
Biotechnology Update

Internal Co-ordination Group for Biotechnology (ICGB)

No. 20, 7 July 2010

This newsletter provides up-to-date information on OECD activities related to biotechnology. It is mainly intended for delegates to OECD meetings who are already familiar with certain aspects of OECD's work. We hope that it is also informative for the wider biotech community.

The contents of this newsletter have been provided by those members of the OECD secretariat who are responsible for the various activities. The secretariat can be contacted via the e-mail address: icgb@oecd.org. Alternatively, individuals can be contacted via e-mail using the form firstname.lastname@oecd.org.

Table of Contents

ABOUT OECD'S INTERNAL CO-ORDINATION GROUP FOR BIOTECHNOLOGY (ICGB).....	2
BIOTECHNOLOGY HAS A ROLE TO PLAY IN ACHIEVING GREENER GROWTH.....	3
THE BIOECONOMY TO 2030 PROJECT	4
BIOENERGY	5
CLIMATE CHANGE ADAPTATION	5
GLOBAL FORUM ON BIOTECHNOLOGY	6
HARMONISATION OF REGULATORY OVERSIGHT IN BIOTECHNOLOGY	7
BIOTRACK ONLINE	8
SAFETY OF NOVEL FOODS AND FEEDS	8
BIODIVERSITY ECONOMICS AND POLICY	10
GUIDELINES FOR HUMAN BIOBANKS AND GENETIC RESEARCH DATABASES	12
PHARMACOGENETICS.....	12
BIOMARKERS AND TARGETED THERAPIES.....	13
KNOWLEDGE MARKETS IN THE LIFE SCIENCES.....	13
COLLABORATIVE MECHANISMS FOR THE MANAGEMENT OF INTELLECTUAL PROPERTY (IP)	14
BIOMEDICINE AND HEALTH INNOVATION.....	14

INDUSTRIAL BIOTECHNOLOGY.....	15
SYNTHETIC BIOLOGY	16
ENVIRONMENTAL BIOTECHNOLOGY	17
BIOSECURITY	18
BIOLOGICAL RESOURCE CENTRES	19
GUIDELINES AND BEST PRACTICES	19
OECD/HUGO SYMPOSIUM: GENOMICS AND THE BIOECONOMY	21
BIOTECHNOLOGY STATISTICS	21
CO-OPERATIVE RESEARCH PROGRAMME	22
SEED CERTIFICATION AND FOREST REPRODUCTIVE MATERIAL SCHEMES.....	28
OECD BIOTECHNOLOGY AND THE WORLD WIDE WEB.....	29
FUTURE EVENTS.....	30
WHO'S WHO IN BIOTECH AT OECD	31
CONTACT POINT	33
MEDIA ENQUIRIES	33
ENDNOTE: A BRIEF GUIDE TO THE OECD	33



ABOUT OECD'S INTERNAL CO-ORDINATION GROUP FOR BIOTECHNOLOGY (ICGB)

OECD and its member countries have been addressing issues related to biotechnology since 1982.

Since that time, biotechnology has had an increasing impact on the programmes of different sectors at OECD such as: agriculture and trade; environment; science, technology and industry. So in 1993, the Internal Co-ordination Group for Biotechnology (ICGB) was established to facilitate co-ordination among these sectors.

Michael Osborne, the Director of OECD's Advisory Unit on Multidisciplinary Issues and the International Futures Programme, chairs the ICGB. Peter Kearns, the Head of OECD's Biosafety Programme, is the Executive Secretary.

Contacts: Peter Kearns, Bertrand Dagallier



BIOTECHNOLOGY HAS A ROLE TO PLAY IN ACHIEVING GREENER GROWTH

Green growth is gaining support as a way to pursue economic growth and development, while preventing environmental degradation, biodiversity loss and unsustainable natural resource use. A strategic vision is needed to develop coherent policies that are appropriate in terms of economic efficiency, environmental integrity and social equity. The OECD's Green Growth Strategy is developing a practical policy toolkit for governments to harness the potential of green growth.

New technologies contribute to improving environmental performance and achieving green growth targets by replacing resource-intensive and polluting activities or making existing ones more efficient. Providing incentives to develop and use new technologies will improve the overall standard of living in society, for example, ICTs for smart urban transport and power systems. Biotechnology, particularly industrial biotechnology, can play an important role in delivering eco-efficiency and tackling green growth issues. The Strategy will work towards identifying new opportunities for eco-innovation across the economy as well as the policies that can support business in unlocking the potential for new value creation. It will look at the environmental and economic benefits that could be derived from biotechnology innovation. It would also examine new approaches to international cooperation on science, technology and innovation.

The [Interim Report from the OECD Green Growth Strategy](#), presented to the Ministerial Council Meeting in May 2010, provides some first insights into how countries can achieve greener growth, and discusses what steps countries have already taken, as well as some of the barriers and challenges associated with the transition. It also proposes a framework for green growth strategies to help ensure an efficient shift to more sustainable economies while maximising opportunities for new green industries, jobs and technologies.



The Green Growth Strategy will be delivered a year from now in 2011. It will develop an integrated framework to guide government intervention across broader green growth policy areas. A draft outline of the report will be available on OLIS in September 2010, and a first draft of the overall Report in January 2011. Delegates will be invited to give their feedback on the report via their delegations or using the secure website below.


The OECD has set up the **International Green Growth Dialogue (IGGD)**, an initiative to share and exchange information between a wide range of stakeholders on a host of green growth issues. The IGGD secure website will host a discussion about the next stage of the Green Growth Strategy. Delegates to the Task Force on Industrial Biotechnology (TFIB) and the Working Party on Biotechnology (WPB) have access to this portal. For any access problems, please contact greengrowth@oecd.org.

If your organisation wants to join this online community, please send your representative's title (Mr/Miss/Ms/Mrs), first name, last name, organisation name, and e-mail address to greengrowth@oecd.org.

Web site: www.oecd.org/greengrowth / www.oecd.org/croissanceverte

Secure web site: <https://community.oecd.org/community/greengrowth>

Recent publication:

 *Interim Report of the Green Growth Strategy: Implementing our Commitment for a Sustainable Future (2010); OECD*

Contact: Nathalie Girouard



THE BIOECONOMY TO 2030 PROJECT

The bioeconomy is the set of economic activities relating to the invention, development, production and use of biological products and processes. Already today and even more in the future, biotechnology is expected to improve health, the productivity of agriculture and industrial processes, and to enhance environmental sustainability. The International Futures Programme (IFP) of the OECD undertook a project on *The Bioeconomy to 2030*, along with the support of other interested OECD directorates, to analyse key long-term trends to help governments map strategies for the bioeconomy. The main outputs of the project are now available:

- *The Bioeconomy to 2030: Designing a Policy Agenda*. This publication, available in both English and French and currently being translated into Korean, is the outcome of an interdisciplinary foresight project by the OECD on the bioeconomy. It considers the role biotechnology could play in addressing what are considered the most serious challenges to world economies and societies over the next decades. These challenges include providing food, water, energy, healthcare and other resources and services to a world that will see its population increase by a third in the face of mounting environmental stresses over the next 20 years. More information is available at www.oecd.org/futures/bioeconomy/2030, and the principle policy conclusions are available in a brochure at www.oecd.org/dataoecd/5/24/42837897.pdf.
- *Agricultural and health biotechnologies: Building blocks of the bioeconomy*. This special issue of the OECD Journal: General Papers contains two reports containing projections of biotechnologies to 2015:
 - ✓ *Biotechnologies in Agriculture and Related Natural Resources to 2015*
 - ✓ *Human Health Biotechnologies to 2015*

These articles discuss trends in the application of biotechnology to 2015. In ANR, this encompasses the use of both transgenic and non-transgenic biotechnologies in plant and animal breeding and diagnostics, as well as a few applications in veterinary medicine. In health this includes biopharmaceuticals, bioinformatics, diagnostics, and pharmacogenetics. The studies provide an overview of the current state of technological development and, through an analysis of quantitative data related to R&D pipelines and the current literature, presents estimates and projections for the types of biotechnologies expected to reach the market to 2015. The trends indicate that the importance of biotechnology will increase in both areas. The reports are now being translated into Russian and are available at www.oecd.org/futures/bioeconomy/2015.

- *Bioeconomy Background Documents* – Prepared on the responsibility of the authors as inputs to *The Bioeconomy to 2030* project, background documents are available online at http://www.oecd.org/document/56/0,3343,en_2649_36831301_36960312_1_1_1_1,00.html. These cover scenarios to 2030, emerging business models, intellectual property, regulation and ethics as relate to the bioeconomy. They are provided for informational purposes only and the opinions expressed and arguments employed herein do not necessarily reflect the official views of the OECD or of the governments of its Member countries.

Web site: www.oecd.org/futures/bioeconomy

Contacts: Michael Osborne, David Sawaya



BIOENERGY

The subject of bioenergy touches various areas, in particular, scientific developments, environmental effects, energy balances and agricultural market economics. In that context, the OECD has launched an overarching research program. Lead by the Trade and Agriculture Directorate it incorporates expertise from other directorates of the OECD and the International Energy Agency.

The OECD work on bioenergy focuses on a comprehensive compilation of data and information on the issue, the categorization of the variety of support policies and the quantitative analysis of bioenergy policy measures.

OECD published in 2008 an economic assessment of biofuel support policies (OECD, 2008a). It concluded that government support of biofuel production in OECD countries is costly, has a limited impact on reducing greenhouse gases and improving energy security, and has a significant impact on world crop prices. Indeed, in a context of policy driven mandates for the blending of biofuels in transportation fuels, first generation biofuels derived from agricultural food commodities have developed strongly over the past few years. OECD (2008a) finds that other forms of bioenergy, such as bioheat, biopower and biogas, could represent economically more viable and environmentally more efficient ways to reduce GHG.

OECD (2008b) presents the technology and costs associated with the production of bioheat, biopower as well as second generation biofuels. OECD (2010) focuses on the development and the environmental performance of those alternative forms of energy. They are mostly generated with non-agricultural feedstocks and, to a lesser extent, agricultural residues and wastes. Main technologies to convert biomass to heat and/or electrical power include the direct combustion, the gasification and the anaerobic digestion producing biogas. Combined heat and power generation plants allow improving the energy efficiency with the use of the remaining heat after power generation for space heating or in industrial applications.

Publications:

- 📖 OECD (2008a), *Biofuel Support Policies – An Economic Assessment*
- 📖 OECD (2008b), *Developments in Bioenergy Production Across the World: Electricity, Heat and Second Generation Biofuels*
- 📖 OECD (2010), *Bioheat, Biopower and Biogas: Developments and Implications for Agriculture*

Web site www.oecd.org/tad/bioenergy

Contact: Céline Giner



CLIMATE CHANGE ADAPTATION

As part of the work programme on Economic Aspects of Adaptation to Climate Change, case studies are currently underway to examine what role the private sector can play in facilitating adaptation to the impacts of climate change.

One of the case studies in this context is on the potential of biotechnology to meet the challenges posed by climate change on agriculture. This case study is examining recent progress in developing crop varieties that are more resilient to abiotic stresses, assess emerging evidence from field trials of such crop varieties,

and seek to address questions related to how the direction of further research can be shaped to better prioritise crops and regions that are particularly vulnerable to the impacts of climate change.

Contact: Shardul Agrawala



GLOBAL FORUM ON BIOTECHNOLOGY

The Global Forum on Biotechnology, being established in 2010, will be the latest of a series of Global Forums created by OECD Committees. Global Forums are not official OECD bodies (except one¹), but are best described as broad communities of stakeholders in the areas of responsibility of one or more Committees. OECD Committees have an interest in hearing the views of these stakeholders, but their capacity to accommodate non-Member observers is very limited.

The OECD Global Forums provide platforms for peer learning and policy dialogue on issues which require world-wide interaction with non-Members world-wide. Global Forums can also promote multidisciplinary and horizontal approaches beyond the scope of any single Committee, and foster partnerships with other intergovernmental organisations.

OECD Global Forums bring together government officials, policy analysts, business leaders, international experts, researchers and various other stakeholders. Many Global Forum meetings are major events, attracting large numbers of participants from different regional and cultural backgrounds. They help to create active networks of policy makers in member and non-member economies and to build consensus on more effective policy towards achieving stated government objectives.

The principal functions of Global Forums are to:

- Help the Committee identify relevant issues (including 'next generation issues');
- Promote a convergence of views on the Committee's outputs among a broad range of Members and non-Members;
- Ensure that these outputs are known and used among these stakeholders;
- Share best practices in the implementation of the results.

The Global Forum on Biotechnology will constitute a new stand-alone entity, following the previous "Global Forum on the Knowledge Economy" which was dealing with biotechnologies for a part of its mandate. The Global Forum on Biotechnology will mainly support the activities and networks developed by the Working Party of the Committee for Scientific and Technological Policy (STI) and two subsidiary bodies of the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology (ENV): the Working Group on the Harmonisation of Regulatory Oversight in Biotechnology, and the Task Force for the Safety of Novel Foods and Feeds (see relevant sections below).

Web site: Information on Global Forums: www.oecd.org/ccnm/globalforums

Contact: Jan Schuijjer

¹ The Global Forum on Transparency and Exchange of Information for Tax Purposes differs from all other Global Forums: it is a separate OECD Body in which many countries and economies outside the OECD's membership participate on an equal footing with OECD member countries.



HARMONISATION OF REGULATORY OVERSIGHT IN BIOTECHNOLOGY

The OECD's *Working Group on Harmonisation of Regulatory Oversight in Biotechnology* (the Working Group) deals with the environmental risk/ safety assessment of transgenic (genetically engineered) crop plants and other organisms. The work aims to ensure that the type of information used in biosafety assessment, as well as the methods to collect such information, are as similar as possible amongst countries. This improves mutual understanding and harmonised practice, which in turn, increases the efficiency of the risk/safety assessment process and avoids duplication of effort, while reducing barriers to trade.

The participants to the Working Group are mainly officials who have responsibility for the environmental risk/safety assessment of products derived from modern biotechnology. In addition, a number of observer delegations and invited experts participate in the work including: Argentina; the Russian Federation; Slovenia; the Secretariat of the Convention on Biological Diversity (SCBD); FAO, UNEP, and the Business and Industry Advisory Committee to OECD (BIAC). In recent years, with the increasing use of biotech products in many regions of the world together with the development of activities relating to tropical and sub-tropical species, there has been increased participation of non-member economies including Brazil, Cameroon, China, Estonia, India, Philippines, Slovenia and South Africa. Their participation used to be through the Global Forum on the Knowledge-based Economy but this arrangement has been replaced during 2010 with a Global Forum on Biotechnology.

The publication of Consensus/ Guidance Documents continues to be a major output of the Working Group. These documents constitute a set of practical tools for regulators and biosafety assessors dealing with new plant varieties and organisms, with respect to environmental safety. To date, 40 Consensus Documents have been published. They address a range of issues including the biology of crops, trees and micro-organisms as well as selected traits that have been introduced into crop species. All of these documents are available through the OECD website (www.oecd.org/biotrack).

Currently, the Working Group is preparing new Consensus Documents on tomato, cucurbits, cassava, eucalyptus and sugarcane. Work is also underway on a range of other issues. For example, work is under way to extend the Unique Identifier system, which was originally developed for transgenic plants, to microorganisms. In addition, a project to identify aspects of molecular characterisation useful to risk/safety assessment is at final stage and a document will be published soon. This is a common project with the Food Safety Task Force. Work is also underway on considerations relevant to environmental safety, the consequences of low level presence of genetically-engineered grains in conventional seeds or commodities. In addition, a document on the biology of Atlantic salmon is under preparation which will be the first consensus document which addresses an animal species.

Future event:

- 25th Meeting of the Working Group for the Harmonisation of Regulatory Oversight in Biotechnology, OECD Paris, 9-11 May 2011

Recent Publications:

- 📖 *Brochure "OECD and Risk/Safety Assessment in Modern Biotechnology"* (updated June 2010)
- 📖 *Consensus Document on the Biology of Douglas-Fir [*Pseudotsuga menziesii* (Mirb.) Franco]*
- 📖 *Consensus Document on the Biology of Lodgepole Pine (*Pinus contorta* Dougl. Ex. Loud.)*
- 📖 *Consensus Document on the Biology of Cotton (*Gossypium* spp.)*
- 📖 *Consensus Document on Information Used in the Assessment of Environmental Applications involving *Acinetobacter**
- 📖 *Guide for the Preparation of Biology Consensus Documents*
- 📖 *Consensus Document on the Biology of Bananas and Plantains (*Musa* spp.)*

Upcoming Publications:

- 📖 *Consensus Document on Molecular Characterisation of Plants Derived from Modern Biotechnology*
- 📖 *Consensus Document on the Biology of Picea mariana (Mill.) spp. (Black Spruce)*
- 📖 *Consensus Doc. on the Biology of Cucurbita spp. (Squashes, Pumpkins, Zucchini or Gourds)*
- 📖 *Guidance Document on Horizontal Gene Transfer Between Bacteria*
- 📖 *Summary of Activities of the Working Group on Tree Species subject to Transgenic Improvements*

Web site: BioTrack Online www.oecd.org/biotrack

Contacts: Yukihiko Fukase, Bertrand Dagallier, Peter Kearns



BIOTRACK ONLINE

The BioTrack Online information system is a mechanism by which the *Working Group on Harmonisation in Biotechnology* and the *Task Force for the Safety of Novel Foods and Feeds* make available the outputs of their work, especially the Consensus/ Guidance Documents of both groups. Recent issues include: Biology of Douglas-fir; lodgepole pine; cotton; bananas and plantains; Applications involving *Acinetobacter*; Guide for preparation of Biology Consensus Documents; Compositional considerations for new varieties of tomato; cassava; grain sorghum; sweet potato; and papaya.

BioTrack Online also includes information on various workshops and conferences organised by the OECD, and a database of transgenic products (mainly crop plants) which have been approved for commercial use in OECD member countries [Product Database, which includes 131 entries, listed with unique identifiers, of transgenic crops and flowers from 13 plant species (May 2010)].

Progress has been made on co-operation between the FAO Global Portal on Food Safety, Animal and Plant Health, the CBD Biosafety Clearing-House and the OECD's Product Database on interoperability between these web-based systems. This aims to facilitate the exchange of information on safety assessment of transgenic organisms and foods, such as unique identifiers, events and traits, common/scientific names of the host organism and introduced genes. This project was developed in response to a request from the Codex ad hoc Task Force on Food Derived from Biotechnology, and a Memorandum of Cooperation signed between OECD and the Secretariat of the Convention on Biological Diversity.

Web site: BioTrack Online www.oecd.org/biotrack
Products Database www.oecd.org/biotrack/productdatabase

Contacts: Yukihiko Fukase, Bertrand Dagallier, Peter Kearns



SAFETY OF NOVEL FOODS AND FEEDS

The Task Force for the Safety of Novel Foods and Feeds (Task Force) addresses aspects of the safety assessment of foods and feeds derived from genetically engineered crops. The main focus of the work is to ensure that the types of information used in risk/ safety assessment, as well as the methods to collect such information, are as similar as possible amongst countries. The approach is to compare transgenic crops and derived products with similar conventional ones that are already known and considered safe

because of recognised experience in their use. Harmonised methods and share of data are facilitated through the Task Force activities.

Consensus Documents

The main output of the food and feeds programme is the set of **consensus documents** on compositional considerations of new varieties of specific crops. The Task Force documents compile a common base of scientific information on the major components of crop plants, such as key nutrients, toxicants, anti-nutrients and allergens. These documents constitute a set of practical tools for regulators and risk/safety assessors dealing with these new varieties, with respect to human food and animal feed safety.

To date, 19 consensus documents have been published on i) major crops, a mushroom, and ii) the ‘Safety Assessment of Animal Feedstuffs Derived from Genetically Modified Plants’. These documents complement those of the Working Group. Recent issues deal with many species (see list below), and an advanced draft is being discussed on sugarcane (*Saccharum* spp. hybrids). In addition, a process was launched for revising published consensus documents and incorporate new information as it becomes available; the two earliest documents issued in 2001, on Low erucic acid rapeseed (Canola) and Soybean, are currently being updated and should be published in the coming months.

Detail information on the Task Force consensus documents can be found in the *Introduction to the Food/Feed Safety Consensus Documents of the Task Force*, which explains i) the rationale for the Task Force to prepare consensus documents in its programme of work; ii) their purpose and use as a practical contribution to the risk/safety assessment of foods and feeds derived from transgenic organisms; and iii) the process by which consensus documents are drafted and brought to final publication.

Outreach and non member economies engagement

The Task Force continues to involve more actively the experience, scientific knowledge and interests of non member economies. This broadens the available expertise, while addressing a wider range of food and feed products that are of global interest. The increasing development of Task Force activities on tropical and sub-tropical species was made possible through active co-operation with non Members, and targeted expertise from specialized international research organizations, FAO, WHO and others. South Africa and Thailand, for example, led the drafting of consensus documents on compositional considerations for cassava, sweet potato and papaya. These crops are of high importance for these countries as well as many OECD Members and other economies around the world.

The Task Force benefits from the participation of non-member economies and invited experts such as Argentina, Brazil, China, Latvia, the Russian Federation, Slovenia, South Africa and Thailand. Non members’ participation has been possible in the past through the Global Forum on the Knowledge-based Economy, and from 2010 through the Global Forum on Biotechnology, under the under the auspices of OECD’s Centre for Co-operation with non-members.

OECD work on the risk/safety assessment of modern biotechnology

Currently, the Task Force is carrying out jointly with the Working Group on Harmonisation of Regulatory Oversight in Biotechnology a project on **Molecular Characterisation for Transgenic Plants**. A document is being prepared, currently at an advanced stage and expected to be issued in 2010.

Future event:

- 18th Meeting of the Task Force for the Safety of Novel Foods and Feeds, OECD Paris, 12-13 May 2011

Recent Publications:

- 📖 *Brochure “OECD and Risk/Safety Assessment in Modern Biotechnology”* (updated June 2010)
- 📖 *Consensus Document on Compositional Considerations for New Varieties of Tomato: Key Food and Feed Nutrients, Toxicants and Allergens*
- 📖 *Consensus Document on Compositional Considerations for New Varieties of Cassava (Manihot esculenta Crantz): Key Food and Feed Nutrients, Anti-Nutrients, Toxicants and Allergens*

- 📖 *Consensus Document on Compositional Considerations for New Varieties of Grain Sorghum [Sorghum bicolor (L.) Moench]: Key Food and Feed Nutrients and Anti-Nutrients*
- 📖 *Consensus Document on Compositional Considerations for New Varieties of Sweet Potato [Ipomoea batatas (L.) Lam]: Key Food and Feed Nutrients, Anti-Nutrients, Toxicants and Allergens*
- 📖 *Consensus Document on Compositional Considerations for New Varieties of Papaya (Carica papaya L.): Key Food and Feed Nutrients, Anti-Nutrients, Toxicants and Allergens*

Upcoming Publications:

- 📖 *Consensus Document on Molecular Characterisation of Plants Derived from Modern Biotechnology*
- 📖 *Revised Consensus Document on Compositional Considerations for New Varieties of Soybean [Glycine max (L.) Merr.]: Key Food and Feed Nutrients, Anti-Nutrients, Toxicants and Allergens (will supersede the 2001 version)*
- 📖 *Revised Consensus Document on Compositional Considerations for New Varieties of Low Erucic Acid Rapeseed (Canola): Key Food and Feed Nutrients, Anti-Nutrients and Toxicants (will supersede the 2001 version)*

Web site: BioTrack Online www.oecd.org/biotrack

Contacts: Bertrand Dagallier, Peter Kearns



BIODIVERSITY ECONOMICS AND POLICY

The OECD Working Group on Economic Aspects of Biodiversity (WGEAB), a subsidiary body of the Environment Policy Committee (EPOC), focuses on valuation, economic instruments, incentive measures, and the creation of markets to promote the conservation and sustainable use of biodiversity and ecosystem services. This work also supports the UN Convention on Biological Diversity.

Recent OECD work has examined the inter-linkages between biodiversity and climate change, namely in the area of forests and Reducing Emissions from Deforestation and Forest Degradation (REDD-plus) in developing countries. REDD-plus is a new international mechanism proposed under the United Framework Convention on Climate Change (UNFCCC) to help address the global climate change challenge. Successful agreement on a future REDD+ mechanism would represent an unprecedented development in the creation of an international mechanism to help internalise the carbon-related ecosystem services provided by forests. Such a mechanism also has great potential to also offer substantial biodiversity co-benefits.

The UNFCCC Bali Action Plan recognises that action to support REDD+ “can promote co-benefits and complement the aims and objectives of other relevant international conventions and agreements”. One notable example is that of the Convention of Biological Diversity (CBD). How a REDD+ mechanism is designed at the international level can have implications (both positive and negative) for biodiversity. For example, activities that resulted in mono-plantations and the potential use of invasive alien species in plantations could have adverse impacts on biodiversity. It is important therefore to search for synergies that maximise benefits and to introduce safeguards so as to minimise the potential for any adverse impacts on biodiversity.

At the domestic level, implementing REDD+ activities in areas that have both high carbon and high biodiversity benefits can help to promote biodiversity co-benefits of REDD+. This way, finance delivered to achieve carbon emission reductions (or enhancements) will simultaneously provide biodiversity co-benefits, thus achieving two benefits for the price of one. To identify where such high benefit areas are spatially correlated, economic valuation and spatial mapping tools are needed.

If a REDD+ mechanism is successful in achieving emission reductions in areas that also promote biodiversity co-benefits, then this could free up existing financial resources that are invested in biodiversity (i.e. from areas where high carbon and high biodiversity benefits coincide). Such finance could then be channelled to areas with high biodiversity and low carbon benefits. In this way, the total ecosystem service benefits achieved would increase.

In addition, biodiversity mechanisms to co-finance REDD+ activities could be developed so as to bundle and layer additional payments to REDD+ finance. Indeed, voluntary initiatives to bundle payments for both carbon and biodiversity in forestry activities are already emerging. Examples include the Climate Community and Biodiversity Alliance and PlanVivo. These early initiatives can provide valuable insights and lessons for how multiple ecosystem service benefits can be jointly marketed. However, it is important to note that voluntary schemes are unlikely to provide the scale necessary to create a global demand for biodiversity and to fundamentally impact land use decisions. Just as demand for carbon allowances, certified emission reductions from the Clean Development Mechanism, and potentially REDD+ credits in the future, are driven by legally-binding GHG emission reduction commitments, large scale international demand for biodiversity would come from more ambitious regulatory policies for biodiversity.

The WGEAB is currently undertaking work on the effective design and implementation of Payments for Ecosystem Services (PES). PES provide direct payments from the beneficiaries of ecosystem services to individuals or communities whose land use decisions influence the provision of ecosystem services. These payments therefore create financial incentives for biodiversity conservation and sustainable use. A forthcoming OECD 2010 publication, *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services*, will aim to help policy makers responsible for designing and implementing PES programmes understand how best to enhance their cost-effectiveness. Drawing on theory and a wealth of case studies across both developed and developing countries, this book will develop best practice principles and criteria for cost-effective PES programmes. It will examine, *inter alia*, how to target payments, how to engage and leverage investment from the private sector, and the role of inverse auctions to enhance PES cost-effectiveness. Lessons learned and insights for international PES will also be discussed. The WGEAB convened an expert workshop on “Enhancing the Cost-Effectiveness of Payments for Ecosystem Services” on 25th March 2010. The workshop brought together more than 40 participants from government, non-governmental organisations and the private sector, including the CBD Secretariat, to exchange views and discuss how to move forward.

PES and REDD-plus represent two of a number of innovative financial mechanisms that can be used to promote biodiversity conservation and sustainable use. An upcoming OECD report, *International Financing for Biodiversity: Innovative Approaches and Persistent Challenges*, will provide an overview of other mechanisms and issues associated with international financing approaches for biodiversity. It will examine underlying principles for effective biodiversity finance and will proceed to review three case studies; bio-prospecting, conservation concessions and biodiversity offsets, to derive insights on how international finance mechanisms for biodiversity conservation can be better designed. The WGEAB held an expert workshop on “Innovative International Financing for Biodiversity Conservation and Sustainable Use” on July 2nd, 2009. Issues examined included: (i) existing financing gaps and the need for an international financing mechanism for biodiversity; (ii) how to scale-up existing financing for biodiversity conservation and sustainable use; (iii) how to enhance the cost-effectiveness of biodiversity financing, including via targeting; and (iv) lessons learned.

Future event:

- 1st Meeting of the Working Party on Biodiversity, Water and Ecosystems, Paris, 7-9 March 2011 (formerly, the Working Group on Economic Aspects of Biodiversity - WGEAB)

Upcoming Publication and Reports:

- 📖 *Paying for Biodiversity: Enhancing the Cost-Effectiveness of Payments for Ecosystem Services*
- 📖 *International Financing for Biodiversity: Innovative Approaches and Persistent Challenges*

Web site: www.oecd.org/env/biodiversity

Contact: Katia Karousakis



GUIDELINES FOR HUMAN BIOBANKS AND GENETIC RESEARCH DATABASES

In October 2009, the OECD Council adopted a Recommendation on Human Biobanks and Genetic Research Databases (HBGRD). The Guidelines are intended to assist both OECD and non-OECD governments in the development of policies applicable to HBGRDs and to provide guidance for private and public sector HBGRDs.

HBGRDs which bring together and allow the sharing of human biological material and information derived from its analysis, are a key element of the scientific infrastructure underpinning such research. The establishment, harmonisation and broad use of research involving data and samples from human biobanks and genetic research databases analysed in conjunction with personal or health data is important for research and will be increasingly important for not only for healthcare but also for drug discovery.

The Guidelines provide guidance for the establishment, governance, management, operation, access, use and discontinuation of HBGRDs. They cover governance structure and oversight mechanisms; privacy and confidentiality; terms of participation; access; funding mechanisms; benefit sharing, intellectual property and commercialisation; protection and security of human biological materials and data; the qualifications, education and training of staff; disposal of materials and data and the discontinuation of a HBGRD.

Publications:

-  *Guidelines for Human Biobanks and Genetic Research Databases, Paris: OECD, 2009*
-  *Creation and Governance of Human Genetic Research Databases, Paris: OECD, 2006*

Web site: www.oecd.org/sti/biotechnology/hbgrd

Contact: Robert Wells



PHARMACOGENETICS

In 2009, the OECD Working Party on Biotechnology published a report on “Pharmacogenetics: Opportunities and Challenges for Health Innovation”.

Pharmacogenetics helps us understand the relationship between an individual’s genetic make-up and the way medicines work for each person. This book reviews the use of pharmacogenetics across all stages of the health innovation cycle from research through to uptake by doctors and patients. It focuses on how to optimise the use of pharmacogenetics to deliver effective innovations for public health, and design policies that enhance their economic and social benefits.

The book argues for large-scale studies to validate the biomarkers that underpin pharmacogenetics and policies to share the cost and risk of using pharmacogenetics to improve the use of existing medicines. Governments and others need to align regulatory, reimbursement and other incentives and work with industry to measure better the impacts of pharmacogenetics. Health systems need to take positive steps to adapt to the use of pharmacogenetics and ensure that health professionals receive adequate training.

This publication is part of the OECD Innovation Strategy, a comprehensive policy strategy to harness innovation for stronger and more sustainable growth and development, and to address the key societal challenges of the 21st century.

Recent publication:

📖 *Pharmacogenetics: Opportunities and Challenges for Health Innovation, Paris: OECD, 2009*

Web site: www.oecd.org/sti/biotechnology

Contacts: Robert Wells, Elettra Ronchi



BIOMARKERS AND TARGETED THERAPIES

The OECD Working Party on Biotechnology (WPB) launched work on biomarkers in 2008 by holding a workshop in Hinxton, United Kingdom, entitled “*Policy Issues in the Development of Biomarkers in Health*”. This meeting was a follow up to the work on Pharmacogenetics.

As a support to the 2008 workshop a number of background analytical papers have been provided and are available online. The conclusions of the workshop added to information obtained from other work on health ongoing under the WPB will be pulled in a Policy Report which will be available by the end of 2010.

Web site: www.oecd.org/sti/biotechnology

Contacts: Elettra Ronchi, Marie-Ange Baucher



KNOWLEDGE MARKETS IN THE LIFE SCIENCES

In the biomedical sector, new mechanisms are emerging to facilitate the exchange and trade of a variety of intellectual assets (e.g. data, materials, expertise, knowhow, services) important in the advancement of science. Such “knowledge markets” encourage knowledge sharing and creation; they may also increase the speed and efficiency with which health-related research is translated into innovative goods and services as well as the returns on investments made.

The OECD Working Party on Biotechnology held an expert’s workshop on “*Knowledge Markets in the Life Sciences*” in Washington, DC on 16-17 October 2008. The workshop brought together experts from a variety of backgrounds (academia, public research organisations, health and IT industries, patient groups, non-governmental organisations, and policymakers) to explore the present structures and uses of Knowledge Markets, their impact on innovation, and what governments can do to help make knowledge markets become a reality while delivering on societal expectations.

Specifically, the workshop explored: (1) what “Knowledge Markets” are by discussing their theoretical basis and real world examples of current exchange mechanisms; (2) what are the business, economic and policy incentives behind the creation of knowledge markets in the life sciences; (3) what types of health data, information, and know-how could create greater added-value if more easily exchanged or traded; (4) what impacts knowledge markets might have on biomedical innovation and health outcomes; (5) new business models and opportunities that open up due to the use of knowledge markets; and (6) the factors that influence their development.

An analytical report capturing discussion at the workshop is planned for publication in third quarter 2010.

Web site: www.oecd.org/sti/biotechnology

Contact: Robert Wells



COLLABORATIVE MECHANISMS FOR THE MANAGEMENT OF INTELLECTUAL PROPERTY (IP)

Increasingly, governments, the public sector and the private sector are interested in the factors and mechanisms that encourage collaboration amongst diverse interests in order to stimulate innovation, foster R&D and promote access and diffusion of technology and information in the life sciences.

Collaborative mechanisms, such as clearinghouses, auctions, IP pools, model agreements, etc. have been successfully used in industries such as information technology. Some organisations have recently recommended that the public and private sectors consider the development and use of collaborative mechanisms for the life sciences and biotechnology. The organisations include the Australian Law Reform Commission, the Canadian Expert Working Party on Human Genetic Materials, Intellectual Property and the Health Sector (Canadian Biotechnology Advisory Committee), the United States National Academies of Science (US), and the OECD.

The OECD held an expert Workshop on Collaborative Mechanisms in Spring 2009. The workshop explored different models of collaborative mechanisms and their application within the life sciences. Experts discussed how collaborative mechanisms increase efficiencies for the transaction of intellectual property, foster R&D and promote commercialisation of products and services. The Workshop explored the role of government policy in achieving such objectives.

A publication capturing discussion at the workshop is planned for publication in third quarter 2010.

Web site: www.oecd.org/sti/biotechnology

Contact: Robert Wells



BIOMEDICINE AND HEALTH INNOVATION

In November 2007 the OECD Working Party on Biotechnology established a new Task Force on Biomedicine and Health Innovation. Its first task was to take stock of the health-related biotechnology studies and policy recommendations produced over the past several years about how to create an environment that is supportive of health innovation, facilitates access to innovations so that they best serve the public good, and includes a receptive end-market for innovations. In 2008, the Task Force on Biomedicine and Health Innovation developed a Synthesis Report of the main policy messages emerging from recent OECD work related to innovation and health.

The Task Force focused on five policy issues which have been at the core of the work of the Working Party on Biotechnology: (1) access to knowledge and intellectual property, (2) new business models and the fusion and exchange of knowledge, (3) the governance of new research infrastructures, (4) the demand and take up of health innovations in health systems, (5) the impacts of new technologies on policy. The Synthesis Report reviewed over two dozen reports from a variety of OECD sources since 2000,

summarised the main messages found therein, and identified key areas where there are gaps in OECD understanding of the health innovation process.

The key messages extracted from this body of work will be published in a Synthesis Report by the end of 2010.

To continue the work related to the biomedicine and health innovation work an OECD Expert Workshop on Progress in Governance of Biomedicine and Other Health Innovations will be held in September 2010 in Berlin, Germany.

Future event:

- OECD Expert Workshop on Progress in Governance of Biomedicine and Other Health Innovations, 27-28 September 2010, Berlin, Germany

Web site: www.oecd.org/sti/biotechnology

Contact: Elettra Ronchi



INDUSTRIAL BIOTECHNOLOGY

Biotechnology offers the possibility to transform industrial processes and to deliver both profitability and environmental benefits. A report entitled, “*The Application of Biotechnology to Industrial Sustainability*” (OECD, 2001: <http://www.oecd.org/dataoecd/61/13/1947629.pdf>), prepared by the OECD Task Force on Industrial Biotechnology, has prompted action in several countries aimed at delivering a more resilient, sustainable and bio-based economy. The report focuses on how industrial biotechnology can contribute to green growth and tries to identify and appraise policy can drive an efficient transition towards a more sustainable bio-based economy.

Issues in supply-side for delivering further innovation to industrial biotechnology:

What are supply-side limitations for industrial biotechnology – including those on capital, human resources and globalisation of R&D? To address these questions, the Task Force on Industrial Biotechnology (TFIB) held a roundtable at the World Congress on Industrial Biotechnology in April 2008. Discussions with various stakeholders, such as policy makers, industry and academia, helped to identify further supply side issues, which led to the development of a draft policy recommendation. These draft recommendations were submitted to a second OECD Roundtable held in Brussels on September 15th in the context of the 1st European Forum for Industrial Biotechnology 2008. These Roundtable comments are included in the OECD Policy Report on *Supply Side Issues for Industrial Biotechnology*, which is expected to be published later in 2010.

Industrial Biotechnology for Green Growth:

The Task Force also developed a case study on “*Metrics to Support Informed Decision-Making for Consumers of Biobased Products*” which was published in March 2009 (OECD, 2009: www.oecd.org/dataoecd/37/48/42400999.pdf). This case study is used as a basis for the development of best practices for assessing the sustainability of bio-based products.

To initiate the process, the Task Force held a workshop on the margins of the World Congress on Industrial Biotechnology and Bio-processing on 19-22 July 2009, in Montreal, Canada. The overall goal of the workshop was to define the way towards the development of Best Practices and Guidance in planning for and assessing the environmental sustainability of bio-based products and processes. A workshop

report with main conclusions and way forward has now been published: http://www.oecd.org/document/8/0,3343,en_2649_34537_43177288_1_1_1_1,00.html.

To launch the report and to define potential pathways towards the development of OECD Best Practices, the Task Force is organising a Panel Discussion that will be hosted by the US Biotechnology Industry Association (BIO) and will be held on June 29, 2010 in Washington, D.C., in conjunction with the 7th World Congress on Industrial Biotechnology and Bio-processing (<http://www.bio.org/worldcongress/program/workshops.asp>).

OECD Outlook for Industrial Biotechnology in the Economy: The OECD Task Force on Industrial Biotechnology started the development of an Outlook for Industrial Biotechnology in the Economy. This work is a follow up to the work on “Supply Side Issues for Industrial Biotechnology”. A kick-off workshop was held in January 2010 in Vienna, Austria. About 50 experts discussed the current and emerging trends and policies related to Industrial Biotechnology. Coming from different perspectives – such as industry, academia and public policy - workshop participants actively raised and examined the main issues which surround the development of industrial biotechnology for green growth and innovation worldwide. Issues ranging from technological development to policy challenges, investment or business models were addressed (http://www.oecd.org/document/18/0,3343,en_2649_34537_44776082_1_1_1_1,00.html).

The main objective of the workshop was to develop a short, data intensive report, the OECD Outlook on Industrial Biotechnology. This OECD Outlook is intended to provide data and information on a number of Industrial Biotechnology-related trends and issues. It is expected that the themes addressed during the Workshop will also provide the basis for creation of datasets and indicators to improve evidence-based policy making. The Outlook on Industrial Biotechnology is planned for publication at the beginning of 2011.

As a follow up to the Outlook on Industrial Biotechnology work, a workshop will be held in St Petersburg, Russia in October 2010, hosted by the Russian Federation (Federal Ministry of Science and Education). This workshop will specifically identify key issues that countries face while building the bio-based economy and to come up with a set of practical solutions to overcome the issues. The main focus will be on the issues relevant to the BRIC countries as integral players of the global bio-based economy.

Future event:

- OECD Workshop on Knowledge-based Bioeconomy: Innovative Policies for the Development of Biotechnology, 28-29 October 2010, St Petersburg, Russia

Web site: www.oecd.org/sti/biotechnology

Contact: Alexandre Bartsev



SYNTHETIC BIOLOGY

The OECD Working Party on Biotechnology started to work on synthetic biology related issues in 2008. As a first step a symposium was organised to as a first place established the main challenges and opportunities synthetic biology is raising. Under the auspices of the OECD, the US National Academies of Science and the Royal Society an international symposium entitled “Opportunities and Challenges in the Emerging Field of Synthetic Biology” was held in Washington, DC on 9-10 July 2009.


This symposium brought together the different communities – scientific, engineering, policy, public, legal – involved in synthetic biology and explored the opportunities and challenges posed by this emerging field. The symposium was organised around expert presentations and discussions treating issues such as the state of the field and its commercial and scientific potential; the scientific, educational and commercial infrastructure needs; emerging financial and business models for its commercial development; the

challenges synthetic biology may raise to legal and regulatory arrangements (e.g. biosafety, biosecurity, intellectual property rights); and the ethical dimensions of this new field. The symposium aimed to contribute to fostering the safe and efficient development of synthetic biology by identifying issues and areas for future study and informing policy-makers. **A Synthesis Report capturing discussion at the Symposium was published in May 2010** (OECD - Royal Society, 2010: <http://www.oecd.org/dataoecd/23/49/45144066.pdf>). This is a joint publication between the OECD and the Royal Society.

The OECD is in an ideal position to forge a common understanding in the policy community of the issues being raised by synthetic biology (research needs, scientific community building, safety and security concerns, regulatory implications, market pathways, public understanding). Moreover, the OECD can launch an early dialogue on what reasonable and responsible conduct might emerge in this field and thus assure that the economic and social benefits of this new technology are safely encouraged.

Synthetic biology is taking an increasing importance in the policy landscape. The OECD Working Party on Biotechnology (WPB) is thus pursuing its work on Synthetic Biology and is now in the process of publishing a Policy Brief on Synthetic Biology which aims to give a snapshot of what synthetic biology represents for policy today, why does it raise so much attention and what are the opportunities it can provide. The WPB is also developing a strategic agenda in order to start addressing in more details some of the most pressing policy issues associated to synthetic biology.

Recent Publication:

 *Symposium on Opportunities and Challenges in the Emerging Field of Synthetic Biology: Synthesis Report*, OECD-Royal Society, 2010

Web site: www.oecd.org/sti/biotechnology/synbio

Contact: Marie-Ange Baucher



ENVIRONMENTAL BIOTECHNOLOGY

The Working Party on Biotechnology (WPB) endorsed a project on Eco-innovation through environmental biotechnology under its 2009-2010 Programme of Work. An expert group consultation was held in October 2008 to define the scope and content of questions to be explored in 2009 and 2010.

The work will address what are the challenges to research and development for Environmental Biotechnology that might impede the delivery of innovative products and technologies to the market place. The project aims to provide recommendations on policies that will ensure the efficient delivery of advances in Environmental Biotechnology R&D. The lack of clear, practical and internationally agreed upon guidance on how to manage and evaluate the development of Environmental Biotechnology R&D, starting from the laboratory up to field application in the open environment, presents a major barrier that impedes further development of the field.

The OECD Working Party on Biotechnology is exploring those barriers and will be formulating guidance on how the barriers might be overcome. A workshop will be held in September 2010 in Rimini, Italy, which will aim at building consensus on the scope of main issues that Environmental Biotechnology R&D faces and on the ways to overcome those. (http://www.oecd.org/document/10/0,3343,en_2649_34537_42313610_1_1_1_1,00.html).

Future event:

- OECD Workshop on Biotechnology for Environment in Future: Science, Technology and Policy, 16-17 September 2010, Rimini, Italy

Web site: www.oecd.org/sti/biotechnology

Contacts: Alexandre Bartsev, Claire Miguet



BIOSECURITY

Because of the threat of bioterrorism there is a need for security measures in legitimate bioscience facilities that handle, store or transfer dangerous biological material in order to prevent this material from being lost or stolen and subsequently misused for malevolent ends.

In March 2007 the OECD Committee for Scientific and Technological Policy (CSTP) agreed to “*Best Practice Guidelines on Biosecurity for Biological Resource Centres*” (BRCs). The Guidelines on Biosecurity contain a Framework on Risk Assessment to guide BRCs in classifying pathogens (for example, according to one of four biosecurity risk levels) and robust Risk Management measures to be applied as a function of a particular pathogen’s biosecurity risk level. The Guidelines are available on the OECD website.

An increasing number of culture collections worldwide are currently implementing the Biosecurity Guidelines. In France, for example, a standard authorisation form for the use of micro-organisms and toxins, as well as best practice regulations for authorised centres, draws upon the OECD Guidelines. The Guidelines were also referenced by The European Commission in the development of harmonised minimum requirements on Biosecurity in Europe (for reference, see *Green Paper on Bio-preparedness, Brussels, COM (2007) 399 Final*).

Moreover, the “Bulletin of the Atomic Scientists” published an article recognising current and future role of OECD in addressing biosecurity issues (www.thebulletin.org/web-edition/columnists/laura-h-kahn/in-pursuit-of-international-biosecurity-oversight).

The OECD co-organised a workshop with Chinese Academy of Sciences on 17-19 December 2008, in Beijing which discussed how to develop oversight mechanisms for research in the life sciences using the Biosecurity Guidelines.

Currently, OECD is organising a Forum on Biosecurity (to be tentatively held in mid-November 2010) where recent countries’ efforts to efficiently implement biosecurity-related policies will be assessed.

Publication:

📖 *OECD Best Practice Guidelines on Biosecurity for BRCs*, Paris: OECD, 2007.

Free download: <http://www.oecd.org/dataoecd/6/27/38778261.pdf>

Contact: Alexandre Bartsev

Web site: www.oecd.org/sti/biotechnology




BIOLOGICAL RESOURCE CENTRES

Towards a Global Biological Resource Centre Network (GBRCN)

A Workshop on “*The Global Biological Resource Centres Network – Networking the Networks*” was held on 13-14 December 2007, in Paris. The objective of the workshop was to develop recommendations and consensus on practical measures towards the establishment of an inclusive, virtual global network of BRCs (GBRCN), drawing on existing networking practice. Participants agreed on key elements for the establishment of a GBRCN as well as commonalities and differences in the issues raised by different domain-specific networks (*i.e.*, Microbial domain and Human-derived material BRCs). A policy report with recommendations on how such network can be established will be published at the end 2010.

To test the feasibility of the GBRCN, a pilot project has been launched with the support from the German Federal Ministry of Research and Education (BMBF) (<http://www.gbrcn.org>).

Publication:

 *OECD Best Practice Guidelines for Biological Resource Centres*, Paris: OECD, 2007.
Free download: <http://www.oecd.org/dataoecd/7/13/38777417.pdf>

Web site: www.oecd.org/sti/biotechnology

Contact: Alexandre Bartsev



GUIDELINES AND BEST PRACTICES

Two Council Recommendations related to genetic inventions and genetic testing and one set of best practices on biological resource centers have been agreed at the OECD since 2004. Most recently, a set of guidelines for human biobanks and genetic research databases have also been adopted. While not legally binding, a “Recommendation” of the OECD Council indicates a strong political commitment on the part of all member countries to implement an instrument. The OECD is helping to promote dissemination of the instruments below and will also assess their implementation and impact in countries. These Guidelines and Best Practices are an important contribution to international soft-law and practice related for the life science and health communities.

- **Guidelines for the Licensing of Genetic Inventions**

Biotechnology and genetics research have been the subject of extensive investment by both the public and private sectors. The products and processes that emerge from such research is making a significant contribution to human health and to health care. In 2006, OECD member countries adopted *Guidelines for the Licensing of Genetic Inventions* which offer principles and best practices for the licensing of intellectual property rights that relate to genetic inventions used for the purpose of human health care. Overall, the Guidelines seek to foster the objectives of stimulating genetic research and innovation while maintaining appropriate access to health products and services.

The Guidelines are available on the web (in English, French, Japanese and Italian).

Web site: www.oecd.org/sti/biotechnology/licensing

Contacts: Robert Wells, Elettra Ronchi

- **Guidelines on Quality Assurance in Molecular Genetic Testing**

These Guidelines focus on the provision of clinical genetic services, in particular on: quality assurance systems for the tests offered, result reporting requirements, proficiency testing of laboratories performing tests, and the education and training standards for laboratory personnel. The Guidelines concern molecular genetic testing offered in a clinical context for the *diagnosis* of a particular disease or condition and for *predictive* screening before any clinical signs of a disease or condition appear. They are also relevant to pharmacogenetic tests, which predict the response profile of an individual to a drug or course of therapy. However, they do not address testing carried out only for research purposes.

The Guidelines are available on the web (in English, French, Japanese and Spanish).

Web site: www.oecd.org/sti/biotechnology/qualityassurance

Contacts: Robert Wells, Elettra Ronchi

- **OECD Best Practice Guidelines for Biological Resource Centres**

Biological Resource Centres (BRCs) are considered as key elements of the international scientific infrastructure and are necessary to successfully deliver the benefits of biotechnology in health, industry and other sectors. “*OECD Best Practice Guidelines for BRCs*”, establishing a target for the quality management of BRCs, were agreed by OECD member countries and published in March 2007. OECD co-organised a series of workshops and conferences in 2008 where the guidelines were promoted and their impact was assessed.

The Best Practices are available on the web (in English, French, Korean).

Web site: www.oecd.org/sti/biotechnology

Contact: Alexandre Bartsev

- **OECD Guidelines for Human Biobanks and Genetic Research Databases**

In October 2009, the OECD Council adopted a Recommendation on Human Biobanks and Genetic Research Databases (**HBGRD**). The Guidelines are intended to assist both OECD and non-OECD governments in the development of policies applicable to HBGRDs and to provide guidance for private and public sector HBGRDs. The Guidelines provide guidance for the establishment, governance, management, operation, access, use and discontinuation of HBGRDs. They cover governance structure and oversight mechanisms; privacy and confidentiality; terms of participation; access; funding mechanisms; benefit sharing, intellectual property and commercialisation; protection and security of human biological materials and data; the qualifications, education and training of staff; disposal of materials and data and the discontinuation of a HBGRD.

The Guidelines are available on the web (in English and French).

Web site: www.oecd.org/sti/biotechnology/hbgrd

Contact: Robert Wells



OECD/HUGO SYMPOSIUM: GENOMICS AND THE BIOECONOMY

The symposium “*Genomics and the Bioeconomy*” was held in Montpellier, France on 17 and 18 May 2010. It was organised jointly by the OECD, the Human Genome Organisation, the McLaughlin-Rotman Centre for Global Health at the University of Toronto, and the Mexican Health Foundation (FUNSALUD). A grant from the government of Japan also supported this program which was held in conjunction with HUGO’s annual worldwide meeting.

This symposium followed thematically the issues explored in the OECD’s Bioeconomy 2030 report and examined how the advancement of genomic technologies and related bioinformatic developments will have an impact on the world economy in the coming decades. This impact will be manifest in biofuels, accelerated breeding of crops and livestock, personalized health products, pharmaceutical efficiency, and genomic monitoring of environmental health. Key speakers addressed not only scientific but also economic challenges.

The overall goal of the meeting was to devise a first draft of a policy agenda and recommendations on how genomics could boost the development of the bioeconomy. A report between OECD and HUGO on these topics will be prepared in the coming months.

The main messages which came out of the meeting were the need for guidelines on international cooperation in genomics R&D; the need to further advance the areas of genomics through innovative IPR management models; and the need for innovative approaches to measure the economic impact of genomics.

A policy paper resulting from the meeting is being drafted and will be available by the end of 2010.

Contact: Robert Wells



BIOTECHNOLOGY STATISTICS

The 2009 edition of *OECD Biotechnology Statistics* was released in May, 2009. It includes data for 22 OECD countries and four non-member countries. This edition provides data on the number of biotechnology firms, business expenditures on R&D, biotechnology employment, and sales of biotechnology goods and services, biotechnology patents, venture capital, alliances, GM crops, biofuels, and biopharmaceuticals. Results for biofuels and biopharmaceuticals are provided for the first time in this edition. This is the fourth collection of OECD biotechnology indicators. The previous version was published in 2006. The 2009 edition (English only) is available at: www.oecd.org/dataoecd/4/23/42833898.pdf

The *OECD Key Biotech Indicators* were updated. The indicators are available in English at: www.oecd.org/sti/biotechnology/indicators and in French at: www.oecd.org/sti/biotechnologie/indicateurs

Guidelines for collecting statistics on public biotechnology R&D expenditure and funding were declassified by the Committee for Scientific and Technological Policy (CSTP). The aim of these guidelines is to propose a harmonised approach for the collection and analysis of biotechnology research and development (R&D) statistics in the government and higher education sectors. To simplify, this document calls the government and higher education sectors the "public sector" when they are treated together. In some countries,

this definition of the public sector may differ from that of the official definition in the System of National Accounts.

Guidelines for collecting statistics on “public” biotechnology R&D funding were beyond the scope of the 2005 version of the [Framework for Biotechnology Statistics](#). However, the collection of data on public biotechnology R&D expenditure and funding is seen as highly relevant to policy decisions and the guidelines on how to undertake this represent an extension of the development of statistical standards. The guidelines are available in English at: www.oecd.org/dataoecd/37/3/45369831.pdf and in French at: www.oecd.org/dataoecd/37/2/45369974.pdf

Contact: Brigitte van Beuzekom



CO-OPERATIVE RESEARCH PROGRAMME: BIOLOGICAL RESOURCE MANAGEMENT FOR SUSTAINABLE AGRICULTURAL SYSTEMS

The rationale of this OECD programme, which gathers 26 OECD countries, is based on the observation that multi-disciplinary agri-food research is needed to address the gaps in knowledge, deepen understanding and enhance the scientific base of policy. The objectives of the CRP are thus the following: to provide a sound scientific knowledge base to agricultural policy-making; to contribute to an informed public debate on current and emerging agro-food issues and to help resolve conflicting views in Member countries; and to promote scientific understanding and standards between major regions of OECD. The Programme’s mandate was renewed on 1 January 2010 for five years.

Operational features of the Programme involve supporting and promoting international co-operation and networking in the field of basic and applied research. In this respect it awards fellowships to scientists from an OECD Member to conduct research projects in another OECD country, and supports financially workshops to address agro-food issues that are high on the science/policy agenda of OECD Members. The CRP strategy emphasises the need to engage a range of scientific disciplines including the natural sciences, social sciences and the humanities in an interactive dialogue. Three themes will be addressed by the Programme during its mandate period: 1) The Natural Resource Challenge; 2) Sustainability in practice; and 3) The Food Chain.

Conferences co-sponsored by the Programme in 2008:

- *Livestock Waste Treatment Systems of the Future, Florence, South Carolina, USA, 2-4 April 2008*

Disposing of animal waste has become a pressing problem with new understanding of methane contributions to the greenhouse gas effect, and also with concerns raised by the recent “mad cow disease” outbreak and the need for the safe disposal of animal parts such as spinal cords. The workshop’s objectives were to describe the current state of scientific information on the advanced treatment of animal waste, with the intent to apply it strategically to enhancing livestock systems for both the sustainable use and protection of natural resources and sustainable production..

The workshop was multidisciplinary: microbiologists, chemical, industrial, civil, agricultural and environmental engineers, chemist, veterinarians, animal scientists, soil scientists, ecologists and natural resource/environmental scientists were represented. It covered i) hygienic aspects of manure treatment and food safety; ii) advanced treatment technologies for liquid manure; iii) advanced treatment technologies for the utilisation of manure; iv) the implementation of treatment technologies – the environmental and societal benefits; v) holistic treatment systems for animal manure.

➤ *Basic and Applied Aspects of Aquaculture Nutrition, Krakow, Poland 16-17 September 2008*

This conference treated a very pertinent question in aquaculture i.e. that of how far it is possible to substitute fishmeal/oil based products in particular with plant proteins. The increasing competition for plant protein (and the limited availability of fishmeal and oil products which are also in use in terrestrial animal farming, such as hogs and pigs) is the key driver of this basic research into fish nutritional issues.

➤ *Managing Parasitic Weeds, Burio, Italy 22-26 September 2008*

This workshop brought together experts with different biotechnology backgrounds to explore advanced approaches to parasitic weed management. Parasitic plants severely constrain Mediterranean and Tropical agriculture, affecting major crops, yet the efficacy of available means of control have been minimal. In Europe, the Middle East and North Africa, among crops affected are grain legumes, sunflower, clover, potato, tobacco and tomato. In semi-arid Africa and parts of Asia, yield losses for maize, sorghum, dryland rice can result in a total crop failure. This can significantly affect millions of people, and in particular small holders and subsistence farms.

There is an urgent need to re-evaluate novel integrated control programmes in the light of recent basic research successes in understanding the enemy. The aims of the conference were to discuss how new approaches, solutions or methodologies may further be used, and to create a network of scientists to explore opportunities to adapt a global collaborative approach.

➤ *Sustainability of Biofuels Production on the Landscape, Madrid, Spain 22-24 October 2008*

The objectives of the workshop included looking at implications of biomass feedstock production on land use and rural communities. Together with presentations from the industry, contributions from farmers focused on practical issues (soil management, agronomy, crop production inputs, sustainability, harvesting, storage), kept the programme content at an applied level.

Among the vast range of subjects, some papers on “energy cropping” covered the future for GM crops, energy crops used for land remediation (example of high salinity soils), biofuels policies, opportunities for biotechnology developments, etc. Overall the challenges of producing energy crops for biofuels cost effectively and in a sustainable manner were clearly identified and the needs for greater RD&D investment highlighted. The “real-world” views of farmers and industry representatives proved to be valuable to the overview coming from the workshop presentations.

➤ *Tropical Fruits in Human Nutrition and Health, Brisbane, Australia 8-11 November 2008*

Fruits are an essential component of human nutrition. Tropical fruits could be more widely distributed through global supply chains. This conference related to the sustainable production of valuable, nutritional and safe foods along the entire food chain. Whereas the key role of fruits and vegetables in healthy diet is established, the specific benefits associated with tropical fruits are not well-defined but could be significant for both industry and consumers. The conference took a ‘whole of chain’ approach including information on health benefits from the population level to the identification of nutritional bioactives, coupled with the requirement for eating quality and supply chain excellence to ensure that consumer acceptance is maximised.

The Conference contributed to enhance economic and social health benefits from tropical fruits by raising awareness of the need for more research in this area, helping identify gaps in knowledge, for favouring the development of market tropical fruits. The Conference Proceedings provide a valuable resource for policy makers and larger public in the areas of functional foods, nutrition, health and wellbeing (Proceedings of the Tropical Fruits in Human Nutrition and Health Conference 2008, The State of Queensland, Department of Employment, Economic Development and Innovation, 2009).

➤ *Sustainable Transition of Agriculture, Tokyo, Japan 10-12 December 2008*

World food demand is expected to double by 2050 as a result of the increase of world population, per capita consumption, and dietary shifts toward meat diet. The limited land available for food production has begun to compete with other land uses such as bio-energy production, biodiversity conservation, and

residence. The establishment of sustainable agricultural systems has become important for improved productivity while considering the preservation of natural environment in an innovative way.

The topics of this conference were the following: sustainable transition through recognising agriculture as coupled human and natural systems; implementing the concepts of sustainable transition, establishing related tools for supporting policy decisions; innovation by adopting sustainable agricultural systems.

The main conclusion of the conference was that Life Cycle Assessment (LCA) and related system modelling tools can be useful in addressing the environmental constraints and impacts of food production and distribution chains. LCA can assist in “globalising” what are local impacts of agriculture, in identifying options and quantifying trade-offs in relation to climate change, water use and food security. Life Cycle thinking is still a developing area of environmental research and needs ongoing support and integration into wider policy initiatives.

Conferences co-sponsored by the Programme in 2009:

- *Workshop on Managing the Biosecurity Threat to Forests in a Changing Global Environment: Links between science, policy, regulation and management, - Forest Biosecurity Conference, Rotorua, New Zealand, 16-20 March 2009*

Implementation of effective biosecurity policies at national and international levels is vital for sustained protection of forests and the associated benefits they provide. Sound biosecurity policy should be informed by science and priorities influenced by policy makers’ needs. The purpose of the OECD workshop was to provide a forum for scientists, policy makers and stakeholders implementing these policies. The forum provided a valuable opportunity for a better understanding among all parties and to identify more effective ways of aligning our collective efforts.

The workshop came to the following, practical conclusions:

- Dialogue between policy, science and management staff need to be actively encouraged;
- Biosecurity focus needs to shift from pest risk analysis to pathway analysis – *i.e.* less emphasis on the pests, more emphasis on how they move around;
- Need to develop risk management frameworks to guide decision making;
- Fundamental research and excellent science capability must be maintained.

More ideological conclusions were that international trade in live plants should stop, and that a paradigm shift is needed for plant biosecurity, currently regulated within a trade paradigm, to redesign international regulation around the movement of species. OECD could clearly play a role of leadership to address this.

- *What Future for the Agriculture and Food Sectors in an Increasingly Globalised World, Paris, France, 30-31 March 2009*

The symposium aimed at identifying key developments that determine the medium-term future of the agriculture and food sector in about 20 years, beyond the current volatile agricultural markets and the global financial and economic crisis. Identifying key drivers, trends and tradeoffs should help in developing ‘robust’ policies for alternative futures. The main purpose of the symposium was to identify the issues of paramount importance, and which are likely to influence the design of future agriculture and food policies.

The main themes of discussion were:

- ‘Competing claims’: What are the main scarcities that will drive agro-food developments?
- ‘Innovation’: What can technology and innovation contribute?
- ‘Agriculture and its neighbours’: What are the links with non-agricultural sectors?
- ‘Great expectations’: What is society expecting from the global food system?

- *Challenges for Agricultural Research, Prague, Czech Republic, 6-8 April 2009*

This conference was jointly organised by the CRP and the Czech Ministry of Agriculture. Its aim was to highlight the major progress in agricultural research outcomes and challenges. Summary presentations of CRP sponsored events held during the 2005-2009 period served as the basis for a forward looking discussion on the challenges and opportunities for agriculture research in the changing agriculture and

food policy environment. The conference helped in formulating an agricultural research agenda based on policy and societal needs.

The discussions focused on how to achieve a doubling of food production with agreed sustainability metrics by 2050. It was clear that the imperative to achieve food security for a growing world population while at the same time deal with the challenges of climate change, limitations of water and land availability, soil degradation and limited options for land use change, may compromise the opportunity to enhance the sustainability profile of agricultural production systems. The importance not only of investing in research for new technologies to help solve the problems of global food production, but also of making these technologies available to the developing world were highlighted.

- *Sustaining Soil Productivity in Response to Global Climate Change: Science, policy and ethics, Madison, Wisconsin, USA, 29 June-1 July 2009*

The aim of this workshop was to address environmental issues relating to natural resource stewardship, and strategies to evaluate the compromises made when balancing human and natural resources, emerging technologies, the environment, and social issues.

The participants discussed how global climate change has the potential to accelerate soil degradation due more frequent droughts and floods. With increasing demand for food and biofuel production to meet growing global energy needs, soil resources are coming under increasing stress to sustain or increase productivity. Maintaining or enhancing soil productivity is a high priority area for developing food security policy at national and global scales. Policies to mitigate climate change consequences for global food supplies must ensure that short-term supplies can be met without sacrificing long-term soil degradation due to erosion, pollution, physical and chemical deterioration. Strategies to reverse current practices leading to soil degradation are urgently needed. By broadening the climate change debate, this conference illuminated some of the human aspects that are so relevant yet generally overlooked by the economic analyses and political expediencies that currently control the debate.

- *Flavobacterium 2009, Paris, France, 21-23 September 2009*

A number of Flavobacterium species are responsible for Bacterial Cold Water Diseases of farmed fish causing a significant economic loss to this industry worldwide. Due to the appearance of antibio-resistant strains of bacteria and the absence of an efficient immersion vaccine, the sanitary situation in fish farms is worsening. The conference studied in depth:

- the impact of Flavobacterium infections on aquaculture worldwide,
- the biology, virulence and genetic diversity of the bacterial pathogens in relation to the recent sequencing of *F. psychrophilum* genome,
- the selection of resistant fish.

Several participants reported promising vaccination trials. From the point of view of the field veterinarians, the situation of fish diseases caused by Flavobacterium is worsening. Help from scientists is needed to find sustainable prophylactic and therapeutic measures against flavobacteriosis. The bulk of information available during the conference could be used as a basis for precise recommendations limited to these diseases usable by fish veterinarians and also for the information of policy makers.

- *Exploiting Genome-wide Associations in Oilseed Brassicas: a model for genetic improvement of major OECD crops for future farming, Crawley, Perth, Australia, 9-12 November 2009*
- *Biosecurity in the New Bioeconomy: Threats and opportunities, Canberra, Australia, 19-21 November 2009*

Reports on these two conferences will be included in the next edition of the ICGB Biotechnology Update newsletter.

Conferences co-sponsored by the Programme for 2010 are:

- *First International Cold Chain Conference: Sustainability and the Cold Chain*, Cambridge, UK, 29-31 March 2010; www.icccuk2010.com
- *The Role of Forest Biodiversity in the Sustainable Use of Ecosystem Goods and Services in Agro-forestry, Fisheries and Forestry*, Tokyo, Japan, 26 April 2010; www.ffpri.affrc.go.jp/symposium/FFPRI-sympo/2009/CBD_COP10/20100426/index_e.html
- *Developing Partnerships for Sustainable Water Management and Agriculture in the context of Global and Climate Change*, W. Lafayette, Indiana, USA, 11-12 May 2010
- *International Strategic Programs for the Conservation of Animal Genetic Resources for Food and Agriculture*, Vancouver, Canada, 17 July 2010
- *Vaccination and Diagnosis for Food Safety in Agriculture*, Tokyo, Japan, 16 August 2010; <http://9th-ivis.itbcom.co.jp/>
- *Emerging Health Topics in Fruit and Vegetables*, Lisbon, 23-25 August 2010; www.ihc2010.org/symposia.asp?page=fav_health
- *Delivering Food Security with Supply Chain Led Innovations: Understanding supply chains, providing food security, delivering choice*, London, UK, 7-9 September 2010; [Delivering Food Security Conference](http://www.deliveringfoodsecurityconference.org/)
- *Diffuse Pollution and Eutrophication*, Beaupré, Quebec, Canada, 12-17 September 2010; www.dipcon2010.org/
- *Decision making and Science: the balancing of risk based decisions that influence the sustainability of agricultural production*, Berlin, Germany, 7-8 October 2010; <https://apps2.bvl.bund.de/registrywww/home.do>

Fellowship research topics in 2009 and 2010 of particular interest are:

2009

- *Enhancing the quantification and monitoring of soil loss and sediment transfer by water erosion within and outside rangeland and cropland areas using innovative sediment tracers*
- *Evaluation of large aperture scintillometer as a tool for validating regional evapotranspiration maps*
- *Evaluating the feasibility of emissions trading in agriculture: what can Europe learn from New Zealand?*
- *Novel endophytes were developed to provide the attributes of the wild-type endophytes in sustaining productive growth of perennial ryegrass stands, but without the toxic alkaloids that cause ryegrass staggers and a disruption of thermoregulation in cattle and sheep. Doppler ultrasound technology has potential to measure blood flow response to toxicants. This new technology will be used to determine if vasoconstriction and reduced blood flows occur in sheep grazing novel endophyte ryegrass.*
- *Investigating how earthworms could mitigate soil methane (CH₄) production in manure-amended soils.*
- *Multiple pest control by a generalist predator: the case of *Amblyseius swirskii* as a biological control agent of the thrips *Frankliniella occidentalis* and the whitefly *Trialeurodes vaporariorum**
- *Improving Methodology for Evaluating Non-target Species for Assessing Risk of Candidate Agents for Biological Control of Arthropod Pests*
- *Evolution, biochemical and molecular studies on herbicide resistant weeds. Overall objective aimed at minimising adverse impacts of herbicide resistant weed evolution.*
- *Towards Climate Neutral Farming. An investigation of the feasibility and consequences of modest to very ambitious objectives for the mitigation of greenhouse gas emissions by agriculture.*
- *Post-genomic analysis of milk production, fertility and energy balance of dairy cattle*
- *Genomic approach to development of new pest control strategies: plant resistance mechanisms to *Tetranychus urticae*, major pest in agriculture with new genomic resources.*
- *Evaluation of anti-cattle tick vaccine candidates selected by bioinformatic and proteomic analyses of a cattle tick expressed gene database.*
- *Resolving Bottlenecks to Developing the Sustainable Aquaculture of Octopus*
- *Determining Research Needs for Testing and Deployment of GM Sorghum*
- *Genetic markers of fertility in relation to heat stress*
- *Developing a surveillance system for *Trichinella* reservoir hosts to support international certification programs*
- *Production of additive-free meat products. Investigating into the mechanism leading to good colour dried pork meats without the use of nitrite and nitrate*
- *Evaluation of hybrid poplar tree tolerance to irrigation with high boron waters: both EU and the US are using trees as a green technology tool for protecting our natural resources from harmful trace elements, e.g., boron (B). However, quantitative information is lacking for identifying hybrid poplar clones that tolerate excessive B in poor quality waters/soils. Hence, our study on "Evaluation of hybrid poplar tree tolerance to irrigation with high boron waters" will identify specific hybrid poplar trees that can be used for managing excessive B in our living environment*

2010

- *Wildfire is amongst the most significant natural disturbance agents, impacting a wide range of ecosystems at small and large scales in almost all forested ecosystems of the planet. The subject of this research is wildfire in the frame of preservation of forests as a natural resource, and specifically the detection, characterisation and study of wildfires using new remote sensing methods that are capable of being applied to the next generation of*

small, light and affordable imaging spectroradiometers that can be mounted on civil protection aircraft, unmanned aerial vehicles or Earth-orbiting micro-satellites.

- Development of an international impacted agricultural areas standard for ecological services - a synthesis of science, policy and law. This project will produce an international impacted agricultural areas standard for ecological services through a review of pertinent literature and interviews/field visits with local, regional and national government officials and subject matter experts. This will result in an international synthesis of what works (using “small indicators”) at the local level and national level to achieve environmental sustainability.
- I would like to join to a research project running at the University of Wisconsin (U.W.), Department of Plant Pathology led by Professor Dennis Halterman. The subject of this project is to identify and to characterize novel resistance genes to potato late blight (*Phytophthora infestans*) in wild potato species using molecular genetics techniques. More over we would like to determine the origin of late blight resistance genes of some US and Hungarian potato cultivars too.
- Characterization of RC-Mediated Regulation of Proanthocyanidin Biosynthesis as a Prerequisite for a Novel Weed Control Strategy in Rice: The overall goals are 1) To identify a rice proanthocyanidin biosynthetic gene regulated by RC. 2) To dissect the promoter of an RC-regulated proanthocyanidin biosynthetic gene to determine the region that is necessary for transcriptional activation by RC. 3) To develop a pathway-based model describing allelic interactions that govern pericarp color in rice.
- Comparing domestic vs imported greenhouse tomatoes: LCA approaches for new sustainable greenhouse systems. To quantify via the LCA the environmental impact of greenhouse growing systems using anaerobic digestion of waste biomass as a source of energy and nutrients. We will also be using wetlands and bioreactors to treat and recycle effluents compared to conventional and organic farming in Canada, Mexico and the Mediterranean region. For Canada, comparisons will also be made for imported fruits.
- Comparative DNA analysis of several races of southern root-knot nematode, *Meloidogyne incognita*, for a designing of DNA marker(s) to identify nematode races, and detection of gene(s) involved in resistance of host plant leading to molecular breeding of crops: Towards a development of new nature friendly management of root knot nematodes.
- Bioinformatics analysis and collation of streptococcal peptidoglycan hydrolases
- Characterization of MYB transcription factors of flavonoid biosynthesis in apples and the application for production of health promoting buckwheat varieties. In order to produce health promoting buckwheat varieties, we will clarify the molecular mechanisms of apple MYB genes, and apply for regulation of some specific flavonoid biosynthesis in buckwheat organs.
- Improving lactational persistency in dairy cows. Objective – To learn a genome wide DNA methylation analysis technique (MeDIP) as used in Prof. Rijnkels’s laboratory. This technique will be very useful for dairy research to address epigenetic effects of nutrition, milking frequency, disease and other management practices. The applicant wishes to apply the learning gained to the problem of lactation persistence (post-peak decline in milk yield) a relevant and economically important issue to the dairy industry.
- Reduced-risk strategies for alien invasive insect pests. A significant number of IAS in Canada are of European origin. Climate change may disrupt species interactions at the same or adjacent trophic levels. As climate change influences each species differently, species interactions will appear, disappear, or change. Bio-climate simulation models will be developed to assess the potential impact of global warming on the ecology of host crop-herbivore-parasitoid agro-ecosystem.
- Studying the protein factors and protein-protein interactions of the expressing wheat storage proteins in transgenic rice endosperm.
- A DNA barcoding approach to assess earthworm diversity in riparian buffers at the interface of agricultural and aquatic ecosystems, and implications for nitrogen cycling.

Information on the CRP and application forms for conference sponsorship or Research Fellowship awards are available at: www.oecd.org/topic/0,2686,en_2649_33903_1_1_1_1_37401,00.html

Recent Publications

- 📖 *Forestry Research Management in an Era of Globalization; proceedings from the International Union of Forest Research Organizations conference, (a CRP-sponsored conference in Arlington, Virginia, USA, 18-21 April 2007)*
- 📖 *A DVD of the proceedings of the Frontiers in Transgenesis Symposium, (a CRP-sponsored conference in St. Louis, Missouri, USDA, 26-28 September 2007)*
- 📖 *Bioresource Technology; Special Issue “OECD Sponsored Workshop: Livestock Waste Treatment Systems of the Future: A challenge to environmental quality, food safety and sustainability”, Volume 100, issue 22, November 2009 (Proceedings from a CRP-sponsored conference in Charleston, N. Carolina, USA, 1-4 April 2008)*
- 📖 *Aquaculture Research; Special Issue “Basic and Applied Aspects of Aquaculture Nutrition: Healthy Fish for Healthy Consumers”, Volume 41, Number 5, 16 April 2010 (Proceedings from a CRP-sponsored conference in Krakow, Poland, 17-18 September 2008)*

- 📖 *Wiley, Pest Management Science; Special Issue “Managing Parasitic Weeds”, May 2009, Volume 65, Issue No 5 (Proceedings from a CRP-sponsored conference in Bellagio, Italy, 22-26 September 2008)*
- 📖 *Sustainability of Cellulosic Biofuels on the Landscape (Proceedings from a CRP-sponsored workshop in Madrid, Spain, 22-24 October 2008)*
- 📖 *Proceedings of the Tropical Fruits in Human Nutrition and Health Conference 2008 (a CRP-sponsored conference in Brisbane, Australia, 8-11 November 2008)*
- 📖 *A DVD of the proceedings of the Eights International Conference on EcoBalance 2008: The challenge of creating social and technological innovation through system-thinking (the CRP sponsored a workshop on Sustainable Transition of Agriculture, Tokyo, Japan, 10-12 December 2008)*
- 📖 *New Zealand Journal of Forestry Science; Proceedings from the OECD Workshop at the IUFRO International Forest Biosecurity Conference: Managing the Biosecurity Threat in a Changing Global Environment (Rotorua, New Zealand, 17 March 2009)*
- 📖 *A DVD of the proceedings from the 1st International Institute of Refrigeration Conference on Sustainability and the Cold Chain (a CRP-sponsored conference, Cambridge, UK, 29-31 March 2010).*

Web site: www.oecd.org/agriculture/crp

Contacts: Carl-Christian Schmidt, Janet Schofield



SEED CERTIFICATION AND FOREST REPRODUCTIVE MATERIAL SCHEMES

The following three criteria namely; distinctness, uniformity and stability are used for defining crop varieties and form the basis for agricultural seed development and trade. Identification and minimum purity criteria are important components of sustainability, especially in the case of hybridisation and genetic modifications. For forest reproductive material reliability depends on several factors including local identification, regions or provinces, selection and breeding.

The **OECD Seed Schemes** were developed in the late 1950s to regulate international exchanges, as well as “counter season” multiplication of seed, particularly between the northern and southern hemispheres. They are implemented by 58 member and non-member countries across all continents. In essence, the Schemes attempt to harmonise certification with a view to facilitating international trade in agricultural seeds. 200 species, including all the basic staples and over 43 000 varieties appear on the latest *OECD List of Varieties Eligible for Certification*. Among the emerging issues are the role of government in the control and testing of seeds, the accreditation of authorised private field inspectors and laboratories, the impact of biotechnology and advanced breeding methods on seed certification, the certification of seed mixtures (herbage species, hybrid maize, swede rape), rules for hybrid cotton and hybrid grass seed, and the issue of seed lot size and homogeneity. A Strategic Plan was approved in 2009.

Under the broad mandate to assess the current and future needs of international certification, the “Working Group on Varietal Purity and Varietal Identity” established in 2006 have started to develop new definitions and procedures to be introduced into the Schemes.

A new **OECD Scheme for the Certification of Forest Reproductive Material** was introduced in June 2007. This new Scheme clarifies the terminology and improves the rules relating to the “Source-identified” and “Selected” categories (forest seed stands and sources). The Scheme is implemented by 25 countries. Discussions on the more “advanced” forest reproductive material continue for a possible future extension of the Scheme to cover them at the international level.

Future events:

- Technical Working Group Meetings and Extended Advisory Group Meeting (16-19 November 2010, OECD Conference Centre)

- Annual Meeting of National Designated Authorities/Agricultural Seed (9-13 May 2011, Istanbul - Turkey)
- Annual Meeting of National Designated Authorities/Forest Reproductive Material (28-30 September 2010, OECD Conference Centre)

Recent Publications:

- 📖 *List of Varieties Eligible for Seed Certification 2010*
- 📖 *OECD Seed Schemes “2010” (Rules and Directives)*
- 📖 *Guidelines for the Authorisation of some certification activities under the OECD Seed Schemes “2008”*
- 📖 *OECD Forest Seed and Plant Scheme “2009”*

Web sites: www.oecd.org/tad/seed ; www.oecd.org/tad/forest

Contacts: Michael Ryan, Katarina Djermanovic, Csaba Gaspar



OECD BIOTECHNOLOGY AND THE WORLD WIDE WEB

OECD's web site includes much information on biotechnology and related topics. The web site allows individual users to tailor the OECD site to their needs. By selecting the themes that interest them, visitors can personalize their homepages at My OECD to present the news, events, and documentation related to their chosen themes. Visitors can also choose to receive automatically future editions of Biotechnology Update through My OECD.

- OECD's portal: www.oecd.org
- OECD's biotechnology portal: www.oecd.org/biotechnology
- More on industrial, scientific and health applications of biotechnology: www.oecd.org/sti/biotechnology under the theme "[Biotechnology Policies](#)"
- OECD Biosecurity codes of conduct: www.biosecuritycodes.org
- OECD work on green growth: www.oecd.org/greengrowth / www.oecd.org/croissanceverte
- OECD work on bioeconomy: www.oecd.org/futures/bioeconomy
- OECD work on bioenergy: www.oecd.org/tad/bioenergy
- OECD work on biosafety and food/feed safety for transgenic products, see BioTrack system: www.oecd.org/biotrack
- OECD work on biodiversity: www.oecd.org/env/biodiversity
- OECD seed certification schemes (agriculture, forest): www.oecd.org/tad/seed; www.oecd.org/tad/forest
- OECD's Cooperative Research Programme on Biological Resources in Agriculture: www.oecd.org/agriculture/crp

📖 *Hard copies of some OECD publications can be obtained free-of-charge from the ICGB Secretariat.*



FUTURE EVENTS

- OECD Discussion Panel on the Development of Strategies for Measuring and Reporting Sustainability of Bio-based Energy and Products, Washington DC, United States, **29 June 2010** (*contact: Alexandre Bartsev*)
- OECD Workshop on Biotechnology for Environment in Future: Science, Technology and Policy, Rimini, Italy, **16-17 September 2010** (*contact: Alexandre Bartsev*)
- OECD Expert Workshop on Progress in Governance of Biomedicine and Other Health Innovations, Berlin, Germany, **27-28 September 2010** (*contact: Elettra Ronchi*)
- Annual Meeting of National Designated Authorities/Forest Reproductive Material, OECD Paris, **28-30 September 2010** (*contact: Csaba Gaspar*)
- OECD Workshop on Knowledge-based Bioeconomy: Innovative Policies for the Development of Biotechnology, St Petersburg, Russia, **28-29 October 2010** (*contact: Alexandre Bartsev*)
- Global Forum on Biotechnology, OECD Paris, **6-7 December 2010** (*contact: Stella Horsin*)
- 27th Session of the Working Party on Biotechnology, OECD Paris, **8-9 December 2010** (*contact: Stella Horsin*)
- 1st Meeting of the Working Party on Biodiversity, Water and Ecosystems, Paris, **7-9 March 2011** [formerly, the Working Group on Economic Aspects of Biodiversity] (*contact: Katia Karousakis*)
- 25th Meeting of the Working Group for the Harmonisation of Regulatory Oversight in Biotechnology, OECD Paris, **9-11 May 2011** (*contact: Yukihiro Fukase*)
- 18th Meeting of the Task Force for the Safety of Novel Foods and Feeds, OECD Paris **12-13 May 2011** (*contact: Bertrand Dagallier*)
- Annual Meeting of National Designated Authorities / Agricultural Seed, Istanbul - Turkey, **9-13 May 2011** (*contact: Katarina Djermanovic*)



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ENDNOTE: A BRIEF GUIDE TO THE OECD

The Organisation for Economic Co-operation and Development (OECD) is an intergovernmental organisation with 31 member countries². OECD brings together the governments of countries committed to democracy and the market economy from around the world to support economic growth, boost employment, raise living standards, maintain financial stability, assist other countries' economic development, and contribute to growth in world trade. By sustainable economic growth the OECD means growth that balances economic, social and environmental considerations.

The Organisation provides a setting where governments compare policy experiences, seek answers to common problems, identify good practice and coordinate domestic and international policies. An increasing number of non-member economies participate in a wide range of activities, including some of those related to biotechnology.

² OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Chile, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission also takes part in the work of the OECD.

The Council of OECD is the highest decision-making body of the Organisation. Its members are the Ambassadors of the Member countries to OECD. It is chaired by OECD's Secretary-General. Once a year, it meets at the level of Ministers from member countries. The Council decides on the annual budget of Organisation as well as the content of the programme of work.

In addition to the Council, there are around 200 specialised Committees and other bodies (including Working Parties, Working Groups, and Task Forces), which undertake the Organisation's programme of work. The governments of the Member countries nominate the participants to all these groups.

The list below shows the main OECD bodies that have activities related to biotechnology:

OECD COUNCIL

Green Growth Strategy

Committee for Agriculture (COAG)

- Co-operative Research Programme
- Research Programme on Bioenergy (*Trade and Agriculture Directorate, in collaboration with the International Energy Agency*)
- Seed Certification Schemes (agriculture, forest)

Committee for Scientific and Technological Policy (CSTP)

- Working Party on Biotechnology
- Task Force on Industrial Biotechnology
- Task Force on Biomedicine and Health Innovation

Environment Policy Committee (EPOC)

- Working Group on Economic Aspects of Biodiversity, [*to become the Working Group on Biodiversity, Water and Ecosystems (WPBWE), effective as of January 2011*]

Chemicals Committee and Working Party on Chemicals, Pesticides and Biotechnology (Joint Meeting)

- Working Group for the Harmonisation of Regulatory Oversight in Biotechnology
- Task Force for the Safety of Novel Foods and Feeds