



# DEVELOPMENT OF WHEAT POPULATION USING SPEED BREEDING FOR SALINITY TOLERANCE

## RESEARCH SUMMARY

### UA518

#### FAST FACTS

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##### PROBLEM

It is essential for South Australian researchers developing salinity tolerant crops to maintain their currency and relationships within the global field.

##### PROJECT

Dr Allison Pearson travelled to the 2018 'Salt and Water Stress In Plants' Gordon Research Seminar and Conference in New Hampshire, USA to present her research and take part in conference activities.

##### PARTICIPANTS

(For) University of Adelaide:  
Dr Allison Pearson

##### DATES

**Start:** 1 May 2018

**Finish:** 30 August 2018

Dr Allison Pearson has undertaken research on the development of wheat populations using embryo rescue and speed breeding techniques for salinity tolerance. It has been estimated that approximately 50% of farms in South Australia are at risk of transient salinity, so developing tolerant wheat cultivars is of high importance.

With SAGIT support, Dr Pearson presented aspects of her work to a field of international experts at the 2018 "Salt and Water Stress In Plants" Gordon Research Seminar and Conference in New Hampshire, USA

#### BACKGROUND

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Gordon Research Conferences provide an international forum for the presentation and discussion of frontier research in the biological, chemical, physical and engineering sciences. In 2018, the Salt and Water Stress In Plants' Gordon Research Seminar and Conference events were held at Waterville Valley, New Hampshire, USA.

The event comprised a two-day Gordon Research Seminar designed for early career researchers, followed by the Seminar proper, attended by some 200 researchers specialising in salinity and water stress in significant agricultural crops – including wheat, barley and rice.

As a researcher developing salinity tolerance in wheat at the University of Adelaide, Dr Allison Pearson took an active part in both events as a discussion chair and through presenting work.

Dr Pearson also took the opportunity to attend several other notable presentations and discussions, and to engage with salinity tolerance researchers from around the world.

#### RESEARCH AIMS

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The core objectives of the project were to:

- Engage with international peers at the 2018 'Salt and Water Stress In Plants' Gordon Research Seminar and Conference events.
- Present work on 'Development of a wheat RIL population using embryo rescue and speed breeding for salinity tolerance' to international peers.

#### IN THE FIELD

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There was a wide range of valuable presentations and discussions offered across five days, on topics such as 'Dealing with a changing environment', 'Genome level responses to the environment' and 'Crop productivity under abiotic stress'.



The two-day Gordon Research Seminar provides an opportunity for early career researchers to gather and discuss their research. As part of this event, Dr Pearson was invited to be a discussion chair for a session on 'Applications in Fundamental Research in Field Conditions'.

During the 'Salt and water stress in plants' Conference, she presented her poster on 'Development of a wheat RIL (recombinant inbred line) population using embryo rescue and speed breeding for salinity tolerance'. The conference presentations covered a wide range of research into water and environmental stress in crops, from findings on genetic responses to environmental stress to the presentation of specialised software tools for this research area.

## RESULTS

As well as presenting her own work from the University of Adelaide, Dr Pearson attended talks by numerous post-doctoral researchers and PhD candidates including Stephanie Saade from Mexico's CIMMYT International Maize and Wheat Improvement Centre on 'Identifying the components of salinity tolerance in a barley association mapping population' and John Ferguson from the University of Illinois at Urbana-Champaign, USA on 'Increasing stomatal resistance to water loss in sorghum'.

Of particular interest were presentations by Magdalena Julkowska (King Abdullah University of Science and Technology, Saudi Arabia) and Maximilian Feldman (Donald Danforth Plant Science Centre, Missouri), both of which included details of new data analysis tools that can be used to help salinity tolerance research in Australia.

The conference and seminar enabled Dr Pearson to make connections with other scientists in her field from around the world, which has the potential to accelerate knowledge sharing and deliver valuable future collaborations.

## VALUE FOR GROWERS

Through the exchange of knowledge and ideas, Dr Pearson has been able to bring additional and updated knowledge of international water stress research home to South Australia and learn about software tools that will help advance her research into this critical topic.

Her expanded knowledge and the establishment of international research contacts will advance the development of salinity tolerant crops for South Australian growers.



Dr. Allison Pearson (right) with Jun. Prof. Sandra Schmoekel of Hohenheim University, Germany and Assoc. Prof Stuart Roy from The University of Adelaide, during the 'Salt and Water Stress In Plants' Gordon Research Conference in New Hampshire, USA.

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