

# Lucerne Feed Quality Trial

2017 | Penfield Research Station | Trial Sown 25/05/2015

- The trial was sown May 25, 2015.
- Three replicates were sown for each variety.
- All varieties were initially sown at 15 kilograms per hectare.
- The trial was irrigated, and treated as a high production trial, aiming for six to seven cuts per year, for assessing overall forage yield.
- Forage quality measurements were taken throughout spring and summer, 2016/17. Four quality measurements of freshly cut lucerne were taken prior to whole plot forage yield cuts being made.
- Each cut was made 28 days following the previous cut, all varieties were cut at the same time.
- The results are average of 12 samples - four cuts per variety, with three replicates of each variety per cut.

This trial assessed the standing forage quality of many commercial lucerne varieties as two-year-old lucerne stands; as well as examining other key factors – percentage of crude protein (CP) present, metabolizable energy (ME) as megajoules per kilogram (MJ/kg) of dry matter (DM), and digestibility characteristics.

The relative feed value (RFV) of each variety was calculated. The RFV is an index value that ranks feed based on the potential digestible dry matter intake.

The RFV value is calculated by comparing the digestible dry matter of the variety; using the percentage of acid detergent fibre (ADF) with the dry matter intake estimate of the variety, using the percentage of neutral detergent fibre (NDF).

The equation used for RFV calculation is as follows:

$$RFV = ((88.9 - (0.779 * ADF)) * ((120 / NDF) / 1.29))$$

The RFV does not consider the percentage of CP or other nutrient factors, but does give a good indication of the quality of the forage in regard to its value to the grazing animal in terms of digestibility, and allows for an indexed value to be used when comparing different forage quality results of a number of varieties.

Varieties such as Q31 Lucerne and Q75 Lucerne have shown their characteristic quality traits clearly in this trial; both varieties were developed to produce high quality forage.

The samples were taken from fresh cut forage prior to cutting for forage yield; there would be greater differences again if the varieties were tested after going through a mechanical hay making process, as varieties such as Q31 Lucerne and Q75 Lucerne, maintain higher RFV values due to their high leaf holding traits. A typical lucerne hay or silage feed sample would have a lower RFV rating, and lower percentage of CP and ME values than shown on this chart, as these were fresh cut pasture with very little leaf loss, compared to what would normally be, after mechanical harvesting.

Variety	Dormancy	CP%	ADF%	NDF%	DMD%	ME	RFV
Q31 Lucerne	3	30.8	21.4	26.2	78.0	11.8	256.5
SARDI Five	5	28.7	24.3	28.6	76.9	11.6	227.6
L56 Lucerne	5	28.4	23.0	28.9	75.3	11.3	228.5
SF Force 5	5	28.3	23.7	29.5	75.6	11.4	222.1
Stamina 5	5	27.4	24.3	31.3	72.5	10.9	208.0
Stamina GT6	6	27.0	26.2	30.8	73.0	10.9	206.9
GTL@60 Lucerne	6	28.7	22.2	29.6	75.3	11.3	225.0
Aurora	6	25.6	25.6	32.5	71.5	10.7	197.4
SARDI Grazer	6	27.5	25.2	30.5	74.5	11.2	211.3
Genesis	7	26.7	21.3	31.1	76.3	11.5	216.3
SARDI Seven Series 2	7	26.3	24.8	30.8	70.3	10.5	210.2
Titan 7	7	26.0	25.6	33.0	71.9	10.8	194.4
SF Force 7	7	28.6	23.0	30.1	75.9	10.4	219.4
Haymaster 7	7	28.3	22.9	29.4	75.2	11.3	224.8
SF 714QL	7	26.8	24.5	30.9	73.3	11.0	210.2
Q75 Lucerne	7	28.9	23.8	27.3	76.1	11.5	239.7
L70 Lucerne	7	27.0	26.1	31.3	71.8	10.7	203.8
L71 Lucerne	7	29.8	23.3	28.9	75.9	11.4	227.0
Pegasis	9	25.7	26.8	34.2	69.9	10.4	185.0
Sequel	9	25.7	26.8	34.2	70.4	10.5	185.0
Titan 9	9	26.5	27.4	32.0	71.5	10.7	196.4
L91 Lucerne	9	25.1	25.4	32.7	70.0	10.4	196.6
L92 Lucerne	9	26.5	26.7	31.5	71.4	10.7	201.1
SARDI Ten Series 2	10	26.8	27.6	33.9	69.9	10.4	184.9
SF Force 10	10	25.8	27.0	34.6	70.3	10.5	182.5
ML99 MultiLeaf® Lucerne	10	28.6	24.4	30.8	74.9	11.3	211.1
Average		27.4	24.7	30.9	73.4	11.0	210.5



The ability for green cut lucerne to hold its leaf into the bale is critical when making premium quality hay. Mechanical losses at time of baling range from eight to 45 percent. When targeting high quality lucerne hay, it is paramount to select varieties with such leaf holding traits. Q31 Lucerne demonstrates excellent leaf retention in the bale.

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The selection of lucerne cultivars with high leaf holding capacity such as Q31 Lucerne, allows for higher relative feed value results, as demonstrated in this trial.



Left:  
Q31 Lucerne  
after baling.



Right:  
Replicated  
lucerne plots,  
lucerne feed  
quality trial.