

# **Pasture digital image analysis as a support tool for grazing management in montados: a preliminary approach**

L M Rato<sup>1</sup>, M I Ferraz de Oliveira<sup>2</sup>, E Sales Baptista<sup>2,3</sup>

<sup>1</sup> Departamento de Informática, Universidade de Évora, Évora, Portugal; <sup>2</sup> ICAAM - Instituto de Ciências Agrárias e Ambientais Mediterrânicas (ICAAM), Universidade de Évora, Évora, Portugal; <sup>3</sup> Departamento de Zootecnia, Universidade de Évora, Évora, Portugal.

The knowledge of vegetation land cover over time is essential for an appropriate grazing management in any free range animal production system. Ground vegetation has traditionally been monitored using visual methods that produce estimates of percentage covered/bared soil, green/senescent vegetation and also grasses/forbs occurrences. Visual methods are extremely time consuming and prone to observer bias. The use of digital image to evaluate and monitor ground vegetation has increased in recent years. These techniques allow a more cost effective data collection over larger areas, avoiding the need of judgement-based choices of representative areas.

The aim of this work is to test the applicability and robustness of simple image processing techniques to monitor ground vegetation in Montado. The set of images were collected using a GoPro HD HERO2 digital camera, facing down, mounted on a stand at constant distance above ground. An application of threshold segmentation techniques to a set of digital images is presented. A procedure to calibrate the threshold value is proposed. Some results are presented and analyzed for different lighting conditions, type of vegetation, as well as percentage of Montado vegetation cover. Montados are characterized by a pronounced patchiness of vegetation communities and should benefit from such an approach.