



UNIVERSITÀ
DEGLI STUDI
DI PALERMO

SOCIETÀ ITALIANA DI AGRONOMIA
“ATTI DEL XLVII CONVEGNO NAZIONALE”

**L'AGRONOMIA
NELLE NUOVE
AGRICOLTURAE**

Biologica, Conservativa, Digitale e di Precisione

12-14 SETTEMBRE 2018

Complesso Monumentale San Pietro
MARSALA (TP)



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Grafiche Salerno
Typography & Graphic Design



UNIONE EUROPEA
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PON IMPRESE E
COMPETITIVITÀ
2014-20

Riaccendiamo lo sviluppo



Ministero dello Sviluppo Economico

Approccio integrato per lo sviluppo di prodotti innovativi nei settori trainanti del comparto agroalimentare siciliano* - Voce progetto: 2017-NAZ-0228 - CUP B76117000260008



Società Italiana di Agronomia

Atti del XLVII Convegno della Società Italiana di Agronomia

L'Agronomia nelle nuove *Agriculturae* (Biologica, Conservativa, Digitale, di Precisione)

Università degli Studi di Palermo
Dipartimento di Scienze Agrarie, Alimentari e Forestali
Complesso Monumentale di San Pietro
Marsala (TP)
12-14 settembre 2018



Società Italiana di Agronomia

Proceedings of the XLVII Conference of the Italian Society for Agronomy

***University of Palermo
Dipartimento di Scienze Agrarie, Alimentari e Forestali
Complesso Monumentale di San Pietro
Marsala (TP)
12-14 September 2018***



Società Italiana di Agronomia

A cura di
Edit by

Giovanna Seddaiu
Marcella Giuliani
Claudio Leto

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www.siagr.it

ISBN 978-88-904387-4-5



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I lavori in questi Atti devono essere citati come segue:

The correct citation of article in this book is:

Authors, 2018. Title. Proceedings of XLVII Conference of Italian Society for Agronomy (Seddaiu G, Giuliani M and Leto C Eds.), Marsala (TP), Italy, 12th-14th September 2018, pag x-y

The Life Regenerate Project: Revitalizing Multifunctional Mediterranean Agrosilvopastoral Systems Using Dynamic And Profitable Operational Practices

Antonio Pulina^{1,2}, Antonio Frongia¹, Maria Carmela Caria³, Tore Pala¹, Daniele Nieddu⁴, Simonetta Bagella^{2,3}, Antonello Franca⁴, Pier Paolo Roggero^{1,2}, Giovanna Seddaiu^{1,2}

¹ Dip. di Agraria, Univ. Sassari, IT, anpulina@uniss.it; ² Nucleo Ricerca Desertificazione, Univ. Sassari, IT, pproggero@uniss.it; ³ Dip. di Chimica e Farmacia, Univ. Sassari, IT, sbagella@uniss.it; ⁴ CNR-ISPAAAM, Sassari, IT, antonio.franca@cnr.it

Introduction

The Quercus-based silvopastoral systems of the Mediterranean basin are recognized as priority by the “Habitats” Directive 92/43/EEC (type 6310 “Dehesas with evergreen Quercus spp”). These systems are declining because of both abandonment and intensification trends (Sales-Baptista et al., 2016). Grazing practices could inhibit the tree regeneration processes thus compromising their long-term preservation (Rossetti and Bagella, 2014). Some studies evidence that the profitability of these systems is also under threat (e.g. Escribano et al., 2018). There are clear needs to transform current production systems and to identify alternative sources of income, to recycle the local resources, to stimulate natural tree regeneration, to improve soil fertility and increase farm productivity, so that these systems can become economically and environmentally sustainable.

The main objective of the LIFE Regenerate project (<http://regenerate.eu/>) is to provide ground evidence that silvopastoral farms can become self-sufficient and profitable relying on resource efficiency principles and incorporating in the farm income the added value of local products, and to upscale results to a wider scale. The project will take place in two phases: the demonstration and the replication activities. In this abstract, the experimental design set up of the Italian demonstration site is reported. The experimental hypothesis is that multiple species and multi-paddock grazing can be more effective than current grazing systems in supporting the biodiversity and ecosystem services in wooded grasslands.

Methods

In Italy, the demonstration activities are carried out at the “Elighes Uttiosos” farm, in Santu Lussurgiu (Sardinia, Italy, 40°8'N, 8°35'E). The main farm activity is the beef cattle and goats breeding. The farm consists of two distinct areas located at 850 m a.s.l. and 400 m a.s.l. Grazing of cattle and goats is organized on the basis of a seasonal short-transhumance among the two main plots.

Evolving from the actual grazing management, a grazing management based on the Adaptive Multi Paddock (AMP) system (e.g. Teague et al., 2011) will be adopted. A group of 5/6 cattle and 15/20 goats will be selected as experimental units. The AMP rotational grazing will be conducted in the mountain area (Figure 1a) from June to December and the hill area (Figure 1b) from January to June. The AMP grazing will be compared with a business as usual grazing scheme on both areas, according to their land use (*dehesa* type and permanent grassland). These areas will be grazed continuously during the grazing season.

Expected Results

The AMP rotational grazing applied within the framework of the LIFE-Regenerate project was designed to demonstrate the potential beneficial effects of AMP rotational grazing on: soil carbon sequestration, water retention capacity, soil nutrient availability, microbiota, and prevention of water erosion; pasture production and botanical composition, ultimately aiming to assure farm self-sufficiency in animal feeding and a higher profitability of livestock-raising practices; plant biodiversity and ecosystem services provision.

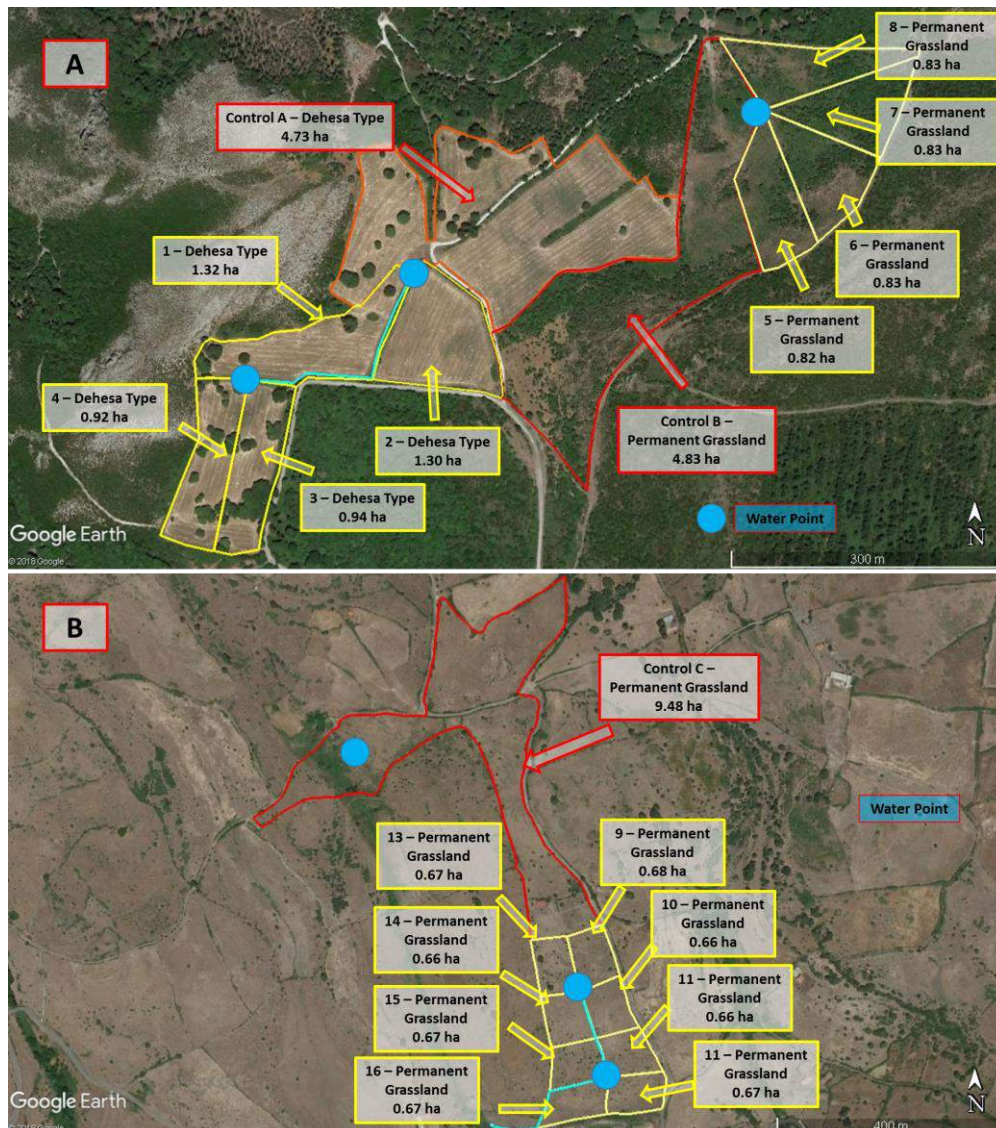


Figure 1. Experimental design of the trial at the Sardinian Demonstration Site (“Elighes Uttiosos” Farm) in the mountain (A) and valley (B) area. The yellow plots represent the Adaptive Multi Paddock (ADP) plots, while the red ones represent the control.

Acknowledgments

This project is funded by the LIFE programme's (LIFE16 ENV/ES/000276Regenerate).

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