

Evaluation of sycamore maple, common ash, goat willow, and rowan foliage for goat nutrition

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Introduction: Tree and shrub foliage is an important component of small ruminant diet in many parts of the world and plays an essential role for browsing animals. The importance of fodder tree species is particularly relevant during dry periods, when herbage quality decreases as a consequence of reduced water availability and/or the advancement of plant phenological stage, while in the meantime tree foliage maintains a higher nutrient quality. However, many tree and shrub species are underestimated fodder resources, especially in European temperate areas, due to insufficient knowledge about their potential feeding value. The objective of the present study was to characterize as fodder resource the tree leaves of four tree species widely common for goat nutrition in different European mountain areas, either directly by browsing or fed after cutting.

Materials and methods: Four temperate tree species were selected: *Acer pseudoplatanus* (sycamore maple), *Fraxinus excelsior* (ash), *Sorbus aucuparia* (rowan), and *Salix caprea* (goat willow). In 2015, leaf length and biomass, main chemical components, fatty acid profile, phenolic composition, and *in vitro* true digestibility were determined along the vegetative season.

Results: The differences found among the species were remarkable, even if weakly related to seasonal changes, especially when considering fatty acid and phenolic compositions. *Fraxinus* sprouts were the most productive and its foliage showed the lowest phenolic contents, resulting in the highest digestibility. *Sorbus* digestibility was similar, but its lower polyunsaturated fatty acid concentration could reduce the interest for this species as a feeding resource for goat dairy products with healthy properties. The lower digestibility found for *Salix* and *Acer* may be related to their high phenolic concentrations.

Conclusion: The four species could represent a good quality feedstuff for goat nutrition, above all in the late summer when herbage quality decreases, particularly in terms of crude protein and fatty acid profile.

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