Section 5

FODDERS

Trading Standards

NOTE: With industry agreement (24th August, 1998) each commodity has now been allocated a "Commodity Standard" (CS) reference and in this commodity group viz "Fodder" the letter "F" is added - CSF followed by a number. This system will facilitate specific commodity identification.

- Australian Fodder Industry Association Standards
- GTA Standards

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Section 5

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COMMODITY STANDARD REFERENCE NUMBER GUIDE

FODDERS

Reference	Commodity	Origin
Table 1	Legume and Pasture Hay & Silage	AFIA
Table 2	Cereal Hay and silage	AFIA
CSF - 3	Intentionally left blank	
CSF - 4	Lucerne Chaff	GTA
CSF - 5	Wheaten Chaff	GTA
CSF - 6	Oaten Chaff	GTA
CSF - 7	Lucerne Meal	GTA

AUSTRALIAN FODDER INDUSTRY ASSOCIATION STANDARDS

HAY AND SILAGE

Fodder Grades:

Since the formation of AFIA, considerable discussion has taken place within the fodder industry about the need for a common fodder description "language" or grading system. This system should be based on objective measurements, as an additional step to obtaining uniform-testing methods for the measurement themselves.

The objective of a grading system is to allow both buyer and seller of fodder products to instantly recognise the quality of a given fodder by means of a simple alpha-numeric code, and to use it as a marketing aid. The grade would appear on fodder analysis reports and on the Vendor Declaration Forms, but its use would be completely up to the individual trader.

Two separate grading systems have been adopted, one for legume, grass and legume, grass hay mixtures (Table 1) and the other for cereal hay (Table 2). The grades take account of the range in metabolisable energy and crude protein, which can occur in hay, and the effect on animal performance. The only differences between the two tables are in the grades for crude protein, reflecting the lower protein content of cereal hay. If all hay (including cereal hay) were included in Table 1, it would be impossible for any cereal hay to achieve an "AI" grade. This could unnecessarily penalise exporters of cereal hay, which is normally used as a part of a total ration in feeding regimes where the protein content of the hay is less important than other factors.

Table 1 - AFIA Grades for Legume and Pasture Hay & Silage

DMD%	ME	Crude Protein %			
	MJ/kg	>19	14-19	8-13.9	<8
>66	>9.5	A1	A2	A3	A4
60-66	8.6-9.5	B1	B2	B3	B4
53-59.9	7.5-8.6	C1	C2	C3	C4
<53	<7.5	D1	D2	D3	D4

Table 2 - AFIA Grades for Cereal Hay & Silage

DMD%	ME	Crude Protein %			
	MJ/kg	>10	8-10	4-7.9	<4
>66	>9.5	A1	A2	A3	A4
60-66	8.6-9.5	B1	B2	B3	B4
53-59.9	7.5-8.6	C1	C2	C3	C4
<53	<7.5	D1	D2	D3	D4

ME (MJ/kg DM)	metaboliseable energy MJ/kg of dry matter
DMD%	dry matter digestibility,
CP M of DM)	crude protein, per cent of dry matter

Hence if a mixed grass-clover hay had a CP content of 12.2%, a DMD of 62.9% and an ME of 9.6 MJ/kg, it would have a “B3” grade.

AUSTRALIAN FODDER INDUSTRY ASSOCIATION
ASSESSING SILAGE QUALITY

Whilst hay is traded as a commodity, much more than silage, the advent of wrapped bales has enabled silage to become more "portable" and hence also a marketable commodity. The grading systems apply to hay, but there is no reason why the grades for CP and ME could not also apply to silage.

After ME content, silage fermentation quality is probably the most important measure of silage quality influencing animal production.

Poor silage fermentation will result in unpalatable silage, and even if ME and crude protein content are high, intake and animal production will be low on these silages. The protein fraction is extensively degraded in poorly preserved silage, so high ammonia-N (as a % of total nitrogen) in silage indicates a poor fermentation. Ammonia-N is an excellent guide to silage fermentation quality, with levels =10% of total nitrogen indicating good silage fermentation.

Silage pH can also provide a guide to silage fermentation quality for silages with a DM content less than35%.

The risk of poor silage fermentation can be minimised by good silage management.

Use of silage PH as a guide to silage fermentation quality

Silage DM content	Probability of poor fermentation if pH exceeds:	
%	Grasses	Legumes*
15	4.10	4.20
20	4.20	4.30
25	4.35	4.50
30	4.50	4.70
35	4.65	4.80

**Tropical grasses with low sugar content, such as kikuyu grass, can be included in this category*

Use of silage ammonia nitrogen content as a guide to silage fermentation quality	
Ammonia – N (% total silage N)	Silage fermentation quality
<5	Excellent
5-10	Good
10-15	Moderate
>15	Poor

Reference:

Successful Silage. A.G. Kaiser and J.W. Piltz,
Dairy Research and Development Corporation and NSW Agriculture 2003

CSF – 4
LUCERNE CHAFF

DESCRIPTION:

The material obtained by cutting or chaffing baled lucerne hay of good quality. Contains not less than 95% lucerne and is subsequently free from grass.

PHYSICAL PROPERTIES:

Colour
Shall retain the green colour of properly harvested lucerne.

Texture
Particle size shall be reasonably uniform with a minimum of long stalks and a high leaf content. Shall be substantially free from dust.

Odour
Clean and free from mustiness, sourness or any other odour which suggests an off quality condition

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CHEMICAL PROPERTIES:

Moisture Maximum 14%

Crude Protein
As a guide, expect not less than 14%

Crude Fibre
Maximum 28%

NIL ACCEPTANCE:

Water damage, taint, mustiness, mould, insect and rodent damage and any pesticide residue in amounts greater than that permitted by State Stockfeed Regulations.
Must be completely free from toxic weed seeds.

CSF – 5
WHEATEN CHAFF

DESCRIPTION:	The material obtained by cutting or chaffing good quality wheat hay from which the grain has not been removed. The presence of whole grain may indicate separate addition of grain. Is substantially free from grass/weeds.
PHYSICAL PROPERTIES:	Texture Particles shall be approximately 7 mm in length. Shall be substantially free from dust. Odour Clean and free from mustiness, sourness or any other odour Which suggests an off quality condition
CHEMICAL PROPERTIES:	Moisture Maximum 12% Crude Protein Expect considerable variation within the range 55-10% (AFIC 1987)? 5.5 Crude Fibre Maximum 34%
NIL ACCEPTANCE:	Water damage, taint, mustiness, mould, insect and rodent damage and any pesticide residue in amounts greater than that permitted by State Stockfeed Regulations. Must be completely free from toxic weed seeds.

CSF - 6
OATEN CHAFF

DESCRIPTION:	The material obtained by cutting or chaffing good quality oaten hay from which the grain has not been removed. The presence of whole grain may indicate separate addition of grain. Is substantially free from grass/weeds.
PHYSICAL PROPERTIES:	Texture Particles shall be approximately 7 mm in length. Shall be substantially free from dust. Odour Clean and free from mustiness, sourness or any other odour which suggests an off quality condition
CHEMICAL PROPERTIES:	.Moisture Maximum 12% Crude Protein Expect considerable variation within the range 4%-9.5% (AFIC 1987) Crude Fibre Maximum 34%
NIL ACCEPTANCE:	Water damage, taint, mustiness, mould, insect and rodent damage and any pesticide residue in amounts greater than that permitted by State Stockfeed Regulations. Must be completely free from toxic weed seeds.

CSF - 7
LUCERNE MEAL

DESCRIPTION:	The material obtained by hammer milling good quality baled lucerne hay through a screen of 4 mm. Contains not less than 95% lucerne and is substantially free from grass and completely free from toxic weed seeds.
PHYSICAL PROPERTIES:	Colour Shall retain the green colour of properly harvested lucerne and have a high leaf content. Texture Particle size shall be reasonably uniform with a minimum of long stalks and a high leaf content. Shall be substantially free from dust. Odour Clean and free from mustiness, sourness or any other odour which suggests an off quality condition.
CHEMICAL PROPERTIES:	Moisture Maximum 13 % Crude Protein As a guide expect not less than 16% Crude Fibre Maximum 28%
NIL ACCEPTANCE:	Water damage, taint, mustiness, mould, insect and rodent damage and any pesticide residue in amounts greater than that permitted by State Stockfeed Regulations. Must be completely free from toxic weed seeds.

AFIA - Fodder Vendor Declaration Form

VDF No.:_____

Contract No.:_____

1. Vendor's Details Vendor's name:	**2. Buyer's Details** Buyer's name :
Address: Tel: Fax:	Address : Tel: Fax:
3. Production Details If vendor not the producer, provide corresponding producer's VDF No.	
Paddock identification:	Delivery date:
Commodity:	Cutting date:
Is 95% free of genetically modified organisms: **Yes ? No ?**	Other:
4. Fodder Quality Product description: Species : (if mixed include estimate of percentage) Quantity: Bale size: Weeds:	Analysis: Lab Reference no.: Dry matter: % Crude protein: % of DM Metabolisable energy: MJ/kg of DM Other - -

5. Testing and Chemical Status

This form only applies to a single "lot" of hay (see Sampling Protocol on pressure sheet)

Has the fodder sample been taken according to AFIA sampling procedure? *(one test per 200 tonne lot or paddock)* Yes ? No ?

Has the fodder been tested for ARGT **Yes ? No ?**

or Prussic acid? **Yes ? No ?**

If yes name the Laboratory:……Case or Sample No:……and Result ……..:

Has the fodder been tested for pesticide residues? **Yes ? No ?**

If yes, attach details of testing results on the delivered product

Has the crop been grown on a property with either an organochlorine (OC) status classification, or under quarantine because of OC residues, *within the past 12 months?* If yes give details ***Yes ? No ? Don't know ?***

Does the property from where the fodder is grown carry accreditation *under an independently audited QA program?* ***Yes ? No ?***

If yes give name of program

Has the fodder crop been subject to spray drift during its production? Yes ? No ? Don't know ?

If yes attach a list of chemicals applied to neighbouring crops, the date sprayed and application rates.

If selling fodder to a client, operating within a livestock QA program, who require a full list of chemical names, rates and dates both applied to the fodder crop, as well as those applied to neighbouring crops within 100 metres, please attach the details to this form.

6 Declaration

I/We ……..……..……..…… (name of fodder supplier)

declare that I/we have the systems in place to ensure that the fodder complies with all State and Federal laws and the requirements relating to chemical and pesticide residues and specified Government designated maximum residue levels. These systems include:

(i) any chemical treatment applied to any component of this consignment during storage on our premises or otherwise in our possession was as per product label approved by the National Registration Authority for Agriculture and Veterinary Chemicals and that the withholding period specified on that label has been observed; and

(ii) In relation to the sourcing of raw materials:

a) the property on which the fodder was grown, or the storage facility in which the fodder has been stored, carries accreditation under a recognised, and independently audited QA program, which includes chemical residue management provision; **OR**

b) has been purchased under a contract in which the supplier warrants that the fodder complies with all State and Federal laws and requirements relating to chemical and pesticide residues and specified Government designated maximum residue levels; **OR**

c) in relation to direct farm purchases that the supplier of the fodder has attested to the effect that any pesticides/insecticides used on the fodder have been applied in accordance with the registered labels of these chemicals, at rates not exceeding the maximum rate set out on the label of these chemicals and the appropriate withholding periods have been observed.

I/we further declare that this consignment at the time of the sale:

1. Is free from animal material as defined and required under State legislation and
2. It is otherwise fit for the purpose of feeding to the category of livestock indicated in the product description above.

Intended Use/Purpose.....

VENDOR'S SIGNATURE_____**DATE**_____

∗ The AFIA Inc does not accept responsibility or any liability for the information contained in this declaration. December 2003

Australian Fodder Industry Association Fodder Sampling Protocol

How to take fodder samples for analysis

The accuracy of fodder analysis depends on the sample you send to the laboratory. It is critical that the sample represents the average composition of the "lot" of fodder sampled, otherwise the laboratory tests will not be useful.

A "lot" is defined as hay or silage taken from the same cutting, at the same stage of maturity, the same species (pure or mixed) and variety, the same paddock, and harvested within 48 hours. Other factors influencing the definition of a "lot" include rain damage, weed content, soil type, treatment after cutting and storage effects. A "lot" of baled hay or cubes should not exceed 200 tonnes.

Sampling hay

Representative hay samples can only be obtained with a probe or core sampling device. Do not rely on a couple of handfuls or a "flake" from one bale. Corers are commercially available in Australia from HAYCORE, P.O. Box 31, Dunkeld, Victoria 3294 (phone 03 5577 2216), and there are several types also marketed in the USA. Alternatively, they can be home-made using 32 mm. steel tubing, and should be at least 450 to 500 mm long with a slightly scalloped and sharp cutting edge. Corers are driven either using a hand brace or an electric drill (where practicable). Some cordless drills may not be suitable if they lack power or turn too fast. A portable generator is useful and can be justified if many samples are taken.

Small square bales

Sample between 10 and 20 small square bales, selected at random from the "lot". Take one core from each bale selected, probing near the centre of the "butt" end, at right angles to the surface. Ensure that the corer does not get hot. Combine all cores into a single sample in a bucket, and mix thoroughly. The whole sample should be kept intact and not subdivided.

Large round or square bales

Sample between 5 and 10 large bales, again selected at random. Take one core from each side of all bales selected, probing at right angles to the surface at different heights. Combine all cores into a single sample in a bucket, and mix thoroughly. The whole sample should be kept intact and not subdivided.

Cubes or pellets

Select a handful of cubes or pellets from at least 6 locations or bags which make up the complete lot. Combine the sub-samples in a bucket and mix thoroughly to obtain a final sample not exceeding 500 grams.

Sampling silage

Silage is best sampled at least 3 weeks after it has been ensiled, and as close to the time of feeding as practicable. In theory, there should be minimal losses in quality if ensiled correctly, but in practice this is not always the case, depending on time of wilting, rain or heat damage, mould and the presence of air.

Pit or bunker silage

Before opening the pit or bunker, core samples for analysis can be obtained using a long coring device that extends deeply into the pit or bunker. Alternatively, random handfuls can be taken from at least 10 locations across a freshly cut face of the stack, although this will not provide such a good representative sample. Combine all the material into a single sample in a bucket and mix thoroughly to obtain a final sample not exceeding 500 grams, reducing the sample by the quartering process if necessary.

Wrapped baled silage

Sample between 5 and 10 large bales at random, using a coring device in the same manner as for large hay bales. However, this procedure is acceptable only if great care is taken to reseal the holes made in the plastic by the corer. Combine all cores into a single sample in a bucket, and mix thoroughly. The whole sample should be kept intact and not subdivided.

Sample handling

Immediately after sampling and mixing, the final fodder sample should be placed in a robust (preferably "press-seal") plastic bag and tightly sealed to exclude air. This is to ensure that the laboratory report of dry matter will approximate the dry matter content of the "lot" when it was sampled, and also to minimise aerobic spoilage.

Samples must be delivered to the laboratory as quickly as possible after being taken. In particular, silage samples must be frozen immediately after being taken, unless they can reach the laboratory on the same day they were collected. This is especially important during hot weather. Avoid mail delays over the weekend by posting samples early in the week.

Ensure that you closely follow the laboratory's instructions for labelling samples and filling out all the required details on the sample submission sheet.

This protocol forms a component of the AFIA Fodder Code of Practise. If you have any further queries or problems regarding sampling or sample handling, contact the appropriate AFIA-recommended laboratory for further information.