

Educational Farm Walk

Aldinga
15 October 2016



Landholder: Deb Ophof

Event Program (9.30am to 12.00noon)

- Introductions
- The importance of soil testing
- Observe horse keeping facilities and welfare of horses
- Understand horse management system
- Observe pasture and discuss grazing strategies
- Discuss pasture improvement options and seed mixes
- Weed control options
- Practical activities: plant identification, soil pH testing, water salinity testing, hay assessment.
- Questions throughout the session

SOIL TESTING

Results obtained from CSBP Soil and Plant Analysis Laboratory. Recommendations made by Land Management Advisory Service.

1. SOIL TEST RESULTS (Hay paddock)

Analysis (comprehensive test)	Result	Units	Comment
Colour	DKBR		
Gravel	5	%	
Texture	2.5		loam
Ammonium nitrogen	2	mg/Kg	Indication only – very low
Nitrate nitrogen	31	mg/Kg	Indication only – above average
Ext. Phosphorus	19	mg/Kg	Low (32mg/kg adequate for your PBI)
Ext. Potassium	249	mg/Kg	Adequate (120-250mg/kg adequate)
Ext. Sulphur	7.3	mg/Kg	Low (Adequate > 10mg/kg)
Organic carbon	3.75	%	Above average
Conductivity	0.092	dS/m	Low - good
Soil salinity E _{Ce} (est.)	0.83	dS/m	Low - good
pH level (CaCl ₂)	4.8	pH	Strongly acidic - lime is required
pH level (H ₂ O)	5.4	pH	Strongly acidic
Ext. Copper	0.15	mg/Kg	Low (0.5 to 1.0mg/kg adequate)
Ext. Iron	305.21	mg/Kg	Adequate
Ext. Manganese	16.59	mg/Kg	Adequate (> 10mg/kg adequate)
Ext. Zinc	3.01	mg/Kg	Adequate (adequate is 1.0 to 2.0mg/kg)
Exc. Aluminium	0.182	meq/100g	Possibly toxic to phalaris (Add lime)
Exc. Calcium	7.06	meq/100g	Adequate (adequate 5 to 10meq/100g)
Exc. Magnesium	1.55	meq/100g	Adequate (adequate is 1 to 3meq/100g)
Exc. Potassium	0.53	meq/100g	Adequate (adequate is 0.3 to 0.7meq/100g)
Exc Sodium	0.19	meq/100g	Acceptable (adequate is 0.3 to 0.7meq/100g)
Ext. Boron	0.58	mg/Kg	Acceptable (possibly toxic if > 5.0)
PBI	92.3		Low

2. NUTRIENT RECOMMENDATIONS

Soil Acidity

pH value is 4.8 in CaCl₂ which is strongly acidic. Apply 3 tonnes per hectare of good quality lime. Soil test again in 5 years.

Major Nutrients

Phosphorus is low. To maximise your pasture productivity you will need to add 52kg/ha of phosphorus which is a very large amount. I suggest you add 18kg/ha this year and consider another 18kg/ha next year. After which I suggest soil testing again before applying any more to determine how much more phosphorus is required. To address maintenance levels of phosphorus, apply 6.6kg/ha of phosphorus each year if stocking rates are average.

Potassium is adequate. No potassium is required.

Sulphur is low. Apply 10kg/ha of sulphur

If cutting hay, add 10 to 20kg/ha of nitrogen 6 to 8 weeks before cutting hay. If **not** cutting hay the pasture will still benefit from 10kg/ha of nitrogen this year in Spring. This can be done each year or every few years depending on cost and yield expectations.

Trace Elements

Copper is low. Apply 1kg/ha of copper. This will last 4 years.

3. FERTILIZER SUGGESTIONS

Applying 200kg/ha of single superphosphate with 0.5% copper will add 17.6kg/ha of phosphorus, 22.0kg/ha of sulphur and 1kg/ha of copper.

If cutting hay, apply 10 to 20kg/ha of nitrogen 8 weeks prior to cutting hay. If using a hayboosta fertilizer (12:5:24:5), apply 80 to 160 kg/hectare. Note: potassium and some phosphorus and sulphur will also be added.

If not cutting hay the pasture will benefit from 10kg/ha of nitrogen this year. Applying 25kg/ha of urea will add 11.5kg/ha of nitrogen. This can be done each year or every few years depending on cost and yield expectations.

Next year apply a further 200kg/ha of single superphosphate (no copper), then soil test to determine further requirements.

Note: The above fertiliser recommendations are aimed at maximising pasture productivity. However, for some landholders cost is prohibitive. Adding lesser amounts will still provide some response although not to the same extent.

Soil test again in 4 to 5 years.

PASTURE PLANTS



Perennial ryegrass
(*Lolium perenne*)



Phalaris (*Phalaris aquatica*)



Cocksfoot (*Dactylis glomerata*)



Tall fescue (*Festuca arundinacea*)



Subterranean clover
(*Trifolium subterraneum*)



White clover (*Trifolium repens*)



Annual medic (*Medicago*
spp.)



Oats (*Avena sativa*)



Lucerne (*Medicago sativa*)

ASSESSING PASTURE QUALITY

Pasture quality is a primary factor when determining the stocking rate (i.e. carrying capacity) for any property, and this can vary significantly from paddock to paddock.

The following four pasture descriptors represent poor, moderate, good and high quality pastures.

Poor Pasture: Primarily annual weeds e.g. guildford grass, barley grass, silver grass, brome grass, capeweed, geranium and salvation jane.

Moderate: < 15% perennial grass (e.g. phalaris, cocksfoot, ryegrass), some clover or medic, annual grass weeds and broadleaf weeds obvious.

Good: Approximately 30% perennial grasses (e.g. phalaris, cocksfoot, ryegrass), approximately 20% clover. Annual grass weeds and broadleaf weeds make up the rest.

High: >60% introduced perennial grasses, approximately 30% clover, approximately 10% weeds.

WHAT PASTURE CAN I PLANT?

A. Perennial pasture. Sandy loam over clay soils. Rainfall 400 to 700mm p.a.

Example 1. Rainfall > 700mm p.a.

Perennial ryegrass (low endophyte) 10kg/ha
Cocksfoot 5kg/ha
Subterranean clover 10kg/ha

Example 2. Rainfall 500 – 600mm.pa.

Cocksfoot 3kg/ha
Phalaris 4kg/ha
Subterranean clover 6 - 10kg/ha
Balansa clover 1kg/ha

Example 3. Rainfall 400 - 500mm.pa.

Cocksfoot 2kg/ha
Phalaris 4kg/ha
Subterranean clover 6 - 10kg/ha
Balansa clover 1kg/ha

Note: In alkaline soils subterranean clover can be replaced with medics.

B. Annual dryland pasture. Rainfall < 400mm p.a.

It is difficult to maintain perennial pasture in low rainfall areas, unless irrigation is available. This can create problems for small landholders who do not possess the machinery to undertake sowing of short term annual pastures each year. Contractors or local farmers can provide support in these circumstances, however the key objective should always be to ensure enough ground cover is maintained to avoid any soil erosion.

Sowing annual ryegrasses for hay, silage or grazing is common in low rainfall areas. However, these pastures, known as short term Italian ryegrasses, will only last one or two years. They are often sown with annual medics (or clovers) to lift the protein value in hay.

Annual pasture which eliminates the need to sow each year, should be self-regenerating from the seed it produces each spring. For example 'Safeguard' annual ryegrass is recommended as a self-regenerating vigorous variety which is resistant to annual ryegrass toxicity (ARGT).

Safeguard ryegrass will crossbreed with the local ryegrass species such as Wimmera, to produce ARGT resistant seeds which germinate the following year. This has been developed for the drier regions of South Australia and has excellent winter pasture production and is resistant to the root disease Take-all. This is an option for small horse properties where grazing in spring can be controlled to allow adequate seed set for germination the following autumn.

It is necessary to sow only certified seed of Safeguard to ensure the pasture remains free of ARGT.

Sowing forage oats is another common approach.

Annual pasture mixes

The following annual pasture mixes could be considered for grazing, silage or hay making.

Example 1 (self regenerating)

Annual ryegrass 10 to 15kg/ha (Safeguard)
Medics 5kg/ha
Lucerne 2kg/ha

Example 2

Grazing Oats 40kg/ha
Annual Italian ryegrass 10kg/ha
Annual Medics 5kg/ha (or Balansa clover)
Note: ryegrass will need to be over-sown each year

Example 3

Grazing oats 40kg/ha
Medics 5kg/ha
Lucerne 2kg/ha

Example 4

Grazing oats 60 to 80kg/ha

Veldt grass

Veldt grass (*Enrharta calycina*) is a perennial grass ideal for sowing in sandy soils where the annual rainfall is as low as 300mm. However, it can spread and become invasive, so careful management is required for environmental protection.

Example 5

Perennial veldt grass 3kg/ha
Annual medic 5kg/ha
Note: do not graze in the first year

Kikuyu

Kikuyu is a perennial prostrate grass which spreads by runners, rhizomes and seed. Late spring, summer and early autumn are the main growing season. It is generally managed as a dryland pasture if rainfall is > 500mm per annum.

On medium input horse properties, where paddocks are generally small and grazing is restricted to a few hours each day, kikuyu is a suitable pasture provided it is managed well. If no legumes are present in the pasture, consideration will need to be given to applications of nitrogen.

Kikuyu will tolerate a range of soil types (both alkaline and acid), and is best established by seed sown in a wet spring. A suitable sowing rate is 2kg/ha. If a legume is required use Balansa clover or strawberry clover.

Landholders will need to monitor the spread of this grass since it can become invasive and be a problem in native vegetation and horticultural sites.

GRAZING STRATEGIES

Resting pastures from grazing is essential to ensure pastures last over many years and don't change back to weeds. Once pasture plants have been grazed down to 4 to 5cms in height they should be rested until they have recovered to 12cms in height. Best practice occurs when animals can be grouped together and rotated through a number of paddocks in order to rest pastures. This is known as 'rotational grazing' and is considered one of the best ways to ensure long term survival of pasture.

On small horse properties rotational grazing may not be practical. In these circumstances landholders should make use of yards or stables to restrict the time horses have for grazing pastures. Well designed yards or stables should be an integral part of any horse keeping property where extensive grazing is limited.

In some situations using a small sacrifice paddock is appropriate to control grazing of good pasture paddocks.

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