



Objective

To describe the diversity in the nutritive value of tree leaves and to test if the belonging of a species to a botanical family could be predictive of its fodder quality.



Materials and methods

- ✓ Leaves collection : on 50 woody species (16 botanical families) in August 2016 and 2017 in different regions of France.
- ✓ Sample analysis: enzymatic digestibility of dry matter (ED), content in ash, crude protein (CP), fibres (NDF, ADF and ADL), condensed tannins (C. tannins) and minerals Ca, K, Mg, P, Na.
- ✓ Comparison of 6 botanical families involving at least 2 species belonging to different genus to test the family effect.



Results

I) Effects of botanical families on the nutritive value

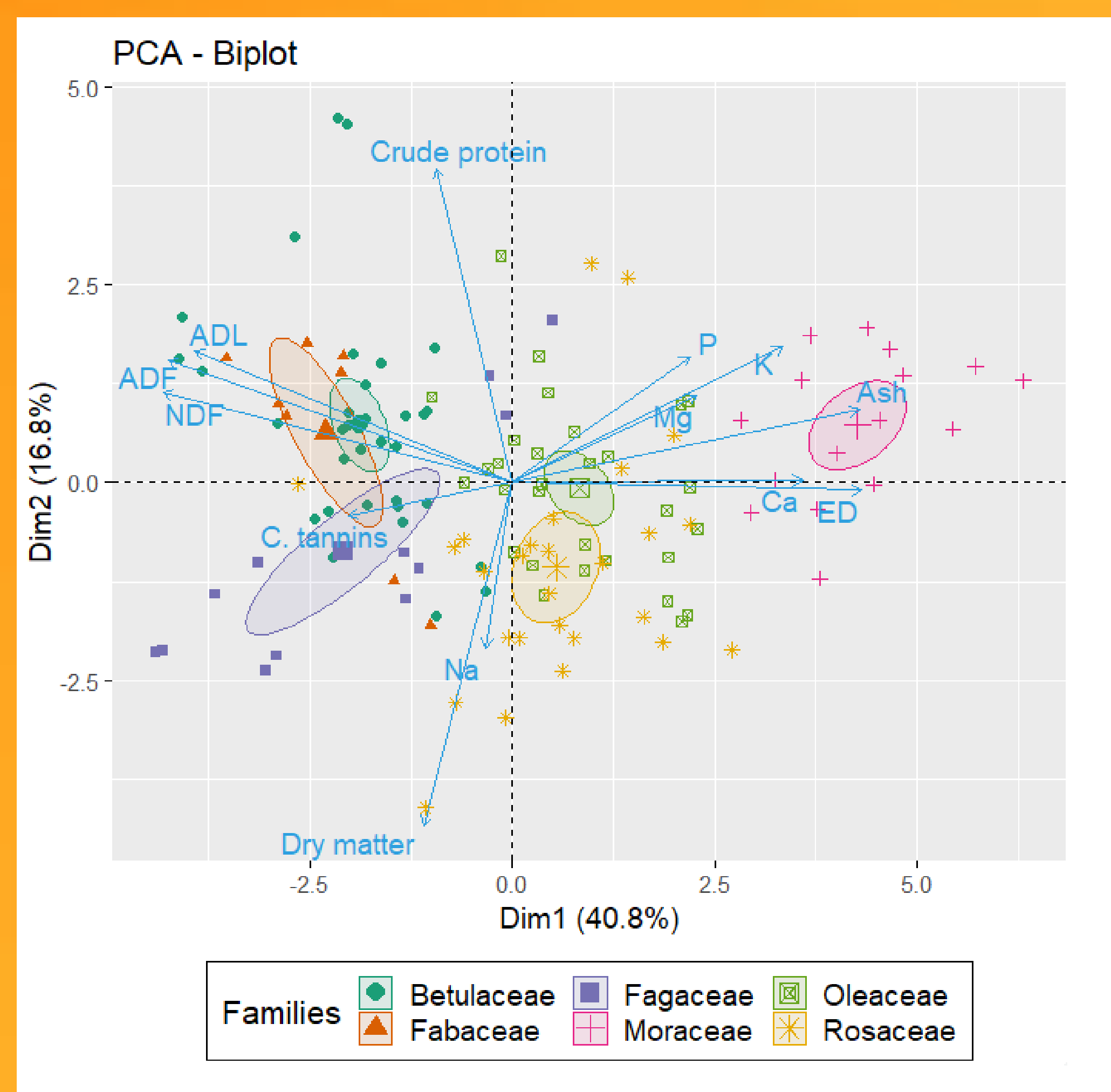


Figure 1 Biplot of variables and individuals on the factor map. Individuals are grouped into families.

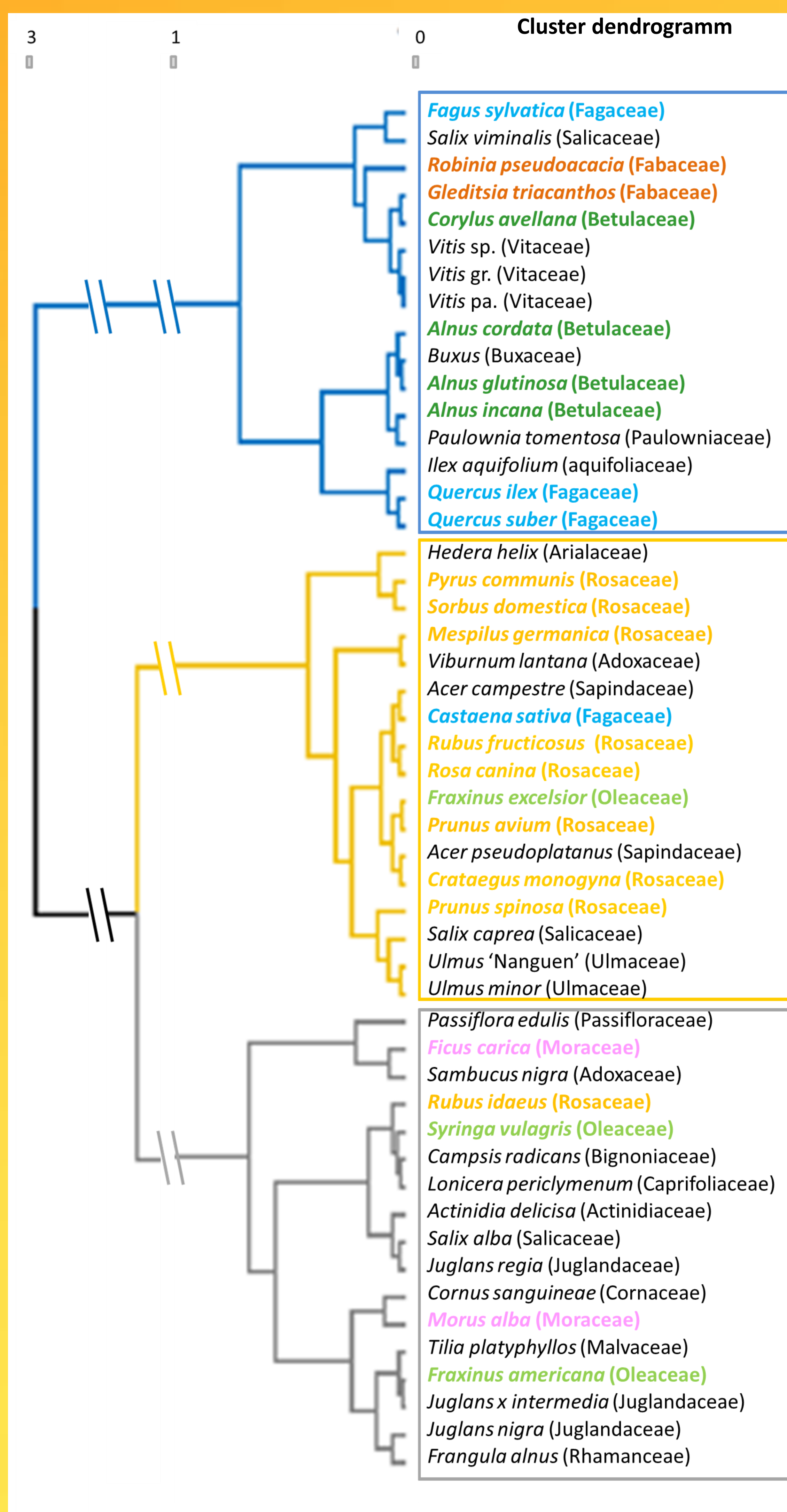
□ No relationship between CP (Dim 2) and ED (Dim 1)



Conclusion

- ✓ Species belonging to the same botanical family show nutritive value similarities
- ✓ High matching (88%) between the classification of species into botanical families and the hierarchical classification of species in clusters.
- ✓ Species showing the best nutritive value (enzymatic digestibility, crude protein and mineral content) belong to the same cluster (3).
- ✓ Results need to be consolidate with further studies including more species and families.

II) Hierarchical clustering of woody species on principal components (HCPC)



3 clusters of species were obtained from the HCPC

Cluster 1

high ADL, ADF, NDF and C. tannins / low P, Ca, Mg, ash content and ED.

➤ 100% of the Fabaceae and Betulaceae and 75% of the Fagaceae.

Cluster 2

high DM and Na / low ADF, ADL and CP.

➤ 88% of the Rosaceae.

Cluster 3

high ash content, Ca, K, Mg, ED, P and CP / low DM, NDF, ADL, Na, and ADF.

➤ 100% of the Moraceae and 66% of the Oleaceae.

Figure 2 Cluster dendrogram obtained from the HCPC of the 50 woody species.