

TRANSFORMATION OF THE TRADITIONAL AGRICULTURAL LANDSCAPE AND LOSS OF RELEVANT ELEMENTS OF THE STRUCTURE OF THE SEMIARID MEDITERRANEAN LANDSCAPE OF MONÓVAR (ALICANTE)

Author(s): Muñoz Mora, V.¹; Pastor-López, A.¹; Martínez-Pérez, J.E.¹; Pérez Lahiguera, J.A.¹

Affiliation(s): ¹Departamento de Ecología, Universidad de Alicante (España)

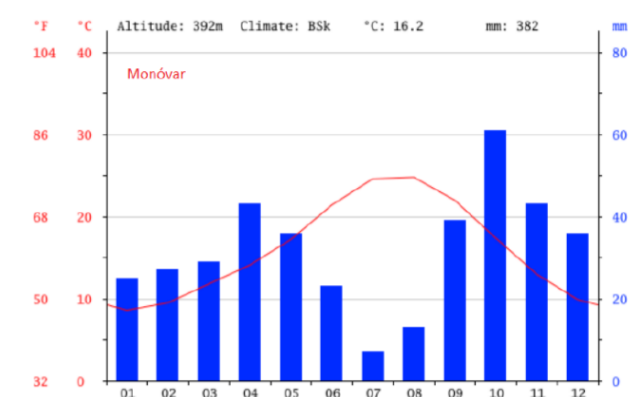
E-mail: antonio.pastor@ua.es

ABSTRACT

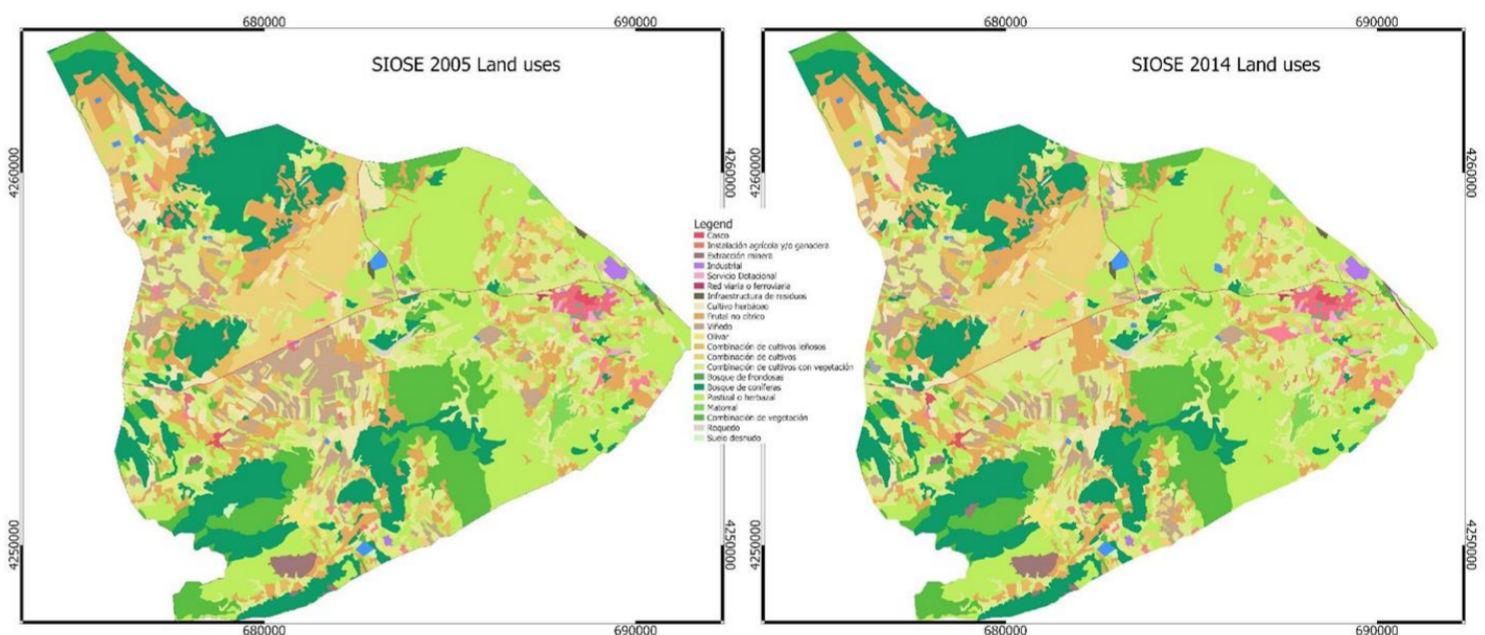
Traditional agricultural activity, in the semi-arid Mediterranean landscapes of the Iberian Peninsula, has been strongly modified because of the intensification of agriculture and the changes to irrigation due to water availability limitations. The unplanned changes in the composition and structure of the landscape show serious affections in biotopes and biocenoses that favor desertification. It is essential to identify the most striking transformations, as well as the maximum tolerable limits, by spatial unit, in order to ensure the permanence of a minimum of biotopes. This could contribute to the regeneration of ecosystems, in the face of socio-economic or natural changes, which favor silent desertification, and the genetic erosion of the biodiversity of these territories.

In this contribution, the transformations of agricultural parcels and their mosaic are analyzed quantitatively. The loss of biotopes and biocenosis associated with margins and isolated trees is characterized, in a preliminary way, in the municipality of Monóvar (Alicante), by comparing aerial photographs from 1956 and 2016.

STUDY AREA



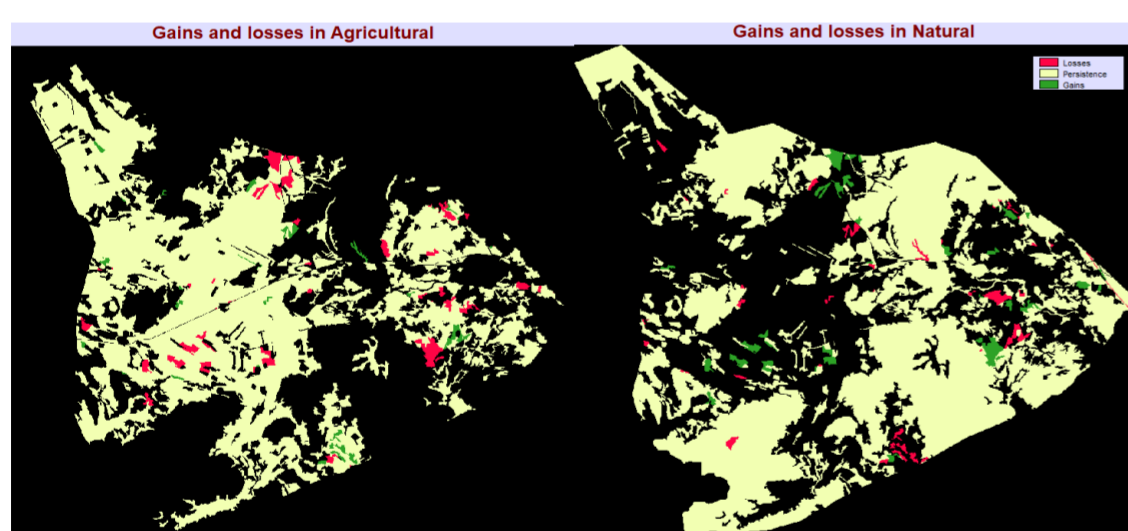
THE CHANGE



MATERIAL AND METHOD

In order to describe the agricultural landscape change over time GIS techniques were used through the IDRISI and QGIS software. Have been used cartographic data obtained from the Instituto Cartográfico Valenciano (ICV): Old and recent orthophoto, 1956 and 2017 editions; land use SIOSE maps, 2005 and 2014 editions; and topographic maps as supplementary information of field works.

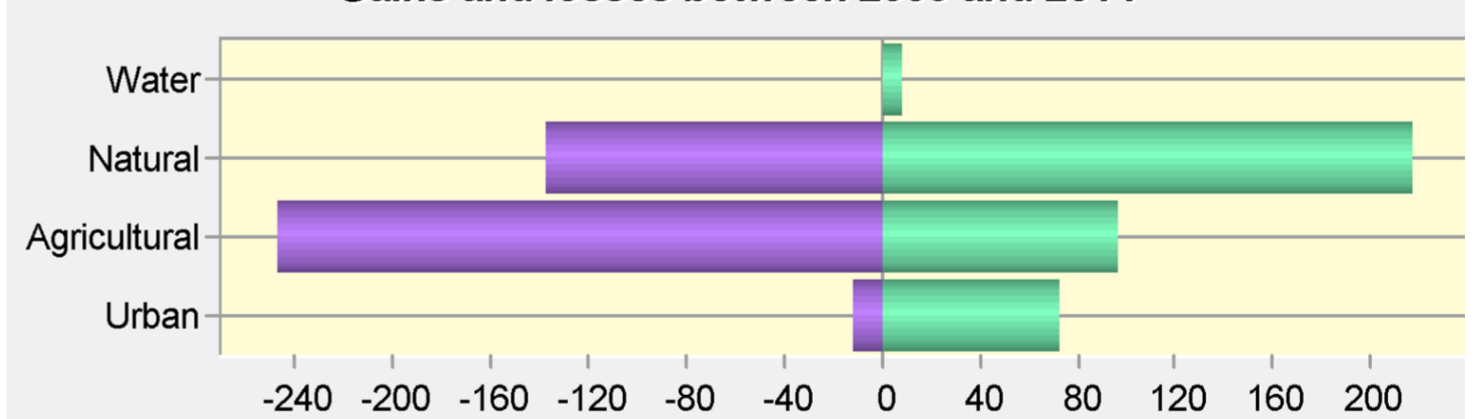
RESULTS



Land use (Agricultural)	Year 2005	Year 2014	Change
Olive grove	123.8	117.6	-6.3
Combination of crops	1229.0	1192.7	-36.3
Combination of crops with vegetation	2107.3	2457.7	350.4
Vineyard	856.4	587.4	-269.0
Combination of woody crops	266.3	245.5	-20.9
Herbaceous	652.2	510.6	-141.5
Non-citrus fruit	1673.3	1647.6	-25.7
TOTAL (ha)	6908.3	6759.1	-149.2

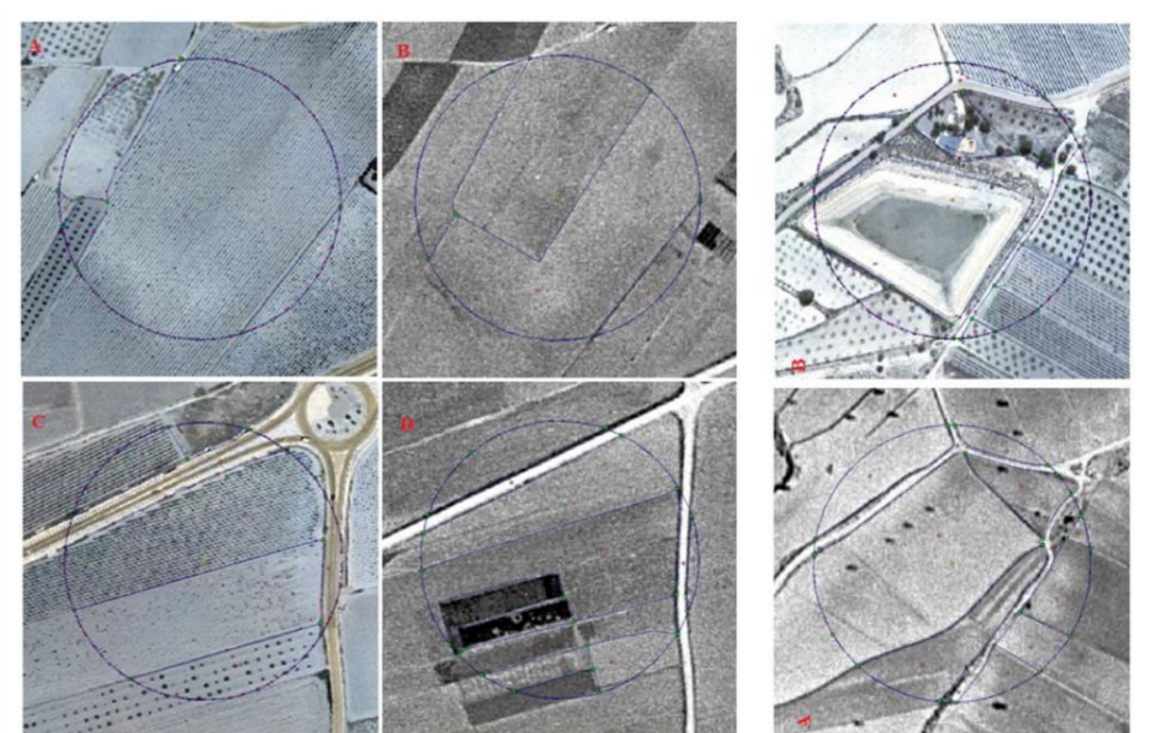
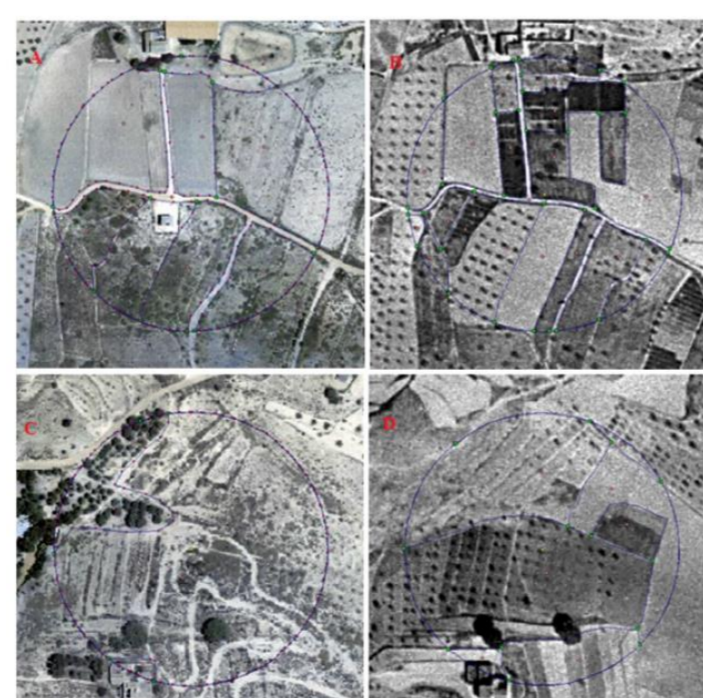
In a general way, changes are observed in the structure of the landscape due to the transformation from traditional rainfed to irrigated land, since the area under herbaceous irrigation has doubled and the abundance of arboreal feet has quadrupled, with a loss of shrub vegetation. Thus, the abandonment of the cultivated fields, in the best of the cases, supposes a recovery of the natural vegetal formations, although, apparently, the negative effects dominate.

Gains and losses between 2005 and 2014



CONCLUSIONS

The multitemporal analysis, using GIS software, revealed an important process of change in the agricultural traditional landscape structure. Agricultural land abandonment is a common land use change in the Mediterranean basin. The main changes occurred in the land dedicated to agriculture, with a marked decline. The data collected in 2014 show that the area devoted to these agricultural uses has been significantly reduced. By the other hand, forest surface increased between 2005 and 2014. A portion of these lands was also transformed into artificial surfaces by the development of new infrastructure.



Sample of agricultural land aggregation and construction of irrigation infrastructures.