



Application of Vegetation Indices to Estimate Acorn Production at Iberian Peninsula

Juan A. Escribano (1,3), Carlos G.H. Díaz-Ambrona (1,3), Laura Recuero (2,3), Margarita Huesca (2), Victor Cicuendez (2), Alicia Palacios (2), and Ana M. Tarquis (3)

(1) Grupo de Sistemas Agrarios AgSystems, E.T.S.I. Agrónomos. UPM, Madrid 28040 Spain, (3) CEIGRAM, ETSI Agrónomos, UPM, Madrid 28040 Spain, (2) Grupo de Ecología y Paisaje E.T.S.I. de Montes. UPM, Madrid 28040 Spain

The Iberian pig valued natural resources of the pasture when fattened in mountain. The variability of acorn production is not contained in any line of Spanish agricultural insurance. However, the production of arable pasture is covered by line insurance number 133 for loss of pasture compensation. This scenario is only contemplated for breeding cows and brave bulls, sheep, goats and horses, although pigs are not included. This insurance is established by monitoring ten-day composites Normalized Difference Vegetation Index (NDVI) measured by satellite over treeless pastures, using MODIS TERRA satellite. The aim of this work is to check if we can use a satellite vegetation index to estimate the production of acorns.

In order to do so, two Spanish grassland locations have been analyzed: regions of Olivenza (Jerez-Oliva) and Merida (Badajoz). The acorns production was evaluated through 2002-2005 gauging conducted by the Grupo Habitat de la Orden (Badajoz). Medium resolution (500x500 m²) MODIS images were used during the same time period to estimate the ten-day composites NDVI at these locations. Finally, meteorological data was obtained from SIAR and MAGRAMA network stations, calculating the ten-day averaged temperature and ten day accumulated precipitation.

Considering two accumulated factors, NDVI and temperature, three phenological stages were well defined being the second one which pointed differences among campaigns. Then, accumulated precipitation versus accumulated NDVI was plot for this second phenological stage obtaining maximum differences at 300 mm of cumulative rainfall. Analyzing acorn production with accumulated NDVI in that moment a production function was obtained with a correlation coefficient of 0.71. These results will be discussed in detail.

References

J.A. Escribano, C.G.H. Diaz-Ambrona, L. Recuero, M. Huesca, V. Cicuendez, A. Palacios-Orueta y A.M. Tarquis. Aplicacion de Indices de Vegetacion para evaluar la falta de produccion de pastos y montaneras en dehesas. I Congreso Iberico de la Dehesa y el Montado. 6-7 Noviembre, 2013, Badajoz.

J.A. Escribano Rodriguez, A.M. Tarquis, C.G. Hernandez Diaz-Ambrona. Pasture Drought Insurance Based on NDVI and SAVI. Geophysical Research Abstracts, 14, EGU2012-13945, 2012. EGU General Assembly 2012.

Juan Escribano Rodriguez, Carmelo Alonso, Ana Maria Tarquis, Rosa Maria Benito, Carlos Hernandez Diaz-Ambrona. Comparison of NDVI fields obtained from different remote sensors. Geophysical Research Abstracts, 15, EGU2013-14153, 2013. EGU General Assembly 2013

Acknowledgements. This work was partially supported by ENESA under project P10 0220C-823.