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Probability satellite imagery based maps for substituting tobacco with energy plants.

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The recent shift of the European Commission's agricultural policy resulted in the abandonment of tobacco in Central and Western Greece. Energy plantations especially those producing solid biomass may be a viable alternative to tobacco. Detailed study is required to estimate biomass supply as well as raw material cost for energy conversion units. In this context, the objective of this paper is to spatially delineate high production areas with respect to the artichoke energy plant, within ex-tobacco producing zones. A number of spatial factors, such as environmental, agricultural, socio-economical and cultivation-specific ones, are taken into consideration. The concurrent evaluation of these factors can only be achieved by the combination of a vast amount of diversified data, exploiting the synergy of remote sensing and geographical information systems and science.

In the present study, eleven administrative units of the finest available resolution in Hellas, i.e. sub-municipal divisions (Dimotika Diamerismata), have been studied up to the year 2005 in the prefecture of Karditsa. The goal is to identify tobacco cultivating zones and subsequently produce maps of ranked suitability for the cultivation of energy plants. The exact identification of the tobacco fields based on the satellite imagery has been implemented via classification techniques as well as by the use of auxiliary data, including field surveys and digital layers (road network, hydrographic network, e.t.c.).

The construction of ranked suitability maps for the artichoke energy plant has been achieved by the construction of the probability digital map for each factor, including altitude, slope, PH, drainage and others. The probability maps are presented in this paper along with the most interesting findings as well as direction for future research.