

Food and Agriculture (FA) Domain Committee

MONITORING PROGRESS REPORT 2006

3rd DC meeting, Antalya (TR), 31 Jan – 2 Feb 2007

COST Action 863

Domain Food and Agriculture (FA)

“Euroberry Research: from Genomics to Sustainable Production, Quality & Health”

Bruno MEZZETTI

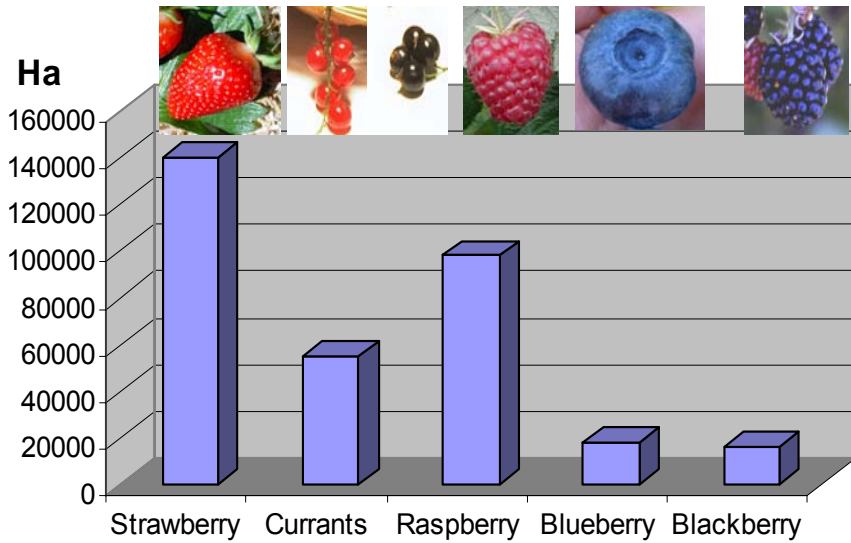
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CSO approval date : 01/12/2004

Entry into force : 20/01/2005

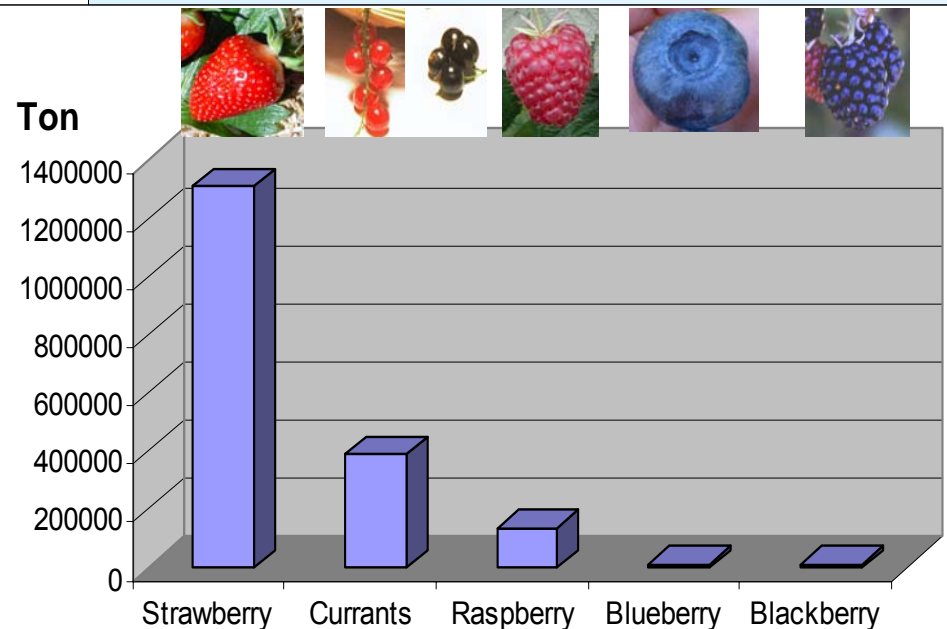
End of Action : 20/04/2010

MAJOR BERRIES FOR EUROPE (Fresh and processed)

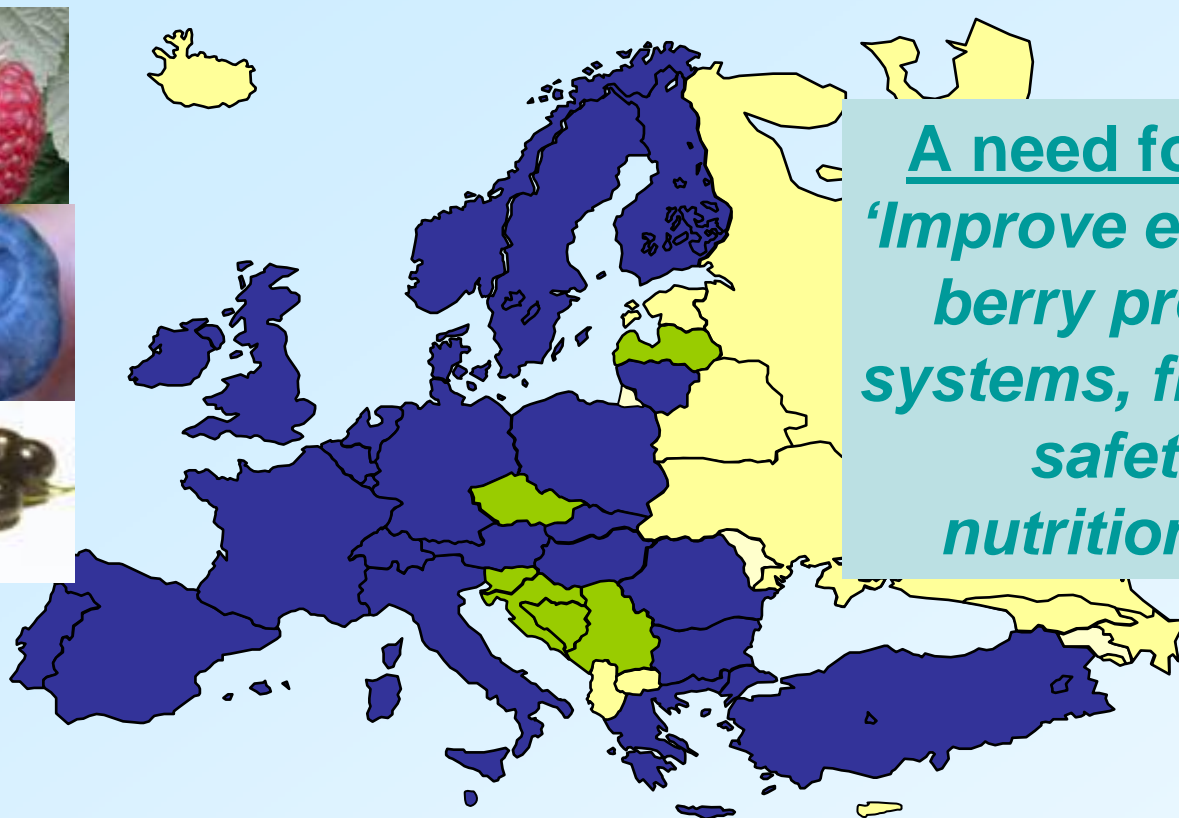


**Total berry production in
28 European Countries**
Total Ha 327,551
Total Ton 1,855,327

**Average price for 1 kg of
berry : 3 Euros**



Berries cultivation widespread all through Europe



A need for Europe:
*'Improve efficiency of
berry production
systems, fruit quality,
safety and
nutritional value'*

Berry production represent an important agriculture and socio-economical opportunity for 30 European countries

Signatures

Country	Date	Status
Austria	27/04/2005	Confirmed
Croatia	05/01/2005	Confirmed
Denmark	28/01/2005	Confirmed
France	03/03/2005	Confirmed
Hungary	10/03/2005	Confirmed
Latvia	05/01/2005	Confirmed
Norway	17/03/2005	Confirmed
Romania	01/02/2005	Confirmed
Slovenia	10/02/2005	Confirmed
Switzerland	08/04/2005	Confirmed
Total	30	

Country	Date	Status
Belgium	18/03/2005	Confirmed
Cyprus	20/01/2005	Confirmed
Finland	01/02/2005	Confirmed
Germany	18/03/2003	Confirmed
Ireland	20/01/2005	Confirmed
Lithuania	20/01/2005	Confirmed
Poland	20/01/2005	Confirmed
Serbia	21/01/2005	Confirmed
Spain	21/01/2005	Confirmed
Turkey	18/10/2005	Confirmed

Country	Date	Status
Bulgaria	20/01/2005	Confirmed
Czech Republic	10/02/2005	Confirmed
Former Yugoslav Republic of Macedonia	16/06/2005	Confirmed
Greece	05/04/2005	Confirmed
Italy	01/02/2005	Confirmed
Netherlands	20/01/2005	Confirmed
Portugal	15/04/2005	Confirmed
Slovakia	20/01/2005	Confirmed
Sweden	16/01/2006	Confirmed
United Kingdom	20/01/2005	Confirmed

Intentions to sign

Israel	09/01/2007	Intention
Total	1	

Now 30 countries
+ Israel
+ Requests from Estonia
and New Zealand

A very large participation:

32 EU Countries
1 Non EU country

OBJECTIVES

The main objective of the Action is to improve the quality and production of four types of berries (strawberries, raspberries, currants and blueberries) to benefit health of the consumers and maintain profitable European production using sustainable systems.

The objective will be achieved by focussing on four areas of research and development:

- From genomics to variety evaluation.
- Nursery production system and plant quality control.
- Plant physiology and culture management.
- Health for the consumer: components and factors affecting berry nutritional value.

4 WORKING GROUPS

1. From genome to berry fruit

Topics

1.1 Genomics in berry

1.2 Use knowledge on berries' genome for increasing breeding effectiveness and shortening the selection time (MAS - Markers Assisted Selection).

1.3 All berries variety evaluation

1.4 Dissemination of the results for all crops *via* a dedicated web.

The impact of new genomic approaches (molecular and biotechnology) in berry research should bring:



- a) integrated approach of evaluation of their efficiency and in some case, as for example for genetically modified plants, an appropriate research activity on their risk and benefits.
- b) increasing breeding effectiveness by shortening the time of selection through use the knowledge concerning berries' genome.

2. Quality assurance of planting material



Topics

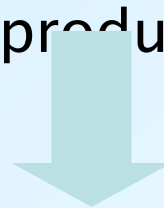
2.1 Variety identification

2.2 Plant health and diagnostics

2.3 Nursery Plant management and physiological quality

2.4 Dissemination for all crops *via* a dedicated web page

Expanding European berry production to different cultivation conditions and culture techniques is strictly related to the availability of a nursery production of healthy plants with the proper quality for sustaining an efficient production.



Inputs reduction

Improve and standardize production system and

3. Sustainable berry production

Topics

- 3.1 Factors affecting plant development and differentiation
- 3.2 Cultivation factors improving efficiency in plant productivity and berry quality
- 3.3 Pest and Disease Management
- 3.4 Dissemination for all crops *via* a dedicated web page.

A sound understanding of the mechanisms involved and factors affecting the production of high yields of good quality berries are essential.



A multidisciplinary approach to study the major factors affecting berry production and quality: *biochemistry, physiology, nutrition, ecology, pathology*

4 Bioactive compounds of berry fruits affecting human health

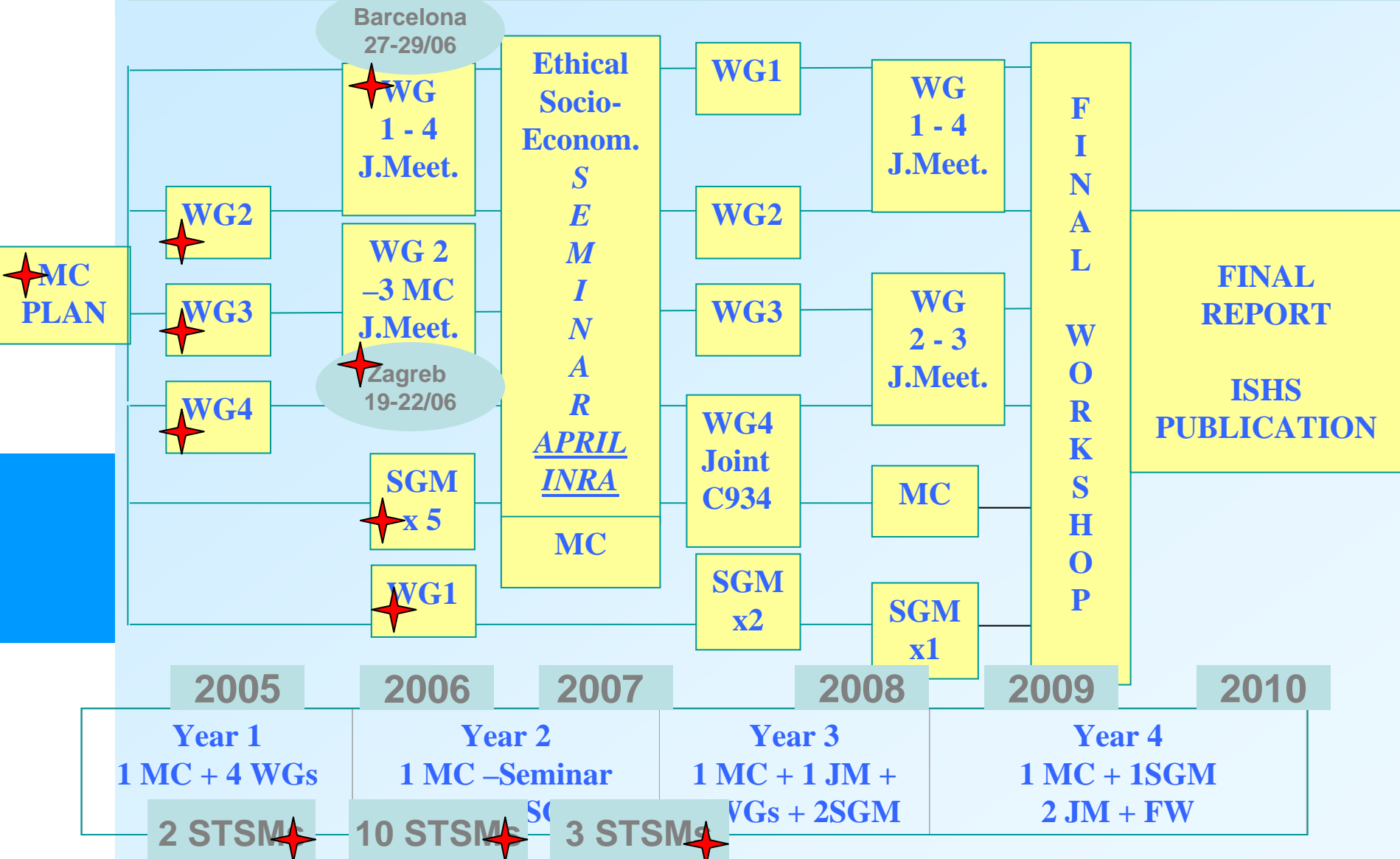
Topics

- 4.1 Development and standardization of technologies to determine the modes of action of berry derived phytochemicals;**
- 4.2 Polyphenolics in berries – profiling and the relation to quality in human health.**
- 4.3 Factors affecting bioactive compound in berry fruits and their derivatives.**
- 4.4 Dissemination for all crops *via* a dedicated web page.**

**A novel theme of extreme actuality,
with an high scientific and social importance**

A convincing association exists between the consumption of berries and vegetables and reduced risk of both Cardio Vascular Disease (CVD) and cancer (WHO and FAO expert report).

Organization, structure and timetable



I World Congress of Public Health Nutrition

VII Congreso de la Sociedad Española de Nutrición Comunitaria

COST 863 Euroberry 1st Joint Meeting of WG1 and WG4 *Genetic bases for bioactive compounds affecting human health in berry fruits*

Barcelona – 28-30 September 2006, combined with WCPHN

Sept. 28th 14:30 Registration

Afternoon Session 1 - How to use large scale functional genomics standardised technologies to determine the modes of action of berry derived phytochemicals in relation to health relevant aspects?

Sept 29th, morning Session 2 -Genomics for better knowledge and breeding for bioactive compound in berry fruits

Afternoon Session 3 - Variety evaluation with regards to polyphenolics in berries: phytochemical profiling and the relation to quality in human health

Evening - Discussion of planned contributions and common actions in the COST- Action 863 to conclude a final outline of our common future activities

Sept 30 th morning WCPHN Session Euroberry: factors affecting bioactive behavior of berry fruits *Chairmen: M. Battino and Jules Beekwilder*

- Berry polyphenols: Bioactivities, bioavailability and human health effects Gordon J. McDougall and Derek Stewart UK
- Allergens in small fruits: an issue for risk assessment Laimer M., Marzban G., Mansfeld A., Herndl A., Stoyanova E., and Katinger H.
- Breeding and biotechnology for improvement of berry nutritional quality and consumer acceptability B. Mezzetti, M. Battino, J. Shaart, C. Atkinson, R. Nestby, J. Davik
- Berry genomics for genes influencing fruit nutritional quality Beatrice Denoyes-Rothan, D. Sargent, C. Rosati, A. Monfort, J. Munoz Blanco

Small Group meetings

1. WG1 - Genetic Resources and variety network organization, held in Forli (IT), 18-19 December 2006
2. WG1 - GMO Biosafety and berry production – in combination with the opening conference of the UNIDO international master on GMO Biosafety, held in Ancona (IT) 23-24/11/2006
3. WG2 - Defining Plant Architecture, held in Huelva (SP) November 2006
4. WG4- Climate influences on health beneficial components, held in Geisenheim (DE) 4-5/12/2006,
5. WG4 - Analytical Methods for studying berry bioactive compounds, held in Wien 18-19/12/2006

Another SGM on the important topic of Sustainability in berry fruit sector: towards a consensus on 'Best practices recommendation' in an EU perspective' IS NOW planned for early 2007: SCRI, Dundee (UK) on Feb 5-6, 2007.

COST863: 2007 and 2008 Activities

- Prefer Joint Meetings, SGMs and STSMs
- Activities with improved science communication on the importance of berry research
- Activities until June:
 - MC MEETING AND SEMINARS ON SOCIO-ECONOMICAL IMPACT OF BERRY CULTIVATION: INRA April 2007
 - 2 SGMs (linked to FP7 topics)
 - WG4 - COST926 JM, Siena (IT)
 - Participation to the MICROARRAY – Strategic conference
 - 10 STSMs (already 3 applications)
- Activities September - December
 - WG1 Kick off meeting of *Geneberry* Dresden (DE) – SGM 8-10 on COST (max 3 days), Middle September.
 - WG1 – WG2 JM – Genome, genetic studies and applications in breeding, biotech, physiology and variety identification (October).
 - WG3 – WG4 JM combined with the Vaccinum and other unknown berry Conference organized in Nitra (SK), 30 September – 3 October.
- Already planned for 2008
 - Workshop 8: 863: Euroberry Research: from Genomics to Sustainable Production, Quality & Health, First Symposium on Horticulture in Europe, Wien (AU)
 - Workshop in the ISHS Strawberry Symposium, Huelva (SP)

Web page:

www.euroberry.it

(.com - .org not available, possibility to extend to .eu)

Promote the use of the webpage and in particular enlarge the Convivial part

Look at the FORUM



Cost863 EUROBERRY
Berries cultivation widespread all through Europe

Fare clic per attivare questo controllo e utilizzarlo

deliveries

Berry production represent an important agriculture and socio-economical opportunity for 30 European countries (In white the 30 COST863 signatory countries)

Cost Organization
Presentation of Cost 863
Signatory Countries
Management Committee
Working Groups Experts

Working Groups Meetings
Euroberry Association (EBA)
Convivial Part Of Cost
Short Term Scientific Missions
Outputs

cost 863 EUROBERRY ACTION
Toward an Organization of the Integrated Research of berries

Euroberry media

Berry production is an economically significant part of agriculture in most European countries. In this window you can find the video in streaming of the COST863 meetings

DISSEMINATION

As a result of the first WG4 meeting 9 papers were published on a special Issue of BioFactors

BioFactors 1 to 10 of 10 Issue: Volume 23, Number 4 / 2005 URL: [Linking Options](#)

Special Issue: EUROBERRY: Highlights on Bioactive Behaviour of Berry Fruits
 Guest Editor(s): Maurizio Battino [Guest Editorial](#) p. 177

- [Genomics of berry fruits antioxidant components](#) pp. 179 - 187 E. D'Amico and G. Perrotta
- [The inhibitory effects of berry polyphenols on digestive enzymes](#) pp. 189 - 195 Gordon J. McDougall and Derek Stewart
- [Identification and dietary relevance of antioxidants from raspberry](#) pp. 197 - 205 Jules Beekwilder, Robert D. Hall, C.H. Ric de Vos
- [Biological activities of berries: From antioxidant capacity to anti-cancer effects](#) pp. 207 - 211 Zorica Juranić and Zeljko Žizak
- [Breeding and biotechnology for improving berry nutritional quality](#) pp. 213 - 220 Jessica Scalzo, Maurizio Battino, Elisa Costantini, Bruno Mezzetti
- [Total antioxidant capacity evaluation: Critical steps for assaying berry antioxidant features](#) pp. 221 - 227 Jessica Scalzo, Bruno Mezzetti, Maurizio Battino
- [Enhancing beneficial antioxidants in fruits: A plant physiological perspective](#) pp. 229 - 234 C.J. Atkinson, R. Nestby, Y.Y. Ford, P.A.A. Dodds
- [Fruit cross-reactive allergens: A theme of uprising interest for consumers' health](#) pp. 235 - 241 Gorji Marzban, Agata Mansfeld, Wolfgang Hemmer, Elitza Stoyanova, Hermann Katinger, Margit Laimer da Câmara Machado
- [The action of berry phenolics against human intestinal pathogens](#) pp. 243 - 251 Riitta Puupponen-Pimiä, Liisa Nohynek, Hanna-Leena Alakomi, Kirsi-Marja Oksman-Caldentey



OTHER DISSEMINATION

- A special issue of **Agriculturae Conspectus Scientificus Journal** (ACS), 2007, 71, No. 4, is now under publication including 14 selected papers from COST 863 WG 2&3 JM.
- Other about 30 related scientific papers
- A joint paper is in preparation as outcome of the COST section organized in the Barcelona Human Health World Congress, to be published on **American J. Clin. Nutrition** (very high IF)
- Now in preparation joint papers to be published on **Journal of Biotechnology**

Euroberry in EU research Programs

FP6 attempts

StrHea : IP, 2004 and Phenoberry : STREP 2005
BOTH FAILED

*COST863 are participating in FLAVO
– STREP, Started in 2005, strawberry as side crop*

APPROVED:

GENBERRY (strawberry and raspberry)
proposed by Beatrice Denoyes-Rothan, INRA France
RIBESCO (black currant), proposed by Saila Karhu,
MTT Agrifood Research Finland.

**Berries in FP7: now already working in at least
2 proposals**

Links with other COST Actions:

- [COST 853 Agricultural Bio-Markers for Array Technology](#)
- [COST858 Viticulture: Biotic and abiotic stress - Grapevine Defence Mechanism and Grape Development](#)
- [COST924 Enhancement and Preservation of Quality and Health Promoting Components in Fresh Fruits and Vegetables](#)
- [COST926 Impact of the new technologies on the health benefits and safety of bioactive plant compounds](#)
- [COST927 Thermally processed foods: possible health implications](#)

Euroberry links with the industries

The EUROBERRY proposal has a new and advanced approach to promote the integration of research, production systems, quality control, added nutritional values, consumer acceptance.

EURO BERRY

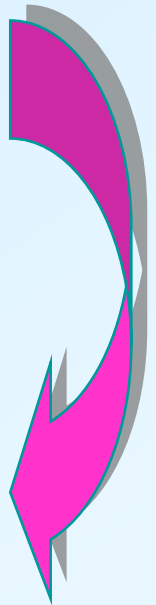
Think to the future with the task to create an:

*European Berry Association
(EBA)*

Promote and sustain integration in science and berry production technology.

COST863: Starting EBA

- Decide today if we really want this
 - Decide how to start it
 - Decide tasks prioritization
 - Who is available to start
-
- Work for having a group of Institutions ready to sign the definitive statute for the next MC.



**THANKS FOR YOUR ATTENTION AND WE
HOPE TO CONTINUE A FRUITFULL ACTIVITY
WITH COST863 EUROBERRY**

