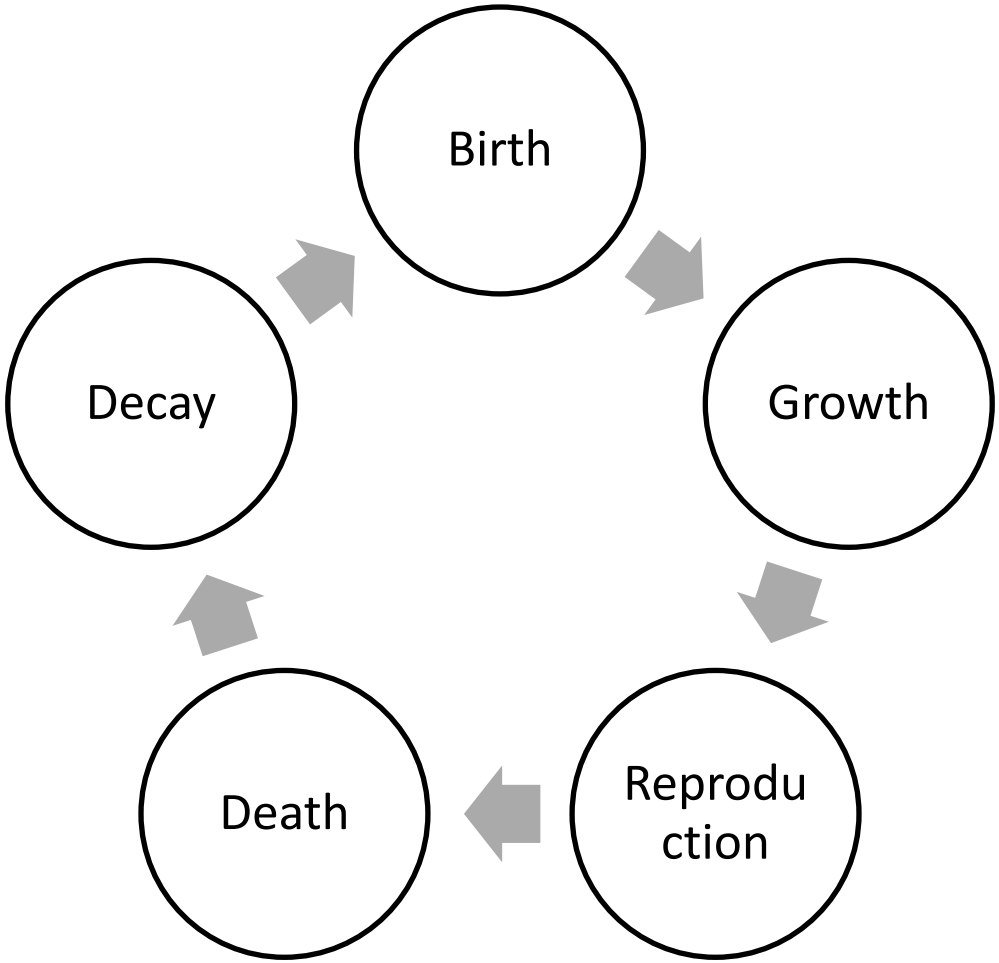
Rethinking the balance in our farming

Kyeamba Valley Landcare Group & Murrumbidgee Landcare Inc

Graeme Hand

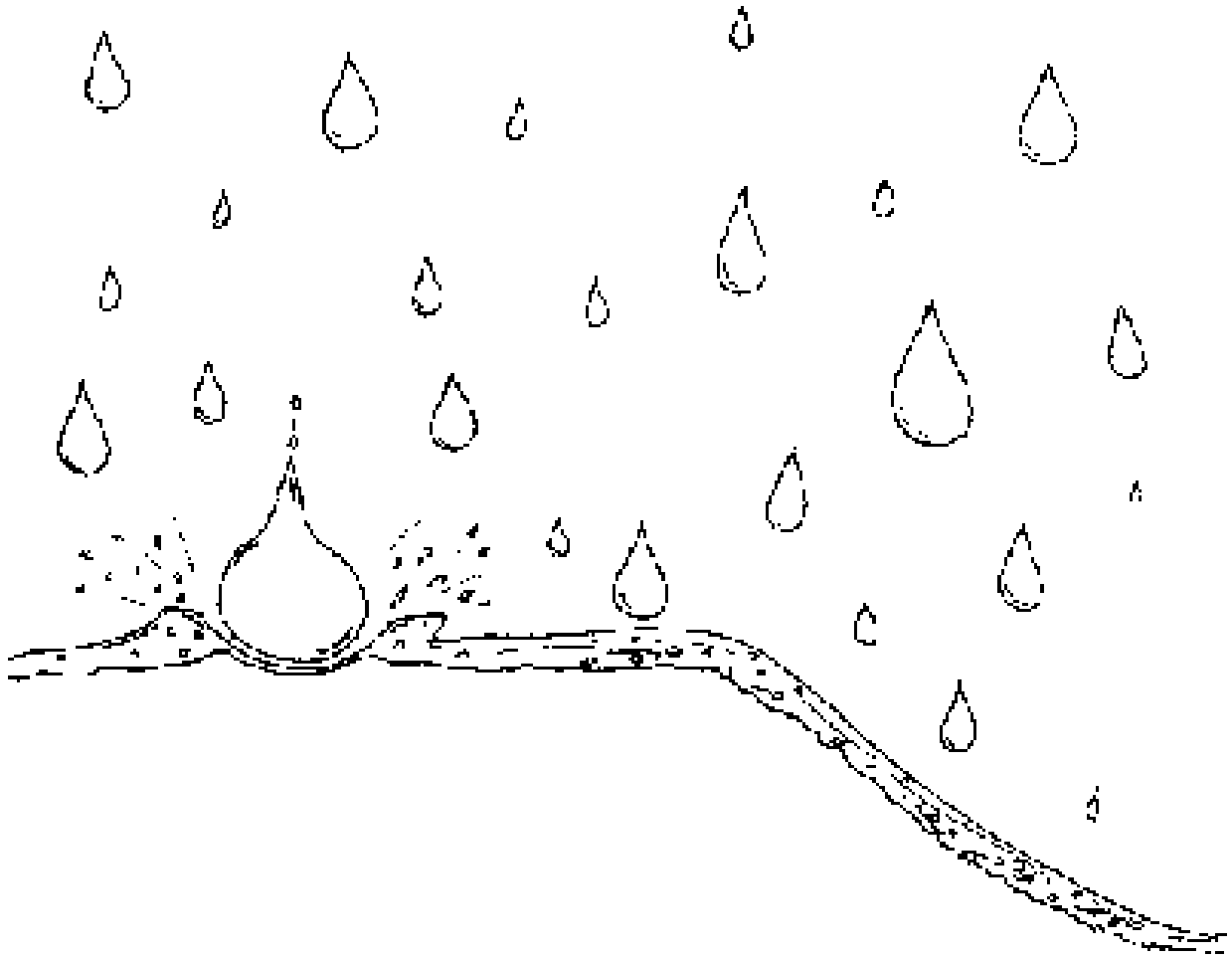
Graeme Hand
0418532130
graeme.hand@bigpond.com

Carbon Cycle




20 10 2011

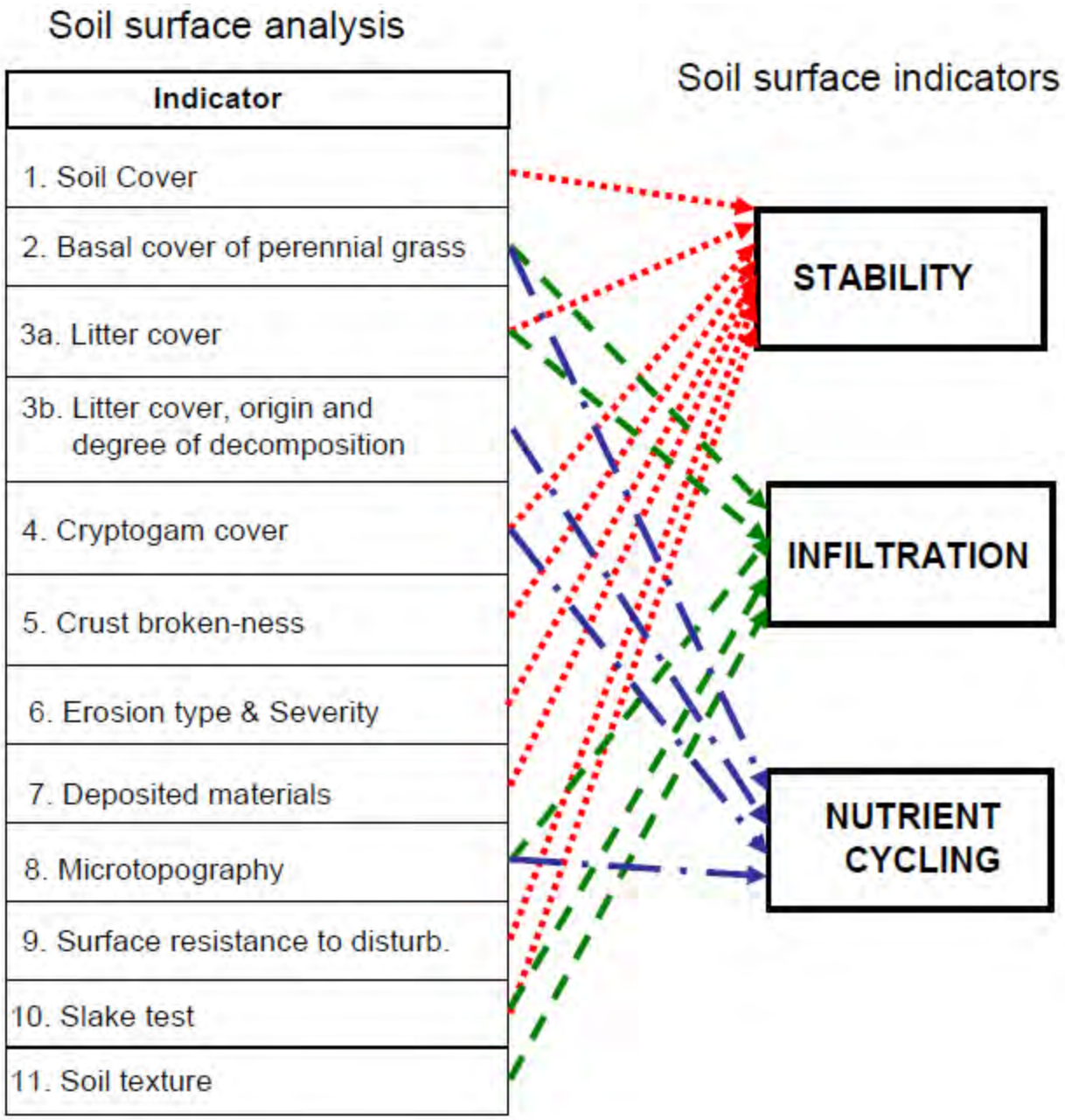

20 10 2011



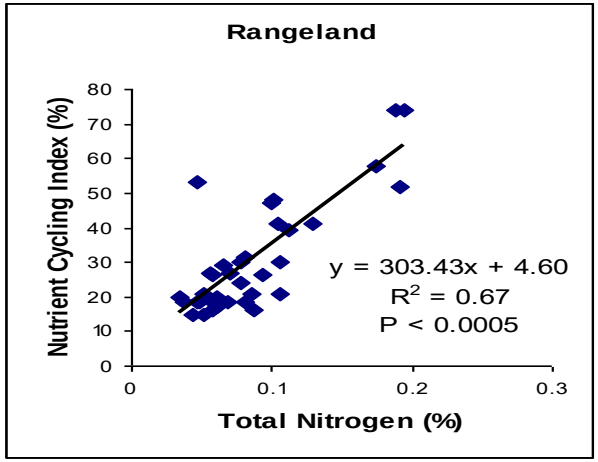

21 02 2007

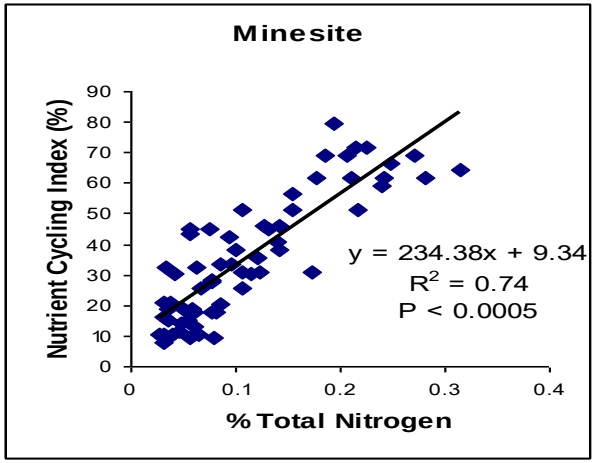

25.08.2003

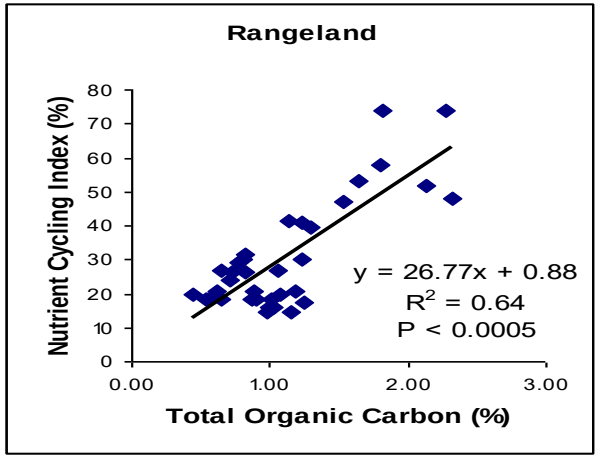

20.01.2007

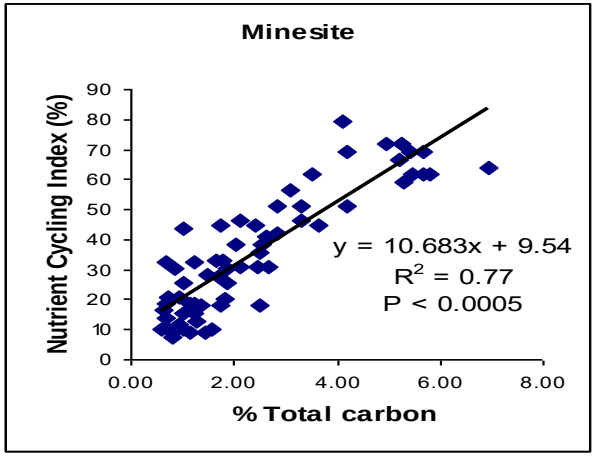


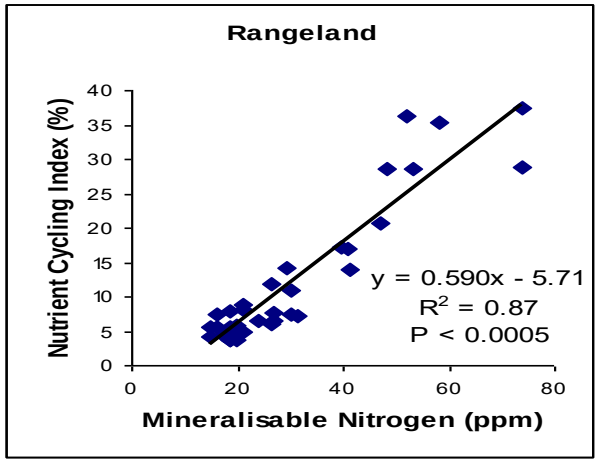
David Tongway http://www.csiro.au/services/EcosystemFunctionAnalysis.html#1

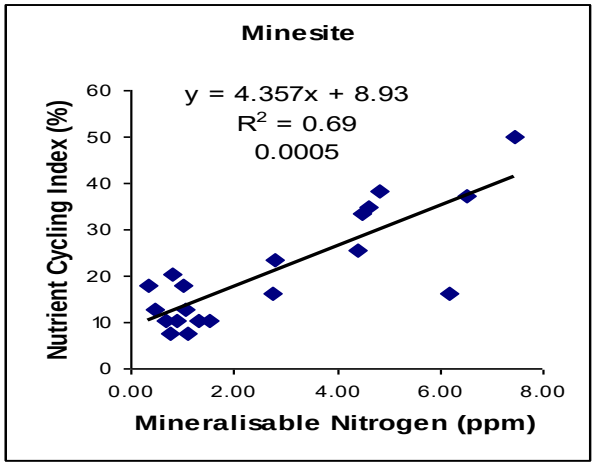

Rangeland
Nutrient Cycling Index (%)
y = 303.43x + 4.60
R2 = 0.67
P < 0.0005
Total Nitrogen (%)


Minesite
Nutrient Cycling Index (%)
y = 234.38x + 9.34
R2 = 0.74
P < 0.0005
% Total Nitrogen


Rangeland
Nutrient Cycling Index (%)
y = 26.77x + 0.88
R2 = 0.64
P < 0.0005
Total Organic Carbon (%)


Minesite
Nutrient Cycling Index (%)
y = 10.683x + 9.54
R2 = 0.77
P < 0.0005
% Total carbon


Rangeland
Nutrient Cycling Index (%)
y = 0.590x - 5.71
R2 = 0.87
P < 0.0005
Mineralisable Nitrogen (ppm)


Minesite
Nutrient Cycling Index (%)
y = 4.357x + 8.93
R2 = 0.69
0.0005
Mineralisable Nitrogen (ppm)

Native Pasture Management

Victoria

DEPARTMENT OF PRIMARY INDUSTRIES | future farming systems research

CSIRO PUBLISHING
www.publish.csiro.au/journals/cp Crop & Pasture Science, 2011, 62, 391–402

Seedling recruitment of native perennial grasses within existing swards

R. Thapa[A,C], *D. R. Kemp*[A], *D. L. Michalk*[B], *W. B. Badgery*[B], *and A. T. Simmons*[A]

[A]Charles Sturt University, EH Graham Centre for Agricultural Innovation, School of Agricultural and Wine Sciences, Leeds Parade, Orange, NSW 2800, Australia.

NSW 2800, Australia.

CHARLES STURT UNIVERSITY

LOW COST REHABILITATION OF PERENNIAL GRASS PASTURES BY MANAGING SEEDLING RECRUITMENT

numacra, investigated the effect of
sition on the recruitment of native
d although successful emergence of
. control treatments resulted in the
l had biomass cut with plant material
ergence as seed-harvesting ants are
mergence in the control treatment
d seed added and herbicide applied.
isturbance through pasture clopping
ce were small with the largest being
ce were related to bare ground, litter
nce was negatively related to plant
urvival was determined at 52 weeks
med to have been influenced by the

ce, seedling survival.

A THESIS SUBMITTED FOR THE DEGREE OF

Doctor of Philosophy

Roshan Thapa

B. For. Sc. (Hons) (Melb)

School of Agricultural and Wine Sciences
Faculty of Science
Charles Sturt University

January 2010

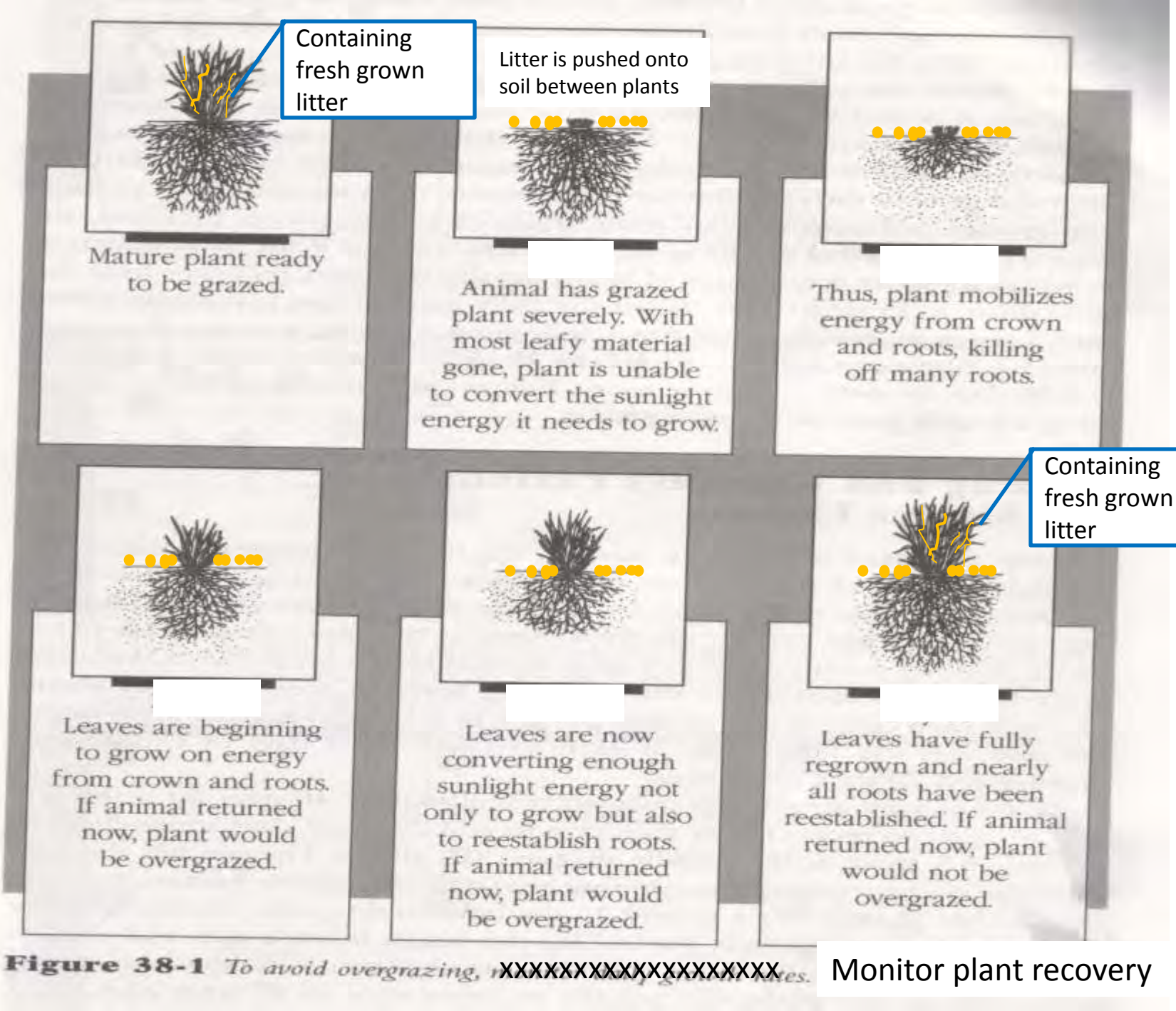


Figure 38-1 *To avoid overgrazing,* XXXXXXXXXXXXXXXXXX

Monitor plant recovery


04 09 2004

Weed Control


15.02.2006

Trial Design

- Low cost – current infrastructure
- Small area – not tempted to graze
- Easy to monitor
- Secure

1100 WETHERS IN ¼ ACRE TRIAL SITE

Monitoring Site (Deerys)- Meerlieu 6/9/11

Before grazing 26/4/11

Recovering 6/9/11


23 10 2011


22 10 2011


22 10 2011


22 10 2011


22 10 2011

Native Grasses Association Inc.

7th National Native Grasslands Conference

Managing Native Grasslands for Soil and Animal Health

Holbrook Town Hall,
Holbrook, NSW, Australia
9th and 10th November 2011

Contact Details – Graeme Hand

- email graeme.hand@bigpond.com

- Mobile – 0418 532 130

THE SOIL SEED BANK OF A LONG-GRAZED *THEMEDA TRIANDRA* GRASSLAND IN VICTORIA

IAN D. LUNT

Species		Density (viable seeds per m^2)					
		Species-poor			Species-rich		
		mean	range		mean	range	
**Vulpia bromoides*	Silver grass	3199	268	10848	15087	8796	23950
**Romulea rosea*	Onion grass	1483	455	3103	2711	170	9497
**Aira cupaniana*	Silvery Hair grass	128	56	170	1759	45	3509
Juncus bufonius/capitatus	Toad rush	805	112	1786	319	27	786
Themeda triandra	Kangaroo grass	769	447	1375	139	98	241
**Briza maxima/minor*	Quaking grass	81	0	313	430	9	1149
Wahlenbergia sp.	Bluebell?	232	152	304	208	45	304
**Centaurium tenuiflorum*	Century weed	221	71	536	186	45	509
Isolepis spp.	Club rush?	142	22	277	199	0	777
**Sagina procumbens*	Pearlwort?	152	0	591	186	54	509
Danthonia spp.	Wallaby Grass	26	9	54	253	100	643

LUNT, I. D., 1990:05:31. The soil seed bank of a long-grazed *Themeda triandra* grassland in Victoria. *Proceedings of the Royal Society of Victoria* 102(1): 53–57. ISSN 0035-9211.

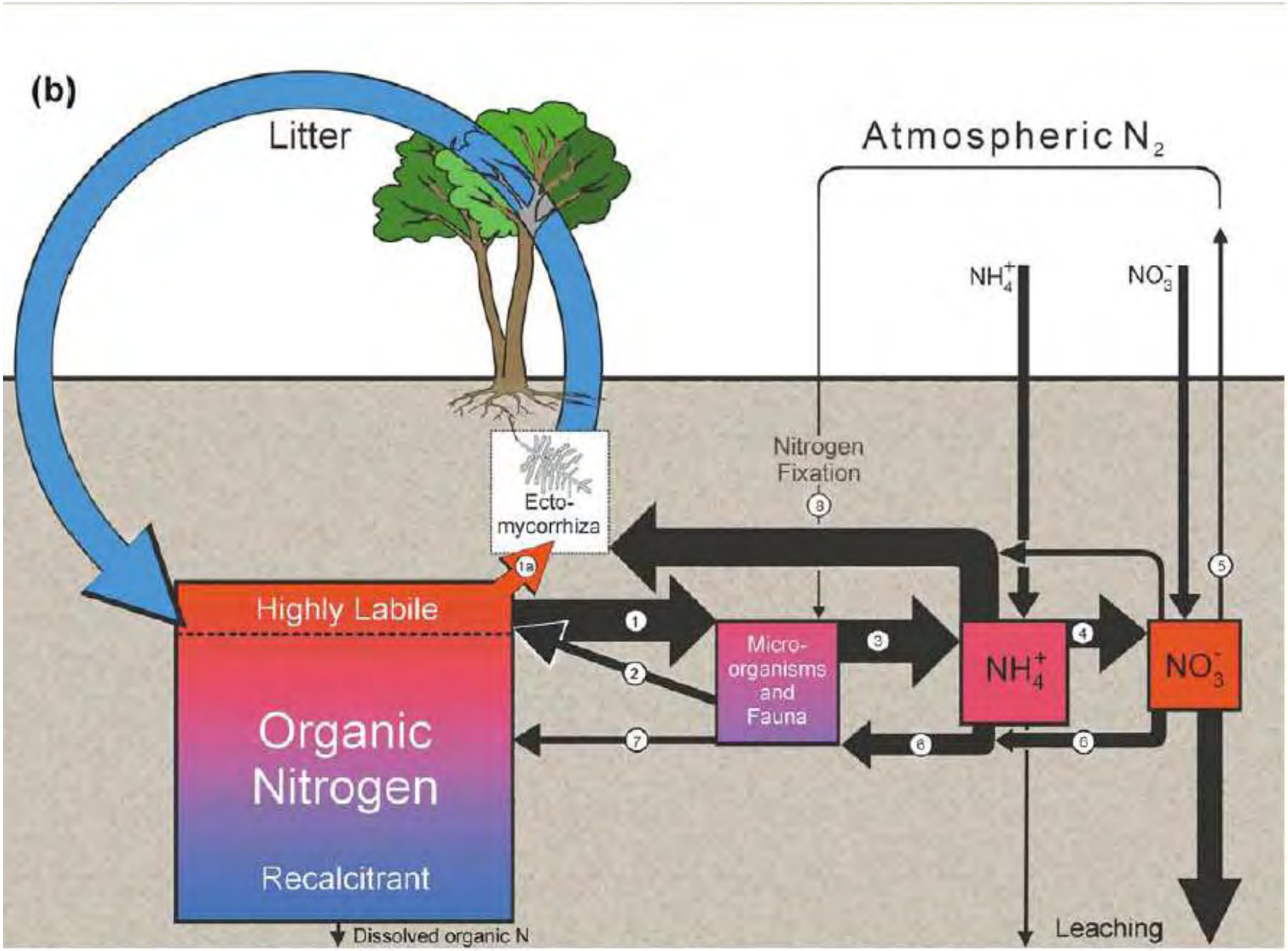
Landscape Goal Pasture areas

Function Indicator	Current	12 months time	5 years time
Soil Cover (%)	50	100	100
Raw Litter	0	70	10
Composting litter %	0	30	90
Number of perennial grasses	3	6	35
Average distance to perennials	30	15	5
Optional Name of perennial grass species if known and growing season/s			

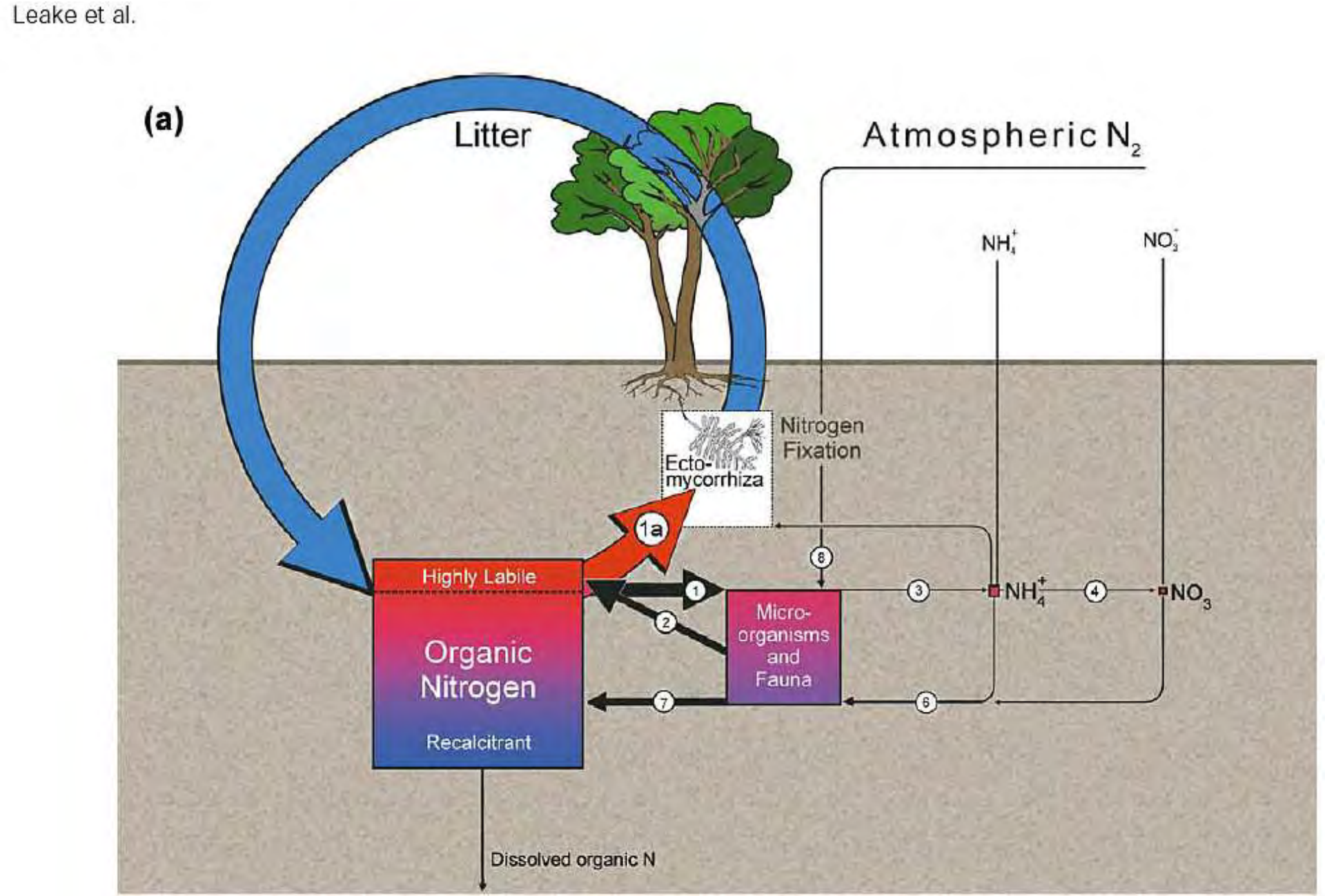

18 10 2011


18 10 2011

From Leake et al. 2004



From Leake et al. 2004



SCORE 1

The animal has eaten little or nothing, which could be due to sudden illness, insufficient feed or a mismatch between rumen flora and feed available.

SCORE 2

This is a sign of insufficient food intake, or a rate of passage that is too high.

SCORE 3

This is the lowest score for animals on well recovered grass. Generally when a portion of the mob is at score 3 it is time to move to the next paddock.

SCORE 4

This is the correct score for a portion of the mob on well recovered grass. Animals will generally be maintaining or increasing in condition.

SCORE 5

This is the correct score for animals on well recovered grass and show a good match between rumen condition and food available. Animals will generally be increasing in condition.

SCORE 1

Watery - This dung is very liquid with a consistency between water and pea soup. Dirty rumps are seen. The dung may actually "jet" from the rump of the cow. Excess protein or starch, or lack of fibre, can lead to this score. With planned grazing the cause could be grass plants that are very young and not recovered. Animals are at high risk of metabolic diseases. As the animals are using energy to process excess non protein nitrogen they are at risk of rapidly losing condition and having associated health problems.

SCORE 2

Custard-like - Dung appears runny and does not form a distinct pat. Dirty rumps are seen. Dung will measure less than 2.5 cm in height and will splatter when it hits the ground or concrete. With planned grazing the cows could be grass plants that are young and not recovered. Animals are at risk of metabolic diseases and using energy to process excess non protein nitrogen.

SCORE 3

Pie-like - This is the optimal score! The dung has a porridge-like appearance, will stack up 2 to 3 cm, will appear like a pie with a small depression or dimple in the middle. The dung makes a plopping sound when it hits the ground and animals will have clean rumps. With planned grazing this indicates a good match between the grass being selected and rumen conditions. Animals are at low risk of metabolic diseases and health is generally good.

SCORE 4

Firm - The dung is thicker and stacks up over 5cm. With planned grazing this indicates that grass being selected is lower in protein and energy, and higher in fibre than is optimal for current rumen conditions. Usually seen when putting animals onto older feed. Animal performance may be lower until the rumen adjusts or younger grass is provided.

SCORE 5

Biscuit-like - The dung appears as a firm mound like a stack. With planned grazing this generally indicates that grass being selected is low in protein and energy and high in fibre. Usually seen when putting animals onto very old feed or leaving them to "clean up" plant material that would be best harvested with the first cut/bale. Animal performance is usually low. Dehydration would contribute to this score. Cows with a digestive blockage may exhibit this score. Animals are at risk of rapidly losing condition and having associated health problems.

SCORE 1

Pea Soup – This dung is very liquid with the consistency between water and pea soup. The dung may actually "arc" from the rump of the animal. Excess protein or starch, or lack of fibre, can lead to this score. With planned grazing the usual cause is grass plants that are very young and not recovered. Animals are at high risk of metabolic diseases. As the animals are using energy to process excess non protein nitrogen they are at risk of rapidly losing condition and having associated health problems.

SCORE 2

Paste – Dung appears as a paste with no evidence of pellets. Dirty rumps are seen. Dung will measure less than 2.5 cm in height and splatters when it hits the ground or concrete. With planned grazing the usual cause is grass plants that are young and not recovered. Animals are at risk of metabolic diseases and using energy to process excess non protein nitrogen.

SCORE 3

Cone of loose pellets – The dung ranges from a cone-like appearance with soft deformed pellets to soft pellets almost mixed into a pile. Rump is clean. With planned grazing this indicates a good match between the grass being selected and rumen conditions. Animals are at low risk of metabolic diseases and health is generally good.

SCORE 4

Firm pellets – The dung appears as individual firm pellets. Rumps are clean. With planned grazing this indicates the grass being selected is lower in protein and energy and higher in fibre than optimal for current rumen conditions. Usually seen when putting animals onto older feed. Animal performance may be lower until the rumen adjusts to young/ grass provided.

SCORE 5

Very firm pellets – The dung appears as very firm pellets. With planned grazing this generally indicates that grass being selected is low in protein and energy and high in fibre. Usually seen when putting animals onto very old feed or leaving them to "clean up" plant material that would be best harvested into the soil surface. Animal performance usually low. Dehydration would contribute to this score. Animals at risk of rapidly losing condition and associated health problems.

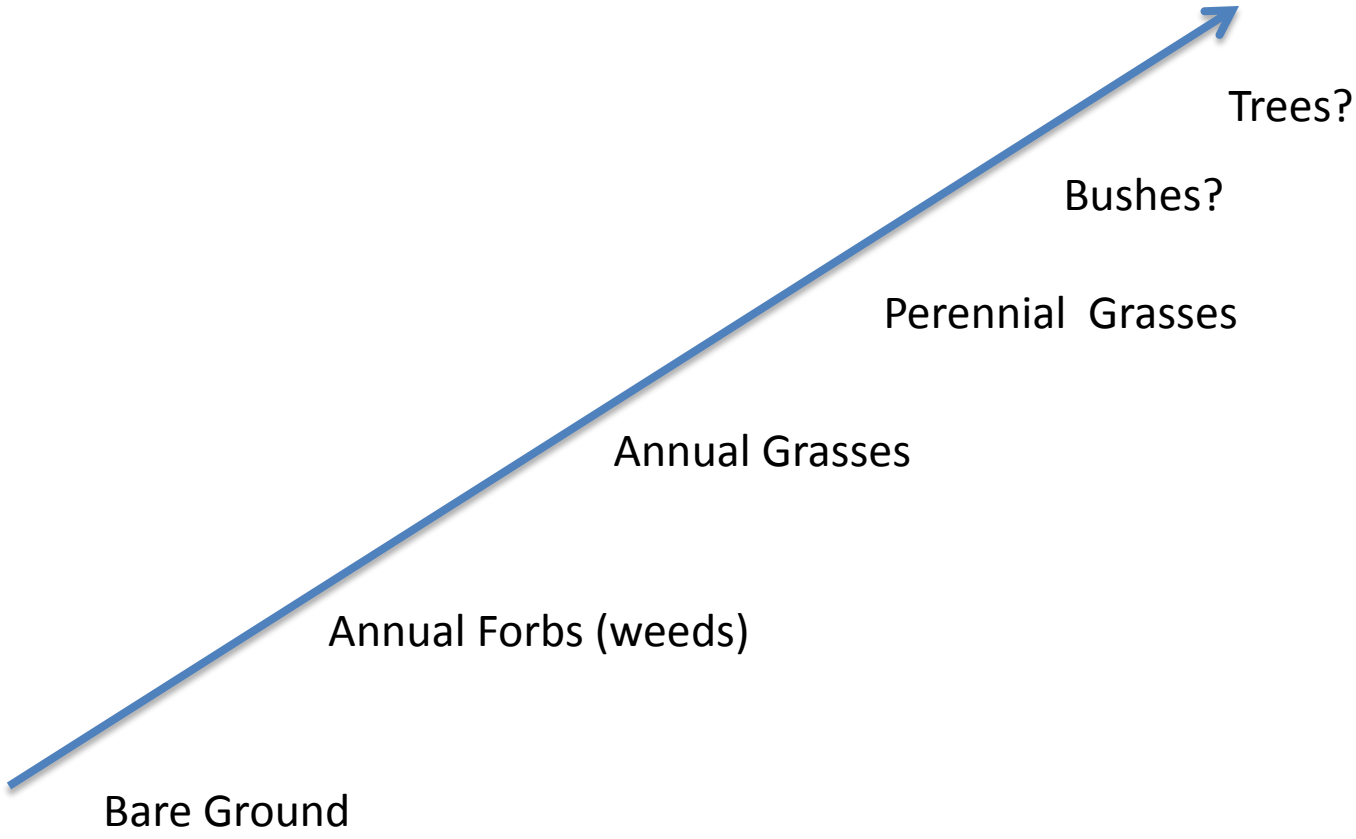
Figure 8: Watch the way animals drink to assess water quality

Overused	Regenerating	Understood
Exposed soil (Fig. 9)	Increasing perennial grass cover (Fig. 12)	Evidence of perennial grasses oxidising and turning grey. They may be dying from not having growth points cleared (i.e. becoming rank, Fig. 15 a and b)
Capping – sealing of the soil surface by rain drops hitting bare ground, (Fig 10)	Increasing perennial grass diversity	Increasing woody plants such as gorse, blackberry, tree seedlings (Fig. 16)
Evidence of erosion (Fig. 11)	Increasing litter production and cover (Fig. 13)	
Low perennial grass cover	Litter decomposing/ composting (Fig. 14)	
Increasing numbers of annual plants such as capeweed and thistles	Pasture has increasing structure, height and understorey	


15 09 2011

Biological Succession

Grassy Woodland



Developed by Graeme Hand from Holistic Management material

Biological Monitoring

- Monitor soil surface
- Ground Cover
- Composting litter
- Distance to nearest perennial
- Photos down & across
- Must produce management change


22.10.2011