

Biomass production from grassland - Demand

General description

The most important forage feeding species in the Alpine space are bovine animals, horses, sheep and goats. The energy demand depends on the herd composition (age class, gender) of each species and the desired output (type of product). In the calculation, the energy demand for raising and sustaining the above-mentioned species is taken into account as well as the energy that is needed to produce milk from dairy cows.

Input data

- Statistical data on livestock units (numbers of animals per species) * Energy demand for producing 1 liter of milk

Calculation processes

(1) Calculate the statistical herd composition

- Calculation of the herd composition for bovines, equidae, sheep and goats. For these classes, the number of animals per species, per age class and per gender is computed. * Depending on data availability and accuracy, the herd composition can be derived directly from livestock statistics.

(2) Calculate the annual energy demand

- Calculation of the energy demand per animal species and age class. Data derived from literature review (Jäger 2017). * Calculation of the Annual Energy Demand [MJ NEL] using the following formula:

$$AED = (Quantity\ of\ each\ animal\ species) \times (percentage\ of\ the\ age\ class) \times (energy\ demand\ per\ day) \times (365)$$

(3) Inclusion of milk production for dairy costs in the model

- Calculation of the average amount of produced milk in kg per municipality from statistical data (Eurostat, 2010). This value is then divided by the number of dairy cows to get the amount of milk produced per animal. Finally, the amount of milk per cow is multiplied by the energy demand [in MJ NEL] required to produce 1 liter of milk.

Biomass Production

Flowchart depicting the procedures used to derive the demand indicator

References:

Jäger H. (2017): Mapping of supply and demand of biomass from Alpine Grassland. Master Thesis. Technical University of Munich.

Eurostat. (2010). Production of cow's milk on farms by NUTS 2 regions. Retrieved 18th May 2017, from: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=__tgs00046

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