

Part 3 – Travel, Conference or Scientific Exchange Report

(Maximum two pages)

1. A brief description of the purpose of the travel.

The main objective of the 10th Australasian Soilborne Disease Symposium was to hold a forum and an interactive environment where national and international experts provide new insights in disease control for researchers, students and agricultural industry representatives including cotton and broad acre crops. The theme of the symposium was 'Paddock to Plates' with an emphasis on delivering the new knowledge to practitioners and at the same time to better harness the new scientific tools for the development of effective management options.

2. What were the:

a) major findings and outcomes

The 10th ASDS was held in Adelaide during September 4th to 7th attracting 120 participants from 9 countries. With over 50 oral and 28 poster presentations, the meeting provided a forum with diverse expertise for the participants to develop new collaborations and learn about latest developments in plant pathogen diagnostics, ecology and disease management. Presentations by key note speakers included topics related to disease suppression, rhizosphere microbiology, diagnostics and new concepts for potential disease management through manipulation of the plant microbiome, plant resistance and biosecurity. It was evident that recent developments in the measurement of pathogen levels in field samples (e.g. DNA based tools and Predicta-B service) have greatly assisted with the improved understanding of pathogen dynamics and benefited both researchers and farmers. The term 'phytobiome' received great attention as it is considered as the next frontier in developing plant-based disease control options. The conference was represented by researchers and/or end users from 7 agricultural industries and the presentations dealt with over 45 fungal and nematode pathogens on 16 different crops. The 10th ASDS meeting with its diverse audience provided an excellent cross-industry platform/international forum for the attendees for sharing ideas, learning new developments in options for disease management and research tools and to forge new collaborations.

The CRDC sponsored key note presented Dr. Maria del Mar Jimenez Gasco, Penn State University, USA (<http://plantpath.psu.edu/directory/mxj22>) gave a talk on 'Genetics, diversity and ecology of the pathogen *Verticillium dahliae*'. The presentation including findings from her latest research highlighted the importance of understanding the pathogen population structure in order to better control disease incidence through crop rotations and other management options including cover crops. She emphasized the need to develop new tools to investigate the pathogen population structure of *V. dahliae* without culturing, to develop research into diagnostic tool that can be used by farmers.

A brief summary of challenges and opportunities identified (Stephen Neate, UQ and VVSR Gupta, CSIRO):

1. Molecular diagnostics – As it is now possible to make in-depth understanding of all the players involved in disease incidence and its impact, the single species based on diagnostics may be extended to include all the pathogenic variants and/or complexes in a community based diagnostics both to identify disease risk and develop more effective management options. In order to maximize the benefits from new molecular diagnostics a closer integration with classical pathosystem research is recommended.
2. Management - It is suggested that the new developments in diagnostics, in particular high throughput and in-field based tools, should be used to improve knowledge about mechanisms of pathogen ecology and epidemiology, disease incidence and suppression. For example, the new tools would allow field-based studies dealing with epidemiology in the presence of multiple pathogens and identification of factors that cause or suppress soilborne diseases. In the mature field of biocontrol research, future research should concentrate on interactions of biologicals with the environment to identify a more effective time of application and improving the stability of biological products.
3. Resistance and Microbiome – Based on recent findings on disease suppressive microbiome and rhizosphere microbial dynamics, future research needs to better exploit host genetics – microbiome linkages, in order to develop more sustainable management options for reducing disease impacts. There was a general agreement that the phytobiome concept should be included in all aspects of disease research i.e. plant based resistance, crop rotations and biological interventions.
4. Phenotyping / Trait analysis - It is suggested that the use of in field phenotypic tools such as image analysis and remote sensing should be encouraged in order to improve interpretation of findings to field based responses to disease management practices.
5. Communication and adoption – There should a clear focus on path to application of research to real field conditions and in the effective communication of research findings to farmers/end users.

Overall, it was clearly evident and agreed by participants that there is a need to adopt a transdisciplinary research approach to integrate the diverse fields of expertise in cropping system-based experiments (e.g. evaluating cover cropping effects on disease incidence/suppression) to deal with the multiple factors and players involved in developing field-effective disease management options and sustainable outcomes.

b) other highlights

- 1. Student presentation award:** The presentation by Ms. Sophia Callaghan from University of Melbourne received the Student best presentation awards as part of the sponsorship support from Cotton RDC. Ms Sophia Callaghan presented a talk on 'Identification and pathogenicity of soil-borne fungal and oomycete pathogens associated with poor growth of processing tomato plants'.
- 2. Technical workshops:** There were 29 attendees to the three pre-conference Technical workshops on 'field sampling strategy and experimental design', 'nematode diagnostics' and 'discovery of actinobacteria'.
- 3. Participant survey results:**

Question	Very Good	Good	Below average
The relevance of conference presentations and topics	70%	30%	0%
The balance and mix of conference topics	41%	51%	<1%
The conference value for money	44%	39%	<1%
Key note presentations	30-64%	34-51%	<6%
Poster presentations	43%	54%	0%
Overall rating of the 10 th ASDS conference	65%	30%	0%

Some of the main reasons for attending the conference include: Theme/content (83%), Networking opportunities (86%), professional development opportunity (60%), to give a presentation (38%) etc.

4. Other comments:

#	RESPONSES	DATE
1	Really enjoyed the post-conference field trip. Was good to hear info from grower and researchers about their trials in SA. Enjoyed the lunch and wine tasting too. Well done to the organisers of the field trip and the speakers in the field!	9/12/2018 3:58 PM
2	One of the better ASDS conferences I have attended - the group was not too big, the venue worked well and proximity to Adelaide City was convenient. A lot of new work was presented, in particular, on genomics, soil and plant microbiology and a systems approach to these issues.	9/12/2018 2:53 PM
3	I really loved the cross sector format great alchemy	9/12/2018 12:55 PM
4	The small size of the conference and not having concurrent session made it a very relaxed environment, good for networking - content was great - this was my first but hopefully not my last ASDS	9/12/2018 10:37 AM
5	I liked this ASDS symposium as one can attend all the presentations, even if not your area of expertise. As researchers, it's good to develop and widen our knowledge of all things pathology. Please avoid ever having concurrent sessions.	9/12/2018 6:04 AM
6	Looking forward to Cairns	9/12/2018 2:27 AM
7	From a topic matter perspective, this is one of the best meetings I have attended during my 30 tenure in the field of plant pathology	9/12/2018 12:31 AM
8	Congratulations Gupta and co!	9/11/2018 2:55 PM
9	A very professionally run conference. A pleasure to attend.	9/11/2018 12:24 PM
10	Hope to see you in Cairns!	9/11/2018 10:32 AM
11	Too many presentations on application/extension studies. I understand that this is an Australasian symposium aimed at solving real problems in the field. But if the symposium wants to attract more international participants, at least 50% of presentations should be about basic or applied basic research.	9/11/2018 10:29 AM
12	It was quite enjoyable.	9/11/2018 10:10 AM

Mark Mazzola (Research Plant Pathologist, Keynote speaker from USDA-ARS Wenatchee, USA) – “It was one of the more informative meetings that I have attended in my time as a research scientist. Would have been of great benefit to have attended such a meeting earlier in life! As I am certain is true for many, I have come to value and appreciate focused topic meetings such as ASDS over a meeting such as ICPP or APS.....”.

Friday Obanor (Manager, GRDC Diseases) – “I thought the meeting on Monday last week and the subsequent symposium on Wednesday was very good. Well done to you and your team for organising a highly successful symposium in Adelaide”

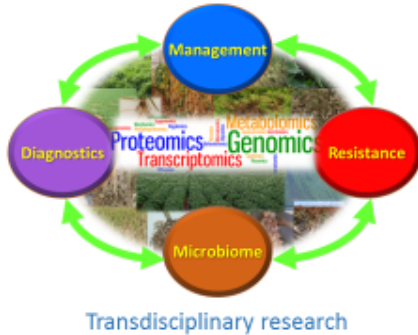
Attachments:

- Copies of the conference program (hard copy) and full proceedings with extended abstracts.
- A copy of the presentation by Dr. Maria del Mar Jimenez Gasco – this presentation is for CRDC viewing only and not for distribution or online posting (Confidential as per the author's request).

Please email your report 30 days after travel/conference to: research@crdc.com.au



10th Australasian Soilborne Diseases Symposium *Challenges and Opportunities – S Neate & V Gupta*



- In-depth understanding of all players is now possible
 - Molecular Diagnostics
- Mechanistic principles / studies – application of diagnostics
- Epidemiology to explain results
 - Presence of multiple pathogens
- Improved phenotyping and statistics critical - management effects
 - Remote sensing / image analysis
- Better exploit the Host genetics – microbiome (including pathogen)
- Biocontrol interactions with environment and growth stage
 - Stability / time of application of biologicals

- Learning from more mature pathosystem work
- A clear focus on path to application of the research & communication

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