An introduction to the EU FP7 funded project JATROPT (*Jatropha curcas* Applied and Technological research on Plant Traits)

Topic V – Integral chains 022/1

Oral presentation

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Abstract

Jatropha curcas shows a big promise towards sustainable and affordable biofuels. Several groups are working independently towards development of both agrosystems and high quality germplasm of jatropha, and downstream processing and biodiesel markets. The challenges are to make the big promises come true: high oil yield, low competition with food crops, use in various agrosystems from monoculture plantations, to mixed cropping and use in hedges around agricultural fields. JATROPT aims at linking high quality research groups and companies that are now operating in different continents in order to achieve a large synergy in research and development of jatropha as a biofuel crop. In five Work Packages (Breeding, Genetic tools, Sustainable Agrosystems, Demonstration and Dissemination), the following aims are pursued: 1) Achieve a world wide germplasm collection of *Jatropha curcas*, molecularly characterized in order to classify the collection into groups with similar genetic backgrounds; evaluation of elite germplasm of this collection in Asia, Africa and Latin-America; linking segregating population based on parents from different parts of the world and creating a global jatropha linkage map. 2) Develop genetic information and marker tools (genetics of toxic/low toxic trait, branching patterns; disease resistance) to speed up the breeding process. 3) Develop agrosystems that yield sustainable and affordable biofuels - and interesting uses of the co-products (biomass/protein residues after oil extraction), with a focus on Pro Poor development and on designing systems in which competition for food and fuel can be minimized; 4) Demonstration of the potential of local/regional use of produced biofuels to increase agricultural and general economic productivity. 5) Achieve dissemination of knowledge on quality of germplasm, on genetics and sustainable agrosystems setting up distribution of combined packages of agronomic guidelines and germplasm.

The 4 million euro project JATROPT officially started on 1 January 2010 and will end on 31 December 2013. The consortium is coordinated by Wageningen University and Research centre - Plant Research International (The Netherlands) with partners Embrapa[2] (Brasil), Centre for Novel Agricultural Products, University of York[3] (UK), Biocombustibles de Guatemala S.A.[4] (Guatemala), BIONOR Transformación S.A.[5] (Spain), CIRAD[6] (France/Mali), D1 Oils Plant Science Ltd.[7] (The Netherlands/Cape Verde), Facultad de Agronomía, Universidad de San Carlos[8] (Guatemala), FOFIFA[9] (Madagascar), KeyGene N.V.[10] (The Netherlands), Tamil Nadu Agricultural University[11] (India) and Universidad Autónoma de Chapingo[12] (Mexico).

The website www.jatropt.eu was launched to disseminate (preliminary) results and enable information exchange with the jatropha community. Mapping populations have been produced in Central America, India and Cape Verde on the basis of productivity, oil quality, and seed oil percentage and on the level of phorbol ester content. Material Transfer Agreements and rules that comply with the Convention on Biological Diversity have secured the legal plant material and DNA exchange between partners for the advanced genetic analyses, marker development and the Genotype x Environment x Management trials. Agronomy experiments in the production systems monoculture, intercropping and hedges have been planted and tree performance is analyzed with the factors tree density, fertilization, and irrigation and intercrop type. Life Cycle Analyses and Green House gas balances, and a sustainable livelihood analyses complement the research components.