The Bioenergy Program and Society

The Bioenergy Program is meant to support the development of specialised ent that have an interest in the use and exploitation of bioenergy, and to assist the the production of energy crops (topinambur, rapeseed, jatropha, sunflower, pop etcetera) to obtain biofuels, conduct quality controls and put them on the market. The synergy of the projects constituting the Program represents an advantage to both privately owned and Estate-run institutions, which can thus get qualified advise on any of the Program-related topics or participate in the Program by integrating their needs into the objectives of certain specific projects and consequently benefit from very specific technological definitions, which have been thoroughly studied and validated on the basis of real experience.



UNIVERSIDAD NACIONAL DE CUYO

Prov. de Mendoza, Argentina

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NAME AND PROFESSIONAL DEGREEPROJECT

INSTITUTION

Dr. Jorge E. Núñez Mc Leod, Engineer Director of the Bioenergy ProgramNational University of Cuyo / School of Agrarian Sciences

Dr. Raymundo Forradellas

Traceability & Logistics

National University of Cuyo / School of Engineering

e+





CONTACT: ENGINEER DANTE BRAGONI

email: ide@uncu.edu.ar Mobile phone: +54 9 261 5119985 CC 405 (M5502 KFA), Mendoza



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MENDOZA - ARGENTINA



YPF



The Bioenergy Program

The Bioenergy Program supported by the encompass the different steps of the biofuehvironmental protection and the quality of National University of Cuyo (UNCuyo) cycle -from selecting basic raw materials fuel blends, to gain expert knowledge to responds to the unquestionable need to gaing. energy crops such as rapeseed and assist agricultural producers and biofuel expert knowledge in the field of biofuels. topinambur) to developing production producers, and to learn about the impact It is to address this issue that the programtechniques (e.g. to get bioethanol, biodies that biofuels and the emissions derived from objectives have been strategically established lignocellulosic pellets) and analysing theeir combustion and blends can have on the to control the Biofuel Cycle from the growtbontaminating emissions derived from the environment and society.

of Energy Crops, to get the UNCuyo to use of these forms of energy. produce its own supplies of biofuels by 20100ver its 4-year length, the Program is to have the quality of biofuels certified, to expected to reach the logical scientific and consolidate both research and researcherstechnical definition of biofuel cycles adapted along their lines of study and to train human the regional reality of the province of resources technically and scientifically in tMendoza and the areas under its direct subject of biofuels. In order to achieve the sefuence, to determine the schemes that Strategic Objectives, institutions like the might favour agricultural exploitation of School of Agrarian Sciences, the School of marginal crops on the basis of the economic Industry Applied Sciences, and the School opportunities available, to define viable Engineering of the National University of alternatives for the province of Mendoza so Cuyo, together with Argentina's National that a projection can be made in order to Institute of Agricultural Techonology (INTA) device the policies that should be carried out and YPF have been invited to take part in to safeguard people and protect the Research and Development Program covereingrironment, to provide the knowledge the full cycle of biofuels. necessary to contribute to the norms This Program integrates 11 projects which regulating the use of biofuels in terms of





Approach of the Biofuel Study

The study of new energy sources is to be approached from an integral perspect other words, it should be understood not only as research into the benefits deriv the application of a given type of biofuel, like bioethanol, biodiesel or lignocellul pellets but as a kind of research that is concerned with such issues as selecting appropriate crop to produce the raw material for bionergy and considering the contamination levels associated with its use, without overlooking the techno production options that are suitable for each case.

On a first stage, the Bioenergy Program is plus alcohol occurring in the presence of aThe full cycles of biofuels represent a series of concerned with the cycles of bioethanol, catalyst) into biodiesel. additional benefits, which go beyond the biodiesel and biomass of vegetable origin. Rapeseed represents a special case because vibronmental credit gained. In this respect, all of these cases, the cycle starts when a is a heavy nectar plant from which honeybbesuse of biodiesel helps to eliminate the given species is planted to get the raw produce a light colored honey that is highlproduction of sulphur composites, to material which will be the basis of the biofpueted in international markets; its seeds caubstantially reduce particulate and aromatic Both willows and poplars are suitable for be pressed for oil and yield a by-product imaterial emissions and consequently to producing the pellets, fire logs and chips that form of a high-protein flour which is used prove the quality of air. By selecting and/or will be eventually used as fuels in household animal feed. developing the right technology, by-products or industrial furnaces, while the organic Finally, all biofuels are burnt. As combustiowhich would be otherwise regarded as matter remaining is compostable. takes place, biofuels release ioto the waste- acquire added-value. Topinambur is a promising resource, becausevironment (carbon dioxide) at a rate that is the sugars derived from this crop can be lower than the amount fixed during the fermented to obtain bioethanol, while the cultivating process. Then, where does the organic matter remaining is compostable. rate difference go to? This difference is Sunflower, jatropha and rapeseed yield aninodorporated into the land as compostable which can be transesterified material or as manure, and constitutes the so-(transesterification is the reaction of an oikalled environmental credit.

A PROGRAM LOOKING INTO THE FUTURE

The Bioenergy Program is concerned with generation of knowledge in connection with the new sources of energy and focuses on to develop and exploit them. It also cent human resources and how to provide the with grade and post grade levels of training : that they can access a new field of study Additionally, through the Program, it is possible to assist small and medium-sized producers and SMEs whose activities relate to biofuels, i.e. they range from selecting the energy crop to deciding on the type of technology to produce them. The Bionenergy Program constitutes a response to the future reality of the region





Integrating and cross-sectional aspects Research and Technological Developme

Selecting energy crops is a relevant issue In will also control automobile exhaust terms of the economic opportunities, emissions, which will be related to the constraints and expectations that agricult wifferent sources of raw materials and producers might have locally, in Mendoza, production processes involved. This will help and on the basis of the profitability to optimise the value chain as well as the associated to the exploitation of these crops, vironmental impact associated with the use Six research projects focus on this subject af holofuels.

study the cases of jatropha, sunflower, A Bench-scale Plant will help to study new topinambur, salicaceae (willow and poplar) lternative sources of raw materials to get and two centre specifically on rapeseed (obiodiesel and, with the aid of a Certification is concerned with the productive aspects daboratory, it will be able to characterise the this crop and the other with the integral quality of the biodiesel or bioethanol that can features of exploitation).

Two of the projects concentrate on the Finally, a research project focused on the technology applied to produce bioethanol Logistics and Traceability of biofuel and biodiesel. Both discuss the need to production will assist in determining the most design and build Pilot Plants where biofuelsensitive points of the production process and production-applied technology can be help to outline a work scheme which will developed and which can eventually supplynsure a cost-effective product. the National University of Cuyo with the all

the biofuel it needs for its vehicles. A Certification-specialised Laboratory will control the quality of the biofuels produced locally and ensure that they conform to national and international standards.

be derived from the different sources.

The Cycle of Biofuels

CO₂ FIXATION IS HER THAN CO LEASE INTO THE /IRONMENT DUE COMBUSTION. VIRONMENTAL CREDIT IS GAINED

ARVEST & SUGAL

Six research projects deal with the selection of energy crops.

