Description and prediction of multi-species pasture nutritive value across the grazing season

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Multi-species pastures have substantial agronomic and animal nutrition advantages. However their feeding value, in terms of voluntary intake, energy and protein value, and variation according to season or management is poorly described. The objective of this 5-year experiment was to evaluate the feeding value of two sown multi-species pastures using *in vivo* sheep measurements.

Two multi-species pastures

Swiss pasture (Mst 444 – 34.5 kg/ha) : foxtail (7.5 kg/ha), red fescue (3.5), common meadow grass (9.5), perennial ryegrass (3.0), meadow fescue (7.5), white clover (3.5)

Sown in Sept. 2004 at Le Pin-au-Haras experimental farm (Normandy - 48.44° N - 0.09° E).

Drained clay-loam soil and oceanic climate (10.7° C – 725 mm rain – 160 rainy days) are favourable to grass production.

Loire valley pasture (34.5 kg/ha) : tall fescue (9.0 kg/ha), timothy (4.5), perennial ryegrass (7.0), white clover (2.5), hybrid clover (3.5), red clover (4.5), birds-foot trefoil (3.5)

Each year, from April to October, 145 *in vivo* digestibility measurement periods were realised to evaluate the

- Chemical composition : DM, OM, CP, CF
- Voluntary intake (LFU) and nutritive value (NEL, PDI) according to the INRA feeding systems (2007).

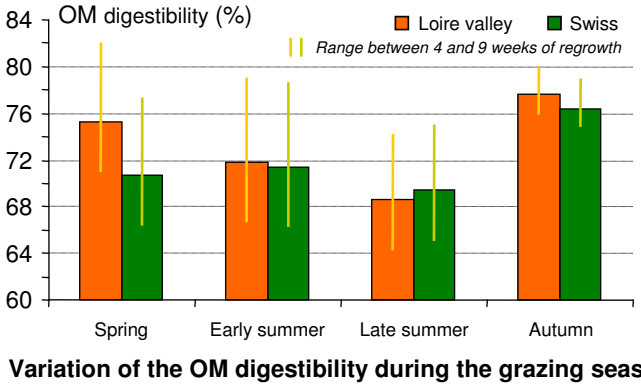
An interesting nutritive value across the grazing season

At the beginning of the experiment, the Loire valley pasture was dominated by perennial ryegrass and red clover, however at the end tall fescue, timothy and white clover were the dominant species. The Swiss pasture was rapidly dominated by foxtail in association with white clover.

On average, these two pastures were characterised by a high nutritive value (kg DM)
72% OMd - 1445 Kcal NEL (0.85 UFL) - 152g CP (95g PDIE - 105g PDIN) - 140g DMI/kg $BW^{0.75}$ (1.00 LFU)

The age of regrowth had a significant effect on the feeding value. The weekly decline was -8.4g, -2.0 pts, -0.03 UFL, + 7.8g and + 0.013 LFU for CP content, OM digestibility, energy value, CF content and lactation feed unit value, respectively.

In this experiment, the multi-species pastures were shown as an interesting option for ruminant feeding due to the high contribution of legumes (red and white clovers) in the mixture. The prediction of digestibility and nutritive value of these pastures remains difficult because of the large variation in the contribution of each species to the overall pasture during the grazing season and between years.



Variation of the OM digestibility during the grazing season