



Crops2Industry

“Non-food Crops-to-Industry schemes in EU27”

Myrsini Christou
Head of Biomass Department
CRES - Center for Renewable Energy Sources

2nd Thematic Workshop, Winschoten/Netherlands, 12 March 2010

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Project coordinates

Funding scheme: Coordination Action

Grant agreement no. 227299

Duration: 30 months

Total budget: € 994,246

14 partners: 4 universities, 5 research institutes and 5 companies





Project coordinates

Topic Area: "KBBE-2008-3-1-03: European non-food crops and their industrial application".

This coordination action should bring together stakeholders such as industry, academia, plant breeders and economists. Coordination of activities should result in a portfolio of industrial crops suitable for the different Member States and map the most promising plant-based products derived from these crops and meet the future needs of consumers and industry (e.g. fibres, resins, oils, specialty products, etc.).

The CSA should identify the necessary enabling technologies to overcome the bottlenecks in plant breeding (such as yield or adaptation), and enable the conversion, extraction and processing of the envisaged compounds.

Also it should identify the economic potential and best business opportunities for the industrial exploitation of European non-food crops.

Expected impact: Selection and prioritization of non-food crops which enhance the competitiveness of the European industry, and will improve rural development through diversification and provision of new sustainable sources of income for the farming community.





The overall objective 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 specialty products **and outline and prioritise crops-to-products schemes**, suitable for the different Member States, which will support sustainable, economic viable and competitive European bio-based industry and agriculture.

The expected output will be to identify whether and under which terms Europe has the potential and the technical competence to develop a competitive bio-industry fed by a sustainable agriculture.



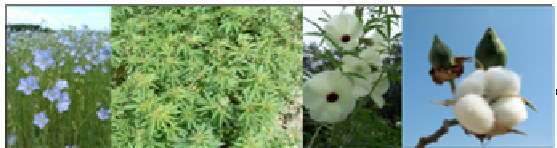


The concept

Oil Crops



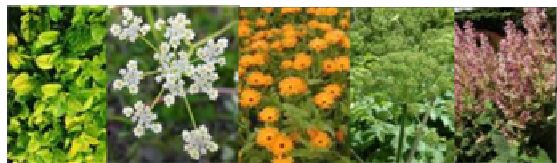
Fibre Crops



Carbohydrate Crops



Other Specialty Crops



Crop2Industry



Oils



Fibres



Resins



Pharmaceuticals and



other specialty products

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The consortium

CRES - Centre for Renewable Energy Sources, Greece	Crops
UNIBO - University of Bologna, Italy	
INF&MP - Institute of Natural Fibres and Medicinal Plants, Poland	
BIOS - BIOS AGROSYSTEMS S.A., Greece	
NCPRI - National Institute for Chemical and Pharmaceutical Research and Development, Romania	
ITERG , France	Industry
KEFI - Kenaf Eco Fibers Italia S.p.A, Italy	
Hempflax B.V , The Netherlands	
CHIMAR Hellas S.A, Greece	
AUA - Agriculture University of Athens, Greece	Biotechnology
ICCEPT - Imperial College London, UK	Economics
OeKO - Institut of Applied Ecology, Germany	Sustainability
BOKU - University of Natural Resources and Applied Life Sciences, Austria	
FZ-JUELICH Forschungszentrum Julich GmbH, Germany	Overall assessment

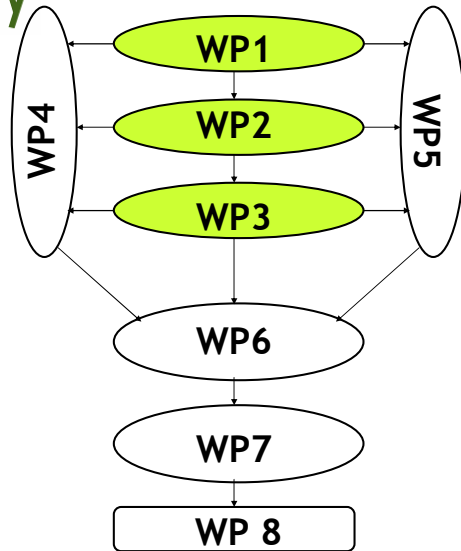
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Project activities

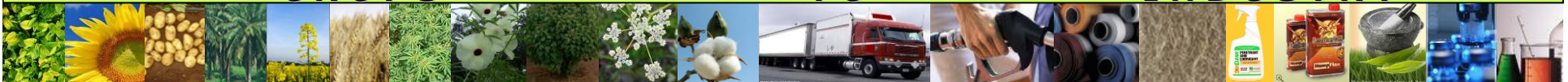


- Identify current molecular genetics technologies (genomic and biotechnological tools) and suggest their potential applications in a crop-specific manner to address a wide range of breeding constraints regarding yields and tolerance to abiotic and biotic conditions (WP2/AUA)
- Explore the potential of non-food crops, which can be domestically grown in EU27 countries, for selected industrial applications (WP1/CRES)
- Explore the potential and feasibility of the European industry to make high-value biobased products namely oils, fibers, resins, pharmaceuticals and other specialty products (WP3/INF&MP)

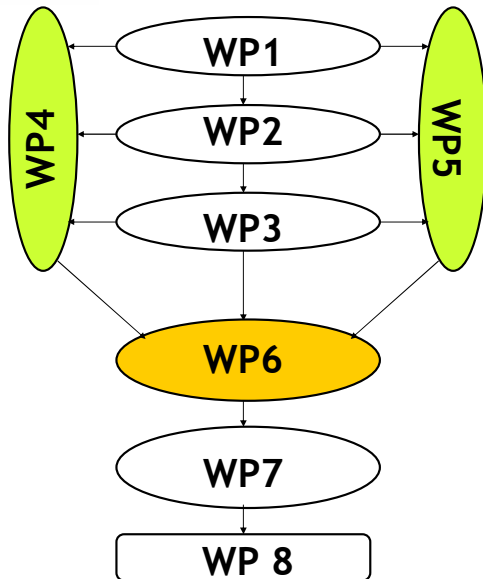
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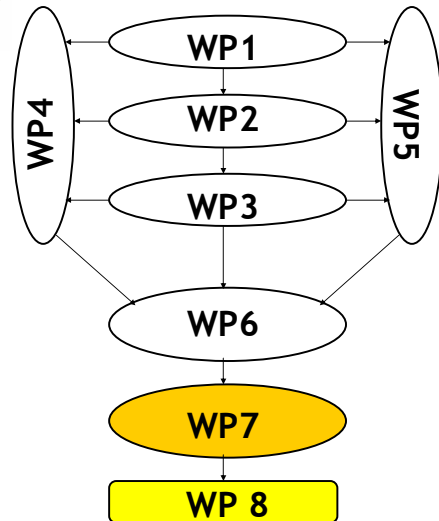
Project activities



- Assess selected production and environmental impacts and identify a ‘core’ list of standards and criteria for the environmental and socio-economic sustainability of selected non-food crops-to-industrial-products systems(WP5/OECO)
- Perform supply chain cost analysis, identify best business opportunities and assess the socio-economic impacts of selected crop-to-product schemes at EU-27, regional and country levels (WP4/IMPERIAL)
- Perform an overall assessment aiming to select and prioritise crops-to-products schemes in technical, socio-economic and environmental terms (WP6/FZJ)



Project activities



Thematic workshops

- Can fibre crops offer a viable alternative land use option? (Poland, 18/11/09)
- Carbohydrate crops and the dilemma of using them for non-food purposes (The Netherlands, 12/3/10)
- Can oil crops be considered as the only industrial crops that have a clear niche market in EU 27? (France, 2010)
- Niche markets for specialty industrial crops (Greece, 2011)
- Non-food crops for a bio-based Industry and sustainable agriculture (Italy, 2/2012)

Dissemination activities (WP7) -

- project website (www.crops2industry.eu)
- links with other activities, like:
 - Plants for the future platform
 - IENICA project
 - 4F Crops project
- EU Twinning events (EU-Canada)

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WP7. Dissemination and support actions

2nd Thematic workshop

“Carbohydrate crops and the dilemma of using them for non-food purposes”

12 March 2010

Winschoten • The Netherlands



WP1. Non-food crops

Objective: Explore the potential of non-food crops, which can be domestically grown in EU27 countries, for selected industrial applications

Task 1.1 Oil crops

Task 1.2 Fibre crops

Task 1.3 Carbohydrate crops

Task 1.4 Other specialty crops

Task 1.5 Multiple end use potentials and allocation factors

Task 1.6 Assess available land area for non-food crops in EU27

Topic areas

- Plants anatomy
- Areas of origin and current cultivation
- Growing conditions - input requirements
- Logistics
- Yields
- Quality
- Applications: current - potential
- Factors restricting growth and yields
- Research gaps





WP3. Bio-based products

Objective: Explore the potential and feasibility of the European industry to make high-value biobased products namely oils, fibers, resins, pharmaceuticals and other specialty products

Task 3.1. Oils

Task 3.2. Fibres

Task 3.3 Resins

Task 3.4

Pharmaceutical and other specialty products

The **output** of this WP will be:

- Review on the product yielding capacity from various industrial crops streams
- Identify desirable quality characteristics for mature industrial processes
- Report on current alternative resources for each industrial use
- Set prospects to widen the range of potential feedstocks
- Identify restricting factors that inhibit broader industrial use of the biomass feedstocks
- Define research gaps, prospects and recommendations

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8:30 - 9:10	Welcome coffee	
9:10 - 9:20	Welcome - Itegr activities	Guillaume Chantre, ITERG
9:20 - 9:40	CROPS2INDUSTRY Project outline	Myrsini Christou, CRES
9:40 - 10:00	Crambe and erucic rapeseeds : interests and competition	CETIOM (A. Mérien ou A. Quinsac)
10:00 - 10:20	"Linseed :crop and applications"	Reynald Tavernier, LINEA
10:20 - 10:40	Coffee break	
10:40 - 11:00	"Industrial applications of linseed oil and industry outlook"	PM Baudoin, VANDEPUTTE
11:00 -11:20	"Lunaria : culture and oil production for bio-lubricants and nutraceutic industry"	Xavier Guillot, LABOULET
11:20 - 11:40	Development and industry outlook of high oleic sunflower through an agricultural cooperative.	ARTERRIS + ITERG
11:40 -12:00	« Jatropha : current development and potentialities in Europe »	Roland Pirot, CIRAD
12:00 - 13:30	Lunch break	
13:30 - 13:50	Industrial Uses of Biobased Feedstocks - Focus on Oleoproducts	Jean-Marc Pujol, RHODIA
13:50 -14:10	« Valorization of the castor oil for polymers applications »	Jean Luc Duboit, ARKEMA
14:10 - 16:00	Round Table:	
Topics:	<ol style="list-style-type: none"> 1. Restricting factors limiting broader industrial use of oil crops (supply, costs, physical traits, consistency in quality, technical performance, economic viability and security of the investment, etc.) 2. Prospects to widen the range of potential feedstocks 3. Research gaps and recommendations 	

1st Thematic workshop 'Can fibre crops offer a viable alternative land use option and could they support a competitive industry ?'



2nd Thematic workshop 'Carbohydrate crops and the dilemma of using them for non-food purposes'





Some remarks from the two workshops

- The shortage of science and technology does not seem to be an issue but **putting the supply chain together and attract the market**, which is fed by imports of low-cost raw material, is the real challenge. However, research on improving crop yields and technology efficiency is still imperative.
- **Consistency in feedstock and bio-product**, poses challenges for speciality products or special feedstocks (in terms of chemicals).
- A structure for **prioritisation** of the uses of main products and by-products is needed. **The biorefinery concept** is recommended because it improves the overall efficiency of the industrial plant by exploring all by-products for several uses.
- From the industrial part, more **innovation in product** development is needed, in order to promote investments.



- To attract investors **the projects have to be bankable**, else the investor is not going to have any support from the banks.
- **Low prices of biomaterials** will certainly attract customers
- **Assessment of cost variables** is required in order to estimate profits of the investments. Market appraisal and sensitivity of the costumers to the product quality and price is required in order to promote investments.
- **Profitability** is a decisive motive for crops to be cultivated. Which crops to grow depends on the latitude, security of supply, sustainability criteria and its final uses.
- As there are big markets, like the biofuels, and with small markets, like plastics, detailed **business plans** for crops are crucial. Bioenergy as a product is easy. The high value of low tonnage products shouldn't be overlooked.

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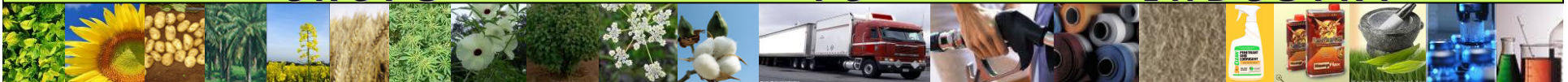


- **CAP impact** is huge. Any investment decision need long term financial stability. Social motives may still be in need for subsidies. Biomass need the same playfield as the other renewable, thus subsidies have to be put in the right direction and there must be a clear plan on how to remove them, because crop financial profitability should stand alone.
- **Land use changes** in the tropics have huge impact on sustainability
- But, **security of investment is a long-term EU - governmental issue.** We have to pass the message to policy makers that we need stability of science and stability of investment.
- For all the above reasons, **public awareness has to be increased.** Targeted workshops open to all relevant stakeholders, from farmers to end-users are important for the industry as well as for the investments.

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**Thank you for your attention
and your presence in our workshop!**

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