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International Association for Ecology

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Greetings from INTECOL President



This past year was an eventful one for INTECOL in many ways. More interesting expectations for 2011 are anticipated as our members continue to develop new ways to communicate and to build the effectiveness of INTECOL. We soon will begin the “Year of the Rabbit”, so we can anticipate much good luck with these plans!

In this past “Year of the Tiger” we moved ahead with our strategic planning. We initially focused on plans for INTECOL 2013 - “Ecology: Into the Next 100 Years” to be held in the EXCEL Center in London, United Kingdom. This INTECOL Congress will celebrate the BES centenary and will be an excellent opportunity for all of us to meet new colleagues. The theme of the Congress is “Advancing Ecology and Making it Count.” With leadership by Alastair Fitter, INTECOL Vice President, we met in York, UK, in early September to begin organizing the Congress program. Alastair chairs the International Science Committee and is in the process of identifying 10 plenary speakers and themes. If you have suggestions, please let us know. The call for symposia will open in March 2011. To keep up with the developments, please continue to browse the website: www.britishecologicalsociety.org/meetings/current_future_meetings/2013_intecol_congress/index.php.



In 2010, we also participated in regional meetings such as the Fourth East Asian Federation of Ecological Societies (EAFES) International Congress in Sangju, Korea. This Congress provided an opportunity for many INTECOL members to meet and discuss future needs. This meeting in Korea was coordinated with the Eighth International Long Term Ecological Research East Asia-Pacific Regional Conference. These opportunities provided new ways for us to connect with other international groups. We expect these collaborations will continue to expand in the years ahead. Let us know if you have suggestions for co-sponsoring activities with other international ecological organizations.

We will have many opportunities to exchange ideas and to further develop our perspectives on ecology in 2011 through many new activities. For example, we look forward to the 8th World Congress of the International Association of Landscape Ecology to be held in Beijing, China, during August 18-23, 2011 (www.iale2011.org). The 6th World Congress on Allelopathy will be held in Guangzhou, China, during December 15-19, 2011. For more details, see page 7 of this edition of the e-bulletin.

INTECOL will co-sponsor the Ninth International Wetlands Conference to be held during June 3-8, 2012 in Orlando, Florida, USA. The deadline for session proposals is April 1, 2011 for the Wetlands Conference to be held with the Society of Wetland Scientists. Please see the new website for deadlines and details: www.conference.ifas.ufl.edu/intecol/. We are also co-sponsors of the Fourth EcoSummit to be held during September 30 - October 5, 2012 in Columbus, Ohio, USA, and hosted by The Ohio State University. The last EcoSummit in Beijing during 2007 was attended by approximately 1,500 ecologists. The theme for the 2012 EcoSummit is "Ecological Sustainability: Restoring the Planet's Ecosystem Services." An array of field trips in different locations within North

America is planned for participants prior to the meeting in Columbus. See the two new web sites to follow these developments: www.ecosummit2012.org and <http://swamp.osu.edu/EcoSummit2012>.

A group of young professional ecologists is beginning to organize a network among student members of various national ecological societies and those in INTECOL. This effort follows up on the workshop held in Brisbane for graduate students and post-docs who attended our last Congress in Australia. We look forward to helping to expand and to diversify this network in the next few months by increasing our virtual connections through email, other links and emerging social media. More and more of our communication will be taking full advantage of our current technology to provide cost-effective exchanges while having low environmental impacts. One new means of communication among INTECOL members is to review books that are being written by our members and others. If you are interested in reviewing a book, please contact our e-Bulletin Editor, Sun-Kee Hong.

I look forward to working with you as we continue to grow in membership and to develop more close connections. Let us make this next year another one to remember. We need to continue to inform our policy makers and the general public about the essential values of ecological goods and services. We have had only mixed successes in terms of recent discussions about climate change and loss of biodiversity. To make a difference, each of us needs to communicate our views and to collaborate among colleagues in our local, national and international organizations. INTECOL will continue to help make these connections in many ways. Good luck in the Year of the Rabbit!

Alan P. Covich
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A Happy New Year



Global Forum

Legume Future for Productive and Environmentally Friendly Farming

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Leguminous plants (of the family Fabaceae), are characterized by their ability to form a symbiotic association with bacteria collectively termed 'rhizobia'. Rhizobia fix inert atmospheric nitrogen (N_2), into biologically useful forms: a process termed 'Biological Nitrogen Fixation' (BNF). The bacteria commonly infect legume roots and induce the formation of root-nodules, a niche specialized to allow the rhizobia to fix nitrogen. In exchange for the provision of residency, and energy supplied as plant-photosynthate, the plant uses the fixed nitrogen. This symbiotic association is the greatest contributor of reactive nitrogen essential for all living systems.



The ability to fix nitrogen has allowed leguminous plants to be characterized as important pioneer plants of low-nutrient and often arid environments. Many legumes are also highly water-use efficient. Such plant life-history traits are especially attractive for crops that should occupy agriculture systems today, as human activities within such systems are aimed towards being more nutrient, energy and water use efficient. This is largely a response to the impact of climate change plus fuel and food insecurity.

Legumes are used as food, their seeds are consumed and their leaf material may be used as a forage or green manure to fertilize soil. In addition, legumes represent a real alternative to the application of man-made nitrogenous fertilizer. The use of which has increased from 2 million tons (Tg)/year in 1950, to nearly 11 Tg in 2007, with further predicted increases of 3% by 2019 (European Fertilizer Manufacturers Association, 2007). In addition, only a fraction of the nitrogen in applied fertilizer becomes bound in agricultural products. The example of a relatively efficient production system such as pig meat show a 17% efficiency in terms of nitrogen in the final product (Galloway et al. 2010). In terms of the nitrogen fertilizer recovered, this will be lower still and perhaps as reduced to 5%. Nitrogen losses are therefore very large, and this includes very significant contributions in GHG (greenhouse gas) emissions. Improving estimates of nitrous oxide (N_2O) losses in particular, and with respect to whole cropping systems, will inform the IPCC (Intergovernmental Panel on Climate Change) and greenhouse gas inventories.

Legumes grown and exploited locally can help mitigate the current nitrogen and energy use inefficiencies in current agricultural production. Despite their potential advantages legume cropping has declined throughout the European Union (from 11.3 million ha (1961) to about 3.4 million ha (2005)). However, European agriculture relies heavily on legumes, especially soybeans grown elsewhere and imported for animal feed.



There is a decline in legume crop production within the European Union, and this is a function of several factors, and not least among these is that legumes often struggle to be economically competitive with other land-use forms. The decline and low uptake of legume-based cropping in Europe is also a function of the long-term trend in specialization and simplification of cropping systems. This has contributed to declines in biodiversity for ecologically important wild species such as pollinators and natural pest predators on farmland. The relatively low uptake of legume based cropping within Europe is also due to a very complex set of cultural and socio-economic factors. Current knowledge is therefore insufficient for many parts of Europe, and reliable recommendations regarding increased legume use cannot yet be made with confidence. However, farming systems which include legumes can provide benefits across all of the important attributes for stable production ecosystems, though the full extent of these benefits remains unrealized due to a lack of system-level studies which quantify those benefits (and risks), of legume cropping. Increased economic competitiveness and environmental benefits can only be achieved with a fundamental understanding of the systems elements, especially the local environment.

The Legume Futures consortium was formed to assess the effects of greater legume use within European cropping systems. In doing so, the research will serve efforts to optimize the exploitation of legumes in Europe.

The research project is funded under the Europe Unions Framework Programme 7 and started in March 2010. Legume Futures will run for four years. Central to it is the generation of novel legume based cropping-systems/crop-rotations. These will be assessed for their potential environmental and economic effects.

The Legume Futures consortium presents a novel approach for several reasons. Firstly, it collates quantitative and qualitative data of crop rotation systems (with and without legumes) using local professional knowledge and experience which is valuable but largely unexploited scientifically. Secondly, it is an unusually large European-wide network of 18 research partner institutions and experimental facilities. Thirdly, Legume Futures combines data from controlled field trials with qualitative 'farming rules', via the integration of various mathematical modelling approaches. This allows the scientists to provide and test novel legume based systems within relatively short time-frames and with less expenditure than could be achieved from field trials alone. In addition, the mathematical modelling has the capability to assess the suggested legume based systems for the utility across scales (from the local, to the regional and Europe-wide), and utility across three key indicators: 1) economic, as market forces as major drivers will also be considered; 2) bio-physical environment, and; 3) social. The approach is also novel by effectively combining and delivering a 'systems level' perspective from a unique multidisciplinary team of scientists whose specialists span agricultural ecology, socio-economic and governmental policy.



*Legume Futures is funded
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Research Programme*



Reference

Galloway, J, F Dentener, M Burke, E Dumont, L Bouwman, R Kohn, H Mooney, S Seitzinger and C Kroeze. 2010. The impact of animal production systems on the nitrogen cycle. In *Livestock in a Changing Landscape, Integrated Analysis and Global Consultation*. Vol. 1. Drivers, Consequences, and Responses. H Steinfeld, H Mooney, F Schneider, L Neville (Eds.). Island Press, Washington DC, USA.



An Activity of INTECOL Board Member

The 1st International Symposium on Tropical Horticulture November 22-26, 2010, Kingston, Jamaica

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At the end of November 2010, the 1st International Symposium on Tropical Horticulture has been taken place in Kingston, Jamaica. It was convened by Professor Nouredine Benkeblia, with the support of the University of the West Indies at Mona, Jamaica, and under the aegis of the International Society for Horticultural Sciences (ISHS, www.ishs.org) and an International Scientific Committee (<http://ocs.mona.uwi.edu/ocs/index.php/th/th1>). The philosophy of this symposium, as already given by the Convener and the ISHS, was "...to promote and encourage research and education in all branches of horticultural (here tropical) science and to facilitate cooperation and knowledge transfer on a global scale through its symposia and congresses, publications and scientific structure".

With respect to this statement, the overall symposium was presented in 5 sessions on following topics;

1. Botanical, Anatomy, Nomenclature and Physiology of Tropical Crops;
2. Growing, Irrigation, and Pest Management of Tropical Crops;
3. Postharvest Physiology, Biochemistry, and Technology of Tropical Crops;
4. Biotechnology and Processing of Tropical Crops;

5. Miscellaneous Topics on Tropical Horticulture Crops.

The symposium was enriched by a posters session, a tour to the Blue Mountains (coffee production) and other social activities. The outcome of this highly stimulating symposium was an international network of international scientists distributed over the globe. For this, the second symposium has been planned in two years at Thailand at the Naresuan University in Phitsanulok and will be by Dr. Peerasak Chaiprasart (peerasake@gmail.com).

Special reference has been focussed on an international education of students in special courses on Tropical Horticulture. One example can be the undergraduate teaching course of The University of the West Indies at Mona, Jamaica (www.mona.uwi.edu). The aims are to promote and contribute to the health and well being of individuals and communities within the Caribbean through the increased profitable production of high quality fresh and processed/preserved foods including fruits, vegetables and other crops. A further objective is to facilitate the creation of functional, aesthetically pleasing and sustainable designed landscapes which can provide psychological, social, economic and educational benefits thereby promoting an important contribution to



development at the individual, community, corporate and national levels. Similar student courses to reaching the Master of Science in International Horticulture will be already successfully given in nontropical regions, as e.g. at the Leibniz University of Hannover, taught completely in English (www.hort.uni-hannover.de)

For reaching above mentioned goals in research and education, a strong interdisciplinary cooperation in between universities, industry and public institutions is of highest importance. This goal was e.g. given as a “special” talk by Mr. Derrick Reckord of Grace Kennedy, Ltd, Jamaica, on “Industry - Academia Collaboration - A Test Case for Coconut Water”.

During the symposium, it was clearly stated that an international, interdisciplinary and intercultural networking and cooperation of agricultural issues can only be reached when information and communication with the public and politics will be strongly promoted by the media in the future. This essential form of “propaganda” has been done in a perfect form during the symposium e.g. by radio power 106. For sure the organizers of the symposium are fully convinced and thankful that deep sponsoring of Grace Kennedy Ltd, and GlobalHort was of highest benefit for all national and international participants during the meeting and for their further research.

The symposium can be ranked as a full benefit for

all participants from 12 nations (from North and South America, Australia, Europe and Asia) coming to Kingston Jamaica. All of them are coming back, for sure, because they have realized, that Jamaica is not “only” the country in which reggae, fastest sprinters in sport, the Miss Universe 2010 and one of the best coffees of the world is originating from, but in addition, highest motivated researcher and students. Elected papers of the overall symposium will be published soon in *Acta Horticulturae* (<http://www.actahort.org/>).



Jamaica, Nov. 2010, Blue Mountains, coffee excursion



Meetings & Congresses

1. The 8th IALE World Congress

August 18-23, 2011, Beijing, China

"Landscape Ecology for Sustainable Environment and Culture"

The organizers of the 8th IALE World Congress are pleased to announce that the Chinese Academy of Sciences (CAS), National Natural Science Foundation of China (NSFC), China Association for Science and Technology (CAST), and International Association for Landscape Ecology (IALE), are sponsors for the 2011 IALE World Congress. The theme of the world congress is *landscape ecology for sustainable environment and culture*. The goal of the congress is to highlight the frontiers of the science of landscape

ecology and promote communication and understanding between different cultures. The meeting will bring participants from all over the world to discuss landscape change due to intensified influences of nature and human society. It will include discussion on landscape resilience and adaptive capacity, application of landscape ecology in understanding cultural landscapes, biodiversity responses to climate change, landscape economics, adaptive management, etc.

Website: <http://www.iale2011.org/>

2. The 6th World Congress on Allelopathy

December 15-19, 2011, Guangzhou, China

The 6th World Congress on Allelopathy (WCA) will be held in Guangzhou, China, during December 15-19, 2011. The World Congress of Allelopathy is a formal academic conference organized by the International Allelopathy Society (IAS) every three years. Recent trends in sustainable development and advances in research methodology have helped to make allelopathy a rapidly growing research field throughout the world. The 6th WCA will provide an excellent opportunity for

exchange of ideas and methodologies between those who are interested in the science of allelopathy and its application in sustainable resource management. The city of Guangzhou is the southern gate of China with a subtropical climate. Because beautiful flowers can be grown year round in Guangzhou, it is called the "Flower City". You are warmly welcome to attend this congress in Guangzhou by the local organizing committee and the IAS Executives.

For more information please visit: <http://www.international-allelopathy-society.org/main/WCA/index.html>

The first circular is at: <http://www.international-allelopathy-society.org/main/WCA/WCA.pdf>

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3. EcoSummit 2012 - Ecological Sustainability: Restoring the Planet's Ecosystem Services

September 30 - October 5, 2012, Columbus, Ohio, USA

Ecosystems such as lakes, streams, rivers, and inland and coastal wetlands provide numerous services that fundamentally support human health and well-being. This international conference will explore innovative science-based strategies that are socially and culturally acceptable to create, manage, and restore these ecosystems, ensuring that society has access to all the ecosystem services that these systems provide. Our aim is to provide a high-profile platform for dialogue among researchers, planners and decision-makers to develop a better understanding of the complex nature of ecological systems and the means to protect and enhance their services.

Topics

- Ecosystem Creation and Restoration
- Ecological Engineering

Contact: Bill Mitsch (EcoSummit 2012 chair)

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Website: www.ecosummit2012.org/

- Sustainability and Resilience
- Ecotechniques - Rooftop Gardens and Rain Gardens
- Biological Invasions
- Biodiversity and Biological Conservation
- Climate Change
- Ecological Complexity
- Ecosystem Services
- Ecotoxicology
- Ecological Economics
- Ecological Health
- Environmental Policy
- Global Change
- Quantification and Sharing of Ecological Knowledge
- Solving Coastal Problems Caused by Upland Pollution Sources
- Watershed/River Catchment Management



INTECOL, International Association for Ecology

INTECOL is affiliated with the ICSU family of scientific organizations as the section responsible for general ecology within the International Union of Biological Sciences (IUBS). The association will assist and/or support the development of the science of ecology and the application of ecological principles to global problems, especially by assisting international cooperation; the collection, evaluation and distribution of information about ecology; national, regional and international actions which will serve ecological research, training of personal, coordination of general publications of ecological principles and the recognition of the importance of ecology for economy and society; the organization of conferences, meetings, symposia, programs and projects, conduct of speaking-series, publication of manuscripts, and measures which are deemed necessary to reach the goals of the association.

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