International Society for Seed Science (ISSS)
Seed Longevity Workshop
Wernigerode, Germany, July 5 – 8, 2015

Seeds for future generations –
Determinants of longevity

PROGRAM

Wernigerode 2015

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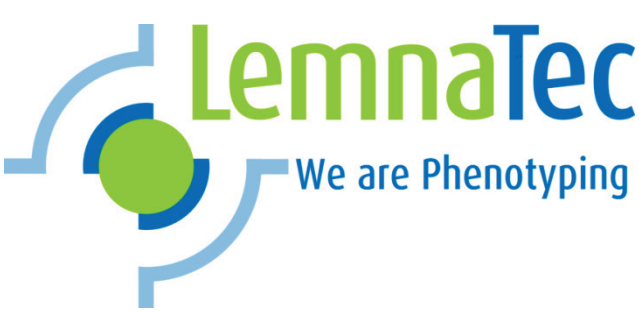
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IN MEMORIAM

Prof. Patricia Berjak (1939-2015)
Professor Emeritus at the University
of KwaZulu-Natal (South Africa)
Member of the Academy of Sciences of South Africa
President Elect (2005-2008) and
President (2008-2011) of the ISSS

Program

July 05, 2015

12:00-21:00	Registration
19:00-22:00	Welcome Reception

July 06, 2015

Session I : Seed banking – state of the art

Chairs: Françoise Corbineau, Andreas Börner

08:15	Andreas Börner, Françoise Corbineau	Opening Remarks
08:30	Christina T. Walters (invited speaker) (dedicated to Pat Berjak)	The modern seed bank: Promise, uncertainties and cross-cutting issues
09:15	Jae-Sung Lee	Inter- and intra-species differences in seed longevity: What can be discovered from the germination test data of the CGIAR genebanks?
09:30	Stan Matthews	Quick, convenient measures of seed germination for routine use in seed bank monitoring
09:45	Robert Redden	Seed longevity studies of pea, lentil and chickpea at the Australian Grains Genebank
10:00	Xinxiong Lu	Optimizing seed moisture content based on the risk of power outages at genebanks: A fifteen year study from China
10:15		Coffee Break / Poster Session

11:00	Ola Tveitereid Westengen (invited speaker)	The global back-up
11:45	William John Raupp	The wheat genetics resource center genebank and the rapid curation of germplasm collections using genotyping-by-sequencing
12:00	Bart Panis	Germination and storage behaviour of wild banana seed
12:15	Lydia K. Guja	Comparative longevity and persistence of Australian alpine seed
12:30		Group Photo
12:45		Lunch

Session II : Role of pre- and post-harvest environmental factors on seed longevity

Chairs: Hugh Pritchard, Bill Finch-Savage

14:00	Fiona Hay (invited speaker)	Why have we seen a decline in the storage potential of rice genebank accessions?
14:45	Kent J. Bradford	Relationships of seed sorption and desorption isotherms to seed longevity
15:00	Steven P.C. Groot	Oxygen is equally important in seed storage experiments as temperature and water activity
15:15	Louise Emma Colville	The influence of storage environment on volatile emission and viability loss during seed artificial ageing
15:30	Katherine Jane Whitehouse	Improved drying protocols to maximise the longevity of rice seed germplasm
15:45		Coffee Break / Poster Session
16:30	Andrea Mondoni (invited speaker)	The ecology of seed longevity

17:15	Lucile Daron	Impact of pre- and post-harvest conditions on leek seed quality
17:30	Hector Eduardo Pérez	Desiccation and cryo-freezing tolerance in seeds of two geographically distant *Uniola paniculata* (Poaceae) populations
17:45	Sttela D. V. F. Rosa	Studies on sensitivity to desiccation of different parts of *Coffea arabica* L. seeds
18:30		Guided Tour Wernigerode
20:00		Dinner

July 07, 2015

Session III - Genetics of inter- and intra-specific variation of seed survival

Chairs: Olivier Leprince, Wim Soppe

08:30	Leónie Bentsink (invited speaker)	What do we know about of the role of natural variation in the control of seed longevity?
09:15	Froukje Marije Postma	Seed bank dynamics is affected by genetic and both pre-and post-harvest environmental factors in *Arabidopsis thaliana*
09:30	Mai Abdel-Moez Allam	Genetic studies in oilseed rape (*Brassica napus*) revealed QTL for seed longevity related to seed weight, oil content and nutrition accumulation in seeds
09:45	Mian Abdur Rehman Arif	Genetic architecture of seed longevity in wheat and its relationship with seed dormancy and pre-harvest sprouting
10:00		Coffee Break / Poster Session
10:45	Julia Buitink (invited speaker)	From seed longevity to passive defense against pathogens: Co-evolution of two traits to remain alive in the dry state ?

11:30	Julia Zinsmeister	*ABI5* is a major regulator of late maturation in legume seeds, linking longevity, oligosaccharide accumulation and chloroplast dedifferentiation
11:45	Buzi Raviv	The seed coat as a reservoir of growth promoting substances
12:30	Excursion to Companies Alternative Options: 1. MAWEA Aschersleben 2. Agrargenossenschaft Calbe 3. Gartenland Aschersleben 4. Strube Schlanstedt	
17:00	Barbecue IPK Gatersleben (including visits of the genebank, greenhouses, experimental fields, automatic phenotyping)	
22:00/23:00	Transfer to Wernigerode	

July 08, 2015

Session IV - Physiology and biochemistry behind seed ageing – deleterious effects vs. repair mechanisms

Chairs: Henk Hilhorst, Kent J. Bradford

08:30	Wanda Waterworth (invited speaker)	Seed longevity and the importance of safeguarding genome integrity
09:15	Françoise Corbineau	Changes in embryo soluble carbohydrates and antioxydant system during ageing of wheat (*Triticum aestivum L.*) grains
09:30	Marc Galland	Genome-wide identification of rice seed vigor and longevity determinants through combined “omics”

09:45	Annette Büttner-Mainik	Quantitative transcriptome, hormone and redox analyses reveal sugar beet seed deterioration mechanisms and their enhancement after priming
10:00	David Riewe	Metabolic marker of seed viability in long-term stored wheat (*Triticum aestivum*)
10:15	Coffee Break / Poster Session	
11:00	Ilse Kranner (invited speaker)	Biochemical mechanisms that contribute to seed ageing in the Garden pea, *Pisum sativum*
11:45	Sara Mira	Characterization of volatile production during seed storage
12:00	Manuela Nagel	Does controlled deterioration of seeds mimic long-term storage in wheat and barley?
12:15	Gerhard Leubner-Metzger	Tissue-specific hormone metabolism as quality marker for seed technology and storage
12:30	Natanael Vinegra de la Torre	Identification of seed quality markers by activity profiling of proteases
12:45	Marcin Michalak	DNA methylation changes in seeds
13:00	Françoise Corbineau, Andreas Börner	Closing Remarks

List of Posters

Session I — Seed banking – state of the art

P 01	A M Artemyeva, L Y Novikova	10 rounds of cabbage accessions reproduction in VIR genebank: Stability of authenticity?
P 02	A Baliuckienė, A Blažytė, R Baltrėnas, A Bivilienė, S Dapkūnienė, B Gelvonauskis, B Markevičienė, L Šveistytė	Long term seed conservation of plant genetic resources in Lithuania
P 03	E Chaideftou	The investigation of a persistent soil seed bank in submediterranean oak forests of Greece under different grazing regimes
P 04	P Chmielarz, B Bujarska-Borkowska, M Michalak, B P Plitta, J Suszka, T Tylkowski	Sensitivity of short-lived seeds to desiccation and storage conditions
P 05	D E Costich, M Rivas, P Gonzalez, A Segundo , J Burgueño	Exploring seed longevity in different kernel types in the CIMMYT maize germplasm collection
P 06	A Didier, M Deloche, F Exbrayat, C Haller, L Bardy, F Balfourier	Certification process of small grain cereals BRC in France
P 07	A Diederichsen, L Jones-Flory	Monitoring oilseeds, legumes and cereals in seed storage at Plant Gene Resources of Canada
P 08	A W Ebert , Y-K Huang	Are *Momordica charantia* (bitter gourd) seeds truly orthodox?
P 09	M A de Figueiredo, S D V F da Rosa, A da C S Clemente, L F S Coelho, S V B Coelho, A L Vilela	Cooling methodologies of coffee seeds for storage in liquid nitrogen
P 10	A Gailite, A Gaile, D Rungis	Long-term storage of plant genetic resources in the Latvian genebank
P 11	M T Matheus (in memorian), D M T Oliveira, Q S Garcia	*In situ* and *ex situ* seed longevity of two endangered Brazilian cerrado species (*Dimorphandra*, Leguminosae)
P 12	E Gasparin, R A de Melo, J M R Faria, A C José1, O A O Tonetti, H W M Hilhorst	Soil seed bank: The effect of forest cover on the viability of *Araucaria angustifolia* seeds

P 13	V Holubec , L Papoušková	Germplasm conservation and seed longevity in the Czech genebank
P 14	C Mallor, Á Vela, I Martín	Seed longevity of vegetable seeds from BGHZ-CITA genebank (Zaragoza, Spain) compared to their duplicates from CRF-INIA (Madrid, Spain)
P 15	M Megyeri, G Linc, P Mikó, A Farkas, I Molnár, L Láng, C Kuti, M Molnár-Láng	Martonvásár Cereal Genebank
P 16	S Mira, F Pérez-García, I M Martínez, M E Gonzalez-Benito	Optimizing seed conservation protocols and cryopreservation at the CRF-INIA genebank to reduce genetic erosion
P 17	M Nagel, I Kranner, H W Pritchard, A Börner, C Bailly, M Koornneef, W E Finch-Savage, A Marion-Poll, C Foyer, O L Sanchez, A Krieger-Liszkay, P Cayrel	The EcoSeed project – seed performance in a changing climate
P 18	M Niedzielski, J Puchalski, C Walters	Kinetics of seed deterioration in diverse lines of rye, wheat and triticale
P 19	M Niedzielski, B Cieślak, J Puchalski, M W Obiedziński	Seed longevity of cereal seed samples during hermetic vs. “open” storage at 350C, and headspace gases effect of hermetically stored samples
P 20	M Niemczyk, J Puchalski	Studies on seed germination biology and cryopreservation of endangered Polish archaeophytes
P 21	O Oyatomi, M Abberton	Stability of seed viability over ten years in the cowpea germplasm collection of IITA
P 22	L Papoušková, V Holubec	An improvement of genebank management system in the Czech Republic
P 23	J Pohl, S L Greene, C Walters	Monitoring viability of seeds in gene banks: Developing software tools to increase efficiency
P 24	L G Santos, M C Duque, D G Debouck	Increasing efficiency in evaluating seed viability in genebank materials using wald’s sequential sampling
P 25	V Zepeda, C Martorell	Measuring seed banks´contribution to plant diversity maintenance

Session II — Role of pre- and post-harvest environmental factors on seed longevity

P 26	L C Barreto, A L L Magalhães, J A Takahashi, Q S Garcia	Changes in reserve compounds of macaw palm (*Acrocomia aculeata*) fruits and seeds stored in different conditions
P 27	R Betoni-Bragante, J P N Silva, D da C Centeno, C J Barbedo, R de C L Figueiredo-Ribeiro	Metabolic responses of immature seeds of *Libidibia ferrea* Mart. under contrasting storage temperatures
P 28	L Bowden, V Cockerell	Analysis of the sources of variation in quality of cereal seed produced in Scotland
P 29	V F da Silva, H O dos Santos, M L M de Carvalho, É V de R Von Pinho	Conservation of castor seeds (*Ricinus communis* L.)
P 30	T B Fantazzini, R M Guimarães, S D V F da Rosa, A da C S Clemente, E R Carvalho	Storage of seeds corn under different inoculum potential of *Fusarium verticillioides*
P 31	A D Fischer, D M Anderson	How to outlast winter on land and sea: Terrestrial plant seeds and marine dinoflagellate cysts both rely on winter chilling
P 32	K Ghamkhar, T Faithful, P Nichols, M Ryan	Hardseededness in subterranean clover (*Trifolium subterraneum* L.) cultivars and mapping populations
P 33	T S R Jesus, I B Oliveira, L S Silva, M B Loureiro, D T Bernal, R D de Castro, L G Fernandez	Evaluation of different storage conditions for castor seeds (*Ricinus communis* L.) suitable to family farming in the Brazilian semiarid region
P 34	R Karklelienė, A Radzevičius, N Maročkienė, E Dambrauskas, L Duchovskienė, D Juškevičienė	Influence of metrological conditions and growing methods for the longevity of carrot seeds
P 35	J Koen, M Slabbert, C Bester	Anatomical and morphological features of honeybush (*Cyclopia* spp.) seed
P 36	D Angassa	Germination ability of seeds of barley, niger seed, teff and fenugreek stored in the genebank of Ethiopia
P 37	E V Lamarca, M R Bonjovani, A C B Araújo, J I O Mello, D da C Centeno, R de C L Figueiredo-Ribeiro, C J Barbedo	Oxidative process and speed of deterioration of orthodox and recalcitrant seeds during storage

P 38	K Mavi	The effect of seed priming on differentially developed seeds of aji (*Capsicum baccatum* var. *pendulum* Willd.)
P 39	M Motsa, M Slabbert, C Bester	Natural fecundity and germination characteristics of selected genotypes of *Cyclopia* species
P 40	R M de O Pires, G A de Souza, N M da Silva, A de P Alvarenga, D C F dos S Dias, M L M de Carvalho	Alternative control of microorganisms in rubber tree seeds (*Hevea brasiliensis*) during the storage
P 41	G P Prado Brigante, M L M de Carvalho, C A G Pinto	Physiological and biochemical changes during seed deterioration of high oleic sunflower
P 42	B G Ribeiro, R M de O Pires, M L M de Carvalho, G A de Souza, D C F dos S Dias	Temperature and environmental conditions of forage peanut storage
P 43	J Suszka, B Bujarska-Borkowska, S Kotlarski	Effects of collection time and preliminary storage of beech (*Fagus sylvatica* L.) seeds on their germination after dehydration
P 44	T A A Vaz, A C Davide, A G Rodrigues-Junior, P E Toorop, E R Marques, W V S Pereira	Ex-situ and in-situ longevity of *Swartzia langsdorffii* seeds – a Brazilian rainforest tree
P 45	M Wijayasinghe, A Mondoni, A Balestrazzi, L Colville, G Rossi, H W Pritchard	Improving seed longevity in storage of alpine species

Session III — Genetics of inter- and intra-specific variation of seed survival

P 46	M Agacka-Mołdoch, M Nagel, T Doroszewska, F R Hay, R S Lewis, A Börner	Seed longevity in tobacco (*Nicotiana* spp.) – intraspecific variation and genetic mapping
P 47	A Diederichsen, L Jones-Flory, D Kessler	Optimizing and applying accelerated seed ageing tests to assess flax (*L. usitatissimum*) of different seed colour
P 48	D J Henriques da Silva, L J da Silva, D C F dos S Dias	Physiological quality and conservation of *Jatropha curcas* L. seeds obtained from fruits at different maturation stages

P 49	H W Pritchard, I D Kossmann Ferraz, W Stuppy, M de J V Lima Junior, P E Toorop, Y M B C Arruda, A M Mendes, S A do N Ferreira, J L C Camargo, A C José, K J Willis	Bio-economics and Ecosystem Services of Amazonian Native Seed (BESANS)
P 50	B Raviv, G Granot, G Grafi	The seed coat as a reservoir of growth promoting substances
P 51	C Savaskan	Long term productivity of seeds can be provided by amelioration
P 52	S Scacchi, E Battistini, E Noli	Expression of protein l-isoaspartyl methyltransferase in sunflower seeds as affected by ageing and priming
P 53	I Tokatlidis	Longevity of elite cultivars is a matter of intense breeding within 'breeder seed' at nil-competition.
P 54	D Wozny, J Jiménez-Gómez, S Effgen, M Harperscheidt, M Koornneef	Identification and characterization of seed longevity genes in barley (*Hordeum vulgare*)

Session IV — Physiology and biochemistry behind seed ageing – deleterious effects vs. repair mechanisms

P 55	D T Bernal, I B Oliveira, T S R Jesus, M B Loureiro, R D de Castro, L G Fernandez	Germination responses of *Ricinus communis* L. seeds to accelerated ageing
P 56	M Betsiashvili, N Kokiashvili, D Bedoshvili	Changes in maize germination ability and antioxidant enzymes activities during seed natural ageing and as a result of priming
P 57	E M Bicalho, M Pintó-Marijuan, M Morales, S Munné-Bosch, Q S Garcia	Vitamin E and hormonal balance during macaw palm seeds germination after storage
P 58	C Biniek	Role of quinone reductases in germination and in the early development of *Arabidopsis*
P 59	A da C S Clemente, S V B Coelho, S D V F da Rosa, M A de Figueiredo, L F S Coelho	Physiological behavior of coffee seeds under quick and slow drying

P 60	S V B Coelho, M H de Carvalho, S D V F da Rosa, A da C S Clemente	Drying speed in the conservation of coffee seeds
P 61	B Treins, M Ruh, J Husson, C Lambot, C Bailly, F Corbineau	Effects of temperature, moisture content and oxygen on the viability of coffee (*Coffea canephora* var. *robusta* and *C. arabica*) seeds during storage
P 62	S Daneshmandi	Antioxidants and oxidation contrast process; a factor of diagnosis the longevity and deterioration of some seed medicinal
P 63	A Dayal , O S Dahiya , Harish	Effect of priming treatments on storability of cotton varieties picked at different intervals
P 64	D C F dos S Dias, G A de Souza, E E L Borges	Physiological and biochemical alterations in rubber tree seeds [*Hevea brasiliensis* (Willd. ex Adr. de Juss.) Müell.-Arg.] during storage
P 65	O A O Tonetti, J M R Faria, A C José, W V S Pereira	Physiological and cellular changes of stored *Cryptocarya aschersoniana* Mez. seeds
P 66	G Gryziak, H Kubicka-Matusiewicz, M Wiśniewski	Flow cytometry as a tool for assessing seed viability of the long-term stored seeds
P 67	C C Guimarães, S D V F da Rosa, M H de Carvalho, A da C S Clemente, S V B Coelho, M R Malta	Comparative study of fatty acid profile in endosperm and embryos of *Coffea arabica* seed and its correlation with desiccation tolerance
P 68	M Ignatz, J Meinhard, A Büttner-Mainik, F Weltmeier, I Kranner, L Colville, V Turečková, M Strnad, U Fischer, G Leubner-Metzger	Molecular mechanisms of combined priming and aging treatments in sugar beet seeds
P 69	A C José, G H Silva, L M Gonzaga, F P Teixeira, R A R Molina, J M R Faria	Effect of priming on physiological quality of *Handroanthus serratifolius* (Vahl.) S.O. Grove seeds
P 70	D Juškevičienė, A Radzevičius, N Maročkienė, E Dambrauskas, R Karklelienė	Generative development and true seeds formation in garlic (*Allium sativum* L.) grown in Lithuania
P 71	S Khan, T Steinbrecher, K Graeber, M Perez, G Leubner-Metzger	Understanding seed longevity of Aethionema arabicum dimorphic diaspores

P 72	J Kodde , S P C Groot	Ethanol degradation a simple and sensitive indicator for seed ageing
P 73	M Nagel, E Willner, A Börner	Effects of oilseed rape seed compositions on seed viability after long-term storage
P 74	N V Obroucheva, S V Lityagina, I A Sinkevich	Deceleration of seed germination at early aging
P 75	M E Sabatini, A Pagano, D Carbonera, A Balestrazzi	Role of chromatin remodeller TRRAP (TRansformation/tRanscription domain-Associated Protein) during seed germination
P 76	G F Safina, G I Filipenko, B Kobiljski, U Lohwasser, A Börner	Dynamics of accelerated seed ageing in wheat genetic diversity
P 77	M Shibata, C M M Coelho, M Maraschin	Physiological quality maintenance favored by early harvest of *Araucaria angustifolia* seeds
P 78	L J da Silva, D C F dos S Dias, H C dos Santos Júnior, R A da Silva Júnior	Biochemical changes during storage of *Jatropha curcas* L. seeds from fruits harvested in different maturation stages
P 79	L Siles, L Alegre, V Tijero, S Munné-Bosch	Tocopherols, rather than tocotrienols, protect seeds from lipid peroxidation during germination in *Chamaerops humilis*
P 80	E S Tessema	Evaluation of seed storage condition on isozyme activity in groundnut
P 81	P Vaccino, D Gerna, M Limonta, S Paparella, S Araujo, P Cauzzi, T Abeli, G Rossi, A Bentivoglio, D Dondi, A Buttafava, M Kockelkoren, P Viola, D Carbonera, A Balestrazzi	Seed repair mechanisms during priming: Synergy for a multidisciplinary approach in the PRIMTECH project
P 82	T V Veselova, V A Veselovsky	Stimulation of germinability of aged seeds by various physical actions
P 83	D de S Vidigal, L A J Willems, H W M Hilhorst, L Bentsink	Galactinol as indicator of seed longevity
P 84	M-H Wagner, N Vialles, J Buitink, O Leprince, S Ducournau	Characterization of LEA proteins as potential markers for the prediction of seed longevity

P 85	R Wang, M Nagel, A Börner, H-P Mock	Physiological differences between purple and yellow-grained wheat with different anthocyanins characteristics during artificial ageing
P 86	H Yan, P Mao	Exogenous glutathione pre-treatment alleviates the loss of seed vigour of Siberian wildrye (*Elymus sibiricus* L) during artificial accelerated ageing
P 87	G Yin, X Xin, X Chen, J Zhang, J He, X Lu	Comprehensive mitochondrial metabolic shift during the critical node of seed ageing in rice

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