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## **Bioethanol production: Corn v/s lignocellulose biomass from olive oil industry and the potential role in ensuring food security**

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**B**iofuels production cannot mean a threat for food security. Biofuels of second and third generation, nowadays in phase of research and development (R+D), imply the use of integrated bio-refineries for fuels production, electricity generation and biological products. In advanced technologies, it is predicted to reduce natural resources like earth and water, and with it the worry about food security. Amongst these advanced technologies stand out ethanol production from lignocelluloses residues (or lignocelluloses byproducts), biodiesel from algae, or conversion methods of solar energy in fuels by means of microorganisms. In recent decades numerous studies have attempted to enhance production yields of ethanol-based fuel from biomass through different biochemical pathways. The main substrates in the bioethanol industry are still cereals and sugarcane. In this sense, industrial yield of 0.35 kg ethanol/kg corn kernel has been reported. However, corn is also processed for human consumption so the diversion of resources from the food market to fuel production has caused a great controversy. In countries of the Mediterranean basin, olive generates different lignocellulose by-products not related to the animal or human food chain which can be regarded as a potential source of bioethanol. Ethanol yields of 0.072kg/kg, 0.13 kg/kg and near 0.10 kg/kg have been reached at laboratory scale from olive pruning, olive stone and extracted olive pomace, respectively. This indicates that feasibility of the production of ethanol-fuel from olive by-products will solely be possible by considering two key factors: the development of the concept of bio-refinery and the exploitation of economies of scale. The ongoing growth of the corn ethanol industry has brought about technological advances (e.g. in the enzymatic field) that will be implemented for the development of the lignocellulose ethanol industry. So rather than facing these industries they should be regarded, from the technological point of view, as allies.

This presentation will look at the food versus fuel debate from the point of view of G2 and G3 biofuels.

### **Biography**

Sebastián Sánchez is currently a member of the Department of Chemical, Environmental and Materials Engineering of University of Jaén. His research interests are in the areas of 'Use of Lignocellulose materials for Biofuels Production', 'Oil Technology', 'Use of By-products and Residues from Olive Oil Industry', 'Tertiary Treatment of Wastewater and Microalgae Biotechnology', and 'Gas Absorption with Chemical Reaction'.

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