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54th SISV Congress

*Twenty years in the third millennium
with Vegetation Science*

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Abstract book

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Master di II livello

TRADITIONAL VS ADAPTIVE MULTI-Paddock GRAZING IN MEDITERRANEAN SILVOPASTORAL SYSTEMS

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The project LIFE Regenerate (LIFE16 ENV/ES/000276) aims to improve biodiversity and ecosystem services in Mediterranean silvopastoral systems by applying the Adaptive Multi-Paddock (AMP) grazing management model. AMP is a rotational grazing system with high stocking rates for short periods and resting periods long enough to plant regrowth. The experimental hypothesis is that AMP management is more effective than traditional grazing systems for maintaining plant biodiversity and the ecosystem services it supports [1]. We show here some preliminary results concerning the effects of AMP on Pastoral Value (PV), a proxy for forage production and quality, one of the most relevant ecosystem services of grasslands.

The results were obtained at “Sas Bogadas”, in an experimental site located in the Municipality of Santu Lussurgiu (Sardinia, Italy) at 350 m a.s.l. on permanent grasslands. Grazing animals were suckling cows cattle (Moricana breed). The paddocks were managed with electrified fences. The average stocking rate in the AMP and control areas (CON), were managed with rotational or continuous grazing, respectively, at an average stocking rate of 2.9 livestock units (LU) ha⁻¹ from March to May (90 days). The vegetation surveys were carried out with the “point quadrat” method along permanent linear transects (50 m) at regular intervals (1 m) randomly located within each survey area in the AMP paddocks and the CON. Following the grazing animal rotation in the AMP paddocks, the measurements were repeated six times in different seasons: from spring 2018 (time 0) to spring 2021 (time 6). The percentage contribution of each species (CSP) was calculated by dividing the number of occurrences of each species in the transect by the total number of contacts in each line. The PV was assessed according to Daget and Poissonet [2;3]. A two factors ANOVA (grazing management by date) was performed to compare the PV of AMP vs CON. Preliminary results did not show significant differences between AMP and CON. Significant differences were observed between dates. The highest PV means were detected in spring 2020 (PV=47), the lowest in autumn 2018 (PV=33). This result is consistent with the temporal variability of Mediterranean pastures PV [4] in relation to the seasonal weather and the soil seed bank dynamics of annual species [5].

The hypothesis of higher effectiveness of AMP in providing ecosystem services was rejected on the basis of the obtained results on PV. However, this does not exclude that other aspects of the system that are being investigated by the Life Regenerate project, such as plant biodiversity, soil characteristics, forage and animal production might be significantly influenced by the AMP grazing management system.

1) <http://regenerate.eu/it/>, Life Regenerate, 2018.

2) Bagella S., Salis L., Marrosu G.M., et al., 2013. Effects of long-term management practices on grassland plant assemblages in Mediterranean cork oak silvo-pastoral systems. *Plant Ecology*, 214(4): 621-631.

3) Seddaiu G., Bagella S., Pulina A., et. al., 2018. Mediterranean cork oak wooded grasslands: synergies and trade-offs between plant diversity, pasture production and soil carbon. *Agroforestry Systems*, 92(4): 893-908.

4) De Pablo C.L., Peec B., Galiano E.F., Nicolas J.P., Pineda F.D., 1982. Space-time variability in Mediterranean pastures analyzed with diversity parameters. *Vegetatio*, 50(2): 113-125.

5) Díaz-Villa M.D., Marañón T., Arroyo J., Garrido B., 2003. Soil seed bank and floristic diversity in a forest- grassland mosaic in southern Spain. *Journal of Vegetation Science*, 14: 701-709.

