

TRIAL DATA AND EVALUATIONS FOR RLF PASTURE PLUS



Pasture
Plus



Ultra
Foliar

NEW ENGLAND REGION (Northern) NSW AUSTRALIA

2014/2015



INTRODUCTION

During 2014/15, a series of pasture evaluations, analysis and measurement trials were conducted on several large grazing properties in the New England region of northern New South Wales. The owners of eight properties joined with RLF to take part in these trials to determine the effectiveness of RLF's Ultra Foliar **Pasture Plus** on their paddocks.

Two approaches were taken :

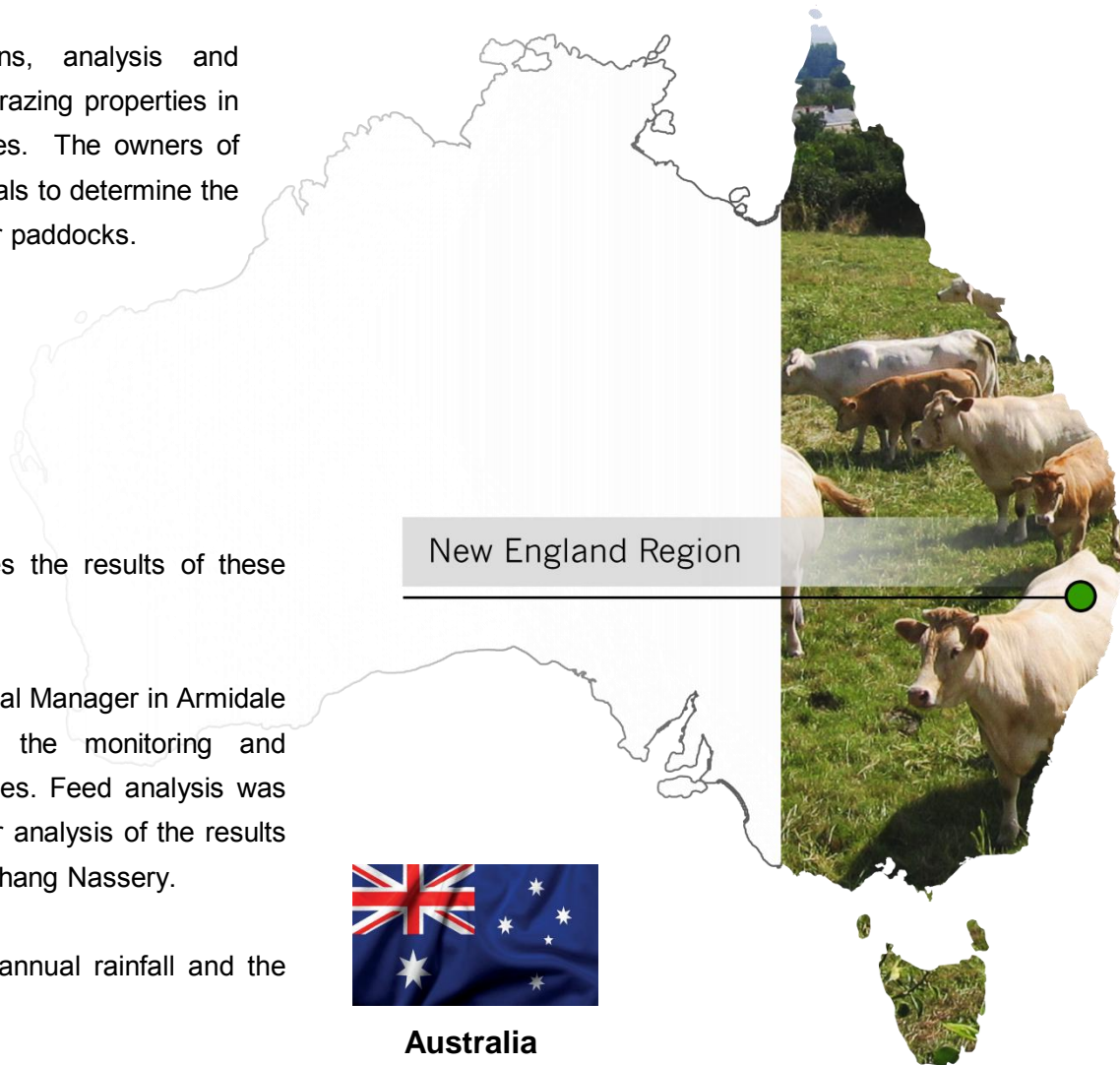
1. Grass measurement
2. Grass analysis

This Product Evaluation Report reviews and analyses the results of these evaluation trials.

The trials were under the management of RLF's Regional Manager in Armidale Mr Greg Kaynes, and he was responsible for the monitoring and measurements of pasture on the participating properties. Feed analysis was carried out by an accredited laboratory service. Further analysis of the results has been provided by RLF's Head of Technical Dr Hooshang Nassery.

This area historically receives approximately 800mm annual rainfall and the predominant businesses are for beef and/or dairy cattle.

The map shows the region that all participating properties were situated in.



LIST OF PARTICIPATING PROPERTIES

Initially, grass measurement results provided the impetus for a more concerted study of the feed quality benefits of Pasture Plus. The analysis of the quality of the feed from other properties then followed. The properties that participated in this study are :

| Name of Property | Name of Farmer or Owner | Location or Property | Type of Business (i.e. beef cattle, dairy cattle, mixed farming) |
|------------------|-------------------------|----------------------|---------------------------------------------------------------------|
|------------------|-------------------------|----------------------|---------------------------------------------------------------------|

For Grass Measurement

| | | | |
|-----------|-----------|----------------------|------------------------|
| Rockvale | Mabbott P | Kentucky | Mixed (beef and sheep) |
| Wilmott | Maloney D | Ebor | Beef Cattle |
| St Helena | McPhee J | Armidale (Wollomomb) | Beef Cattle |

For Grass Analysis

| | | | |
|--------------|-----------------|----------|------------------------|
| Willow Park | McKemey D and M | Guyra | Mixed (beef and sheep) |
| Swallowfield | Adams R and L | Armidale | Mixed (beef and sheep) |
| Walcha Dairy | Nottman P | Walcha | Dairy Cattle |
| Glenbrook | Mitchell W | Armidale | Beef Cattle |
| Salway | Mulligan R | Walcha | Mixed (beef and sheep) |

BACKGROUND TO THE TRIAL

There is a back story to these trials that began to emerge with the surprising results that were achieved when growers and graziers experimented with RLF Ultra Foliar **Pasture Plus**. Whilst not totally unexpected from RLF's perspective, the momentum for more structured evaluation trials arose from these small but significant beginnings.

Firstly, grass measurement.....

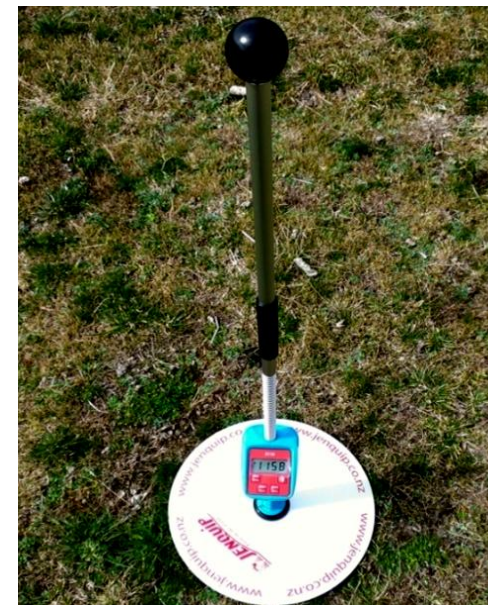
Several grass measurement experiments were carried out on a number of properties in the New England grazing region of northern NSW. At this time property owners or managers were seeking to include **Pasture Plus** into their fertilising routines, as all were looking for the advantages that RLF's Ultra Foliar products were reported to deliver. In general, **Pasture Plus** was sprayed onto a section of pasture or paddock and the growth responses measured and compared with an adjacent area using a digital plate meter (DPM).

Interesting results also began to emerge in one grass measurement replicated trial being conducted on yet another property (suspended however due to prolonged drought conditions) that demonstrated the degree of variation in paddock sections. The figures are presented as an addition to the **SUMMARY OF TRIAL RESULTS** section at page 21/25, because even in the trial's current incomplete state, the raw data supports the major benefit outcomes of **Pasture Plus**.

Followed by, grass analysis.....

Later, as more properties joined these evaluation trials, independent feed-analysis of the pasture was then undertaken. These results showed that the treated pasture had higher crude protein, and lower acid detergent and neutral detergent fibre. This resulted in an increase in the digestibility and metabolisable energy of the feed.

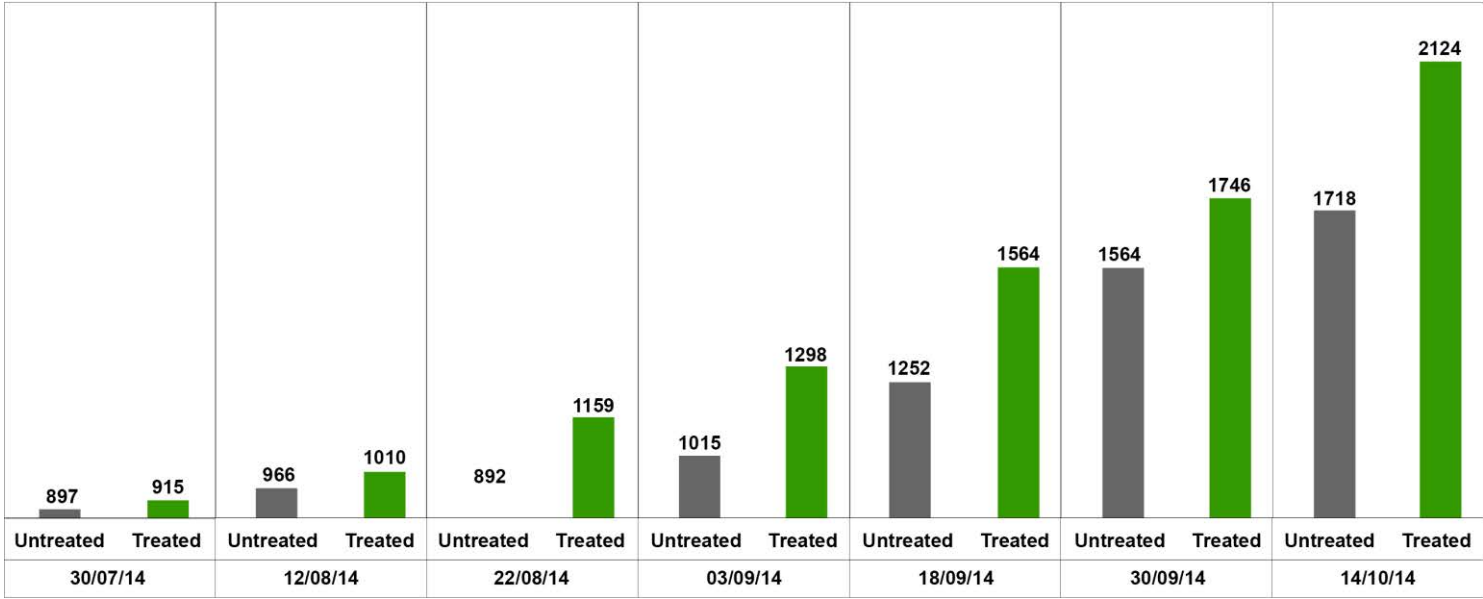
This Product Evaluation Report presents the data, analysis and conclusions from these trials.



Three Case Studies of grass measurement trials – the forerunners to the grass analysis trials – are outlined as follows :

CASE STUDY NO.1 | ROCKVALE

Digital Plate Meter Readings of Treated and Untreated Pasture

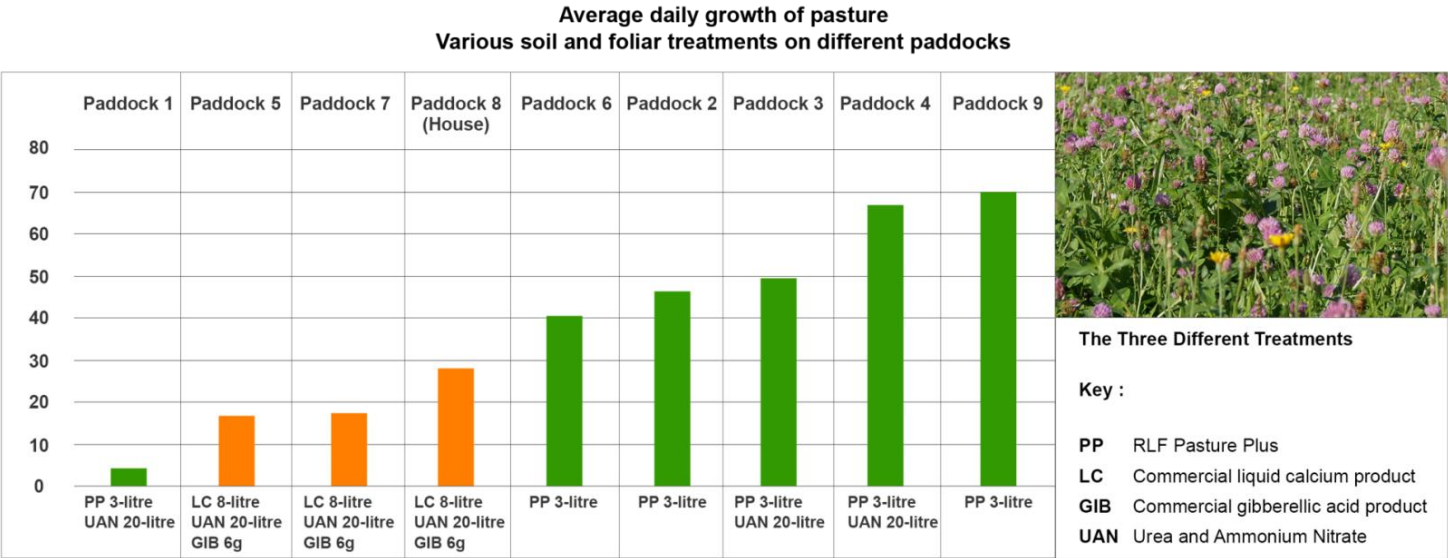


Comments

As can be seen from the DPM readings of both the Treated and Untreated (Control) sites, there was negligible difference in green matter at the start of the treatment on 30th July 2014. But from that point onwards **Pasture Plus** consistently measured higher production at every sampling. On average, the growth factor of the treated pasture over that of the untreated pasture was approximately 20%, each time it was sampled.

CASE STUDY NO.2 | WILMOTT

In this study, nine different paddocks were evaluated using three different methods of soil and/or foliar treatments. It was designed to measure the response of the pasture to each of the treatments. Pasture was measured after seventeen (17) days and the growth outcomes recorded. The graph opposite shows these outcomes.



Product trade names have been 'categorised' where competitor product has been used (and shown in orange). **Pasture Plus** has been shown in green.

Comments

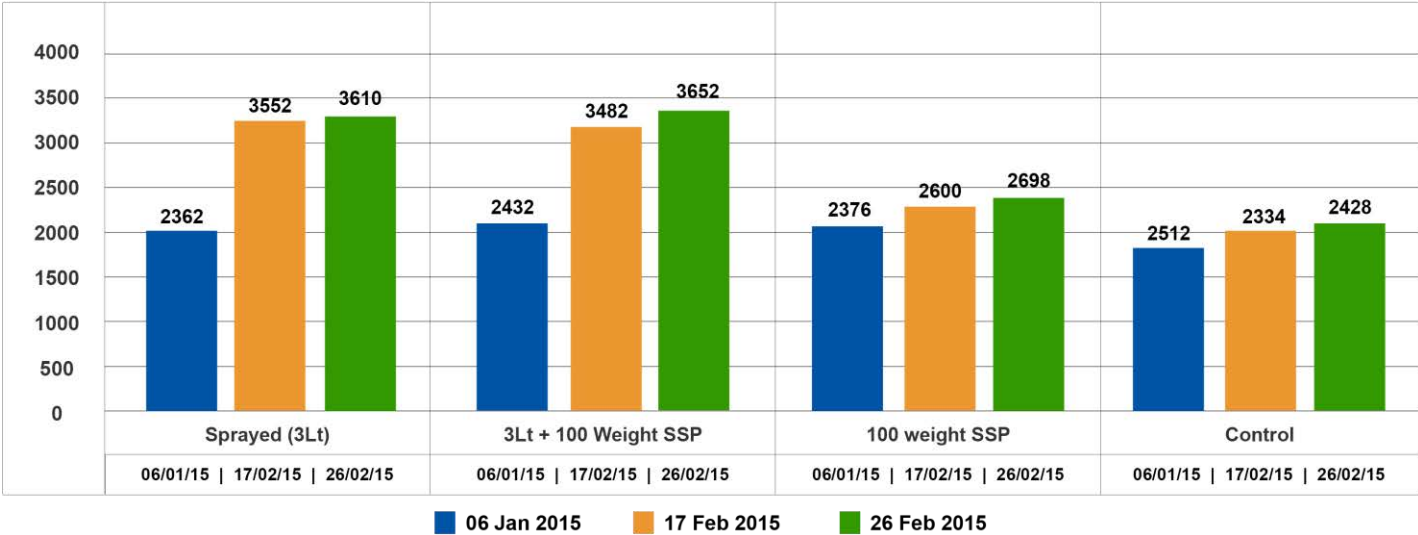
As can be seen from the graph, of the six (6) paddocks sprayed with **Pasture Plus**, five of them showed growth improvement over Control. Paddock 1 result was adversely affected because the grower ran out of feed for his cattle and required access to this paddock for his stock. This therefore rendered this result unreliable.

Furthermore, when products containing gibberellic acid and calcium were used as Control, there was similar growth stimulation with **Pasture Plus** that contrasted with no benefit resulting from the use of other products. It was more surprising to find that combined GIB (a gibberellic acid source known to stimulate pasture growth) and LC (a liquid calcium product), consistently and considerably produced less pasture than the **Pasture Plus** treatment. It is also noted that the higher cost of such unconventional treatments should also be a factor when considering results.

As the graph shows, the daily trend in pasture growth (as per kg/ha) for paddocks treated with **Pasture Plus** were a few folds higher than their respective Controls.

CASE STUDY NO.3 | ST HELENA

The response of Pasture Plus as opposed to SSP Treatment and Control



Comments

At St Helena, the response of the pasture to 3-litres **Pasture Plus** was compared with a Control and a treatment that had received applications of Single Superphosphate (SSP). As the graph highlights, the dry matter levels between the start of treatment, in this case 10th December 2014 and the first measurement taken on 6th January 2015, differed by a couple of hundred kilograms per hectare between the Control and sprayed areas.

However, in subsequent measurements the **Pasture Plus**-treated site increased in yield by over 1,000kg per hectare compared to the respective Controls.

This trial showed that on this particular site, topdressing of SSP had little impact in the growth of the pasture over the two-month period, whilst **Pasture Plus** increased growth by some 40% when compared with the untreated Control pasture.

METHOD AND MANAGEMENT OF THE TRIAL

The following methodology and management gives background information and further insight into the processes involved in conducting a large-scale, multi-site evaluation trial such as undertaken in this Product Evaluation Report.

For Grass Measurement

• Measuring the Pasture Growth

A digital measuring device called a Rising Plate Meter was used to measure the growth of pasture. This is a farm management tool that approximates pasture mass. The plate is placed on the pasture and based on grass height takes a reading, providing the average dry matter per hectare, when many such readings are averaged by walking and recording over the treated and control sections.

For Grass Analysis

• Collecting the Samples

All samples collected from each of the properties for analysis were independently tested by an accredited agricultural agency. As such, the procedures set down by the testing facility were strictly followed. In evaluation trials such as these, it is important to understand that fresh pasture samples are perishable, so same day, and/or very quick delivery to the testing laboratory was required to minimise chemical changes that may occur after collection. This imperative was observed.

• The Sampling Procedure

The following steps were undertaken at every site.

1. Walk through the paddock within the designated zone for collection.
2. Cut a sample to ground level with hand shears from near the toe of your right boot every 10 steps.



METHOD AND MANAGEMENT OF THE TRIAL

Continued.....

3. Avoid including soil or dung in the sample.
4. Ensure that an area of the same size is cut each time (approximately 6cm x 6cm) and that samples are taken from at least 15 locations in the paddock.
5. Combine the samples, mix thoroughly and, if required, sub-sample to obtain a portion for submission not exceeding 500g.

Managing the Untreated Pasture (Control) v Treated Pasture sites

For these evaluations the Control plots equate to the standard farmer practice. It is recognised that farmer practice will vary from farm to farm, so a standard procedure for either measurement or sample collection was adopted for all properties.

In each case, the grazier identified a paddock that he wanted to conduct the trial of **Pasture Plus** on. The majority of the area was sprayed, deliberately leaving one area untreated. Once the spraying was completed, an area was identified using star-pickets (or posts), from which the measurement of pasture growth would be made. Each paddock had two areas marked out with star posts – one area for **Pasture Plus**, the other being for Control. The reason star posts were used was to ensure the exact same line was followed for measurement purposes each time a new sample was taken. Star posts were approximately 50m apart and it was from these marked areas that the grass samples (in accordance with the governance given above) was taken.

General Parameters

Every property was measured the exact same number of times, and although variations existed between locations insofar as 'standard farmer practice' was concerned – and these have all been recorded and noted along with the results – the measuring and sampling techniques used did not vary.

Graziers were required to keep the paddocks clear of stock.

GRASS ANALYSIS TRIAL DATA

The Measurements of Pasture Quality comparing untreated with Pasture Plus treatment

| | Willow Park | | Swallowfield | | Walcha Dairy | | Glenbrook | | Salway | |
|---------------------------------------------------------|-------------|---------|--------------|---------|--------------|---------|-----------|---------|-----------|---------|
| | Untreated | Treated | Untreated | Treated | Untreated | Treated | Untreated | Treated | Untreated | Treated |
| Dry Matter (%) | 28.1 | 28.9 | 37.2 | 36.2 | 37.9 | 35.6 | 24.1 | 23.7 | 30 | 21 |
| Moisture (%) | 71.9 | 71.1 | 62.8 | 63.8 | 62.1 | 64.4 | 75.9 | 76.3 | 70 | 79 |
| Crude Protein (% of dy matter) | 13.7 | 15.3 | 5.5 | 8.7 | 16.8 | 21.6 | 19.7 | 22.2 | 17.6 | 26.4 |
| Acid Detergent Fibre (% of dy matter) | 32.4 | 31.2 | 38.1 | 34.9 | 33.6 | 32.5 | 18.8 | 20.3 | 29.3 | 23.2 |
| Neutral Detergent Fibre (% of dy matter) | 59.8 | 58 | 71.7 | 66.5 | 59.5 | 56.7 | 45.9 | 46.2 | 56.3 | 51.7 |
| Digestibility (DMD) (% of dy matter) | 65.3 | 67.3 | 52.5 | 55.5 | 66.5 | 72.1 | 79.2 | 78.8 | 60 | 65.5 |
| Digestibility (DOMB) (% of dy matter) | 62.2 | 63.8 | 51.3 | 53.9 | 63.2 | 67.9 | 73.9 | 73.6 | 57.7 | 62.3 |
| Est. Metabolisable Energy (Calculated) (MJ/kg DM) | 9.3 | 10 | 7.4 | 7.9 | 9.8 | 10.8 | 12 | 11.9 | 8.7 | 9.6 |
| Time post application | 4 Weeks | | 4 Weeks | | 4 Weeks | | 5 Weeks | | 6 Weeks | |

GRASS ANALYSIS TRIAL DATA

The change in pasture quality in Pasture Plus over Control (by percentage)

| | Willow Park | | Swallowfield | | Walcha Dairy | | Glenbrook | | Salway | |
|-------------------------------------------------------------|-------------------------------------------|---------|-------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------|---------|
| Movement over control % | Untreated | Treated | Untreated | Treated | Untreated | Treated | Untreated | Treated | Untreated | Treated |
| Crude Protein (% of dry matter) | | 11.7% | | 58.2% | | 28.6% | | 12.7% | | 50.0% |
| Acid Detergent Fibre (% of dry matter) | | -3.7% | | -8.4% | | -3.3% | | 8.0% | | -20.8% |
| Neutral Detergent Fibre (% of dry matter) | | -3.0% | | -7.3% | | -4.7% | | 0.7% | | -8.2% |
| Digestibility (DMD) (% of dry matter) | | 3.1% | | 5.7% | | 8.4% | | -0.5% | | 9.2% |
| Digestibility (DOMB) (% of dry matter) | | 2.6% | | 5.1% | | 7.4% | | -0.4% | | 8.0% |
| Est. Metabolisable Energy (Calculated) (MJ/kg DM) | | 7.5% | | 6.8% | | 10.2% | | -0.8% | | 10.3% |
| Time post application | 4 Weeks | | 4 Weeks | | 4 Weeks | | 5 Weeks | | 6 Weeks | |
| Additional Notes regarding 'standard farmer practice' | No fertiliser history for past 5 years | | No fertiliser history for past 5 years | | Annual application : 60g/ha Gib. Acid 400kg/ha UREA 1.2 tonne/ha manure 20kg/ha phosphorus 20kg/ha sulphur | | Annual application : 20kg/ha phosphorus 20kg/ha sulphur 75kg/ha UREA | | Annual application : 20kg/ha phosphorus 20kg/ha sulphur 75kg/ha UREA and microbes | |

ANALYSIS OF TRIAL RESULTS

Understanding Feed Analysis Results

Feed-analysis results of **Pasture Plus** when used in northern NSW and New Zealand are very similar.

As exemplified in the following results chart for two Australian properties and one New Zealand property, it shows that the results are practically the same, with very similar growth traits when pasture treated with **Pasture Plus** is compared with pasture that is untreated. **Pasture Plus** showed higher protein, less fibre (both neutral detergent and acid detergent), greater digestibility (based on dry matter or organic matter) and finally higher metabolisable energy.

| Readings | Property 1 (AU) WALCHA DAIRY | | Property 2 (AU) SALWAY | | Property 3 (NZ) ADAMS | |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------------------|---------|
| Sample Collection Details | Date sample collected 20 November 2014 Date sample analysed 25 November 2014 Type of sample Pasture, fresh | | Date sample collected 22 August 2014 Date sample analysed 24 August 2014 Type of sample Pasture, fresh | | Date sample collected 29 May 2015 Date sample analysed 02 June 2015 Type of sample Pasture, fresh | |
| | Untreated | Treated | Untreated | Treated | Untreated | Treated |
| Dry Matter (%) | 37.9 | 35.6 | 30.0 | 21.0 | 14.7 | 14.4 |
| Moisture (%) | 62.1 | 64.4 | 70.0 | 79.0 | 85.3 | 85.6 |
| Crude Protein (% of dry matter) | 16.8 | 21.6 | 17.6 | 26.4 | 25.2 | 26.3 |
| Acid Detergent Fibre (% of dry matter) | 33.6 | 32.5 | 29.3 | 23.2 | 20.8 | 19.2 |
| Neutral Detergent Fibre (% of dry matter) | 59.5 | 56.7 | 56.3 | 51.7 | 36.5 | 32.8 |
| Digestibility (DMD) (% of dry matter) | 66.5 | 72.1 | 60.0 | 65.5 | n/a | n/a |
| Digestibility (DOMD) (Calculated) (% of dry matter) | 63.2 | 67.9 | 57.7 | 62.3 | 76.7 | 77.1 |
| Est. Metabolisable Energy (Calculated) (MJ/kg DM) | 9.8 | 10.8 | 8.7 | 9.6 | 12.3 | 12.3 |

NOTE : Metabolisable Energy calculated using this equation | $ME = (0.203 \times DOMD\%) - 3.001$

ANALYSIS OF TRIAL RESULTS

Interpreting feed analysis reports is often complex and confusing. Reports generally include results for a variety of tests and the following explanations will help in understanding the relevance of some of the more technical component results given in the above comparison chart.

Dry Matter (%) - (DM)

Dry Matter is everything remaining after all the water in the sample has been removed. It is expressed as a percentage of the original sample, i.e. $DM\% = \frac{\text{dry matter}}{\text{sample weight}} \times 100$. DM contains the energy, protein, vitamins and minerals required by animals for maintenance and production and it is the basis for a true comparison between feeds and feed components.

Moisture (%)

Moisture is the percent of the sample that is water.

Crude Protein (% of dry matter) - (CP)

Crude Protein is a calculation expressed $CP = \text{nitrogen (N)} \times 6.25$. CP includes protein and non-protein nitrogen and is expressed as a percentage of Dry Matter (DM).

Acid Detergent Fibre (% of dry matter) - (ADF)

Acid Detergent Fibre is the residue remaining after boiling a forage sample in acid detergent solution. ADF contains cellulose, lignin and silica, but not hemicellulose (i.e. the long chains of sugar compounds associated with plant cell walls). Often used to calculate digestibility, and a contrast is drawn with crude fibre and/or neutral detergent fibre.

ANALYSIS OF TRIAL RESULTS

Neutral Detergent Fibre (% of dry matter) - (NDF)

Neutral Detergent Fibre is the residue left after boiling a sample in a neutral detergent solution. Called a NDF if amylase and sodium sulphite are used during the extraction (this being the recommended procedure). The NDF in forages represents the indigestible and slowly digestible components in plant cell walls (cellulose, hemicellulose, lignin, and ash).

Digestibility (% of dry matter) - (DMD)

Dry Matter Digestibility is the proportion of the dry matter in a feed that can be digested by an animal. It is expressed as a percentage of Dry Matter (DM).

Digestibility (Calculated) (% of dry matter) - (DOMD)

Dry Organic Matter Digestibility is the proportion of the organic matter in the DM that can be digested by an animal. It is expressed as a percentage of Dry Matter (DM).

Est. Metabolisable Energy (Calculated) (MJ/kg DM) - (ME)

Metabolisable Energy is the amount of energy in a feed that is available to an animal to utilise for maintenance, production and reproduction. It is expressed as megajoules of metabolisable energy per kilogram of DM. It is calculated from the digestibility of the organic matter as a percentage of Dry Matter (DM).

ANALYSIS OF TRIAL RESULTS

Relating these Findings to the Properties under Review

Now that the actual changes in feed quality factors have been reviewed, the feed specific factors across different properties (where appropriate) by looking at percentage change that resulted after being treated with **Pasture Plus** can be considered.

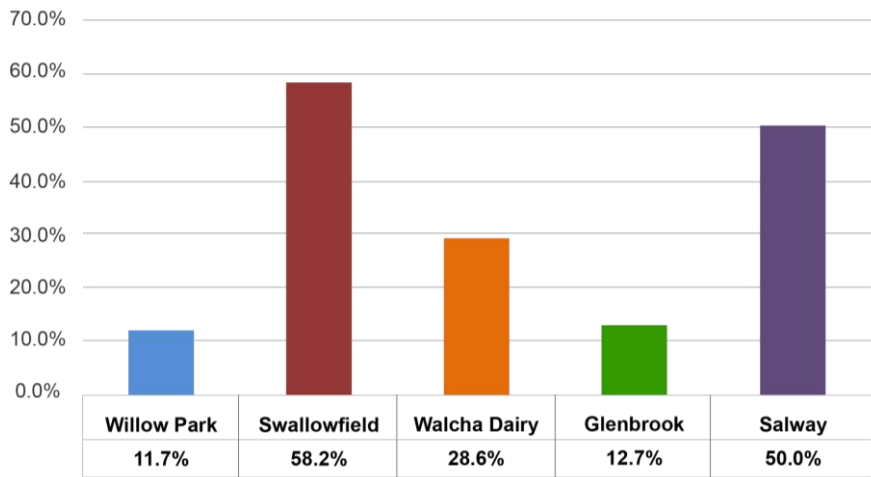
The following four factors will be further explored as they relate to the trial currently under review.

1. Increase in Crude Protein
2. Decrease in Fibre Content of the Feed
3. Change in Feed Digestibility
4. Metabolisable Energy



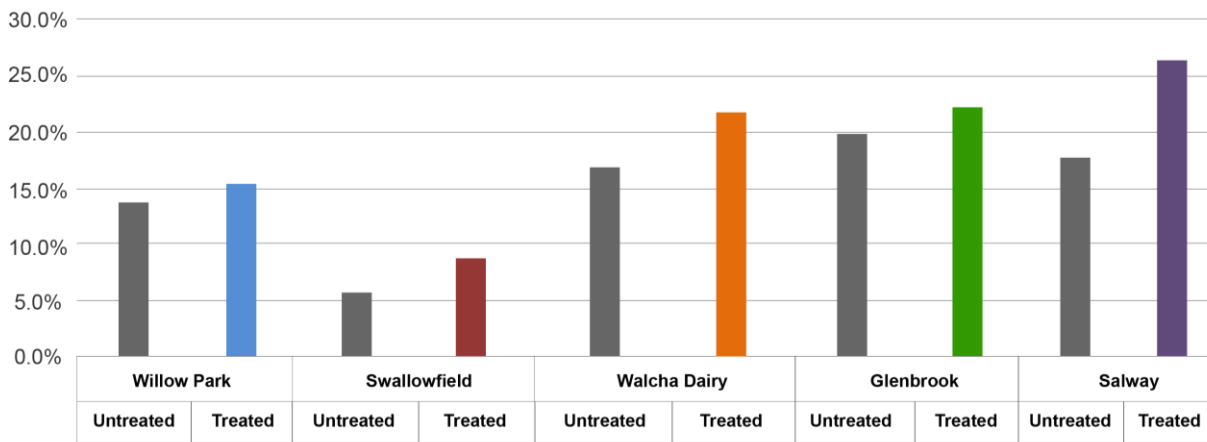
ANALYSIS OF TRIAL RESULTS

Increase in Crude Protein



- a. The graph opposite shows that **Pasture Plus** increased crude protein across all grazing properties from between 10% and 60%.
- b. The graph below shows that increase in crude protein is highly desirable in most farms since four out of five untreated pastures had protein values close to, or below 15%. Protein values below this figure are low for dairy cattle, and supplementation of protein to value of 16% to 18% increases milk production. It appears that pastures tested in northern NSW, that **Pasture Plus** can substitute protein supplementation of feed, and that it also increases milk production.

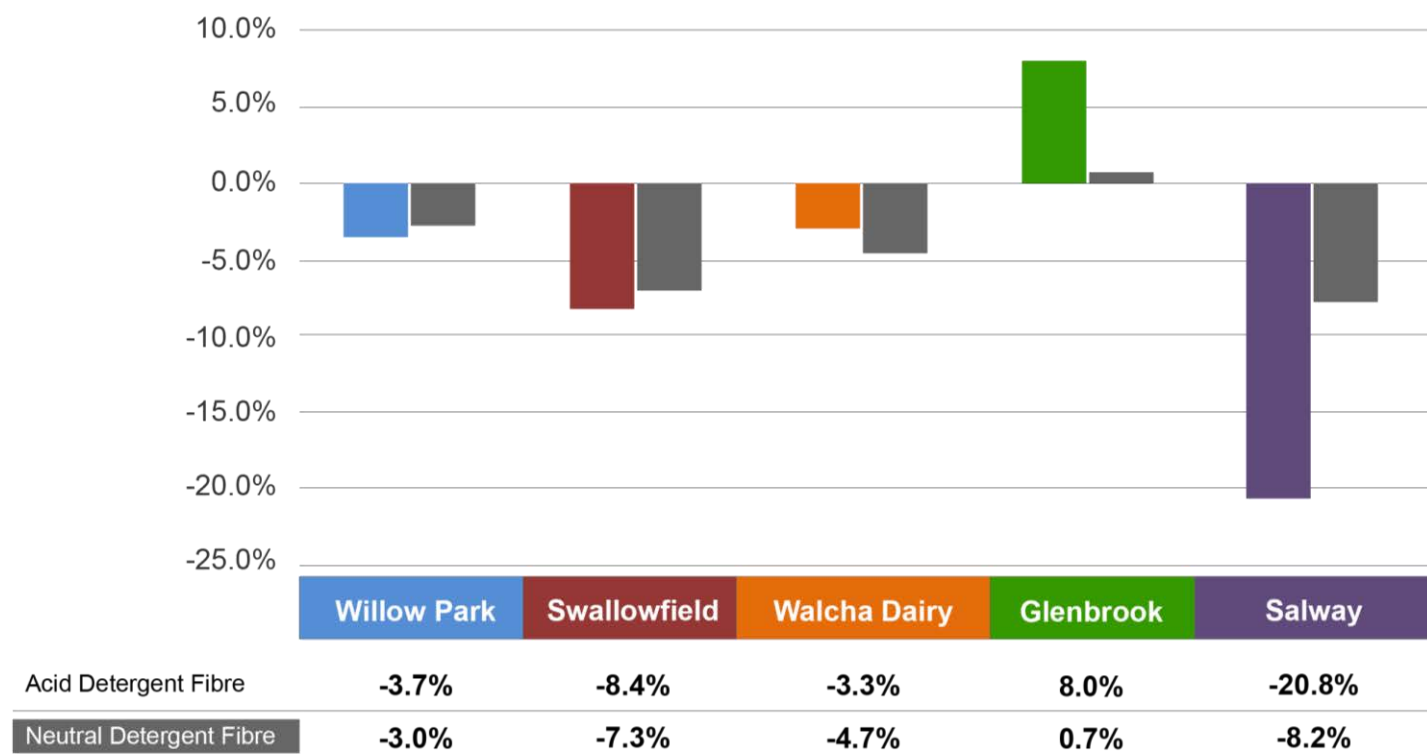
Crude protein values of treated and untreated samples in five properties



ANALYSIS OF TRIAL RESULTS

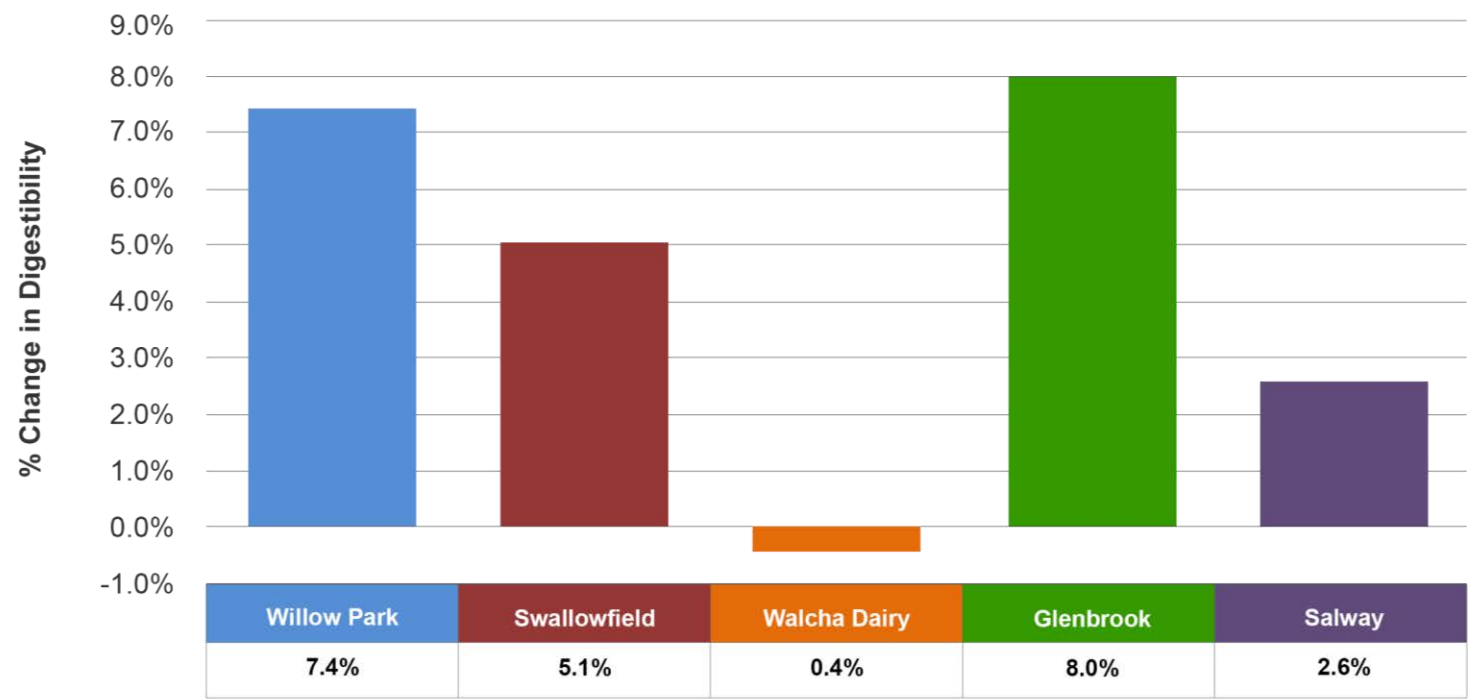
Decrease in Fibre Content of the Feed

The following graph shows that in four out of five of the feed samples, fibre content decreased as expected from samples with younger tissues. The odd results for the Glenbrook property is being investigated for possible explanation as to why it resembled that of matured and old tissues.



Change in Feed Digestibility

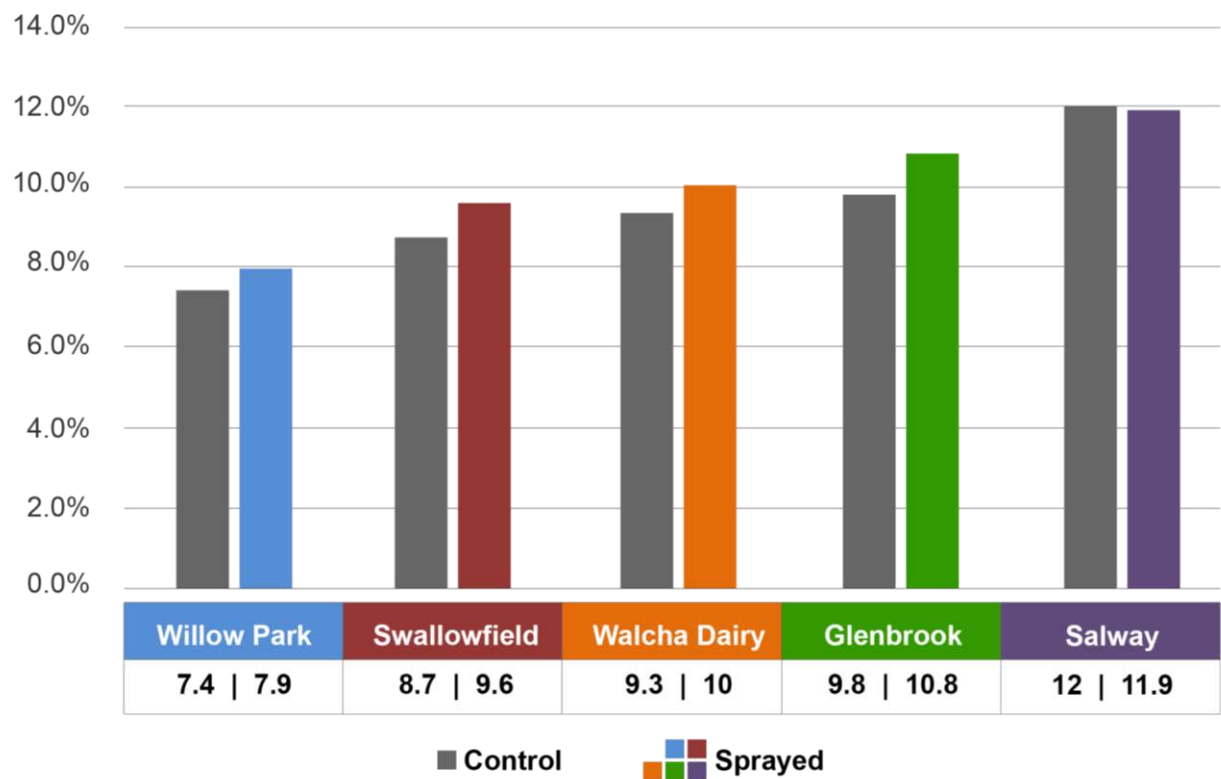
The following graph shows that in four out of five samples, the feed digestibility increased as a result of Pasture Plus, from 2.8% rising to 8.0%. The increase in feed digestibility is congruent with the presence of more young tissue in treated pasture than untreated pasture (i.e. young tissues have lower fibre or woody tissue than old tissue).



ANALYSIS OF TRIAL RESULTS

Metabolisable Energy

As the following graph demonstrates, due to changes described in feed quality, the metabolisable energy of **Pasture Plus**-sprayed samples increased in four out of five properties by some 10%.



SUMMARY OF TRIAL RESULTS

The following key points have arisen from these evaluation trials.

RLF **Pasture Plus** allows :

- the plant to bypass any soil hurdles for nutrient uptake, i.e. the unlocking of fixed soil phosphorus that is needed before uptake from the soil can take place
- the higher uptake efficiency of foliar versus soil uptake, which is considered as much as 80% to 90% more efficient in foliar uptake of phosphorus as compared to soil uptake
- plants to expend less energy as they absorb foliar nutrients as compared to the uptake of nutrients from the soil
- nitrate uptake from soil has (in addition to the previous point) an extra step, being the reduction of nitrate that uses more energy when compared to urea uptake from the leaf
- foliar phosphorus to stimulate ATP (plant energy) turnover, positively impacting photosynthesis and phloem loading due to gradient of hydrogen ion created by RLF acid foliar. This increases the photosynthetic sugar production and phloem loading of sugars, leading to a higher concentration of sugars and metabolites in growing points in both top growth and the root system of plants
- increased carbohydrates and metabolite transport to growing points of root and tillers
- increased root exudation and rhizosphere activity
- the emergence of new root tips and stimulated turnover in roots that results in more exudation and unlocking of phosphate which is highly tied up in acid soils
- increased exudation to stimulate bacterial population and growth, resulting in more humus in the rhizosphere which can unlock and mineralise more nutrients within the rhizosphere
- increased activity of free living nitrogen fixing bacteria that are associated with grass roots which in turn increases availability of nitrogen to the pasture
- useful bacterial populations to exclude pathogens from root surface (by space and food competition) thereby reducing disease impact
- useful bacteria to communicate with plants via hormonal and nutritional changes that impact greater plant and root development

SUMMARY OF TRIAL RESULTS

Comment about Repeatability Raw Data (reference page 4/26)

Paddock and soil variability is a major factor in crops and pastures not performing to best potential. **Pasture Plus** therefore provides the key to bypassing any hurdles for the unlocking of nutrients. The increased efficiency of foliar versus soil uptake of nutrient is amply demonstrated in the first three sets of measurements taken in the previously referred to grass measurement replicated measurements. This trial was regrettably suspended because of prolonged drought and the need to utilise pasture before the grass measurement/cattle weight analysis could be completed. The measurements show the trend : in that at every measurement, treated pasture grew more than the untreated pasture and repeated measurements varied within expected variation but showed an average value that confirmed the benefit of **Pasture Plus**.

TREATED SECTIONS

| Section 1 : Treated (Sprayed 12/01/2016) | Measured | | |
|---------------------------------------------|-----------|------------|------------|
| | 5/02/2016 | 13/02/2016 | 20/02/2016 |
| Measurement 1 | 1844 | 1844 | 1774 |
| Measurement 2 | 1592 | 1830 | 1620 |
| Measurement 3 | 1749 | 1732 | 1550 |
| Measurement 4 | 1760 | 1732 | 1676 |
| Section 1 : Average | 1736 | 1785 | 1655 |

UNTREATED SECTIONS

| Section 2 : Not Treated (Not Sprayed) | Measured | | |
|------------------------------------------|-----------|------------|------------|
| | 5/02/2016 | 13/02/2016 | 20/02/2016 |
| Measurement 1 | 1774 | 1718 | 1620 |
| Measurement 2 | 1718 | 1564 | 1704 |
| Measurement 3 | 1648 | 1606 | 1550 |
| Measurement 4 | 1676 | 1704 | 1648 |
| Section 2 : Average | 1704 | 1648 | 1631 |



SUMMARY OF TRIAL RESULTS

TREATED SECTIONS

| Section 3 : Treated (Sprayed 23/11/2015) | Measured | | |
|---------------------------------------------|-----------|------------|------------|
| | 5/02/2016 | 13/02/2016 | 20/02/2016 |
| Measurement 1 | 1984 | 1956 | 1732 |
| Measurement 2 | 1984 | 2068 | 1802 |
| Measurement 3 | 1984 | 2012 | 1816 |
| Measurement 4 | 2012 | 1760 | 1844 |
| Section 3 : Average | 1991 | 1949 | 1798.5 |

| Section 5 : Treated (Sprayed 08/01/2015) | Measured | | |
|---------------------------------------------|-----------|------------|------------|
| | 5/02/2016 | 13/02/2016 | 20/02/2016 |
| Measurement 1 | 2050 | 2390 | 1788 |
| Measurement 2 | 2152 | 2236 | 1774 |
| Measurement 3 | 2082 | 2320 | 1760 |
| Measurement 4 | 2348 | 2264 | 1844 |
| Section 5 : Average | 2158 | 2302.5 | 1791.5 |

UNTREATED SECTIONS

| Section 4 : Not Treated (Not Sprayed) | Measured | | |
|------------------------------------------|-----------|------------|------------|
| | 5/02/2016 | 13/02/2016 | 20/02/2016 |
| Measurement 1 | 1536 | 1788 | 1592 |
| Measurement 2 | 1718 | 1760 | 1704 |
| Measurement 3 | 1620 | 1648 | 1774 |
| Measurement 4 | 1558 | 1620 | 1606 |
| Section 4 : Average | 1608 | 1704 | 1669 |

| Section 6 : Not Treated (Not Sprayed) | Measured | | |
|------------------------------------------|-----------|------------|------------|
| | 5/02/2016 | 13/02/2016 | 20/02/2016 |
| Measurement 1 | 1816 | 1619 | 1648 |
| Measurement 2 | 1704 | 1760 | 1494 |
| Measurement 3 | 1662 | 1802 | 1522 |
| Measurement 4 | 1732 | 1870 | 1466 |
| Section 6 : Average | 1729 | 1763 | 1533 |

The effects of foliar spray require a few weeks following the initial spraying for the full impact to be seen. Therefore, an important premise of RLF foliar is to not only supply nutrients directly to the plant, but to modify the rhizosphere of the root system for improved nutrient uptake from the soil.

More root initiation/turnover is stimulated with every application of foliar, and that root growth creates more interception and unlocking, thereby easing and overcoming the nutrient limitation for growth.

THE PRODUCT USED IN THE TRIAL

RLF Ultra Foliar PASTURE PLUS

Pasture Plus is a leaf applied foliar fertiliser product that in one single engineered High-analysis formulation contains up to 12 nutrient elements. All the nutrients needed by the plant, and all safely balanced in a Broad-spectrum solution without any chemical antagonism, is delivered through the leaf.

It delivers the required quantities to suit the plant's optimum requirements and promotes healthy and strong plant growth. Only with the crop's nutrient requirements completely satisfied can a plant achieve its maximum potential yield volume and quality, particularly considering the variables of the climate and other environmental conditions. This means that farmers and growers need to ensure that their farming practices are focused on providing the optimum nutrient to the plant during ALL stages of growth towards yield.

Pasture Plus has been developed to give farmers and growers one of the most modern farming practice fertilisers available. It will enable the farmer to achieve a practical and economical method of providing crop nutrition throughout the entire growth cycle of his chosen crop.

The grazing and animal-production businesses of the agricultural industry form an important part of the primary food production chain in countries all around the world. The benefits of producing more nutritionally balanced feed and pasture for stock can therefore have a wide-range of value-added outcomes.



THE PRODUCT USED IN THE TRIAL

It could be expected that potential revenue increases from animal production could be achieved through :

- reduced need for feed supplements
- reduced veterinary expenses
- improved birth rates
- lower mortality
- improved weight gain
- improved wool clip
- higher quality and improved milk production

This list of benefits is not exhaustive and every pastoralist and grazier will have different requirements and crop outcome needs. But, the 'yield' evidence is building towards advantageous outcomes, such as those listed above.

Pasture Plus is nutritionally balanced with the right pH, buffering capacity and wetter to effectively enter the leaves within a short time span for speedy uptake and utilisation by the pasture or feed crop.

RLF Ultra Foliar is a world-leading product and **Pasture Plus** has been specially engineered for animal carrying pastures and hay crops.

There is much more information about RLF products on the global website www.ruralliquidfertilisers.com.



CONCLUSION

It has been demonstrated by these results that RLF Ultra Foliar **Pasture Plus** has increased pasture growth in most treatments by between 20%, to greater than 100%. This is an astonishing result, and one that cannot be ignored. In all instances the changes in feed quality were in agreement with the feed-analysis results, showing that the **Pasture Plus**-treated samples were younger, when compared to the analysis of the untreated samples.

The science and mechanisms behind such an astonishing effect has been written about and published in many Technical Bulletins, Product Bulletins, RLF Insights and other Corporate Publications. Readers are encouraged to avail themselves further of this information. The science of foliar sprays and their impact on root and root rhizosphere can also be found in literature reviews of Rhizosphere, Foliar Uptake and Plant Physiology. The benefits delivered by RLF's Integrated Fertiliser Management (IFM) program should also be considered in this context.



THANK YOU FOR VISITING OUR PRESENTATION

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