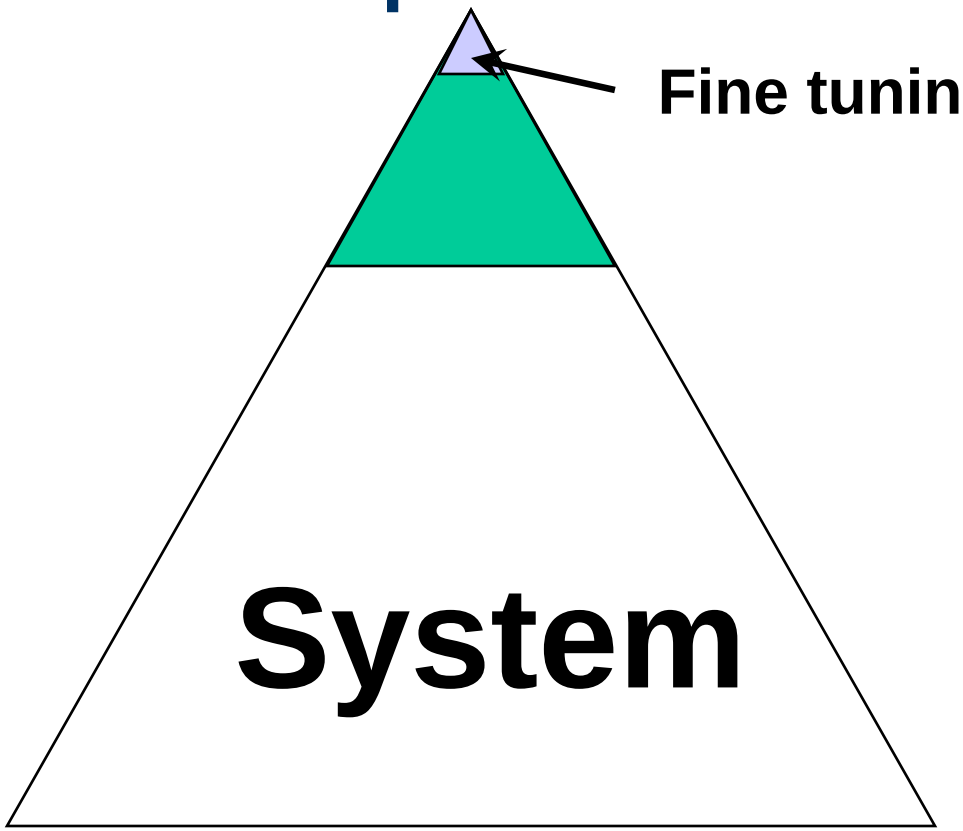
Pasture based dairies -a systems approach.

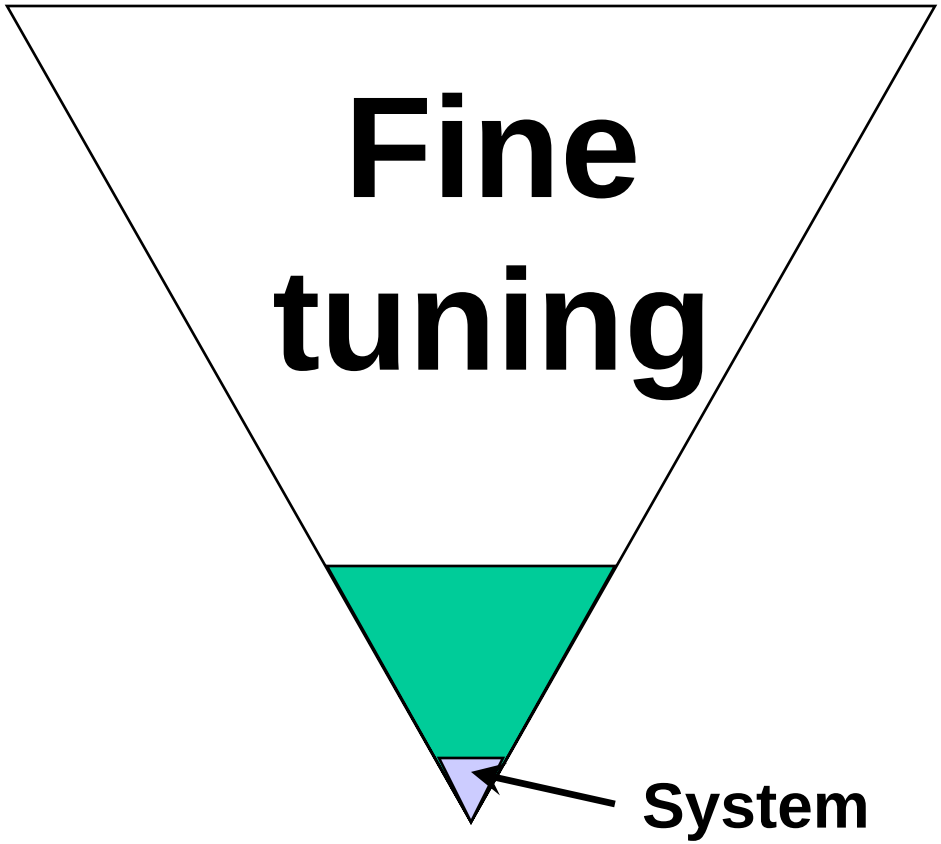
John Roche

Get the priorities right



80% of potential gain made by getting the system right

Too many people get it wrong



Rising Demand for Meat and Milk in Developing Countries: Implications for Grass-based Livestock Production

- By 2020 large increase in demand for food in developing countries
- Growth in monogastric livestock in Asia and South America will continue, but at a reduced rate mainly because of environmental issues
- Ruminant livestock products account for an increasing proportion of the increased demand
- Inflation-adjusted prices for feed grain will only fall marginally by 2020

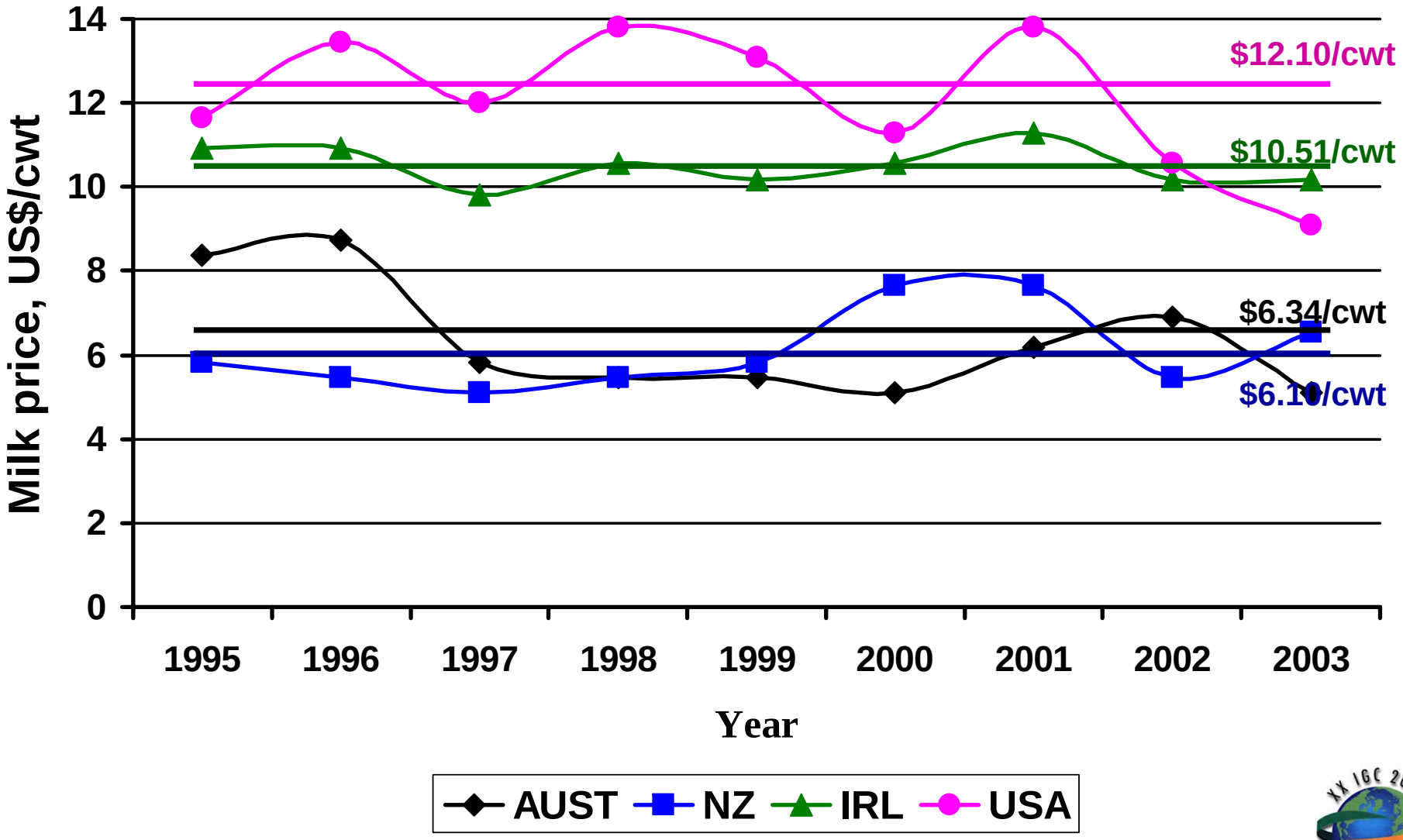
Source: Delgado (2005)

- Unlikely to be an increase in milk price (OECD)

Grass-based Vs Confinement

System of production	Grass-based	Confinement
Feed costs	Low	High
Feed quality	Variable	High
Stocking rate	Critical	Ignored
Milk supply profile	Seasonal	Constant
Labour requirement	Seasonal	Constant
Decision support	Rudimentary	Sophisticated
Effluent management	Low	High
Agrochemical use	Low	High
Energy use	Low	High
Capital Investment	Low	High

Trends in World Milk Prices

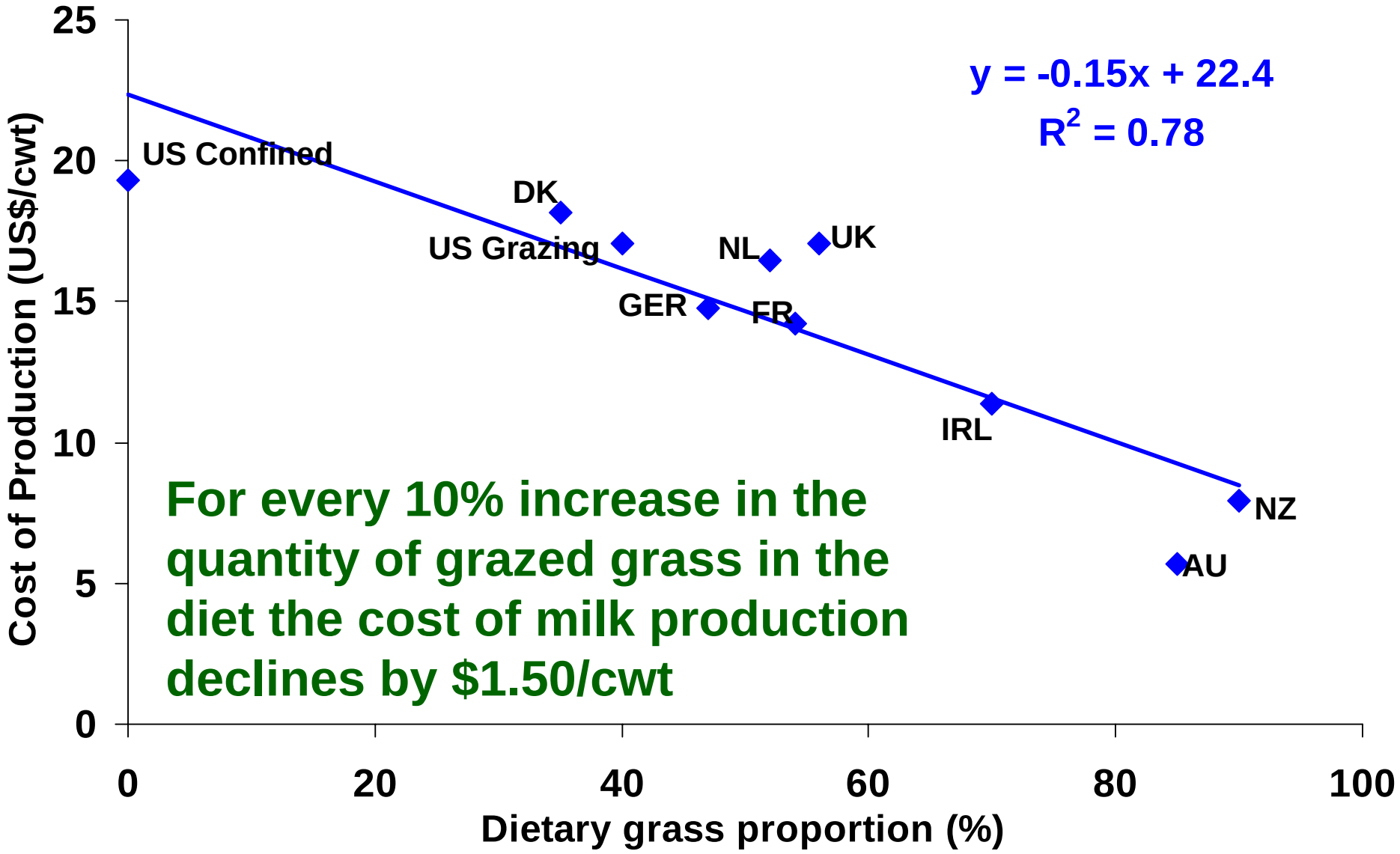


Physical Characteristics of Farming Systems

	NZ	Aust	Ire	US Graz	US Conf
Farm Size (ac)	254	566	59	198	415
Cow numbers	271	312	45	64	115
Yield/cow (lb)	8,092	10,560	10,094	17,114	22,535
Repl. rate (%)	18	15	19	NA	33
Conc. (lb/cow)	330	880	1650	NA	9,900
Stocking (cows/ac)	1.1	0.6	0.8	0.3	0.3
Cows/person	97	80	44	-	40

LIC, 2003; Dairy Australia, 2004; Fingleton, 2003; IFCN, 2003; Kriegl, 2001; Dillon et al., 2005

The relationship between cost of milk production and proportion of the diet as grazed grass



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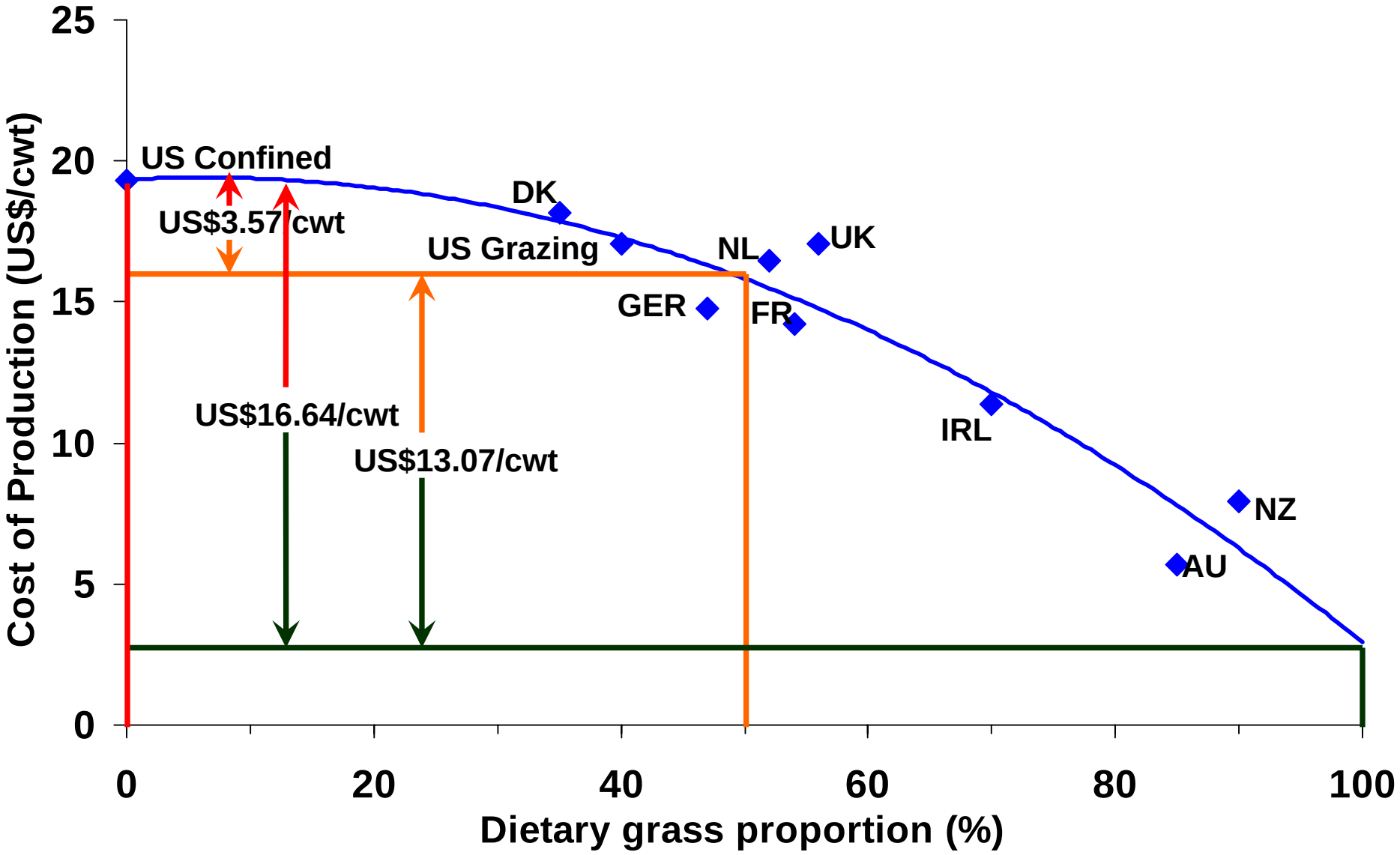


USA

- Huge opportunities for profitable pasture-based systems
- Focus on returns
  - Low costs
  - Maintaining reasonable milk yields
- Don’t adopt another system
- Adapt successful systems

Maximise Margins

- High pasture production
- High pasture utilisation and animal prodn.
- Assess importance of costs individually
  - Not minimise costs - spend money wisely
- Minimise unnecessary fixed costs
- Simplify management - reduce labour

Maximising profit

- Grow as much pasture as possible.
- Utilise the pasture you've grown.

Pasture production/utilisation

No more powerful force exists, for good or evil, than the control of stocking rate in grassland farming

- C.P. McMeekan

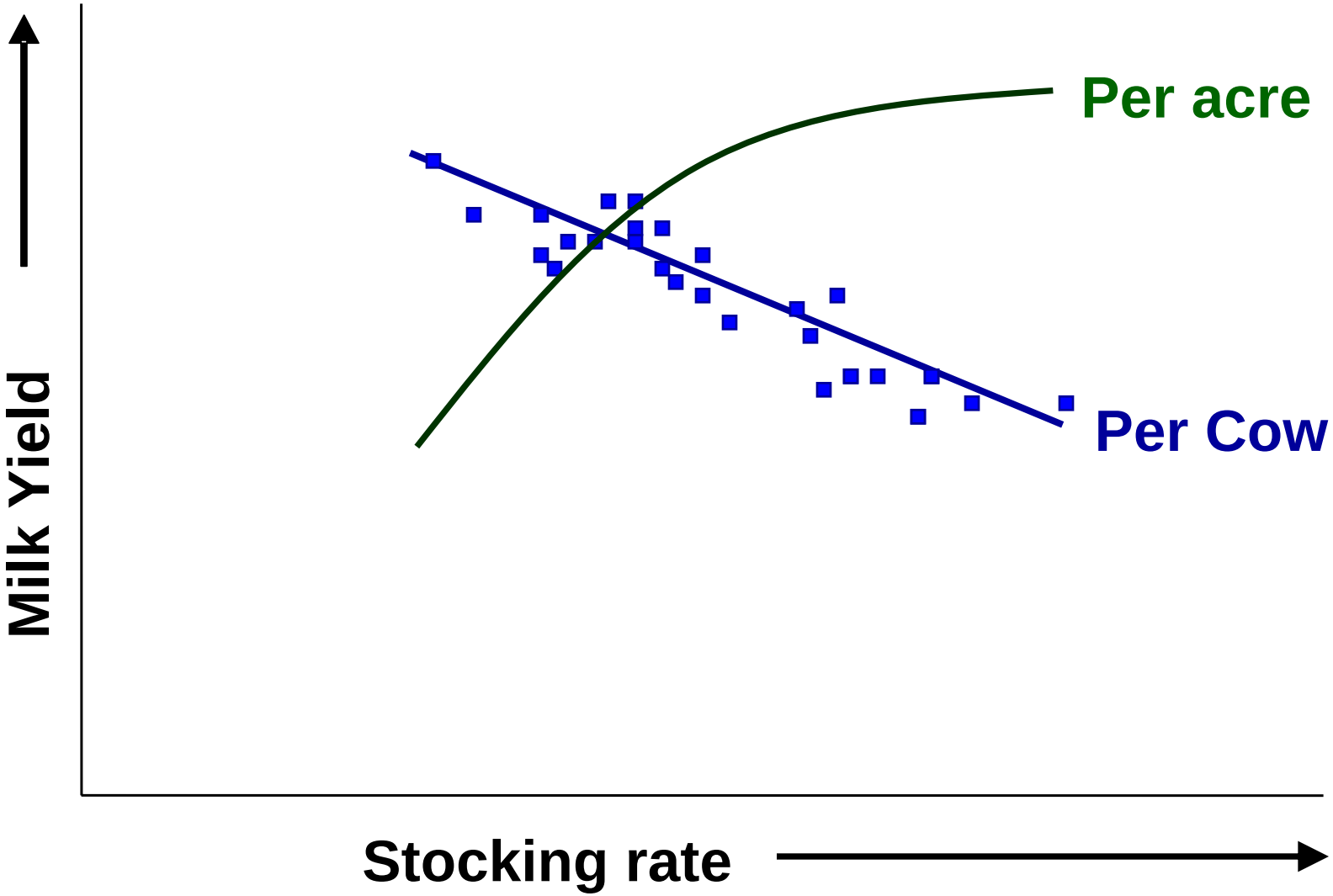
Stocking rate

- Pasture utilisation increases with SR
- Milk production/ha increases with SR

But

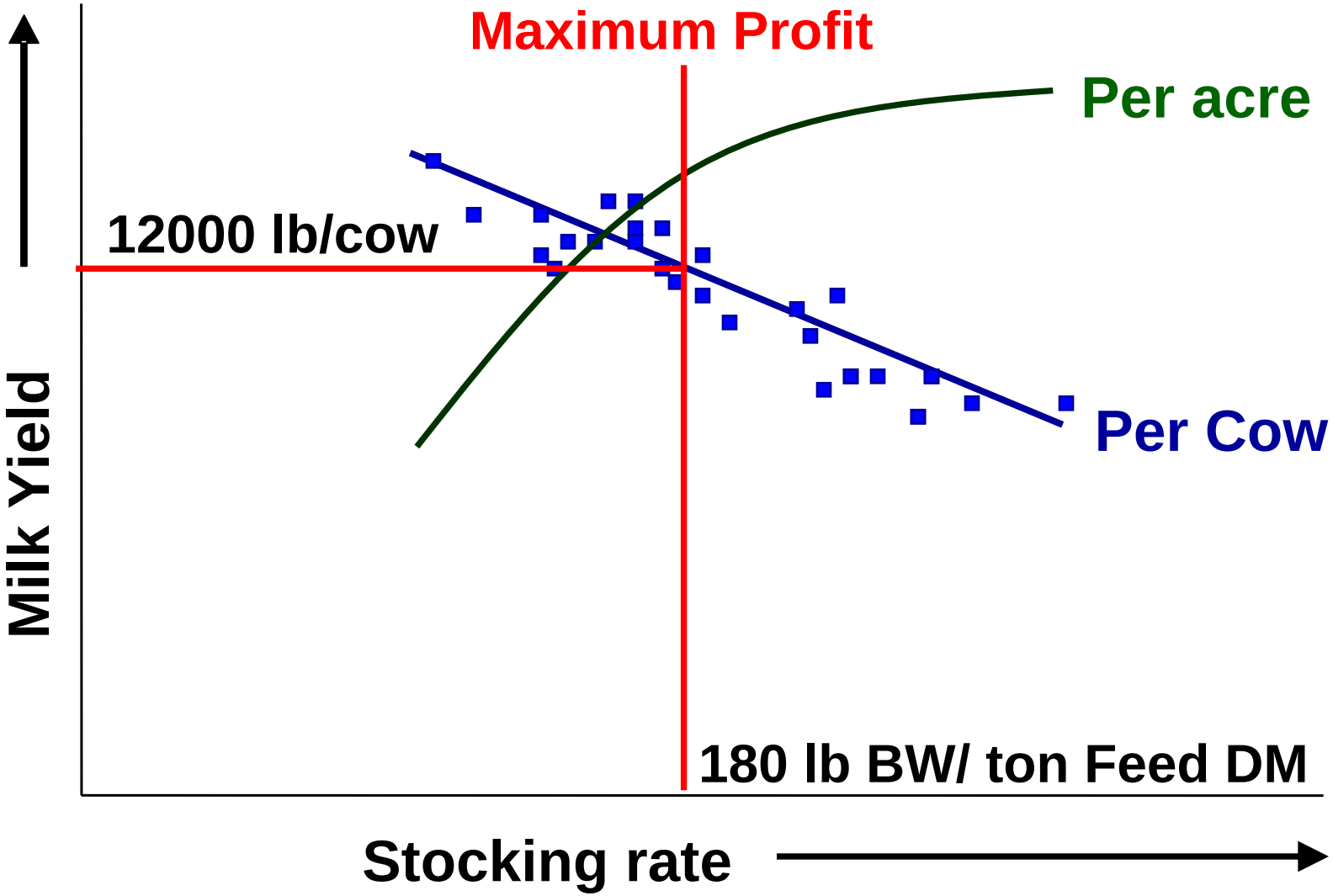
- Milk production/cow decreases with SR
- Cows/acre meaningless
    - Cow size
    - Pasture grown
    - Imported feed
- Comparative stocking rate
    - Liveweight/ton of feed

Effect of Stocking Rate



(Penno 2001)

Optimum Stocking Rate

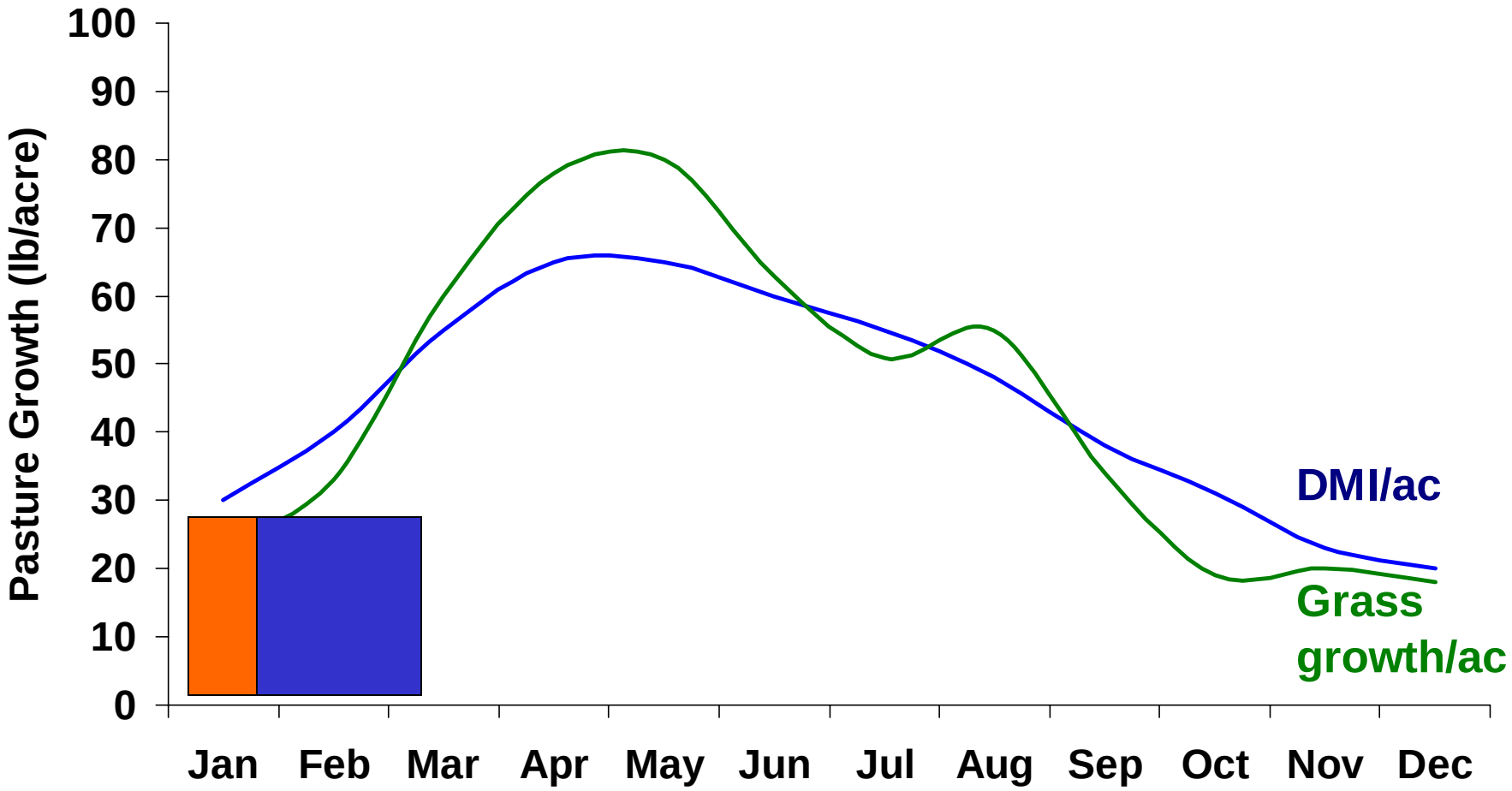


(Penno 2001)

High Pasture Utilistion

- Stocking Rate
- Calving Date & Spread

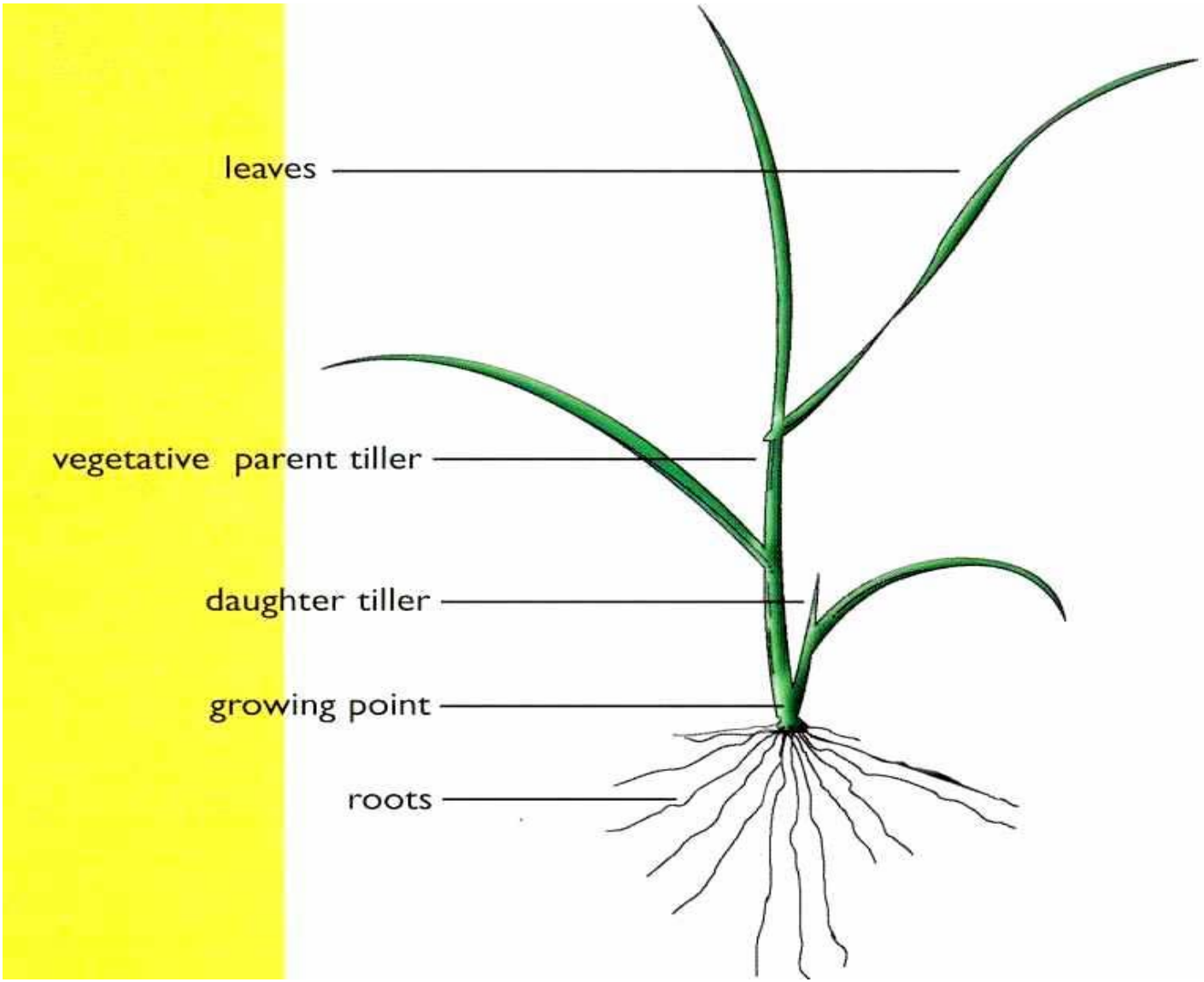
Calving date essential



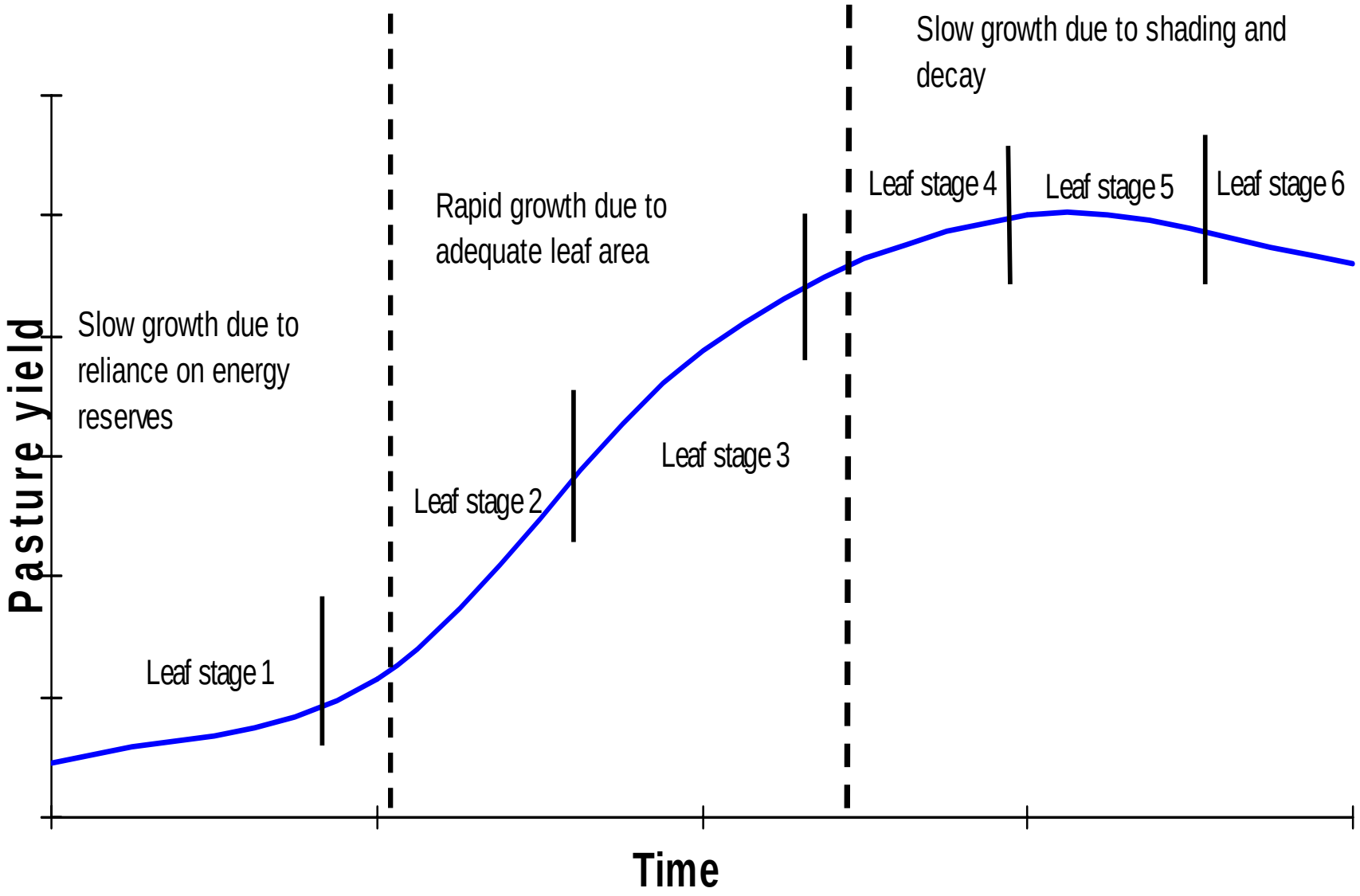
High Pasture Utilistion

- Stocking Rate
- Calving Date & Spread
- Grazing Management

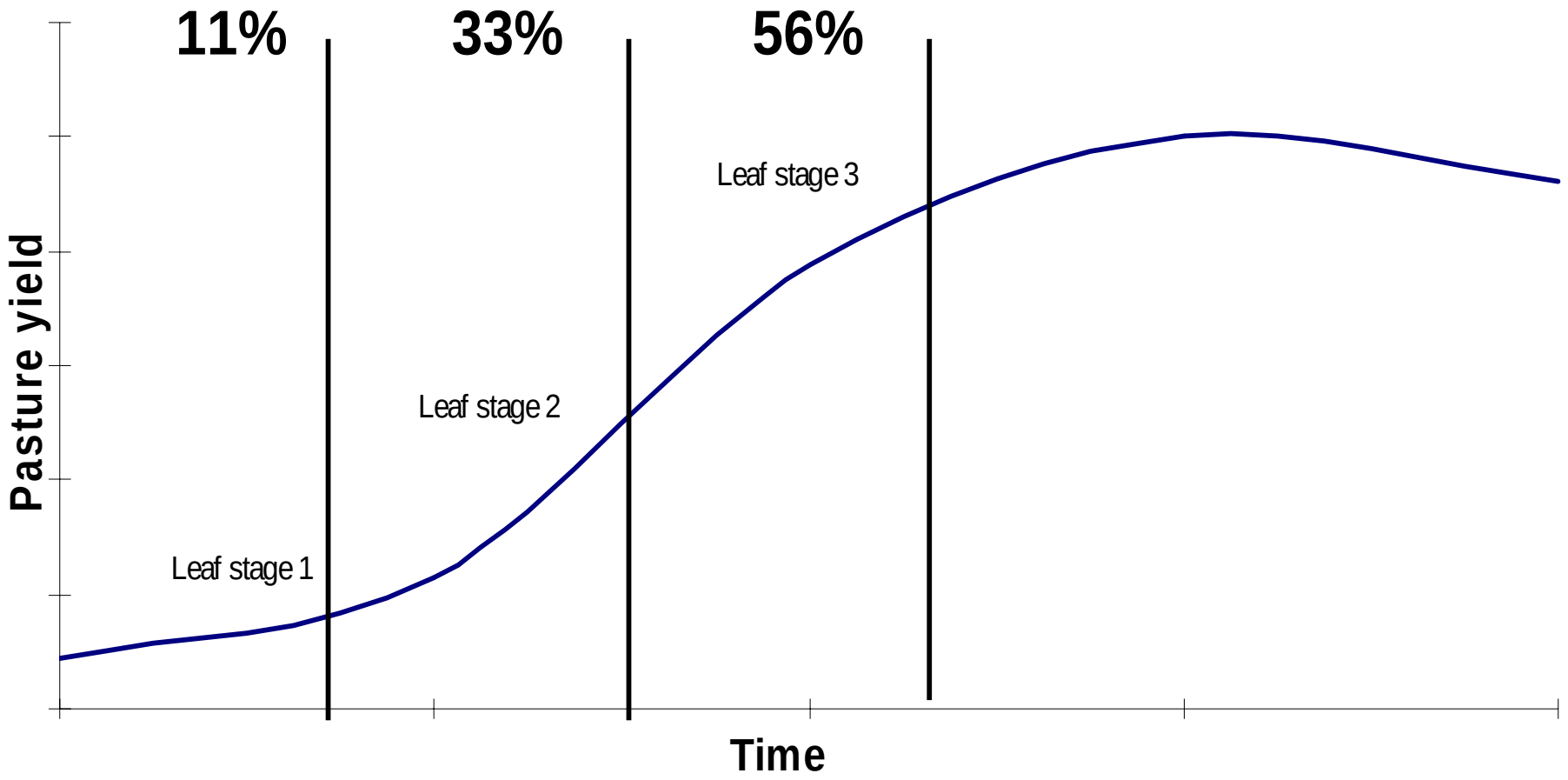
Vegetative grass tiller



Productivity - sigmoid growth curve



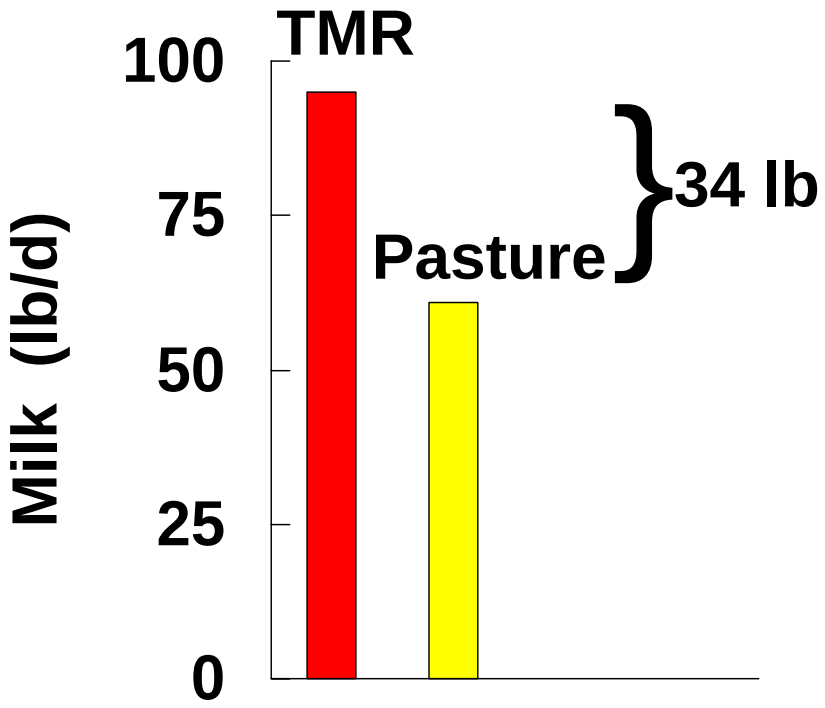
By grazing too early we are losing pasture



High Pasture Utilistion

- Stocking Rate
- Calving Date & Spread
- Grazing Management
- Supplementary Feeding
  - when pasture is not available
  - keep it simple

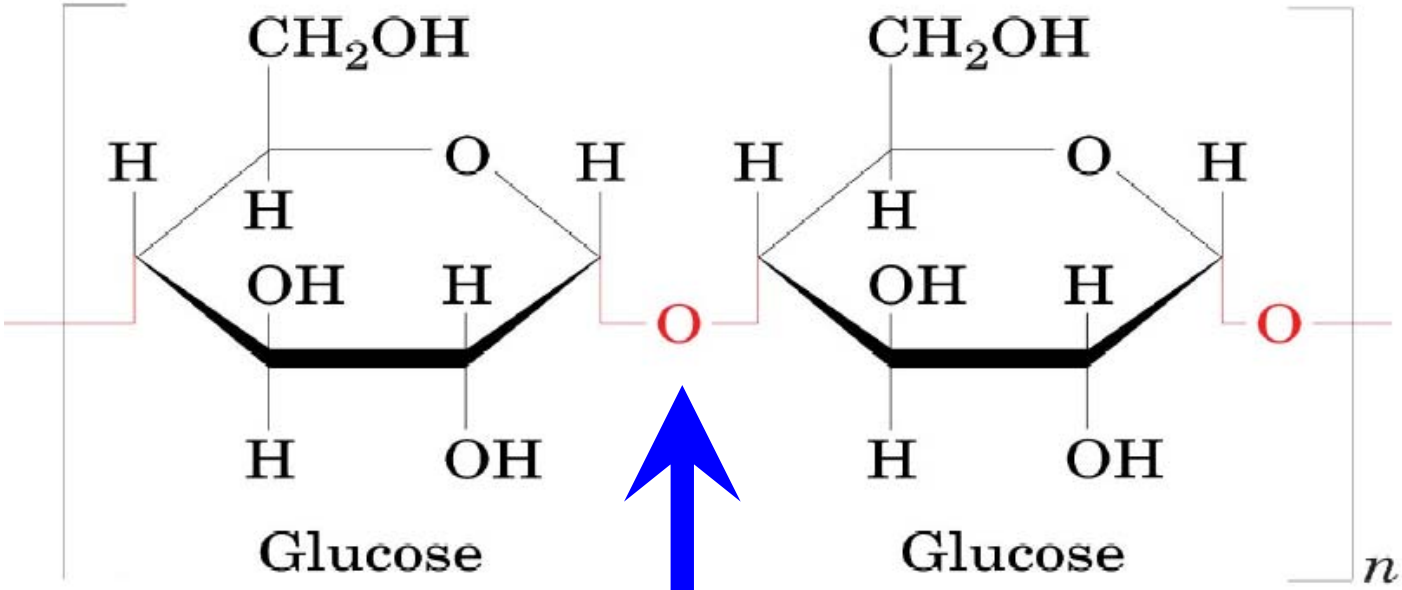
What limits production on pasture?



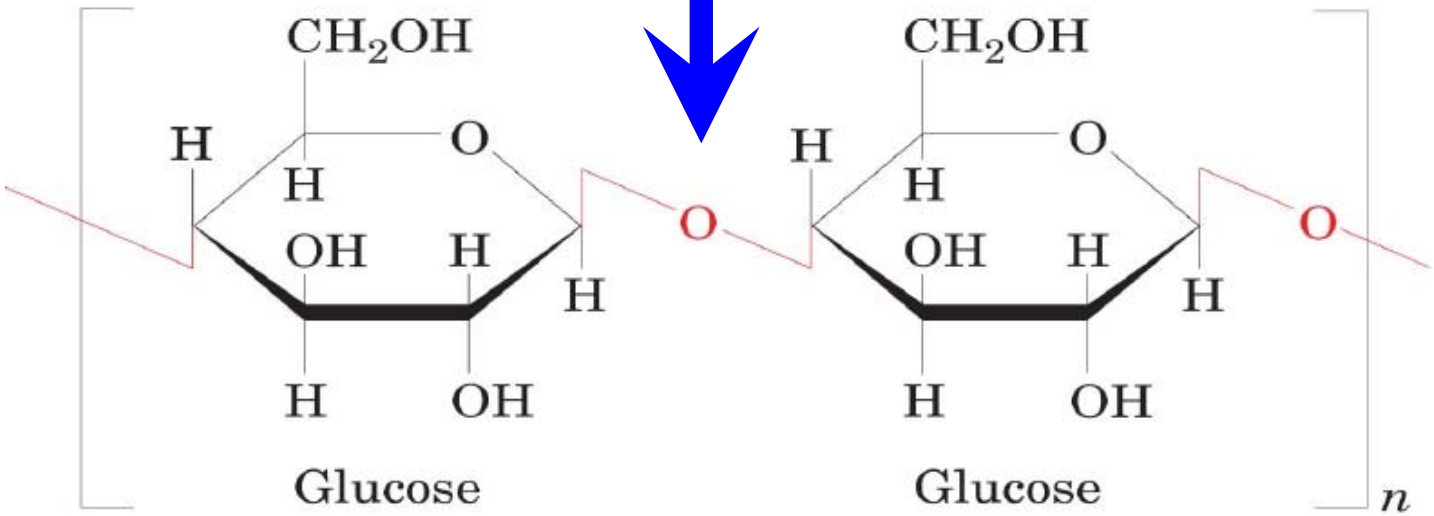
	Milk (lb/d)
Intake	+ 21 (59%)
Grazing/walking	+ 8 (23%)
Urea cost	+ 4 (11%)
Milk composition	+ 2 (7%)
Liveweight	- 1.5 (4%)
	33.5

Kolver and Muller, 1998

Starch



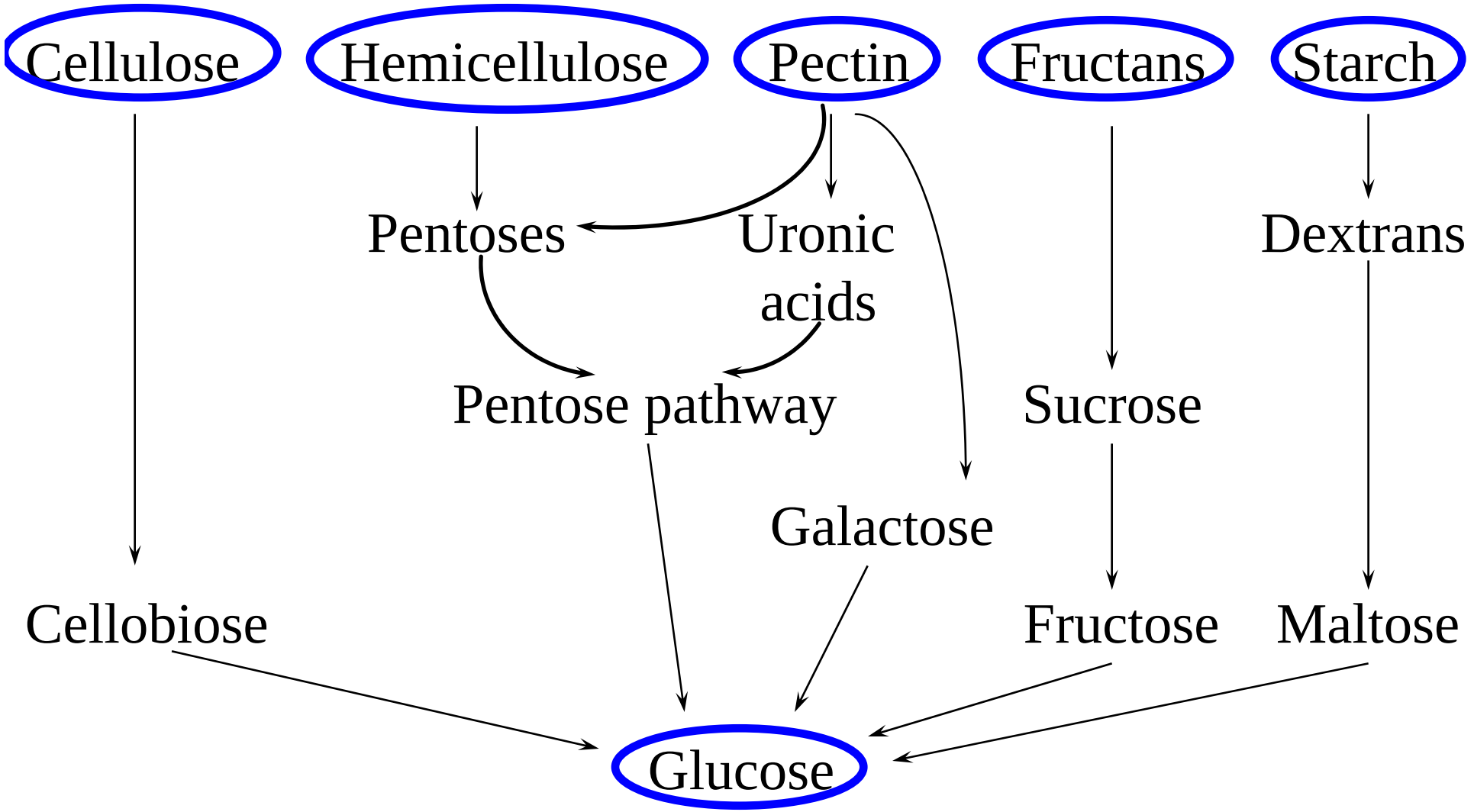
Fibre



Carbohydrate Metabolism

Cellulose Hemicellulose Pectin Fructans Starch

Carbohydrate Metabolism



Replace NDF with NSC

Caruthers et al. 1997

- No increase in efficiency of ruminal N utilisation.
- No increase in microbial protein.
- <Fat Yld (E. Lact)
- >Protein Yld (L. Lact)

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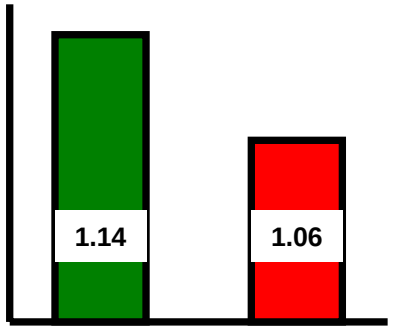
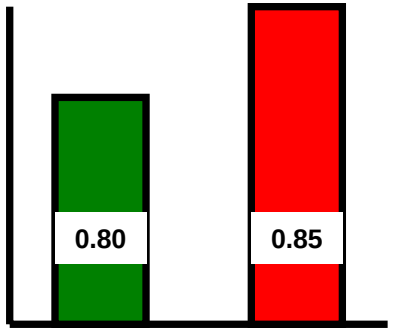
Roche et al. 2006

- <Fat



- >Protein



Conclusions

- Huge opportunity in the U.S. for pasture-based systems
- Aim to maximise profits – not minimise costs
- High pasture utilisation through
  - High stocking rates (>1 cow/ac)
  - Supplement cows when insufficient pasture
- Forget the toys. You've outgrown them!
- Less emphasis on milk yield/cow.
- Don't listen to nutritionists trained for TMR!