

Diet formulation software at the heart of dairy farm coaching

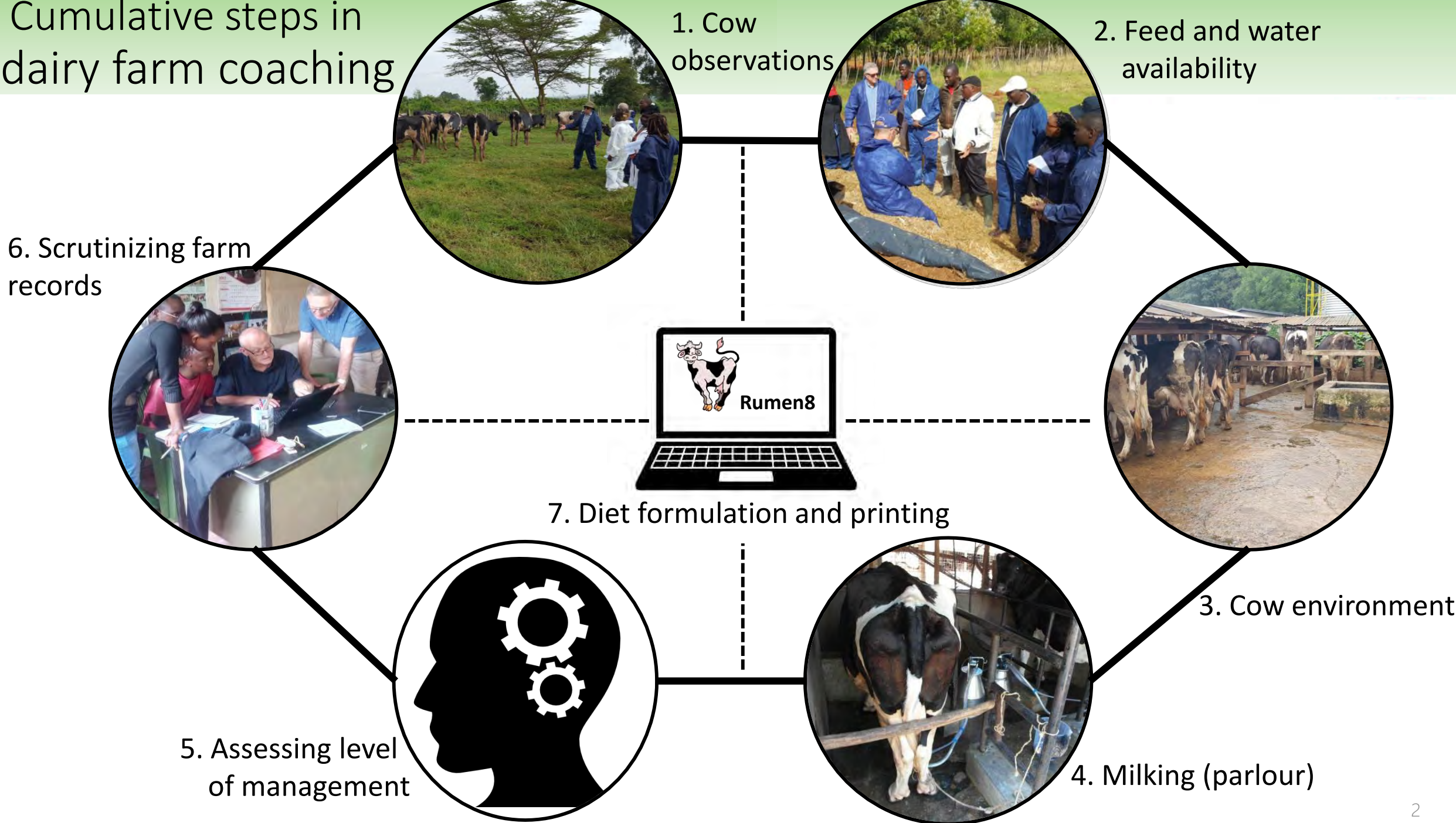
Hink Perdok, PhD

PUM  (Netherlands Senior Experts)
Netherlands senior experts



- Dairy cattle and beef cattle nutritionist
- Selected Rumen8 software for KMDP and assisted with the introduction in Kenya

Cumulative steps in dairy farm coaching



Cow observations: heat stress negatively impacts (re)production and health



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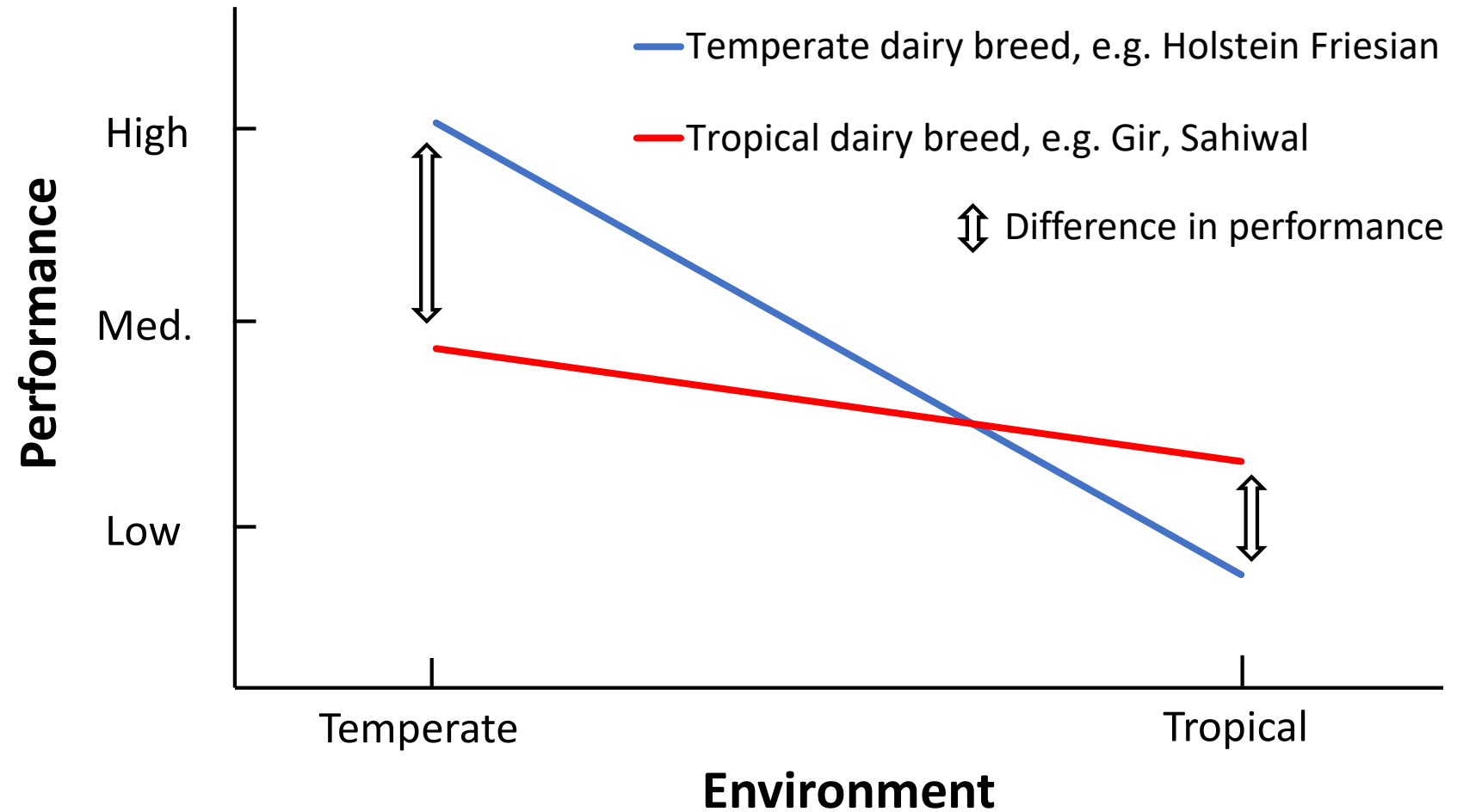
Genotype by environment interaction



e.g. Holstein Friesian (HF)



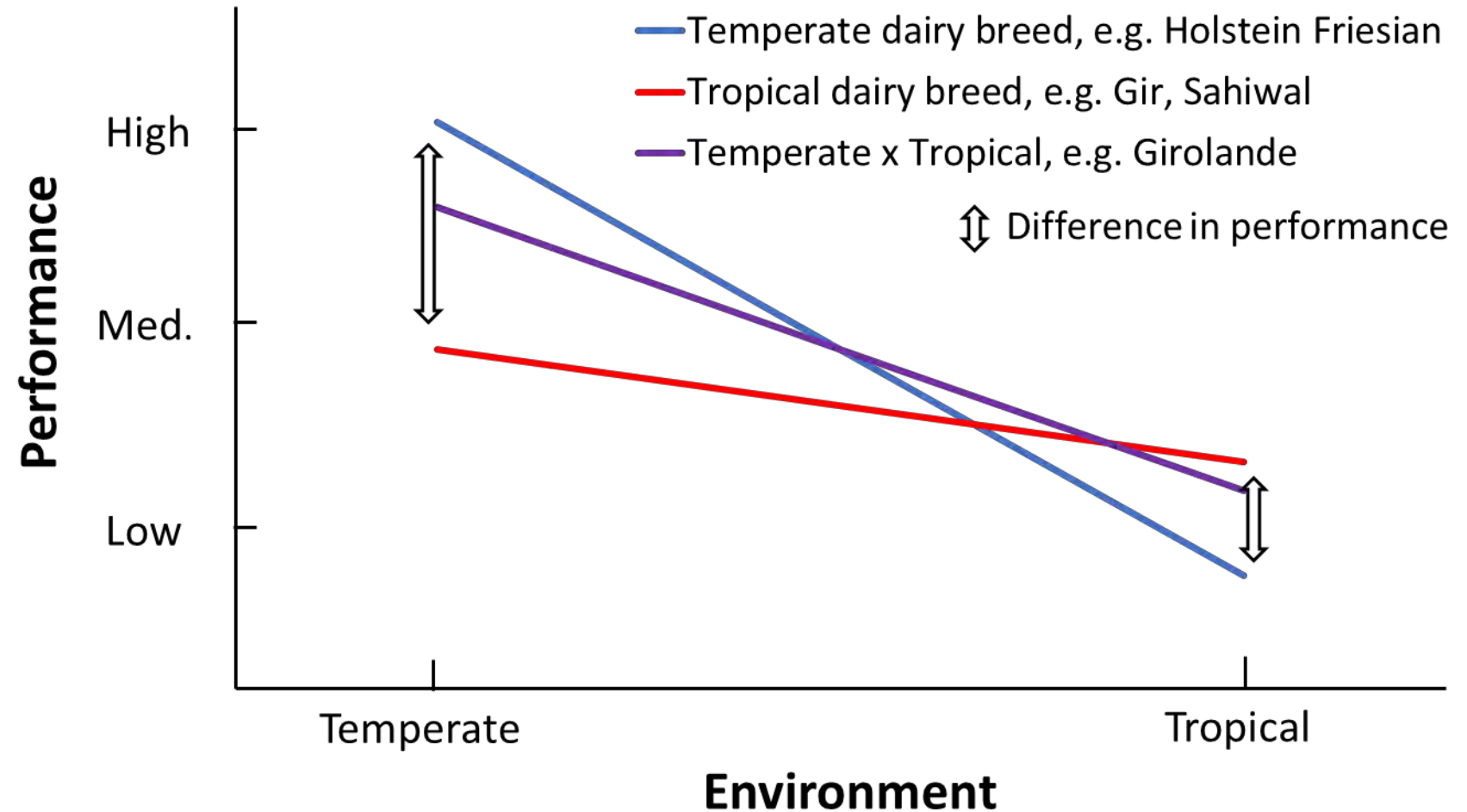
e.g. Gir



Genotype by environment interaction



Girolande: 5/8th HF, 3/8th Gir

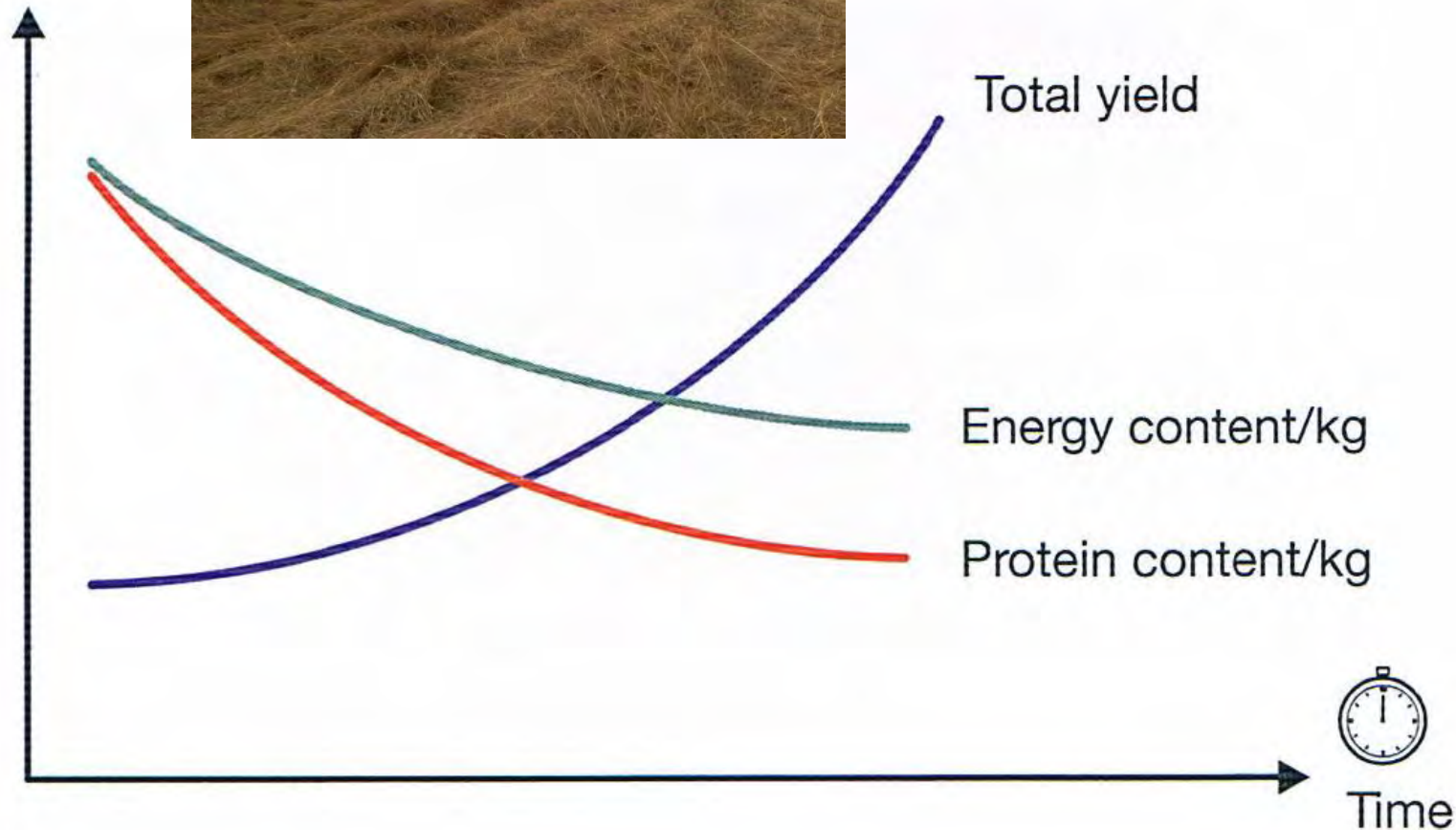


In Kenya there is the unjustified belief that importation of Holstein Friesian cattle and semen is the solution to low production levels. Rather than for high milk yields (& black and white colour), breed for traits such as:

- Resilience; Longevity
- Ease of calving and high fertility
- Lower mature body weight; 100 kg lower Bwt lowers ME requirements by equivalent of 1.5 L milk/day
- Low susceptibility to diseases such as mastitis, external and internal parasites
- Maintaining a high DMI (especially roughages) at high temperature (>20°C) and humidity
- Good converters of roughage



Drop in grass quality over time

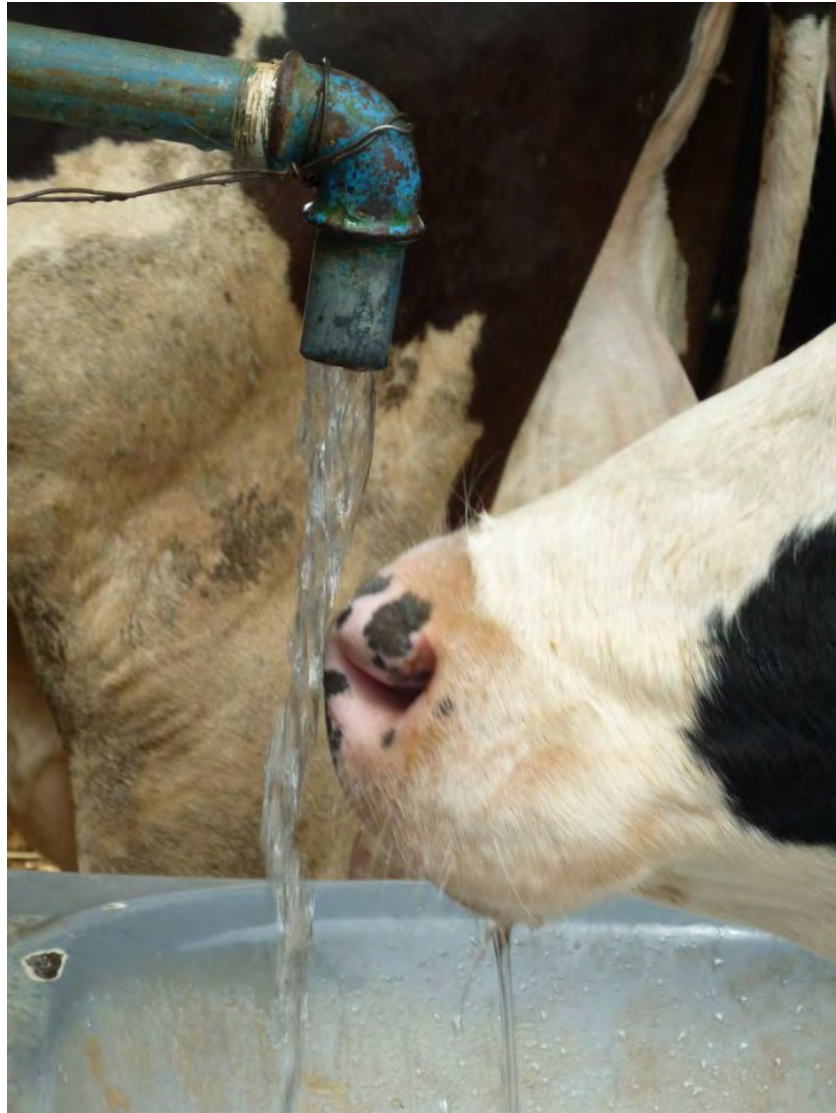


- MJ ME and CP per kg DM drop as grasses mature.
- Contradicting interests:
 - Vendor wants high tonnage/ha and produces low quality hay.
 - Buyer wants high quality hay and consequently tonnage/ha drops, though more cuts per year.
- Be fair to all:
 - Pay per MJ ME and kg CP
 - Price/kg poor hay will drop
 - Price/kg good hay will rise
 - Good hay will become a feedstuff worth including in the diet

Supply fresh and clean water 24/7



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A well balanced diet can still be sickening

- 600 kg Bwt
- 28 L milk
- 13.5 kg concentrates

New Diet* - Rumen8 registered to Hink Perdok

File Edit Animal View Help

Diet ingredients	DM	As Fed
1. Maize silage DM <> 30-35%	6.62	19.76
2. Bracharia (Signal Grass) fresh	1.35	5.36
3. Dairy Meal High Yield	4.75	5.34
4. Wheat bran	5.50	6.23
5. Soyabean meal fat < 40 g/kg	1.70	1.90
6. Limestone (CaCO3)	0.07	0.07
Total daily intake (kg/d)	20.0	38.7

Animal Diet Diet detail Milk price Feed cost Compare Notes Optimise

Dry Matter Intake	100 % Limit
Metabolisable Energy	100 % Req't
Metabolisable Protein	100 % Req't
Calcium	100 % Req't
Phosphorus	157 % Req't
Magnesium	151 % Req't
NDF (% DM)	39 %
Starch (% DM)	24 %
Forage:Conc. ratio	40:60

Warning - Starch level is high. High risk of ruminal acidosis

Warning - Forage:Concentrate ratio is too low. High risk of ruminal acidosis



- Rumen acidosis despite meeting recommended levels.

→ How and when to feed is not captured in diet formulation.

How to feed is not part of diet formulation



Sub Acute Ruminant Acidosis (SARA):

- Cow off feed, loss of body condition, drop in milk yield & milk fat %, diarrhoea, reddening of coronary band.

Corrective measures, esp. $>20^{\circ}\text{C}$ when temperate breeds avoid roughages to reduce metabolic heat production

- Spread concentrates over the day and mix well with roughage, lower concentrates & starch and increase high quality roughage in the diet such as lucerne hay that stimulates production of saliva which contains the natural buffer sodium bicarbonate. Addition of sodium bicarbonate (250 g) in the diet or another buffer.

The best feeding trough is no feeding trough



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Economics of hiring a Farm Coach

- Assumptions: farm with 25 cows in milk at any one time; approx. 500 L per day
- KES 65 increase in MAFC per lactating cow per day.
- Monthly visits for a year by a consultant @ KES 20,000 /day; 3 full days and 9 half days.

Extra MAFC per year	Consultancy fee / year	Nett MAFC / year	Consultant as % extra MAFC
KES 585,000	KES 150,000	KES 435,000	26

- \pm KES 10 MAFC /cow/day changes annual MAFC by KES 90,000
- A change in milk price (e.g. bonus / penalty for quality) of KES 1/L changes the MAFC by KES 170,000
- Farm size has large impact on economics of Farm Coaching
 - Relative costs drop rapidly with more than 25 cows in milk
 - Relative costs quickly become prohibitive with less than 25 cows in milk \rightarrow group coaching
- A lot of savings can be made by reducing the size of the dry herd and by lowering the age at 1st calving



- Diet formulation software only useful when integrated in broader farm coaching programme.
 - Essential to balance total diet, with special attention for forages
 - Feed analysis will boost predictive power of diet formulation
 - Sound knowledge of dairy cow nutrition needed
 - Truthful farm records indispensable
- It will be fair to all stakeholders to trade feedstuffs on their nutritive value
- Either adapt the cow (breed) or the environment (feed quality, housing, disease prevention, etc.)
- Hiring a farm coach with diet formulation software for monthly visits can be financially very attractive:
 - At farms that produce at least 500 L per day
 - Smaller farms better off with group coaching
 - Try it for a full year to even out seasonal effects

