



Climate Change and Food

Revolution not Evolution

July 24th , 2007

Climate change and agriculture

Effects of a biofuels response to climate change

Food Miles/Carbon Footprint Models

How to think about long term uncertainty

Multiple Climate Change Impacts on Food Production



The Map is not the Territory

Following Data Referenced from:

Climate Change Impacts on Australia and the
Benefits of Early Action to Reduce Global
Greenhouse Gas Emissions. Preston, B.L. and
Jones, R.N., February, 2006

A consultancy report for the Australian Business
Roundtable on Climate Change

Temperatures

Length of the growing season

Available soil moisture

Timing of rainfall events

Atmospheric CO₂

Climate extremes such as droughts and storms.





**250–310 litre
annual
decline in
milk
production
per cow in
Hunter Valley
for up to 1
degree rise**

Temperature
Water

Pasture growth and timing

1-2 Degree Rise

- 12% chance of decreased wheat production (without adaptation)
- 32% chance of wheat crop value below current level (without adaptation)
- 91% chance of wheat exports being below current level (without adaptation)
- \$12.4 million/year to manage with southward spread of Queensland fruit fly
- \$5.7 million/year benefit due to reduction of Light brown apple moth

2-3 Degree Rise

- 31% reduction in native pasture growth (for 32% precipitation decrease)
- 40% reduction in livestock carrying capacity of native pasture systems (for 32% precipitation decrease)

“These projected impacts are highly dependent upon changes in rainfall regimes. However, CSIRO projections generally indicate rainfall, particularly in winter, will decrease substantially in Victoria, S Australia, and Western Australia over the 21st century. Changes are more uncertain for other regions”*

*Climate Change Impacts on Australia and the Benefits of Early Action to Reduce Global Greenhouse Gas Emissions. Preston, B.L. and Jones, R.N., February, 2006
A consultancy report for the Australian Business Roundtable on Climate Change

**Increased Risk
Means Increased
Price or Increased
Risk Sharing**

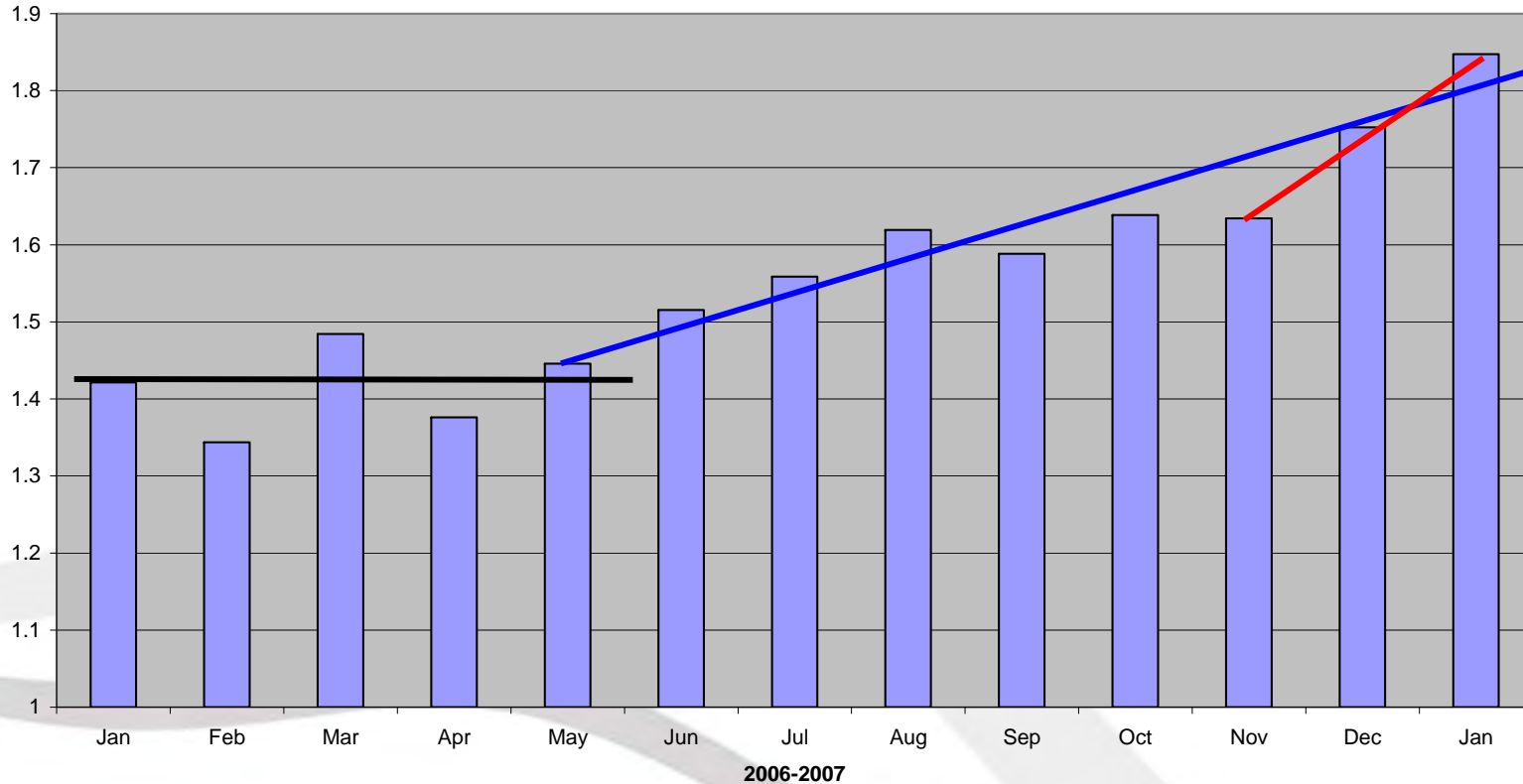
Huge Developments in Global Biofuels

Massive Growth in USA

**18.4 Billion Litres
2006**

Source: Renewable Fuels Association

Monthly Ethanol Production (Billion Litres)



Source: Renewable Fuels Association

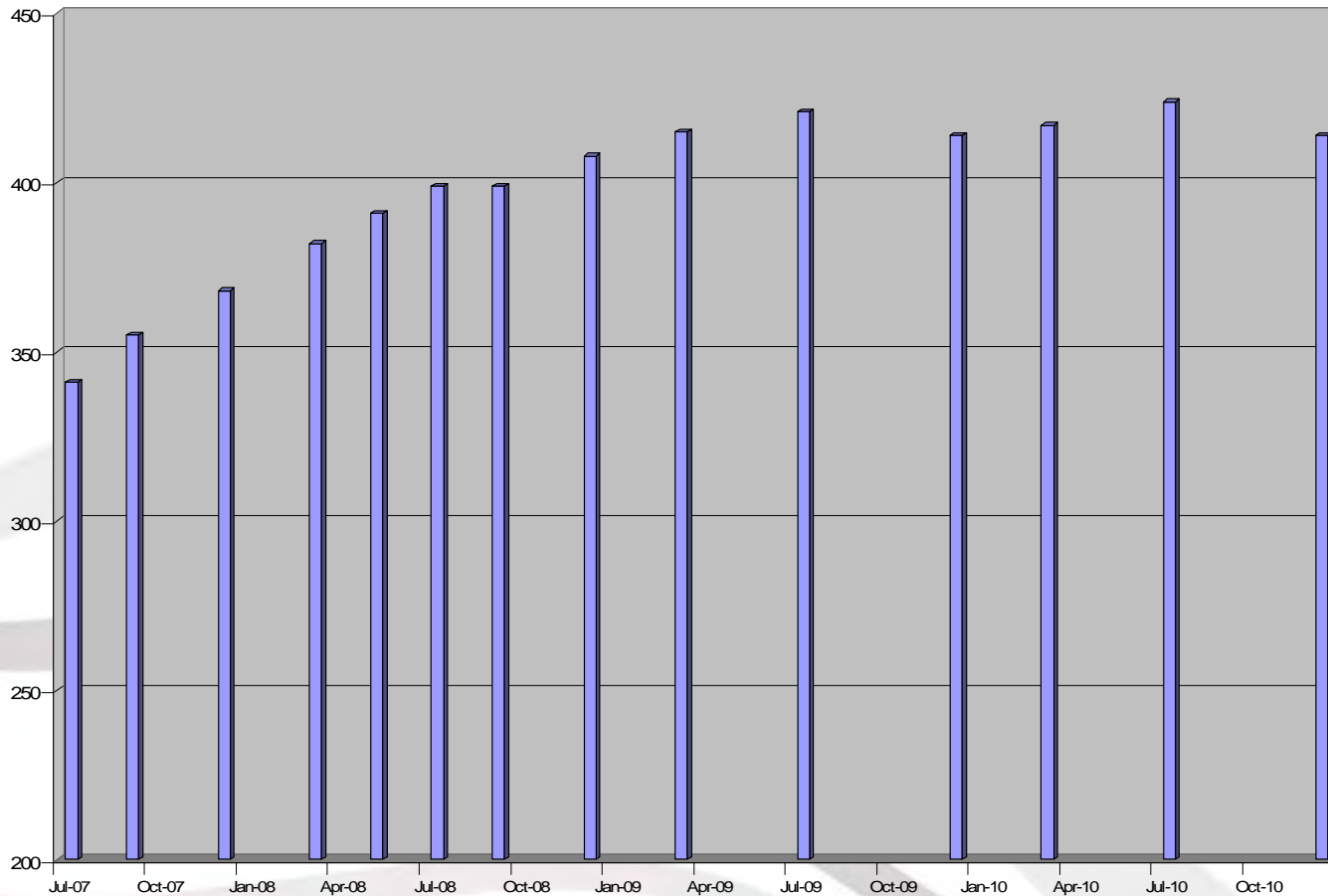
**29 billion litres of
ethanol production
being added/
already in
production**

Our Views are Conservative – Our Survey Results April – Billion Litres

Currently Producing	29.7
Under Construction	29.2
Total	58.9

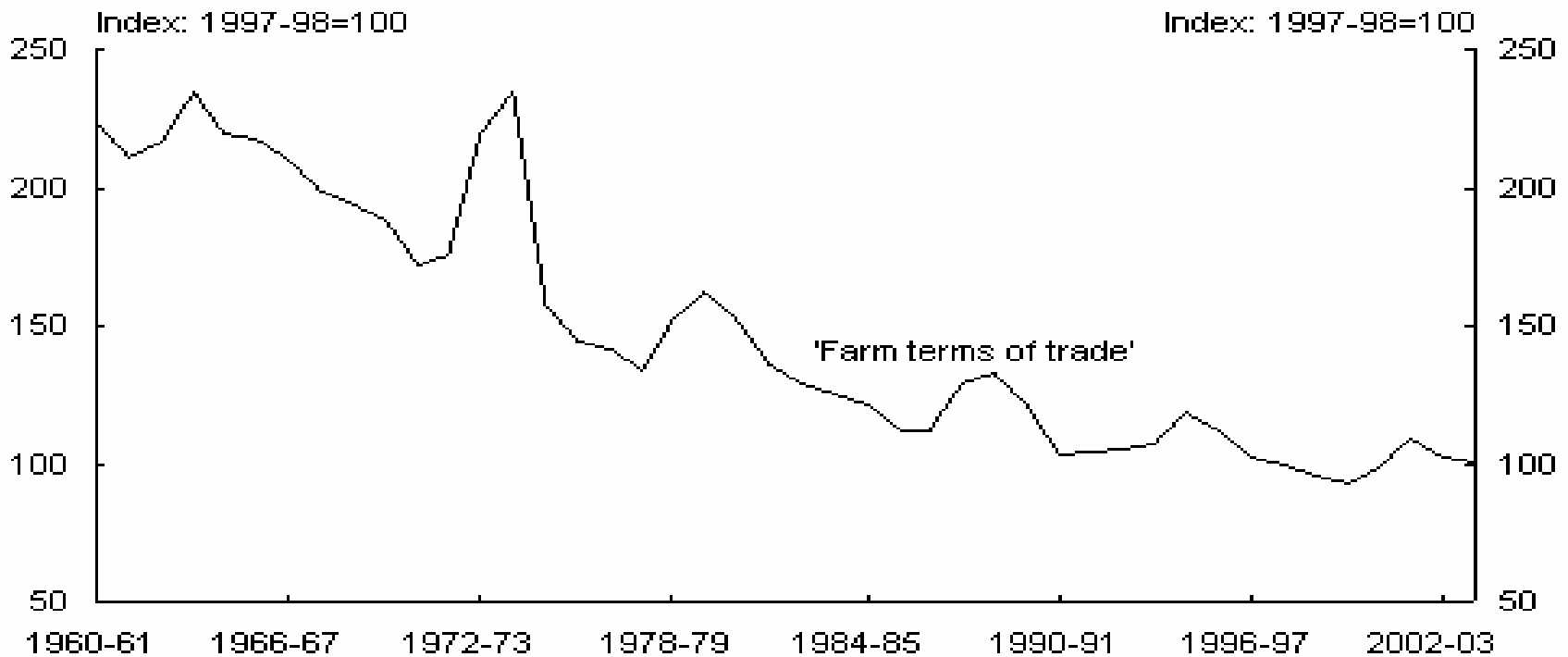
CBOT US Corn Futures US c/bu – July 13th 2007

CBOT Corn Prices 13th July 2007



**Has the
capacity to
completely re-
order world
agriculture**

Twin demand has capacity to reverse terms of trade decline



Source- Australian Treasury



United States Department of Energy
Office of Public Affairs
Washington, DC 20585

**NEWS MEDIA CONTACT: FOR IMMEDIATE
RELEASE**

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Wednesday, February 28, 2007

**DOE Selects Six Cellulosic Ethanol Plants
for Up to \$385 Million in Federal Funding**

*Funding to help bring cellulosic ethanol to
market and help revolutionize the industry*

Carbon Footprint models for food

**Will not work for
two reasons**

**Consider the
following four
questions**

**Will you still
respect me in the
morning?**

**Do you love your
mother?**

**Will you buy food
produced by
Australian
Farmers?**

**Will you buy foods
that help save the
planet?**

**Will be hugely
expensive to
monitor and verify.**

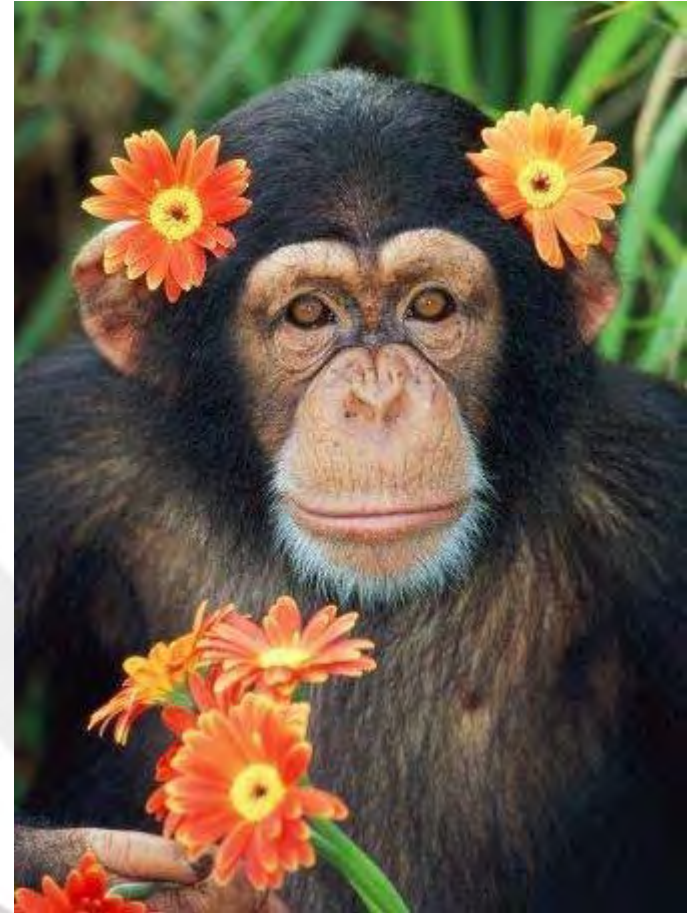
**The answer: a
comprehensive
carbon trading
system that works
on current
transaction system**

**How to think in
the face of
complex
uncertainty**

No –One Can Predict the Future



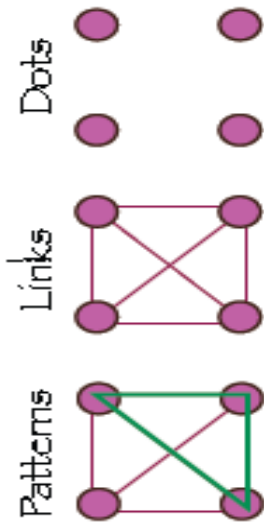
Are Humans are better than chimps at forecasting?



Philip E Tetlock – Expert Political Judgement - 2005

Complex situations – Number of Possible Interactions – 4 dots or 10????

Joining up the dots



Number of dots	Number of possible links	Number of possible patterns
	$L = N(N-1)/2$	$P = 2L$
$N=4$	$L=6$	$P=64$
$N=10$	$L=45$	$P=3.5$ trillion
$N=12$	$L=66$	$P=4,700$ quadrillion

**So What
should you do?**

**HOW you think
is more
important than
what you with**

Three Things

**Do what you are
sure of
NOW**

**Do what is too high
a risk not to do!!**

**Set up probes or
pattern recognition
systems to stay
ahead of your
competitors**

Thank you

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