



THE CRAWFORD FUND FOR FOOD SECURITY ANNUAL CONFERENCE

Emerging Voices Shaping Regional Integration for a Food Secure World

10-11 August 2026

Parliament House, Canberra,
Australia, and online



Breeding Wheat for Reproductive-Stage Heat-Tolerance for Future Climate Scenarios

Abu Bakar Siddique

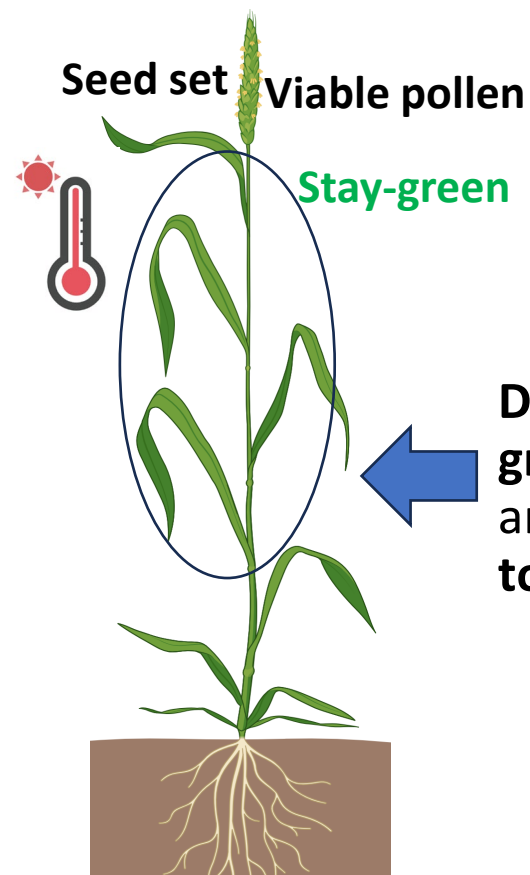
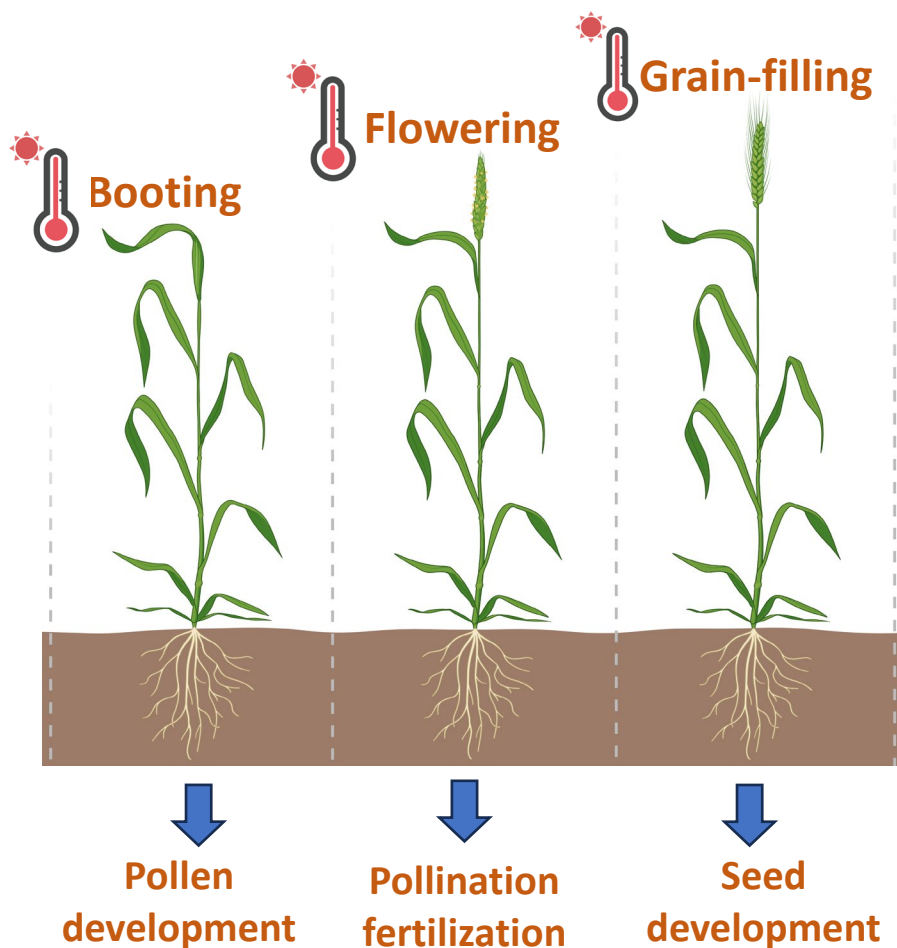
University of Tasmania, Australia

The Crawford Fund for Food Security Conference

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Heat stress timing and yield loss

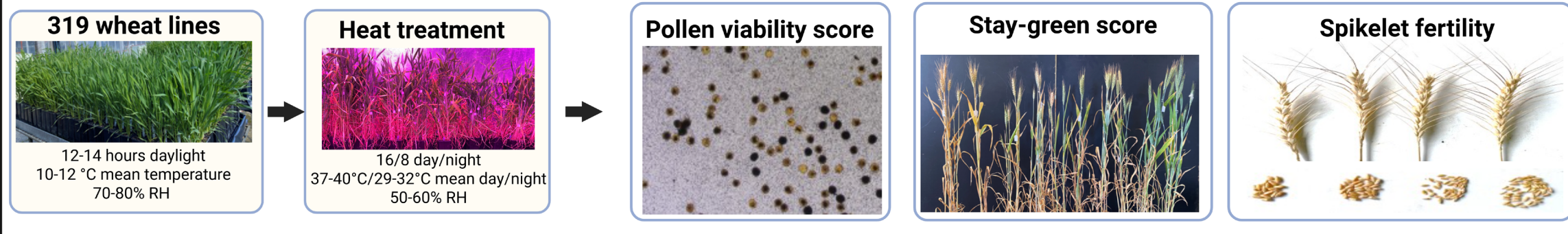
- HS during reproductive stage causes **29-44% yield loss, \$655 million** loss in Australia
- Development of **heat-tolerant wheat** is one of the major solutions to reduce the yield loss



Approach

- Phenotyping for pollen viability, stay-green score, and seed set in 319 wheat lines

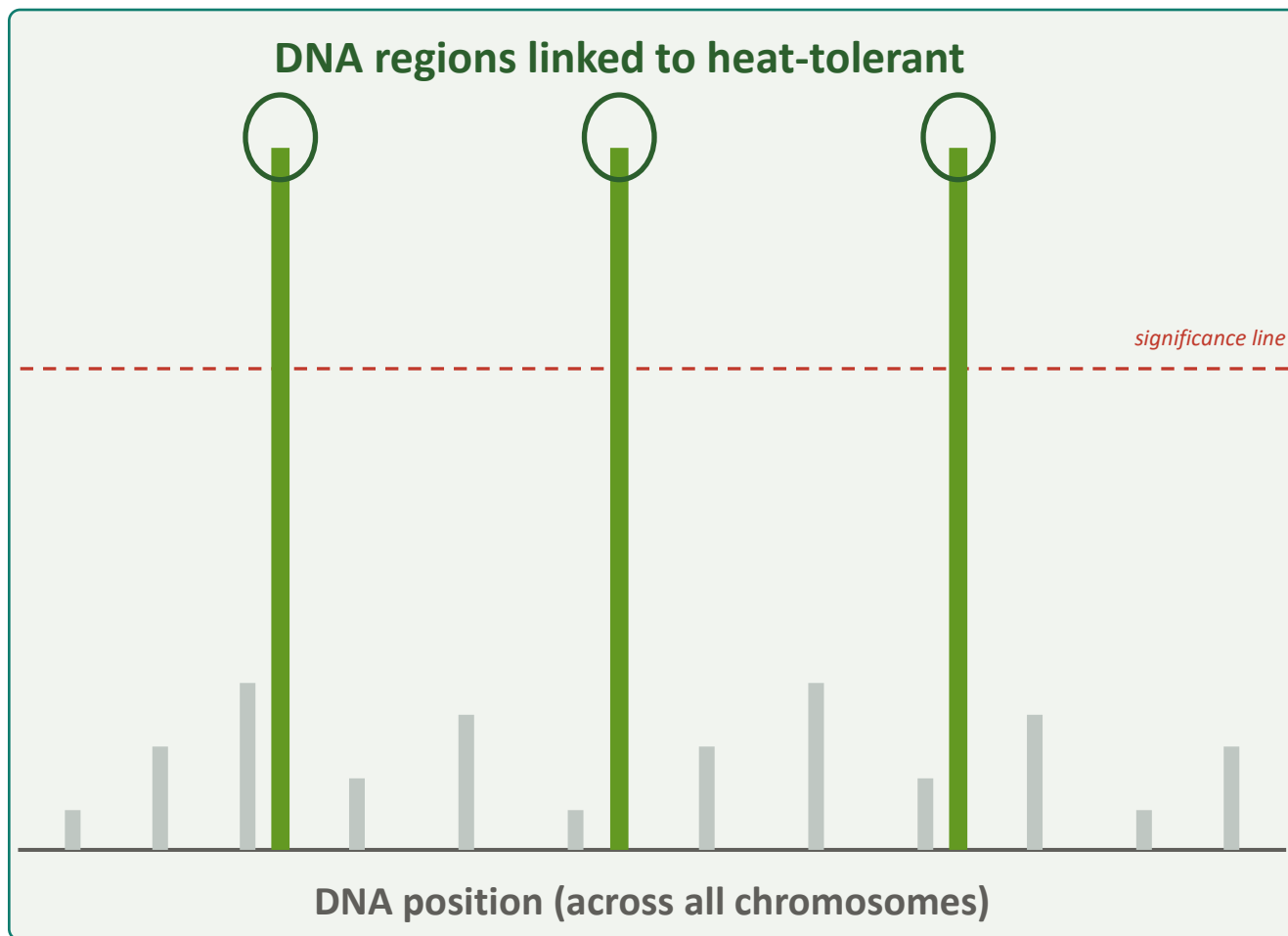
Phenotyping pollen viability, stay-green, and spikelet fertility



- **Scanning each variety's DNA to find:**
 - ❖ **DNA regions** associated with heat-tolerant traits
 - ❖ **Genes** that may help wheat to survive under heat stress

Key Results

- This study identified several DNA regions and genes associated with heat-tolerance traits



We found DNA regions for:

Viable pollen

- ✓ Plants can still fertilise in the heat

Stay-green leaves

- ✓ Leaf supplies energy to the grain

Seed set

- ✓ Plants able to have seed



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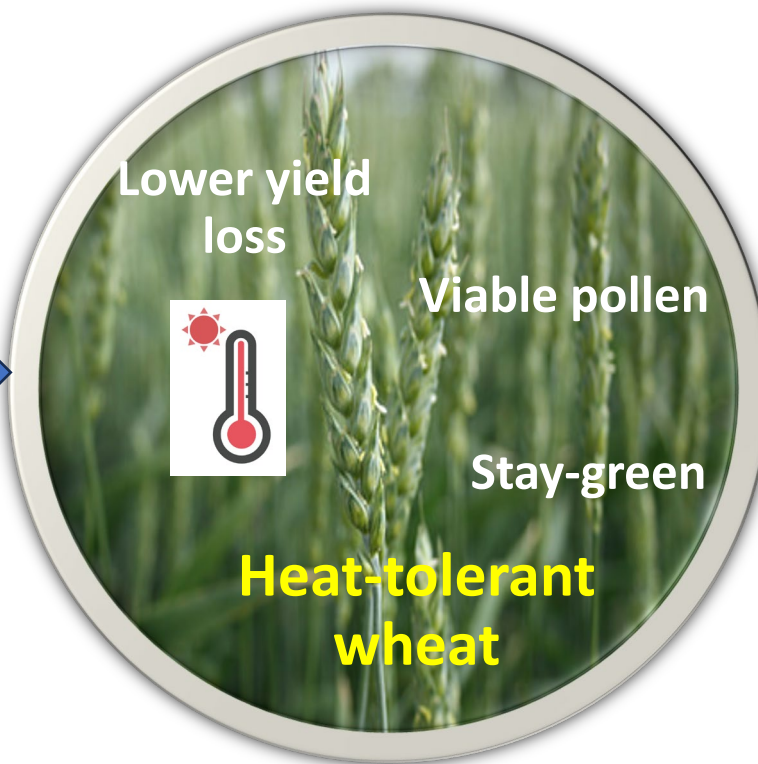
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Impact

Plant breeders can use the identified DNA regions and gene in breeding program



Reduced yield loss under HS

Reliable wheat supply

Sustained food security

Resilient future for upcoming climate scenarios



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THANK YOU



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