

# Examining the possibility of cultivating energy crops in ex-tobacco growing zones, Greece<sup>1</sup>

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## *Abstract*

While the cultivation of energy crops is considered a prominent activity in most Northern European countries, where the production of biofuels from organic biomass is steadily increasing, in Greece such activities have not yet been undertaken. The main reason for this is none other than the structure of Greek agriculture that until recently favored monoculture of certain highly subsidized crops like cotton and (especially) tobacco. The 2003 reform of the EU Common Agricultural Policy (CAP) seems to produce an ideal momentum for new cropping activities, like energy crops, to appear and take root in places that were once dominated by highly subsidized arable crops.

Although agronomic experiments have been conducted in the past to assess the adaptability of certain energy crops like sorghum and sunflower in Greece, no study has ever compared the profitability of energy versus conventional crops at farm level, by using actual farm-level data. This paper examines the potential of cultivating cynara (*Cynara cardunculus*), sunflower (*Helianthus annuus*) and sorghum (*Sorghum bicolor* L. Moench) in three ex-tobacco cultivating regions in Greece, Aitoloakarnania, Karditsa and Kilkis, which used to represent the bulk of tobacco production in the country.

A questionnaire was used in a representative sample of ex-tobacco producing farms in each of these regions, in order to retrieve data concerning their production activities, land ownership, cultivating techniques, the existence of animal breeding, subsidies received, and eligible land under the new CAP regime. The questionnaire covered a two year period (2005 and 2006) so as to also record any changes due to the transition to the new CAP regime.

The main purpose of this work is to produce supply curves for the three energy crops under consideration, in order to create aggregated price-production combinations for the farm sample. This will specify the conditions under which these energy crops can substitute conventional activities to a degree that will allow the corresponding industries to absorb the necessary quantities of biomass. For this reason, a Linear Programming model has been constructed, taking into account farm specific information on yields, costs and land ownership. Results indicate that substitution of conventional activities requires high prices for energy crops that are questionable whether or not they can be achieved in the existing economic context.

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