Economic Development, Jobs, Transport and Resources

Heat Tolerance ABV

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DataGene Solutions for Herd Development

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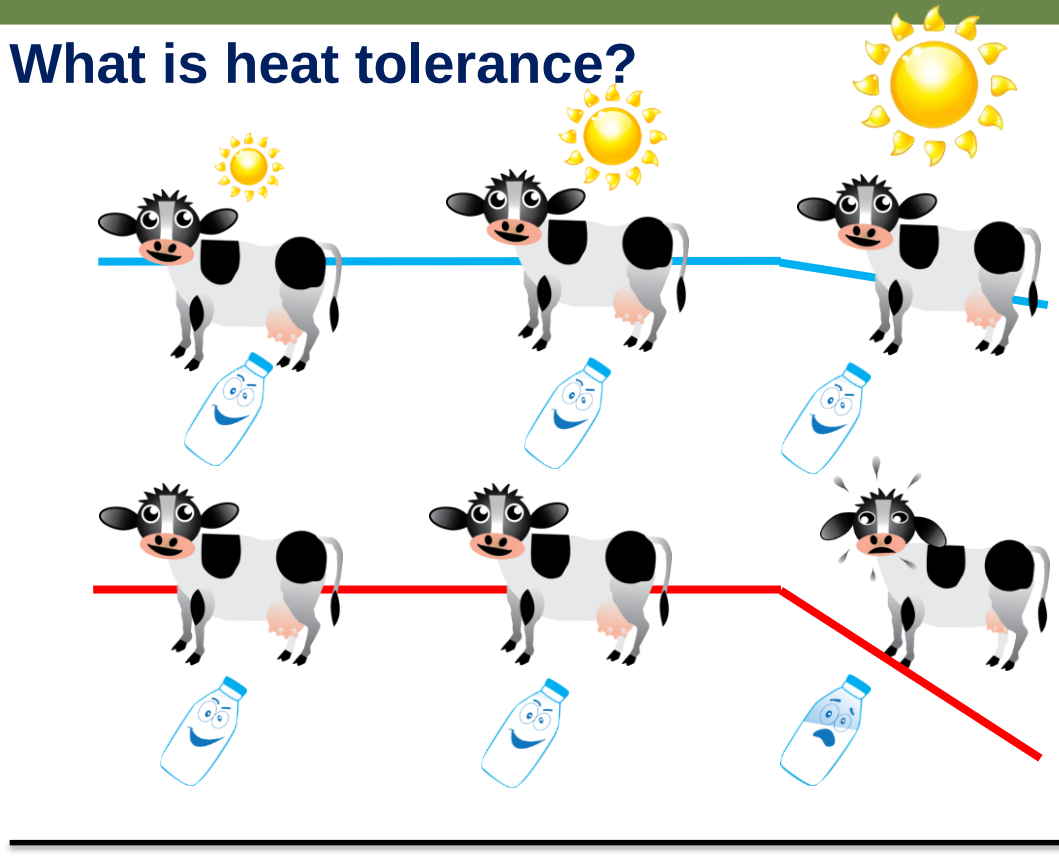
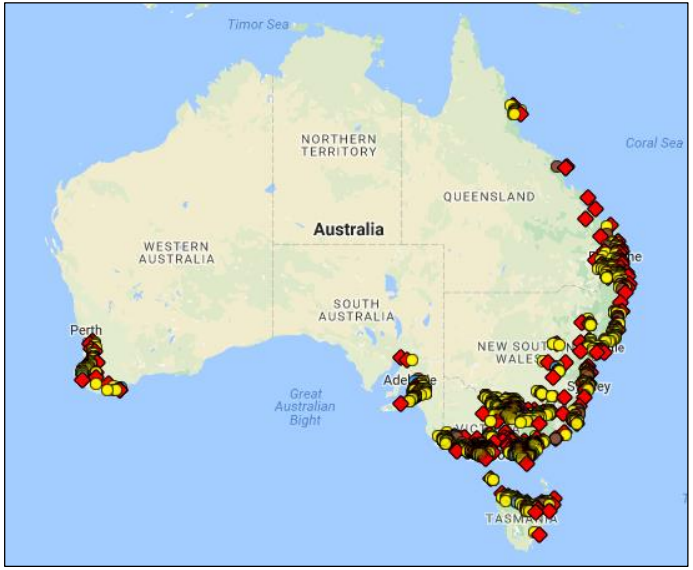
What is heat tolerance?



How to estimate genomic breeding value for heat tolerance?



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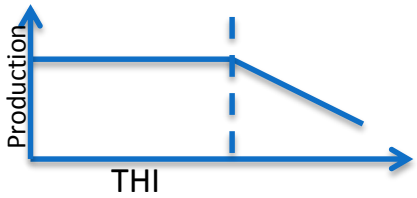
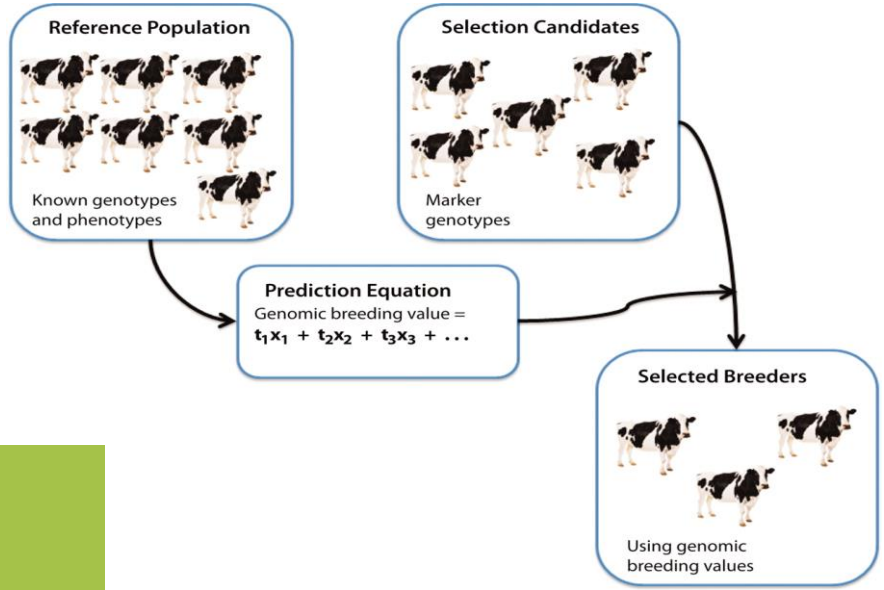




Estimated cow slopes

Decline in milk, fat and protein yields per unit increase in THI

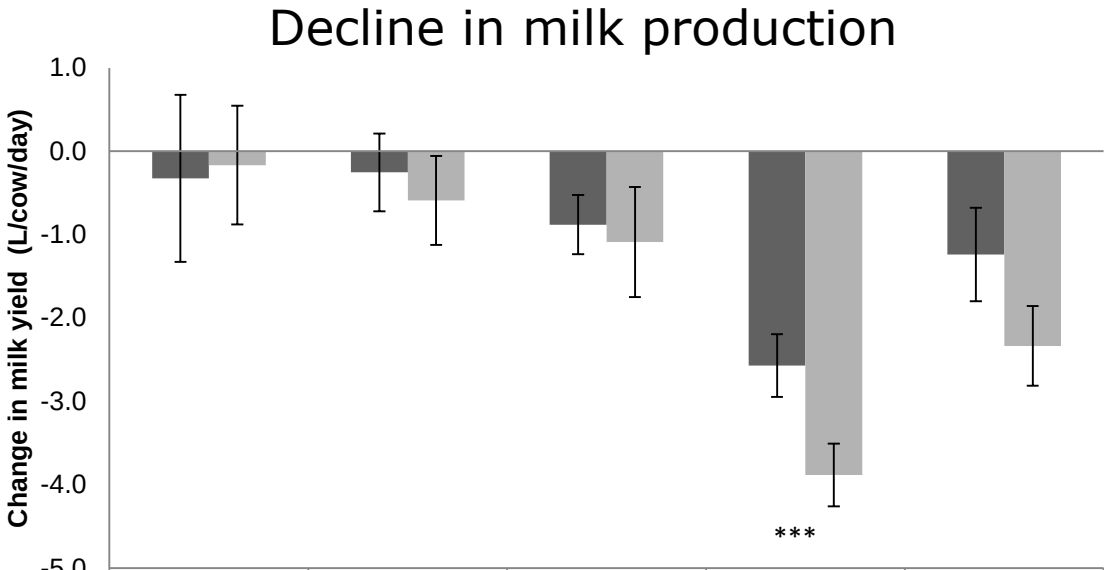
Sire slope = average of daughters

Heat tolerance ABVg reliability:
Average 38%
in Holsteins and Jerseys

Validation experiment

- 400 heifers screened
- 24 predicted most heat tolerant, 24 predicted most susceptible selected on GEBV
- Run through a simulated heat wave event at Ellinbank
- 4 day event, measure milk production, core temperature

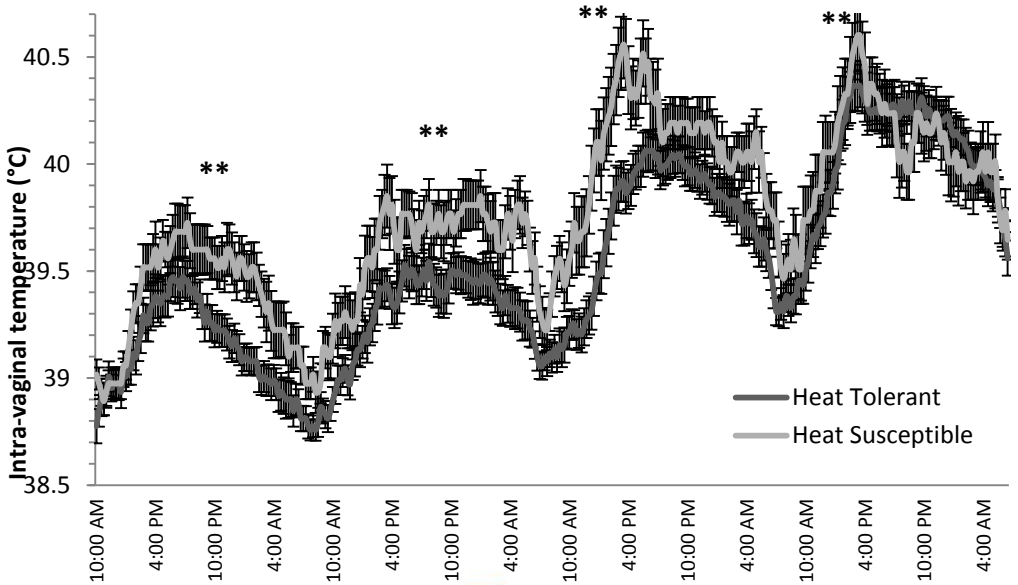
Validation experiment



	Day 1	Day 2	Day 3	Day 4	Recovery
HT	-0.3	-0.3	-0.9	-2.6	-1.2
HS	-0.2	-0.6	-1.1	-3.9	-2.3

Validation experiment

Difference in intra-vaginal temperature



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Expression of heat tolerance ABVg

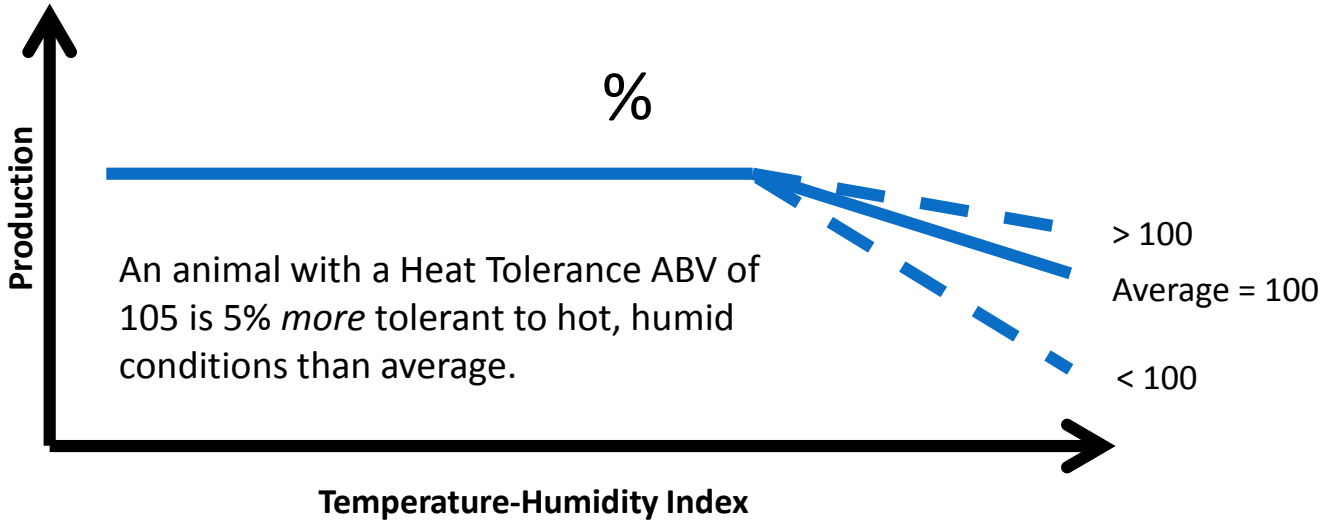
Decline in $

- Using economic weight of milk, fat and protein

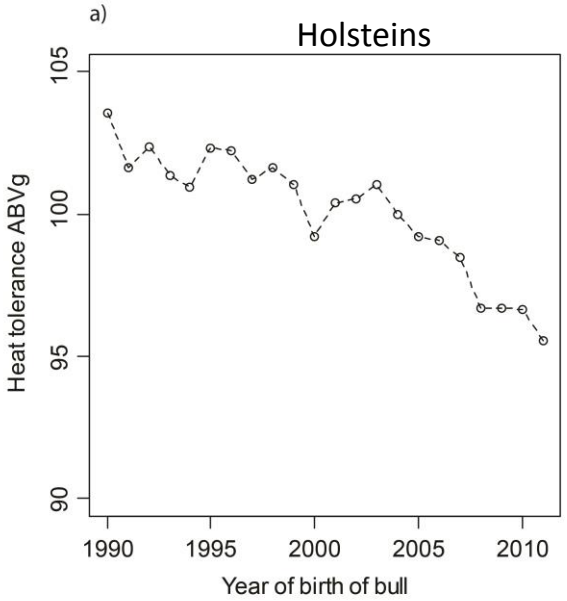
Standardise

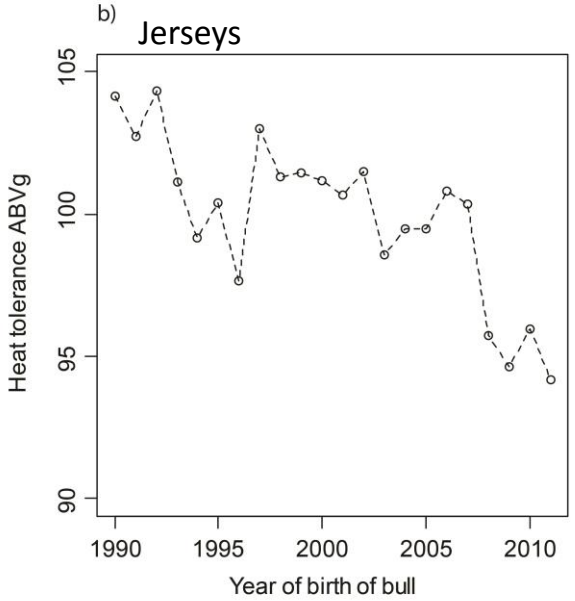
- Mean =100
- Standard deviation = 5

Heat tolerance ABVg



Genetic trend (decline ~1.5 SD in 20 years)





Cool cows toolbox

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Good Bulls

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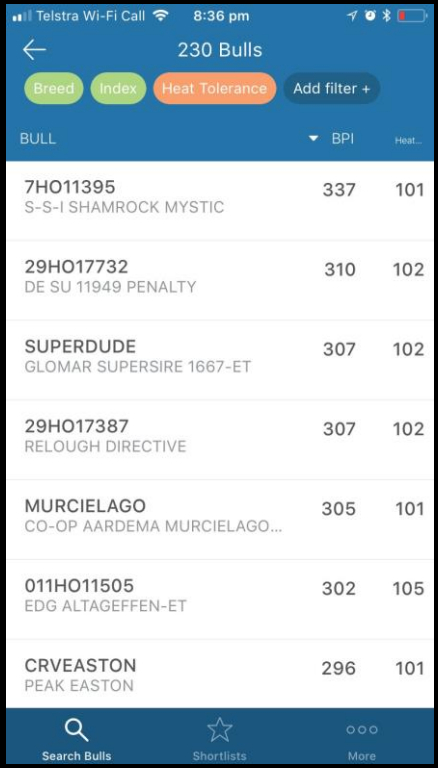
Advice to farmers

- Choose bulls from the Good Bulls Guide
- If Heat Tolerance is important, select above average bulls



What did farmers say?

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Trevor Parrish, New South Wales

“Now when I get a list of bulls I’m going to be looking for bulls which combine increased production and increased heat tolerance – they are going to be the ones who buck the trend.”

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Ray Kitchen, Boyanup, Western Australia

“Having a Heat Tolerance ABV will mean we can breed cows with a greater ability to tolerate hot weather, be better suited to our farming environment.

“ We will be looking for the bulls that pull together production and heat tolerance.”

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Shane Gardiner, Mt Gambier South Australia

“Heat Tolerance is something we can breed in our cows for free so why not? Like all genetic traits, it will be permanent and cumulative.”

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Ross Gordon, Cohuna, Victoria

“If two bulls have the same BPI but one has better heat tolerance than that’s the one we will be selecting”

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Ian Scott, Nanango, Queensland

“We can send a man to the moon but we can’t control the weather so we need to do everything possible to make things better for the cows, which includes breeding cows with good heat tolerance.”

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Key messages

- The Heat Tolerance ABV identifies animals with greater ability to tolerate hot, humid conditions with less impact on milk production
- Released in December 2017
- Validated in research conditions
- The Heat Tolerance ABV is unfavourably correlated with production but there are high Balanced Performance Index bulls that are also above average for Heat Tolerance

Thank you!

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