



*international society
for seed science*

NEWSLETTER

April 2010

<http://www.kew.org/iss>

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message from the PRESIDENT

It has been extremely remiss of me not to have made a feature of the conferment of Honorary Life Membership of the ISSS on Derek Bewley, on the basis that his positive input into the Society has, particularly during his Presidency, far exceeded what might ordinarily have been expected. Derek's attention to detail and the many actions he undertook, went far to give the present shape and substance to the Society. I am sure that the Membership of the ISSS endorses the action of the Executive, and joins us in congratulating and thanking Derek.

On the matter of membership, it is opportune to remind those who have let their renewals lapse recently, of the significance we place on the support of each and every individual Member. This is therefore an appeal to anyone whose membership has lapsed in the last couple of years – and to those whose subscriptions have only just run out – to act without delay in renewing. This is done by contacting our Treasurer, Ken Thompson, and making arrangements for the very modest payment of £20 (£10 for bona fide student members and £15 for retired members) as subscriptions for the current year. There is a special deal for institutional membership (details from Ken). There will also be rewards for paid-up membership in terms of a reduction in the registration fee for the forthcoming 10th ISSS Conference in Brasil next year.

Here's the information about means of payment from Ken:

"Most members pay by credit card. I need only the card number and expiry date.

Payment by bank transfer can be made to: The International Society for Seed Science, HSBC Bank plc, 63 High St., Lewes, East Sussex, BN7 1XQ, UK
Sort Code: 40-28-15

Account No: 21305506

SWIFT code: MIDLGB22

IBAN: GB69MIDL40281521305506

If paying by bank transfer, PLEASE make sure your bank pays ALL necessary charges.

Cheques (UK BANK ACCOUNTS ONLY PLEASE) payable in £ sterling to the International Society for Seed Science. Do not send cash by mail. People should contact me by mail or email only. NOT Fax - the fax number on ISSS brochures no longer works."

The 2010 AGM of the ISSS will be convened by President-Elect, Bill Finch-Savage, at the Seed Ecology meeting in Salt Lake City, Utah, USA in June. We will be posting the various reports on our website, so pre-preparing ISSS members attending the AGM, as well as giving those who will not be there, the means to have an input. On the matter of AGMs, it was illuminating that there was a zero response to last year's e-AGM. Does this mean that people attend an AGM simply because they are on site at a meeting – or that people were generally satisfied and did not have any issues?

On the matter of the ISSS Website, please see John Dickie's appeal to Members about the Website; a request for anyone who has the skills, the time, and the interest, to consider assisting him. The Secretary really does have an onerous spectrum of tasks, and website maintenance is high on this list.

There is information in this Newsletter about some forthcoming meetings of interest. Of particular interest, is our 10th Conference, in Brasil next year. This Newsletter includes a flyer compiled by the organiser, Renato de Castro, to tempt seed biologists to the event. To all those interested in matters dry and wet, we will be hosting the next 'Desiccation Workshop' in South Africa in January 2012, and not 2011 as was originally planned. This is to avoid holding two meetings (one being the ISSS Conference in Brasil) only months apart and in the same year, in the southern Hemisphere. There will be news about this meeting as soon as we have settled on a wild area (nature reserve) affording novelty in both plant and animal life.

I must conclude the serious business of my report on a sad note, in mourning the passing of A.C. (Carl) Leopold,

a remarkable plant physiologist and seed biologist.

On a light note, for those who read the story of the prolifically flowering *Calodendrum capense* which bears no fruit, the 'student with a paint-brush' did have success – but most of his hand-pollinated flowers were torn off by a ferocious wind. Nevertheless, here is proof of the potential of the paint-brush technique for pollination, as presented by final-year B.Sc. student, Thembela Mshengu.

Pat Berjak



Thembela Mshengu with the *Calodendrum capense* fruit

Growing up (scientifically) with A. Carl LEOPOLD

My first encounters with Carl Leopold were defining ones. He was a wonderful speaker with a rich baritone voice and infectious enthusiasm, and he wove a story about seeds and their extreme tolerance to stress that led to the only possible conclusion: I needed to study with this man. He was a little less enthusiastic about me, but he liked that I noticed how he had constructed his seminar into a perfect loop and that I was devoted to the study of seeds too. And so, as a test, he offered me the challenge of getting decent data from a Gilson Respirometer that he inherited when he moved with Boyce Thompson Institute to Ithaca, NY in the late 1970s. All biology majors should be forced to work with this contraption: not to measure their grit, but to build appreciation that the Great Questions were asked by earlier generations of scientists. We, in the younger set, should be awed by the scientific knowledge gained using such crude and impossible measuring devices. Carl was pleased when I brought him this perspective – along with a graph of oxygen uptake in maize seeds at different water contents. We began to discuss his recent publication about how the exercise of science, the quest for learning something you didn't know you didn't know, was an act of creativity (Leopold, 1978).

Carl's lab group met for journal club on Friday mornings. Carl would always joke as he slid a dusty old box filled with reprints to the middle of his office floor so that we had a table to, literally, put our heads together and examine something recently published (years later he replaced that old box with a brand new table with wheels, and journal club somehow lost that aura of community and progress in the face of adversity). You knew when Carl was not pleased

with your presentation when he would politely ask a single question. He hated it when we trashed the methods of a paper; he thought that was lazy and showed a lack of curiosity. On the other hand, if we could demonstrate how a twist of the question or experiment could bring new insight, we were rewarded with a gratifying exclamation of 'shazaam!' During my time in Carl's lab, journal club topics almost always had relevance to seeds and ranged from calmodulin-mediated response, gravitropism, and membrane changes with desiccation and hydration. David Priestley was writing his book on seed aging (Priestley, 1986), and Carl and I both became hooked on the question of how life persists (and ends) when there is no water. David's book with an inscription from Carl was my gift when I got my PhD. The other book I received from Carl as a graduating student was 'Advice to a Young Scientist' (Medawar, 1979), essential reading for anyone with aspirations for a career in the critical climate of peer review. Ithaca has interminable winters and Carl always got a little cranky by March. Lynn, his wife, arranged trips to sunnier locales and brought Carl back for the Ithaca spring – which is always gorgeous. Carl occasionally hosted a nature walk where he would describe the natural history of the place. At these times, there was a clear and profound connection between Carl, his dad Aldo Leopold, and The Land Ethic. After I left Ithaca, Carl and I began discussing our mutual efforts in conservation – he in reforesting his farm in Costa Rica, often using species that produce recalcitrant seeds; and me collecting and preserving seeds and working to bank wild relatives of agricultural species and US's native flora. I told him once that I was working to 'save pieces [sic]' (Leopold, 1949), and he was pleased with the tribute. The notion of science leading the way to conservation and political movement was always a pretext with Carl (Leopold, 2004).

Carl designed and constructed an amazing house in a 'wood lot' on an Ithaca slope. The house was built of logs harvested from trees that Carl and his dad planted in Wisconsin many years earlier. Outside the kitchen window of Carl's house, you could see the birds darting in and out and there was a nearby waterfall adding a trickling sound to the magic. I house-sat for Carl a couple of times (once while writing my thesis), and after one of these adventures I asked Carl to identify a bird that I had come to love. He kindly smiled and told me that he also liked chickadees. The best part of going to Carl's house was when he hosted a lab party in the evening. After the meal, Carl would move a dining chair into the middle of the room, pull out his guitar, and begin to play a study by Segovia or another classical piece while the rest of us listened spellbound. A true Renaissance man!

No longer a young scientist myself, I honor Carl by trying to pass on some of his lessons to the next generation of scientists that did not have the privilege of working with him directly: learning requires a curious and creative mind; established knowledge is sustaining and new knowledge is liberating; our Earth depends on our connection to it and our genius to protect it; seeds are nature's gift to scientific inquiry.

A. Carl Leopold, Ithaca, New York, USA (born Dec 18, 1919; died Nov 18, 2009)

Citations

- Leopold, A.C. 1978. The act of creation: Creative processes in science. *BioScience* 28: 436-440.
- Priestley, D.A. 1986. Seed aging: Implications for seed storage and persistence in the soil. Comstock publishing Associates, Cornell University Press, Ithaca, NY.
- Medawar, P.B. 1979. Advice to a young scientist. BasicBooks, HarperCollinsPublishers.
- Leopold, A.C. 2004. Living with the Land Ethic. *BioScience* 54: 149-154.
- Leopold, A. 1949. A Sand County Almanac. Oxford University Press, New York

Christina Walters

upcoming MEETINGS

2010. June 16-18. ISTA Seed Symposium 2010. Application and improvement of established and advanced technologies in seed testing. Cologne, Germany.

The programme for the 29th ISTA Seed Symposium has now been finalised. There is a wide range of topics within each of the five oral sessions, many of which will be of interest to seed scientists.

Topics in Session 1, "Technologies for improved seed supply", range from the use of spectral imaging to detect seed-borne infection to a report from a Darwin Initiative project on the supply of orchid seed for horticulture and conservation, while papers in Session 2, "Aspects of purity: genetic, technical and physical", are divided equally between image analysis systems and DNA-based methods for detecting aspects of seed purity. Session 3, Basic approaches to physiological processes in seeds, is held in collaboration with ISSS and chaired by Gerhard Leubner. Papers on both seed storage and germination are featured and cover the physiological and genetic bases of seed response to storage, as well as the use of water activity measurements in routine storage conditions. More practical aspects of germination are found in Session 4, Approaches to the evaluation and improvement of germination, and include the use of climate data to predict germination conditions and papers that investigate the potential for more rapid evaluation of germination ability using radicle emergence and seed leakage. Session 5, Assessment and improvement of seed performance in practice, is divided equally into the two topics of assessment and improvement. The use of computer vision, Q2 technology and ethanol assays are evaluated as methods to predict seed vigour, while the role of metabolic repair during hydration treatments and the effect of priming on water sorption properties and their effect on seed storage potential are investigated.

Full details of these and other papers on the programme can be found on the ISTA website (www.seedtest.org), where you can also register online for the Seed Symposium.

For more details www.seedtest.org

2010. 20-24. ISSS Seed Ecology III: Seeds and Change. Salt Lake City, Utah, USA.

Website: <http://www.seedecology3.org/>

2010. July 18-21. 3rd ISSS Workshop on the Molecular Aspects of Seed Dormancy and Germination

Most of you will be aware that the 3rd ISSS-sponsored workshop on the Molecular Aspects of Seed Dormancy and Germination will take place from 18th to 21st July 2010, in York, UK. This workshop follows the very successful first and second workshops held in Wageningen in 2003 and Salamanca in 2007, and will keep to a similar format, with an emphasis on maximising the number of oral contributions from participants. We have arranged an exciting mix of invited speakers, including Giltso Choi, Bill Finch-Savage, Steve Penfield, Mike Holdsworth, Eiji Nambara, Wim Soppe, Frank Gubler, Isabel Diaz, Ian Graham, and Camille Steber. The Workshop will cover molecular, genetic, and related physiology of dormancy and germination in model species, important crops, arable weeds, and wild plants.

The programme all takes place within the historic city walls of the UK's best-preserved medieval city, with the Workshop based in the updated Hospitium, believed to be the former hospitality suite for the 9th century Benedictine monastery. The Hospitium is sited within the York Museum Gardens, a unique 19th century botanical garden of 10 acres in size set out around the ruins of a Roman fort, a 9th century Benedictine monastery, the renowned Yorkshire Museum, and more. Between sessions, delegates will be free to wander the peaceful gardens and visit some of the ruins on site. Within two minutes' walk is the vibrant historic centre of York, including York Minster, the largest Gothic Cathedral in Northern Europe, and numerous other unique attractions.

The meeting will take the format of a welcome reception in York Art Gallery on the evening of Sunday July 21st, followed by 2.5 days of oral sessions, ending at lunchtime on Wednesday 21st. We have reserved at least 20 slots for talks from submitted abstracts, so we hope that most people that wish to speak will get a chance. Early on Monday evening there will be a poster session, followed by free time to explore the city, and on Tuesday evening we will host a conference dinner in the Great Hall of the 650 year-old Merchant Adventurer's Hall.

A detailed programme, instructions on registration and abstract submission as well as further information can be found on the Workshop web pages, at the address below:

<http://www.york.ac.uk/org/cnap/ISSS/ISSSseedormancy.html>

Informal enquiries are welcome and should be directed to Steven Penfield (sdp5@york.ac.uk) or Judith Mitchell (jm33@york.ac.uk).

We look forward to seeing you all in York in the summer.

Steven Penfield, Ian Graham and Judith Mitchell (Conference organisers)

2010. August 22-27. 28th International Horticulture Congress. Lisbon, Portugal.

The International Horticulture Society and the ISSS are cosponsoring a seminar entitled: "Molecular Profiling of Microbial Communities Associated with Seeds" (http://www.ihc2010.org/seminars.asp?page=sm12_seed_microbiology) that is part of the 28th International Horticulture Congress (IHC).

10th Conference of the International Society for Seed Science - ISSS

“Seed Science in the 21st Century”

Salvador - Costa do Sauípe, Bahia - Brazil April 10 - 15, 2011

Costa do Sauípe Grande Hotel

The Federal University of Bahia is hosting the 10th Conference of the International Society for Seed Science - ISSS, at Costa do Sauípe Grande Hotel - Bahia, from April 10 to 15, 2011.

The 6-day programme will consist of major topics in seed science to showcase the current and future status of the increasing importance of seeds not only for propagation but also for food/feed, bioproducts/biofuels and biodiversity, under the theme of the meeting: “Seed Science in the 21st Century”.

A special session co-promoted by the International Seed Testing Association (ISTA) will focus on technological applications of seed science. Topics on seed education and seed industry will be part of workshops. A trade exhibition will feature organizations and products related to seed science and future perspectives.

Besides, delegates will have the opportunity to enjoy one of the most beautiful natural landscapes of the Brazilian Northeast region, famous for its natural beauty, friendly hospitality and for its cultural, religious and racial diversity.

Brazil is going through an emergent condition of significant economic and social development like other areas of the world where agricultural potential is crucial to meet global demands for food and bioproducts, but which also increases pressure on biodiversity. For all these reasons, we consider Bahia and Brazil the ideal venue for the 10th ISSS Conference and invite you to take part in this special event.

Welcome to Costa do Sauípe!

GENERAL INFORMATION

1- Deadlines

- * For receipt of abstracts: 8 December, 2010
- * Registration start: 1 May, 2010
- * Deadline EARLY Registration: 05 October, 2010
- * Deadline Registration: 1 April, 2011

2- The website for the event will be available shortly
Contact: +55 43 3025-5223
seedsience2011@fbeventos.com

Promotion

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Logistic Support



Invited presentations: "Seed-borne endophytes: diverse communities with possible roles in germination or defense" by E. Martinez-Romero et al.; "The development of the spinach phylloepiphytic bacterial community from seed through mature leaf stages" by M. Ponder et al.; "Bacterial endophytes of flowers, fruits and seeds of grapevine: identification, localization, functions, differences with other plant parts and prospects for utilization" by S. Compant et al.

Volunteered presentations on various aspects of seed biology relating to the production of horticultural crops will also be presented as posters or oral sessions during the Congress.

Convener: Greg Welbaum, Virginia Tech, Blacksburg, Virginia, USA. (welbaum@vt.edu). Deadline for registration at reduced fee: 30th April. Email: info@ihc2010.org, Website: www.ihc2010.org

2010. October 25-29. 12th International Symposium on Pre-Harvest Sprouting on Cereals. Red Deer, Alberta, Canada.

For further information / to express interest in attending, please contact Joseph Nyachiro: joseph.nyachiro@gov.ab.ca

news from around the WORLD

China and Japan

There were ~100 participants at the 2009 National Conference for Seed Science and Technology in China held on December 13–17 at Huaihua College, Hunan. The conference highlighted the recent advances in seed science and technology and the hot issues in seed production. The conference topics included: seed development (maturation) and seed production, seed dormancy and germination, seed longevity and germplasm preservation, seed stress tolerance, seed ecology, and seed biotechnology.

The conference was sponsored by the Botanical Society of China, and was co-sponsored by Huaihua College. The organizing committee was composed of Pro-

fessor Songquan Song, Professor Xianjin Wu, Professor Chaowen She, Mr Xin Hu, Mrs Annan He, and Mr Junying Zeng.

Songquan Song

Eastern Europe and Russia

The Sixth International Scientific Conference, "Regulation of plant growth, development, and productivity" was held on 28-30 October 2009 in Minsk, Belarus.

The conference was organised by the V.F. Kuprevich Institute of Experimental Botany from the National Academy of Sciences of Belarus. The conference included the main sessions: 1) the growth and morphogenesis of plants, phytocenosis productivity; 2) the physiology of photosynthesis, mineral nutrition, and water relationships in plants; 3) the mechanisms of seed germination and physiological basis of seed treatment. The goal of the conference was to bring together scientists from Eastern countries and share ideas on plant physiology ranging from agronomic systems to model plants. About 70 people from Belarus, Russia, Ukraine, Lithuania, Estonia, Latvia, Moldova, and Tajikistan took part in the Conference. The next Conference will be in 2011.

Galina Alekseichuk



Natalia Obrucheva at the Sixth International Scientific Conference in Minsk, Belarus.



Participants at the 2009 National Conference for Seed Science and Technology at Huaihua College, China.

North America

UC Davis Plant Breeding Academysm Class III – September, 2010. UC Davis is currently accepting applications for the Plant Breeding Academy III (PBA) scheduled to begin in September at UC Davis. The program is aimed toward assistant breeders, seed production personnel, line breeders and trait integration personnel, etc. that lack the academic background needed to advance as breeders. The program, which is not crop specific, teaches the basics of plant breeding, genetics, and statistics through lectures, discussion, and



field trips to public and private breeding programs. This certificate course has less breadth, but more depth than a Masters degree in Plant Breeding. Employers appreciate the opportunity to provide their valued employees advanced training without disrupting their full-time employment. Participants attend six 6-day sessions over 22 months. The instructors are internationally recognized experts in plant breeding and seed technology. Class size is limited to 20 to ensure good interaction, with over half of the positions already filled. For more information or to apply, go to pba.ucdavis.edu or contact Joy Patterson at jpatterson@ucdavis.edu.



Plant Breeding Academysm Class II participants.



Plant Breeding Academysm participants on a field visit.



AoB PLANTS

Open Access Journal for all Plant Biologists

AoB PLANTS – a new open access journal for plant biologists

Authors are turning in increasing numbers to open access journals to publish their work. The attractions of doing so are several. They include greater control over copyright, the flexibility of the latest publishing technologies and, above all, having papers made available without charge worldwide and thus freely available to anyone who wishes to read them as soon as they are published. The newly launched journal AoB PLANTS offers these and other attractive features. It covers all aspects of plant biology, is owned and managed by plant scientists on a not-for-profit basis and is published by Oxford University Press. AoB PLANTS publishes 'Research Articles', 'Points of View', 'Reviews', 'Mini-reviews' and 'Technical Articles'. Manuscripts are evaluated against published minimum criteria for acceptability using a double-blind refereeing system. Papers will appear online within 3-5 days of acceptance and benefit from an attractive, spacious final formatting. For an introductory period, there will be NO CHARGE to publish in AoB PLANTS. This creates the ideal opportunity for authors to try the new journal and enjoy the benefits of open access publishing at no cost. The not for profit status of 'AoB PLANTS' also enables the journal to give financial support to conferences and sessions where this could lead to the publication of high quality papers. For further information contact Mike Jackson, Chief Editor AoB PLANTS, E-mail: mike.jackson@bristol.ac.uk or visit the web site <http://aobpla.oxfordjournals.org/>.

ISSS website refresh: appeal to MEMBERS

For a while the Executive Committee have been aware of the ever more pressing need to upgrade the Society's webpages, currently hosted by the Royal Botanic Gardens, Kew. As well as exploring the possibilities of professional help with design and management, we would like to hear members' views on the current web pages - what's good, what's less good - and what they would like to see in the future; concentrating on what it should do (functionality), rather than just looking pretty. We would also like to hear from any members who have website design skills, and who feel they could contribute to, or take on the task. Please contact the Secretary: John Dickie j.dickie@kew.org

SEED SCIENCE RESEARCH

The official journal of the International Society
for Seed Science (ISSS)

<http://journals.cambridge.org/ssr>



Seed Science Research is **the** leading international journal in the field, with the research emphasis on the physiology, biochemistry, molecular biology and ecology of seeds. Published quarterly, the journal provides a forum for the publication of high-quality original research papers and review articles on the fundamental aspects of seed science.

Latest Journal Developments:

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- broadened scope
- new journal cover
- new journal design
- online manuscript submission:
www.editorialmanager.com/ssr

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- Nuclear DNA replication and seed quality, *E. Sliwinska*
- *Brassica rapa* L. seed development in hypergravity, *Musgrave et al.*
- DNA preservation and utility of a historic seed collection, *Leino et al.*
- Protein and gene expression patterns of endo- β -mannanase following germination of rice, *Ren et al.*
- Expression and activity of a Kip-related protein, Zeama;KRP1, during maize germination, *Jesús Juárez et al.*
- Sensitivity cycling and its ecological role in seeds with physical dormancy, *Gehan Jayasuriya et al.*

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