



4F CROPS

Future Crops for Food, Feed, Fiber and Fuel

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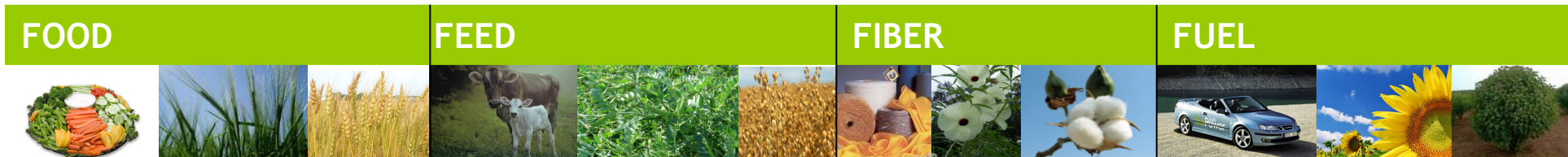
4F CROPS Project

- The project is being funded by the 7th Framework Programme for Agriculture and the theme 2 (Food, Agriculture and Fisheries and Biotechnology)
- The proposal was submitted in May 2007 in the call FP7-KBBE-2007-1
- The Grant Agreement number is 212811
- The project was started in the beginning of June will last 24 months.
- The total budget is 998.520 euros
- The consortium is consisted by 13 partners (six are Universities and the rest research organization and/or institutes)



The Consortium

Beneficiary number	Beneficiary name	Country
1 (Coordinator)	Center for Renewable Energy Sources - CRES	Greece
2	University of Catania - UNI.CT	Italy
3	Agricultural University of Athens - AUA.eco	Greece
4	Institute for Energy and Environmental Research - IFEU	Germany
5	Agro technology & Food - A&F	Netherlands
6	University of Bologna - UNIBO	Italy
7	National Institute for Agricultural Research - INIA	Spain
8	University of Lisbon - UniNOVA	Lisbon
9	Institute of Natural Fibres - INF	Poland
10	University of Agricultural Science in Bucharest - UASB	Romania
11	Agricultural University of Athens - AUA.bio	Greece
13	National Agricultural Research Foundation - NAGREF	Greece
14	Baltic Renewable Energy Centre - EC BREC	Poland



- The *main aim* of the 4F CROPS project is to survey and analyze all the parameters that will play an important role in successful non-food cropping systems in the agriculture of EU27 alongside the existing food crop systems

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Specific objectives

- ❖ Review of the agricultural land uses in EU27 and the prediction in short (2020) and longer terms (2030), so as to identify possibilities of non-food cropping systems for each time frame.
- ❖ Mapping of cropping possibilities like choice of crops, rotation cycles, yielding potential, raw material characteristics for each end-use based on regional potential levels, ecology and climate.
- ❖ Comparative cost analysis of the food and non-food crops in short and long term consideration and evaluation of the most critical socio-economic parameters, like farmer's income, rural development, public acceptance and safety measures.
- ❖ Evaluation of the most important environmental criterial (soil water, air, climate change, biodiversity, landscape) by means of an Environmental Impact Assessment (EIA) and a Life Cycle Analysis (LCA).



Why there is a need for the cultivation of the non-food crops (fiber and fuel crops)?

The concept of using plants as non-food crops feedstock is not new, but, despite considerable investment in research and development little progress has been made in the commercial marketplace.

The IENICA consortium carried out an estimation of the potential of plants to produce non-food crops and according to them, the potential was enormous, but the markets disorganized and frequently uninformed (Schenkey, 2006).



Specific objectives

- ❖ Record of the existing policies and the driving forces in the future crops
- ❖ Development of scenarios for promising non-food cropping alongside food cropping systems, be defining systems' boundaries and evaluating the priorities and trends, in short and long time frameworks.
- ❖ To develop a whole dissemination plan that its main elements will be the web-site development, the projects workshops and other dissemination activities (articles, presentations, fact sheets, leaflets, links with previous and on-going activities, etc.)



Why there is a need for the cultivation of the non-food crops (fiber and fuel crops)?

The need for the cultivation of the non-food crops is supported by the following facts:

- ❖ The reform of **CAP** is going to lead to the release of agricultural arable land
- ❖ There is an **increasing need for fibers crops** (to describe the needs for biobased products)
- ❖ There is a **great need for biofuels** that will be produced from dedicated crops
- ❖ The **climate change** is going to force especially the south Europe to shift to other cultivations that will need less water, nitrogen that will have salt tolerance, in other words crops that will not need intensive cultivation



The concept

Need for the cultivation of non-food crops
(fibre and fuel crops)

4F CROPS

Survey and analyze all the parameters that will play an important role in a successful non-food cropping systems alongside the existing food crop systems

This mainly will be done through the formation of successful scenarios that will take under consideration the several parameters such as *technical* (which crops, in which rotation systems, logistics, the role of biotechnology, etc.), *socio-economics* (cost analysis, public acceptance, rural development, farmers income (etc), *environmental* (sustainability), *regulatory* (co-existence and safety measures when crops using for both food and non-food uses).

1st Workshop
(Month 4, Bologna)
“Market need of non-food crops and available land use in EU27”

4 Workshops with key theme and the Scientific committee (consortium and key invited stakeholders)

Will also help to the formation of these scenarios as well as to determine research gaps and to set future challenges for research

4th Workshop
(Month 22, Greece)
“Successful scenarios for the establishment of non-food crops”

2nd Workshop
(Month 10, Spain)
“Future non-food crops (fibre and fuel) in EU27”

3rd Workshop (Month 16, Romania)
“Can we produce non-food crops that can be environmental friendly and economic viable”

The project is being carried by **eight** work packages:

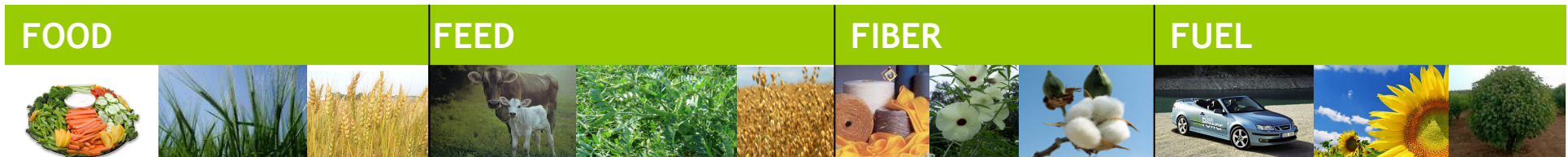
WP1 Land use in EU27 (led by EC BREC - Poland)

- The work was start with a **review of the current land use in EU27** that will be used as a base for the prediction of the future land use in short term (2020) and long term (2030).
- For the prediction a number of parameters will be considered like the **existing intensive agricultural systems, climate change, regional differences and market demands for food, feed, fiber and fuel.**



WP2 Cropping possibilities (leaded by UNI.CT - Italy)

- The main objective of this WP is the mapping of the **cropping possibilities** that will be based on **regional potential levels, ecology and climate**.
- The **future crops** will be categorized in four major categories, namely crops for **food, animal feed, fiber and fuel**).
- Several parameters will be critically addressed, like **crop domestication and genetics, physiology, input requirements (water, fertilizers, chemicals) and crop management possibilities (double cropping/parallel cropping)**.



WP3 Economic analysis and socio-economics impacts (*leaded by AUA.eco - Greece*)

- For the **economic appraisal of the crops**, monitoring of economic parameters, such as **commodity prices**, **interdependency of crops** and the **new CAP amendments** will be included.
- Economic analysis of new and conventional crops will include details of **production**, and **distribution of agricultural products** from the point of view of the producer. **Estimates of future land use changes** will be made.
- **Socio economic impacts**, like farmers' income, rural development, public development, public acceptance, safety measures will be analysed.

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WP4 Environmental analysis (*leaded by IFEU - Germany*)

- For the selected non-food crops and the bio-products (bioenergy, bio-based material) the environmental implications will be assessed to their respective conventional products (fossil energy, conventional materials).
- Several environmental impacts will be assessed like soil quality and soil erosion, air quality and climate change, water issues, biodiversity and landscape by using Life Cycle Analysis assessment and environmental Impact assessment methods.



WP5 Regulatory framework (*leaded by CRES - Greece*)

- The **existing policies** will be evaluated.
- Emerging **best practices and key factors** that led to the success stories will be pointed out.
- **Barriers** prevented the development of non-food cropping systems will be analysed and reviewed.
- **Co-existence and safety measures** when crops are used for both food and non-food uses will be addressed and recommendations will be sought.
- A **framework of strategic policies options** will be formed



WP6 Best practice scenarios *(led by A&F - Netherlands)*

- The work accomplished in WP1-5 will be used as a base to elaborate scenarios for successful non-food cropping alongside food cropping systems, which will provide answers whether a competitive bioeconomy is a viable option for EU27.



WP7 Dissemination and Support Actions (*led by CRES - Greece*)

A whole dissemination plan was presented and discussed in the kick off meeting and the main elements are:

- The development of the web-site (intranet)
- The project workshops (with key themes)
- Dissemination activities such as articles, leaflets, conferences, fact sheets, links, etc.

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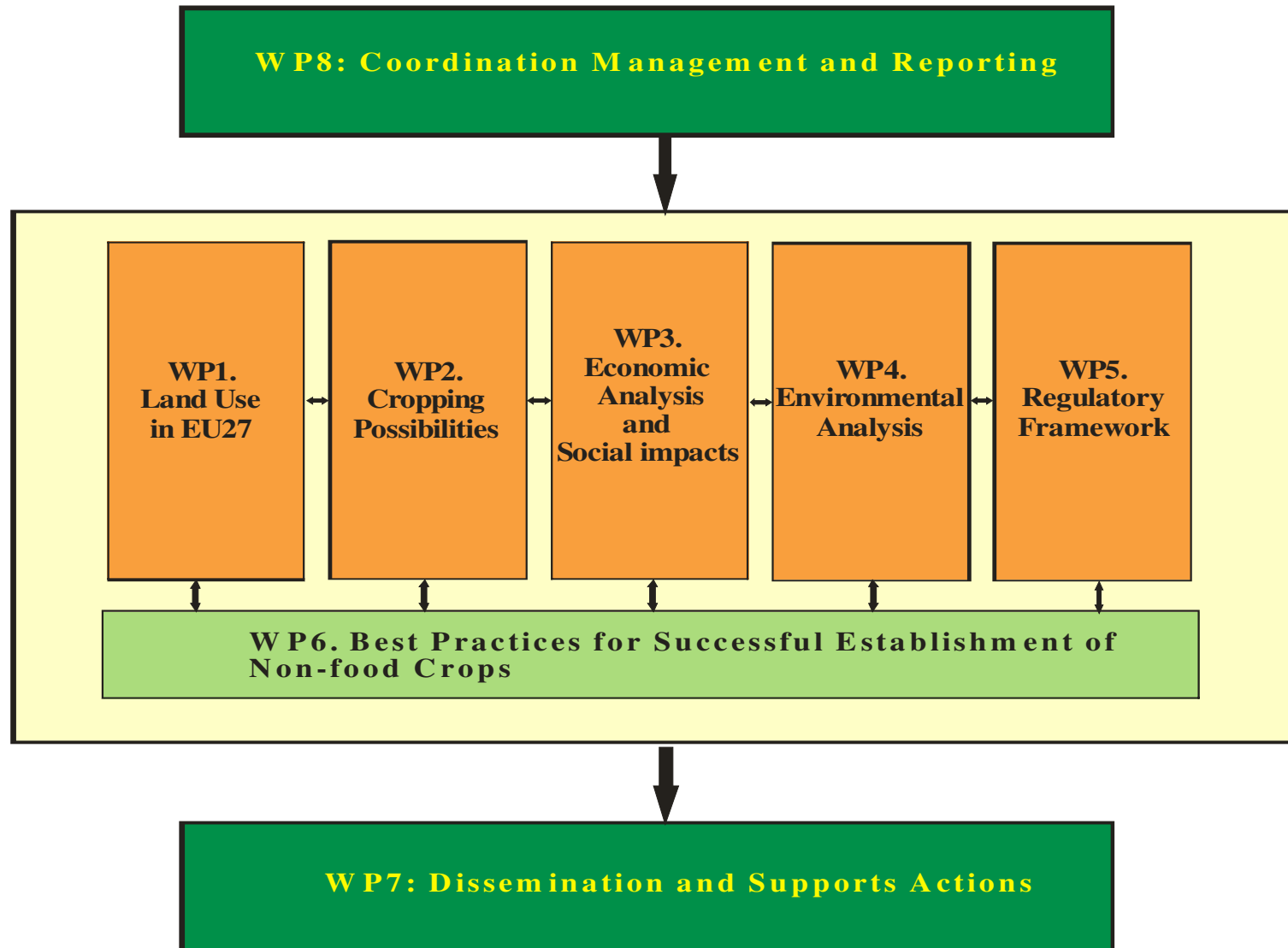
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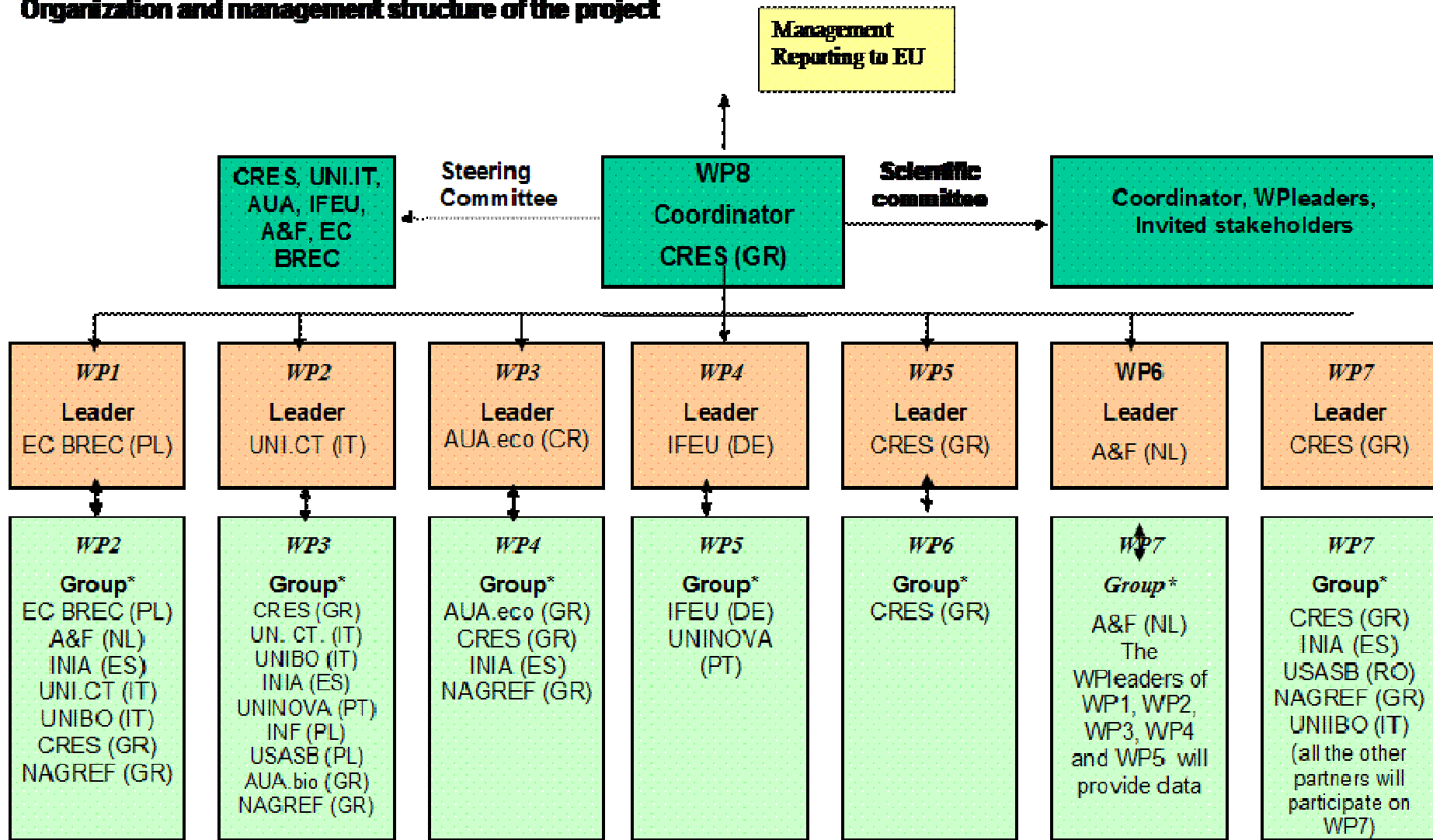
Graphical presentation of the project's components



B 1.3.2 Timing of work packages and their components

WPs	Workpackage short title - Milestones	Year 1		Year 2	
WP1	Land Use in EU27				
	Description of the current situation for the land Use in EU27	M1			
	Evaluation of the restricts factors for the EU agriculture	M2			
	Market demand for non-food crops (fuel and biobased products)	M3			
	Determination of the key factors affecting the future land use			M4	
WP2	Cropping possibilities				
	Choice of the non food crops	M5			
	Rotation possibilities	M6	M6		
	Yielding potential	M7	M7		
	Biotechnological improvement	M8	M8		
	Raw material characteristics	M9	M9		
	Cropping possibilities			M10	
WP3	Economic analysis and socio-economic impacts				
	Development / adaptation of existing models	M11			
	Economic analysis of competing conventional crops		M12	M12	M12
	Economic analysis of future non-food crops			M13	M13
	Monitoring of social impacts		M14		M14
WP4	Environmental analysis				
	Environmental impact assessment (EIA)	M15	M15		
	Life cycle analysis (LCA)	M16	M16		
	Modeling of dependencies and sensitivities		M17		M17
	Identification of best options			M18	M18
WP5	Regulatory framework				
	Review of existing policies at EU27 level	M19	M19		
	Co-existence and safety measures			M20	M20
	Strategic policy options				M21
WP6	Best practices scenarios				
	Integration and evaluation of results			M22	M22
	Definition of systems boundaries			M23	M23
	Evaluation of priorities and information of scenarios			M24	M24
WP7	Dissemination and support actions				
	Web-site development and updated				
	Workshops				
	Other dissemination activities				
WP8	Coordination, management and reporting				
	Meetings	○	○	○	○
	Reports		✍	✍	✍

Organization and management structure of the project



WP1. Land Use in EU27, WP2. Cropping possibilities, WP3. Economic analysis and socio-economic impacts, WP4. Environmental analysis, WP5. Regulatory framework, WP6. Best practice scenarios, WP7. Dissemination and WP8. Coordination, management and reporting

- **A Steering Committee (SC)** was nominated made up of Work Packages Leaders and the Coordinator. The Committee will meet regularly after each technical meeting and will review progress report before their delivery to the EU.
- Additionally, to the SC a **Scientific Committee** was established **in the kick-off meeting** and will be consisted from the members of the whole consortium and selected invited key players that play an important role to the development of the non-food crops in EU27 (such as members of Industries, with success stories - like the case of Brassica in Germany, of KEFI company in Italy, Hempflax in Netherlands - coordinators of on-going relevant activities).



Deliverables

WP no	Deliverable name	Delivery
WP1	Review of the current situation for the land use in EU27	Month 6
	List of the restrict factors for EU agriculture	Month 6
	Report on the market demand for non-food crops in EU27	Month 9
	Report entitled “Land use in EU27 now, 2020 and 2030”	Month 13
WP2	List of the non-food crops	Month 6
	Report entitled “Cropping parameters”	Month 12
	Report on “Cropping possibilities of selected non-food crops in the future agricultural analysis”	Month 18
WP3	Report on the economic analysis of conventional crops in EU	Month 6
	Report on the economic analysis of conventional crops in EU	Month 12
	Report on the economic analysis of future non-food crops in EU	Month 21
	Social impacts of non-food cropping systems	Month 21

Deliverables

WP no	Deliverable name	Delivery
WP4	Environmental analyses (EIE)	Month 12
	Life cycle analysis (LCA)	Month 12
	Set of best options	Month 21
WP5	Report on existing policies, best cases, success factors and barriers	Month 12
	Review co-existence and safety measures	Month 21
	Formation of a strategic policy framework	Month 21
WP6	Report on non-food crops facts and figures including an output markets overview	Month 15
	Report on scenarios for implementation of new crop-application-market implementation	Month 21
	Report on the economic analysis of conventional crops in EU	Month 24

Deliverables

WP no	Deliverable name	Delivery
WP7	Web site	Month 1
	Intranet	Month 3
	Report on the first, second, third and fourth workshop	Month 7, 13, 19, 24
	Dissemination plan	Month 1
	Articles to conferences and journals, etc.	Month 4-24
	Leaflet for the 1 st , 2 nd , 3 rd , 4 th Workshop	Month 7, 13, 19, 24
	Fact sheet 1, 2, 3, 4	Month 8, 14, 20, 24
	Reports	Month 6, 13, 18, 24
	Link establishment with relevant activities and on-going projects	Month 3
	Link establishment with relevant organization and associations	Month 6