



4FCROPS

**Future Crops for
Food, Feed, Fiber and Fuel**

Minutes of the second 4FCROPS workshop

“Which are the key future crops in EU27?”

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Introduction

Dr. Piero Castanera welcomed the participants of the workshop to INIA premises. He pointed out that this workshop is an excellent change to discuss and try to have some answers to the question “Which are the key non food crops for EU27”.

Prof. Melvyn Askew (chairman of the workshop) welcomed the audience of the workshop and pointed out that a very important part of this workshop is the round table discussion and the participation of all participants will have added value to the outcome of the today work.

He posed five issues for further discussion during the round table discussion:

- What do we know about the biorenewables potential?
- What is holding up or what is assisting development?
- How do we overcome the obstacles?
- How an action plan will be developed for the future strategy?

The above questions will be discussed during his presentation entitled “*Sustainable non food products: an unexploited opportunity*”

Dr. Piero Venturi, EU Commission, DG Research

Presentation of the targets of 7th Framework Programme for Agriculture

Dr. Venturi presented the targets of the 7th Framework Programme for Agriculture. The major challenges are: a) the global warming and climate change, b) the sustainable, secure and affordable supply of energy and other resources and c) the EU competitiveness, job creation and innovation.

RES share has to increase (at the moment the RES share is 7%). The land in EU25 that occupied by non-food crops is 5.070.000 ha and the 55% is referring to bioenergy and the rest to industrial uses.

Dr. Venturi presented the EU most relevant policy initiatives for agriculture. Emphasis should be put to the “Renewable Energy Directive (2008)”. This directive has set as targets the 20% reduction in the primary energy consumption, 20% reduction in the greenhouse emissions, 20% RES (10% biofuels). In 2006 the RES was 7% and the biofuels 1.4%, in 2010 is expected RES to be 12% and 5.75% biofuels, while the target for 2020 is 20% RES and 10% biofuels.

The sustainability criteria for biofuels are: a) minimum GHG savings 35%, b) the raw materials should not be obtained from land that have been recognized with high bio-diversity value in January 2008, c) the raw materials should not be obtained from land with high carbon stock land (wetland, continuously forested areas) and d) second generation biofuels count double.

The next call for agriculture (FP7-KBBE-2010-4) will be published in middle of July 2009 and the deadline will be in middle of January 2010, while the evaluation will take place in March/April 2010. All the proposals will have

one stage submission and in total the budget will be 203 million. This call is expected to cover 53 topics and all proposals will be evaluated. In the next call one interesting topic will be for abiotic stress as a global challenge. It will be included project managers from all over world). More information about the 7th Framework in www.cordis.europa.eu/fp7/kbbe/home_en.htm.

Dr. Venturi presented the main topics of the activity 2.3. He presented also the Bilateral Dialogues and Joint Events that EU has established with Canada, China, India, Russia, South Africa and USA.

At the end of his presentation the markets for bio-based products were presented, which are: biofuels, fibre-based composite materials, paper and paperboard, bioplastics and biopolymers, surfactants, biosolvents, biolubricants, pharmaceutical products and enzymes.

Dr. Efi Alexopoulou, CRES

4FCROPS: a brief presentation of the project

Dr. Alexopoulou presented in brief the project 4FCROPS (www.4fcrops.eu) that was the reason for the organisation of this thematic workshop.

4FCROPS started in June 2008 and will finish in May 2010. The project is a dissemination and support action one and its main aim is to survey and analyse all the parameters that will play an important role in a successful non-food cropping systems alongside the existing food crops systems.

The project will be established through eight work packages: 1) land use in EU27, 2) cropping possibilities, 3) cost analysis of non-food crops and socio economics impacts, 4) environmental analysis, 5) regulatory framework, 6) best practices scenarios, 7) dissemination and support actions and 8) management and coordination.

Key element to the success of the 4FCROPS is the thematic workshops that will take place. The first workshop took place in Bologna (September 2008) and the theme of this workshop was “Market needs of non-food crops in EU27” and today is the second one.

Another important element to the project success is the scientific committee of the project that consisted from the work packages leaders and invited stakeholders that have an advisory role in the scientific committee and participate in the thematic workshops.

4FCROPS had been invited to participate in the twinning opportunity between EU and Canada that started last year with a workshop (February 2008 in Montréal) and will continue this year in Pisa in the second workshop (June 2009). In the view of this twinning action have been invited today Dr. Neil Harker to present the Canadian project for Canola and Dr. Gail Taylor to present the European project energy poplar. Both of these project participated in the twinning action.

Recently, 4FCROPS have been invited to participate in the twinning opportunity with Argentina and MERCOSUR project. Sweetfuel project that

will be presented later by Dr. Serge Braconnier is also a European project that has been selected for the same twinning action.

At the end of her presentation, Dr. Alexopoulou asked from the workshop participants to express their opinions during the round table discussion that is the most important part of this event.

Prof. Melvyn Askew, Census-BIO

Sustainable non-food bio-products: an unexploited opportunity

Prof. Askew focused his presentation on the main findings of the IENICA project had been funded twice by EU (www.ienica.net).

The main findings of this project were: a) the science and technology were not limiting the uptake of non-food products from bio-resources, b) massive markets which were significantly under-supplied were indentified and c) a range of non-scientific issues were holding up development. The main opportunities that indentified from IENICA project were: oils, fibres, sugars and specialty products. From the above mentioned opportunities only the biofuels have been developed.

According to Prof. Askew there is some development on non-food crops but many constraints still exist such as: a) the government priorities tend to be short and not inter linked, b) industry and the general public is still broadly unaware of the potential of bioresources, c) change involves risk and costs money - stakeholders and investors tend to be averse to these things and d) planner, for example are inhibiting progress.

The main drivers to change this situation are: a) climate change, b) the worries about reliability of oil supply, c) the needs to recycle because of pollution and waste disposal problems, d) the recognition of value of insulation and reduction of oil demand and e) the inter-linkage of science and technology in for example bio-refinery.

According to the “Biofuel Vision for 2030” the vision for 2005 was first generation biofuels (biodiesel), the vision for 2010/2020 is the second generation biofuels (bioethanol), while the vision for 2030+ is the integrated Biorefineries. The biorefinery concept should add value to natural feedstocks and will make them more economically viable. It will also aid sustainability.

In the question “are the resources unexploited” the answer is most certainly. Prof. Askew pointed out that the resolution may come out of governmental activities to stimulate sustainable development, recognizing that very cheap oil is in fact a negative feature in our longer term sustainability plans and that several opportunities from the past could be rediscovered with huge benefits. Another important parameter is the information of the public of the opportunities.

At the end of his presented gave show some early successes in the bio-renewable field (car parts, cloths from stirring nettle, etc.).

List of the future non-food crops as it was recorded in 4FCROPS project

Prof. Cosentino presented the choice of the future non-food crops as this work described in Task 2.1 of the project 4FCROPS.

The non-food crops categorized to: a) oil crops, b) starch and sugar crops, c) fiber and cellulose crops and d) lignocellulosic crops.

He presented in detail the crop *Brassica carinata* (crop for biodiesel production), *flax* (fiber production), *hemp* (for high quality paper, cloths, etc.), *kenaf* (for fiber, cloths, paperpulp), *sweet and fiber sorghum* (for bioethanol and paper pulp, etc.) *miscanthus* (for heat and electricity, second generation biofuels, etc.), *giant reed* (for heat and electricity, second generation biofuels, etc.), *cardoan* (for heat and electricity, for biodiesel, second generation biofuels, etc.), *castor bean* (biodiesel, biomass for heat and electricity), *topinambur* (for bioethanol) and *reed canary grass* (for paper, biomass for heat and electricity and second generation biofuels).

Prof. Cosentino partition the land use in EU in bioclimatic zones (Continental, Panonian, Atlantic north, Atlantic central, Lusitanian, Mediterranean north and Mediterranean south). He presented the European map with the bioclimatic zones and for each zone he proposed a number of non-food crops.

1. Continental: Rapeseed, Sunflower, Sweet and Fiber sorghum, Topinambur, Miscanthus, Switchgrass, SRF, Sida hermaphrodita Reed Canary grass
2. Panonian: Miscanthus, Switchgrass, Reed canary grass, SRF
3. Atlantic north: SRC, miscanthus
4. Atlantic central: SFR, Miscanthus, Rapeseed
5. Lusitanian: Rapeseed, Reed canary grass, Miscanthus, Switchgrass, Sunflower
6. Mediterranean north: Sweet and Fiber sorghum, Arundo, Miscanthus, Rapeseed, Soybean
7. Mediterranean south: Brassica carinata, Cardoon, Arundo, Saccharum aegyptiacum, Ampelodesmos, Spartium junceum

According to Prof. Cosentino research needed on a wide range of crops, otherwise they will disappear. He pointed out that during the first two years of the 7th Framework for Agriculture only three research projects were announced. The first one is the energypoplar, the second if sweetfuel and the third it will be a project for jatropha. The two out of the three projects refer to crops that will be cultivated mainly outside of Europe.

Dr. Katri Pahkala, MTT

List of the non-food crops for northern EU

Dr. Pahkala presentation targeted to the future non-food crops for northern Europe. The examples that will be presented have been categorized in four categories: a) caraway as a non-food crop, b) energy crops such as reed canary grass, fibre hemp and straw, c) pulping field crops for papermaking and d) dye plants.

Caraway is a biennial crop that is being cultivated in Finland (which is the only producer) in a total area of 20000 ha and its seeds are used as a spice.

Reed canary grass is a perennial grass that can be used as an energy and fibre source in Sweden and Finland and can be harvested for 10-15 annual harvests with yields varied from 3 to 8 dry matter yields per ha.

Fiber hemp have been evaluated for solid biofuels with dry matter yields 6-10 t/ha when the harvesting takes place in autumn and 4.7 to 5 t/ha when it is postponed until spring.

A large number of field crops have been tested for papermaking and reed canary grass was chosen as the best because had the highest pulp yield and crude fibre content, lowest kappa number and high crude fibre content indicates high pulp yield.

The main dye plants that have been tested were: blue dye, dyer's knotweed and tansy.

The climate change will affect the crops that will be cultivated in the north Europe. It should be mentioned that the day length will remain the same.

For Finland reed canary grass is a very important crop and by 2015 it is expected to be cultivated in a total area of 100.000 ha. This target has been settled by the Finish Ministry of Agriculture but Dr. Pahkala expressed doubts if this will be achieved.

Prof. Gail Taylor, University of Southampton

Presentation of the ENERGYPOPLAR project

Prof. Taylor presented the first year results of the project ENERGYPOPLAR (www.energypoplar.eu). This project started in 2008 and is one of the funded projects of the first call of FP7 for agriculture.

The project is addressing the yield gap in energy poplar in order to produce more biomass on less land. The actual poplar yields in UK are around 10 ODT per ha and the potential yields could reached 35 to 40 ODT per ha.

The use of poplar for bioenergy is globally significant. Three are the main reasons: a) ore than 30 species in a wide range of climates and soils, b) large genetic diversity, large natural provenances around 91% and c) inter specific hybridization.

The main reasons for making poplar as an ideal bioenergy model are: a)full genome sequence, b) small genome, c) diversity of species, d) fast growing

perennial, e) clonal, f) transformation system, g) genetic collections and molecular maps, i) activation tagged populations, k) EST and BAC libraries and l) genomic and post genomic tools.

The main aims of energy poplar are: to improve the feedstock characteristics for bioethanol production, to improve yields, to improve saccharification, to improve sustainability and water use efficiency and last to optimize the LCA.

In summary, Prof Taylor pointed out that we should keep in mind three important points: a) the poplar is a crop with high potential as bioenergy feedstock, worldwide, b) the genomic approaches are beginning to unravel complex traits such as biomass, response to drought and c) new research centers in the USA will invest massively in poplar and Europe should aim to remain competitive.

Prof. Jesus Fernandez, UPM

Presentation of the main results that derived from the BIOCARD project

Prof Fernandez presented the final results of the project BIOCARD that ended at the end of November 2008 (1/9/2005 to 30/11/2008). The project had five work packages but today only WP1 will be presented (Energy crop management and harvesting).

Prof Fernandez made first a short introduction of the investigated crop (cardo) including the eco physiological requirements of the crop and showed some pictures of the crop at several stages of growth.

Six were the objectives of WP1: a) cynara biomass productivity, b) cynara oil production, c) development of a static system of biomass fractionation from bales to seeds and lignocellulosic biomass, d) development of specific machinery to harvest and separate directly in the field the seeds and the biomass, e) analysis of low cost pre-treatments for Cynara biomass and f) cynara biomass logistics.

Cynara was established in a 20 ha field in Madrid in a very bad soil that were also not homogeneous. In fields under favorable conditions (500 mm precipitation/year, deep soil and loam texture) 14 t/ha dry matter yields could be obtained. The harvested biomass (in summer) contains: 37% basal leaves, 11% cauline leaves, 21% stems (stems+ braches) and 31% heads. It has been estimated that about the 8.7% of the total harvested biomass are oil seeds. The seed production was 1.2 seeds per ha and the seeds contains 25% oil. The fatty acid profile of cynara oil is similar to common sunflower oil.

Two harvesting systems were studied: a) harvesting the whole crop and b) harvesting separately the capitula flowers and the rest aerial part. Losses of seeds recorded if conventional harvesting machinery for cereals is used. It was decided to separate the capitulas from the stems on the field. Two cutting heads in the harvests: the upper for the capitulas and the lower for the stems.

Dr. Neil Harker, Lacombe Research Centre of Canada

Presentation of the Canola project in Canada

Dr. Neil Harker presented the first year results of the Canadian Canola project. The project will last from 2008 to 2013. Canola is the number one cash crop in Canada. Canola is like rapeseed in Europe and its main use is for biodiesel production.

In 2008, 10.9 million tonnes of canola were produced from a total area of 6.4 million hectares. It is estimated that there will be a demand for 15 million tonnes of Canadian canola by 2015 and 2.5 million tonnes will be the demand for biodiesel feedstocks.

It should be pointed out that in this project field trials will be carried out for a period of six subsequent years in several sites of Canada and in all cases rotation study will be made. Recently some diseases were recorded in the canola fields.

Canola in Canada had been compared with other 10 crops and canola was the best. The ten crop species that were compared are: Argentine Canola LL hybrid 5440 (*Brassica napus*), Polish Canola synthetic (*Brassica rapa*), Camelina (*Camelina sativa*), Ethiopian mustard (*Brassica carinata*), Yellow mustard (*Sinapis alba*) Andante, canola quality Juncea (*Brassica juncea*) cutlass, flax (*Linum usitatissimum*) CDC Bethune, soybean (*Glycine max*) - variety 1, soybean (*Glycine max*) variety 2.

It should be stressed out that the 95% of the cultivated canola varieties are have been genetically modified.

Dr. Alex Gablenz, Elaion Company

Presentation regarding the jatropha plant

Dr. Alex Gablenz presented the Elaion Company activities on jatropha (www.elaion-ag.de). Elaion Company recently rent a total area of 1,000 ha in Mozambique (from the government) for a total period of 50 years. The rent area is open woodland savanna and charcoal being the main ecosystem service. Elaion Company is trying to cultivate this crop in a sustainable way and trying by cultivating jatropha on these fields to go from degrading marginal areas to sustainably cultivated areas. Jatropha is being used for fire protection in high conservation value areas and offer land and income opportunity for relocated dwellers.

The main crops applications are: fertilizers, biochar, soap, fuels, lubricants, pesticides and base materials for chemicals. It has been tested to mix different oils from seeds, vegetables or algae, in order to optimize the desired characteristics. Biological additives have been used to enhance oxidation stability and pour point.

Jatropha oil as a lubricant is an excellent base oil for engine lubricants (straight use with anti-oxidants and winterization thinkable). One of the

main cultivation problems of this crop is the no uniform ripen of the crop and this mean that it is very difficult to be harvest in a specific time of the year. There is no mechanical harvesting of the crop, although some machines from other crops are being tested (like machines that being used for olive oil trees). At the moment is being harvested by hand and for this reason jatropha is a crop that can be cultivated only in the low cost labour countries.

The main problems for the cultivation of jatropha in Europe are: a) it is not resistant to cold and b) there is no mechanical harvesting.

Dr. Serge Braconnier, CIRAD

Presentation of the project SWEETFUEL

Dr. Serge Braconnier presented the project SWEETFUEL that has just started and is being coordinated by CIRAD. SWEETFUEL is a research project for sweet sorghum that will last 5 years.

The work in sweetfuel has been organished in eight work packages. The main sweetfuel objectives are: a) to breed ne high performance sweet sorghum material that will be adapted to temperate area and will be drought and/or marginal soil in semi arid areas, b) to improve the knowledge on the accumulation of sugars and the relationships among the traits for sugar accumulation, plant phenology, stay-green and terminal drought tool, c) to understand the agronomic determinants of optimized yield and recommended the best cultural and harvest techniques, d) to elaborate a plant model for sorghum to indentify potential area for production, e) to provide a multi-criteria evaluation of the sustainability of the bioethanol production from sweet sorghum on a social, economic and environmental point of view, f) to promote the exchanges between RTD experts, stakeholders and key actors, g) to elaborate a detailed exploitation plan, i) to indentify and monitor of the ethical risks due to the development of ethanol production from sweet sorghum and propose guidelines for policy makers.

In the view of this project sweet sorghum field trials will be established in France (Montpellier) and in Italy (Bologna).

Very soon a website for this project will be available (www.sweetsuel-project.eu).

Dr. Myrsini Christou, CRES

Presentation of the Crops2Industry project

Dr. Christou presented a new coordination and support action project entitled Crops2Industry. This project will start in the beginning of June 2009 and is being coordinating by CRES.

The overall objective of this project is to explore the potential of non-food crops, which can be domestically grown in EU27 context, for selected industrial applications namely oils, fibers, resins, pharmaceuticals and other

speciality products and outline and prioritize crops-to-product schemes, suitable for the different Member States, which will support sustainable, economic viable and competitive European bio-based industry and agriculture.

The workprogramme will be organised through eight work packages: 1) non-food crops, 2) plant breeding, 3) bio-based products, 4) socioeconomics, 5) sustainability, 6) crops-2-industry schemes, 7) dissemination and 8) management.

Five thematic workshops will be carried out in Crops2Industry project. The titles of the workshops are: 1) Can the fibre crops offer a viable alternative land use option, 2) Niche markets for speciality industrial crops, 3) can oil crops be considered as the only industrial crops that have a clear niche market in EU27, 4) Carbohydrate crops and the dilemma of using them for non food purposes and 5) Non food crops for a biobased industry and sustainable agriculture.

A very important element of this project is the participation of four industries (the consortium is consisted from 14 partners) that will be responsible for the first four thematic workshops.

Round table discussion

Questions set by Prof. ASKEW (chairman of the workshop)	
1. Why did you choice the non-food crops that you presented today?	
Prof Gail Taylor	Poplar was chosen because the science was mature for the genetic resources and poplar is the only plant that has genome sequence. Even if ethanol is a short product, lignin would also be another topic.
Dr. Neil Harker	Canola was chosen for three main reasons: a) high interest of Canola in Canada since is the first cash crop and nothing is expected to change, b) in Canada the next 5 years will be high on the agenda, although other crops will also look at and c) farmers are comfortable with canola
Prof. Luciano Cosentino	He presented a list of future non-food crops. From research point of view the main criteria are the climate change suitability and low input requirements (with good energy input/output ratio). He pointed out that It is difficult to introduce jatropha in EU climate because of non-tolerance to frost. Time and research is needed. The breeding for food crops was done many years ago. Some of the food crops can be used also for energy production but there is the “low input requirement” and sustainability that affects our choices.
Dr. Katri Pakkala	In Finland the reed canary grass was selected among a large number of crops for paper pulp industry as the best crop. The choice was made in the framework of a national project. However industry was not involved at that time. Only when industry was involved research was started because there was a need for fiber materials to be used in pulp industry.
2. Is the choice of crops driven by the Government or by research?	
Prof. Ryszard Kolzowski	A more clearly governmental policy is needed. The main driven force in each country should be the national government for the choice.
Dr. Alex Gablenz	They should subsidize the sustainability and not they old crops like tobacco.
Prof. Luciano Cosentino	In EU there are strong bodies with traditional crops- governments have to interfere strongly. Government have to give stable indication so that farmers-industries by new crops.

3. How easily the farmers convinced to change their cultivation?	
Prof. Gail Taylor	In UK the traditional farmers do not want long term contract and they are not prepared to take risks with new crops. On the other hand the new farmers that are mostly from London are farmers that want to grow new crops.
Dr. Carlos Cadorniga	In Spain if a market is there the farmers are able to grow everything.
Dr. Myrsini Christou	In Greece, the young farmers have a more opened mind compared to the older ones and they are not negative to change from the traditional cultivation to new ones as long as a market is already there. It should be pointed out that the farmers will change easier when the proposed crops are annuals.
Prof. Luciano Cosentino	In Italy the framers could change easier to annual than the perennial non-food crops. There are many possible non-food crops, the choices lie to the farmers and their reluctance to take any risks.
Dr. Neil Harker	In Canada, when no subsidies, farmers are willing to try low input crops - even if these crops are perennial ones.
Dr. Maria Dolores Curt	In Spain the farmers can grow everything in case that somebody will pay the final product. From point of view of the research: to cultivate species that can be suitable to the Spanish climatic and soil conditions. From the part of farmers: agriculture is an economic activity and they will grow what industry can pay.
Dr. Nicola di Virgilio	In Italy hemp was appeared again after many years in Emilia Romania when a company asked for this material. The company is ARMANI and takes the hemp for cloths production. A good question is what is going to happen if the company decide in the future to stop this activity.
4. Which non-food crops will exist in EU27 agriculture after ten years? (Climate change should be taken under consideration)	
Dr. Nicola di Virgilio	In Italy switchgrass for ethanol (second generation biofuels), hemp for fiber, dye crops for colorants have hood changes to be existed in the agriculture from ten years from now.
Dr. Ana Luisa Fernando	In Portugal, miscanthus is considered as an important perennial crop that has chances to be cultivated in farms (it has low fertilization needs). It is believed that in Portugal the first priority will be the use of the residues and wastes before any new crop insertion in to the Portuguese agriculture.

Dr. Srege Braconnier	For France, Dr. Braconnier believed that the sorghum (not the sweet sorghum) have chances for cultivation. This crop could replace part of the fields that at the moment are being occupied by maize.
Dr. Katri Pakkala	In Finland the most important new non-food crop will be reed canary grass, which is a crop that have been selected after many years of research and comparison with other non-food crops for fiber production. Dr. Pakkala believes that the cereals will be cultivated in the future for non-food uses.
Dr. Maria Dolores Curt	In Spain a lot of research has been carried out with cardoon (BIOCARD project presented today) that is a multi propose crop and with Brassica carinata that is a good crop for biodiesel production. Both these crops have chances in the future Spanish agriculture. She pointed out that could be found also crops with other uses (like pharmaceutical uses) that have niche markets.
Dr. Myrsini Christou	In Greece the cultivation of the high oleic varieties is feasible for biodiesel production in ten years from now. Since the target for 2020 is 10% biofuels is there the crops for biodiesel production could have good chances for cultivation in the next years. From the perennial non-food crops it could be possible to see fields with cardoon and switchgrass.
5. What about genetic modified crops (GMO)?	
Prof. Gail Tayor	The main agricultural crops, like soya or maize are genetic modified ones in USA and Canada. In Europe something like this is not allowed to take place. There is a big question why in Europe it is not allowed to be cultivated the genetic modified crops when these referring to non-food crops (with no flowering) like poplar.
Dr. Neil Harker	It should be pointed out that in Canada the 95% of the cultivated canola varieties are genetically modified ones.
Dr. Nicola di Virgilio	After ten years of research, there is no evidence that genetic modified crops are not harmless. In Italy the genetic modified crops is an emotional issue.
Dr. Piero Venturi	According to investigations that have been done by EU it was stated that the European citizens do not want to know anything about genetic modified crops even these crops are going to be cultivated non for food and feed.
Prof. Dimitra Millioni	We have to inform the citizens that non-food crops are not for human consumption. If we did we could bring an enormous amount of biomaterials. Could be the way forward ... White technology can be a solution when the crops are for non-food crops.

6. Is any available agricultural land for the cultivation of non-food crops?

Dr. Ewa Ganko	According to the work that have been done in work package of WP1 the total fallow land in EU27 is estimated 21.4 Mha (20% of the total arable land in EU27). In most of the regions the fallow land is 4-9%. The largest areas (fallow land) are concentrated in Portugal, Spain and Poland. Over 50% of fallow land is in Spain (arid lands), south Poland (not profitable to cultivate small fields) and S. France, S. Italy (not profitable to cultivate, farmers not willing because of low economics).
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Prof. Luciano Cosentino	There is a strong competition with food crops. We should take under consideration the last year dialogues on the TV news when the biofuels were blamed for the increased prices on the cereals. This year that the prices of cereals were reduced nobody same anything about the biofuels.
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7. Why there is only a small amount of money for research on crops from DG Research under the 7th Framework Programme?

Prof. Luciano Cosentino	He pointed out that during the first two years of the 7 th Framework Programme for agriculture only three topics were referring to the research of the non-food crops. The projects that have been already started are: Energy and Sweetfuel that presented today and the third one for jatropha will be starting the negotiation in summer. It should be noted that two out of the three funded projects were for non-food crops (sweet sorghum and jatropha) that will be cultivated mainly outside of Europe.
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Dr. Piero Venturi	In the future they will not be research projects focused only on agronomy. Only whole chains that produce certain products in certain time will be funded in the future. Although that sweet sorghum and jatropha are not non-food crops that will mainly grow in EU by growing their out of Europe EU policies will be served and therefore improvement is also considered. Dr. Venturi pointed out that EU funds the 5-6% of the European research. They avoid overlapping actions that already have been funded or will be funding by national projects. EU facilitates all financial procedures to involve industries. During the negotiation period of the succeed projects some of industrial partners afraid to invest on projects and in many cases they decided to leave.
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