Robust animals for grass based production systems

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The message to take home ...

« A robust animal is transparent »
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Grass-based production systems

The ruminant’s natural ability to consume grass and forage is a chance and a challenge for the future

Pasture-based systems are seasonal, less stable and more uncertain

![Graph showing grass growth (kg DM/ha/day) over time with lines for Average 10 years, 2008, and 2014.]

Good grazing management imposes low post grazing height

Herd demand [2.5 cows/ha]

A robust animal should be able to face all the constraints associated with grass-based systems

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1. The animal for the system

**Ability to adapt to grazing**

High level of intake in adverse conditions  
(*balance per animal and per hectare performance*)

Large intake relative to their productivity potential

Motivation: « aggressive grazers »

**Ability to cope with resource variability and to rebound**

Easier to do if the nutrient demand is aligned with available resources

- Capability to adapt milk or growth without negative effect on reproduction (body reserves)
- Able to react (milk yield, fertility,...) when the feeding situation is improved
The key role of the breeding season

Dairy and beef cow - One calving season
- Calving
- Breeding
- Drying off

Suckling ewe - One lambing season
- Lambing
- Weaning
- Mating

Dairy and beef cow - Two calving seasons
- Calving
- Breeding
- Calving
- Breeding
- Drying off

To match herd & flock demand to the seasonality of grass availability
2. The animal for the system

Assume all the cascade of fertility to recalve/lamb at the right period

Age at puberty / 1st calving or lambing age
3. The animal for the system

**Ability for maternal care**

- Deliver a viable offspring with minimal (no ?) human assistance
- Limit calf and lamb mortality with a high maternal behaviour

**Ability to stay healthy**

- Cope with parasite burdens – High resistance (less impacts, less anthelmintic treatments)
- Metabolic disorders due to inclement weather and/or nutrients imbalance (tetany, toxemia, bloat)
- Feet and legs diseases (grazing is walking …)
Robustness is multi-functional traits

- Milk Solids priority
  - MS in 150 days (average = 274 kg)
  - In-calf (average = 64%)

- BCS priority
  - BCS at calving (average = 3.1 pts)
  - BCS max loss in 150 days (average = -0.9 pts)

- Breeding priority
  - In difficulty
  - MS 150 d (kg)
  - In calf (%)
To conclude …

In high input indoor systems, the entire farm system serves the animal requirements.

In low input and grass based systems, the animal has to be adapted to the specific environmental context and challenges.

Better combine the genetic sub-indices available to select animal traits for grass-based systems.

Better understand the trade-off and more accurately identify robust animals.

Develop research to define new traits of interest and imagine tools and methods to evaluate them.
Thank you for your attention