

1 **The role of scarlet ash trees of *lameiro* systems on livestock production in**  
2 **Northeast Portugal**

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10 The *lameiro* is the silvo-pastoral system specific to the region of Trás-os-Montes,  
11 Northeast Portugal, comprising a natural herbaceous formation in association with specific  
12 riparian trees. Among them, the ash (*Fraxinus angustifolia*, Vahl) is the most frequent. Ash  
13 occurs in the meadows as scarlet trees or as a line trees. Usually, the meadows aren't grazed  
14 from March to June, in order to get the hay. From June to March, the meadows are directly  
15 consumed by the livestock such as cattle or sheep. As output from the system, the trees  
16 furnish firewood and timber. At the same time that they furnish shelter, they also furnish  
17 leaves, which constitute an important complement to the natural pastures in the diet of  
18 animals. In addition, trees have an important ecological effect. Animal products like meat and  
19 milk constitute another of the outputs of the system. Also, the hay is a commercial product.  
20 The density of trees ranges from about 5 ha<sup>-1</sup> to 20 ha<sup>-1</sup> depending on soil conditions and on  
21 the main objective of the exploitation. Traditionally, the timber is sold in special moments of  
22 financial needs. The ash trees act as a security funding for the farmers and as a complement to  
23 the needs of livestock in the scarcity periods. Traditionally, the branches are lopped and are  
24 used as fodder, in the middle summer, when the herbaceous component is dried. Occasionally  
25 the branches are dried for used as winter forage. The objective of this study is to analyse the  
26 performance of woody component of *lameiro* from livestock perspective, particularly to study  
27 the chemical composition and *in vitro* digestibility of ash tree leaves harvest at different  
28 mature stages. Also, the leaves production was assessed. The average production of ash leaves  
29 is 2.6 t ha<sup>-1</sup>year<sup>-1</sup>. The digestibility *in vitro* of ash leaves ranges from 74.6% (July) to 81.0%  
30 (August). The crude protein varies from 14.4% DM in early July to 11.5% DM in final  
31 September, when the signs of senescence appear. The acid detergent lignin (ADL) contents  
32 ranged from 10.6% DM in early July to 8.8 % DM in final September. The ash tree leaves can  
33 be seen as an important feed resource during the dry season for the livestock.

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