\_Stuct\_Spe\_rate ==1** | Descrip\_gen&dair |
| actual spe rate should be greater than 35%  **Observation dropped if not true (deactivated)** | Actual\_Spe\_rate  Check\_Actual\_Spe\_rate | gen Actual\_Spe\_rate = (MO/TO)\*100  gen Check\_Actual\_Spe\_rate =0  replace Check\_Actual\_Spe\_rate =1 if Actual\_Spe\_rate<35  **drop if Check\_Actual\_Spe\_rate ==1** | Descrip\_gen&dair |
| Percentage of the output value of Ewes and goat milk on total milk output | PercEwesgoats\_Milk\_value | (Ewes\_goats\_milk\_outp\_value/Milk\_outp\_value)\*100 | Descrip\_gen&dair |
| Check if the percentage of the output value of Ewes and goat milk on total milk output is higher than 90%  If yes=1 | checkPercEwesgoats\_value | gen checkPercEwesgoats\_value = 0  replace checkPercEwesgoats\_value = 1 if PercEwesgoats\_Milk\_value>90 | Descrip\_gen&dair |
| FNVA (Farm net value added) | FNVA | Se415 | Descrip\_gen&dair |
| FNI – farm net income (This indicator is calculated for the whole farms including those without family labour) | FNI | Se420 | Descrip\_gen&dair |
| Subsidies beef (inserted here in order to delete observations for which Beef output is negative (problem on the farm) | Beef\_subsid | se617 | Descrip\_gen&dair |
| Value of beef output (beef and veal) (inserted here in order to delete observations for which Beef output is negative (problem on the farm) | Beef\_outp\_value | se220 | Descrip\_gen&dair |
| Beef output & subsidies  Dropping observations for which **Beef\_outp\_value<0** | BO | gen BO = Beef\_outp\_value+Beef\_subsid  **drop if Beef\_outp\_value<0** | Descrip\_gen&dair |
| Beef herd renewal costs (breeding heifers)  (inserted here in order to delete observations where there are output problems) | Beef\_renewal\_cts | (Purchases\_Fcattle1\_2y\_cts+Purchases\_Mcattle\_More2y\_cts+Purchases\_cattle\_Less1y\_cts)\*Perc\_sucklercow\_av | Descrip\_gen&dair |
| Beef: Specific forage costs (seeds and plants + fertilisers +crop protection)  (inserted here in order to delete observations where there are output problems) | Spe\_forage\_cts\_beef | Seeds\_forage\_cts+Fertilisers\_forage\_cts+CropP\_forage\_cts\*(BLU/GLU)  replace Spe\_forage\_cts\_beef = 0 if BLU==0  replace Spe\_forage\_cts\_beef = 0 if GLU==0 | Descrip\_gen&dair |
| (Total output - specific forage cost – beef herd renewal costs) + coupled subsidies  (inserted here in order to delete observations where there are output problems) | TOb | (se131-Beef\_renewal\_cts-Spe\_forage\_cts\_beef)+Coup\_subsid | Descrip\_gen&dair |
| Check if Total Output minus coupled subsidies is negative  **Observation dropped if negative**  **(inserted before saving the file that will be also used for beef)** | TObcheck1 | gen TObcheck1 = 0  replace TObcheck1 = 1 if se131-Beef\_renewal\_cts-Spe\_forage\_cts\_beef <0  \* 663 out of 332,142 have a value lower than 0  **drop if TObcheck1 ==1** | Descrip\_gen&dair |
| Check if Total Output is strictly positive  **Observation dropped if not strictly positive**  **(inserted before saving the file that will be also used for beef)** | TObcheck2 | gen TObcheck2 = 0  replace TObcheck2 = 1 if TOb<=0  \* No observations concerned  **drop if TObcheck2 ==1** | Descrip\_gen&dair |
| Check is Total output is higher than Beef output  **Observation dropped if not true OK**  **(inserted before saving the file that will be also used for beef)** | TObcheck3 | gen TObcheck3 =0  replace TObcheck3 =1 if TOb<BO  \* 3,304 additional observations concerned out of 331,479  **drop if TObcheck3 ==1** | Descrip\_gen&dair |
| Check if Total Output minus coupled subsidies is higher than Beef output minus subsidies  **Observation dropped if not true**  **(inserted before saving the file that will be also used for beef)** | TObcheck4 | gen TObcheck4 = 0  replace TObcheck4 = 1 if se131-Beef\_renewal\_cts-Spe\_forage\_cts\_beef <Beef\_outp\_value  \* 6,729 observations out of 328,175 have a total ouput lower than the milk output (excluding subsidies)  **drop if TObcheck4 ==1** | Descrip\_gen&dair |
| Check if the farm is of a dairy type  If =1, the farm is of dairy type , according to the criteria listed on the right  Here three things are **not considered**:  - Specialisation rate to be greater than 40%  - Actual specialisation rate to be greater than 35%  - Share of sales of milk and milk products in the milk output to be higher than 50% | Type\_dair | gen Type\_dair=0  replace Type\_dair = 1 if FarmType == 4500  replace Type\_dair = 1 if FarmType == 4700  replace Type\_dair = 1 if FarmType == 7310  replace Type\_dair = 1 if FarmType == 8310  replace Type\_dair = 1 if FarmType == 8320  replace Type\_dair = 0 if GLU<=0  replace Type\_dair = 0 if dairycow\_av<0  replace Type\_dair = 0 if MilkPrice\_Cow\_t>900 | Descrip\_gen&dair |
| Observation deleted: 165'577 observations dropped out of 341'972 | drop if Type\_dair==0 | Descrip\_gen&dair | Descrip\_gen&dair |
| Family farm income | FFI | se430N | Descrip\_gen&dair |
| Labour in AWU | AWU | se010 | Descrip\_gen&dair |
| Family labour (AWU) / Total employment (AWU) | Ratio\_Family\_AWU\_w | (se015/AWU)\*100 | Descrip\_gen&dair |
| replace Ratio\_Family\_AWU\_w =0 if se015==0  replace Ratio\_Family\_AWU\_w =0 if AWU==0 |
| Altitude by class (3 classes) | Altitude | A41 | Descrip\_gen&dair |
| Is the farm organic, conv, or in conversion | Organic\_check | A32 | Descrip\_gen&dair |
| Total Utilised Agricultural Area | UAA | se025 | Descrip\_gen&dair |
| Checks if farm has land | uaa\_check | se025>0=1 | Descrip\_gen&dair |
| Checks if farm has animals | lu\_check | se080>0=1 | Descrip\_gen&dair |
| Total Livestock Units | TLU | se080 | Descrip\_gen&dair |
| Dairy cow av | dairycow\_av | D30av | Descrip\_gen&dair |
| Number of other cattle av | otherCattle\_av | calves\_Veal+calves\_1minus+d25av+d26av+d27av+breedheif\_av+d29av+sucklcow\_av |  |
| Suckler cow av | sucklcow\_av | D32av | Descrip\_gen&dair |
| Check if farm has suckler cows | Sucklcow\_check | sucklcow\_av>0; 1 | Descrip\_gen&dair |
| Calves/fattening SN: check if animals are sold | Fat\_calves\_sold\_check | If N23SN>=1; 1 | Descrip\_gen&dair |
| Check if farm purchases young males animals: M cattle(12-24m) PN + Calves/fattening PV | Purch\_young\_check | (N23PN+N25PN)>0; 1; otherwise =0 | Descrip\_gen&dair |
| Suckler cow av per total employment (AWU) | Ratio\_suckler\_AWU | (sucklcow\_LU / AWU)\*100 | Descrip\_gen&dair |
| replace Ratio\_suckler\_AWU =0 if sucklcow\_av==0 | Descrip\_gen&dair |
| Female cattle 1-2yrs av | Fcattle1\_2y\_av | D26av | Descrip\_gen&dair |
| Farm purchases of female cattle 1-2yrs | Purchases\_Fcattle1\_2y\_cts | N26PV | Descrip\_gen&dair |
| Farm purchases of breeding heifers | Purchases\_Bheifers\_cts | N28PV | Descrip\_gen&dair |
| Farm purchases of male cattle > 2yrs | Purchases\_Mcattle\_More2y\_cts | N25PV | Descrip\_gen&dair |
| Farm purchases of cattle < 1yr (calves/fattening, other cattle) | Purchases\_cattle\_Less1y\_cts | N23PV+N24PV | Descrip\_gen&dair |
| Value of female cattle 1-2yrs sold | Sold\_Fcattle1\_2y\_rev | N26SV | Descrip\_gen&dair |
| Value of breeding heifers sold | Sold \_Bheifers\_rev | N28SV | Descrip\_gen&dair |
| Value of male cattle > 2yrs sold | Sold \_Mcattle\_More2y\_rev | N25SV | Descrip\_gen&dair |
| Value of cattle < 1yr (calves/fattening, other cattle) sold | Sold\_cattle\_Less1y\_rev | N23SV+N24SV | Descrip\_gen&dair |
| Breeding heifers av | breedheif\_av | D28av | Descrip\_gen&dair |
| Fattening cattle >2yrs | fatcattle\_2plus | sum(D27av,D29av) | Descrip\_gen&dair |
| Fattening cattle 1-2yrs | fatcattle\_1\_2 | sum(D25av, Fcattle1\_2y\_av) | Descrip\_gen&dair |
| Calves under 1yr (exc. Veal calves) | calves\_1minus | D24av | Descrip\_gen&dair |
| Veal calves | calves\_Veal | D23av | Descrip\_gen&dair |
| Proportion of dairy cows from all cows | Perc\_dairycow\_av | dairycow\_av/ TotalCow\_av | Descrip\_gen&dair |
| replace Perc\_dairycow\_av = 0 if dairycow\_av==0 |
| Proportion of suckler cows from all cows | Perc\_sucklercow\_av | sucklcow\_av/ TotalCow\_av | Descrip\_gen&dair |
| replace Perc\_sucklercow\_av = 0 if sucklcow\_av ==0 |  |
| Share of total breeding heifers and young females equal to the proportion of suckler cows in the total number of cows | Share\_Bheifers\_Fcattle1\_2y | (breedheif\_av + Fcattle1\_2y\_av)\*Perc\_sucklercow\_av | Descrip\_gen&dair |
| Beef cattle av (all cattle minus dairy cows + Share\_Bheifers\_ Fcattle1\_2y) | BLU | otherCattle\_av - Share\_Bheifers\_Fcattle1\_2y | Descrip\_gen&dair |
| Dairy LU | DLU | D30av + (( breedheif\_av + Fcattle1\_2y\_av)\*( Perc\_dairycow\_av)) | Descrip\_gen&dair |
| Total crop area | crop\_area | se035 + se041 + se042 + se046 + se050 + se054 + se055 + se060 + se065 | Descrip\_gen&dair |
| Share of crop area on UAA | perc\_crop\_area | (crop\_area/ UAA\_calc)\*100 | Descrip\_gen&dair |
| Total fodder area | other\_fodder\_area | se071-meadow\_pp\_area-k151aa-k326aa | Descrip\_gen&dair |
| Share of other fodder area on UAA | perc\_other\_fodder\_area | =(other\_fodder\_area/ UAA\_calc)\*100 | Descrip\_gen&dair |
| Total grassPP\_RG\_area | grassPP\_RG\_area | meadow\_pp\_area+k151aa | Descrip\_gen&dair |
| Share of grassPP\_RG\_area on UAA | perc\_grassPP\_RG\_area | =(grassPP\_RG\_area/ UAA\_calc)\*100 | Descrip\_gen&dair |
| Total maize area | maize\_area | k326aa | Descrip\_gen&dair |
| Percentage of maize area out of the UAA | perc\_maize\_area | (maize\_area/ UAA\_calc A)\*100 | Descrip\_gen&dair |
| Share of maize area on UAA | perc\_maize\_area | (maize\_area/UAA\_calc)\*100 | Descrip\_gen&dair |
| Share of forage area on UAA | perc\_forage\_area | (forage\_area/UAA\_calc)\*100 | Descrip\_gen&dair |
|  | perc\_TG\_PP\_RG | perc\_grassPP\_RG\_area+perc\_tempgrs\_area | Descrip\_gen&dair |
|  | perc\_till\_area | 100-perc\_grassPP\_RG\_area | Descrip\_gen&dair |
|  | perc\_maize\_in\_till\_area | (perc\_maize\_area/(perc\_till\_area-perc\_tempgrs\_area))\*100  replace perc\_maize\_in\_till\_area = 0 if perc\_till\_area-perc\_tempgrs\_area==0 | Descrip\_gen&dair |
|  | perc\_crop\_in\_till\_area | (perc\_crop\_area/(perc\_till\_area-perc\_tempgrs\_area))\*100  replace perc\_crop\_in\_till\_area = 0 if perc\_till\_area-perc\_tempgrs\_area==0 | Descrip\_gen&dair |
|  | perc\_otherfodd\_in\_till\_area | (perc\_other\_fodder\_area/(perc\_till\_area-perc\_tempgrs\_area))\*100  replace perc\_otherfodd\_in\_till\_area = 0 if perc\_till\_area-perc\_tempgrs\_area==0 | Descrip\_gen&dair |
| Permanent crop area | perm\_area | Sum(SE050,SE055,SE060,SE065) | Descrip\_gen&dair |
| Forage (grass and temporary forage) area | forage\_area | SE071 | Descrip\_gen&dair |
| Fallow | fallow\_area | SE072 | Descrip\_gen&dair |
| Areas leased to others | LeasedOthers\_area | K149AA | Descrip\_gen&dair |
| Rough grazing area | RoughGrazing\_area | K151AA | Descrip\_gen&dair |
| (Meadows area + permanent pastures) | Meadows\_area | K150AA | Descrip\_gen&dair |
| Allocation of seed forage costs | Seeds\_forage\_cts | (F72+F73) \* (forage\_area/UAA) | Descrip\_gen&dair |
| Allocation of fertilisers forage costs | Fertilisers\_forage\_cts | F74\*(forage\_area/UAA) | Descrip\_gen&dair |
| Allocation of crop protection forage costs | CropP\_forage\_cts | F75\*(forage\_area/UAA) | Descrip\_gen&dair |
| Dairy cow av + Suckler cow av | TotalCow\_av | dairycow\_av+ sucklcow\_av | Descrip\_gen&dair |
| Total Cow AV + breedheifers AV | TotalCow\_Breedheif\_AV | TotalCow\_AV+ breedheif\_AV | Descrip\_gen&dair |
| LU per ha | lu\_ha | TLU / forage\_area | Descrip\_gen&dair |
| GLU per forage ha | glu\_forage \_ha | Se120n/ forage\_area | Descrip\_gen&dair |
| Stocking density (calculated) | Stock\_dty | se080/UAA | Descrip\_gen&dair |
| GLU (grazing livestock units) | GLU | Se120n | Descrip\_gen&dair |
| Dairy: Purchased concentrates for grazing livestock \* (DLU/GLU) | Conc\_cts\_dair | F64\*(DLU/GLU) | Descrip\_gen&dair |
| replace Conc\_cts\_dair=0 if f64==0  replace Conc\_cts\_dair=0 if DLU==0  replace Conc\_cts\_dair=0 if GLU==0 |
| Dairy: Purchased coarse fodder for grazing livestock \* (DLU/GLU) | Coarse\_fodder\_cts\_dair | F65\*(DLU/GLU) | Descrip\_gen&dair |
| replace Coarse\_fodder\_cts\_dair=0 if f65==0  replace Coarse\_fodder\_cts\_dair=0 if DLU==0  replace Coarse\_fodder\_cts\_dair=0 if GLU==0 |
| Dairy: Farm use of non-fodder crops \* (DLU/GLU) | Non\_foddercrops\_cts\_dair | F68\*(DLU/GLU) | Descrip\_gen&dair |
| replace Non\_foddercrops\_cts\_dair=0 if f68==0  replace Non\_foddercrops\_cts\_dair=0 if DLU==0  replace Non\_foddercrops\_cts\_dair=0 if GLU==0 | Descrip\_gen&dair |
| Dairy: Specific forage costs (seeds and plants + fertilisers +crop protection) | Spe\_forage\_cts\_dair | (Seeds\_forage\_cts + Fertilisers\_forage\_cts + CropP\_forage\_cts) \* (DLU/GLU) | Descrip\_gen&dair |
| replace Spe\_forage\_cts\_dair=0 if DLU==0  replace Spe\_forage\_cts\_dair=0 if GLU==0 |
| Milk herd renewal costs | Milk\_renewal\_cts | (Purchases\_Fcattle1\_2y\_cts + Purchases\_Bheifers\_cts)\* Perc\_dairycow\_av | Descrip\_gen&dair |
| Milk levy | Milk\_levy\_costs | =0 | Descrip\_gen&dair |
| Dairy: Other specific livestock costs \* (DLU/TLU) | Other\_spe\_lives\_cts\_dair | F71\*( DLU/TLU) | Descrip\_gen&dair |
| replace Other\_spe\_lives\_cts\_dair=0 if f71==0  replace Other\_spe\_lives\_cts\_dair=0 if DLU==0 |
| Total subsidies, excluding invest | Tot\_subsid\_excInvest | se605 | Descrip\_gen&dair |
| Total subsidies | Tot\_subsid | Tot\_subsid\_excInvest + se406 | Descrip\_gen&dair |
| Decoupled payments | Dec\_subsid | se630 | Descrip\_gen&dair |
| Coupled subsidies | Coup\_subsid | Tot\_subsid - Dec\_subsid | Descrip\_gen&dair |
| Subsidies dairying | Dair\_subsid | se616 | Descrip\_gen&dair |
| Cow milk and milk products | Cowmilk\_outp\_value | se216 | Descrip\_gen&dair |
| Ewes and goats milk | Ewes\_goats\_milk\_outp\_value | se245 | Descrip\_gen&dair |
| Cow milk and milk products + Ewes and goats milk | Milk\_outp\_value | Cowmilk\_outp\_value+Ewes\_goats\_milk\_outp\_value | Descrip\_gen&dair |
| Milk output & subsidies | MO | Milk\_outp\_value + Dair\_subsid | Descrip\_gen&dair |
| (Total output - specific forage cost - milk herd renewal costs) + coupled subsidies | TO | (se131 - Milk\_renewal\_cts - Spe\_forage\_cts\_dair) + Coup\_subsid | Descrip\_gen&dair |
| MO in TO | MObyTO | (MO/TO) | Descrip\_gen&dair |
| Dairy: Machine and building upkeep \* (MO/TO) | Mach\_build\_cts\_dair | (F78+F61)\* MObyTO | Descrip\_gen&dair |
| Dairy: Energy \* (MO/TO) | Energy\_cts\_dair | (F79+F80)\* MObyTO | Descrip\_gen&dair |
| Dairy: Contract work \* (MO/TO) | Contract\_w\_cts\_dair | F60\*MObyTO | Descrip\_gen&dair |
| Dairy: Taxes and other dues \* (MO/TO) | Taxes\_otherdues\_cts\_dair | F83\*MObyTO | Descrip\_gen&dair |
| Dairy: Other direct costs \* (MO/TO)  (water and other farming overheads) | Other\_directs\_cts\_dair | (F84+F81)\*MObyTO | Descrip\_gen&dair |
| Dairy: Taxes on land and buildings \* (MO/TO) | Taxes\_land\_build\_cts\_dair | F88\*MObyTO | Descrip\_gen&dair |
| Dairy: Insurance for farm buildings \* (MO/TO) | Insurance\_build\_cts\_dair | F87\*MObyTO | Descrip\_gen&dair |
| Dairy: Depreciation \* (MO/TO) | Deprec\_cts\_dair | Se360\*MObyTO | Descrip\_gen&dair |
| Dairy: Wages paid \* (MO/TO) | Wagespaid\_cts\_dair | F59\*MObyTO | Descrip\_gen&dair |
| Dairy: Rent paid \* (MO/TO) | Rentpaid\_cts\_dair | F85\*MObyTO | Descrip\_gen&dair |
| replace Rentpaid\_cts\_dair=0 if f85==0  replace Rentpaid\_cts\_dair=0 if se030==0 |
| Dairy: Interest paid \* (MO/TO) | Interestpaid\_cts\_dair | F89\*MObyTO | Descrip\_gen&dair |
| Family imputed labour cost per AWU if there are wages (create the variable with a value of 0, and replace it by the formula if the condition is fulfilled) | Family\_wI\_IfWages\_AWU\_cts | se370/se020 if se370>0 | Descrip\_gen&dair |
| Average Nuts2 family labour costs | Nuts2\_Family\_w\_AWU\_cts | bysort nuts2 year: egen Nuts2\_Family\_w\_AWU\_cts = mean (Family\_wI\_IfWages\_AWU\_cts) if nuts2!= ""  replace Nuts2\_Family\_w\_AWU\_cts=0 if Family\_wI\_IfWages\_AWU\_cts!=.  recode Nuts2\_Family\_w\_AWU\_cts(.=0) | Descrip\_gen&dair |
| Average Nuts1 family labour costs | Nuts1\_Family\_w\_AWU\_cts | bysort nuts1 year: egen Nuts1\_Family\_w\_AWU\_cts = mean (Family\_wI\_IfWages\_AWU\_cts) if nuts1 != ""  replace Nuts1\_Family\_w\_AWU\_cts=0 if Family\_wI\_IfWages\_AWU\_cts!=.  replace Nuts1\_Family\_w\_AWU\_cts=0 if Nuts2\_Family\_w\_AWU\_cts>0  recode Nuts1\_Family\_w\_AWU\_cts(.=0) | Descrip\_gen&dair |
| Average Country family labour costs | Country\_Family\_w\_AWU\_cts | bysort country year: egen Country\_Family\_w\_AWU\_cts = mean (Family\_wI\_IfWages\_AWU\_cts) if country != ""  replace Country\_Family\_w\_AWU\_cts=0 if Family\_wI\_IfWages\_AWU\_cts!=.  replace Country\_Family\_w\_AWU\_cts=0 if Nuts2\_Family\_w\_AWU\_cts>0  replace Country\_Family\_w\_AWU\_cts=0 if Nuts1\_Family\_w\_AWU\_cts>0  recode Country\_Family\_w\_AWU\_cts (.=0) | Descrip\_gen&dair |
| Family imputed labour cost per AWU | Family\_w\_AWU\_cts | Family\_w\_AWU\_cts = Family\_wI\_IfWages\_AWU\_cts + Nuts2\_Family\_w\_AWU\_cts + Nuts1\_Family\_w\_AWU\_cts + Country\_Family\_w\_AWU\_cts | Descrip\_gen&dair |
| Dairy: Family imputed labour costs \* (MO/TO) | Family\_w\_milk\_cts\_dair | (Family\_w\_AWU\_cts\*se015)\*MObyTO | Descrip\_gen&dair |
| Farm capital (permanent crops, building, machinery, forest land, livestock, crop stocks)  G98BV and G98CV are missing (opening and closing value for building): replaced by se450 (simple value) | Own\_Capital\_exclLand\_cts | ((G96BV+G96CV)/2) + se450 + ((G101BV+G101CV)/2) +((G100BV+G100CV)/2) + se475 + se460 + se470 | Descrip\_gen&dair |
| Own land costs if rented | Own\_land\_ifRented\_cts | gen Own\_land\_ifRented\_cts\_ha =.  replace Own\_land\_ifRented\_cts\_ha = (f85/se030) if se030>0 & f85>0 | Descrip\_gen&dair |
| Average Nuts2 land rent costs | Nuts2\_landR\_cts\_ha | bysort nuts2 year: egen Nuts2\_landR\_cts\_ha = mean (Own\_land\_ifRented\_cts\_ha) if nuts2 != ""  replace Nuts2\_landR\_cts\_ha =0 if Own\_land\_ifRented\_cts\_ha!=.  recode Nuts2\_landR\_cts\_ha (.=0) | Descrip\_gen&dair |
| Average Nuts1 land rent costs | Nuts1\_landR\_cts\_ha | bysort nuts1 year: egen Nuts1\_landR\_cts\_ha = mean (Own\_land\_ifRented\_cts\_ha) if nuts1 != ""  replace Nuts1\_landR\_cts\_ha =0 if Own\_land\_ifRented\_cts\_ha!=.  replace Nuts1\_landR\_cts\_ha =0 if Nuts2\_landR\_cts\_ha>0  recode Nuts1\_landR\_cts\_ha (.=0) | Descrip\_gen&dair |
| Average Country land rent costs | Country\_landR\_cts\_ha | bysort country year: egen Country\_landR\_cts\_ha = mean (Own\_land\_ifRented\_cts\_ha) if country != ""  replace Country\_landR\_cts\_ha=0 if Own\_land\_ifRented\_cts\_ha!=.  replace Country\_landR\_cts\_ha=0 if Nuts2\_landR\_cts\_ha>0  replace Country\_landR\_cts\_ha=0 if Nuts1\_landR\_cts\_ha>0  recode Country\_landR\_cts\_ha (.=0) | Descrip\_gen&dair |
| Own land costs | Own\_Land\_cts | (Own\_land\_ifRented\_cts\_ha\*Surf\_Ownld)+(Nuts2\_landR\_cts\_ha\*Surf\_Ownld)+(Nuts1\_landR\_cts\_ha\*Surf\_Ownld)+(Country\_landR\_cts\_ha\*Surf\_Ownld) | Descrip\_gen&dair |
| Calculating the own land costs per ha of own land | CheckLdcts\_ha | gen CheckLdcts\_ha = Own\_Land\_cts/Surf\_Ownld  replace CheckLdcts\_ha = 0 if Own\_Land\_cts==0  replace CheckLdcts\_ha = 0 if Surf\_Ownld==0 | Descrip\_gen&dair |
| Interest paid | Interest\_paid | se380 | Descrip\_gen&dair |
| Actual Interest rate (calculated in a separated excel sheet) | actual\_interest\_rate | New variable inserted | Descrip\_gen&dair |
| Unpaid capital costs | Unpaid\_Capital\_cts | (Own\_Capital\_exclLand\_cts + Own\_Land\_cts) - Interest\_paid | Descrip\_gen&dair |
| Own capital cost | Own\_Capital\_cts | Unpaid\_Capital\_cts \* (Actual\_interest\_rate/100) | Descrip\_gen&dair |
| Own capital cost \* (MO/TO) | Own\_Capital\_cts\_dair | Own\_Capital\_cts\*MObyTO | Descrip\_gen&dair |
| Dairy: Specific costs Tot\_beef\_rev | Spe\_tot\_cts\_dair | Conc\_cts\_dair + Coarse\_fodder\_cts\_dair +Non-foddercrops\_cts\_dair + Spe\_forage\_cts\_dair +Milk\_renewal\_cts +Milk\_levy\_costs + Other\_spe\_lives\_cts\_dair | Descrip\_gen&dair |
| Dairy: Non-specific costs | Non\_spe\_tot\_cts\_dair | Mach\_build\_cts\_dair+Energy\_cts\_dair+Contract\_w\_cts\_dair+Taxes\_otherdues\_cts\_dair+Other\_directs\_cts\_dair+ Taxes\_land\_build\_cts\_dair + Insurance\_build\_cts\_dair | Descrip\_gen&dair |
| Dairy: Total operating costs (specific + non-specific costs) | Oper\_tot\_cts\_dair | Spe\_tot\_cts\_dair +Non\_spe\_tot\_cts\_dair | Descrip\_gen&dair |
| Dairy: Ratio specific costs on total operating costs | RatioSpe\_Oper\_cts\_dair | (Spe\_tot\_cts\_dair/ Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio non-specific costs on total operating costs | RatioNoSpe\_Oper\_cts\_dair | (Non\_spe\_tot\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio total operating costs on total input costs | RatioOper\_Inputs\_cts\_dair | (Oper\_tot\_cts\_dair/ Tot\_inputs\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio purchases concentrates on total operating costs | RatioConc\_Oper\_cts\_dair | (Conc\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio purchases coarse fodder on total operating costs | RatioFodder\_Oper\_cts\_dair | (Coarse\_fodder\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio non-fodder crops on total operating costs | RatioNoFodder\_Oper\_cts\_dair | (Non\_foddercrops\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio specific forage costs on total operating costs | RatioForage\_Oper\_cts\_dair | (Spe\_forage\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio renewal costs on total operating costs | RatioRenewal\_Oper\_cts\_dair | (Milk\_renewal\_cts / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio milk levy cots on total operating costs | RatioLevy\_Oper\_cts\_dair | (Milk\_levy\_costs / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio other specific livestock costs on total operating costs | RatioSpeLives\_Oper\_cts\_dair | (Other\_spe\_lives\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio Machine and building upkeep on total operating costs | RatioBuild\_Oper\_cts\_dair | (Mach\_build\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio Energy on total operating costs | RatioEnergy\_Oper\_cts\_dair | (Energy\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio contract work on total operating costs | RatioContract\_w\_Oper\_cts\_dair | (Contract\_w\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio taxes and other dues on total operating costs | RatioOtherdues\_Oper\_cts\_dair | (Taxes\_otherdues\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio other direct costs on total operating costs | RatioOtherDcts\_Oper\_cts\_dair | (Other\_directs\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio Taxes on land and buildings on total operating costs | RatioTaxLandBuild\_Oper\_cts\_dair | (Taxes\_land\_build\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: Ratio Insurance for farm buildings on total operating costs | RatioInsurBuild\_Oper\_cts\_dair | (Insurance\_build\_cts\_dair / Oper\_tot\_cts\_dair)\*100 | Descrip\_gen&dair |
| Dairy: External factors (wages paid, rent paid, interest paid) | Ext\_tot\_cts\_dair | Wagespaid\_cts\_dair+Rentpaid\_cts\_dair+Interestpaid\_cts\_dair | Descrip\_gen&dair |
| Dairy: Imputed family factor costs (family labour costs, own capital costs) | Family\_capital\_cts\_dair | Family\_w\_milk\_cts\_dair + Own\_Capital\_cts\_dair | Descrip\_gen&dair |
| Dairy: Total inputs (operating costs, depreciation, external factors, imputed family factor costs) | Tot\_inputs\_cts\_dair | Oper\_tot\_cts\_dair + Ext\_tot\_cts\_dair + Family\_capital\_cts\_dair + Deprec\_cts\_dair | Descrip\_gen&dair |
| Total revenues from milk (cow milk, ewes milk, goat milk, EU dairy payments and article 68, national dairy payments) | Tot\_milk\_rev | Milk\_outp\_value + Dair\_subsid | Descrip\_gen&dair |
| Dairy: Gross margin (over operating costs) with coupled subsidies | GrossMarg\_incl\_coupSubsid\_dair | (Tot\_milk\_rev) - (Oper\_tot\_cts\_dair) | Descrip\_gen&dair |
| Dairy: Gross margin (over operating costs) | GrossMarg\_dair | GrossMarg\_incl\_coupSubsid\_dair - Dair\_subsid | Descrip\_gen&dair |
| Dairy: Gross margin (over operating costs) per unit | GrossMarg\_dair\_ut | GrossMarg\_dair/DLU | Descrip\_gen&dair |
| replace GrossMarg\_dair\_ut = 0 if GrossMarg\_dair==0 |
| Dairy: Gross margin (over operating costs) per milk litter | GrossMarg\_dair\_lt | GrossMarg\_dair/Milk\_Prod | Descrip\_gen&dair |
| Dairy: Net margin (before own factors) with coupled subsidies | NetMarg\_incl\_coupSubsid\_dair | (Tot\_milk\_rev) - (Tot\_inputs\_cts\_dair - Family\_capital\_cts\_dair) | Descrip\_gen&dair |
| Dairy: Net margin (before own factors) | NetMarg\_dair | NetMarg\_incl\_coupSubsid\_dair - Dair\_subsid | Descrip\_gen&dair |
| Dairy: Net margin (before own factors) per unit | NetMarg\_dair\_ut | NetMarg\_dair/DLU | Descrip\_gen&dair |
| replace NetMarg\_dair\_ut = 0 if DLU==0 |
| Dairy: Net margin (before own factors) per milk litter | NetMarg\_dair\_lt | NetMarg\_dair/Milk\_Prod | Descrip\_gen&dair |
| Dairy: Net economic margin (after own factors) with coupled subsidies | NetEconMarg\_incl\_coupSubsid\_dair | (Tot\_milk\_rev) - (Tot\_inputs\_cts\_dair) | Descrip\_gen&dair |
| Dairy: Net economic margin (after own factors) | NetEconMarg\_dair | NetEconMarg\_ incl\_coupSubsid\_dair - Dair\_subsid | Descrip\_gen&dair |
| Dairy: Net economic margin (after own factors) per unit | NetEconMarg\_dair\_ut | NetEconMarg\_dair/DLU | Descrip\_gen&dair |
|  |
| replace NetEconMarg\_dair\_ut = 0 if DLU==0 |
| Dairy: Net economic margin (after own factors) per milk litter | NetEconMarg\_dair\_lt | NetEconMarg\_dair/Milk\_Prod | Descrip\_gen&dair |
| Check if there are missing values or values equal to 0 when calculating the net economic margin | check\_MissVal | gen check\_MissVal = 0  replace check\_MissVal = 1 if NetEconMarg\_dair\_lt ==.  replace check\_MissVal = 1 if NetEconMarg\_dair\_lt ==0  *\*Comment: No missing value and no value equals to 0* | Descrip\_gen&dair |
|  |  |  |  |
| BEEF |  |  |  |
|  |  |  |  |
| Calculating the number of observations per nuts2, nuts1 and country  And **deleting regions/country** where necessary:   * **Nuts2<5** * **Nuts1<100 (deactivated)** * **Country<400 (deactivated)**   Done at the very beginning of the stat coding | Nb\_obs\_nuts2\_2 | bysort nuts2 year: egen Nb\_obs\_nuts2\_2 = total (no)  **drop if Nb\_obs\_nuts2\_2<5**  bysort nuts1 year: egen Nb\_obs\_nuts1\_2 = total (no)  **drop if Nb\_obs\_nuts1\_2<100**  bysort country year: egen Nb\_obs\_country\_2 = total (no)  **drop if Nb\_obs\_country\_2<400** | Descrip\_beef |
| Calculating the number of observations per nuts2, nuts1 and country  And **deleting regions/country** where necessary:   * **Nuts2<5** * **Nuts1<100 (deactivated)** * **Country<400 (deactivated)**   Done just before calculating regional average for land rent | Nb\_obs\_nuts2\_3 | bysort nuts2 year: egen Nb\_obs\_nuts2\_3 = total (no)  **drop if Nb\_obs\_nuts2\_3<5**  bysort nuts1 year: egen Nb\_obs\_nuts1\_3 = total (no)  **drop if Nb\_obs\_nuts1\_3<100**  bysort country year: egen Nb\_obs\_country\_3 = total (no)  **drop if Nb\_obs\_country\_3<400** | Descrip\_beef |
| Value of cattle that are saled | cattle\_sa | n23sn+n24sn+n25sn+n26sn+n27sn+n28sn+n29sn | Descrip\_beef |
| **Dairy replace (special type)** | Dairy\_replace | gen Dairy\_replace=0  replace Dairy\_replace=1 if (n28sn/cattle\_sa)>=0.95 | Descrip\_beef |
| **Veal prod (special type)** | Veal\_prod | gen Veal\_prod=0  replace Veal\_prod=1 if sucklcow\_av==0 & n23sn>=5 | Descrip\_beef |
| **Breeders** (farmers with suckler cows not fattening their calves); = 1 if yes | Type\_beef\_Breeders | gen Type\_beef\_Breeders=0  replace Type\_beef\_Breeders=1 if sucklcow\_av>=5 & (n24sn/cattle\_sa)>=0.95  replace Type\_beef\_Breeders=0 if Dairy\_replace==1 | Descrip\_beef |
| **Fatteners** (purchase young males animals and then finish fattening them); = 1 if yes | Type\_beef\_Fatteners | gen Type\_beef\_Fatteners=0  replace Type\_beef\_Fatteners=1 if sucklcow\_av==0 &(n25sn+n26sn+n27sn+n29sn)>=5  replace Type\_beef\_Fatteners=0 if Dairy\_replace==1  replace Type\_beef\_Fatteners=0 if Veal\_prod==1 | Descrip\_beef |
| **Breeders and fatteners** (fatten the calves born on their farms); = 1 if yes | Type\_beef\_Breeders\_Fatteners | gen Type\_beef\_Breeders\_Fatteners=0  replace Type\_beef\_Breeders\_Fatteners =1 if sucklcow\_av>=5 & (n24sn/cattle\_sa)<0.95  replace Type\_beef\_Breeders\_Fatteners =0 if Dairy\_replace==1 | Descrip\_beef |
| Check if there is no overlaps between the different farm types defined  A score of 0 means that the farm is not assigned to any beef type  A score of 1 means the farm is assigned to one type  A score of 2 means there are overlaps | Check\_Type\_beef | Dairy\_replace + Veal\_prod + Type\_beef\_Breeders + Type\_beef\_Breeders\_Fatteners + Type\_beef\_Fatteners | Descrip\_beef |
| Check2\_Type\_beef | gen Check2\_Type\_beef=0  replace Check2\_Type\_beef=1 if Check\_Type\_beef ==1  replace Check2\_Type\_beef=2 if Check\_Type\_beef>1 | Descrip\_beef |
| **Dropping farms which are not of beef type** | | drop if Check2\_Type\_beef ==0 | Descrip\_beef |
| Beef: Purchased concentrates for grazing livestock \* (BLU/GLU) | Conc\_cts\_beef | F64\*(BLU/GLU) | Descrip\_beef |
| replace Conc\_cts\_beef = 0 if f64==0  replace Conc\_cts\_beef = 0 if BLU==0  replace Conc\_cts\_beef = 0 if GLU==0 |
| Beef: Purchased coarse fodder for grazing livestock \* (BLU/GLU) | Coarse\_fodder\_cts\_beef | F65\*(BLU/GLU) | Descrip\_beef |
| replace Coarse\_fodder\_cts\_beef = 0 if f65==0  replace Coarse\_fodder\_cts\_beef = 0 if BLU==0  replace Coarse\_fodder\_cts\_beef = 0 if GLU==0 |
| Beef: Farm use of non-fodder crops \* (BLU/GLU) | Non\_foddercrops\_cts\_beef | F68\*( BLU/TLU) | Descrip\_beef |
| replace Conc\_cts\_beef = 0 if f68==0  replace Conc\_cts\_beef = 0 if BLU==0  replace CConc\_cts\_beef = 0 if GLU==0 |
| replace Spe\_forage\_cts\_beef = 0 if BLU==0  replace Spe\_forage\_cts\_beef = 0 if GLU==0 | Descrip\_beef |
| Beef: Other specific livestock costs \* (BLU/TLU) | Other\_spe\_lives\_cts\_beef | F71\*( BLU/TLU) | Descrip\_beef |
| replace Other\_spe\_lives\_cts\_beef = 0 if f71 ==0  replace Other\_spe\_lives\_cts\_beef = 0 if BLU ==0  replace Other\_spe\_lives\_cts\_beef = 0 if TLU ==0 |
| Dropping observations for which Beef output & subsidies equals to 0  *\** *number of values: before=320.126, after=265.979* | | drop if Beef\_outp\_value=0 | Descrip\_beef |
| Dropping observations for which Beef livestock units equals to 0  *\** *number of values: before=265.979, after=265.727* | | drop if BLU==0 |  |
| Percentage of BO in TOb | BObyTOb | (BO/TOb) | Descrip\_beef |
| Same as for dairy: the variable listed on the right have to be created again (the one for dairy are wrong because observations have been dropped to represent dairy system) | Family\_wI\_IfWages\_AWU\_cts  Nuts2\_Family\_w\_AWU\_cts  Nuts1\_Family\_w\_AWU\_cts  Country\_Family\_w\_AWU\_cts  Family\_w\_AWU\_cts | gen Family\_wI\_IfWages\_AWU\_cts=.  replace Family\_wI\_IfWages\_AWU\_cts = se370/se020 if se370>0  bysort nuts2 year: egen Nuts2\_Family\_w\_AWU\_cts = mean (Family\_wI\_IfWages\_AWU\_cts) if nuts2 != ""  replace Nuts2\_Family\_w\_AWU\_cts=0 if Family\_wI\_IfWages\_AWU\_cts!=.  recode Nuts2\_Family\_w\_AWU\_cts(.=0)  bysort nuts1 year: egen Nuts1\_Family\_w\_AWU\_cts = mean (Family\_wI\_IfWages\_AWU\_cts) if nuts1 != ""  replace Nuts1\_Family\_w\_AWU\_cts=0 if Family\_wI\_IfWages\_AWU\_cts!=.  replace Nuts1\_Family\_w\_AWU\_cts=0 if Nuts2\_Family\_w\_AWU\_cts>0  recode Nuts1\_Family\_w\_AWU\_cts(.=0)  bysort country year: egen Country\_Family\_w\_AWU\_cts = mean (Family\_wI\_IfWages\_AWU\_cts) if country != ""  replace Country\_Family\_w\_AWU\_cts=0 if Family\_wI\_IfWages\_AWU\_cts!=.  replace Country\_Family\_w\_AWU\_cts=0 if Nuts2\_Family\_w\_AWU\_cts>0  replace Country\_Family\_w\_AWU\_cts=0 if Nuts1\_Family\_w\_AWU\_cts>0  recode Country\_Family\_w\_AWU\_cts (.=0)  recode Family\_wI\_IfWages\_AWU\_cts(.=0)  gen Family\_w\_AWU\_cts = Family\_wI\_IfWages\_AWU\_cts + Nuts1\_Family\_w\_AWU\_cts + Nuts2\_Family\_w\_AWU\_cts + Country\_Family\_w\_AWU\_cts | Descrip\_beef |
| Beef: Machine and building upkeep \* (BO/TOb) | Mach\_build\_cts\_beef | (F78+F61)\*BObyTOb | Descrip\_beef |
| Beef: Energy \* (BO/TOb) | Energy\_cts\_beef | (F79+F80)\*BObyTOb | Descrip\_beef |
| Beef: Contract work \* (BO/TOb) | Contract\_w\_cts\_beef | F60\*BObyTOb | Descrip\_beef |
| Beef: Taxes and other dues \* (BO/TOb) | Taxes\_otherdues\_cts\_beef | F83\*BObyTOb | Descrip\_beef |
| Beef: Other direct costs \* (BO/TOb) | Other\_directs\_cts\_beef | (F84+F81)\*BObyTOb | Descrip\_beef |
| Beef: Taxes on land and buildings \* (BO/TOb) | Taxes\_land\_build\_cts\_beef | F88\*BObyTOb | Descrip\_beef |
| Beef: Insurance for farm buildings \* (BO/TOb) | Insurance\_build\_cts\_beef | F87\*BObyTOb | Descrip\_beef |
| Beef: Depreciation \* (BO/TOb) | Deprec\_cts\_beef | Se360\* BObyTOb | Descrip\_beef |
| Beef: Wages paid \* (BO/TOb) | Wagespaid\_cts\_beef | F59\*BObyTOb | Descrip\_beef |
| Beef: Rent paid \* (BO/TOb) | Rentpaid\_cts\_beef | F85\*BObyTOb | Descrip\_beef |
| replace Rentpaid\_cts\_beef=0 if f85==0  replace Rentpaid\_cts\_beef=0 if se030==0 |
| Beef: Interest paid \* (BO/TOb) | Interestpaid\_cts\_beef | F89\*BObyTOb | Descrip\_beef |
| Beef: Family imputed labour costs \* (BO/TOb) | Family\_w\_ cts\_beef | (Family\_w\_AWU\_cts\*se015)\*BObyTOb | Descrip\_beef |
| **Same as for dairy:** the variable listed on the right have to be created again (the one for dairy are wrong because observations have been dropped to represent dairy system) | Own\_Capital\_exclLand\_cts  Own\_land\_ifRented\_cts\_ha  Nuts2\_landR\_cts\_ha  Nuts1\_landR\_cts\_ha  Country\_landR\_cts\_ha  Own\_Land\_cts  CheckLdcts\_ha  Unpaid\_Capital\_cts  Own\_Capital\_cts | \*\*\*\*\*\*\*\*\*\* | Descrip\_beef |
| Own capital cost \* (BO/TOb) | Own\_Capital\_cts\_beef | Own\_Capital\_cts\*BObyTOb | Descrip\_beef |
| Beef: Specific costs | Spe\_tot\_cts\_beef | Conc\_cts\_beef + Coarse\_fodder\_cts\_ beef + Non-foddercrops\_cts\_ beef + Spe\_forage\_cts\_ beef +Beef\_renewal\_cts + Other\_spe\_lives\_cts\_ beef | Descrip\_beef |
| Beef: Non-specific costs | Non\_spe\_tot\_cts\_beef | Mach\_build\_cts\_ beef + Energy\_cts\_beef + Contract\_w\_cts\_ beef + Taxes\_otherdues\_cts\_beef + Other\_directs\_cts\_beef + Taxes\_land\_build\_cts\_beef + Insurance\_build\_cts\_beef | Descrip\_beef |
| Beef: Total operating costs (specific + non-specific costs) | Oper\_tot\_cts\_beef | Spe\_tot\_cts\_beef + Non-spe\_tot\_cts\_beef | Descrip\_beef |
| Beef: Ratio specific costs on total operating costs | RatioSpe\_Oper\_cts\_beef | (Spe\_tot\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio non-specific costs on total operating costs | RatioNoSpe\_Oper\_cts\_beef | (Non\_spe\_tot\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio total operating costs on total input costs | RatioOper\_Inputs\_cts\_beef | (Oper\_tot\_cts\_beef / Tot\_inputs\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio purchases concentrates on total operating costs | RatioConc\_Oper\_cts\_beef | (Conc\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio purchases coarse fodder on total operating costs | RatioFodder\_Oper\_cts\_beef | (Coarse\_fodder\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio non-fodder crops on total operating costs | RatioNoFodder\_Oper\_cts\_beef | (Non\_foddercrops\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio specific forage costs on total operating costs | RatioForage\_Oper\_cts\_beef | (Spe\_forage\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio renewal costs on total operating costs | RatioRenewal\_Oper\_cts\_beef | (Beef\_renewal\_cts / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio other specific livestock costs on total operating costs | RatioSpeLives\_Oper\_cts\_beef | (Other\_spe\_lives\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio Machine and building upkeep on total operating costs | RatioBuild\_Oper\_cts\_beef | (Mach\_build\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio Energy on total operating costs | RatioEnergy\_Oper\_cts\_beef | (Energy\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio contract work on total operating costs | RatioContract\_w\_Oper\_cts\_beef | (Contract\_w\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio taxes and other dues on total operating costs | RatioOtherdues\_Oper\_cts\_beef | (Taxes\_otherdues\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio other direct costs on total operating costs | RatioOtherDcts\_Oper\_cts\_beef | (Other\_directs\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio Taxes on land and buildings on total operating costs | RatioTaxLandBuild\_Oper\_cts\_beef | (Taxes\_land\_build\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: Ratio Insurance for farm buildings on total operating costs | RatioInsurBuild\_Oper\_cts\_beef | (Insurance\_build\_cts\_beef / Oper\_tot\_cts\_beef )\*100 | Descrip\_beef |
| Beef: External factors (wages paid, rent paid, interest paid) | Ext\_tot\_cts\_beef | Wagespaid\_cts\_beef + Rentpaid\_cts\_beef + Interestpaid\_cts\_beef | Descrip\_beef |
| Beef: Imputed family factor costs (family labour costs, own capital costs) | Family\_capital\_cts\_beef | Family\_w\_ cts\_beef + Own\_Capital\_cts\_beef | Descrip\_beef |
| Beef: Total inputs (operating costs, depreciation, external factors, imputed family factor costs) | Tot\_inputs\_cts\_beef | Oper\_tot\_cts\_beef + Ext\_tot\_cts\_beef + Family\_capital\_cts\_beef + Deprec\_cts\_beef | Descrip\_beef |
| Total revenues from beef | Tot\_beef\_rev | Beef\_outp\_value + Beef\_subsid | Descrip\_beef |
| Revenues from beef per unit | beef\_ut\_rev | Tot\_beef\_rev/BLU | Descrip\_beef |
| replace beef\_ut\_rev = 0 if Tot\_beef\_rev == 0 |
| Beef: Gross margin (over operating costs) with coupled subsidies | GrossMarg\_incl\_coupSbs\_beef | (Tot\_beef\_rev) - (Oper\_tot\_cts\_beef) | Descrip\_beef |
| Beef: Gross margin (over operating costs) with coupled subsidies; per unit | GrossMarg\_incl\_coupSbs\_beef\_ut | (Tot\_beef\_rev-Oper\_tot\_cts\_beef)/BLU | Descrip\_beef |
| Beef: Gross margin (over operating costs) | GrossMarg\_beef | GrossMarg\_incl\_coupSbs\_beef - Beef\_subsid | Descrip\_beef |
| Beef: Gross margin (over operating costs) per unit | GrossMarg\_beef\_ut | GrossMarg\_beef/BLU | Descrip\_beef |
|  |
| Beef: Net margin (before own factors) with coupled subsidies | NetMarg\_incl\_coupSubsid\_beef | (Tot\_beef\_rev) - (Tot\_inputs\_cts\_beef - Family\_capital\_cts\_beef) | Descrip\_beef |
| Beef: Net margin (before own factors) | NetMarg\_beef | NetMarg\_incl\_coupSubsid\_beef - Beef\_subsid | Descrip\_beef |
| Beef: Net margin (before own factors) per unit | NetMarg\_beef\_ut | NetMarg\_beef/BLU | Descrip\_beef |
| replace NetMarg\_beef\_ut = 0 if BLU==0 |
| Beef: Net economic margin (after own factors) with coupled subsidies | NetEconMarg\_incl\_coupSubsid\_beef | (Tot\_beef\_rev) - (Tot\_inputs\_cts\_beef) | Descrip\_beef |
| Beef: Net economic margin (after own factors) | NetEconMarg\_beef | NetEconMarg\_incl\_coupSubsid\_beef - Beef\_subsid | Descrip\_beef |
| Beef: Net economic margin (after own factors) per unit | NetEconMarg\_beef\_ut | NetEconMarg\_beef/BLU | Descrip\_beef |
| replace NetEconMarg\_beef\_ut = 0 if BLU==0 |
| Check if there are missing values or values equal to 0 when calculating the net economic margin | gen checkBeef\_MissVal | gen checkBeef\_MissVal = 0  replace checkBeef\_MissVal = 1 if NetEconMarg\_beef\_ut ==.  replace checkBeef\_MissVal = 1 if NetEconMarg\_beef\_ut ==0 | Descrip\_beef |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Temperature max, average on the year | avg\_tpmax\_year |  | weather\_process |
| Temperature min, average on the year | avg\_tpmin\_year |  | weather\_process |
| Temperature min, average on the year | avg\_tpavg\_year |  | weather\_process |
| Vapour pressure, average on the year | avg\_vappress\_year |  | weather\_process |
| Precipitation (mm) per day, average on the year | avg\_mmd\_year |  | weather\_process |
|  |  |  |  |
| Temperature max, average, SD on the year | sd\_avg\_tpmax\_year |  | weather\_process |
| Temperature min, average, SD on the year | sd\_avg\_tpmin\_year |  | weather\_process |
| Temperature min, average, SD on the year | sd\_avg\_tpavg\_year |  | weather\_process |
| Vapour pressure, average, SD on the year | sd\_avg\_vappress\_year |  | weather\_process |
| Precipitation (mm) per day, average, SD on the year | sd\_avg\_mmd\_year |  | weather\_process |
|  |  |  |  |
| Number of day with precipitation below 1mm/day, on the year | d\_0\_1mmd\_year |  | weather\_process |
| Number of days with temperature max above 25°c, on the year | dtpmax\_sup25\_year |  | weather\_process |
| Number of days with TH1 above 55, on the year | THI1\_d\_sup55\_year |  | weather\_process |
| Number of days with TH1 above 60, on the year | THI1\_d\_sup60\_year |  | weather\_process |
| Number of days with TH2 above 55, on the year | THI2\_d\_sup55\_year |  | weather\_process |
| Number of days with TH2 above 60, on the year | THI2\_d\_sup60\_year |  | weather\_process |
| Temperature max in January, on average on the year | jan\_tmax |  | weather\_process |
| Temperature max in February, on average on the year | fev\_tmax |  | weather\_process |
| Etc (the same for all months) | etc |  | weather\_process |
| Temperature min in January, on average on the year | jan\_tmin |  | weather\_process |
| Temperature min in February, on average on the year | fev\_tmin |  | weather\_process |
| Etc (the same for all months) | etc |  | weather\_process |
| Temperature avg in January, on average on the year | jan\_tavg |  | weather\_process |
| Temperature avg in February, on average on the year | fev\_tavg |  | weather\_process |
| Etc (the same for all months) | etc |  | weather\_process |
| Average vapour pressure in January, on average on the year | jan\_vappress |  | weather\_process |
| Average vapour pressure in February, on average on the year | fev\_vappress |  | weather\_process |
| Etc (the same for all months) | etc |  | weather\_process |
|  |  |  |  |
| Precipitation (mm per day) in January, on average on the year | jan\_mmd |  | weather\_process |
| Precipitation (mm per day) in February, on average on the year | fev\_mmd |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |
| Number of days with precipitation below 1mm/day in January, on the year | jan\_d\_0\_1mmd |  | weather\_process |
| Number of days with precipitation below 1mm/day in February, on the year | fev\_d\_0\_1mmd |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |
| Number of days with temperature max above 25°c in January, on the year | jan\_d\_sup25 |  | weather\_process |
| Number of days with temperature max above 25°c in February, on the year | fev\_d\_sup25 |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |
| Number of days with TH1 above 55 in January, on the year | jan\_dTHI1\_sup55 |  | weather\_process |
| Number of days with TH1 above 55 in February, on the year | fev\_dTHI1\_sup55 |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |
| Number of days with TH1 above 60 in January, on the year | jan\_dTHI1\_sup60 |  | weather\_process |
| Number of days with TH1 above 60 in February, on the year | fev\_dTHI1\_sup60 |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |
| Number of days with TH2 above 55 in January, on the year | jan\_dTHI2\_sup55 |  | weather\_process |
| Number of days with TH2 above 55 in February, on the year | fev\_dTHI2\_sup55 |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |
| Number of days with TH2 above 60 in January, on the year | jan\_dTHI2\_sup60 |  | weather\_process |
| Number of days with TH2 above 60 in February, on the year | fev\_dTHI2\_sup60 |  | weather\_process |
| Etc (the same for all months) | etc... |  | weather\_process |

sd\_avg\_tpavg\_year sd\_avg\_mmd\_year dtpmax\_sup5\_year dtpavg\_sup5\_year jan\_max\_tmax feb\_max\_tmax mar\_max\_tmax apr\_max\_tmax may\_max\_tmax jun\_max\_tmax jul\_max\_tmax aug\_max\_tmax sep\_max\_tmax oct\_max\_tmax nov\_max\_tmax dec\_max\_tmax jan\_min\_tmin feb\_min\_tmin mar\_min\_tmin apr\_min\_tmin may\_min\_tmin jun\_min\_tmin jul\_min\_tmin aug\_min\_tmin sep\_min\_tmin oct\_min\_tmin nov\_min\_tmin dec\_min\_tmin avg\_tpmax\_year avg\_tpmin\_year avg\_tpavg\_year avg\_mmd\_year d\_0\_1mmd\_year dtpmax\_sup25\_year THI1\_d\_sup55\_year THI1\_d\_sup60\_year THI2\_d\_sup55\_year THI2\_d\_sup60\_year jan\_tmax feb\_tmax mar\_tmax apr\_tmax may\_tmax jun\_tmax jul\_tmax aug\_tmax sep\_tmax oct\_tmax nov\_tmax dec\_tmax jan\_tmin feb\_tmin mar\_tmin apr\_tmin may\_tmin jun\_tmin jul\_tmin aug\_tmin sep\_tmin oct\_tmin nov\_tmin dec\_tmin jan\_tavg feb\_tavg mar\_tavg apr\_tavg may\_tavg jun\_tavg jul\_tavg aug\_tavg sep\_tavg oct\_tavg nov\_tavg dec\_tavg jan\_mmd feb\_mmd mar\_mmd apr\_mmd may\_mmd jun\_mmd jul\_mmd aug\_mmd sep\_mmd oct\_mmd nov\_mmd dec\_mmd jan\_d\_0\_1mmd feb\_d\_0\_1mmd mar\_d\_0\_1mmd apr\_d\_0\_1mmd may\_d\_0\_1mmd jun\_d\_0\_1mmd jul\_d\_0\_1mmd aug\_d\_0\_1mmd sep\_d\_0\_1mmd oct\_d\_0\_1mmd nov\_d\_0\_1mmd dec\_d\_0\_1mmd jan\_d\_sup25 feb\_d\_sup25 mar\_d\_sup25 apr\_d\_sup25 may\_d\_sup25 jun\_d\_sup25 jul\_d\_sup25 aug\_d\_sup25 sep\_d\_sup25 oct\_d\_sup25 nov\_d\_sup25 dec\_d\_sup25 jan\_dTHI1\_sup55 feb\_dTHI1\_sup55 mar\_dTHI1\_sup55 apr\_dTHI1\_sup55 may\_dTHI1\_sup55 jun\_dTHI1\_sup55 jul\_dTHI1\_sup55 aug\_dTHI1\_sup55 sep\_dTHI1\_sup55 oct\_dTHI1\_sup55 nov\_dTHI1\_sup55 dec\_dTHI1\_sup55 jan\_dTHI1\_sup60 feb\_dTHI1\_sup60 mar\_dTHI1\_sup60 apr\_dTHI1\_sup60 may\_dTHI1\_sup60 jun\_dTHI1\_sup60 jul\_dTHI1\_sup60 aug\_dTHI1\_sup60 sep\_dTHI1\_sup60 oct\_dTHI1\_sup60 nov\_dTHI1\_sup60 dec\_dTHI1\_sup60 jan\_dTHI2\_sup55 feb\_dTHI2\_sup55 mar\_dTHI2\_sup55 apr\_dTHI2\_sup55 may\_dTHI2\_sup55 jun\_dTHI2\_sup55 jul\_dTHI2\_sup55 aug\_dTHI2\_sup55 sep\_dTHI2\_sup55 oct\_dTHI2\_sup55 nov\_dTHI2\_sup55 dec\_dTHI2\_sup55 jan\_dTHI2\_sup60 feb\_dTHI2\_sup60 mar\_dTHI2\_sup60 apr\_dTHI2\_sup60 may\_dTHI2\_sup60 jun\_dTHI2\_sup60 jul\_dTHI2\_sup60 aug\_dTHI2\_sup60 sep\_dTHI2\_sup60 oct\_dTHI2\_sup60 nov\_dTHI2\_sup60 dec\_dTHI2\_sup60

1. The mean was performed on non-zero yield pixels in order to exclude non-suitable areas from average. [↑](#footnote-ref-2)