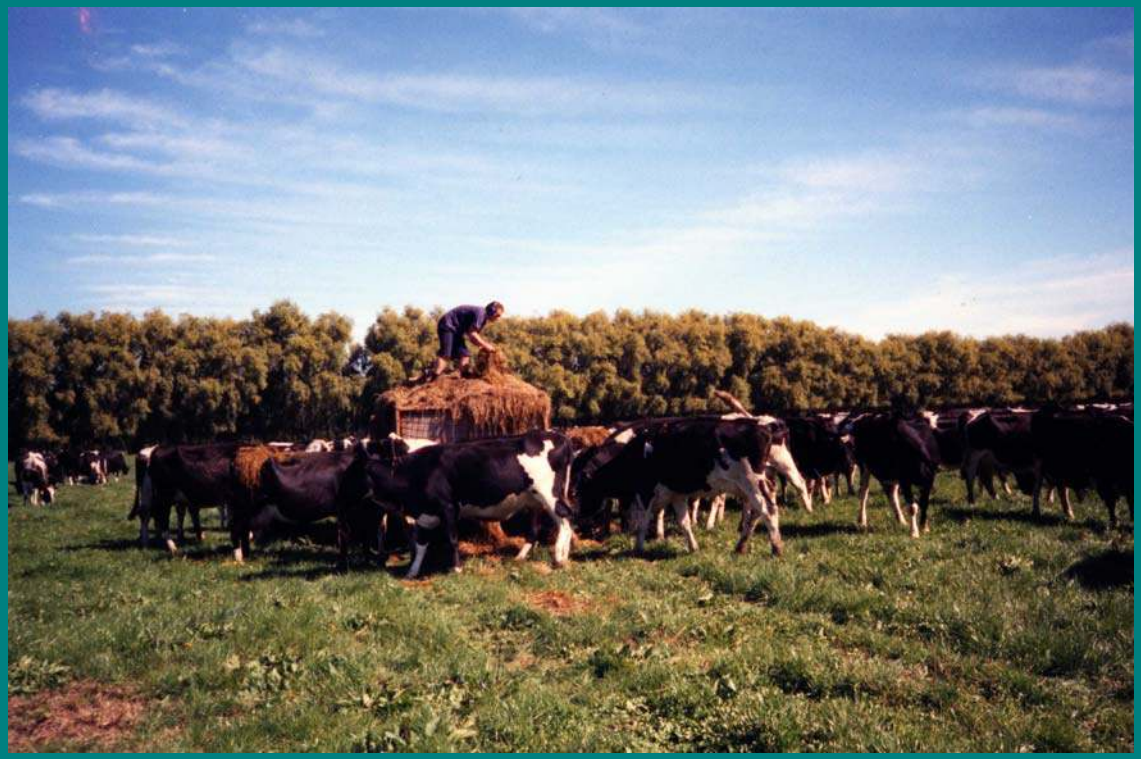
THE POSSIBILITY OF PASTURE



WHY pasture-raised rotational farm management?

- unsubsidized farming system in New Zealand = farm efficiently and without use of pastures profits margins would be significantly reduced
- minimize labour inputs leaving more time allocated to improving farm in different ways

WHY CANADA?

- land in Canada is affordable
- Good seasonal grazing conditions
- energy costs are increasing

WHY PASTURE-RAISE?

- decrease risk of infecting stock with illness thus increase in animal longevity
- free energy while improving farm fertility
- low cost margins

BASIC TOOLS OF THE TRADE

- electric fence
- rising plate meter

PROFITABLE PASTURE PRACTICES

- Pasture Management – WHY?
  - grass quality can vary depending on seasonal variance and the stages that pasture is allowed to mature
  - how you watch and manage the farm pasture is how you will achieve higher quality pasture and animal intakes, better returns and a higher quality grass feed product

ROTATIONAL PASTURE MANAGEMENT MODEL

- theory - begin at one point on the farm and complete a cycle of the farm before grazing the first grazed field again
- knowing your field variances and seasonal growth ensures efficient stocking rates
- NZ - rule of thumb to renovate approx 10% of the farm pastures per year to make use of exhausted fields and to keep up with new cultivars of grass

ONTARIO GRAZING

- in spring operate a grazing round of approx 20 days lengthening to a 40 day round in the summer
  - just a guideline as soils, drainage, climate and stocking rates all differ in affecting pastures in different ways

TOOLS OF THE TRADE

- most of the necessary recorded information required to successfully operate with this method is gathered by the trained eye and/or the use of a rising plate meter

PASTURE COVER

- 30 cm in height maximum prior to grazing (2800 kg/dm/ha)
- grazing the fields back to 7 to 10 cm of height on exit (1500 kg/dm/ha)
- graze the forage at the four leaf stage
- graze before seed head
- animal access for a 24 hour period of grazing

PASTURE COVER cont'd

- eliminating back grazing is essential
- EXCESS RANK PASTURE
  - topping mover to cut field then graze
  - ensure lush re-growth of top quality feed with high palatability levels

WATER EASEMENTS

- portable trough
- nose pump on flat farms
- gravity feeding on high farms
- basic well and pump
- IDEAL: a water line down the centre of the farm with outlets in each field to watering troughs

STOCKING RATES

- intense stocking rate is required
- Canada = 1.6 ha per cow calf
  - vary on farm type and how farm produces pasture
- New Zealand = 3 livestock units per ha
  - stock at a higher animal per hectare rate due to seasonal differences and farm productivity

DEFERRED GRAZING

- a process where you allow late fall pastures to grow over the 2800kg/dm ha levels
  - force a surplus of grass in the late part of summer to early fall (before soil temperatures trigger dormant stage) to create a feed wedge of surplus pastures
- growth upwards of 3500+ kg/dm/ha

UNDERSTANDING PASTURE COVER

- target pasture cover
  - e.g. pasture 2800 kg dm/ ha = grazing to 1500 kg/dm/ha leaving 1300kg/dm /ha available pasture to graze
- different breeds of animals will have lower residuals
- target will fluctuate with seasonal growth, surplus and deficits
- judgment and experience with pasture allocation becomes essential to meet seasonal needs

RISING PLATE METER

- help calibrate the untrained eye
- relatively accurate definition of how much grass each individual field holds
- reading of overall farm pasture cover
- computer programs - give out reports from the input of field data

USING RISING PLATE METER

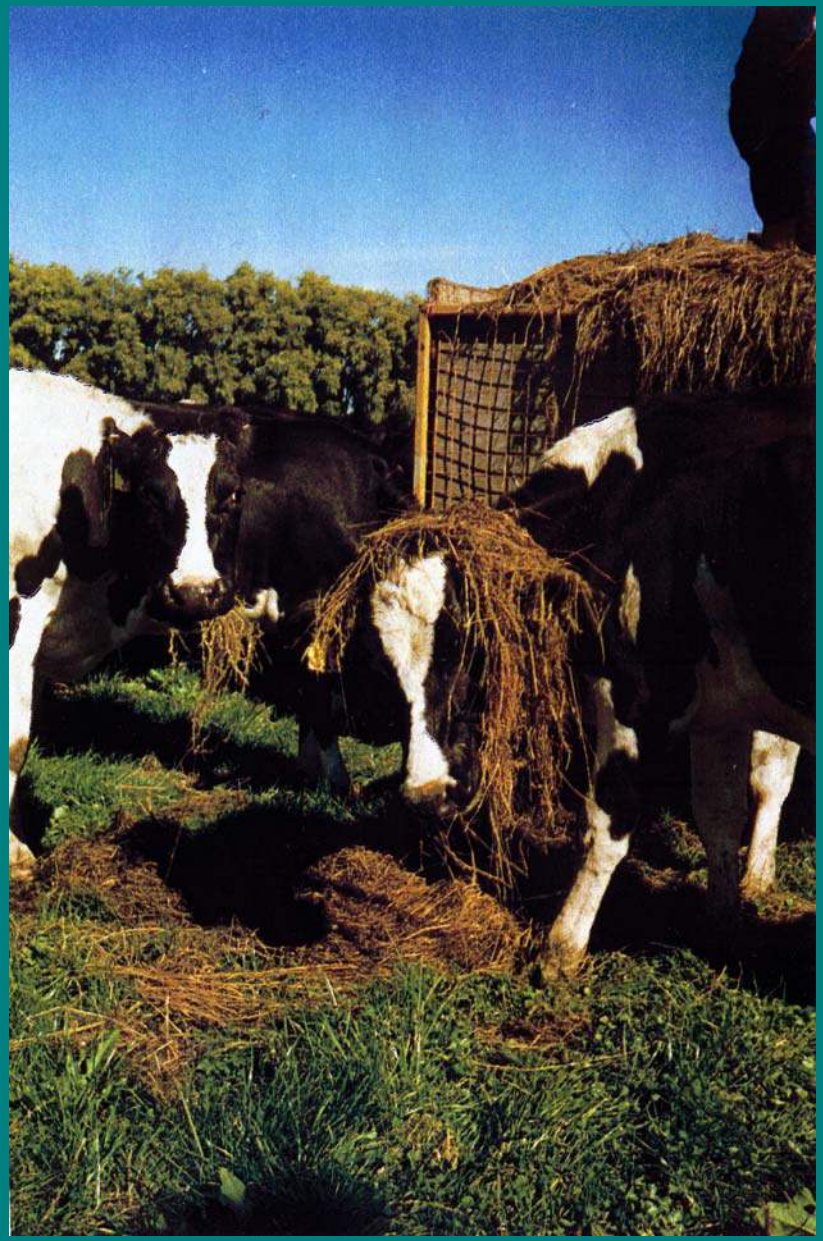
- define field boundaries and sizes
- weekly or bi-weekly farm walk
- diagonal cross from one end of the field to the other taking approximately 50 readings
- plate meter will average
- by multiplying field ha by kg/dm/ha you will understand the feed available in the field

USING RISING PLATE METER cont'd

- AVOID - pugged areas, gateways, and fowled spots with the plate meter
- do not just measure all the best bits
- WEEKLY WALKS = identification of pasture levels, farm growth rates and seasonal pasture covers
  - help manage future feed surpluses and deficits

PASTURE MANAGEMENT

- understanding animal feed requirements to best meet animal daily feed needs
  - maintaining a high quality pasture by avoiding seed heads
  - animal daily metabolisable energy requirements vary
  - main aim of managing pasture quality is the level of MJ/ME (mega joules of metabolisable energy)



WHAT IS A KILOGRAM OF DRY MATTER?

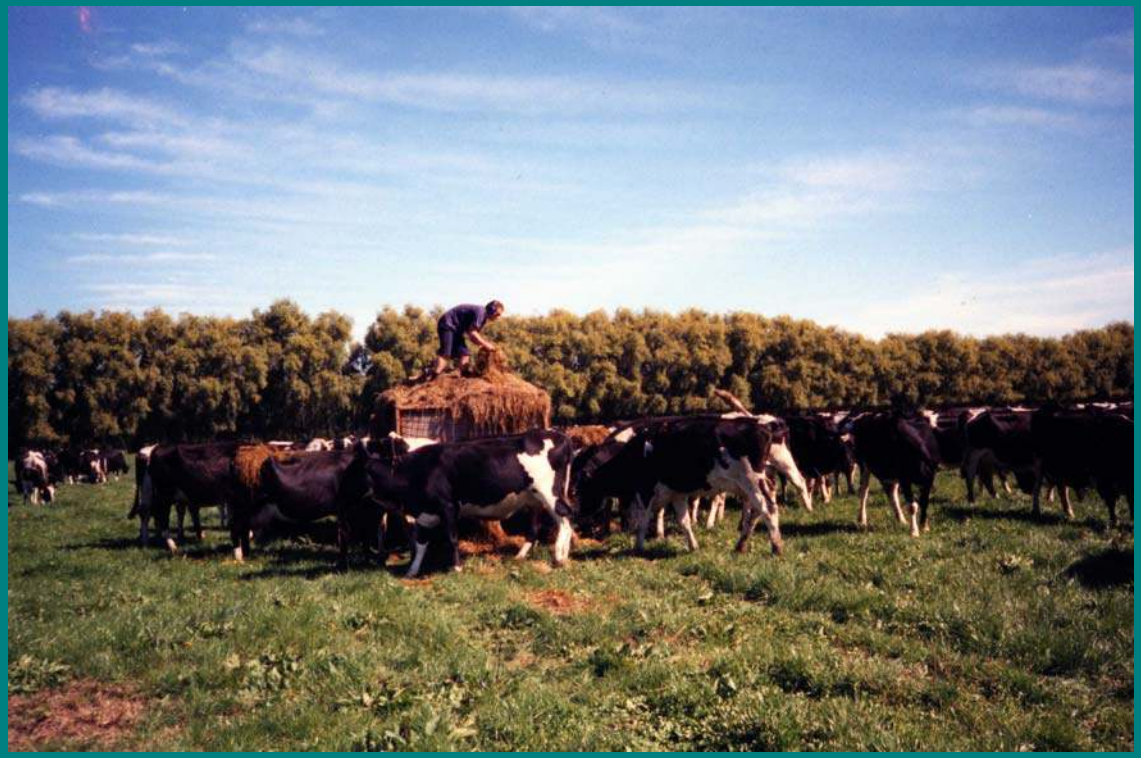
- the dry weight of a pasture sward with all of the moisture removed
- an analysis of energy, protein, dry matter and mineral elements per kg of 100% dry weight of the grass
- maintaining high quality grass along with good management = ensures grass has enough energy to maintain daily feed intakes in order to maintain weight gains and reproductive cycles

GOOD QUALITY GRASS

- high mj/me = nice lush grass, 4 tiller stage high mj/me and no appearance of seed head
- low mj/me = long rank grass left to a specific day to be grazed or cut
- a grass fed diet has high levels of protein therefore emphasis on achieving higher levels of mj/me to balance diet
- spring - feed some hay to boost roughage
- quality feed works to minimize metabolic issues in livestock

TYPES OF GRASS

- pastures in NZ consist of approximately 30% clovers and a 70% mix of perennial ryegrass, annual rye grass, and other grass species
- due to the high nitrogen fixation of clovers or legumes, NZ farmers tend to make use of the free available nitrogen
  - in some cases the deposit of 320kg nitrogen/ha can be achieved free of charge to the farmer



FEED BUDGETING

- a way to identify specific animal needs while also identifying seasonal feed values to best meet the nutritional needs of your animals

Feed Requirements of Dairy Calves and Heifers

	Rate of Liveweight Gain (kg/day) - 11 MJ ME/kg DM feed				
	0	**0.4**	**0.6**	**0.8**	**1.0**
100kg	1.6	2.3	2.7	3.0	3.4
150kg	2.1	2.9	3.2	3.6	4.0
200kg	2.7	3.6	4.1	4.6	5.1
250kg	3.1	4.1	4.6	5.1	5.6
300kg	3.6	4.8	5.4	6.0	6.6
350kg	4.0	5.2	5.8	6.4	7.0
400kg	4.5	5.9	6.7	7.4	8.1
450kg	4.9	6.3	7.1	7.8	8.5
500kg	5.3	6.9	7.7	8.6	9.4

Maintenance

- the energy required by heifers to survive from day to day
- maintenance needs are related to liveweight (0.55 MJ ME/kg LW), with heavier animals needing more feed for maintenance

	LIVEWEIGHT (kg)				
	100	**200**	**300**	**400**	**500**
MJ ME/day	17	29	40	49	58

Liveweight Gain

- takes more ME for liveweight gain than it does to maintain body weight
- as heifers grow the ME they require to gain 1kg of liveweight increases
- chart below is based on 11 MJ ME/kg DM feed

	LIVEWEIGHT (kg)				
	100	**200**	**300**	**400**	**500**
MJ ME/kg LWG	20	27	33	40	45

WINTER FEED BUDGETING

	Typical Pre Snow (available)	Typical Post Snow (available)	
Kale			
- Knee Height	5000 kgDM/ha	4000 kgDM/ha	
- Crutch Height	7000 kgDM/ha	5500 kgDM/ha	
- Waist Height	8000 kgDM/ha	6000 kgDM/ha	
Swedes & Turnips			
- Tennis Ball	4500 kgDM/ha	4000 kgDM/ha	
- Soft Ball	6000 kgDM/ha	5500 kgDM/ha	
- Bread & Butter Plate	10000 kgDM/ha	9500 kgDM/ha	
Greenfeed Oats 30cm (Knee)	3500kgDM/ha	1800 kgDM/ha	flat & bent
		2500 kgDM/ha	flat only
Autumn Saved Grass			
- 10cm	1500 kgDM/ha	1300 kgDM/ha	
- 15cm	2500 kgDM/ha	2000 kgDM/ha	
- 20cm	4000 kgDM/ha	2500 kgDM/ha	
Winter Pasture			
- 1cm		300 kgDM/ha available	
- 2cm		500 kgDM/ha available	
- 5cm		1300 kgDM/ha available	
- 8cm		2000 kgDM/ha available	

BASIC FEED BUDGET

- e.g. based on a 150 acre 68 ha operation with 100 milking cows, 25 one year old replacement heifers and 25 replacement 8 week old weaned calves with an established farm pasture cover of 2250kg/dm/ha

STEP 1 - (kg/dm/day/animal) x (stock units) x (days feeding) = (required kg/dm per mth)

Animal	Kg/dm/day/ animal	Livestock #	Days feeding	Required kg/dm per mth
Dairy cow	18 kg/dm/day	100 cows	30	54,000 kg/dm
350kg heifer	7 kg/dm/day	25	30	5,250 kg/dm
100kg calf	3.5 kg/dm/day	25	30	2,625 kg/dm
TOTAL: 61,875 kg/dm				

STEP 2 - (acre/ha) x (pasture growth rate per day) x (days of growth) = (pasture available)

based on farm growth for a 30 day period with a farm cover of 2250kg/dm/ha

Pasture Cover at start of mth	**Acre/ha**	**Pasture growth rate per day**	**Days of growth**	**Pasture available**
2250kg/dm/ha	150/ 68ha	80 kg/dm/ha	30	163,200kg/dm

STEP 3 – (animal requirements per mth) – (pasture available) = (surplus/deficit kg/dm)

Animal requirements	**Pasture available**	**Surplus/deficit kg/dm**
62,000 kg/dm	163,200 kg/dm	101,000 kg/dm surplus

table indicates total pasture grown for the month less animal requirements leaving a pasture surplus of 101,000kg/dm

(surplus/deficit kg/dm) divided by (hectares) = (per acre increase of pasture cover)

CONSIDERATIONS

- there is a surplus of feed of approx 1650 kg/dm/ha with a target of 2800 kg/dm/ha

- high quality pasture requires a 685 kg/dm/ha increase to 2800 kg/dm/ha

CONSIDERATIONS cont'd

- e.g. reducing amount of hectares to graze from 68ha to 50ha
  - 18 ha piece of land will have a pasture sward height of approx 3450kg/dm/ha
  - with the use of hay bines the aftermath of the field will measure approx 1000kg/dm/ha leaving 2450kg/dm/ha available for making silage or hay or forcing ahead for deferred grazing
    - RESULT = maintain good quality grass on the 50 ha and the recovering 18 ha will be of high quality = surplus of 44,000 kg/dm

ADVANTAGES OF INFORMATION COLLECTED

- a weekly or monthly farm walk will make future feed deficits and feed shortages more predictable
  - options to manage livestock
    - slow down with inputs of silage
    - cull stock
    - efficient breeding programmers and condensed birthing patterns
    - animal condition scores

HOW TO FENCE A PROPERTY EFFECTIVELY

- two wire system with the bottom wire being 18 inches from the ground and the top at the 36 inch range
- posts are put in at a 20 pace interval with the use of 12.5 gauge high tensile wire that is fixed to the posts with plastic insulators
- gates at the end of each fence line
- fence reels and pigtail standards

SEASONAL VARIATIONS

- lush spring growth - high levels of proteins and lower levels of energy making for high palatability of the grass
- animal manure will become firmer as seasonal growth increases
- as the year progresses energy levels in the grass will rise

PASTURING AND ILLNESS

- ISSUE: lack of control to maintain effective levels of minerals due to low seasonal levels
- seasonal ability of plants to maintain sufficient levels of energy, proteins and minerals at certain stages of growth can lead to metabolic disorders
  - milk fever
  - low calcium levels
  - rye grass staggers
  - high endophyte levels in summer grown rye grass
  - lack of magnesium

PASURING AND ILLNESS cont'd

- Diseases of dairy cattle
  - Calving
  - Bloat
  - Metabolic diseases - milk fever, grass staggers and ketosis.
  - Mastitis
  - Foot problems
  - Leptospirosis
  - Facial eczema
  - Tail docking
- Diseases of calves
  - Scours
  - Navel ill.
  - Internal parasites
  - External parasites - lice
  - Blackleg
  - Coccidiosis
  - Dehorning
  - Castration
  - Feeding

PASTURING AND ILLNESS cont'd

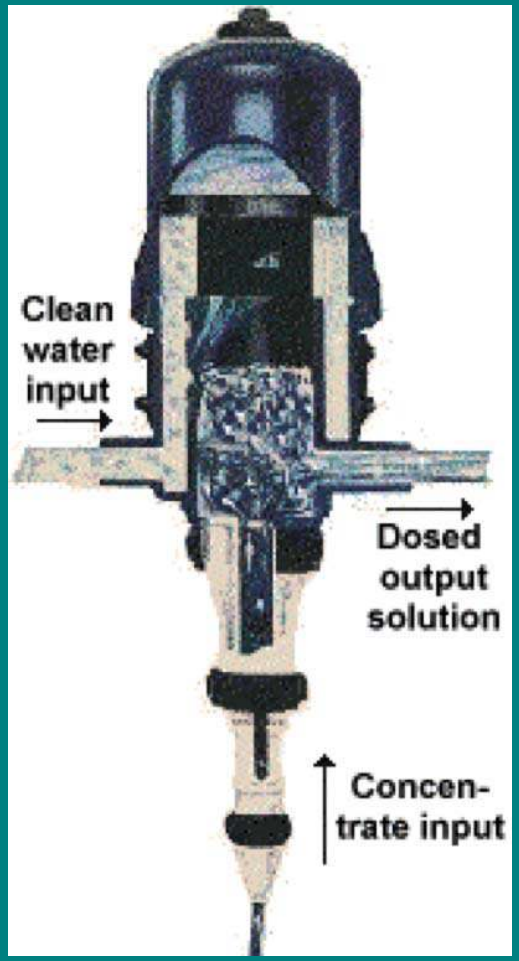
- Diseases of beef cattle
  - Metabolic diseases - milk fever, grass staggers and ketosis
  - Internal parasites
  - External parasites - lice
  - Foot problems
  - Facial eczema

PASTURING AND ILLNESS cont'd

- control seasonal copper, cobalt, selenium, magnesium and calcium levels via the use of a herd blood test to identify deficiencies
  - add to water supply - weekly concentrate via a dispenser like a dosatron
- treat the cause and not the symptoms
  - e.g. what management practices have I put in place that has caused the disease?

Inline Water Dispenser

Inline Water Dispenser cont'd



CERTIFIED ORGANIC HEALTH SYSTEM

- general principles:
  - Farming animals under an organic system require a higher standard of management.
  - Preventing disease is always cheaper than finding cures.
  - Healthy animals come from healthy pastures which come from healthy soils.
  - When animals are sick, don't delay in making a decision to treat them.
  - Intervention must be early to ensure successful treatment.
  - If treatment under an organic regime is not effective, animals must be treated conventionally.
  - If animals under a certified organic system receive a conventional animal heath treatment, then they must be quarantined for twice the Meat Withholding label period in a designated quarantine area.
  - Homeopathy is approved for treatment all animals

STRESS AND DISTRESS

- Stress” leading to “distress” = core of most animal health problems
- Animals have natural antibodies that fend off all disease and stress can reduce their effectiveness
- Good animal husbandry builds up a healthy immune system and reducing stress is part of that husbandry

STRESS AND DISTRESS cont'd

Where is stress found on the farm?

- Birth
- Docking and castration
- Dehorning
- Weaning
- Shearing
- Badly discipline dogs
- Transport
- Sticks and electric goads
- Shouting and beating
- Excessive unfamiliar noise
- Swimming and high-pressure hosing
- Sale yards
- Continual disturbance
- Mixing mobs and meeting strangers
- Mixing age groups
- Mixing breeds
- Mating
- Changes in diet
- Summer heat and drought
- No shade
- Poor tethering with a danger of strangulation
- Food and water shortage
- The smell of blood

FUTURE CONSIDERATIONS

- Grass data management
- Farm discussion groups
- Farm walks
- Exchange of feed budgets for regions