

# PASTURES & LIVESTOCK SOME POSSIBILITIES

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Department of Primary Industries

# RAINFALL

Annual

Drier

2090

Wetter

Drier

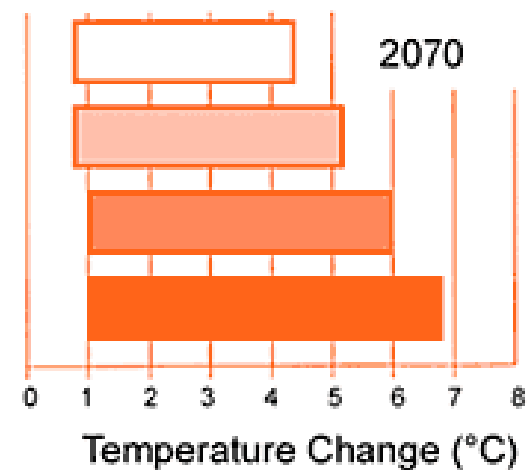
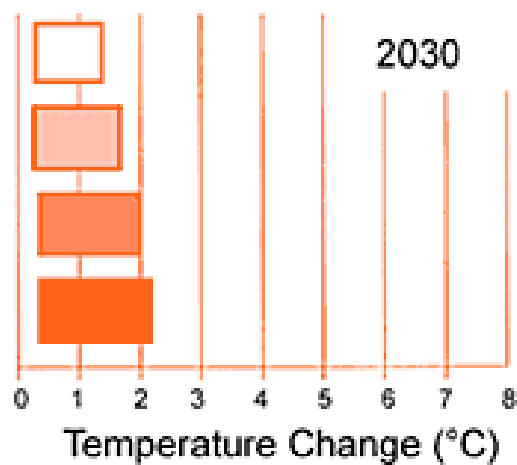
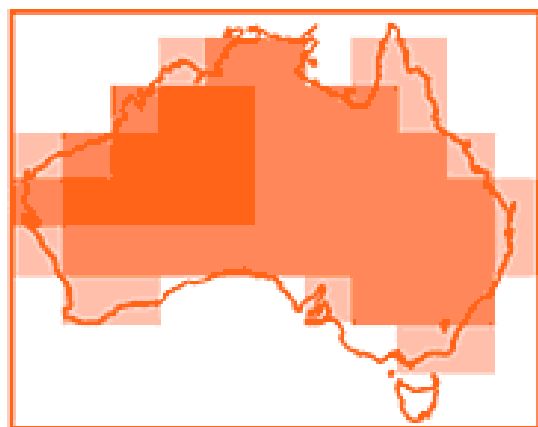
2050

Wetter

Summer rainfall increase?  
Autumn rainfall drier  
Winter rainfall drier  
Spring rainfall drier

# TEMPERATURE CHANGE

CSIRO's projected temperature changes for Australia

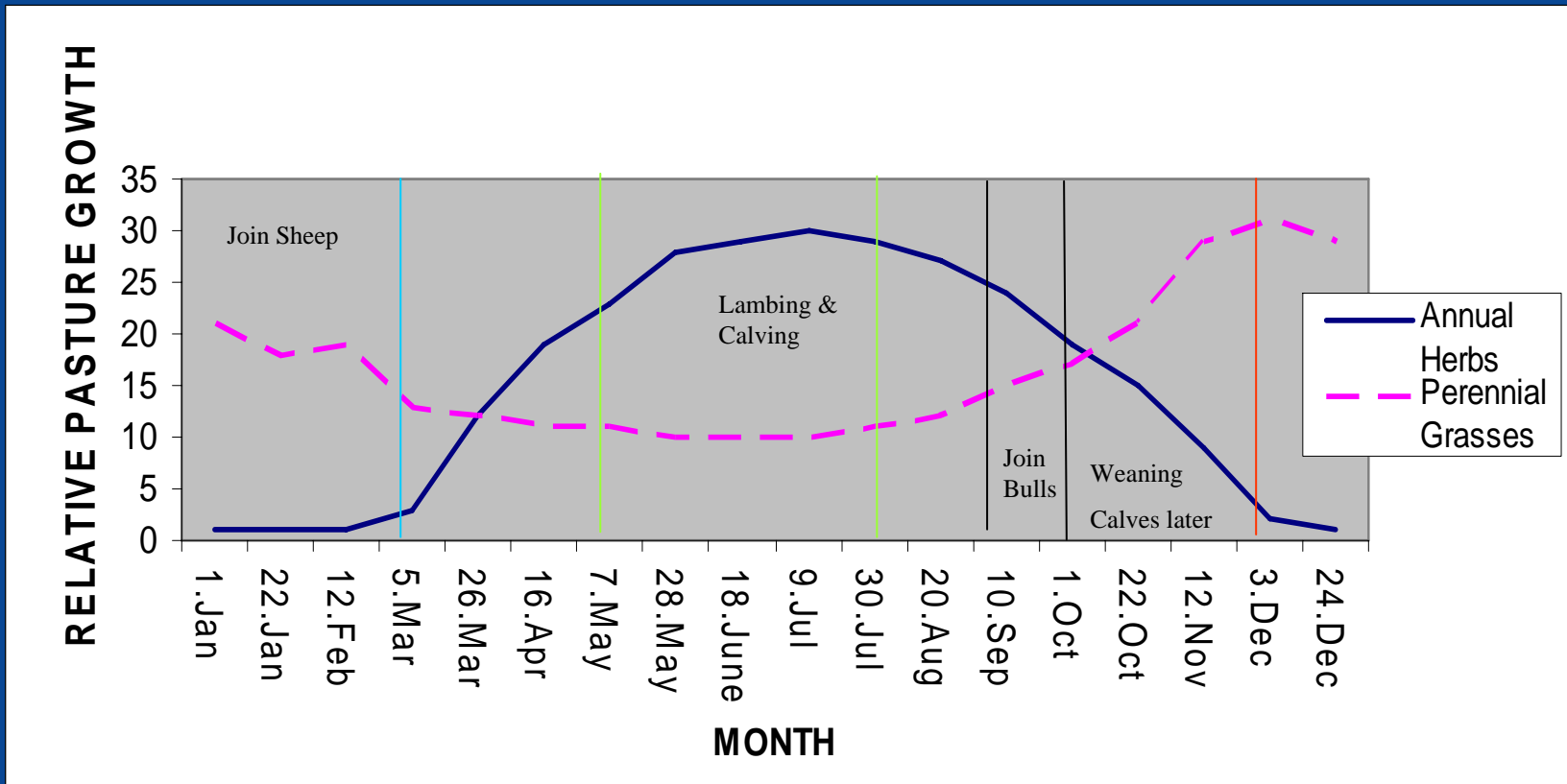


All seasons will be warmer

# MAIN IMPACTS

- Many of the impacts of climate change are likely to be through extreme events (extreme high temps, fewer frosts & more storms).
- Climate variation will increase with more dry periods where annual rainfall is expected to decrease.
- Studies suggest that in areas between 300-500mm annual rainfall further decreases in precipitation may cancel any vegetation gains from increased CO<sub>2</sub>.

# WESTERN DIVISION PASTURE GROWTH

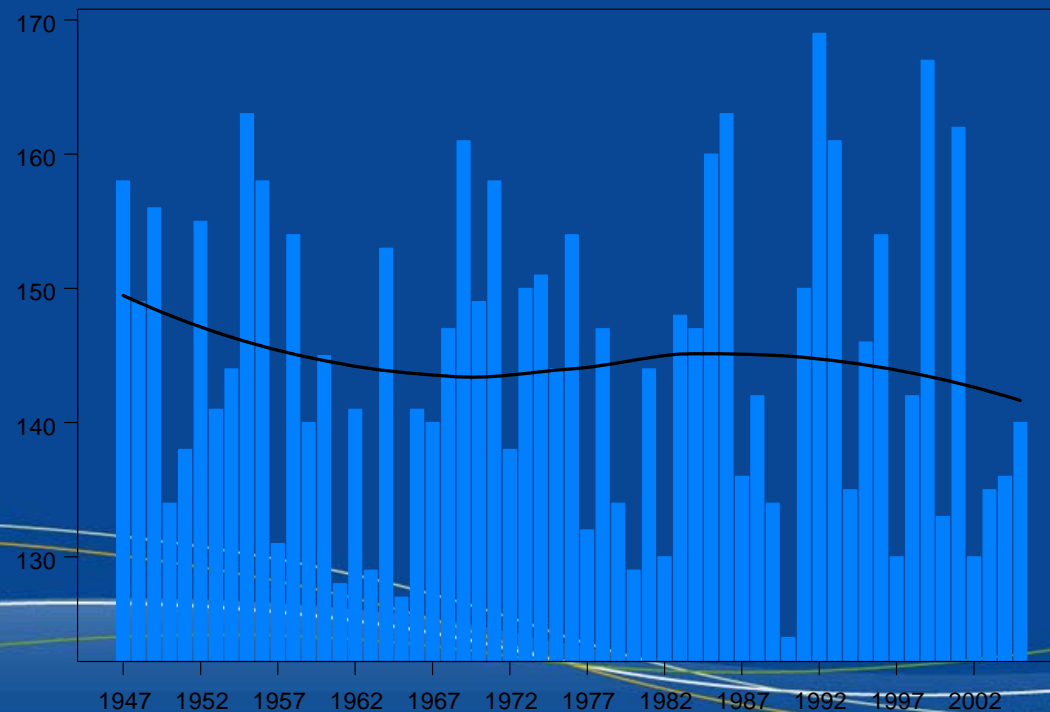


# GRASS GROWTH

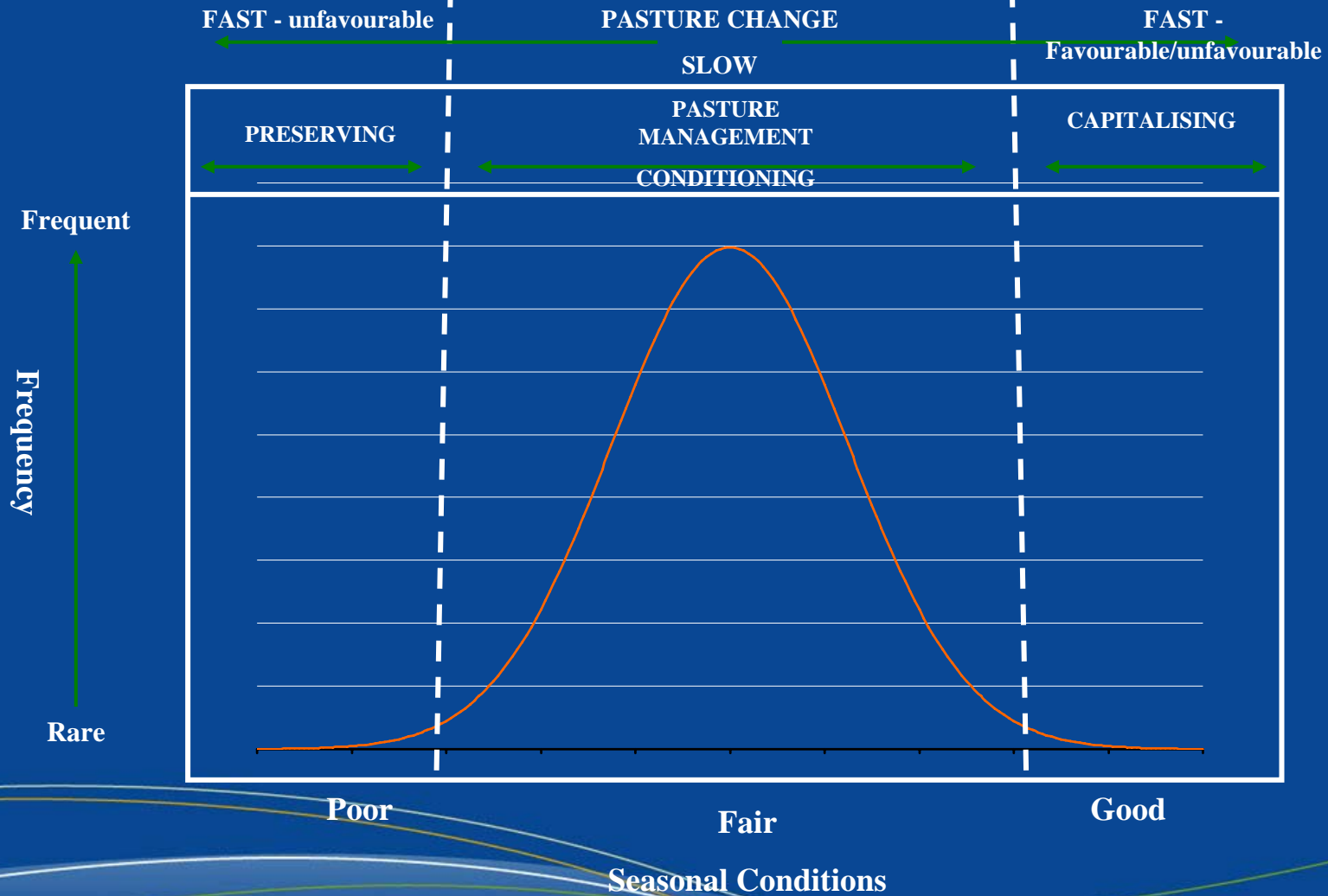
Annual C3 grasses stop growing when temperature is over 28°C

Perennial C3 grasses stop growing at temps over 33°C

## Trend in number of days to meet 28°C



# PASTURE MANAGEMENT



# PASTURES INTO THE FUTURE

- Shorter autumn – spring growing season due to higher temps and less rainfall
  - Establishment and growth of annuals and C3 perennials reduced.
- Wetter summers
  - C4 grasses and shrubs move south displacing more nutritious C3 perennial grasses????
  - C4 shrubs such as bladder saltbush might have increased growth but less germination as they need temps below 20<sup>0</sup>C to germinate.
  - More summer weeds.

## Possible solutions:

- New plant varieties to cope with drier and hotter climate .i.e. earlier flowering.
- Planting C4 grasses such as buffel grass.
- Shrub based grazing systems (Oldman saltbush).

# LIVESTOCK

Climate change is expected to affect livestock production through direct impacts of thermal stress on reproduction and indirect effects on animal health and growth including via nutrition.

## THERMAL STRESS (TEMPERATURE AND HUMIDITY INCREASE)

Manifested through an increased frequency of days where daily temperature and humidity exceeds a critical value.

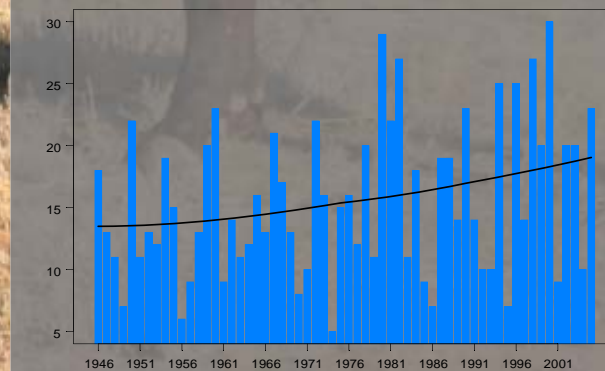
Critical temperature for mild stress:

Bos taurus cattle over 31°C

Bos indicus 10% higher

Sheep???

## NO OF DAYS TEMP OVER 30°C



# LIVESTOCK CONT

- Reduced rain and increased heat stress could depress grazing and animal production through lower growth rate appetite suppression and decreased reproduction rates.
- Dust contamination of fleece with increased erosion.
- Increased vegetable fault if there is a change in pasture composition.
- Higher lamb mortality.
- Poor nutrition of stock as pastures fail due to increased drought.

## PESTS AND DISEASES

Increased summer rainfall and humidity (blowfly strike rise).

Bush tick go south.

Parasites may appear early in the season and go through more generations.

# ENVIRONMENTAL IMPACT

- Higher water demand by livestock due to increased temp. Thereby not walking as far and increasing impact around waters.
- Where rainfall is significantly reduced plant cover is negatively affected and grazing lands become more susceptible to erosion. Also increase storm frequency.
- Increased fire frequency.
- Reductions in rainfall and increases in evaporation rates may combine to make surface water less abundant as well as accelerate the depletion of small water storages (e.g farm dams).
- The ability of natural systems to cope with these challenges will be largely dependent on their ability to withstand and successfully respond to changes in the climatic and environmental conditions to which they are currently adapted.

# THE FUTURE

## More about managing extreme risks

- **On farm storage of feed**
- **Supplementary feeding**
- **Containment areas where stock are fed during drought**
- **Good financial management**
- **Diversification**
- **Shifting mating/breeding times to coincide with later winter-spring**
- **New and improved pasture varieties**
- **Greater reliance on satellite and predictive growth models**
- **Wildlife harvesting**