

STO 2016-2019

Hugh W. Pritchard
Chairman



STO committee members

2016-19	Country	2019-22	2016-19	Country	2019-22
1 Chair: Hugh W. Pritchard	UK	??	10 Frank Lanfermeijer	Netherlands	✓
2 VC: David Mycock	RSA	✓	11 Isaura Martin	Spain	x
3 Cathy Offord	Australia	✓	12 Moctar Sacandé	Italy	✓
4 Joseph Asomaning	Ghana	✓	13 Sershen	RSA	✓
5 Andreas Börner	Germany	✓	14 Christina Walters	USA	✓
6 Rekha Chaudhury	India	x	15 Xiang-Yun Yang	China	✓
7 Isolde Ferraz	Brazil	✓	Applications:		
8 Elena Gonzalez-Benito	Spain	x	G V Jagadish	India	✓
9 Steven Groot	Netherlands	✓	Jayanthi Nadarajan	NZ	✓



Seed Innovation Systems for the 21st Century

2nd week, September 2020, University of Sussex
Brighton. UK

Monday: Registration, reception and evening lecture

Tuesday, Wednesday, Friday: Science symposium

Thursday: Excursion to Kew OR Wakehurst Place

(Saturday: Science symposium, depending on demand)

Aiming for £ 600 per person (all but travel)assuming 350 persons



Themes

- 1: **Seed memory** – how environment influences traits during development
- 2: **Seed lifespan** – the science of maximising survival
- 3: **Seeds and society** - local innovation systems and species added-value
- 4: **Seed form and function** – the morphology of success
- 5: **Seed germination and stress** – niches and coping strategies
- 6: **Seed innovation systems for the 21st century** – automation to zeitgeist

Session co-organised with ISTA Secretariat



Work programme

B. PUBLICATIONS		
<u>B1. Publications to accompany the Rules</u>		
	Publication title	proposed finalisation
1	Handbook on Seed Storage (will include Appendix on seed storage of Rules species)	2019
	<p>2016: Applied special project – unsuccessful.</p> <p>2017: Local assistance supported from Annual Budget; now left Kew.</p> <p>2018: Getting authors to produce content remains huge challenge.</p> <p>2019: Encouragement from Craig, Steve and Andreas.</p>	Not achieved



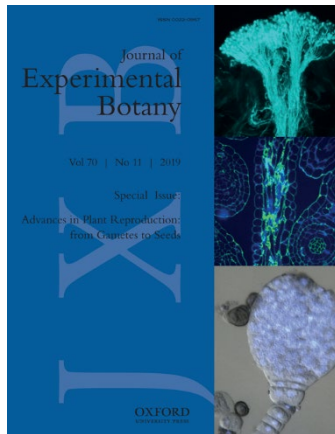
Publications

B3. Scientific information publications	
Publication title	proposed finalisation
30 scientific publications (book chapters and journal articles, including in SS&T) on seed storage.	2019
2016: 8 publications. 2017: 9 publications. 2018-19: 20 publications. Total: 37	Achieved

Journals: *Plant & Cell Physiol*; *Exp Agric*; *African J Agric Res*; **Nature Genetics**; *Acta Phys Plantarum*; *J Plant Phys*; *Bot Rev*; *Environ & Exp Bot*; *Australian J Bot*; *Protoplasma*; **PLOS ONE**; *Cons Phys*; *Indian J Plant Path*; *Acta Hort*; *J Biosci*; **SS&T**; *Plant Biol*; *CryoLetters*; *Gen Resources & Crop Evol*; *Plant Div*



Publications (x2)



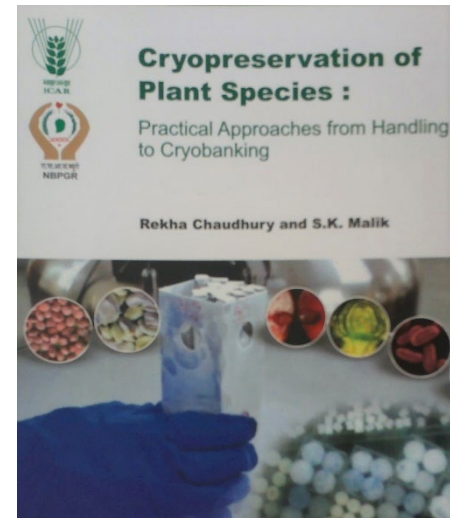
Applied publications



Orchid storage



Seed banking



Cryo storage



Workshops & Seminars

C. WORKSHOPS AND SEMINARS	
<u>C1. Training and education workshops</u>	
workshop subject location	Proposed finalisation
1 (new) (Groot) Master Class Seed Technology, Wageningen, Netherlands, 2018	Completed



<u>C2. Seminars</u>		Proposed finalisation
Seminar subject and location		
1	1st International Agrobiodiversity Congress (India, Nov 2016), Chaudhury, Pritchard.	Completed
2	International Botanic Congress – Hot forests and cold storage (China, July 2017), Walters, Pritchard, Seršen.	
3	Seed Working Group of the German Society for Plant Breeding (Germany, April 2018). 155 participants. Börner.	
4	Society for Cryobiology Annual Meeting (Spain, July 2018). 300 participants. Walters.	
5	Seed Longevity, ISSS (USA, July 2018). 200 participants. Walters, Börner, Pritchard.	



Special projects

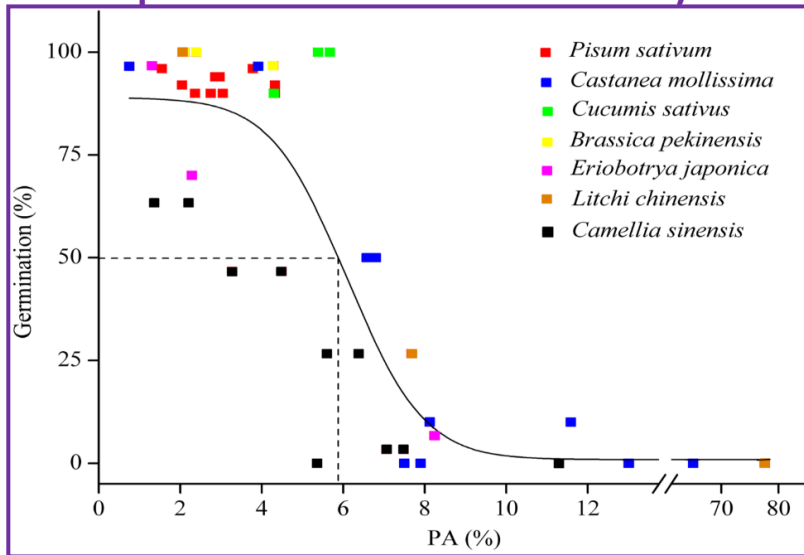
F. SPECIAL PROJECTS		Proposed finalisation
1	Characterisation of seed storage biology for 100 'new' species: 116 species , of which 96 species (DT; Mattana et al., 2016), 20 (DS; Subbiah et al., 2017).	Achieved
2	Develop and/or apply five innovations / techniques associated with seed storage (e.g., cryopreservation, biophysical analysis). 1. (Ferraz, Pritchard): Multi-technique assessment (MC, TZ, GSH) of a single seed, linked to germination (Calvi et al., 2016). 2. (Ferraz, Pritchard) - Underwater storage of a recalcitrant seed (Calvi et al., 2017). 3. (Sershen) - Modified inverse hyperbolic (MIH) model to quantify desiccation sensitivity = stress index (Subbiah et al., 2017). 4. (Sershen) – iTRAQ for protein profile / quantitation in DS seed (Moothoo-Padayachie et al 2018). 5. (Ferraz) – Seed morphology and MC determination (Bentes et al., 2018).	Achieved



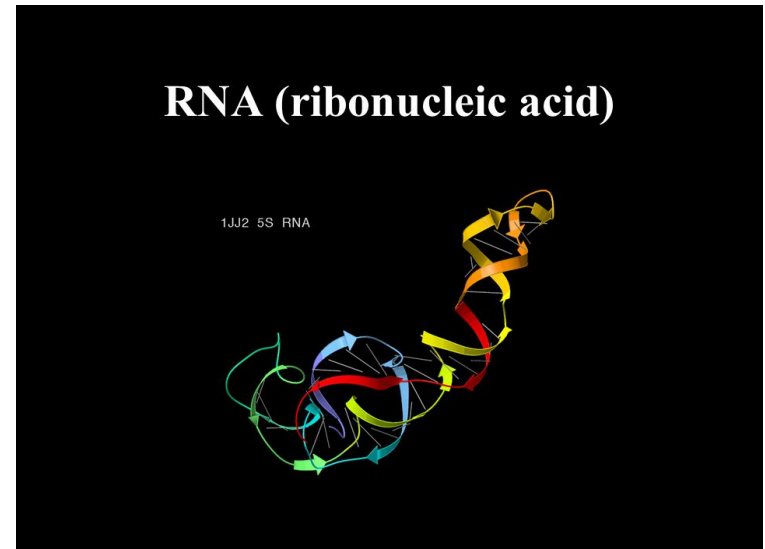
Special Projects

F. SPECIAL PROJECTS		Proposed finalisation
2	Develop and/or apply five innovations / techniques associated with seed storage (e.g., cryopreservation, biophysical analysis).	
	<p>(Pritchard) - Phosphatidic acid and desiccation (in)tolerance (CHEN et al., 2017). (Walters) – Ribonucleic acid Integrity Number (RIN) and stored seed (Fletcher et al., 2017)</p>	

Species' seeds with different DT/DS



RIN



Special projects

F. SPECIAL PROJECTS		Proposed finalisation
3	<p>Maximise dry storage potential (including seed health, role of oxygen in seed ageing) for seeds of 70 species.</p> <p>24 species worked on.</p> <p>Gaseous environment:</p> <ul style="list-style-type: none"> • (Groot) Primed celery seeds store better under low oxygen. • (Gonzalez-Benito, Martin) Oxygen consumption in dry seeds of lentil, barley and <i>Camelina</i> at 20 and -18°C. AND effects of gases on onion and rye ageing. <p>Other projects:</p> <ul style="list-style-type: none"> • (Mycock) Cathodic water on 5 crops species. Prolonged exposure negative. • Gonzalez-Benito: DNA methylation / degradation during ageing on mint seeds. • (Sershen) Drying environment – identified 23 fungal species on rice. • (Martin) 30 years storage data on four lupin species. 	<p>Not achieved, but new understanding of seed storage environment.</p>



Work programme: 2019-22

B. PUBLICATIONS		
B1. Publications to accompany the Rules		Proposed finalisation
Publication title		
1	Handbook on Seed Storage (will include Appendix on seed storage of Rules species)	2022

C2. Seminars		
Seminar subject and location		Proposed finalisation
1	13th triennial conference of the International Society for Seed Science, Kew and University of Sussex, UK (Sept 2020). Session with ISTA (Secretariat input)	2020

