

## Curriculum vitae - Gregory John REBETZKE

Citizenship: Australian

Address: CSIRO Agriculture and Food, PO Box 1700, Canberra ACT 2601

Email: [Greg.Rebetzke@csiro.au](mailto:Greg.Rebetzke@csiro.au);

Orcid: 0000-0001-7404-0046



### Research Area

Implementing physiological and quantitative genetic understanding to fast-track delivery of elite wheat germplasm containing traits for improved adaptation to droughted and changing climates.

### Academic Record/Qualifications

- 1985 B.App.Sci. (Hons) (Horticultural Technology), Queensland Agricultural College (University of Queensland), Lawes, Queensland, AUSTRALIA
- 1991 M.Agr.Sc. University of Queensland, Brisbane, Queensland, AUSTRALIA
- 1994 PhD. Genetics and Plant Breeding, North Carolina State University, Raleigh, North Carolina, USA

### Career History

- 1995 Postdoctoral Fellow, Cooperative Research Centre for Plant Science (ANU/CSIRO)
- 1997 Research Scientist, Cooperative Research Centre for Plant Science (ANU/CSIRO)
- 1998+ Research Scientist, CSIRO Plant Industry/CSIRO Agriculture and Food

### Awards

- 1998 CSIRO Plant Industry Chief's team award (Transpiration efficiency in wheat)
- 2001 CSIRO Medal (Delivery of world's first drought-tolerant, high transpiration efficient wheat varieties)
- 2004 CSIRO Plant Industry award (Learning culture award for mentoring)
- 2005 CSIRO Plant Industry award (Research team award)
- 2006 CSIRO Plant Industry award (Learning culture award for training and mentoring)
- 2010 CSIRO OCE Newton Turner career award for senior scientists
- 2011 CSIRO OCE Visiting Scientist Award
- 2014 Australian Science Academy Travel award
- 2021 Australian Grains Industry 'Recognising and Rewarding Research Excellence Award' (GRDC)
- 2023 Australian Grains Industry 'Seed of Light Communication Award' (GRDC)
- 2023 University of Queensland Gatton Distinguished Past Student Award

### Editorial Appointments (*since 2000*)

- 2002 Editor, *Crop Science*
- 2007+ Editorial Board, *Field Crops Research*
- 2009 Editor, *Crop and Pasture Science*
- 2012+ Editor, *Journal of Experimental Botany*
- 2013 Editorial Board, *Food and Energy Security*
- 2018+ Editorial Board, *Agronomy MDPI*
- 2022+ Editor, *Frontiers in Plant Science*

### Academic and Research Leadership (*since 2000*)

- 2000 Subprogram Leader, 'Physiological and Molecular Wheat Breeding' CSIRO Plant Industry (24 staff)
- 2004 Stream Leader 'Designing crops and pastures for Australian environmental challenges' (11 projects, \$21M annual budget)
- 2009+ CSIRO-breeding company relationship lead and coordinator (2009-2021)
- 2010+ CSIRO-Bayer Collaboration Scientific Committee (2010-15)

- 2011 Research Program Leader 'High Performance Crops for Australia' CSIRO Plant Industry (82 staff)
- 2014 Research Group Leader 'Southern Crops' CSIRO Agriculture and Food (25 staff)
- 2015 Impact Champion Lead 'Breeding Resilient Crops' CSIRO Agriculture and Food (17 projects, \$11M annual budget)
- 2015 GRDC Western Region panel member (science expert)
- 2017+ Adjunct Professor, University of Western Australia, Perth WA Australia
- 2019+ Adjunct Professor, Charles Sturt University, Wagga Wagga, NSW Australia
- 2020+ Invited member of the 'Global Wheat Initiative' representing global investment in wheat research
- 2020+ Invited chair, Scientific steering committee of 'AHEAD' (Alliance for Wheat Adaptation to Heat and Drought)
- 2022+ Science Advisory Board - International Graduate School, Uni. Giessen - Uni. QLD
- 2022+ Invited genetics/physiology expert, scientific steering committee of European 'Root2Res' (Root adaptation for greater sustainable crop production in Europe)
- 2023+ Science Advisory Board – 'Hy-Gain for Smallholders' (Bill and Melinda Gates Foundation)

**Invited Keynote/Plenary Speaker at International Meetings (*accepted since 2000*)**

- 2007 'What's in the pipeline for new drought tolerance genetics?', North American Wheat Workers Workshop, Saskatoon Canada
- 2007 'Breeding improved establishment and early biomass in wheat', Dual Purpose Wheat Workshop, Oklahoma USA
- 2009 'Translating physiological research to genetic improvement in drought tolerance', Interdrought III, Shanghai China
- 2010 'Breeding International Workshop on Food Security', Beijing China
- 2014 'Delivering improved drought tolerance in future wheats', Montevideo Uruguay
- 2014 'Translating basic research to developing world farmers', CIAT, Bogota Columbia
- 2015 'Drought tolerance in wheat: From concept to delivery', Global Food Security Meeting, Lancaster UK
- 2017 'Breeding drought tolerance in bioenergy crops', WATBIO, Oxford UK
- 2019 'Breeding greater water use efficiency in wheat', American Agronomy Meetings, San Antonio USA
- 2023 'Improving adaptation to future climates through new genetically improved seedling shoot and root growth', Rank Symposium, Lancaster UK
- 2023 'Breeding *systems resilience* and not *crop resistance* to ensure reliable crop production in future climates', International G×E×M Symposium, Gainesville USA

**National and International Science, Industry and Conference Boards (*since 2000*)**

- 2003+ Australian Grain Biosecurity Committee, Canberra ACT
- 2003 Scientific organising committee, 4<sup>th</sup> International Crop Science Congress, Brisbane QLD
- 2004 Organising committee, 11<sup>th</sup> Australian Wheat Assembly, Canberra ACT
- 2004 Invited Chair, 4<sup>th</sup> International Crop Science Congress, Brisbane QLD
- 2007 Invited Chair, Gordon Research Conference: Salt and Water Stress in Plants, Montana USA
- 2008 Invited Chair, Quantitative Genetics, Generation Challenge Program, Beijing China
- 2008+ Science Research committee, Cottech and Cotton Breeding Australia (2008-2015)
- 2013+ Science Organizing Committee, Interdrought IV, V, VI, VII (various international locations)
- 2013 Coordinator, Crawford MasterClass on Adaptation to Drought, Perth WA
- 2013+ Science Advisory Committee, University of Western Australia Plant Breeding and Genetics training, Perth WA
- 2013 Organizing Committee, 13<sup>th</sup> Australian Plant Breeding Conference, Melbourne VIC
- 2015 Organizing Committee, Society of Root Research, Canberra ACT
- 2019 Science Organizing Committee, 14<sup>th</sup> Australian Plant Breeding Conference, Gold Coast QLD
- 2022 Invited Chair and session organiser, Tropical Agriculture Conference, Brisbane QLD
- 2023+ Science Advisory Board, 'Hy-Gain for Smallholders' (Bill and Melinda Gates Foundation)

**National and International Consultancies/Reviews (Invited) (*since 2000*)**

- 2000 Review of Australian grains industry investment into a national strategy for soybean breeding (GRDC)

- 2002+ Review of Canola Breeders Western Australia (Barenburg Breeding, Holland)
- 2003 Review of Australian grains industry national investment and strategy into Molecular Genetics and Breeding (NWMMP)
- 2006 Review Vietnam soybean breeding (ACIAR)
- 2007 Invited chair of review of Australian grains industry investment into Statistics (GRDC)
- 2007 Invited chair of review of Australian grains industry investment into Quantitative Genetics (GRDC)
- 2012 Review of BAYER global efforts in statistics in breeding
- 2012 Review of investment in Genomic Prediction in sugar breeding (Sugar Research Australia)
- 2013 Invited strategic review of QLD State Department Plant Science Statistics and Biometry
- 2014 Review of Australian grain's industry needs in crop modelling (GRDC)
- 2014 Review of strategic needs in Australian grains investment in Nitrogen-Use Efficiency (GRDC)
- 2014 Review of investment in Water-Use Efficiency in sugar breeding (Sugar Research Australia)
- 2014 Review of investment in Nitrogen Uptake/Nitrogen-Use Efficiency in sugar breeding (Sugar Research Australia)
- 2015+ Invited Grain's Industry GRDC Western region panel member (2015-20)
- 2016+ Reviewer on New Zealand Pasture Genomics Science Advisory Panel (2016-20)
- 2017 Expert panel for Australian grains industry in strategy for national pulse investment (GRDC)
- 2017 Expert panel for Australian grains industry in strategy for national oat investment (GRDC)
- 2017 Expert panel for Australian grains industry in strategy for digital investment (GRDC)
- 2017 Expert panel for Australian grains industry in water productivity/drought investment (GRDC)
- 2017 Expert for Australian grains industry in strategy for Phenomics investment (GRDC)
- 2019 Invited expert for Australian grains industry in strategy for cereal nitrogen investment (GRDC)
- 2019 Review of ICARDA wheat breeding program (BPAT, Bill and Melinda Gates Foundation)
- 2020 Review of ICRISAT sorghum breeding program (BPAT, Bill and Melinda Gates Foundation)
- 2020 Review of CIMMYT wheat breeding program (BPAT, Bill and Melinda Gates Foundation)
- 2020 Review of New Zealand Pea Breeding program (New Zealand Plant & Food)
- 2020+ Member of the 'Global Wheat Initiative' representing global investment in wheat research
- 2020+ Chair of the scientific steering committee of 'AHEAD' (Alliance for Wheat Adaptation to Heat and Drought)
- 2022+ Genetics/physiology expert, European 'Root2Res' scientific steering committee
- 2023 Review of CIMMYT wheat breeding program (BPAT, Bill and Melinda Gates Foundation)
  
- 2001+ *Invited grant reviews globally: BBSRC (Britain), BARD (US-Israel), Germany, Canada, ERA/GCP, Australia-India Strategic Fund, ACIAR*

**Invited Keynote/Plenary Speaker at National Meetings (*accepted since 2000*)**

- 2000 Invited Speaker, Australian Association of Agricultural Consultants National Conference, Wagga Wagga NSW
- 2000 Invited Speaker, 7<sup>th</sup> Annual Conference Joint Centre for Crop Improvement, Rutherglen, VIC
- 2003+ Australian Grain Biosecurity Committee representative, Canberra ACT
- 2003 Invited Speaker, Australian Institute Agricultural Scientists, Canberra ACT
- 2004 Invited Chair, 4<sup>th</sup> International Crop Science Congress, Brisbane QLD
- 2008 Invited Speaker, Generation Challenge Program, Beijing China
- 2008 Invited Speaker, International Drought Genomics Meeting, Adelaide SA
- 2009 Invited Chair, Gordon Research Conference: Salt and Water Stress in Plants, Montana USA
- 2008 Invited Chair, Quantitative Genetics, Generation Challenge Program, Beijing China
- 2008 Invited speaker, Dual purpose wheat workshop, Oklahoma USA
- 2009 Invited Speaker, Eucarpia, Freising Germany
- 2010 Invited Speaker, 7<sup>th</sup> Annual Australia-China Symposium, Adelaide SA
- 2010 Invited speaker, GCP Cereal Drought Workshop, Aleppo Syria
- 2011 Invited Speaker Australian Wheat Breeders Assembly, Perth WA
- 2011 Invited Speaker ACPFG Seminar Series, Adelaide SA
- 2013 Invited Speaker, Australian Agronomy Conference, Armidale VIC
- 2013 Invited Speaker, China-EU-Australia workshop on phenotyping for abiotic stress tolerance and water use efficiency in crop breeding, Yangling China
- 2013 Keynote Speaker, Australian Institute of Agricultural Scientists Forum, Perth WA

- 2014 Invited Speaker, Bayer Statistical and Experimental Designs for METs, Gaterslaben Germany
- 2014 Invited Chair, Bayer Statistical Genetics, Gaterslaben Germany
- 2014 Invited Speaker, GRDC National Weeds Forum, Canberra ACT
- 2014 Invited Speaker, Crop Science Congress, Melbourne VIC
- 2014 Invited Speaker, GRDC National Nitrogen Forum, Melbourne VIC
- 2014 Invited Speaker, Association of Applied Biologists, Lancaster UK
- 2014 Invited Speaker, Translation Conference CIAT, Cali Columbia
- 2015 Invited Speaker, First Latin American Conference on Plant Phenotyping and Phenomics for Breeding, Talca Chile
- 2015 Invited Speaker, ICRISAT Seminar Series, Hyderabad India
- 2016 Invited Speaker, 7th International Crop Science Congress, Beijing China
- 2016 Invited Speaker, IPPN 2<sup>nd</sup> International Conference, El Batan Mexico
- 2016 Invited Speaker, 4<sup>th</sup> Biennial Australian Statistics Conference, Bermagui NSW
- 2017 Invited Speaker, International Tropical Agriculture (TropAg) Conference, Brisbane QLD
- 2017 Invited Speaker, Transformative Workshop: Advancing Crop Resilience, Ottawa Canada
- 2017 Invited Public Lecture, Lancaster University, Lancaster UK
- 2017 Invited Speaker, IRRI Seminar Series, Los Banos Philippines
- 2019 Invited Speaker, International Tropical Agriculture (TropAg) Conference, Brisbane QLD
- 2019 Invited Chair, Australian Agronomy Conference, Wagga Wagga NSW
- 2022 Invited Speaker, International Union for the Protection of New Varieties of Plants, Zurich Switzerland
- 2022 Invited Speaker, COMBIO, Melbourne VIC
- 2023 Invited Speaker, Plenary Australian Cereal Grains Science Conference, Rockhampton QLD

2000+ 52 invited Australian grain industry (GRDC Update) talks throughout Australia (see later for titles)

### **Student Supervision and Scientific Visitors**

- 10 graduated PhDs, 1 current PhD, 7 graduated Honours
- 3 Postdoctoral Fellows
- 13 PhD and Master's advisory roles
- 6 international scientific visitors
- 7 formal mentoring roles
- Scientist in Schools presenter (primary and secondary schools)

### **Major Research Grants Initiated/Led**

- 2010 Delivering a national system of coordinated Managed Environment Facilities (GRDC)
- 2010 Genetic variation in nitrogen uptake and remobilisation in wheat (CIC)
- 2011 Use of managed environments to validate and deliver key physiological traits for improving wheat performance under drought (GRDC)
- 2013 Development of weed competitive wheat germplasm to Australian breeders (GRDC)
- 2013 Genetic architecture of Nitrogen-Use Efficiency in wheat (CIC)
- 2014 Water productivity traits – Trait × trait modelling of water productivity (GRDC)
- 2015 New dwarfing genes, modified leaf architecture and high rates of grain-filling in the MEF (GRDC)
- 2015 Genetic variation for seedling drought tolerance in wheat (GRDC)
- 2017 Coupling genetics for reduced-tillering and high early vigour in wheat (CIC)
- 2018 Integrating genomic prediction with high-throughput phenotyping of complex traits (CSIRO)
- 2018 Delivering drought resilient traits from Managed Environments (GRDC)
- 2019 High-throughput phenotyping tools for growth traits in cereal breeding populations (CIC)
- 2020 Translating improved seedling establishment learnings from wheat to other crops (CSIRO)
- 2021 100-day wheats for later sowing with changing climates (GRDC)
- 2021 Genomic prediction for seedling vigour in wheat (CSIRO)
- 2022 Gene editing improved wheat quality (CIC)
- 2022 Delivering long coleoptile wheat genetics to farmers (GRDC)
- 2023 Morphological and anatomical traits for frost tolerance in wheat (GRDC)
- 2023 Genetic improvement of hypocotyl growth to reliably ensure establishment with deep sowing of canola (GRDC)

## Commercial Wheat Varieties/Germplasm Delivered to Breeding Companies

### *Commercial varieties*

- 'LRPB Bale' (Aust. Premium White, slow awnless milling wheat variety with potential as quality hay in frost regions)
- 'LRPB Dual' (Aust. Hard, mid-quick awnless milling wheat variety with potential as quality hay in frost regions) Promotion to premium quality 'Australian Hard' for WA
- 'EGA Drysdale' (high transpiration efficient, Aust. Hard, mid-quick wheat variety)
- 'EGA Rees' (high transpiration efficient, Aust. Prime Hard, mid-quick wheat variety)

### *Elite wheat germplasm (Material Transfer Agreements to breeding companies)*

- Enriched awnless feed wheats in Espada, Gregory, Magenta, Scout, Yitpi genetic backgrounds for commercial release (S&W Seeds)(CIC)
- 100-day, high biomass topcross wheats in multiple genetic backgrounds (all breeding companies)
- Awned-awnless near-isogenic pairs in six elite genetic backgrounds (all breeding companies)
- Awnless topcross breeding lines in two elite genetic backgrounds (all breeding companies)
- Reduced tillering × high early vigour backcross wheats in multiple genetic backgrounds (CIC)
- High grain protein Suntop/Spitfire RILs (CIC)
- Long coleoptile *Rht13* and *Rht1/2* NILs in multiple genetic backgrounds (all breeding companies)
- Long coleoptile *Rht18* and *Rht1/2* NILs in multiple genetic backgrounds (all breeding companies)
- Weed-competitive, high vigour topcross breeding lines (all breeding companies)
- High root biomass topcross lines (CIC)
- Halberd NILs varying for 10 Gibberellic acid-insensitive and Gibberellic acid-sensitive dwarfing genes (all breeding companies)
- Reduced-tillering advanced breeding lines (CIC)
- Transpiration-efficient NILs (tails) in multiple genetic backgrounds (GRDC)

### *Elite Soybean germplasm (published registration details)*

- High oleic, low linolenic acid soybean germplasm: N98-4445A (Registration no. 162) (Crop Science Society of America)
- Reduced palmitic, high oleic acid soybean germplasm: N94-2575 (Registration no. GP-261) (Crop Science Society of America)
- Reduced palmitic acid soybean germplasm: C1943 (Registration no. GP-262) (Crop Science Society of America)

### Most significant publications (10 papers incl. short description why the paper is important; 50 words)

1. Zhao Z, Wang E, Kirkegaard J, **Rebetzke GJ** (2022) Novel wheat varieties facilitate deep sowing to beat the heat of changing climates. *Nature Climate Change* **12**, 291-296  
*Reporting of projected yield benefit with deep sowing long coleoptile wheats across Australia. Summarises modelling of climate and crop growth, and sensitivity analysis of validated deep-sowing field studies of long and short coleoptile near-isolines. GJR designed and analysed the field experiments, assisted parameterisation of the model, and writing (50% contribution)*
2. **Rebetzke GJ**, Jimenez-Berni J, RA Fischer, Deery D, Smith D (2019) High-throughput phenotyping to enhance the use of crop genetic resources. *Plant Science* **282**, 40-48  
*Invited critical review of methods developed for high-throughput phenotyping of genetic resources and derived segregating progeny for water-use efficiency traits. Data represents research undertaken in early vigour/leaf area, biomass and canopy temperature from GJR and colleagues. GJR wrote this invited review (95% contribution)*
3. Jimenez-Berni J, Deery D, Rozas-Larraondo P, Condon AG, **Rebetzke GJ**, James RA, Bovill WD, Furbank R, Sirault XS (2018) High throughput determination of plant height, ground cover, and above-ground biomass in wheat with LiDAR. *Frontiers in Plant Science* Article **9**, 237  
*Demonstrated potential for LiDAR (Light Detection and Ranging) in non-destructive prediction of plant height, leaf area/orientation and biomass in large wheat breeding experiments. Growth stage-specific and -generalised predictions are given in establishing high repeatability for all growth parameters. GJR designed some field experiments, analysis and writing (30% contribution)*
4. **Rebetzke GJ**, Bonnett DG, Reynolds MR (2016) Awns reduce grain number to increase grain size and harvestable yield in irrigated and rainfed spring wheat. *Journal of Experimental Botany* **67**, 2573-2586  
*Comprehensive assessment of 42 awned-awnless wheat pairs (five genetic backgrounds) in drought- and heat-limited field environments globally. Awns increased grain size through compensation from reduced floret fertility and grain number. Demonstrated potential to breed awnless wheats for droughted environments. GJR co-designed, analysed and led reporting of the research (75% contribution)*
5. **Rebetzke GJ**, Condon AG, Rattey AR, Farquhar GD, Richards RA (2013) Genomic regions for canopy temperature and their genetic association with stomatal conductance and grain yield in bread wheat (*Triticum aestivum* L.). *Functional Plant Biology* **40**, 14-26  
*Highly-cited paper (228 cites) establishing first genetic link between canopy temperature (as surrogate for stomatal conductance) and canopy height arising from boundary layer factors addressing uncertainty with canopy temperature as a surrogate for yield in breeding. Statistical models are provided to address canopy height-temperature covariances. GJR designed, analysed and reported the research (95% contribution)*
6. **Rebetzke GJ**, Richards RA, Fettell NA, Long M, Condon AG, Botwright TL (2007) Genotypic increases in coleoptile length improves wheat establishment, early vigour and grain yield with deep sowing. *Field Crops Research* **100**, 10-23  
*Highly cited paper (253 cites) validating emergence with deep-sowing of long coleoptile wheats containing alternative dwarfing genes. Validated then new coleoptile length phenotyping under high throughput, repeatable glasshouse conditions and now used in commercial breeding translated to improved establishment in the field. GJR designed, analysed and reported the research (85% contribution)*
7. Condon AG, Richards RA, **Rebetzke GJ**, Farquhar GD (2004) Breeding for high water use efficiency. *Journal of Experimental Botany* **55**, 2447-2460  
*Highly-cited paper (1353 cites) summarising physiology and genetics research, and efforts at CSIRO and elsewhere to develop selection methods for efficient breeding of water-use efficiency in wheat and translation to other crops. GJR led the writing of the key breeding section of the paper (35% contribution)*
8. **Rebetzke GJ**, Condon AG, Richards RA, Farquhar GD (2002) Selection for reduced carbon-isotope discrimination increases aerial biomass and grain yield of rainfed bread wheat. *Crop Science* **42**, 739-745  
*Highly cited paper (541 cites) First report of targeted breeding of carbon isotope discrimination (surrogate for transpiration efficiency; TE) was associated with greater harvest index and grain yield especially in droughted environments. Also, first report of CSIRO-bred high TE wheat varieties Drysdale and Rees. GJR designed, analysed and reported the research (85% contribution)*

9. Ellis MH, Spielmeyer W, Gale K, **Rebetzke GJ**, Richards RA (2002) Perfect markers for the *Rht-B1b* and *Rht-D1b* dwarfing mutations in wheat (*Triticum aestivum* L.). *Theoretical and Applied Genetics* **105**, 1038-1042  
*Highly cited paper (648 cites) Reported development of perfect molecular markers now globally used in the identification and selection of the green revolution Rht1 and Rht2 dwarfing genes. These are amongst if not the most widely used molecular markers in breeding globally. GJR analysed and co-authored the research (30% contribution)*
10. **Rebetzke GJ**, Appels R, Morrison A, Richards RA, McDonald G, Ellis MH, Spielmeyer W, Bonnett DG (2001) Quantitative trait loci on chromosome 4B for coleoptile length and early vigour in wheat (*Triticum aestivum* L.). *Australian Journal of Agricultural Research* **52**, 1221-1234  
*First detailed report of genetic architecture/QTL for early growth in wheat (and broadly any cereal). Established negative genetic effect of green revolution Rht1 dwarfing gene on seedling emergence and identified five novel QTL including now important 'LCol-A1' allele used in breeding. GJR designed, analysed and reported the research (70% contribution)*

### Full publication list

Citation summary from Scopus (Google Scholar in parenthesis) (as of October 5, 2023):

Articles with citation data:	150 (150)
Sum of times cited:	11315 (18100)
Average citations per article:	73 (119)
H-index:	58 (67)

### Scholarly book chapters

1. Sukumaran S, **Rebetzke G**, Mackay I, Bentley AR, Reynolds MP (2022) Pre-breeding Strategies. In '*Wheat Improvement*' (Eds MP Reynolds and H Braun). (Springer, Cham) pp. 451-469.
2. Walsh M, Broster J, Chauhan B, **Rebetzke GJ**, Pratley J (2019) Weed control in cropping systems – past lessons and future opportunities. In '*Australian Agriculture in 2020: From Conservation to Automation*' (Eds J Pratley and J Kirkegaard) (Agronomy Australia and Charles Sturt University, Wagga Wagga) pp. 153-172.
3. **Rebetzke GJ**, Ingvorsen C, Bovill WD, Trethowan R, Fletcher A (2019) Breeding Evolution for Conservation Agriculture. In '*Australian Agriculture in 2020: From Conservation to Automation*' (Eds J Pratley and J Kirkegaard) (Agronomy Australia and Charles Sturt University, Wagga Wagga) pp. 273-287.
4. Garnett TP, **Rebetzke GJ** (2013) Improving crop nitrogen use in dryland farming. In '*Improving Water and Nutrient-Use Efficiency in Food Production Systems*' (Ed. Z. Rengel) (John Wiley & Sons, New York) pp. 123-144.
5. Reynolds M, **Rebetzke GJ** (2010) Application of plant physiology in wheat breeding. In '*The Wheat Book Vol 2 - A history of wheat breeding*' (Eds AP Bonjean, WJ Angus, M van Ginkel) (Lavoisier, France) pp 807-906
6. Reynolds M, Manes Y, **Rebetzke GJ** (2010) Tools in selection for physiological traits. In '*The CIMMYT Wheat Handbook*'. (Ed. H Braun) (CIMMYT, Mexico) pp. 13-28.
7. Richards RA, **Rebetzke GJ**, Condon AG, Watt M (2010) Breeding to improve grain-yield in water-limited environments: The CSIRO experience with wheat. In '*Crop Stress Management and Global Climate Change*' (Eds Araus JL, Slafer GA) (CABI, London) pp. 105-122.
8. **Rebetzke GJ**, Chapman SC, McIntyre L, Condon AG, Richards RA, Watt M, van Herwaarden A (2009) Grain yield improvement in water-limited environments. In '*Wheat: Science and Trade*' (Ed. BF Carver) (Wiley-Blackwell, Ames Iowa) pp. 215-249
9. Lambrides CJ, **Rebetzke GJ**, Laidlaw H, Godwin I (2008) Molecular breeding for abiotic stress resistance. In '*Principles and practices of Plant Molecular Mapping and Breeding*' (Eds C Cole and A Abbott) (Science Publ. Inc, USA) pp. 165-215.
10. Chapman SC, Wang J, **Rebetzke GJ**, Bonnett DG (2008) Accounting for variability in the direction and use of markers for simple and complex traits. In '*Scale and Complexity in Plant Systems Research, Gene-Plant-Crop Relations*' (Eds JHJ Spiertz *et al.*) (Springer, Netherlands) pp. 37-44.

11. **Rebetzke GJ**, van Herwaarden A, Jenkins C, Ruuska S, Tabe L, Lewis D, Weiss M, Richards RA (2007) Genetic control of water-soluble carbohydrate reserves in bread wheat. *In* 'Wheat Production in Stressed Environments' (Eds H T Buck *et al.*) (Springer, Netherlands) pp. 349-356.
12. Condon AG, Reynolds MP, **Rebetzke GJ**, van Ginkel M, Richards RA, Farquhar GD (2007) Using stomatal aperture traits to select for high yield potential in bread wheat. *In* 'Wheat Production in Stressed Environments' (Eds HT Buck *et al.*) (Springer, Netherlands) pp. 617-624.
13. Bonnett DG, Hyles J, **Rebetzke GJ** (2007) Efficient integration of molecular and conventional breeding methodologies. *In* 'Wheat Production in Stressed Environments' (Eds HT Buck *et al.*) (Springer, Netherlands) pp. 747-752.
14. Ellis MH, Bonnett DG, **Rebetzke GJ** (2007) Borlaug, Strampelli and the worldwide distribution of *Rht8*. *In* 'Wheat Production in Stressed Environments' (Eds HT Buck *et al.*) (Springer, Netherlands) pp. 787-792.
15. Reynolds M, **Rebetzke GJ**, Pellegrineschi A, Trethowan R (2006) Drought adaptation in wheat. *In* 'Drought Adaptation in Cereals' (Ed. JM Ribaut) (Haworth Press, New York) pp. 401-436.
16. Condon AG, Richards RA, **Rebetzke GJ**, Farquhar GD (2006) The application of carbon isotope discrimination in cereal improvement. *In* 'Drought Adaptation in Cereals' (Ed. JM Ribaut) (Haworth Press, New York) pp. 171-211.
17. Richards RA, **Rebetzke GJ**, Appels R, Condon AG (2002) Physiological traits to improve the yield of rainfed wheat: Can molecular genetics help? *In* 'Molecular approaches for the genetic improvement of cereals for stable production in water-limited environments' (Eds J Ribaut *et al.*) (CIMMYT, Mexico) pp. 54-58.

#### Refereed journal articles

18. **Rebetzke GJ**, Hymen B, Ingvordsen CI, Bathgate J (2024) Wheat dwarfing genes modify coleoptile elongation rates and lengths to influence seedling establishment following deep sowing in wheat. *Journal of Experimental Botany* (Submitted)
19. Moore CM, **Rebetzke GJ** (2024) Genetic relationship of embryo size, grain shape and flour yield in a wheat (*Triticum aestivum* L.) quality mapping population. *Field Crops Research* (Submitted)
20. Reynolds M, **Rebetzke GJ** (2024) Wheat genetic resources have avoided disease pandemics, improved food security, and reduced environmental footprints: A review of historical impacts and future opportunities. *Global Change Biology* (Submitted).
21. Bathgate J, Moroni, JS, Harris F, Eastwood R, **Rebetzke GJ** (2024) Influence of dwarfing genes and the *Lcol A1* QTL on coleoptile size and plant establishment. *Field Crops Research* (Submitted)
22. Hendriks PW, Gurusingham S, Weston PA, Ryan PR, Delhaize E, Weston LA, **Rebetzke GJ** (2024) Introgression of early shoot vigour in wheat increases above- and below-ground competitiveness and provides options for integrated weed management. *Plant and Soil* XX, XX-XX
23. Gifford M, Xu G, Dupuy L, Lou G, Vissenberg K, **Rebetzke GJ** (2024) Root architecture and rhizosphere microbe interactions. *Journal of Experimental Botany* 75, 503-507
24. Stummer BE, Flohr BM, Rebetzke GJ, Meiklejohn R, Ware A, Haskins B, Whitworth R, McBeath T (2023) Deep sowing of long coleoptile wheat into subsoil moisture: soil texture and crop establishment impacts. *Environmental Research Communications* 5, 055015
25. Faveri JD, Verbyla AP, **Rebetzke GJ** (2022) Random regression models for multi-environment, multi-time (MEMT) data from crop variety selection trials. *Crop and Pasture Science* 74, 271-283
26. Bowerman A, Byrt C, Roy S, Whitney S, Mortimer JC, Ankey RA, Gillingham M, Zhang D, Millar AA, **Rebetzke GJ**, Pogson B (2023) Potential abiotic stress targets for modern genetic manipulation. *The Plant Cell* 35, 139-161 (Invited)
27. Langridge P, **Rebetzke GJ**, et al. (2023) Meeting the Challenges Facing Wheat Production: The Strategic Research Agenda of the Global Wheat Initiative. *Agronomy* 12, 2767
28. **Rebetzke GJ**, Zhang H, Ingvordsen C, Condon AG, Rich S, Ellis M (2022) Genotypic variation and covariation in wheat seedling seminal root architecture and grain yield under field conditions. *Theoretical and Applied Genetics* 135, 3247-3264
29. Ingvordsen C, Hendriks P, Smith D, Bechaz KM, **Rebetzke GJ** (2022) Genetic differences in maximal wheat rooting depth with different *Rht* dwarfing genes. *Journal of Experimental Botany* 73, 6292-6306



30. Nelson M, Nesi N, Barrero JM, Fletcher AL, Greaves IK, Hughes T, Laperche A, Snowden, **Rebetzke GJ**, Kirkegaard JA (2022) Strategies to improve field establishment of canola: a review. *Advances in Agronomy* **175**, 133-177
31. Hendriks PW, Gurusinghe S, Ryan P, **Rebetzke GJ**, Weston L (2022) Competitiveness of early vigour winter wheat (*Triticum aestivum* L.) genotypes is established at early growth stages. *Agronomy* **12**, 377
32. Rebetzke GJ, Rattey AR, Brooks B, Bovill W, Richards RA, Ellis MH (2022) Agronomic assessment of the durum *Rht18* dwarfing gene in bread wheat. *Crop and Pasture Science* **73**, 325-336
33. Zhao Z, Wang E, Kirkegaard J, Rebetzke GJ (2022) Novel wheat varieties facilitate deep sowing to beat the heat of changing climates. *Nature Climate Change* **12**, 291-296
34. Hendriks PW, Ryan PR, Hands P, Rolland V, Gurusinghe S, Weston LA, **Rebetzke GJ**, Delhaize E (2022) Selection for early shoot vigour in wheat increases root hair length but reduces epidermal cell size of roots and leaves. *Journal of Experimental Botany* **73**, 2499-2510
35. **Rebetzke GJ**, Rathjen T (2021) Dwarfing gene near-isogenic stocks for assessing plant height and agronomic performance in bread wheat. *Field Crops Research* (Embargoed under Commercial in Confidence)
36. Flohr BM, Ouzman J, McBeath TM, **Rebetzke GJ**, Kirkegaard JA, Llewellyn RS (2021) Spatial analysis of the seasonal break and implications for crop establishment in southern Australia. *Agricultural Systems* **190**, Article ID 103105
37. Deery D, **Rebetzke GJ**, Jimenez-Berni J, James R, Bovill WD, Furbank R, Condon AG, Chapman SC (2021) LiDAR improves phenotypic repeatability of above-ground biomass and crop growth rate in wheat. *Plant Phenomics* Article ID 8329798
38. Deery D, **Rebetzke GJ**, Jimenez-Berni J, James R, Bovill WD, Furbank R, Condon AG, Chapman SC (2021) Impact of varying light and dew on canopy ground cover measured from ground-based LiDAR, NDVI and RGB in wheat. *Plant Phenomics*. Article ID 9842178
39. Verbyla AP, Faveri JD, Deery DM, **Rebetzke GJ** (2021) Modelling temporal genetic and spatio-temporal residual effects for high-throughput phenotyping data. *Australia and New Zealand Journal of Statistics* **63**, 284-308
40. Francki M, Stainer GS, Walker E, **Rebetzke GJ**, Stefanova K, French RJ (2021) Phenotypic evaluation and genetic analysis of seedling emergence in a global collection of wheat genotypes (*Triticum aestivum* L.) under limited water capacity. *Frontiers of Plant Science* p. 2851
41. Houshmandfar A, Ota N, O'Leary GN, **Rebetzke GJ**, Taus M (2020) A reduced tillering trait show small but consistent yield gains in dryland wheat production. *Global Change Biology* **26**, 4056-4067
42. Dreccer FM, Condon AG, Macdonald B, **Rebetzke GJ**, Awasi MA, Borgognone MG, Peake A, Piñera-Chavez FJ, Hundt A, Jackway P, McIntyre CL (2020) Genotypic variation for lodging tolerance in spring wheat: Wider and deeper root plates, a feature of low lodging, high yielding germplasm. *Field Crops Research* **258**, Article ID 107942
43. **Rebetzke GJ**, Jimenez-Berni J, RA Fischer, Deery D, Smith D (2019) High-throughput phenotyping to enhance the use of crop genetic resources. Invited paper in *Plant Science* **282**, 40-48
44. Dolferus R, Thavamanikumar S, Sangma H, Kleven S, Wallace X, Forrest K, **Rebetzke G**, Hayden M, Borg L, Smith A, Cullis B (2019) Determining the genetic architecture of reproductive stage drought tolerance in wheat using a correlated trait and correlated marker effect model. *Genes, Genomes, Genetics* **12**, 473-489
45. Houshmandfar A, **Rebetzke GJ**, Lawes R, Taus M (2019) Grain yield responsiveness to water supply in near-isogenic reduced-tillering wheat lines - An engineered crop trait near its upper limit. *European Journal Agronomy* **102**, 33-38
46. Wang E, Brown H, **Rebetzke GJ**, Zhao Z, Zheng B, Chapman SC (2019) Improving process-based crop models to better capture G×E×M interactions. *Journal of Experimental Botany* **70**, 2389-2401
47. Zhao Z, **Rebetzke GJ**, Zheng Z, Chapman SC, Wang E (2019) Modelling impact of early vigour on wheat yield in dryland regions. *Journal of Experimental Botany* **70**, 2535-2548
48. Deery D, **Rebetzke GJ**, Jimenez-Berni J, James R, Bovill WD, Furbank R, Condon AG, Chapman SC (2019) Evaluation of the phenotypic repeatability of canopy temperature in wheat using continuous-terrestrial and airborne measurements. *Frontiers in Plant Science* **10**
49. Bovill WD, Hyles J, Zwart AB, Ford BA, Perera G, Phongkham T, Brooks B, **Rebetzke GJ**, Hayden MJ, Hunt JR, Spielmeyer W (2019) Increase in coleoptile length and establishment by *Lcol-A1*, a genetic locus with major effect in wheat. *BMC Plant Biology* **19**, 332-341

50. Yadav A, Carroll A, Estavillo G, **Rebetzke GJ**, Pogson B (2019) Wheat drought tolerance in the field is predicted by amino acid responses to glasshouse-imposed drought. *Journal of Experimental Botany* **70**, 4931-4947
51. Li X, Ingvordsen C, Weiss M, **Rebetzke GJ**, Condon AG, James RA, Richards RA (2019) Deeper roots are associated with cooler canopy temperatures, higher NDVI and greater yields in three wheat populations grown on stored water. *Journal of Experimental Botany* **70**, 4963-4974
52. Reynolds MR, Borrell A, Braun H, Edmeades G, Flavell R, Gwynn J, Jordan D, Pixley D, **Rebetzke GJ** (2019) Translation research for climate ready, resilient higher-yielding crops. *Crop Breeding, Genetics and Genomics e190016* **1**, 1-32
53. Jimenez-Berni J, Deery D, Rozas-Larraondo P, Condon AG, **Rebetzke GJ**, James RA, Bovill WD, Furbank R, Sirault XS (2018) High throughput determination of plant height, ground cover, and above-ground biomass in wheat with LiDAR. *Frontiers in Plant Science* Article **9**, 237
54. Christy B, Tausz-Posch S, Tausz M, Richards R, **Rebetzke GJ**, Mclean T, Fitzgerald G, Bourgault M, O'Leary G (2018) Benefits of increasing transpiration efficiency in wheat under elevated CO<sub>2</sub> for rainfed regions. *Global Climate Change* **24**, 1965-1977
55. Fischer RA, **Rebetzke GJ** (2018) Indirect selection for potential yield in early generation, spaced plantings of wheat and other small grain cereals: a review. *Crop and Pasture Science* **69**, 439-459
56. Ovenden B, Millgate A, Wade L, **Rebetzke GJ**, Holland JB (2018) Genomic selection for water soluble carbohydrate content in a multi-environment wheat experiment. *Genes, Genomes, Genetics* **8**, 1909-1919
57. Fletcher A, Christopher J, Hunter M, **Rebetzke GJ**, Chenu K (2018) A low-cost method to rapidly, accurately and efficiently screen for transpiration efficiency. *Plant Methods* **14**, 77
58. Moeller CM, **Rebetzke GJ** (2017) Performance of spring wheat near-isogenic for the reduced-tillering tin trait across a wide range of water stress environment types. *Field Crops Research* **200**, 98-113
59. **Rebetzke GJ**, Richards RA, Holland JB (2017) Population extremes for assessing trait value and correlated response of genetically complex traits. *Field Crops Research* **201**, 122-132
60. Ovenden B, Wade L, Millgate A, **Rebetzke GJ**, Holland JB (2017) Genome-wide associations for water-soluble carbohydrate concentration and relative maturity in wheat using SNP and DArT marker arrays. *Genes, Genomes, Genetics* **7**, 2821-2830
61. Ovenden B, Millgate A, Wade L, **Rebetzke GJ**, Holland JB (2017) Strategies for genetic improvement of water-soluble carbohydrate accumulation and investigation of genetic × environment interactions in an elite wheat breeding population. *Theoretical and Applied Genetics* **130**, 2445-2461
62. **Rebetzke GJ**, Bonnett DG, Reynolds MR (2016) Awns reduce grain number to increase grain size and harvestable yield in irrigated and rainfed spring wheat. *Journal of Experimental Botany* **67**, 2573-2586
63. Robertson MJ, Kirkegaard JA, **Rebetzke GJ**, Llewellyn R, Wark T (2016) Prospects for productivity increases in the Australian grains industry. *Food and Energy Security* **5**, 107-122
64. **Rebetzke GJ** (2016) From inspiration to impact: Delivering value from global root research. *Journal of Experimental Botany* **67**, 3601-3603
65. James R, Weligama C, Verbyla K, Ryan P, **Rebetzke GJ**, Rattey A, Richardson A, Delhaize E (2016) Enhanced rhizosheath in wheat on acid soils improves phosphorous use efficiency and growth in P-limiting conditions. *Journal of Experimental Botany* **63**, 3709-3718
66. Rebetzke GJ, Zheng B, Chapman SC (2016) Do wheat breeders have suitable genetic variation to overcome short coleoptiles and poor establishment in the warmer soils of future climates? *Functional Plant Biology* **43**, 961-972
67. Zerner RK, Gill GS, **Rebetzke GJ** (2016) Stability of wheat cultivars in weed competitive ability in differing environments in southern Australia. *Crop and Pasture Science* **67**, 695-702
68. Duan T, Chapman SC, Holland E, **Rebetzke GJ**, Guo Y, Zheng B (2016) Dynamic quantification of canopy structure to characterise early plant vigour in wheat genotypes. *Journal of Experimental Botany* **67**, 4523-4534
69. **Rebetzke GJ**, Jimenez-Berni J, Bovill WA, Deery DM, James RA (2016) High-throughput phenotyping technologies allows accurate selection of stay-green. *Journal of Experimental Botany* **67**, 4919-4924
70. Deery D, Jimenez-Berni J, **Rebetzke GJ**, James R, Bovill WD, Furbank R, Condon AG (2016) Methodology for high-throughput field phenotyping of canopy temperature using airborne and ground-based thermography. *Frontiers in Plant Science* **7**, 1808-1817

71. Zhang L, Condon AG, Richards RA, **Rebetzke GJ** (2015) Recurrent selection for wider seedling leaves increases early leaf area development in wheat (*Triticum aestivum* L.). *Journal of Experimental Botany* **66**, 1215-1226
72. Rosewarne GM, Bonnett D, **Rebetzke GJ**, Loneragan PJ, Larkin PJ (2015) The potential of *Lr19* and *Bdv2* translocations to improve yield and disease resistance in the high rainfall wheat zones of Australia. *Agronomy* **5**, 55-70
73. Moore C, Richards RA, **Rebetzke GJ** (2015) Phenotypic variation and QTL analysis for oil content and protein concentration in bread wheat (*Triticum aestivum* L.). *Euphytica* **204**, 371-382
74. Moore C, **Rebetzke GJ** (2015) Genetic control and genomic regions for embryo size and early vigour in multiple wheat populations. *Agronomy* **5**, 152-179
75. Chochois V, Vogel JP, **Rebetzke GJ**, Watt M (2015) Variation in adult plant phenotypes and partitioning among seed and stem-borne roots across *Brachypodium distachyon* accessions to exploit in breeding cereals for well-watered and drought environments. *Plant Physiology* **168**, 953-967
76. Sheehy J, Borrás L, **Rebetzke GJ**, Sadras VO (2015) Facets of the maximum crop yield problem. *Field Crops Research* **182**, 1-2 (Invited guest editor special 'Yield potential' issue)
77. Wilson PB, **Rebetzke GJ**, Condon AG (2015) Pyramiding greater early vigour and integrated transpiration efficiency in bread wheat; trade-offs and benefits. *Field Crops Research* **183**, 102-110
78. Robertson MJ, **Rebetzke GJ**, Norton R (2015) Assessing the place and role of crop simulation modelling in Australia. *Crop and Pasture Science* **66**, 877-893
79. Sirault XRR, Condon AG, Wood JT, Farquhar GD, **Rebetzke GJ** (2015) 'Rolled-upness': quantifying leaf rolling in wheat using functional data analysis. *Plant Methods* **11**, 1-12
80. Wilson PB, **Rebetzke GJ**, Condon AG (2015) Of growing importance: the potential benefit in genetically combining greater early vigour and transpiration efficiency for wheat in variable rainfed environments. *Functional Plant Biology* **42**, 1107-1115
81. Ryan PR, Liao M, Delhaize E, **Rebetzke GJ**, Weligama K, Spielmeyer W, James R (2015) Early vigour and phosphate uptake in bread wheat. *Journal of Experimental Botany* **66**, 7089-7100
82. Pang J, Palta JA, **Rebetzke GJ**, Milroy SP (2015) The influence of shoot and root size on nitrogen uptake in wheat is affected by nitrate affinity in the roots during early growth. *Functional Plant Biology* **42**, 1179-1189
83. Hendriks PW, Kirkegaard JA, Lilley JM, Gregory PJ, **Rebetzke GJ** (2015) A tillering inhibition gene influences root-shoot carbon partitioning and pattern of water use to improve wheat productivity in rainfed environments. *Journal of Experimental Botany* **67**, 327-340
84. **Rebetzke GJ**, Fischer RA, van Herwaarden AF, Bonnett DG, Chenu K, Rattey AR, Fettell NF (2014) Plot size matters: Interference from intergenotypic competition in plant phenotyping studies. *Functional Plant Biology* **41**, 107-118
85. Benloch-Gonzalez M, Berger J, **Rebetzke GJ**, Palta J (2014) The plasticity of the growth and proliferation of wheat root system under elevated CO<sub>2</sub>. *Plant and Soil* **374**, 963-976
86. Sadras VO, **Rebetzke GJ**, Edmeades G (2014) The phenotype and components of phenotypic variance of crop plants. *Field Crops Research* **154**, 255-259
87. Kirkegaard J, Conyers M, Hunt J, Kirkby C, Watt M, **Rebetzke G** (2014) Sense and nonsense in conservation agriculture: Principles, pragmatism and productivity in Australian mixed farming systems. *Agriculture, Ecosystems and Environment* **187**, 133-144
88. **Rebetzke GJ**, Verbyla A, Verbyla K, Morell M, Cavanagh C (2014) Use of a large multiparent wheat mapping population for genomic dissection of coleoptile and seedling growth. *Plant Biotechnology Journal* **12**, 219-230
89. Burdon JJ, Barrett LG, **Rebetzke GJ**, Thrall PH (2014) Guiding deployment of resistance in cereals through use of evolutionary principles. *Evolutionary Applications* **7**, 609-624
90. Acuña TL, **Rebetzke GJ**, He X, Maynol E, Wade LJ (2014) Mapping quantitative trait loci associated with wheat root penetration ability in simulated controlled and field environments. *Molecular Breeding* **34**, 631-642
91. **Rebetzke GJ**, Kirkegaard JA, Watt M, Richards RA (2014) Genetic vigour helps maintain superior leaf area development for wheat seedlings growing in uncultivated soils. *Plant and Soil* **377**, 127-144
92. Wasson A, **Rebetzke GJ**, Kirkegaard JA, Christopher J, Richards RA, Watt M (2014) Soil coring at multiple field environments can directly quantify variation in deep root traits to select wheat genotypes for breeding. *Journal of Experimental Botany* **65**, 6231-6249

93. Moeller CM, Evers JB, **Rebetzke GJ** (2014) Shoot branching at the meristem, plant, and population scales: which processes and which models to simulate plant plasticity. *Frontiers in Plant Science* **5**, 1-13 (article 617)
94. Lopes MS, **Rebetzke GJ**, Reynolds MR (2014) Drought adaptive traits and their genetic basis in wheat. *Journal of Experimental Botany* **65**, 6167-6177
95. **Rebetzke GJ**, Biddulph B, Chenu K, Deery D, Mayer J, Moeller C, Bennett D, Rattey A (2013) Development of a multisite, managed environment facility for targeted trait and germplasm evaluation. *Functional Plant Biology* **40**, 1-13
96. Pang J, Palta JA, **Rebetzke GJ**, Milroy SP (2013) Wheat genotypes with early vigour accumulated more N and had higher photosynthetic N use efficiency during early growth. *Functional Plant Biology* **41**, 215-222
97. **Rebetzke GJ**, Condon AG, Rattey AR, Farquhar GD, Richards RA (2013) Genomic regions for canopy temperature and their genetic association with stomatal conductance and grain yield in bread wheat (*Triticum aestivum* L.). *Functional Plant Biology* **40**, 14-26
98. Watt M, Moosavi S, Cunningham S, Kirkegaard JA, **Rebetzke GJ**, Richards RA (2013) A rapid, controlled-environment seedling root screen for wheat correlates well with rooting depths at vegetative, but not reproductive, stages at two field sites. *Annals of Botany* **112**, 447-455
99. Mitchell JH, **Rebetzke GJ**, Chapman S, Fukai S (2013) Evaluation of reduced-tillering (*tin*) wheat lines in terminal water deficit environments. *Journal of Experimental Botany* **64**, 3439-3451
100. Sadras VO, **Rebetzke GJ** (2013) Plasticity in tillering is associated with plasticity in yield of wheat. *Crop and Pasture Science* **64**, 234-243
101. Rebetzke GJ, Ellis MH, Bonnett DG (2012) Combining gibberellic acid sensitive and insensitive dwarfing genes in breeding of higher-yielding, sesqui-dwarf wheats. *Field Crops Research* **127**, 17-25
102. Borrás-Gelónch G, **Rebetzke GJ**, Richards RA, Rogomosa I, Slafer G (2012) Genetic control of pre-anthesis duration in two wheat (*Triticum aestivum* L.) populations and its influence on leaf appearance, tillering and dry matter accumulation. *Journal of Experimental Botany* **63**, 69-89
103. Rosewarne G, Singh RP, Huerta-Espino J, Herrero S, Forrest K, Hayden M, **Rebetzke GJ** (2012) Analysis of leaf and stripe rust severities reveals pathotype changes and multiple minor QTLs associated with resistance in an Avocet × Pastor wheat population. *Theoretical and Applied Genetics* **124**, 1283-1294
104. Mitchell JH, Chapman SC, **Rebetzke GJ**, Bonnett DG, Fukai S (2012) Evaluation of a reduced tillering (*tin*) gene in wheat lines grown across different production environments. *Crop and Pasture Science* **63**, 128-141
105. Wasson AP, Richards RA, Chatrath R, Misra S, Sai Prasad SV, Saxena DC, **Rebetzke GJ**, Kirkegaard JA, Christopher J, Watt M (2012) An ideotype breeding approach for root system traits to increase water uptake and yield in dry environments. *Journal of Experimental Botany* **63**, 3485-3498
106. McIntyre CL, Casu RE, **Rebetzke GJ**, Shorter R, Ping Xue G (2012) Genotypic variation in the accumulation of water-soluble carbohydrates. *Functional Plant Biology* **39**, 560-568
107. **Rebetzke GJ**, Ellis MH, Bonnett DG, Mickelson B, Condon AG, Richards RA (2012) Height reduction and agronomic performance for selected gibberellin-responsive dwarfing genes in bread wheat (*Triticum aestivum* L.). *Field Crops Research* **126**, 87-96
108. Yan W, Cai SB, Ma HY, **Rebetzke GJ**, Liu CJ (2011) Plant height affects type I and type II resistance of *Fusarium* head blight differently in wheat (*Triticum aestivum* L.). *Plant Pathology* **60**, 506-512
109. Palta JA, Xing C, Milroy SP, **Rebetzke GJ**, Dreccer F, Watt M (2011) Large root systems: 'Are they useful in adapting wheat to dry environments?' *Functional Plant Biology* **38**, 347-354
110. **Rebetzke GJ**, Ellis MH, Bonnett DG, Condon AG, Falk D, Richards RA (2011) The *Rht13* dwarfing gene reduces peduncle length and plant height to increase grain number and yield of wheat. *Field Crops Research* **124**, 323-331
111. Richards RA, **Rebetzke GJ**, Watt M, Condon AG, Spielmeyer W, Dolferus R (2010) Breeding for improved water-productivity in temperate cereals: phenotyping, quantitative trait loci, markers and the selection environment. Invited paper in *Functional Plant Biology* **37**, 1-13
112. Chapman SC, Chenu K, **Rebetzke GJ**, Dieters M, Hammer GL, Wang J (2009) Developing new methods for the application of cross prediction, QTL analysis and comparisons of breeding strategies. *SABRAO Journal* **41**, 1-19
113. Wang J, Chapman SC, Bonnett DG, **Rebetzke GJ** (2009) Simultaneous selection of major and minor genes: use of QTL to increase selection efficiency of coleoptile length of wheat (*Triticum aestivum* L.). *Theoretical and Applied Genetics* **119**, 65-74

114. Rosewarne GM, Singh RP, Huerta-Espino J, **Rebetzke GJ** (2008) Quantitative trait loci for slow rusting resistance to leaf and stripe rust on wheat identified with multi-environment analysis. *Theoretical and Applied Genetics* **116**, 1027-1034
115. **Rebetzke GJ**, Lopez-Casteneda C, Botwright-Acuna T, Condon AG, Richards RA (2008) Inheritance of coleoptile tiller appearance and size in wheat. *Australian Journal of Agricultural Research* **59**, 863-873
116. **Rebetzke GJ**, van Herwaarden A, Jenkins C, Ruuska S, Tabe L, Lewis D, Weiss M, Fettell N, Richards RA (2008) Quantitative trait loci for water soluble carbohydrates and associations with agronomic traits in wheat. *Australian Journal of Agricultural Research* **59**, 891-905
117. **Rebetzke GJ**, Condon AG, Richards RA, Appels R, Farquhar GD (2008) Quantitative trait loci for carbon isotope discrimination are repeatable across environments and wheat mapping populations. *Theoretical and Applied Genetics* **118**, 123-137
118. **Rebetzke GJ**, Richards RA, Fettell NA, Long M, Condon AG, Botwright TL (2007) Genotypic increases in coleoptile length improves wheat establishment, early vigour and grain yield with deep sowing. *Field Crops Research* **100**, 10-23
119. Richards RA, Watt M, **Rebetzke GJ** (2007) Physiological traits and cereal germplasm for sustainable agricultural systems. *Euphytica* **154**, 409-425
120. Wang J, Chapman SC, Bonnett DG, **Rebetzke GJ**, Crouch J (2007) Application of population genetic theory and simulation models to efficiently pyramid multiple genes via marker-assisted selection. *Crop Science* **47**, 580-588
121. **Rebetzke GJ**, Ellis MH, Bonnett DG, Richards RA (2007) Molecular mapping of genes for coleoptile growth in bread wheat (*Triticum aestivum* L.). *Theoretical and Applied Genetics* **114**, 1173-1183
122. Ellis MH, Bonnett DG, **Rebetzke GJ** (2007) A 192bp allele at the *gwm261* locus is not always diagnostic for *Rht8* in bread wheat. *Euphytica* **157**, 209-214
123. Palta JA, Fillery IRP, **Rebetzke GJ** (2007) Restricted-tillering wheat does not lead to greater investment in roots and early N uptake. *Field Crops Research* **104**, 52-59
124. Burton JW, Wilson RF, **Rebetzke GJ**, Pantalone VR (2006) Registration of N98-4445A mid-oleic soybean germplasm line. *Crop Science* **46**, 1010-1012
125. **Rebetzke GJ**, Richards RA, Condon AG, Farquhar GD (2006) Inheritance of reduced carbon isotope discrimination in bread wheat (*Triticum aestivum* L.). *Euphytica* **150**, 97-106
126. Lawn RJ, **Rebetzke GJ** (2006) Variation among Australian accessions of the wild mungbean (*Vigna radiata* ssp. *sublobata*) for traits of agronomic, adaptive or taxonomic interest. *Australian Journal of Agricultural Research* **57**, 119-132
127. **Rebetzke GJ**, Lawn RJ (2006) Root and shoot attributes of indigenous perennial accessions of the wild mungbean (*Vigna radiata* ssp. *sublobata*). *Australian Journal of Agriculture* **57**, 791-799
128. **Rebetzke GJ**, Lawn RJ (2006) Adaptive responses of wild mungbean (*Vigna radiata* ssp. *sublobata*) to photo-thermal environment. I. Phenology. *Australian Journal of Agricultural Research* **57**, 917-928
129. **Rebetzke GJ**, Lawn RJ (2006) Adaptive responses of wild mungbean (*Vigna radiata* ssp. *sublobata*) to photo-thermal environment. II. Seed yield, biomass and yield components. *Australian Journal of Agricultural Research* **57**, 929-937
130. Ruuska S, **Rebetzke GJ**, van Herwaarden A, Richards RA, Fettell N, Tabe L, Jenkins C (2006) Genotypic variation for water soluble carbohydrate accumulation in wheat. *Functional Plant Biology* **33**, 799-809
131. Bonnett DG, **Rebetzke GJ**, Spielmeyer W (2005) Strategies for efficient implementation of molecular markers in wheat breeding programs. *Molecular Breeding* **15**, 75-85
132. **Rebetzke GJ**, Bruce S, Kirkegaard JA (2005) Genotypic increases in coleoptile length improves emergence and early vigour with crop residues. *Plant and Soil* **270**, 87-100
133. Botwright TL, **Rebetzke GJ**, Condon AG, Richards RA (2005) Influence of the gibberellin-sensitive *Rht8* dwarfing gene on leaf epidermal cell dimensions and early vigour in wheat (*Triticum aestivum* L.). *Annals of Botany* **95**, 631-639
134. Watt M, Kirkegaard JA, **Rebetzke GJ** (2005) A wheat genotype with high inherent shoot vigour can adapt to the physical and biological properties of unploughed soil. *Functional Plant Biology* **32**, 1-12
135. Ellis MH, **Rebetzke GJ**, Azanza F, Richards RA, Spielmeyer W, Richards RA (2005) Molecular mapping of gibberellin-sensitive dwarfing genes in bread wheat. *Theoretical and Applied Genetics* **111**, 423-430

136. Gregory PJ, Gooding MJ, Ford KE, Hendriks PW, Kirkegaard JA, **Rebetzke GJ** (2005) Genotypic and environmental influences on the performance of crop root systems. *Aspects of Applied Biology* **73**, 1-10
137. **Rebetzke GJ**, Botwright TL, Moore CS, Richards RA, Condon AG (2004) Genotypic variation in specific leaf area for genetic improvement of early vigour in wheat. *Field Crops Research* **88**, 179-189
138. Kirkegaard JA, Simpfendorfer S, Bambach R, Holland J, Moore K, **Rebetzke GJ** (2004) Effect of previous crops on crown-rot infection and yield of tolerant bread wheat and susceptible durum wheat in northern NSW. *Australian Journal of Agricultural Research* **55**, 321-334
139. Ellis MH, **Rebetzke GJ**, Chandler P, Bonnett DG, Spielmeyer W, Richards RA (2004) The effect of different height reducing genes on the early growth of wheat. *Functional Plant Biology* **31**, 583-589
140. **Rebetzke GJ**, Richards RA, Sirault XRR, Morrison AD (2004) Genetic analysis of coleoptile length and diameter of wheat. *Australian Journal of Agricultural Research* **55**, 733-743
141. Condon AG, Richards RA, **Rebetzke GJ**, Farquhar GD (2004) Breeding for high water use efficiency. *Journal of Experimental Botany* **55**, 2447-2460
142. **Rebetzke GJ**, Condon AG, Richards RA, Farquhar GD (2003) Gene action for leaf conductance in three wheat crosses. *Australian Journal of Agricultural Research* **54**, 381-387
143. Munns R, **Rebetzke GJ**, Husain S, James R, Hare RA (2003) Genetic control of sodium exclusion in durum wheat. *Australian Journal of Agricultural Research* **54**, 627-635
144. Ellis MH, **Rebetzke GJ**, Chu P (2003) First report of wheat streak mosaic virus in Australian wheat (*Triticum aestivum* L.). *Plant Pathology* **52**, 808
145. Ellis MH, **Rebetzke GJ**, Kelman WM, Moore CS, Hyles JE (2003) Detection of wheat streak mosaic virus in four grass pasture species in Australia. *Plant Pathology* **53**, 239
146. Cousens R, **Rebetzke GJ**, Barnett AG (2003) Dynamics of competition between wheat and oats II. Effects of dwarfing genes. *Agronomy Journal* **95**, 1305-1313
147. Ellis MH, **Rebetzke GJ**, Mago R, Chu P (2003) Wheat streak mosaic virus in Australia – Confirmation with RT-PCR. *Australasian Plant Pathology* **32**, 551-553
148. Richards RA, **Rebetzke GJ**, Condon AG, van Herwaarden AF (2002) Breeding opportunities for efficient water-use and yield. *Crop Science* **42**, 111-121
149. Condon AG, Richards RA, **Rebetzke GJ**, Farquhar GD (2002) Improving intrinsic water-use efficiency and crop yield. *Crop Science* **42**, 122-131
150. **Rebetzke GJ**, Condon AG, Richards RA, Farquhar GD (2002) Selection for reduced carbon-isotope discrimination increases aerial biomass and grain yield of rainfed bread wheat. *Crop Science* **42**, 739-745
151. Ellis MH, Spielmeyer W, Gale K, **Rebetzke GJ**, Richards RA (2002) Perfect markers for the *Rht-B1b* and *Rht-D1b* dwarfing mutations in wheat (*Triticum aestivum* L.). *Theoretical and Applied Genetics* **105**, 1038-1042
152. Botwright TL, Condon AG, **Rebetzke GJ**, Richards RA (2002) Field evaluation of early vigour for genetic improvement of grain yield in wheat. *Australian Journal of Agricultural Research* **53**, 1137-1145
153. Botwright TL, **Rebetzke GJ**, Condon AG, Richards RA (2001) The effect of *rht* genotype and temperature on coleoptile growth and dry matter partitioning in young wheat seedlings. *Australian Journal of Plant Physiology* **15**, 417-423
154. Botwright TL, **Rebetzke GJ**, Condon AG, Richards RA (2001) Influence of variety, seed position and seed source on screening for coleoptile length in bread wheat (*Triticum aestivum* L.). *Euphytica* **119**, 349-356
155. **Rebetzke GJ**, Condon AG, Richards RA, Read JJ (2001) Phenotypic variation and sampling for leaf conductance in wheat (*Triticum aestivum* L.) breeding populations. *Euphytica* **121**, 335-341
156. Kirkegaard JA, **Rebetzke GJ**, Richards RA (2001) Inheritance of root glucosinolate content in canola. *Australian Journal of Agricultural Research* **52**, 745-753
157. **Rebetzke GJ**, Appels R, Morrison A, Richards RA, McDonald G, Ellis MH, Spielmeyer W, Bonnett DG (2001) Quantitative trait loci on chromosome 4B for coleoptile length and early vigour in wheat (*Triticum aestivum* L.). *Australian Journal of Agricultural Research* **52**, 1221-1234
158. Coleman RK, Gill GS, **Rebetzke GJ** (2001) Identification of quantitative trait loci (QTL) for traits conferring weed competitiveness in wheat (*Triticum aestivum* L.). *Australian Journal of Agricultural Research* **52**, 1235-1246



159. Eagles HA, Bariana HS, Ogonnaya FC, **Rebetzke GJ**, Hollamby GJ, Henry RJ, Henschke P, Carter M (2001) Implementation of molecular markers in Australian wheat breeding programs. *Australian Journal of Agricultural Research* **52**, 1349-1356
160. **Rebetzke GJ**, Pantalone VR, Burton JW, Carter TC Jr, Wilson RF (2001) Genetic background and environment influence palmitate content of soybean [*Glycine max* (L.) Merr.] seed oil. *Crop Science* **41**, 1731-1736
161. Munns R, Hare RA, James RA, **Rebetzke GJ** (2000) Novel genetic variation for salt tolerance in durum wheat. *Australian Journal of Agricultural Research* **51**, 69-74
162. **Rebetzke GJ**, Richards RA (2000) Gibberellic acid-sensitive dwarfing genes reduce plant height to increase kernel number and grain yield of wheat. *Australian Journal of Agricultural Research* **51**, 235-245
163. **Rebetzke GJ**, Read JJ, Barbour MM, Condon AG, Rawson HA (2000) A hand-held porometer for rapid assessment of leaf conductance in wheat. *Crop Science* **40**, 277-280
164. **Rebetzke GJ**, Richards RA, Fischer VM, Mickelson BJ (1999) Breeding long-coleoptile, reduced height wheats. *Euphytica* **106**, 159-168
165. **Rebetzke GJ**, Richards RA (1999) Genetic improvement of early vigour in wheat. *Australian Journal of Agricultural Research* **50**, 291-301
166. Pantalone VR, **Rebetzke GJ**, Burton JW, Carter TC Jr, Israel DW (1999) Soybean PI416937 root system contributes to biomass accumulation in soybean reciprocal grafts. *Agronomy Journal* **91**, 840-844
167. **Rebetzke GJ**, Burton JW, Carter TC Jr, Wilson RF (1998) Changes in agronomic and seed quality characteristics with selection for reduced saturated fatty acid content in soybean seed. *Crop Science* **38**, 297-302
168. **Rebetzke GJ**, Burton JW, Carter TC Jr, Wilson RF (1998) Genetic variation for modifiers controlling reduced saturated fatty acid content in soybean. *Crop Science* **38**, 303-308
169. Burton JW, Wilcox JR, Wilson RF, Novitzky WP, **Rebetzke GJ** (1998) Registration of low palmitic acid soybean germplasm lines N94-2575 and C1943. *Crop Science* **38**, 1407
170. Richards RA, **Rebetzke GJ**, van Herwaarden AF, Duggan BL, Condon AG (1998) Improving yields in rainfed environments using physiological breeding. *Annals of the Arid Zone* **36**, 255-266
171. Pantalone VR, **Rebetzke GJ**, Burton JW, Wilson RF (1997) Genetic regulation of linolenic acid concentration in wild soybean (*Glycine soja*) accessions. *Journal of the American Oil Chemists Society* **74**, 159-163
172. **Rebetzke GJ**, Pantalone VR, Burton JW, Carter TC Jr, Wilson RF (1997) Genotypic variation for fatty acid content in selected *Glycine max* × *Glycine soja* populations. *Crop Science* **37**, 1636-1640
173. Pantalone VR, **Rebetzke GJ**, Burton JW, Wilson RF (1997) Relationship between seed mass and linolenic acid in progeny of crosses between cultivated and wild soybean. *Journal of the American Oil Chemists Society* **74**, 563-568
174. Pantalone VR, **Rebetzke GJ**, Burton JW, Carter TC Jr (1996) Phenotypic evaluation of root traits in soybean, and applicability to plant breeding. *Crop Science* **36**, 456-459
175. **Rebetzke GJ**, Pantalone VR, Carver BF, Burton JW, Wilson RF (1996) Phenotypic variation for saturated fatty acid content in soybean. *Euphytica* **91**, 289-295
176. Wilcox JR, Burton JW, **Rebetzke GJ**, Wilson RF (1994) Transgressive segregation of palmitic acid in seed oil of soybean. *Crop Science* **34**, 1248-1250

#### Refereed conference proceedings

177. **Rebetzke GJ** (2023) Breeding targets to improve wheat performance in drying climates: adapting wheat cropping systems to current and future climate change. In 'Proceedings: On the role of plant breeding and plant variety protection in enabling agriculture to mitigate and adapt to climate change' (International Union for the Protection of New Plant Varieties) October 11, 12 and 26, Geneva Switzerland [upov\\_pub\\_364.pdf](#)
178. Hendriks PW, Gurusinghe S, **Rebetzke GJ**, Weston LA (2023) Early vigour, weed competitive wheat as a tool in integrated weed management. In 'Proceedings of the New Zealand Agronomy Conference' Rotorua, NZ.
179. Bathgate, J, Moroni, JS, Harris F, Eastwood R, **Rebetzke G** (2022) Influence of dwarfing genes and the *Lcol A1* QTL on coleoptile size and plant establishment. In 'Proceedings of the Australian Wheat Breeders Assembly' (Eds R Trethowan *et al.*) Narrabri NSW Australia.

180. Green T, Moroni S, Harris F, Pratley J, Mullan D, **Rebetzke G** (2022) 100-day wheats for adaptation to a changing Australian climate. In *'Proceedings of the Australian Wheat Breeders Assembly'* (Eds R Trethowan *et al.*) Narrabri NSW Australia.
181. Hendriks PW, Gurusinghe S, Ingvorsen CH, **Rebetzke GJ**, Ryan PR, Weston LA (2022) Breeding for shoot vigour modifies below-ground architecture and weed competitiveness in wheat (*Triticum aestivum* L.). In *'Proceedings of the 20th Australian Agronomy Conference'* Toowoomba QLD.
182. Ingvorsen CH, Smith DJ, Rathjen T, Gill G, Weston L, Gapare W, **Rebetzke GJ** (2019) Competitive wheats: Does more vigour early matter? In *'Cells to Satellites. Proceedings of the 19th Australian Agronomy Conference'* (Ed. J Pratley) August 25-29 Wagga Wagga NSW Australia.
183. Ingvorsen CH, Rathjen T, Smith DJ, **Rebetzke GJ** (2019) Breeding of weed-competitive wheats. In *'Cells to Satellites. Proceedings of the 19th Australian Agronomy Conference'* (Ed. J Pratley) August 25-29 Wagga Wagga NSW Australia
184. **Rebetzke GJ**, Bechaz K, Smith DJ, Rathjen T, Fettell, N, Fletcher A, Ingvorsen CH (2019) Genetic opportunities in exploiting genotype  $\times$  row spacing for rainfed wheat. In *'Cells to Satellites' Proceedings of the 19th Australian Agronomy Conference'* (Ed. J Pratley) August 25-29 Wagga Wagga NSW Australia
185. **Rebetzke GJ**, Bechaz K, Murfit M, Bange G, Rathjen T, Dreccer F, Muller W, Fletcher A, Zheng B, Wang E, Zhao Z, Fettell N (2019) Establishing a value proposition for future traits in a climate-changing world. In *'Cells to Satellites. Proceedings of the 19th Australian Agronomy Conference'* (Ed. J Pratley) August 25-29 Wagga Wagga NSW Australia
186. Zhao Z, Wang E, **Rebetzke GJ**, Zheng B, Chapman SC (2019) Modelling impact of climate and soil interactions on yield benefit from early vigour of wheat. In *'Cells to Satellites. Proceedings of the 19th Australian Agronomy Conference'* (Ed. J Pratley) August 25-29 Wagga Wagga NSW Australia
187. Fletcher A, **Rebetzke GJ**, Ogden G (2019) Comparing the yield of reduced tillering wheat genotypes at different sowing densities. In *'Cells to Satellites. Proceedings of the 19th Australian Agronomy Conference'* (Ed. J Pratley) August 25-29 Wagga Wagga NSW Australia
188. Robertson M, **Rebetzke GJ**, Kirkegaard J, Llewellyn R (2015) Are future yield gains in wheat of 1.5% per year achievable? In *'Building Productive, Diverse and Sustainable Landscapes. Proceedings of the 17th Australian Agronomy Conference'* (Eds T Acuna *et al.*) September 20-24 Hobart TAS Australia
189. Moeller C, Evers, JB, **Rebetzke GJ** (2015) 3D modelling of tillering behaviour and light interception of freely (-tin) and restricted (+tin) tillering wheat near-isolines. In *'Building Productive, Diverse and Sustainable Landscapes. Proceedings of the 17th Australian Agronomy Conference'* (Eds T Acuna *et al.*) September 20-24 Hobart TAS Australia
190. Low M, Tausz-Posch S, **Rebetzke G**, Dreccer F, Chapman S, Seneweera S, Fitzgerald, G, Tausz M (2015) Reduced-tillering for changing climates. In *'Building Productive, Diverse and Sustainable Landscapes. Proceedings of the 17th Australian Agronomy Conference'* (Eds T Acuna *et al.*) September 20-24 Hobart TAS Australia
191. **Rebetzke GJ**, Bovill W (2014) 'Integrating physiology and genetics in breeding improved wheat varieties' In *'One century of wheat breeding at La Estanzuela Uruguay: a valuable legacy for the future'*. August 29-30 Montevideo Uruguay
192. Seneweera S, Norton R, Posch S, **Rebetzke GJ**, Fitzgerald G (2010) Performance of wheat genotypes in response to elevated CO<sub>2</sub> – Australian FACE studies. In *'Food Security from Sustainable Agriculture. Proceedings of the 15<sup>th</sup> Australian Society of Agronomy Conference'* (Eds H Dove *et al.*) November 15-18 Christchurch NZ
193. Mitchell JH, Chapman SC, **Rebetzke GJ**, Fukai S (2010) Increased stability of kernel weight under drought through selection of a reduced tillering gene in wheat. In *'Food Security from Sustainable Agriculture. Proceedings of the 15<sup>th</sup> Australian Society of Agronomy Conference'* (Eds H Dove *et al.*) November 15-18 Christchurch NZ
194. Zerner MC, Gill GS, **Rebetzke GJ** (2008) Selection of wheats with high early vigour for improved weed competitive ability. In *'Global Issues, Paddock Action – Proceedings of the 14<sup>th</sup> Australian Society of Agronomy Conference'* (Eds M Unkovich *et al.*) September 21-25 Adelaide SA Australia
195. Mitchell JH, Chapman SC, **Rebetzke GJ**, Fukai S (2008) Increasing grain size and reducing screenings in wheat using a tiller inhibition gene – investigating grain morphology by image analysis. In *'Global Issues, Paddock Action – Proceedings of the 14<sup>th</sup> Australian Society of Agronomy Conference'* (Eds M Unkovich *et al.*) September 21-25 Adelaide SA Australia



196. Palta JA, Fillery IRP, **Rebetzke GJ** (2006) Rooting patterns in double-haploids lines of wheat for reduced tillering and their relationship with early uptake. In 'Groundbreaking Stuff. Proceedings of the 13<sup>th</sup> Australian Agronomy Conference' (Eds L Wade *et al.*) September 10-14 Perth WA Australia
197. Mitchell JH, Chapman SC, **Rebetzke GJ**, Fukai S (2006) Reduced tillering wheat lines maintain kernel weight in dry environments. In 'Groundbreaking Stuff. Proceedings of the 13<sup>th</sup> Australian Agronomy Conference' (Eds L Wade *et al.*) September 10-14 Perth WA Australia
198. Bonnett DG, Lu MQ, **Rebetzke GJ**, Hyles JE (2006) Experiences in testing for late maturity alpha-amylase. In 'Proceedings Cereals 2006. 56<sup>th</sup> Australian Cereal Chemistry Conference' (Eds CL Blanchard *et al.*) Fremantle WA Australia pp. 25-30.
199. **Rebetzke GJ**, AF van Herwaarden, C Jenkins, S Ruuska, L Tabe, N Fettell, D Lewis, M Weiss, RA Richards (2005) Genetic control of water-soluble carbohydrate reserves in bread wheat. In 'Proceedings of the 7th International Wheat Conference (Eds H Buck *et al.*) (INTA and SAGPyA) 27 Nov - 2 Dec Mar Del Plata Argentina p.50.
200. Bonnett DG, **Rebetzke GJ**, Spielmeyer W (2004) Efficient marker-assisted backcrossing strategies. In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT Australia pp. 37-40.
201. Sirault XRR, Fettell N, Condon AG, **Rebetzke GJ** (2004) Does leaf rolling slow water use to maintain leaf area in a terminal drought? In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT Australia pp. 52-55.
202. Ruuska S, van Herwaarden A, Jenkins C, Tabe L, Lewis D, Gillespie V, Richards R, **Rebetzke GJ** (2004) Genotypic differences in water soluble carbohydrate accumulation in wheat. In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT Australia pp. 370-373.
203. Ellis MH, **Rebetzke GJ**, Spielmeyer W, Azanza F, Richards RA (2004) Molecular mapping of gibberellin-sensitive dwarfing genes in wheat. In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT Australia pp. 214-217.
204. Condon AG, Reynolds MP, **Rebetzke GJ**, van Ginkel M, Trethowan R, Bonnett DG, Richards RA, Farquhar GD (2004) Physiological traits as indirect selection criteria for yield potential in bread wheat. In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT pp. 112-115.
205. Condon AG, Hare RA, **Rebetzke GJ** (2004) A breeding program to improve the water use efficiency of durum wheat production. In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT Australia pp. 108-111.
206. Palteridge N, Vandeleur RK, **Rebetzke GJ**, Gill GS (2004) Breeding for enhanced weed competitiveness in wheat. In 'Cereals - Proceedings of the 54<sup>th</sup> ACCC and 11<sup>th</sup> WBA' (Eds CK Black *et al.*) Canberra ACT Australia pp. 166-169.
207. Reynolds M, Condon AG, **Rebetzke GJ**, Richards RA (2004) Evidence for excess photosynthetic capacity and sink-limitation to yield and biomass in elite spring wheat. In 'New Directions for a Diverse Planet. Proceedings 4th International Crop Science Congress' (Eds R Shorter *et al.*) 26 Sep-1 Oct Brisbane QLD Australia pp. 127-130.
208. Botwright TL, Condon AG, **Rebetzke GJ**, Richards RA (2001) Improving grain yield by selection for greater early vigour in wheat. In 'Science and Technology. Proceedings of the 10<sup>th</sup> Australian Agronomy Society' Hobart TAS Australia
209. **Rebetzke GJ**, Appels R, Morrison A, Richards RA, McDonald G, Ellis MH, Spielmeyer W, Bonnett DG (2001) Quantitative trait loci for establishment and early growth in wheat. In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 8-10.
210. Spielmeyer W, Bonnett DG, Ellis MH, **Rebetzke GJ**, Richards RA (2001) Implementation of molecular markers to improve selection efficiency in the CSIRO wheat breeding program. In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 88-91.
211. Bonnett DG, Ellis M, **Rebetzke GJ**, Condon AG, Spielmeyer, W, Richards RA (2001) Dwarfing genes in Australian wheat – Present and future. In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 154-157.
212. Bonnett DG, Condon AG, **Rebetzke GJ** (2001) Effect of the *Lr19* translocation on grain yield in Australian wheat backgrounds. In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 163-165.

213. **Rebetzke GJ**, Morrison A, Richards RA, Bonnett DG, Moore CS (2001) Genotypic variation for leaf rolling ability in wheat. In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 172-175.
214. Moore CS, **Rebetzke GJ**, Richards RA, Marshall DR (2001) Genetic variation for embryo size and its influence on early vigour in wheat. In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 177-180.
215. Coleman, RK, Gill GS, **Rebetzke GJ** (2001) Genetic analysis of traits conferring weed competitiveness in wheat (*Triticum aestivum* L.). In 'Proceedings of the 10<sup>th</sup> Australian Wheat Breeders Assembly' (Eds R Eastwood *et al.*) September 16-21 Mildura VIC Australia pp. 220-223.
216. **Rebetzke GJ**, Richards RA, Botwright TL, Condon AG (1999) Are plant height and grain yield related in populations containing gibberellin-sensitive dwarfing genes? In 'Proceedings of the 9<sup>th</sup> Australian Wheat Breeders Assembly' (Eds P Williamson *et al.*) Toowoomba QLD Australia pp. 49-51.
217. Richards RA, **Rebetzke GJ**, Appels R, Condon AG (1999) Molecular markers to target physiological characteristics in a dryland wheat-breeding program. In 'Proceedings of the 9<sup>th</sup> Australian Wheat Breeders Assembly' (Uni. Sth Qld, Toowoomba) Toowoomba QLD Australia pp. 78-81.
218. Hare RA, Munns R, James RA, **Rebetzke GJ** (1999) Genetic variation for salt tolerance in durum wheat. In 'Proceedings of the 9<sup>th</sup> Australian Wheat Breeders Assembly' (Eds P Williamson *et al.*) Toowoomba QLD Australia pp. 94-96.
219. Botwright TL, **Rebetzke GJ**, Condon AG, Richards RA (1999) Alternative dwarfing genes for greater coleoptile length. In 'Proceedings of the 9<sup>th</sup> Australian Wheat Breeders Assembly' (Eds P Williamson *et al.*) Toowoomba QLD Australia pp.181-183.
220. **Rebetzke GJ**, Richards RA, Fischer VM, Mickelson BJ (1998) A breeding solution for improving seedling establishment of wheat. In 'Agronomy - Growing a Greener Future. Proceedings of the 9<sup>th</sup> Australian Agronomy Conference' (Eds DL Michalk *et al.*) Wagga Wagga NSW Australia pp. 497-500.
221. **Rebetzke GJ**, Richards RA, Fischer VM (1996) Selection for increased early vigour of Australian wheats. In 'Proceedings of the 8<sup>th</sup> Assembly Wheat Breeders Society of Australia' (Eds RA Richards *et al.*) Canberra ACT Australia pp. P160-163.
222. **Rebetzke GJ**, Condon AG, Richards RA (1996) Rapid screening of leaf conductance in segregating wheat populations. In 'Proceedings of the 8<sup>th</sup> Assembly Wheat Breeders Society of Australia' (Eds RA Richards *et al.*) Canberra ACT Australia pp. O130-134.
223. Richards RA, **Rebetzke GJ**, Condon AG, Mickelson BJ (1996) Targeting traits to increase the grain yield of wheat. In 'Proceedings of the 8<sup>th</sup> Assembly Wheat Breeders Society of Australia' (Eds RA Richards *et al.*) Canberra ACT Australia pp. O54-57.
224. **Rebetzke GJ**, Richards RA (1996) Improving the establishment and early vigour of wheat. In 'Agronomy – Science with its Sleeves Rolled Up. Proceedings of the 8<sup>th</sup> Australian Agronomy Conference' (Eds M Asghar *et al.*) Carlton VIC Australia pp. 466-469.
225. Lawn RJ, **Rebetzke GJ** (1991) Indigenous Vigna spp. as a source of germplasm for mungbean improvement. In 'Mungbean the Australian Experience, Proceedings of the 1<sup>st</sup> Australian Mungbean Workshop' (Eds BC Imrie, RJ Lawn) Brisbane QLD Australia pp. 21-29.

#### Invited Industry talks

226. **Rebetzke G** et al. (2023) Seed traits – an update of research and development. *GRDC Research Updates Bendigo, Adelaide, Dubbo*
227. Green T, Moroni S, Harris F, Pratley J, Mullan D, **Rebetzke G** (2023) Winter-sown 100-day wheats for a changing Australian climate. *Wagga Wagga GRDC Updates*
228. **Rebetzke G** (2022) Keeping rain affected grain for seed. *GRDC Research Update, National online*
229. **Rebetzke G**, Kirkegaard J, McBeath T, Stummer B, Flohr B, Fletcher A, Rich S, Lamond M, Haskins B, Whitworth R, Bechaz K (2022) Early learnings from multi-site, multi-system assessment of new long-coleoptile genetics for deep sowing of wheat. *GRDC Research Updates Murray Bridge, Adelaide*

230. Flohr B, McBeath T, Ouzman J, Davoren B, Shoobridge W, **Rebetzke G**, Ballard R, Peck D, Llewellyn R, Kirkegaard J, Stummer B (2022) Adaptive sowing strategies to overcome a shifting seasonal break. *Adelaide Grains Research Update*
231. Nelson M, Barrero J, Cmiel M, Fletcher A, Greaves I, Hughes T, Toovey A, Treble K, Zwart A, Kirkegaard J, **Rebetzke G** (2021) Genetic improvement of canola establishment. *Perth GIWA (GRDC) Updates*
232. Dreccer F, Macdonald B, Condon AG, **Rebetzke GJ**, McIntyre CL, Paccapelo V, Peake AS, Forrest K (2020) Better wheat germplasm for good seasons and high inputs. *GRDC Research Update*.
233. **Rebetzke G**, Fletcher A, Micin S, Wesley C (2020) On-farm assessment of new long-coleoptile wheat genetics for improving grain yield with deep sowing. *GRDC Research Update, Perth, Merredin*
234. **Rebetzke G**, Ingvordsen CH, Spielmeyer W, French B, Zaicou-Kunesch C, Fettell N (2019) New genetics to improve wheat establishment and weed competitiveness. *GRDC Research Update Perth*
235. **Rebetzke G** (2019) Breeding for climate change. *GRDC Grains Research Update, Wagga Wagga*
236. **Rebetzke G**, *Understanding the impact of heat in breeding improved tolerance to high temperatures in wheat* Northampton, 2018
237. **Rebetzke G**, Ingvordsen C, Newman P, Weston LA, French B, Gill G (2018) Delivering weed-competitive, wheat breeding lines to growers. *GRDC Grains Research Update, Wagga Wagga*
238. Peake A, **Rebetzke G**, Chapman S, Dreccer F, McIntyre L, Hundt A, Bell LK (2012) Agronomy for high yielding cereal environments: varieties, agronomic strategies and case studies. *GRDC Research Updates*
239. **Rebetzke G**, Fettell N (2007) Breeding for greater yield under drought. *GRDC Grains Research Update, Wagga Wagga*
240. **Rebetzke G**, Condon AG, Richards RA, Fettell N (2008) Breeding for greater water-use efficiency in wheat. *GRDC Grains Research Update, Wagga Wagga*

## Patents/Plant Varieties/Germplasm Delivered to Breeding Companies

### *Commercial varieties*

- 'LRPB Bale' (Aust. Premium White, slow spring awnless wheat variety with potential as hay in frost-regions; southern Australian region) <https://www.longreachpb.com.au/product/bale/>
- 'LRPB Dual' (Aust. Hard, mid-quick awnless wheat variety with potential as hay in frost-regions; southern and western Australian region) <https://www.longreachpb.com.au/product/dual/>
- 'EGA Drysdale' (high transpiration, Aust Hard, mid-quick wheat variety)
- 'EGA Rees' (high transpiration, Aust Prime Hard, mid-quick wheat variety)

### *Wheat germplasm (Material Transfer Agreements to breeding companies)*

- 100-day, high biomass topcross wheats in multiple genetic backgrounds (all breeding companies)
- Awnless topcross advanced breeding lines (all breeding companies)
- Awnless NILs in six modern genetic backgrounds (all breeding companies)
- Reduced tillering × high early vigour backcross wheats in multiple genetic backgrounds (CIC)
- High grain protein Suntop/Spitfire RILs (CIC)
- Long coleoptile, *Rht1/2* and *Rht13* NILs in multiple genetic backgrounds (all breeding companies)
- Long coleoptile, *Rht1/2* and *Rht18* NILs in multiple genetic backgrounds (all breeding companies)
- Weed-competitive, high vigour topcross breeding lines (all breeding companies)
- High root biomass topcross lines (CIC)
- Halberd NILs varying for 10 GA-insensitive and GA-sensitive dwarfing genes (all breeding companies)
- Reduced-tillering advanced breeding lines (CIC)
- Transpiration-efficient NILs (tails) in four genetic backgrounds (GRDC)

### *Soybean germplasm*

High oleic, low linolenic acid soybean germplasm: N98-4445A (Registration no. 162) (Crop Science Society of America)

Reduced palmitic, high oleic acid soybean germplasm: N94-2575 (Registration no. GP-261) (Crop Science Society of America)

Reduced palmitic acid soybean germplasm: C1943 (Registration no. GP-262) (Crop Science Society of America)

**Published media-style commentaries** (not peer reviewed)

Podcast 'Improving crop establishment with long coleoptile wheat' (GRDC, July 2022)

<https://grdc.com.au/news-and-media/audio/podcast/improving-crop-establishment-with-long-coleoptile-wheat>

Video: 'Breeding wheat for a changing climate' (GRDC, February 2020)

<https://www.youtube.com/watch?v=mbFnHkh4uwE>