



Department of  
Primary Industries and  
Regional Development



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# The Impact of Climate on Pasture Production in 2050


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# FutureSheep

The South West of WA is becoming hotter and drier and projections indicate this trend will continue

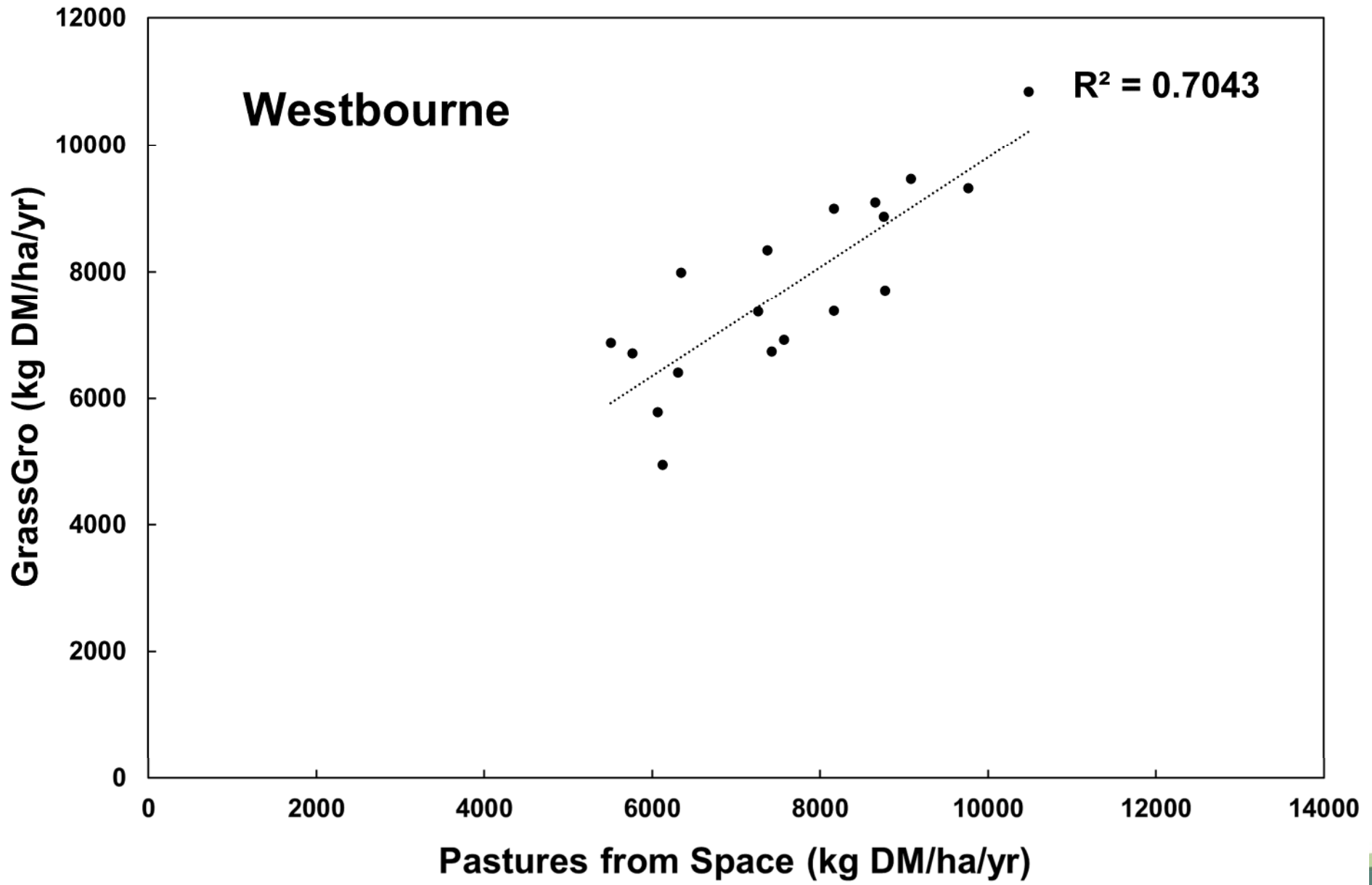
**So what might pasture yield look like in 2050?**

# Methodology

- 8 farm case studies.
  - GrassGro™ was used to predict pasture productivity in 2050.
  - GrassGro™ was validated using Pastures from Space™  
<https://pasturesfromspace.dpird.wa.gov.au/#/>
  - Climate data for 2050 for two greenhouse gas pathways (RCP 4.5 and 8.5), change factors were obtained from the Climate Change in Australia website. Using these factors, daily rainfall and temperature for 2050 was calculated using historical 2002-2021 data.
  - All case study simulations were ungrazed annual pasture run for 20 years.
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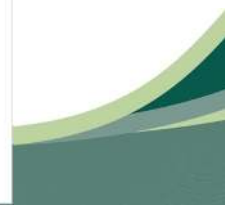
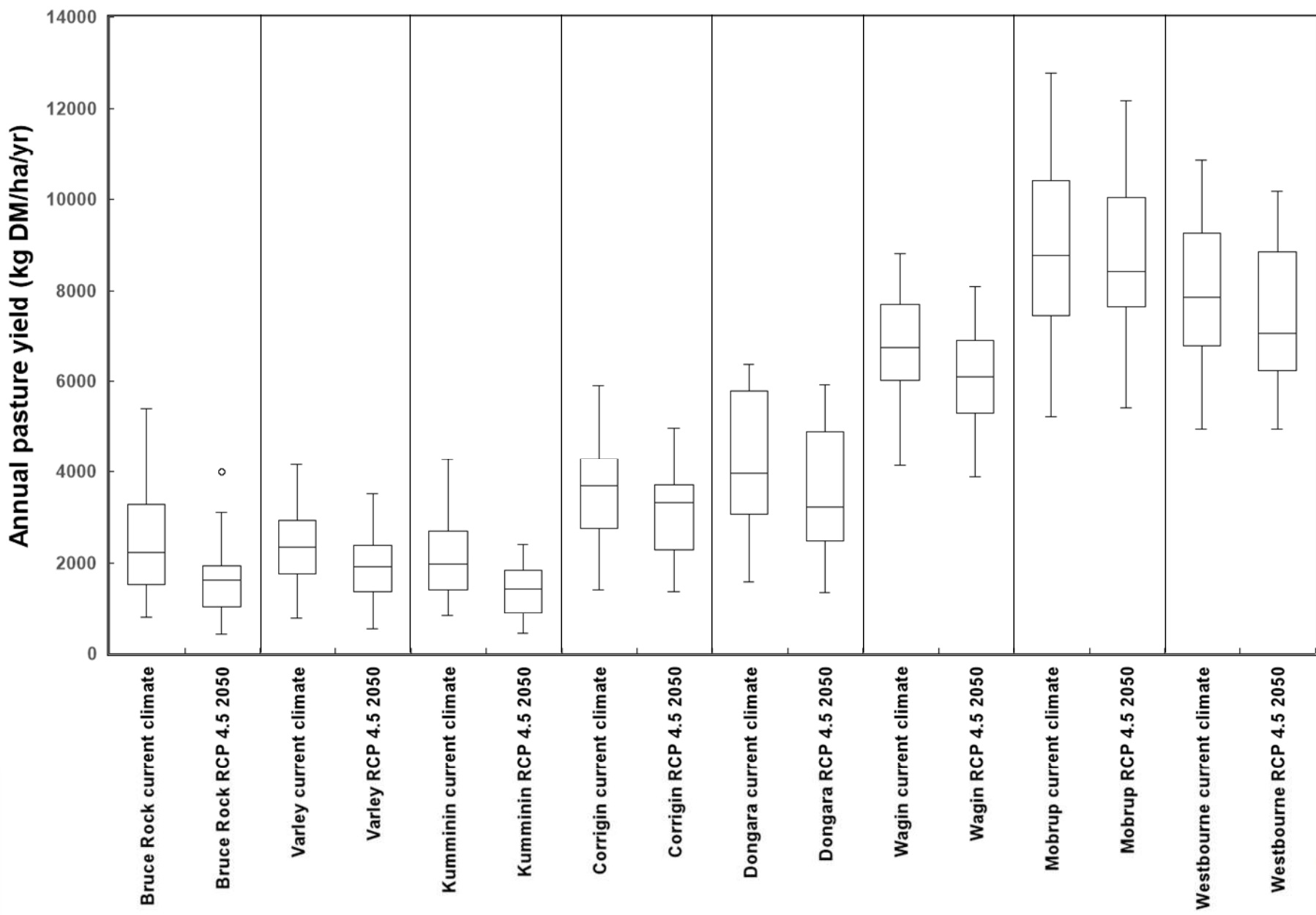
# Location of the case study sites

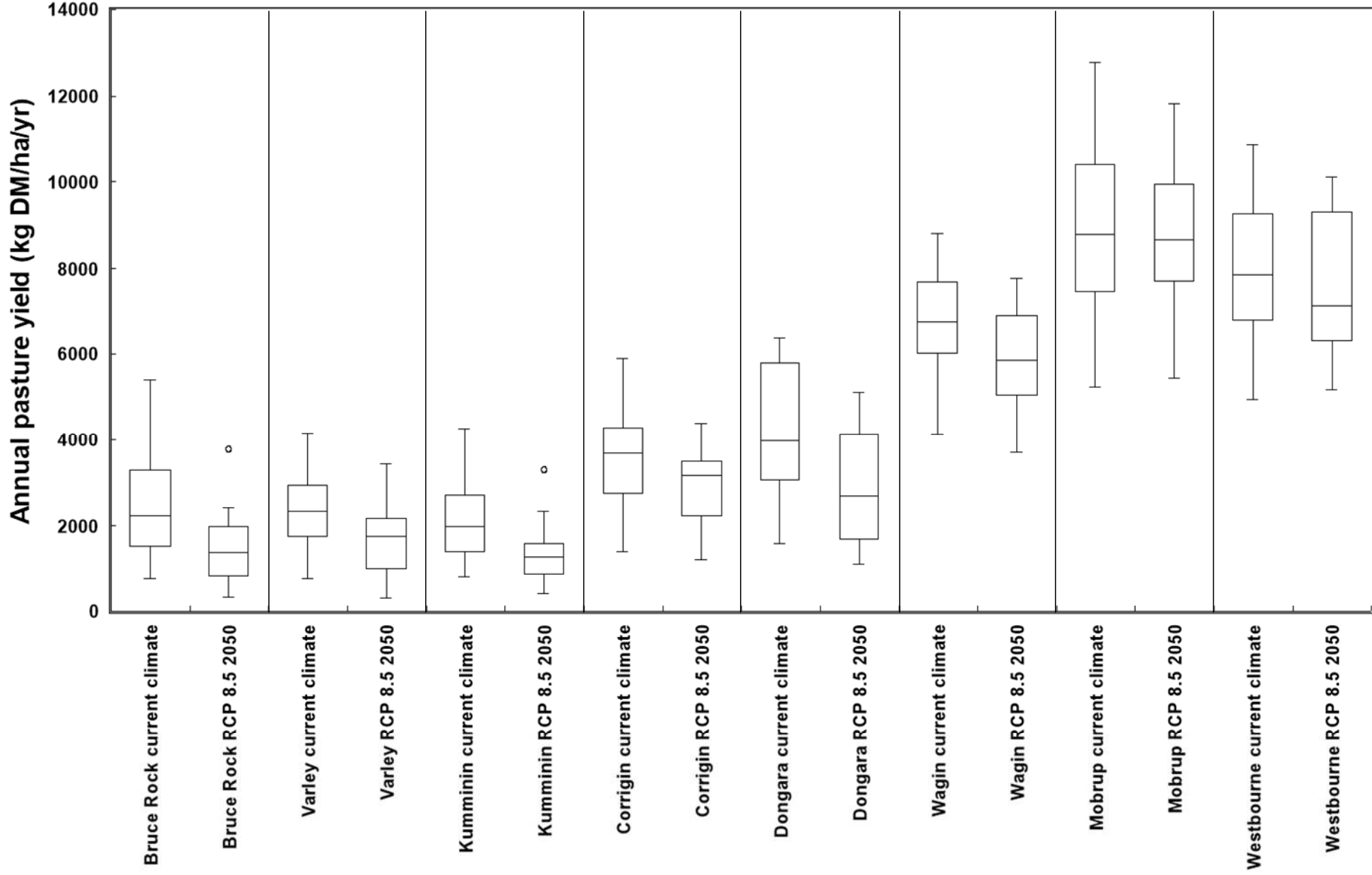




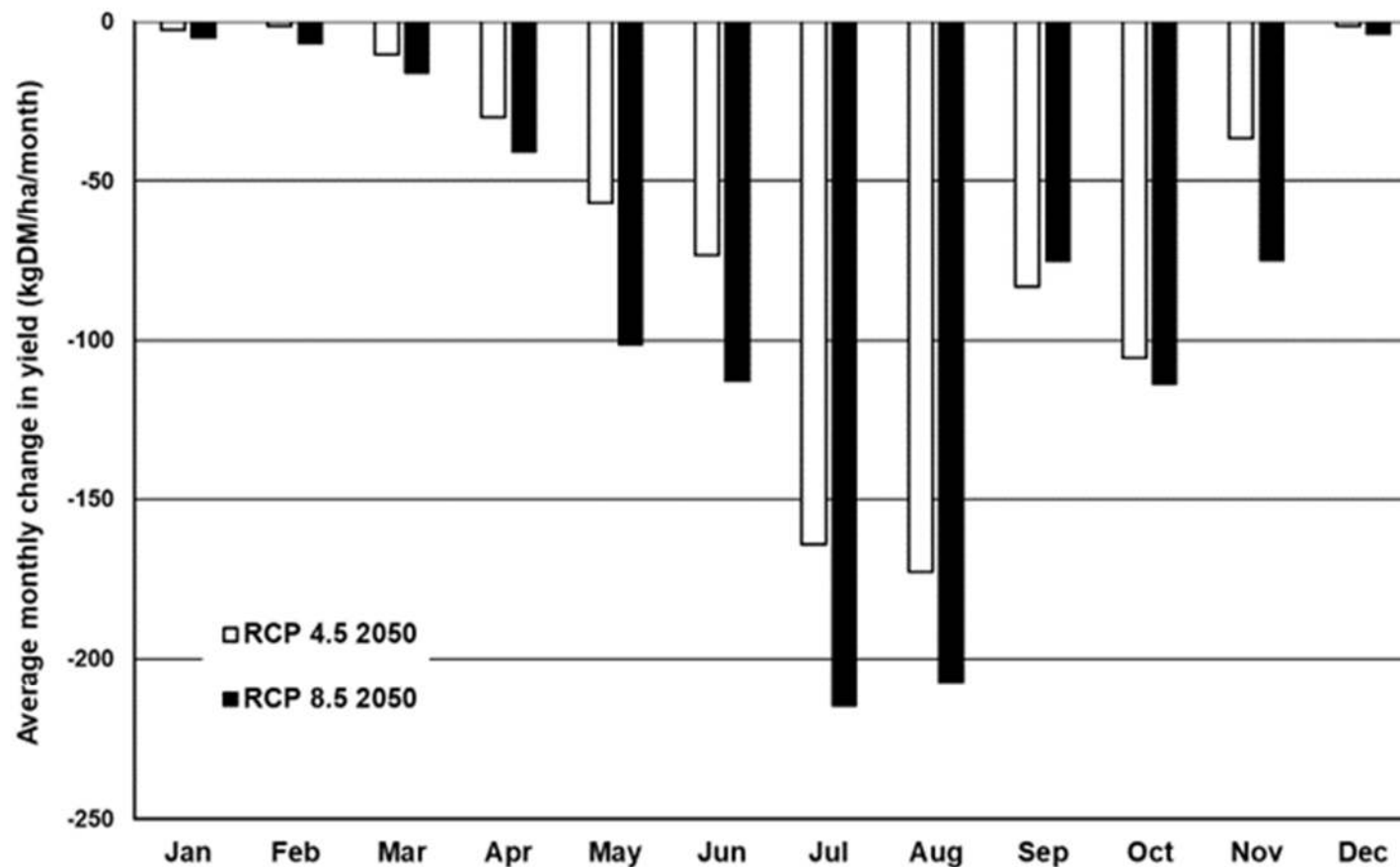
## Annual rainfall for current climate and simulated climate in 2050 with an RCP of 4.5 or 8.5 for the 8 case studies.

Location	Current rainfall (mm)	Reduction in rainfall RCP 4.5 2050 (mm)	Reduction in rainfall RCP 8.5 2050 (mm)
Bruce Rock	294	-27	-43
Varley	318	-14	-47
Kumminin	329	-33	-50
Corrigin	348	-34	-53
Dongara	366	-3	-11
Wagin	392	-42	-59
Mobrup	538	-62	-80
Westbourne	629	-72	-96

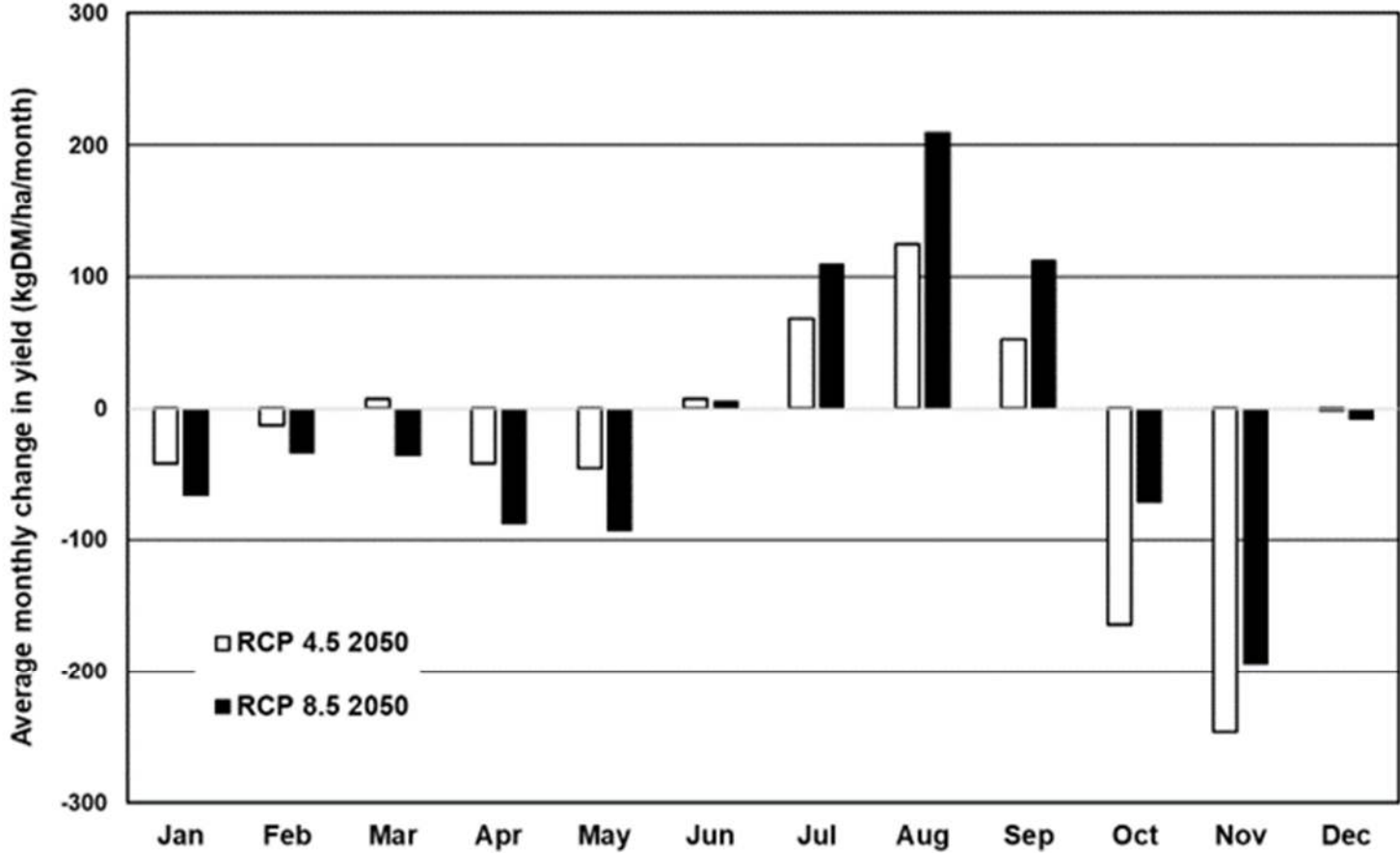





## Simulated average monthly change in pasture yield at Bruce Rock WA (294 mm) in 2050 with an RCP of 4.5 and 8.5




# Simulated average monthly change in pasture yield at Westbourne WA (629 mm) in 2050 with an RCP of 4.5 and 8.5



## **Concluding Remarks**

- **By 2050 pasture yields, without adaptation, in the low to medium rainfall zones may decline by an average of 20% compared to only 6% in the high rainfall zone.**
  - **The simulations also suggest that the growing season in 2050 will be shorter in all rainfall zones.**
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# Concluding Remarks

- **The most promising adaptations to maintain pasture productivity in 2050 are an increase in soil fertility, adoption of drought and heat tolerant temperate species, introduction of summer-active forages and forage crops to fill feed gaps**
  - **Adaptation in the low rainfall zone is likely to require the development of new forage species and livestock systems.**
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# Thank you

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