

Healthy Rivers Wai Ora Plan Change 1 Waikato and Waipa River Catchment

Dr. Chris Rogers

Animal Health and Production, School of Veterinary Sciences,
Massey University, Palmerston North

The horse

- Not a ruminant
- Not bred for feed efficiency
 - Large variation between & within breeds
- Current gold standard for nutrient requirements in horses
 - Nutrient requirements of horses 6th Edition
 - NRC 2007
 - However, limited data for horses @ pasture

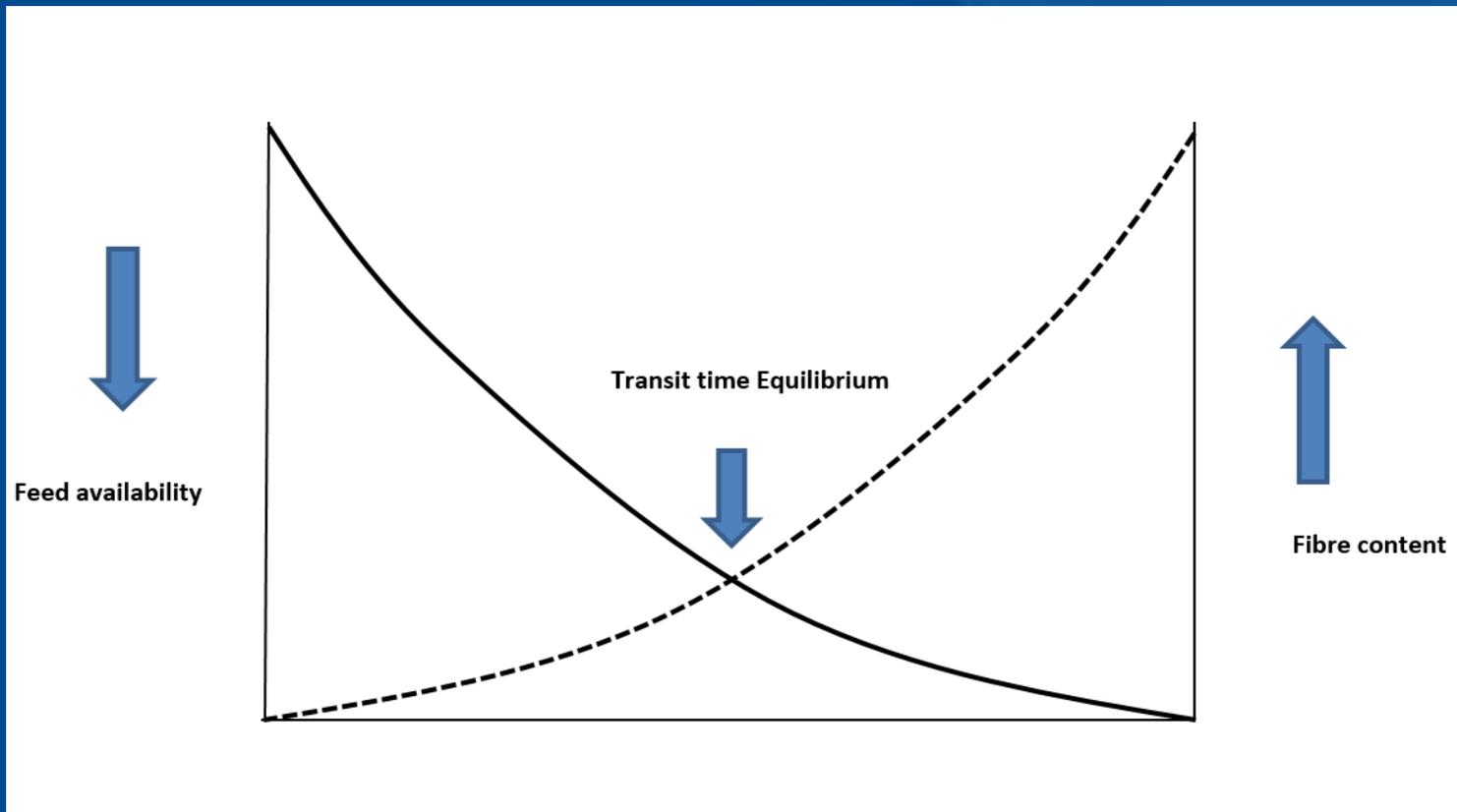
Horse management and feeding

- From ponies at pasture
- To high value sport and racehorses (stables)
- Management systems that vary in intensity
 - Need for an equine farm system grading method
 - (complications with this in supporting evidence)
 - Consensus document being developed

Complexity of horses at pasture

- Estimate 2 – 3% BW consumed at pasture DM
- Ponies to horses
- Commercial breeds –
 - TB - ~500 kgs BW – 10-15kg DM
 - SB ~450 kgs BW - 9-13.5 kg DM

Monogastric VFI and transit time dependent on quantity and quality of feed



Browser vs grazer

- Lawns and roughs

- Pasture utilisation ~70%

- This is a consensus figure based on feed budgeting exercises (otherwise over-estimate pasture production and availability)

- There is a need for accurate data on this and variation with in different equine farm systems

- Rogers CW, Gee EK, Back PJ. Pastures and supplements in New Zealand commercial equine production systems. In: Prattray PV, Brrokes IM, Nicol AM, editors. Pasture and supplements for grazing animals: New Zealand Society of Animal Production; 2017.

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Farms systems – and N utilisation

Class	Management	Diet
Thoroughbred weanlings (179d)	^{1,3,5} Weaning at 4-6 months of age	^{3,5} Weanlings were kept on pasture and receive on average 2.9 (range 1–6) kg of concentrates.
Thoroughbred yearlings (360d)	² Yearling preparation begins between October and November. Ends at yearling sales in January-February the following year.	^{1,2} Most farms used both stabling and pasture turn out allowing yearlings access to pasture up to 12 hrs per day. Fed premixed diets specified for yearling sales preparation providing up to 75% of daily digestible energy requirement.
Mature horses, broodmares (pregnant)	³ Kept on pasture	³ Solely pasture diet up to late pregnancy. Supplements fed are intended to meet other nutrient requirements (vitamins, minerals) rather than macronutrients and energy.
Broodmares (lactating)	³ Kept on pasture	Solely pasture diet.
Sporhorses	⁶ Kept on pasture	⁶ Pasture, concentrates (either in the form of premix feed or grains), with or without additional roughage, and conserved forages (hay/haylage).
Racehorses	⁷ Stabled for >12 hours/day in a confined area (<5x5m)	⁷ Fed 2-8 kg concentrate and <2.25-4.5 kg hay with little or no access to pasture.

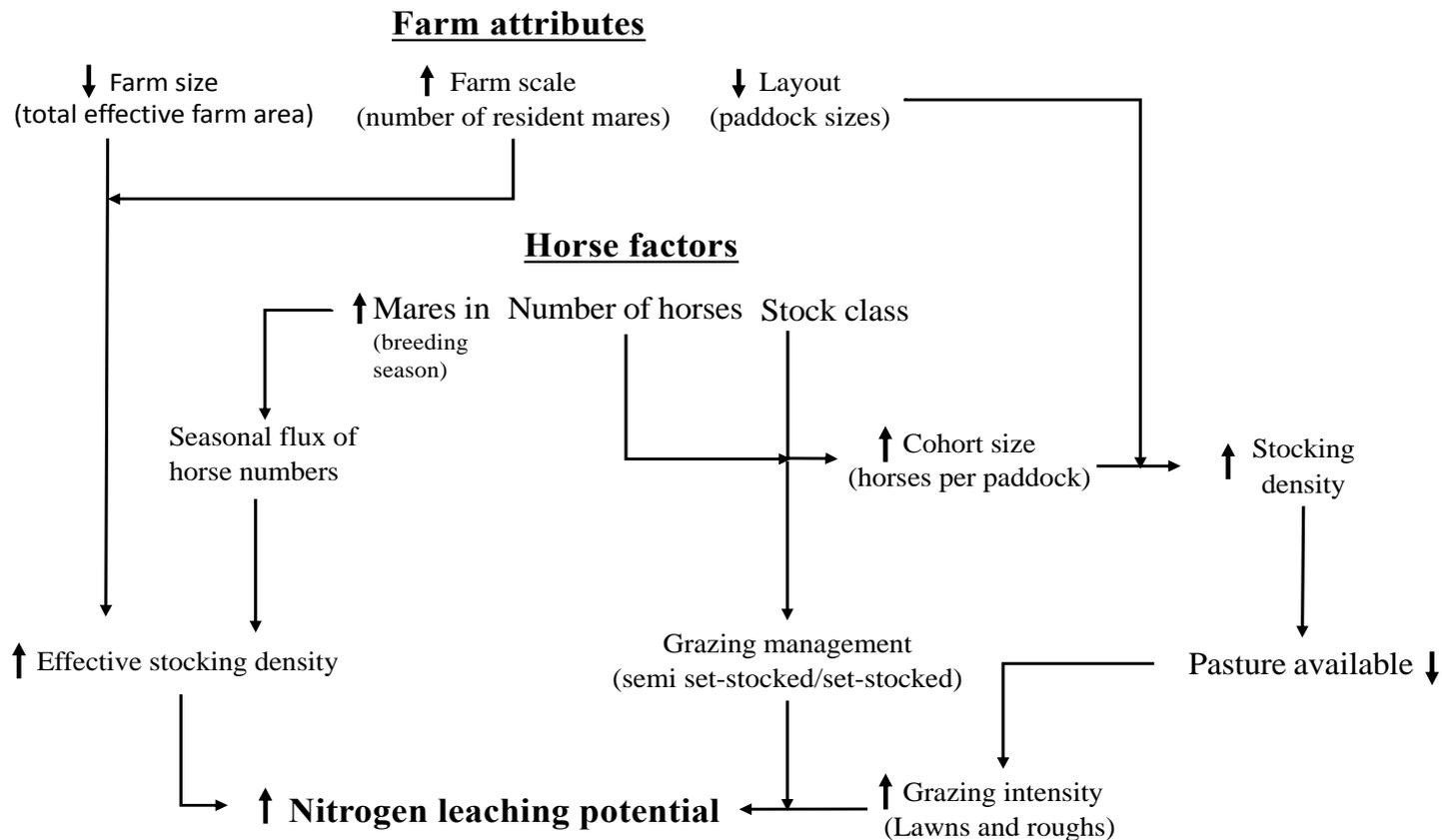


N intake, loss and utilisation

with differing equine systems

Management systems/ horse classes	Daily Nitrogen intake (kg/day)	Total daily nitrogen excretion (kg/day)	Urinary nitrogen loss (kg/day)	Fecal nitrogen loss (kg/day)	Total nitrogen excretion (g/kg BWT)	N Utilisation (%)
Thoroughbred stud farm model, young horses						
100% pasture (P _{100v})						
Weanling	0.185(2.2)	0.098(53)	0.05(29)	0.044(24)	0.38	47
Yearling	0.268(2.2)	0.161(60)	0.097(36)	0.064(24)	0.43	40
Average	0.23	0.13(57)	0.07(33)	0.05(24)	0.40	43
50% pasture (P _{50v})						
Weanling	0.143(1.8)	0.055(38)	0.024(16)	0.032(22)	0.21	62
Yearling	0.157(1.7)	0.05(31)	0.018(11)	0.031(20)	0.13	69
Average	0.15	0.05(34)	0.02(14)	0.03(21)	0.17	66
Thoroughbred stud farm model, 100 % pasture (P_{100m})						
Mature horse/ empty mare						
Broodmare, pregnant	0.398(2.2)	0.285(71)	0.189(47)	0.095(24)	0.51	29
Broodmare, lactating	0.398(2.2)	0.224(75)	0.128(43)	0.095(32)	0.40	25
Average	0.497(2.2)	0.303(61)	0.184(37)	0.119(24)	0.54	39
	0.40	0.27(69)	0.17(43)	0.1(25)	0.48	31
Sport horse model, 50% pasture(P_{50s})						
Show jumping	0.290(1.8)	0.149(51)	0.084(29)	0.065(22)	0.28	49
Dressage	0.267(1.7)	0.121(45)	0.062(23)	0.059(22)	0.22	55
Eventing	0.312(1.6)	0.173(55)	0.103(33)	0.07(22)	0.33	45
Average	0.29	0.147(50)	0.08(28)	0.06(22)	0.28	50.
Racehorse model, 11% pasture (P₁₁)						
	0.224(1.3)	0.092(41)	0.046(21)	0.046(20)	0.18	59

Variables to consider...



Horses and overseer

- Large gaps in data on pasture utilisation and N loss with different equine farm systems
- Overseer model currently unable to interpret / adjust for this
- Requires collection of experimental data to provide robust input data

