Crops2Industry

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

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

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.

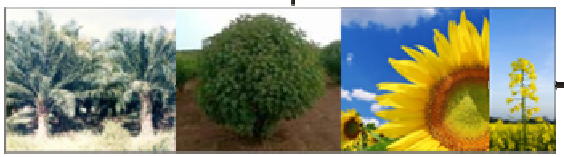
Expected impact: Selection and prioritization of non-food crops which enhance the competitiveness of the European industry, and will improve rural development through diversification and provision of new sustainable sources of income for the farming community.

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

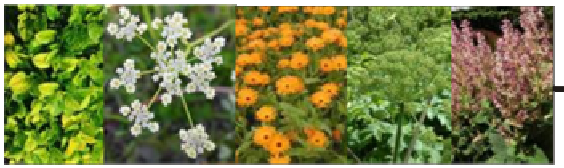
Oil Crops



Fibre Crops

Carbohydrate Crops

Other Specialty Crops



Crop2Industry

Oils

Fibres

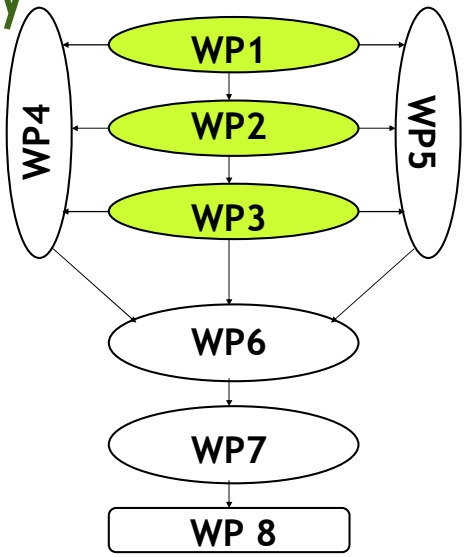
Resins

Pharmaceuticals and other specialty products

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 Forschngszentrum Julich GmbH, Germany	**Overall assessment**

Project activities

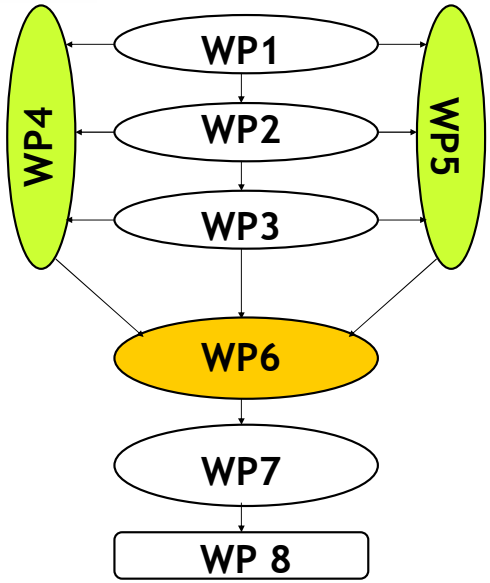


- Identify current molecular genetics technologies (genomic and biotechnological tools) and suggest their potential applications in a crop-specific manner to address a wide range of breeding constraints regarding yields and tolerance to abiotic and biotic conditions (WP2/AUA)

- 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)

Project activities

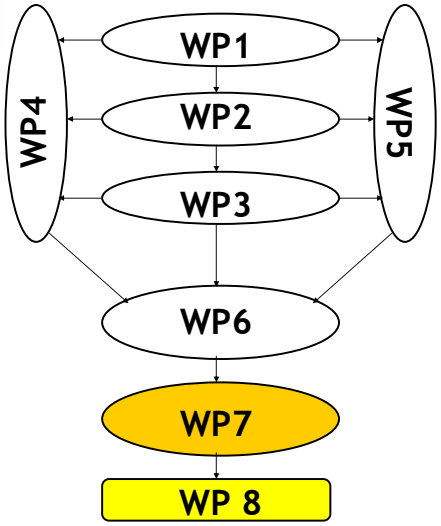


- Perform supply chain cost analysis, identify best business opportunities and assess the socio-economic impacts of selected crop-to-product schemes at EU-27, regional and country levels (WP4/IMPERIAL)

- 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 an overall assessment aiming to select and prioritise crops-to-products schemes in technical, socio-economic and environmental terms (WP6/FZJ)

Project activities

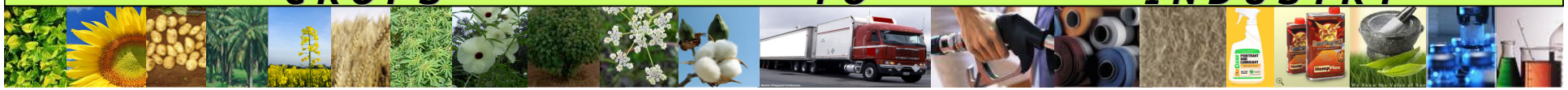


Dissemination activities (WP7) –

- 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)

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)



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

9:00 – 11:00	**Session 1. Growing carbohydrate crops in Europe**	
9:00 – 9:20	Welcome by Hempflax	*Mark Reinders, Hempflax*
9:20 – 9:40	Project outline	*Myrsini Christou, CRES*
9:40 – 10:00	Growing sugar crops	*Andrea Monti, University of Bologna*
10:00 – 10:20	Sweet sorghum: a multiple-purpose crop for water-limited and low-input systems	*Serge Branconier, CIRAD*
10:20 – 10:40	The emerging importance of the new feedstocks for bioethanol production	*Spyros Kyritsis, Agricultural University of Athens*
10:40 – 11:00	Economic viability of energy crops in the EU. The case of sweet sorghum and sugar beets.	*Peter Soldatos, Agricultural University of Athens*
11:00 – 11:20	***Coffee break***	
11.20 – 13:20	**Session 2. Industrial uses of carbohydrate crops**	
11:20 – 11:40	Industrial uses of carbohydrate crops	*Melvyn Askew, CENSUS BIO*
11:40 -12:00	Surgarbeet for non-food biobased products	*De Laat, Cosun*
12:00 – 12:20	Canada's First Integrated Feedlot/Fuel Ethanol Facility	Keith Rueve/Pound-maker
12:20 – 12:40	Researching supply or production chains for a bioethanol facility	Stuart Smyth
12:40 – 13:00	Developing Sustainability in Two Industries; Bioenergy and the Livestock Industry	*Colleen Christensen, University of Saskatchewan, Canada*
13:00 – 13:20	Sustainability issues	*Uwe Fritsche, OECO*
13:20 – 14:20	***Light Lunch break***	
14:20 – 16:30	**Round Table:**	

Topics: 1. Restricting factors limiting broader industrial use of carbohydrate 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 ?

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

Restricting factors limiting broader industrial use of fibre crops were identified in technology, ecology, society and in finance.

Concentration of processing industry around cultivation zones, supply, costs, physical traits, consistency in quality, technical performance, use of bio-products, economic viability and security of the investment, and public perception were among the most important restricting factors.

Remarks from the 1st workshop on fiber crops

Some recommendations to overcome the barriers:

- 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.
- Fibre crops can have several end uses. A structure for prioritisation of the uses of fibre products and by-products is however needed. The biorefinery concept is recommended to be applied in the fibre making industry, because it improves the overall efficiency of the industrial plant by exploring all by-products for several uses.

Remarks from the 1st workshop on fiber crops

- From the industrial part, more innovation in product development is needed, in order to promote investments. For an investment to be viable the whole feedstock should be used and all possible bio-products should be marketed.
- To attract investors the projects have to be bankable, else the investor is not going to have any support from the banks. There is not enough confidence on the investment at this stage of development; there are lots of uncertainties as to where to find the raw material, how long will be the investment, what is the market for the products.

Remarks from the 1st workshop on fiber crops

- 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.
- 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.

Thank you for your attention

and your presence in our workshop!