Characterizing permanent grasslands at farm level through plant functional types

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SCOPE & AIM

- ❑ Encouraging more sustainable livestock systems can take the form of preserving plant diversity;
- ❑ This calls for the development of a method for characterising the implications of diversity for farm management.
- ❑ We examine if a functional categorisation is appropriate for describing within- and between-field grassland diversity

MATERIAL and METHODS

❑Grassland vegetation types (GVT) were defined on the basis of LDMCgw (leaf dry matter content being weighted by the abundance of grass species), leading to distinguish two functional types: acquisitive PFT (PFTacq) having low LDMC, and conservative PFT having high LDMC (Duru *et al.,* 2010). For each grassland field, we calculated:

➢the % of PFTacq for assessing grassland productivity and the dynamics of grass growth along a growing cycle;

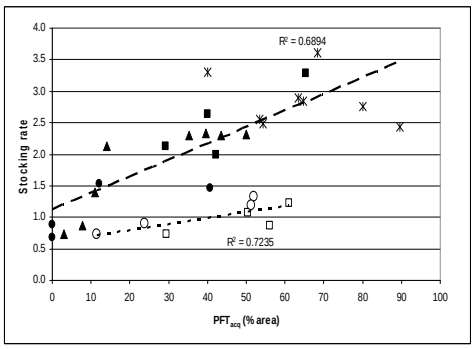
➢within-field functional diversity (FDα), the spreading of LDMC was characterised by an index;

➢a Simpson index for characterising between-field diversity (FDβ), considering six LDMCgw classes for calculating the proportion (pi) of grassland area of each LDMCgw class at land use type levels.

❑The work was carried out in the southern part of the French Central Massif: 169 grassland fields belonging to four dairy and four beef farms; stocking rate varied from 0.7 to 1.1 animal unit per ha

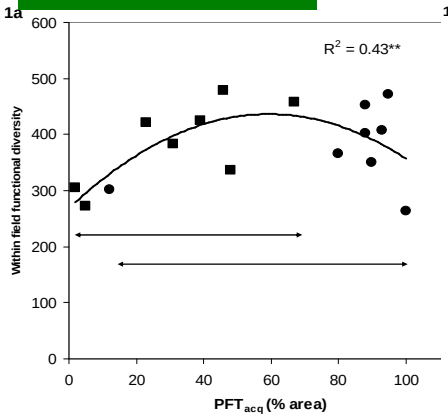
Grassland characterisation through plant functional types

Stocking rate

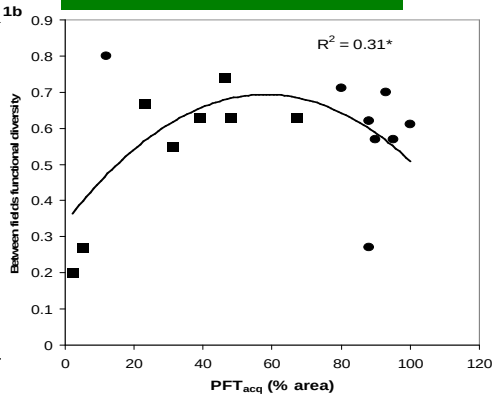


Relationship between the stocking rate and the percentage of grassland area having acquisitive GVT (LDMCacq) at land use type level

Within field diversity



Between fields diversity



Relationship between within- (1a) and between-fields (1b) plant diversity according to PFTacq for grazing (■) and cutting (●) areas

CONCLUSION

❑Vegetation types encountered were mainly related to stocking rate, in such a way that contrasting GVT assemblages (FDβ) were observed at farm level depending on whether land was used for grazing or cutting and on management intensity.

❑Highest FDα was observed for intermediate management intensity.

Duru M, Cruz P, Theau JP. 2010. A simplified method for characterizing agronomic services provided by species-rich grasslands. Crops and Pastures, 61, 420-433.