ASSESSMENT OF GRAZING SELECTIVITY IN RELATION TO LAND COVER: A COMPARISON BETWEEN SHEEP AND GOATS

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Abstract: Each agroforestry system has developed differently to each ecological, economic and social region of the world. In Portugal, the traditional agroforestry landscape of Terra Fria is a mosaic of very small patches of annual and perennial agriculture, shrub and woodlands. This patch diversity – composition and configuration – plays a vital role in supporting biodiversity. On the other hand, traditional livestock systems are based on grazing itineraries searched for different functions – gathering and resting among others– on this landscape mosaic. These agroforestry systems can be considered as a sustainable landscape management which integrates agriculture, livestock and forest on the same land management base.

Landscape attributes such as topography, land cover and land use patterns influence the organization of grazing circuits and patch selection. The comparison between land use territory and land use crossed by flocks can be seen as a result of grazing selectivity made by animals and shepherds. The analysis of grazing selectivity is carried out by calculating a selection ratio (SR) for each land cover type: % of land cover of grazing circuit / % of available land cover type. A SR of 1 means that and cover type is used in a random way; a SR lower than 1 means that land cover type is rejected and SR higher than1 means that that land cover type is preferred.

We investigated the set of land use patches crossed by sheep and goats flocks during a year and we compare it to the landscape composition, in a village context. For each month, we calculated a Selectivity Index (SI) for each land use - annual crops, perennial crops, forests, pasture and natural grasslands and shrubs.

Our results indicate that flock displacement patterns are related with the shepherd and animals perception of benefits and requirements. They are guided by a complex interpretation of land uses and expectations of profits - forage, shade or circulation among patches - in function of environmental constraints and land use types occurring around villages. The seasonal variation of SR for each land use suggests that the itineraries vary along the year regarding the different needs of animals and the resources availability. Shepherds recognize this complexity and use them accordingly to manage the productivity of the system.

Keywords: NE Portugal, Agroforestry, grazing selectivity, Shepherds

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