Biomass production from grassland - Flow

General description:

The flow indicator is defined as the fraction of the local yield that is utilized, expressed by its energy content [MJ NEL ha⁻¹ y⁻¹]. Hence, it introduces a forage quality component to the yield calculation and allows for computing the energy balance combined with the energy demand indicator. Furthermore, losses due to grazing, harvesting and storage processes are considered.

Input data

- Supply indicator (as calculated in the previous section of this document)
- Values on energy content in biomass * Pastures areas
- Harvest and transpiration loss estimates

Calculation processes

(1) Calculate the energy content

 Calculate the average energy content (MJ NEL t¹ DM) of the cut biomass considering vegetation type, harvesting date and method (values according to Resch et al., 2006).

(2) Calculate forage pasture area

For the calculation of the flow indicator, the land cover delimitations for the local yield estimates can be used.However, this data does not allow for distinguishing between meadows and pastures that are grazed or cut and those left barren due to topographical condition and harsh accessibility. Hence, the effective forage extent might differ from the one derived from Corine Land Cover and a hence, a correction based on statistical data on a municipality level might be necessary. For details, please refer to Jäger 2017.

(3) Calculate energy yield at the stock

The yield at the stock describes the aboveground biomass that is growing on the forage area, expressed by its energy content [MJ NEL ha⁻¹]. For this purpose the forage area from step (2) is multiplied with the mean energy yield per ha from step (1). * If specific data on pasture forage types and uses is available, a more detailed approach can be taken into consideration (for details please refer to Jäger 2017).

Otherwise, the calculation can be done directly based on the land cover classes.

(4) Calculate the gross yield

- Last update: 2018/07/18 08:40
 - The amount of fodder that is removed from the stock is called gross yield. Here, losses from harvesting and transpiration are responsible for the deduction. The harvest and transpiration losses range from 5 to 30 % (Buchgraber 2004, p. 49).

(5) Calculate the Net Yield

The net yield is the amount of fodder that is actually consumed by livestock. When computing losses from gross yield to net yield, the specific storage and feeding techniques used have a major impact. Losses during storage and feeding account for anywhere between 5% and 40% (Buchgraber 2004, p. 49). Due to the fact that these factors depend on individual farm management, mean values are used to calculate the deduction: as a total mean, 15% will be deducted for all losses.



WIKIAlps - the Alpine WIKI - http://www.wikialps.eu/doku.php/

References:

Resch R, Guggenberger T, Wiedner G, et al.: Futterwerttabellen für das Grundfutter im Alpenraum.Der fortschrittliche Landwirt 84:1-20, 2006.

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

Buchgraber K: Zeitgemässe Grünland-Bewirtschaftung 2., völlig
neu bearb.Aufl. Edition. Graz [u.a.]: Graz [u.a.]: Stocker, 2004.

From: http://www.wikialps.eu/doku.php/ - **WIKIAlps - the Alpine WIKI**

Permanent link: http://www.wikialps.eu/doku.php/doku.php?id=wiki:net_fodder_energy_content

Last update: 2018/07/18 08:40