Missouri Dairy Grazing Conference

GRAZING AROUND THE WORLD

Michael Murphy
Dairy Producer
Ireland
By 2050

Estimated
NEED + 60% more food than now

2009
Estimated 12 – 16% land very under-utilised

Will we produce +60% food?

Excellent outlook for low cost farming
World Population Growth Through History

Billions of people

- Old Stone Age
- New Stone Age Commences
- Bronze Age
- Iron Age
- Middle Ages
- Modern Age

Black Death - the plague

Years:
- 2.5 million B.C.
- 7000 B.C.
- 6000 B.C.
- 5000 B.C.
- 4000 B.C.
- 3000 B.C.
- 2000 B.C.
- 1000 B.C.
- 1 B.C.
- 1 A.D.
- 1000 A.D.
- 2025 A.D.
World Food Supply

Farmland per person is decreasing rapidly as population increases.
Impact of economic growth and prosperity on consumers

Calories/ person / day

Grain for animal feed
(millon t)

- US
- EU
- China
- India
- Brazil

250 m tonnes MORE to animals now than 25 years ago
Land Use for Biofuel

- 2008 - 175 billion litres of oil
- 2015 - 350 billion litres of oil (IMF)
- Supermarket competing with forecourt as land use
Last 100 Years

Huge Growth in land productivity driven by

– Mechanisation
– Fertilisers
– Irrigation
– Weed Control

All above driven by cheap energy.

Is “cheap” energy almost history?

NOTE: Growth in land productivity is now much lower than earlier decades.
Water shortages into future?

- Major aquifers falling especially in Asia
- Retreating glaciers. Eg India and China
- North China very short of water
- 70% of crops irrigated in North China
- 60% yield drop without irrigation
Water – Melting Glaciers

• Himalayan e.g. Gangotri – supplies 70% of Ganges river dry season flow
  – Forecast to be largely melted by 2035

• China – Glaciers of Tibet Qinghai Plateau
  – Forecast to be 65% melted by 2060

• Huge reduction to dry season flow of Yellow & Yangtze rivers.

• China will be a huge grain importer within 5-10 years

• Cheap grain is nearly history
Dairy Market 2009

- Only 7% of world milk internationally traded
- USA 2000 – 2% of world trade in milk products
- USA 2008 – 12% of world trade in milk products

Growth in Demand for Dairy Products

- In West = in line with population
- In underdeveloped and developing countries = growth in GNP
Global economy expected to contract

A material recovery in demand requires improvements in the economy and credit markets...and that may take time
Economic growth has collapsed

Growth in Global Industrial Production

Av 5.2%

- 12% (Feb 09)

Source: IMF, April 2009
Supply growth has slowed

Quarterly milk production growth in export regions (EU, USA, Aust and Argentina)

But not enough!!!!
Stock have risen sharply, but remain well beyond historic peaks

With US CCC stocks bought by govt in late Mar 09

Source: Commodity Credit Corporation, MDC Datum, Rabobank
Note: chart excludes US stocks of cheese and butter, which were minimal over the period depicted
Commodity Demand

- Very low economic growth
  - Leads to well below trend growth in demand for commodities
- Extraordinary price volatility of 2008/2009 will depress supply very quickly
- Very low stock overhangs on the market
- Commodity markets will recover, probably from 2010 onwards
- Excellent medium/long term prospects for milk products
Grazing Model
“New Zealand actually shows the lowest production costs per litre despite the fact that its milk yields per cow are low”
Rabobank International (1998)

*Profit is sanity; Production is vanity.*
New Zealand Milksolids Production

2 million cows → 4 million cows
Driven by profit!
More land, more cows, better grass management
Keys to future

• Become very low cost
• Develop your skills e.g. grassland feed budgeting
• Very compact calving. Get the right cow
• Make plan for expansion
• Get more grazing land i.e. Milking platform
• Keep lots of A1 Bred replacements
• Monthly financial monitoring
• High labour productivity (16-18 hours/cow)

People who measure- learn and progress

People who don’t measure- don’t learn; don’t progress
The key predictor of Profit

Operating Profit vs Operating Expenses

Operating Profit $/ha

Operating Expenses $/Kg MS

$/Kg MS

R² = 0.7054

Source: 2006-07 Economic Survey

Average Cost of Production is the best indicator of Profit!
## Drivers of Profit

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
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<tbody>
<tr>
<td>Cost of Production</td>
<td>0.70</td>
</tr>
<tr>
<td>Production /ha</td>
<td>0.36</td>
</tr>
<tr>
<td>Production /cow</td>
<td>0.19</td>
</tr>
<tr>
<td>Extra feed fed / cow</td>
<td>0.05</td>
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</table>

Summary of 20 years NZ Dairy Economic Survey data
High % grazed grass = low operating expenses

Relationship between the proportion of grazed grass in the diet and OPEX.

\[ y = -0.007x^2 + 0.16x + 61.0 \]
\[ R^2 = 0.95 \]

Reference; Roche & Newman – SIDE 2003
## Grassland Management - the challenge

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Moderate</th>
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<tbody>
<tr>
<td>Grows</td>
<td>18</td>
<td>11-13</td>
</tr>
<tr>
<td>Tonnes DM/Hec</td>
<td></td>
<td></td>
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<tr>
<td>Utilisation</td>
<td></td>
<td></td>
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<tr>
<td>Tonnes /DM/Hec</td>
<td>(85%) 15.3</td>
<td>(50-60%) 5-8</td>
</tr>
<tr>
<td>ME</td>
<td>12.2-12.6</td>
<td>10.5-11.0</td>
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</tbody>
</table>

1Kg of grass at 12.5 is better than 1kg of meal

Profit difference = +$600 US/acre
Lots of green leafy grass
Eat all the grass
Cows who are excellent grazers and calf every 365 days

Cows that last at least 4 lactations
Compact Calving

• 50%+ calved in 2 weeks
• 90% calved in 6 weeks
• Below 6% empty on a 10 week breeding season

• KEY POINT

• Synchronise the Heifers
  – 6 days observation then PG injection

• 75% of heifers calving in under 2 weeks (at start)
Body Condition

- HP
- NZ

Mating Start

Days in milk

BCS

2.6
2.7
2.8
2.9
3.0
3.1
3.2
3.3
3.4

0
50
100
150
200
250
300
Lots of Heifers

• 100 cow herd with the “wrong” cow can’t expand
• Lose too many cows 25%+ per year
• Can’t get enough heifers in “suitable” window (25%)?

RESULT

• No growth in the business
• Or buy in and risk major disease problems!
Lots of heifers – the right cows

- Very fertile herd (NZ x-bred)
- Very tight calving
- Excellent herd health- “closed herd”
- Excellent management
- 18% replacement rate
- 45% of herd numbers reared as heifers each year
- Herd numbers compound very rapidly
<table>
<thead>
<tr>
<th>Year</th>
<th>Total Cows</th>
<th>Number to Keep</th>
<th>Heifer Calves</th>
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<tr>
<td>2008</td>
<td>100</td>
<td>45</td>
<td>Heifer calves</td>
</tr>
<tr>
<td>2009</td>
<td>100</td>
<td>45</td>
<td>Heifer calves</td>
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<tr>
<td>2010</td>
<td>127</td>
<td>57</td>
<td>Heifer calves</td>
</tr>
<tr>
<td>2011</td>
<td>149</td>
<td>67</td>
<td>Heifer calves</td>
</tr>
<tr>
<td>2012</td>
<td>179</td>
<td>81</td>
<td>Heifer calves</td>
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<tr>
<td>2013</td>
<td>214</td>
<td>96</td>
<td>Heifer calves</td>
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<tr>
<td>2014</td>
<td>256</td>
<td>115</td>
<td>Heifer calves</td>
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<tr>
<td>2015</td>
<td>305</td>
<td>137</td>
<td>Heifer calves</td>
</tr>
</tbody>
</table>
Cows / Full time labour unit
70 → 130

Hours worked / cow
33 → 18

Milksolids / Full time labour unit
20,000 → 42,000
Simple Systems

• Fast Milking: 20 – 27 units - 1 person
  36 – 50 units - 2 people

• Long grazing season 10 months +
• 150 cows / person
• 16 – 20 hours / cow / year
Simplifying the farming system

- Only dairy cows (and replacements)
- Cows harvest their own food
- Cows spread their own manure
- Batch calving
- Batch calf rearing
- Batch mating
Simplifying the farming system (2)

• Focus on easy calving
• Once a day feeding of calves
• Rearing of calves outdoors
• Out wintering of cows
• Improved farm infrastructure
• Almost no machinery
• Weekly pasture measuring
Profitable dairy farms

Low cost of production

Graze grass

Expand more than intensify
My Challenge to you

• Go Home
• Over next 2 days – Decide will I expand?
• Write down 5 actions you will take
• Put a plan in place to do it
• Then act
• Be a winner
Last word

• Success in life is based on good decisions
• Good decisions result from good information/knowledge
• People who measure constantly- learn constantly
• People who don’t measure- don’t learn
• Be a life-time student, hungry for knowledge
• Be excellent
• People make or break the system
• Good people are a treasure