

# QUALITY CERTIFICATE EXPLANATION NOTES

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Feed Central Pty Ltd has collated this document with the intent of providing an explanation to the reader of how to understand their test results and is not intended as advice. It is the responsibility of the user to seek independent advice regarding what their test results mean for their individual circumstances.

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## FEED ANALYSIS EXPLAINED

The Feed Analysis is included as part of a visual inspection service, but it may also appear as a stand-alone on the Quality Certificate if a 'Feed Test Only' service is requested. The sample type and feed test service selected will impact the number of parameters available on the certificate.

ENERGY & RELATED		PROTEIN & RELATED		FIBRE & RELATED		MINERALS & RELATED	
ME 1X (MJ/kg)	9.75	% Crude Protein	21.70	% Neutral Detergent Fibre	36.30	% Potassium (K)	2.22
Relative Feed Value	169.00	% Available Protein	20.29	% aNDFom	34.00	% Calcium (Ca)	1.04
Relative Forage Quality	168.00	% Soluble Protein	9.00	% Acid Detergent Fibre	29.30	% Magnesium (Mg)	0.33
% Crude Fat	1.20	% Degradable Protein	17.00	% TDN	59.00	% Phosphorus (P)	0.26
% ESC (Simple Sugars)	8.00	% ADICP	1.50	% Starch	1.60	% Sulfur (S)	0.27
% Non Fiber Carbo. (NFC)	34.80	% NDICP	4.10	% Lignin	7.60	% Chloride (Cl)	0.97
DE 1X (MJ/kg)	11.52	Degradable Protein % of CP	76.00	% Moisture	20.50		
Horse DE (MJ/kg)	10.45			% Dry Matter	79.50		
Net Energy Gain (MJ/kg)	2.76			% Ash	10.10		
Net Energy Lactation (MJ/kg)	5.70			% WSC (Water Sol. Carbs.)	10.50		
Net Energy Maintenance (MJ/kg)	5.13			NDFD 24hr % of NDF	31.00		
				% uNDFom30	23.80		
				% uNDFom120	22.50		
				% uNDFom240	20.60		

### DRY MATTER (DM)

Equals the whole sample weight, minus the moisture. Represents the nutrient portion of the sample. Results are generally expressed on a DM basis as animals consume feed to meet their dry matter needs. Moisture content can significantly vary between feedstuffs. Removing this water portion of the feed enables us to compare feed on a nutrient basis and establish feeding rates. DM value is important to know as animals are only able to consume a finite amount of feed per day.

#### Converting to Dry Matter Basis

$$DM\ basis = \frac{nutrient}{DM\%}$$

#### Converting to As Fed Basis

$$As\ Fed\ basis = nutrient \times DM\%$$

**Example:** if a feed were 86.6% DM, with a CP of 8.3% (DM basis).

$$\begin{aligned} & \text{To convert to as fed} \\ & = 8.3\%CP \times 0.866 \\ & = 7.2\%CP \end{aligned}$$

### MOISTURE

Percentage of water in the sample.

### ENERGY

Energy is an essential requirement for maintenance of body homeostasis, pregnancy, milk production, movement and weight gain.

### METABOLIZABLE ENERGY (ME)

Equals the gross energy of the feed minus the energy lost in faeces, urine and gases; it is the energy available for use by the animal. The main components contributing to energy content are carbohydrates, fats and proteins; coupled with the digestibility of the feed source. Generally, the higher the energy content, the higher production capacity of the feed.

### DIGESTIBLE ENERGY (DE)

Equals the gross energy of the feed source minus faecal energy; predicted from ADF and CP. Separate results are provided for ruminants and horses.

## NET ENERGY MAINTENANCE (NE<sub>m</sub>)

An estimate of the energy value of a feed used to maintain animal body functions.

## NET ENERGY GAIN (NE<sub>g</sub>)

An estimate of the energy value of a feed used for animal body weight gain.

## NET ENERGY LACTATION (NE<sub>l</sub>)

An estimate of the energy value of a feed used for maintenance plus milk production during lactation and for maintenance plus the last two months of gestation for dry or pregnant cows.

## SS NE<sub>l</sub>

Specific NE<sub>l</sub> value used for corn silage, adjusted for starch digestibility.

## SS Proc. NE<sub>l</sub>

Specific NE<sub>l</sub> value used for corn silage, adjusted for starch digestibility, and accounting for the processing of the forage.

## DIGESTIBILITY & INTAKE POTENTIAL

### RELATIVE FEED VALUE (RFV) & RELATIVE FORAGE QUALITY (RFQ)

Relative feed value (RFV) and relative forage quality (RFQ) both use nutritional components to serve as an indicator of forage quality. They both utilise a scoring system where the higher the number, the better the quality. 100 is considered an average result.

RFV is based solely on ADF and NDF values. RFQ also includes CP, fat, ash and NDF digestibility, providing an enhanced evaluation of forage quality.

Absolute values should not be used for making direct comparisons. Rather a range of values should be used to classify a forage. A good rule of thumb is to accept anything within at least +/- 5 points of the target value.

### TOTAL DIGESTIBLE NUTRIENTS (TDN)

The sum of the digestible protein, digestible NSC, digestible NDF and 2.25X the digestible fat.

## PROTEIN & AMINO ACIDS

### CRUDE PROTEIN (CP)

Protein is necessary for maintenance, growth, lactation and reproduction of the animal. It is the measure of nitrogen in the feed source; including true protein, ammonia, nitrates, amines, amino acids, peptides, and nucleic acid nitrogen.

True protein and non-protein nitrogen are both utilised by the microbes in the rumen to synthesize microbial protein. This microbial protein is the primary source of protein absorbed and utilised by the animal.

Protein and energy must be in balance in order to be most effectively utilised by the animal. Excess of one or the other can lead to inefficiencies of digestion processes.

## UREA & AMMONIA

Urea & Ammonia are classified as non-protein nitrogen (NPN) and are reported as crude protein equivalent (CPE), not the percent of urea or ammonia in the feed. These are not proteins, but do contain nitrogen which can be used by rumen microbes to synthesize protein. Therefore, they have a value that is equivalent to protein for ruminants. The percentage in feed can be calculated by dividing the urea CPE by 2.81 or the ammonia CPE by 5.15.

## AVAILABLE PROTEIN

Equals the crude protein minus the protein lost in faeces. The amount of CP actually absorbed by the animal.

## SOLUBLE PROTEIN

Proteins and non-protein nitrogen that are rapidly broken down in the rumen. They are used to synthesize microbial protein in the rumen.

## DEGRADABLE PROTEIN / RUMEN DEGRADABLE PROTEIN (RDP)

The soluble protein and proteins of intermediate ruminal degradability. They are used to synthesize microbial protein in the rumen.

## ACID DETERGENT INSOLUBLE CRUDE PROTEIN (ADICP)

ADICP escapes ruminal breakdown and represents the portion of the undegradable protein that is unavailable to the animal. Also known as heat damaged or unavailable protein. Typically caused by heating during fermentation or drying, a portion of the protein reacts with carbohydrates to form an indigestible complex rendering it unavailable for digestion. It is used to calculate energy availability.

## NEUTRAL DETERGENT INSOLUBLE CRUDE PROTEIN (NDICP)

Protein which is bound to NDF, representing the portion of the undegradable protein that is available to the animal. It is used to calculate energy availability.

## LYSINE

An essential amino acid, unable to be synthesized by the animal and must be provided through the diet. It aids in protein synthesis.

## METHIONINE

An essential amino acid, unable to be synthesized by the animal and must be provided through the diet. It is involved in many enzymatic processes.

## CARBOHYDRATES

### FIBRE

The structural carbohydrate component of feed, providing the necessary "skeleton" of the plant. Fibre is directly correlated with the amount of forage an animal can consume, restricting daily intake of nutrients. Digestible fibre provides energy to the animal via microbial processing. Indigestible fibre (largely ADF) passes through faeces.

## Neutral Detergent Fibre (NDF)

A measure of the overall fibrous bulk of the forage, including hemicellulose, cellulose and lignin. Generally, the lower the NDF the better the quality, as this allows the animal to rapidly absorb the nutrients of the feed.

**aNDFom** - NDF measured on an *organic matter basis*.

## Acid Detergent Fibre (ADF)

The least digestible component of the plant, comprising of cellulose, lignin, silica and insoluble nitrogen. Cellulose is variable in digestibility, as lignin content increases, cellulose digestibility decreases.

## Crude Fibre

A historical method of fibre analysis used to divide carbohydrates into digestible and indigestible fractions. Crude fibre accounts for most of the cellulose and only a portion of the lignin. It is not the most accurate method for quantifying fibre, particularly for forages. However, given that grains are low in lignin, it is a reasonable estimate of fibre in grains and is still used today as a measurement of fibre in grains and finished feeds.

## LIGNIN

An undigestible plant component. Lignin has a negative impact on cellulose digestibility. As lignin content increases, digestibility of cellulose decreases, thereby lowering the amount of energy potentially available to the animal.

## NON-FIBRE CARBOHYDRATES (NFC)

Non-cell wall carbohydrates consisting of starch, sugar, pectin and fermentation acids that serve as energy sources for the animal. In ruminants, NFC are broken down by the microbial population in the rumen and used as an energy source. NFC is calculated as  $100\% - (\text{CP}\% + (\text{NDF}\% - \text{NDICP}\%) + \text{Fat}\% + \text{Ash}\%)$ . Not to be confused with non-structural carbohydrates (NSC). Much of the difference between NFC and NSC is caused by the contribution of pectin and organic acids in the calculation of NFC, but which is not included in determining NSC.

## WATER SOLUBLE CARBOHYDRATES (WSC)

Carbohydrates solubilised and extracted in water. Includes monosaccharides, disaccharides and some polysaccharides (mainly fructan). Fructan is a major storage carbohydrate in grasses.

## ETHANOL SOLUBLE CARBOHYDRATES (ESC)

ESCs are included within the WSC fraction of the analysis. Carbohydrates solubilised and extracted in 80% ethanol. Includes primarily monosaccharides and disaccharides.

## STARCH

A polysaccharide found primarily in the grain/seed and/or root portions of plants. Starch is a good source of energy.



## NEUTRAL DETERGENT FIBRE DIGESTIBILITY (NDFD)

The percentage of potentially digestible NDF as determined by incubation in rumen fluid for a specified period of time and reported as a percentage of the NDF. The NDFD can be used to rank forages on potential fibre digestibility and in energy calculations.

### NDFD 24hr % of NDF

A higher result indicates better digestibility. This is beneficial to boost the animal's dry matter intake and result in higher nutrient intake, improving production.

## IN VITRO TRUE DIGESTIBILITY (IVTD)

Forage samples are incubated in rumen fluid and buffer for a specified time period at 39°C (body temperature). During this time, the microbial population in the rumen fluid digests the sample as would occur in the rumen. Upon completion, the samples are extracted in neutral detergent solution to leave behind the undigested fibrous residue. The result is a measure of digestibility that can be used to estimate energy.

### 24hr % IVTD

A measure of digestibility after 24 hrs in the rumen. Higher is more desirable.

## uNDFom

Undigested Neutral Detergent Fibre on an organic matter basis.

### uNDFom30

Represents the total amount of forage that is difficult to digest in 30 hours (1.25 days).

### uNDFom 120

Represents the total amount of forage that is difficult to digest in 120 hours (5 days).

### uNDFom240

Represents the total amount of forage that is difficult to digest in 240 hours (10 days).

## FAT

### CRUDE FAT

Traditionally determined by ether extraction method. In addition to fat, ether extraction may solubilize plant pigments, esters and aldehydes; this is why this measurement is called crude fat.

Fat is an energy dense nutrient and contains 2.25X to 2.8X the energy found in carbohydrates. Fat is added to rations to boost energy levels when intake may be limiting.

## VOLATILE FATTY ACIDS

Short chain fatty acids. Production of these occur during the fermenting process.

### LACTIC ACID

Lactic acid is most effective at lowering pH, therefore the aim of the ensiling process is to produce mostly lactic acid to be used as a preserving agent. It doesn't inhibit fungal growth during spoilage, therefore balancing lactic with acetic acid is paramount. The ideal lactic:acetic acid ratio in silage is 3:1.

## ACETIC ACID

The second most produced acid during good fermentation. Production of acetic acid largely occurs within the first few of days of the ensiling process. It is a inhibitor in fungal growth during fermentation. Moderate levels are beneficial, however, too much can be harmful as it can indicate loss of DM, pH drop and inefficient fermentation, resulting in loss of intake. Elevated levels may be the result of exposure to too much oxygen which can occur if silage is put up too dry, too slowly and/or not packed or covered adequately. Elevated levels can also occur when fermentation is prolonged by the high buffering capacity of legume silage or in ammoniated silage. Moderate to higher concentrations of acetic acid may be present if the silage was treated with certain bacterial inoculants. The ideal lactic:acetic acid ratio in silage is 3:1.

## BUTYRIC ACID

The production of butyric acid indicates undesirable clostridial fermentation. Elevated butyric levels may be a result of high moisture content at harvest, lack of adequate sugars and/or excessive soil contamination. High levels of butyric acid result in DM losses, and low nutritive value. It is undesirable during fermentation as it indicates poor DM and energy recovery. It can make feed unpalatable and can even cause animals to become sick after consuming more than 50grams per day.

## AMMONIA % OF CP

Ammonia is caused by the degradation of amino acids in plant proteins. Ammonia formation is unwanted during fermentation as it reflects DM and protein loss. However, formation in storage for corn silage reflects an increase in starch digestibility.

## TOTAL FATTY ACIDS

Total Fatty Acids (TFA) give a more defined and accurate measurement of fat content in feed, eliminating possible contamination from pigments, esters and aldehydes present in crude fat. Fatty acids (FA) play an important role in maintaining physiological processes in animals and have been shown to have nutrigenomic effects.

## SATURATED FATTY ACIDS

Include *Palmitic acid*, which function to partition nutrients to milk production.

Include *Stearic acid*, which is linked to milk and milk fat yield, as well as oleic acid production.

## UNSATURATED FATTY ACIDS (UFA)

Equals Monounsaturated Fatty Acids + Polyunsaturated Fatty Acids (MUFA + PUFA). When present in high levels in the diet, UFA have been shown to cause ruminal microbial population change, fermentation disruption and a negative impact on performance.

## Rumen Unsaturated Fatty Acid Load (RUFAL)

Equals oleic + linoleic + linolenic fatty acids.

### Oleic acid (C18:1)

Used & synthesized to aid in fat digestion, important to maintain/increase body condition score, involved in fertility.

### Linoleic acid (C18:2)

An essential FA, needing to be consumed through the diet as the cow's body cannot make it. Used to form other fatty acids vital to tissue function, fertility and inducing birthing.

### Linolenic acid (C18:3)

Another essential FA. Used to form other fatty acids vital to tissue function, fertility and embryo survival.

## MINERALS

### ASH

A measure of the total mineral content.

### POTASSIUM (K)

Important as an enzyme activator, nerve impulse conductor, osmotic pressure regulation and water balance, electrolyte balance, acid-base balance, and muscle contraction. Of particular importance in Springer cows. Aim for less than 2% for best results.

### CALCIUM (Ca)

Important in bone and teeth formation, blood clotting, muscle contractions, milk production, transmission of nerve impulses, cardiac regulation, activation and stabilization of enzymes.

### MAGNESIUM (Mg)

An enzyme activator, found in skeletal tissue and bone and important for neuromuscular transmissions.

### PHOSPHORUS (P)

Important in bone and teeth formation, key component of energy metabolism, milk production and body fluid buffer systems.

### SULFUR (S)

Needed for microbial protein synthesis, especially when non-protein nitrogen (NPN) is fed.

### CHLORIDE (Cl)

Important for acid-base balance, osmotic pressure regulation, and a component of gastric secretions.

### SODIUM (Na)

Important for acid-base balance, muscle contraction, nerve transmission, maintenance of body fluid balance, osmotic pressure regulation, cellular uptake of glucose and amino acid transport.

### IRON (Fe)

Important for hemoglobin and oxygen transport, and enzyme systems. An iron deficiency makes an animal more susceptible to infection.

### ZINC (Zn)

Particularly important in promoting strength of the immune system. Zinc is also necessary for protein synthesis, reproductive development and health related activities.

### COPPER (Cu)

Copper accumulates in the liver; having either an excess or a deficiency can cause numerous health effects, such as diarrhoea, poor growth and infertility.

### MOLYBDENUM (Mo)

Essential for regulating the pH balance in the body. It has been found to interfere with the absorption of copper and restrict transportation of calcium to the bones.

## MANGANESE (Mn)

Involved in bone development and energy. It is distributed throughout the body, muscles, bones, kidneys and liver. Manganese deficiency can lead to slower bone growth and repair, and can affect body strength.

## COBALT (Co)

Required for vitamin B12 synthesis.

## DIETARY CATION ANION DIFFERENCE (DCAD)

DCAD is the interrelationship of positively charged minerals (cations) and negatively charged minerals (anions) on animal performance. Sodium, Potassium, Chloride and Sulfur are the major contributors affecting the total charge of the diet, these are most commonly used to determine the DCAD value.

$DCAD = (Na^+ + K^+) - (Cl^- + S^-)$ .

## OTHER

### PRUSSIC ACID

Prussic acid (hydrocyanic acid) is a toxin not usually found in high concentrations in plants, but under certain conditions, (commonly through drought and after frost), prussic acid levels increase. Prussic acid acts by attaching to the hemoglobin in the blood, replacing oxygen, and suffocating animals on a cellular level. This results in symptoms of laboured breathing, foaming at the mouth, staggering, discoloured mucous membranes; and can quickly result in death at high levels – as quick as 15 minutes after consumption of toxic feed.

Prussic acid levels are highest in the leaf of the plant. Susceptible species include: sorghum, johnsongrass, sudangrass. Ruminants are particularly susceptible to prussic acid poisoning.

### NITRATE

Plants absorb nitrogen from the soil and use it to make proteins during growth and maturation. If the plant is stressed enough to reduce growth, then the plant stores excess nitrogen as nitrates. This commonly occurs during periods of drought, frost, or where the plants are unable to utilise excess nitrogen applied through fertilisers. Nitrate in plants is converted to Nitrite through digestion processes in ruminants. As with prussic acid poisoning, nitrite replaces oxygen in the blood, and presents as similar symptoms and potentially rapid death of the animal.

Nitrate levels are highest in the stem of forage. They accumulate in the bottom portion of the stalk and it is often recommended that suspect crops be chopped higher than usual. Nitrate levels may be reduced by up to 50% by ensiling.

All plants have the potential to accumulate nitrate, but some species are particularly susceptible; these are known as nitrate accumulators. These include: small grain forages (e.g. sorghum, wheat, etc), maize, canola, johnsongrass, lucerne, kikuyu, and a range of weeds. Ruminants are particularly susceptible to nitrate poisoning. Horses are more resistant to nitrate due to being hindgut fermenters.

### CHEMICAL RESIDUE

A residue is the remains of a chemical or heavy metal inside the plant at a point in time. The time it takes to break down these residues depends on the substance and the type of crop. Residues can become harmful when they exceed the maximum residue limit (MRL), which is the maximum level safe for consumption.

## QUALITY COMPARISON CHART

"Good" results are dependent upon product type. For example, a CP of 12% in cereal hay is considered excellent, but a CP of 12% in legume hay is considered to be quite a poor result. Please see below for an overview of interpreting your feed test results in Cereals and Legumes.

CEREAL HAY / SILAGE		V. POOR	POOR	AVERAGE	GOOD	EXCELLENT
<b>ME</b>	Metabolisable Energy	< 5	5 - 8	8 - 9.5	9.5 - 10.5	> 10.5
<b>CP</b>	Crude Protein	< 4	4 - 6	6 - 10	10 - 12	> 12
<b>NDF</b>	Neutral Detergent Fibre	> 70	70 - 60	60 - 54	54 - 50	< 50
<b>ADF</b>	Acid Detergent Fibre	> 55	55 - 50	50 - 45	45 - 40	< 40
<b>WSC</b>	Water Soluble Carbohydrates	< 10	10 - 12	12 - 18	18 - 25	> 25
<b>RFV</b>	Relative Feed Value	< 80	80 - 90	90 - 100	100 - 120	> 120

VETCH / LUCERNE HAY / SILAGE		V. POOR	POOR	AVERAGE	GOOD	EXCELLENT
<b>ME</b>	Metabolisable Energy	< 5	5 - 8	8 - 9.5	9.5 - 10.5	> 10.5
<b>CP</b>	Crude Protein	< 12	12 - 15	15 - 19.5	19.5 - 22	> 22
<b>NDF</b>	Neutral Detergent Fibre	> 60	60 - 53	53 - 41	41 - 38	< 38
<b>ADF</b>	Acid Detergent Fibre	> 40	40 - 36	36 - 32	32 - 29	< 29
<b>WSC</b>	Water Soluble Carbohydrates	< 7	7 - 9	9 - 11	11 - 15	> 15
<b>RFV</b>	Relative Feed Value	< 90	90 - 100	100 - 120	120 - 180	> 180

# VISUAL INSPECTION EXPLAINED

The inspection process results in a Feed Central visual grade and enables the assessment of the overall quality and suitable purpose of each lot. The Visual Inspection portion of the Quality Certificate summarises the data collated during the inspection process and is then displayed on the website for that lot.

Please note that the visual parameters are only visible if the sample has undergone a Feed Central inspection.

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**QUALITY CERTIFICATE**

FEED TEST  
IN-LAB VISUAL  
ON-FARM INSPECTION

Back to Feed Central

Contact Details:  
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16092021  
LOT #: 47586 Lucerne Hay  
Greener Network - 1st cut to 2021

**SUMMARY**

DOMINANT SPECIES: Lucerne  
VARIETY: L50  
STORAGE STATUS: Shredded  
STAGE: 1st  
ME (M/KG): 8.00  
% MCP: 24.00  
PROTEIN (%): 23.40  
STARCH (%): 1.60

COMMODITY: Hay  
VISUAL GRADE: FC A  
Lge Sq: 670  
Bxk3: 670 (kg)  
BALE / PACKAGE WEIGHT: 670 (kg)

**FEED CENTRAL INSPECTOR COMMENTS**

Note line of hay in 8 x 4 x 3 bins in the shed. Minor bleaching of stems due to number of rainings. Good leaf colour with reasonable attachment. 1st cut irrigated lucerne.

**DETAILED VISUAL ANALYSIS**

CROP		INSPECTION		STEAMING	
Type / Species	Lucerne	Inspector	Accredited Inspector	Steamed at baling?	No
Variety	L50	Inspection Date	15/09/2021	Harvest Date	30-Aug-2021
Crop Height	420	Inspection Manager	Stephen Page	Baling to Storage Time	Same day
Whut cut is it?	1st	<b>MOISTURE</b>		Curing additive	No
Irrigated	Yes	Moisture Average (%)	18.5	<b>STEM</b>	
<b>VOLUME</b>		Moisture High (%)	20	Stem Length Comment	Reasonably even
Quantity	0	Moisture Low (%)	12	Chopped	No
Bale / Package Weight	670	Number of Tests	20	Stem Thickness (mm)	Lucerne 3-4mm
Volume in Tonnes	0	Number of Tests >20%	5	Estimate 80% Stem Length	200 (mm)
<b>PACKAGING</b>		Moisture Comment	Started baling at 12% dew increased moisture	<b>CLOUR</b>	
Broken Strings	<5%	<b>WEEDS</b>		Colour of Core Samples	Majority fresh soft green <20% dew or sun bleach
Bale / Package Size	Lge Sq Bxk3	Wood varieties present	Grass	Colour Comment	Green with minor bleach stalk
Bale / Package Size	665	Wood Amount	Nil - 1%	<b>LEAF</b>	
Comment		Weeds Comments	Grass on head land	Leaf Retention	Generally connected, >80% retention on stem and 95% in bale
Wrap Type	5 - string	<b>FOREIGN MATERIAL</b>		Leaf Retention comment	Good
Material Consistency	Very even <5% variation in material	Percent of Foreign Material sighted.	Nil	<b>AROMA</b>	
<b>ORGANIC/GMO</b>		Foreign Material Comments	Irrigated paddock with regular cuts	Aroma	Normal to sweet hay smell, no dust
Is the product Organically Certified?	No	<b>MATURITY</b>		Aroma Comment	Pleasant aroma
95% free GMO	Yes	Lucerne Cut	1st	<b>CUTTING &amp; CURING</b>	
<b>STORAGE</b>		Rainfall damage	No Rainfall	Mower Conditioner	
Storage Comment	Good safe dry sheds	How Cut	Pre-flowering	No	
Property Access	No road train During diesel access	Maturity When Cut	Reconditioned	No	
Storage Status / Stage	Shredded	Raked Times	4	Weather While Curing	
Property Access	Semi-trailer / single	Weather While Curing	Cool nights	Weather While Curing	
Property Access	Drop deck B-Double	How Long Cured For (Days)	Fine Days	How Long Cured For (Days)	
Storage Surface	Gravel	Curing Comment	Cool nights warm days no Rain no fog	Curing Comment	
<b>RODENT</b>					
Mice/Rats	None Observed				
Baiting Strategy	None observed				

## CVD

All Feed Central advertised product is listed with a commodity vendor declaration, visible through the online version of the certificate. This is a valuable source of information used to determine if the feed may contain chemical residues or restricted animal material.

## PHOTOS

Through the online version of the quality certificate, multiple photos of the product may be viewed. These supplement the information provided in the visual inspection of the product.

## FEED CENTRAL INSPECTOR COMMENTS

Each line of hay is inspected by a certified and trained Feed Central representative. The inspector's comments provide a general overview of the product.

### GRADE

Is designed to give the Buyer and Seller an initial guide to the quality of the product. Determined by a series of physical characteristics of the product and summarised to produce a grade.

GRADE	HAY / STRAW DESCRIPTION
FC AA	VERY GOOD to EXCEPTIONAL QUALITY
FC A	GOOD/AVERAGE Normal dairy/beef performance quality.
FC B	BELOW AVERAGE Usually weather damaged or dew bleached, less than 50% colour - seek guidance from Feed Analysis.
FC C	WELL BELOW AVERAGE Price dependent, use for mulch or bedding, generally not for fodder. Contact a salesperson first.

### CROP

**Type/Species:** The dominant crop type. e.g. *Wheat, Barley, Lucerne*.

**Variety:** The dominant variety.

**Blend:** The minor product mixed with the dominant species and the percentage of the mix.

**Awnless:** Indicates if the hay doesn't have an awn / beard. This is of particular importance to chaff mills or for feeding to horses and young calves. Generally, current varieties have softer beards and are therefore less of an issue to mature cattle (only relevant for Wheaten and Barley hay).

**Irrigated:** Indicates if the product was grown under irrigation (yes) or is a dryland crop (no).

### VOLUME

**Number of Bales:** The number of bales available.

**Bale Weight (kg):** The weight of each bale, on average. This is determined by *baler weights, portable scales, estimate, past experience, or weighbridge*.

**Total Tonnage:** This is the result of the bale numbers x bale weights. It is important information for loading configuration and delivered prices.

## PACKAGING

**Bale size:** The size of the package. These are traditional approximate sizes in feet. e.g. *Round 5x4 or 4x4, Large Squares 8x4x3, 8x3x3, etc.*

**Broken Strings:** Indicates if there are numerous strings broken throughout stack; an indication of the bale integrity.

**Wrap Type:** How the product is secured. e.g. *string, net wrap, silage plastic wrap, bulk etc.*

**Wrap Type Comment:** Inspector comment, providing further detail on the wrap. e.g. *Loose net, missing strings, etc.*

**Material Consistency:** How the material quality varies between bales and within the lot.

## ORGANIC /GMO

Organic and Genetically Modified status of the product.

## STORAGE

**Storage Status:** Indicates how the quality of the product may change over time. Options include *shedded, tarped, no covers, hay caps etc.*

**Storage Surface:** This gives the buyer a strong indication of the availability/quality of the bottom bales especially when stacked outside. Options include *concrete, plastic, straw, dirt, paddock etc.*

## LEAF

**Leaf Retention:** Higher quality hay will have more leaf connected to stem. This can be affected by moisture amounts and use of mechanical aids such as steamers.

**Leaf Retention Comment:** Further inspector comments on leaf. e.g. *Lucerne leaf becomes detached when disturbed in bales.*

## RODENT

**Mice/Rats:** Indication of rodents in the product.

**Damage Caused:** Indication of the level of damage caused by rodents.

**Baiting Strategy:** Evidence of a baiting strategy in place. Indicates the likelihood of future rodent damage to the product.

## INSPECTION

**Inspection Manager:** The Feed Central member overseeing the inspection of this lot.

## MOISTURE

**Moisture Average:** The average of the moisture tests taken.

**Moisture High:** The highest moisture level recorded at time of inspection. High quality hay with no internal fermentation or heating typically has a moisture below 18%.

**Moisture Low:** The lowest moisture level recorded at time of inspection.

**Number of Tests:** The total number of moisture tests carried out by the inspector, which are used to provide the moisture data. A higher number of tests gives greater confidence in moisture results.

**Number of Tests >18%:** The number of moisture spikes that read greater than 18%. Our trained transport companies may be able to add a level of quality control to avoid high moisture bales.

**Moisture Comment:** Additional inspector comments on the moisture profile of the product.



## WEEDS

**Weeds Present:** Type of weeds observed in the lot. This is an indication only, not a guarantee.

**Weed Amount:** An estimate of the volume of weed observed as a percentage of the overall product; an estimate only – not a guarantee.

**Weed Comments:** Inspector comment on the identified weeds. e.g. *weeds present originate from edge of paddock.*

## FOREIGN MATERIAL

**Foreign Material:** Description of foreign material observed in bales. e.g. *sticks, stones, dust etc.*

**Percent of Foreign Material:** Estimate of total foreign material as a percentage in the lot.

**Foreign Material Comments:** Inspector comment regarding foreign material observed.

## MATURITY

**Stage Cut:** Indication of the maturity of the plant when cut. Generally, the younger the better.

**Maturity Percentage Amount:** Approximate percentage of the crop that the maturity stage cut comment represents. High amounts of seed may increase risk of rodent damage and inflate ME levels.

## AROMA

**Aroma:** Indication of the smell of product. e.g. *Sweet, Normal for species, Dusty, mouldy, etc.*

**Aroma Comment:** Additional inspector comments regarding aroma of the product.

## CUTTING & CURING

**Rain Amount:** Approximate mm of rain during curing.

**Rain Period:** The period of time the rain fell over is more important than the amount of rain. 10mm over 3 days will do more damage than 30mm over 10 minutes.

**How Cut:** Indicates how the product was cut. e.g. *For Straw it may be a conventional or rotary header; for Hay it may be a mower conditioner.* The different methods result in a product better suited to different end users.

**Reconditioned:** Indicates if the product was re-conditioned (post initial cutting and conditioning).

**Raked:** Number of times it was raked before baling. A lower number of rakings tend to better preserve the product from bleaching, possible contaminants, and retain better leaf on stem.

**Weather While Curing:** Summary of the dominant weather conditions during the curing period.

**Curing Duration:** Number of days between cutting and baling.

**Curing Comment:** Inspector comment regarding curing to provide further detail e.g. *light shower 2nd day of curing period.*

**Weather Prior To Harvest And How Much Of The Crop Lodged:** Give an indication of the causes for discoloration and aroma changes.

**Time From Grain Harvest To Windrowing:** Provides an indication of possible bleaching or staining on the straw.

**Steamed At Baling:** This indicates better leaf retention in heavier bales.

## HARVESTING

**Harvest Date:** Month and year product was harvested.

**Baling to Storage Time:** The length of time taken after baling to move to final storage can indicate external surface bleaching, or moisture from damp ground, etc.

**Curing Additive:** Inoculants applied at baling reduces the risk of fermentation from moisture above 18%.

## STEM

**Estimate 80% Stem Length:** An estimate of the length of the baled product in cm.

**Chopped:** Impacts intended end use. A shorter stem length reduces mixing costs; however, it can make it more difficult to handle especially if feeding out in hay racks or paddock.

**Stem Thickness:** Estimate of stem width for approximately 80% of the stems. Stem width has a correlation to digestibility. The finer the stem, the higher the quality (for most purposes).

**Stem Length Comment:** Inspector comment about the stem length.

## COLOUR

**Colour of Core Samples:** Core samples are taken from a large number of sample points throughout the lot. This represents the colour of the product inside the bale.

**Bleaching or Discoloration:** A visual measure of the damage caused by rain or sun during curing.

**Colour Comment:** Inspector comment regarding colour. *e.g. Colour is consistent and bright, etc.*



## ONLINE FUNCTIONALITY FOR VIEWING YOUR RESULTS

### WHAT OUR FEED TEST RESULTS LOOK LIKE

When you test with us, you will receive a Quality Certificate similar to the one below.

Our Quality Certificates are clean, simple and easy to read! When viewing your Quality Certificate online, you are able to hover your mouse over parameters of interest to gain an explanation of the parameter.

FIBRE & RELATED		MINERALS & RELATE	
% Neutral Detergent Fibre	36.30	% Potassium (K)	
		% Calcium (Ca)	
Neutral Detergent Fibre (NDF): A measure of the overall fibrous bulk of the forage. In simple terms the lower the number the better; because the lower the NDF reading the easier and faster it will be for the animal to absorb the nutrients.			

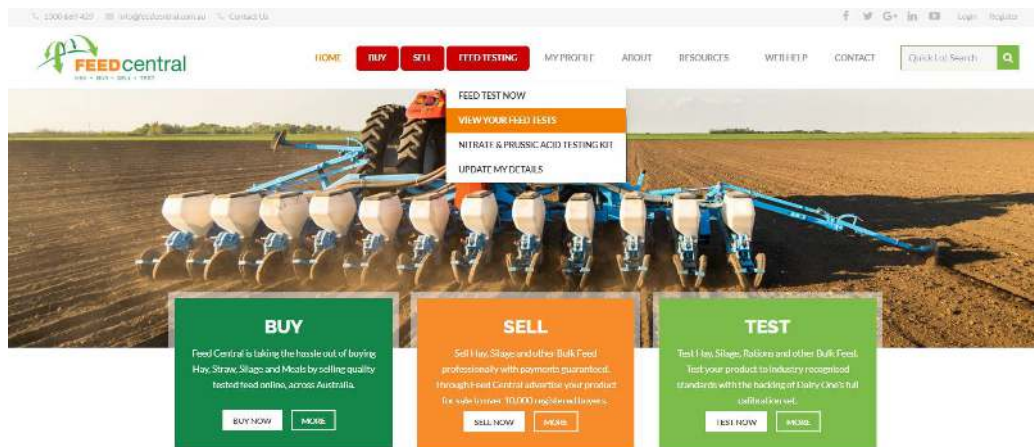
 FEED TEST, <input type="radio"/> IN-LAB VISUAL, <input type="radio"/> ON-FARM INSPECTION" data-bbox="490 270 700 330"/> 							
DETAILED FEED ANALYSIS (DRY MATTER BASIS)							
ENERGY & RELATED		PROTEIN & RELATED		FIBRE & RELATED		MINERALS & RELATED	
LOT #: 66805 Lucerne Hay				NIR - Feed Test			
ME 1X (MJ/kg)	9.75	% Crude Protein	21.70	% Neutral Detergent Fibre	36.30	% Potassium (K)	2.22
Relative Feed Value	169.00	% Available Protein	20.20	% aNDFom	34.00	% Calcium (Ca)	1.04
Relative Forage Quality	168.00	% Soluble Protein	9.00	% Acid Detergent Fibre	29.30	% Magnesium (Mg)	0.33
% Crude Fat	1.20	% Degradable Protein	17.00	% TDN	59.00	% Phosphorus (P)	0.26
% ESC (Simple Sugars)	8.00	% ADICP	1.50	% Starch	1.60	% Sulfur (S)	0.27
% Non Fiber Carbo. (NFC)	34.80	% NDICP	4.10	% Lignin	7.60	% Chloride (Cl)	0.97
DE 1X (MJ/kg)	11.52	Degradable Protein % of CP	76.00	% Moisture	20.50		
Horse DE (MJ/kg)	10.45			% Dry Matter	79.50		
Net Energy Gain (MJ/kg)	2.76			% Ash	10.10		
Net Energy	5.70			% WSC (Water Sol. Carbs.)	10.50		
Lactation (MJ/kg)				NDFD 24hr % of NDF	31.00		
Net Energy	5.13			% uNDFom30	23.80		
Maintenance (MJ/kg)				% uNDFom120	22.50		
				% uNDFom240	20.60		

## VIEWING YOUR FEED TEST RESULTS ONLINE

You can log in at any time to view your current and historical Feed Test results.

### 1. Get started

Visit [www.feedcentral.com.au](http://www.feedcentral.com.au), hover over the 'Feed Testing' tab and select the 'View your Feed Tests' button.



### 2. Logging in

Your username is your email. If you don't know your password you can simply reset it online or give us a call.

The image shows the login form on the Feed Central website. At the top, there are two buttons: 'Sign In' and 'Register'. Below this is a green header with the text 'Login Details'. The main form area contains the following elements:

- A message: 'Please enter your username and password below to sign into the Feed Central website.'
- A 'Username' field with a red asterisk and '(email address)' next to it. The input field contains the placeholder text 'Enter your username here'.
- A 'Password' field with a red asterisk and 'Forgot your password?' next to it. The input field contains the placeholder text 'Password for signing in'.
- A 'Sign In' button located below the password field.

### 3. Personalise your view

You will see all of your past Feed Tests through the 'Manage My Lots' tab. You can then filter how you view your results online by selecting the 'Personalise My View' button. For example, you can filter for specific date ranges, parameters, product types and more! You may also download these results as an excel file by simply clicking the 'Export' button.

The image shows the 'Manage My Lots' filter interface on the Feed Central website. At the top, there is a green header with the text 'CLIENT PROFILE | FEED CENTRAL QUALITY ASSURANCE | FEED CENTRAL QUALITY ASSURANCE'. Below this is a navigation bar with tabs for Contacts, Enterprise Activities, Trading Details, Addresses, Property Locations, Invoices & History, Manage My Lots, Privacy & Marketing, and Manage Alerts. The 'Manage My Lots' tab is selected. The main filter area contains the following elements:

- A search bar with the placeholder text 'I'm looking for'.
- A 'Dominant Species' dropdown menu.
- A 'Grade' dropdown menu.
- A 'Storage' dropdown menu.
- A 'Packaging' dropdown menu.
- A 'Status' dropdown menu.
- A 'Protein Minimum' dropdown menu.
- A 'M.F. Minimum' dropdown menu.
- A 'lot Number' input field.
- A checkbox for 'Certified Organic Only'.
- Buttons for 'ADD NEW LOT', 'EXPORT', 'PERSONALISE MY VIEW', and 'CLEAR FILTERS'.
- A 'STANDARD VIEW' button and a page navigation control showing '1' of 1 items.

# SHARING YOUR FEED TEST RESULTS

## Email Your Results

When viewing your Quality Certificate online, you are able to directly share your results with others who have interest in the results. Simply select the *Email a Friend* button at the top of the certificate, and a link to the results is sent.

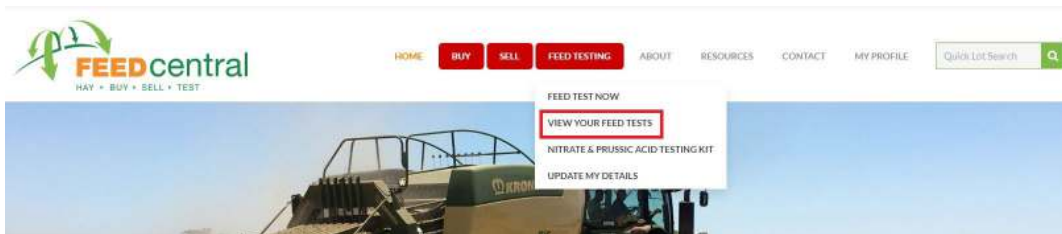


## Authorised 3rd Parties

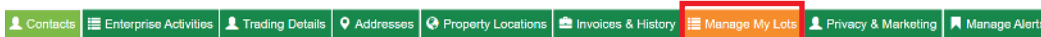
Automatically share your feed testing results with others. You'll need to give Feed Central a call on 1300 669 429 to set up this functionality. This feature is designed to automatically release your results to people you nominate and enable your results to be visible under their own Feed Central profile. The use of this feature will provide third parties with an email upon receipt of your sample for testing, informing them of the expected turnaround date for results. Another email is sent when results are ready to view. This is a very useful tool for farm advisors such as nutritionists, agronomists, etc. For privacy purposes these third parties can NOT view your complete account information, but will identify the sample by your business name and sample reference provided.

Through your own profile you are able to see who has access to your results (see steps below).

1. Click on *View Your Feed Test* (under the Feed Testing tab).



2. Log in to your Feed Central profile.
3. Click *Manage My Lots*.



4. Click *Personalise My View*.



5. Tick *Authorised 3rd Parties*, then click *go*.




6. An extra column will appear to show you who has access to your results.


Lot #	Type / Species	Commodity	Grower Reference I.D	Listing Date	Authorised 3rd Parties	% Dry Matter (DM)	Crude Protein (C.P)
65832	Wheaten (awned)	Hay	2020 Wheaten	20-May-21	kimberley@feedcentral.com.au	93.3	10.3

## RE-TESTING WITH FEED CENTRAL

### REQUEST A FREE SAMPLE SUBMISSION KIT



 [www.feedcentral.com.au/nir-feed-test-pack](http://www.feedcentral.com.au/nir-feed-test-pack)

 1300 669 429

 [info@feedcentral.com.au](mailto:info@feedcentral.com.au)

### LIST OF TEST SERVICES

- NIR Feed Test - Ruminant, Swine & Poultry
- Wet Chemistry
- Prussic Acid - qualitative and quantitative
- Nitrate - qualitative and quantitative
- Chemical Residues
- Mould & Yeast
- Mycotoxins
- Germination
- Vigour
- Tetrazolium
- Soil Testing
- Manure Testing
- Water Testing
- Fertiliser Testing
- Visual Assessment

If you have any other requests, feel free to give us a call.