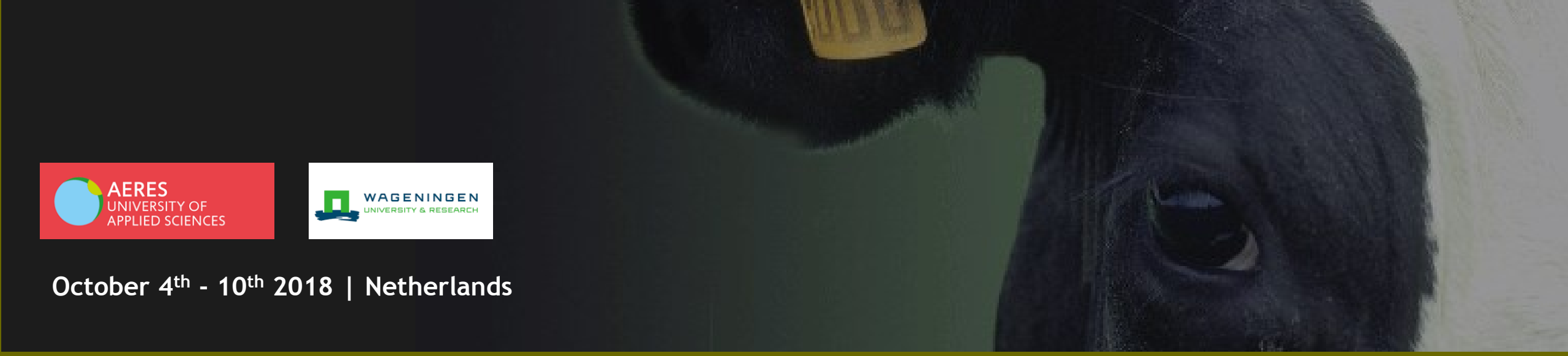

AERES UNIVERSITY OF APPLIED SCIENCES

WAGENINGEN UNIVERSITY & RESEARCH

October 4th - 10th 2018 | Netherlands

"Grass based dairyfarming in Argentina

Hybrid Systems and High Milk Yield under Grazing"

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Dairy Consultant

ARGENTINA

Material for Workshops with Researchers, Professors & Teachers

Hybrid Systems

How to Bring in Grazing into your High Milk Yield System

DEBUNK + AVOID

The Myths

- Lower milk production
- Environmentalist
- Thinner Cows
- Grass farmer (forage)
- Lazy (think smarter)
- Difficult (science + gut)

The Ridiculous Rivalry

- Grass vs. Concentrate
- Bigger cow vs. Smaller cow
- Production vs. Reproduction

Adapted from Bargo

To graze or not to graze, that's the question…

How much room for copy-paste…?

Understanding the differences… (cow, grass, economics…)

Seasonal Systems Basis ⇨ The underlying factors…?

Seasonal Systems Basis ⇨ The underlying factors…?

- Supported by consistent growth
- Intake is restricted for a considerable period of the year
- Production per cow reflects restricted nutrient intake
- Average NZ/IE heds uses 60% of feed eaten for manteinance, 40% or less for milk production
- Holded on:
  - Different cow ⇨ designed to perform under controlled starvation
  - Different pastures ⇨ predictable under “climate paradises” (rainfall, temperature, sunlight, etc)

Who works for who...?

Feed harvesting	Cows-feed joining	Feed mixing	Feed loading & delivery	Feed pushing	Bedding	Manure spreading
						
						

TMR	HYBRID	Grassfed
Year round feed HARVEST need		
Feed STORAGE and handling		
HOUSING facilities		
MANURE store, handle and haul		
HERD uniformity		
COMPACT calving		
NUTRITION focus		
COST/INPUT control		
OUTPUT focus		

What is a Partial Mixed Ration or PMR?

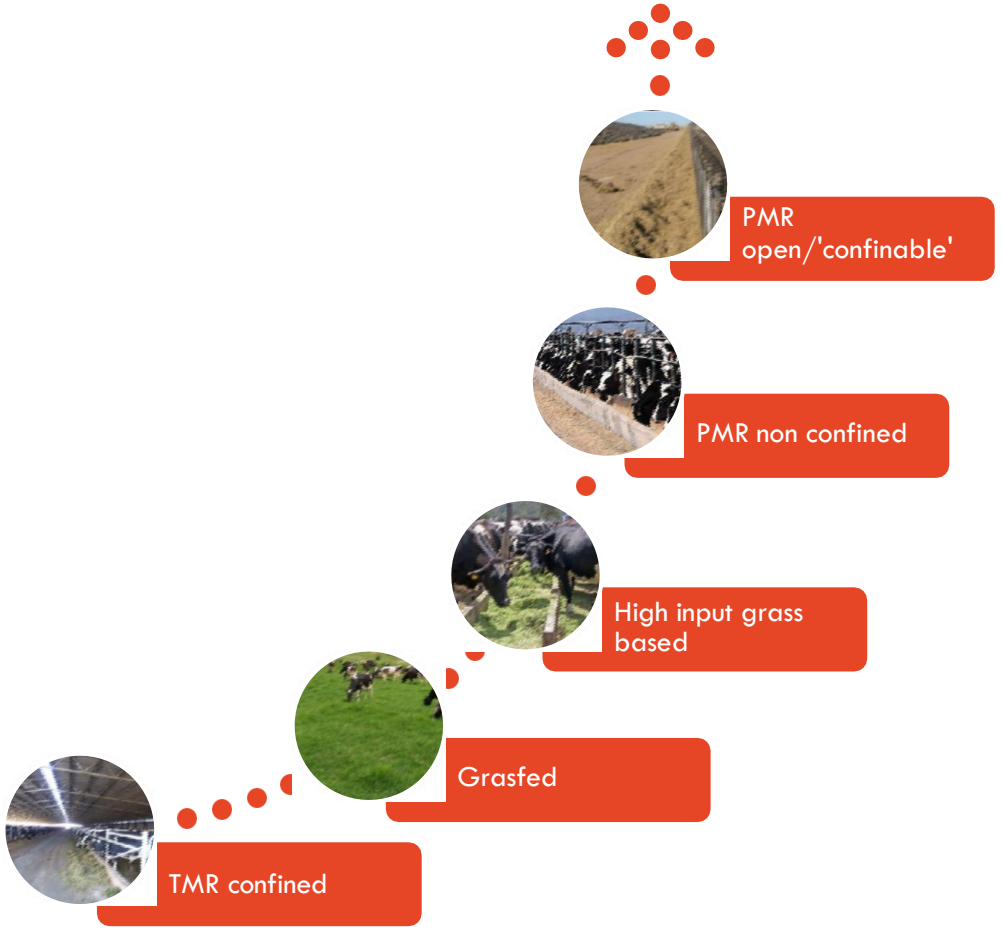
"Total mixed rations incorporated into grazing systems"

Adapted from Univ. Missouri

Even if you come from the other direction avoid to think the way

"Supplementing TMR with grass"

Flexible Feeding Systems



Adapted from García, Univ. Sydney

AIM: Develop flexible and efficient feeding systems that cost-effectively integrate supplementary nutrients into the diets of cows grazing pasture.

(Find better ways to feed supplements)

What is a Hybrid system?

A profitable option for reaching high production per cow and per hectare under grazing with increased flexibility and resilience, if properly desing and managed

Key Insights for NL ⇨ Related to grazing approach

- **Grazing approached as a separte box**
- **Facing system paradigm shift challenge, not just grazing**
- **Focus on 80/20, don't fix what is not broken (i.e. walking distances)**
- **Grazing as:**
  - Coin-activated strategy…?
  - Excuse for exercise your cows…?
  - Real opportunity for make more money and simplify routines…?
- **Shift key question from "grazing or not grazing" by "how hold/increase high milk yields with grazing and make more profit making your life easier"**
- **Other grass-related "mindsets" to be consider**
  - Supplement TMR with grass
  - Loose respect to grass
  - Competition with grass silage after cover you winter target
  - Walking and distances

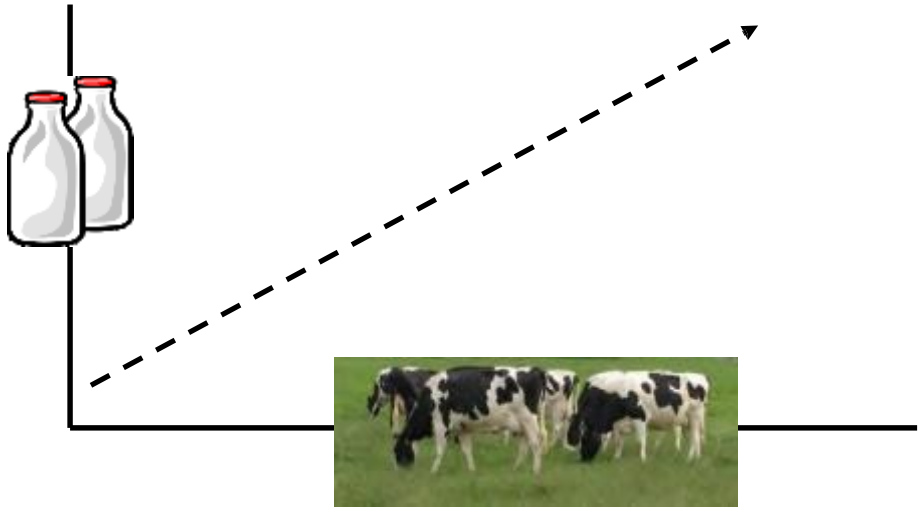
Hybrid Systems

Intake, Grazing and Milk Yields…

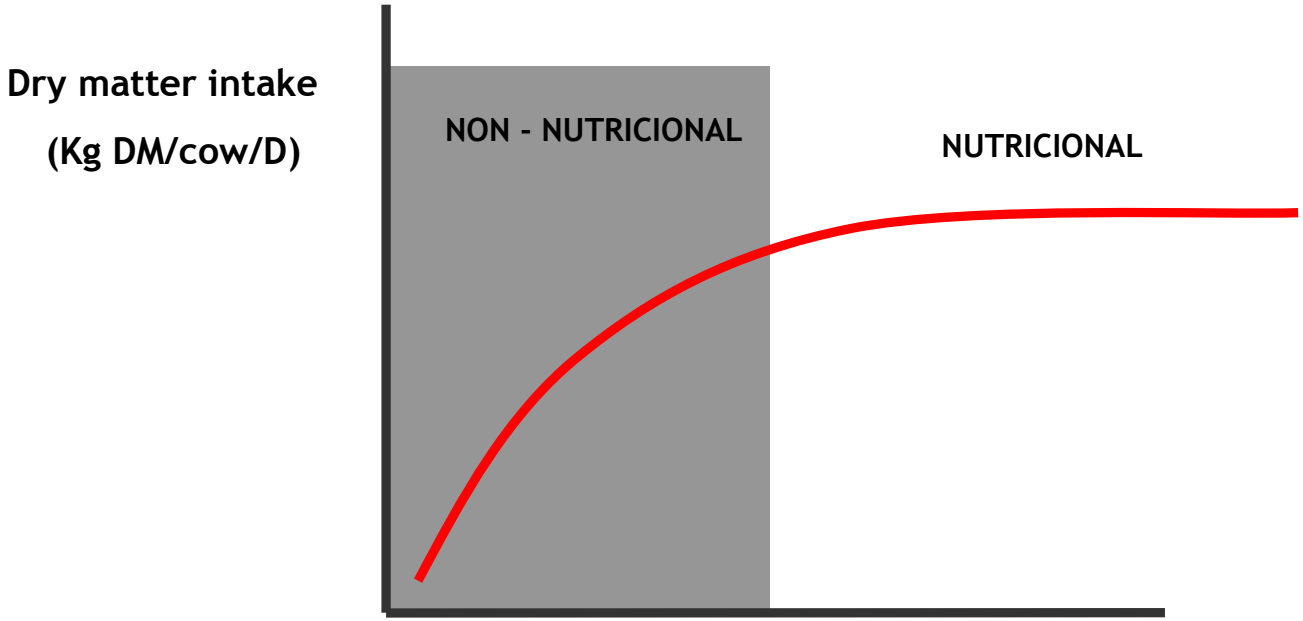
Why focus on INTAKE under grazing?

Intake (energy) drives production

75 % of milk production response is related to intake



Determinants of intake under grazing



One of the biggest challenges under grazing

To achieve high levels of

DRY MATTER INTAKE

Pasture allowance, a double edged sword

- **Too much equals:**
  - Well fed cows
  - Poor pasture quality??
  - Low utilization

- **Too little results in:**
  - Hungry cows
  - Excellent pasture quality
  - Less milk
  - Higher utilization

Trade offs under grazing…?

FULLY FEED THE COW

GRASS UTILIZATION & RESIDUALS

"I can not manage with just pasture and you complicate me if it's too much…"

"I do not care about your cows as long as you harvest me all"

Adapted from Bargo

Grazing intake model

Animal factors
- size
- productiokn
- Genetic potential

¿How many bits per minute?
BITING RATE
(20 – 70 bites/min.)

X

Pasture factors
- height
- density

¿How much each bite weight ?
BITE MASS
(0,1 – 3 grs. DM/bite)

¿How much intake per hour?
INTAKE RATE
(Kg DM/grazing hour)

X

¿How many hours grazing?
GRAZING TIME
(8 – 10 hs. Grazing/day)

¿How much eat a day?
DAIYL INTAKE
(Kg. DM/cow/D)

De Penning, 1985

Intake behaviour: Grazing vs. TMR

	Grazing[1]	TMR[2]	Dif., %
DM, %	21.3	51.3	- 2.4x
DMI, kg/d	20.5	21.8	=
Intake time, min/d	626	254	+ 2.5x
Bites	35,235	6172	+ 5.7x
Bite mass,[3] g DM/bit	0.60	3.53	- 6x

[1]adaptado de Bargo et al. (2002a)
[2]adaptado de Kononoff et al (2003)
[3]peso bocado = CMS / bocados

Bite weight versus intake

	Bite weight	
	Small	Big
Bite weight, g. DM/bit	0.50	0.70
x		
Biting rate, bit/min	55	50
x		
Grazing time, min/d	500	500
=		
Pasture intake, kg DM/d	13.8	17.5

Mayne et al. (2000)

Large herds grazing challenges

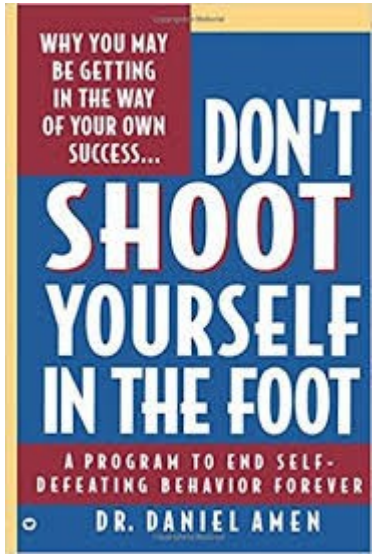
- **Walking distance and time off pasture**
  - Energy cost of walking
  - Time spent pasture to/from milking parlour
  - 7 km/D
  - Herd grouping + farm layout

GRAZING HIGH YIELDING COWS ⇨ The opportunities

Make more profit by better IOFC	⇨	GRAZING MANAGEMENT	+	FORAGE SUPPLY CHAIN		
Simplify daily routines	⇨	FEEDING	+	MANURE HANDLING	+	BEDDING
Increase farm sustainability	⇨	PRODUCTION SYSTEM FLEXIBILITY	+	CONSUMER PERCEPTION	+	ANIMAL WELFARE

GRAZING HIGH YIELDING COWS ⇨ The challenges

Maintain or increase your current level of milk PRODUCTION from grazed grass



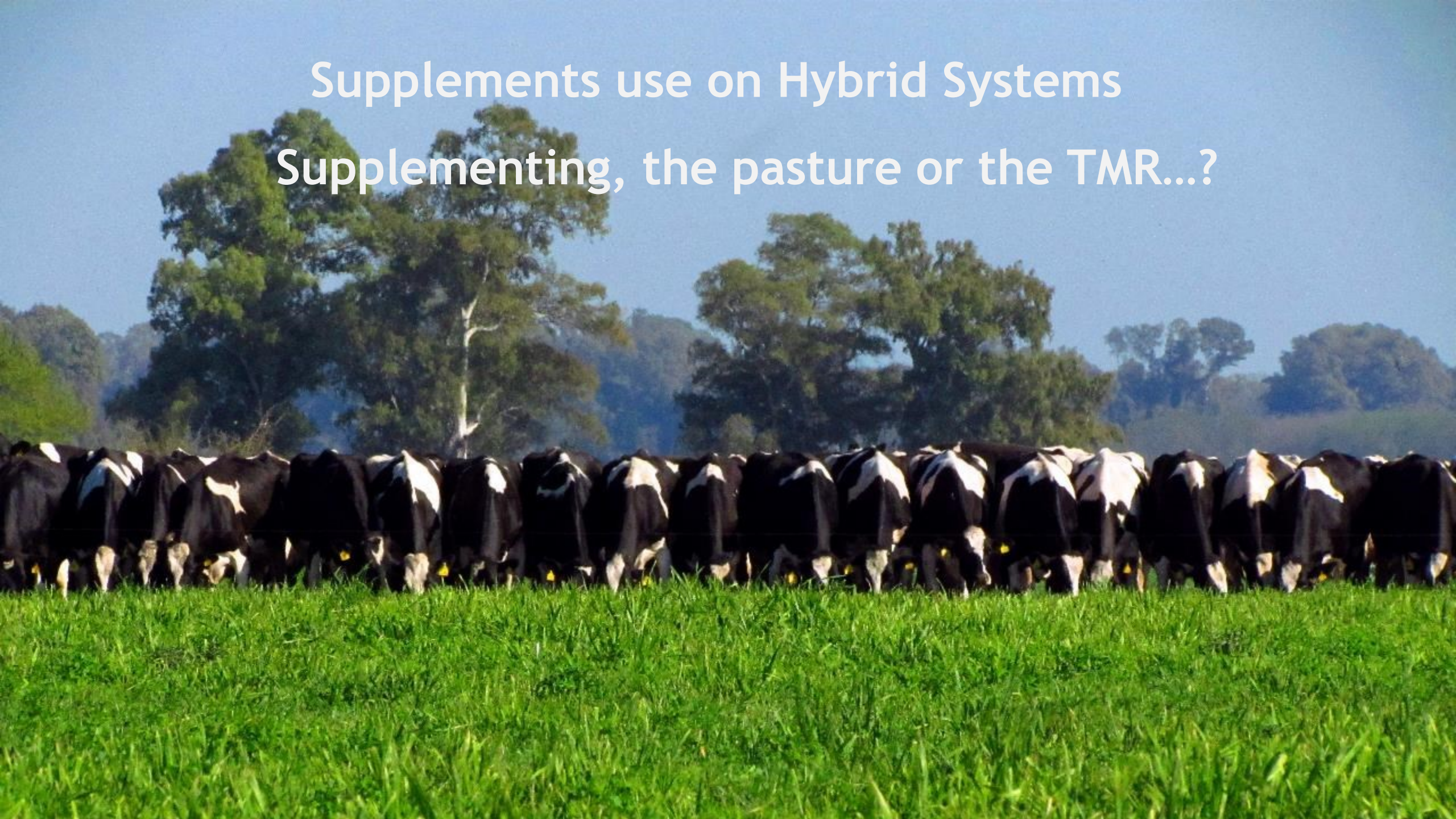
Redesign and operate your FORAGE production strategy to consistent supply of quantity and quality on time

GRAZING HIGH YIELDING COWS ⇨ The homework

Ensure a consistently high quality of daily grass DM production	→	**GRAZING MANAGEMENT**	+	**FORAGE SUPPLY CHAIN**		
Maximize DM intake	→	**GRAZING MANAGEMENT**	+	**SUPPLEMENTS STRATEGY**	+	**COWS AGENDA**
Capitalise on cost savings	→	**PRODUCTION SYSTEM DESIGN**				

Supplements use on Hybrid Systems

Supplementing, the pasture or the TMR…?



Why to use supplements under grazing?

Take control of the cow

- **Increase DMI**
- **Efficiency of rumen fermentation** (synchrony E/P, fiber source, “high-cost” components)

Take control of the pasture

- **Filling Feed Gaps**
- **Stocking rate**
- **Keep residuals on target**

Supplements only increase milk production if they increase total energy intake.

Nothing magical!

Adapted from Dairy NZ

Hybrid Systems

Grazing management at a glance

Grazing Management ⇨ 3 rules of thumb

Overall Target

- To grow and utilise as much pasture as possible

Good Grazing Management

- The art & science of balancing the needs of the cow with the needs of the pasture, now and in the future

Worldwide Applicable

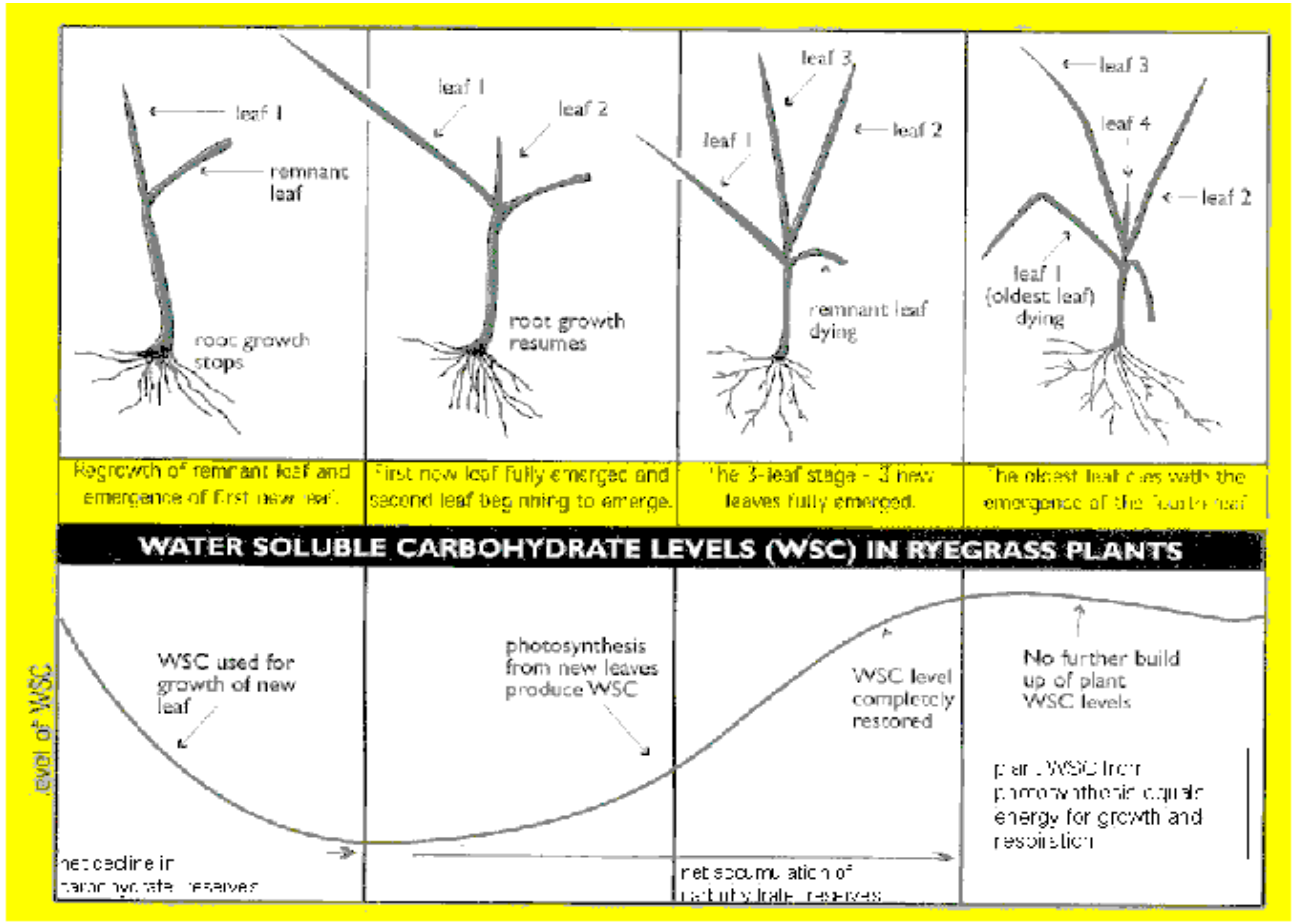
- The principles of efficient grass management apply to all regions of the world where grass can be produced

How the grass grows ⇨ Key concepts

Leaf stage

&

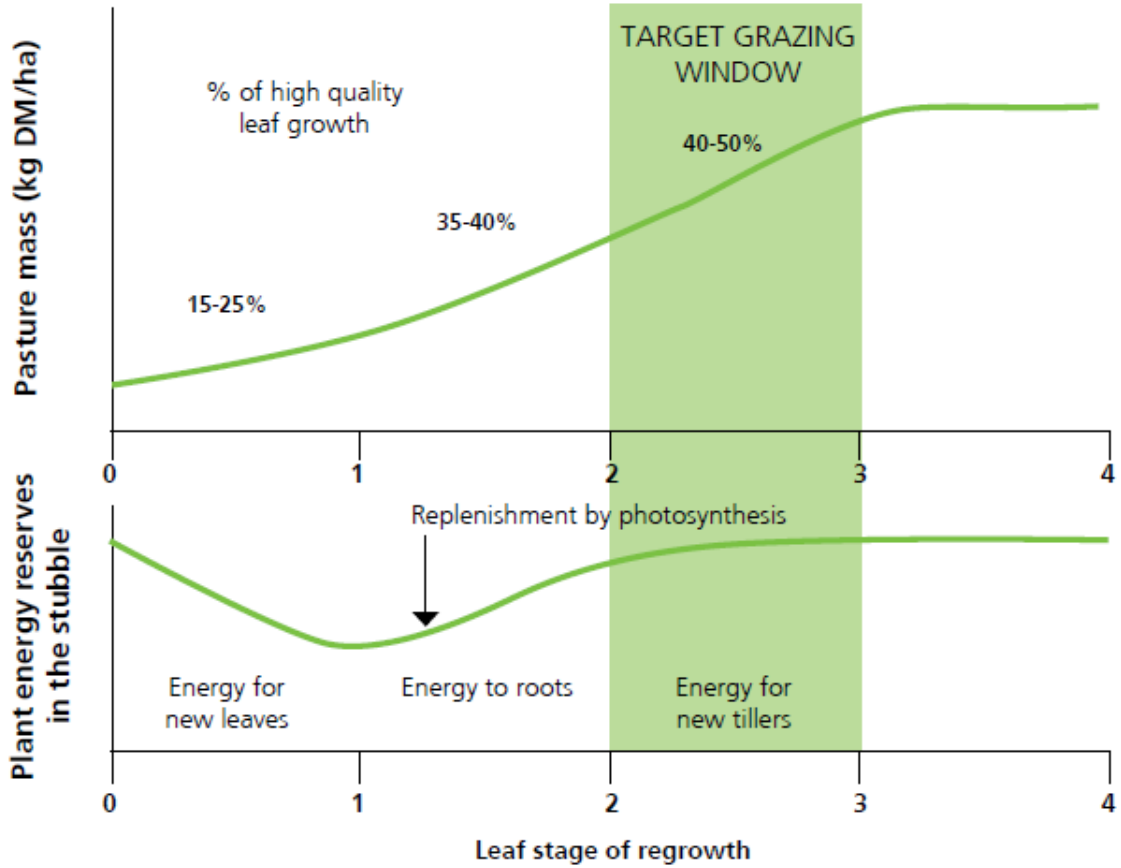
3 leaves growth habit



How the grass grows ⇨ Key concepts

3 leaves growth habit

- Leaf appearence rate:
  - Spring: 4 - 5 days (15 d lifteime)
  - Winterr: 17 - 20 days (60 d lifetime)
- Each leaf~ 25% bigger



Adapted from DairyNZ

How the grass grows ⇨ Key concepts

Canopy closure

- When you can't see the ground or pasture base directly below
- Falls down and/or Yellow tiller base (asparagus effect)
- Closure = ↑ shade, ↑ tillers death, ↓ new tillers growth, ↓ clovers, ↑ aerial tillers, ↑ steam
- If frequent or early could show N deficit or low rotations

GRAZING MANAGEMENT FOCUS

Farm 1

~~"...30 days round..."~~

Cover 2000 Kg. DM/ha

Farm 2

~~"...30 days round..."~~

Cover 1400 Kg. DM/ha

"...Forget about GRAZING ROUND, just focus on 3 things::

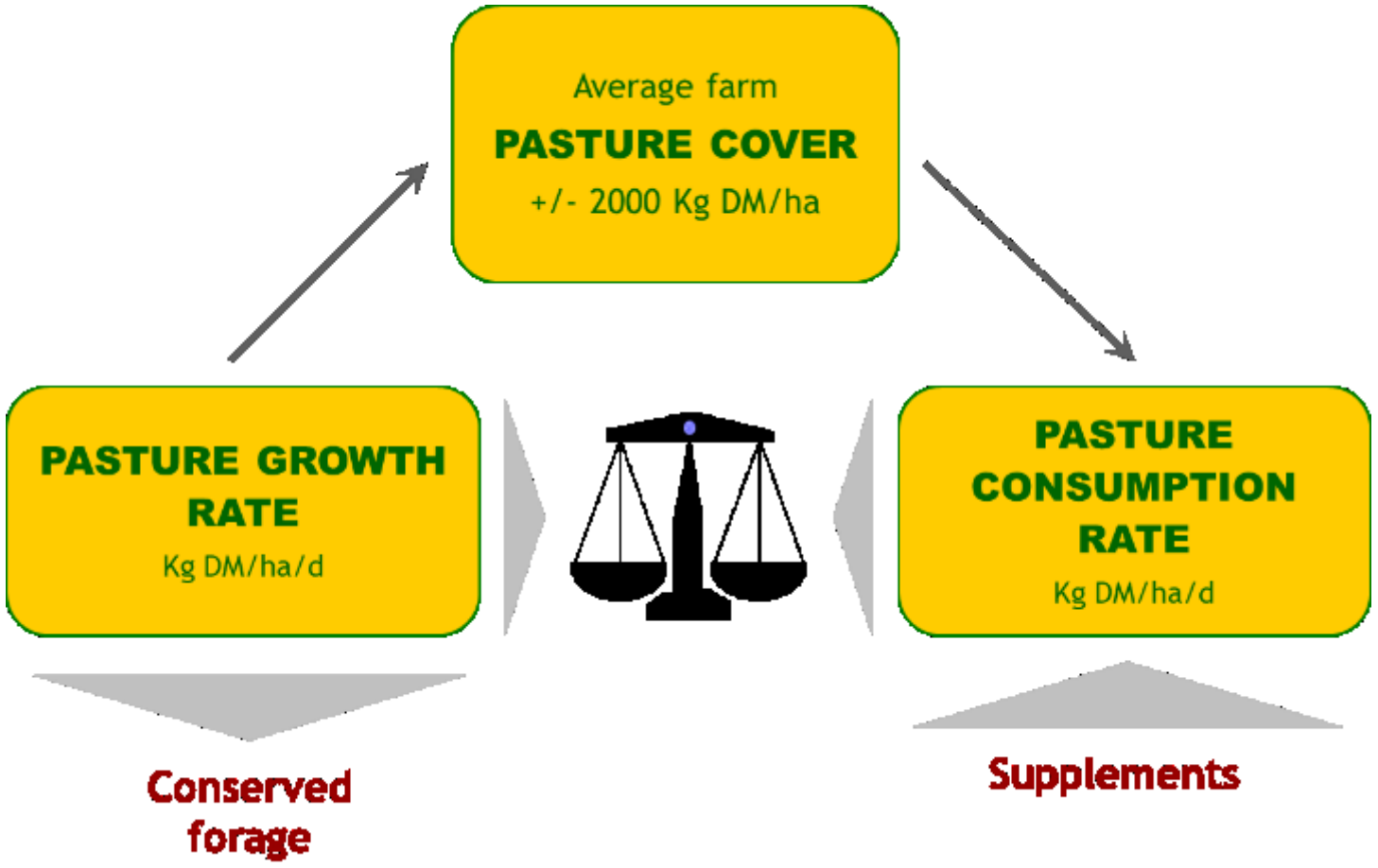
1) Farm cover

2) Pasture growth rate

3) Grass demand..."

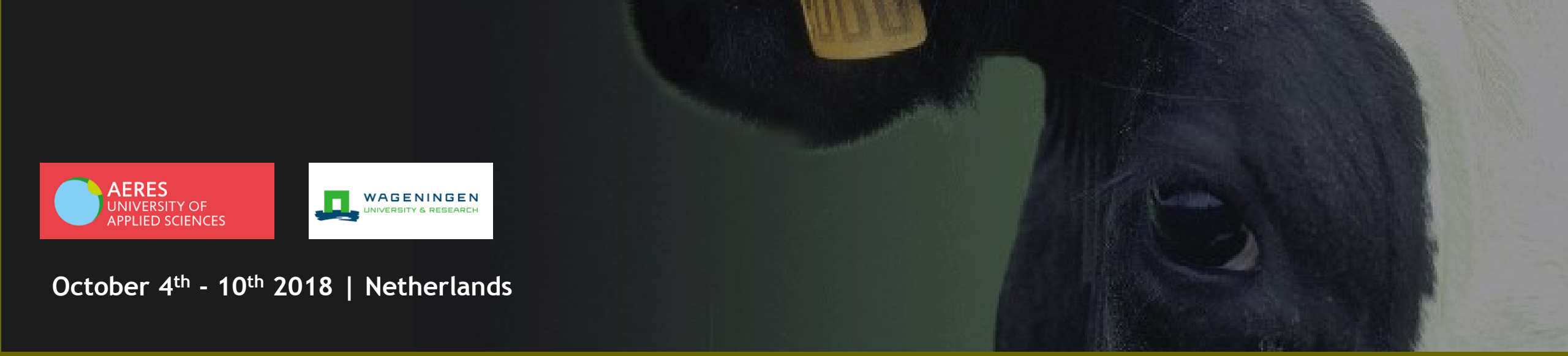
Dr. C. W. Holmes

GRAZING MANAGEMENT FOCUS



"You just need to graze your pasture at the same speed that is growing… and keep your cover on target…"

Simple doesn´t mean easy…



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