



## Hay Competition re-enforces weighing and testing bales

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At the 2013 South Gippsland Expo run by the Poowong Lions Club a competition was held for participants to estimate the weight of two types of bales, a round bale of pasture hay and a large square bale of lucerne. The results showed some very interesting but, unfortunately, not surprising results. The results re-enforced the importance of weighing some hay bales so that farmers do not over feed their animals leading to needless wasted hay or do not underfeed causing loss production (milk or liveweight) and overgrazed pastures.

Equally important is for farmers, contractors and hay suppliers buying or selling hay, if the weigh bridge certificate is not a condition of sale, the old “three bales to the tonne” is often the rule of thumb used and from this competition, buyers beware!

This competition also showed that simply looking at a bale of hay is not a sound way to estimate fodder quality. Anyone purchasing hay (or silage) should seriously consider having the fodder analysed for quality before doing a deal.

Over two days of the expo, of which day two was absolutely miserable, one hundred and twenty five people had a crack at estimating the fresh weight of a large square bale (240 cm x 122 cm x 87 cm, i.e. 8' x 4' x 3' bale size) of lucerne hay and a round bale (145 cm x 144 cm. i.e. 5' x 4') of pasture hay. Before being transported to the Expo the bales were weighed dry at DEPI, Ellinbank Centre, to the nearest kilogram.

Unfortunately, only fifteen people tried estimating the nutritive value of the large square bale and only ten for the round bale. The weather will have had some influence on the low numbers willing to estimate hay quality but during some conversations I found that many folk still do not have a good handle on the nutritive value of fodders that are being fed.

Even more worrying, was that even though many people understood the importance of crude protein and what that term meant, many did not know what Metabolisable Energy (ME) or Neutral Detergent Fibre (NDF) stood for much less what these terms meant when used to describe the quality of feeds.

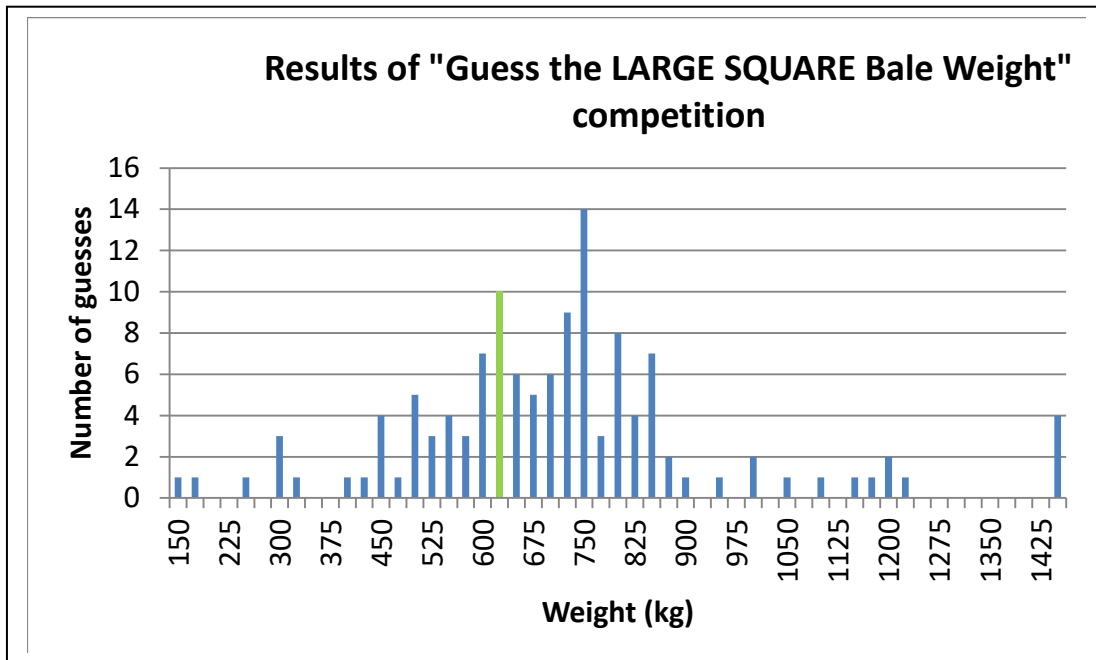
These are the basic terms used to describe the nutritive value of all feeds being offered to animals and understanding these terms is the guts between knowing when an animal is being fed for high, medium low production, or so poor that the feed will not even prevent liveweight loss. With the cost/price squeeze continually happening on farms over the long term, farmers need to know and be able to use this information to help to stay ahead of the game.

So what were the estimations of weight and nutritive value from the Expo Hay Competition?

The estimations, and obviously “guesstimations” in some cases, ranged widely. Being up front there were about ten guesses from children and some from non-farming back grounds but these did not account for all the guesses at the extremes. However, many people estimating bale weights and hay quality should have been a lot more accurate than they were.

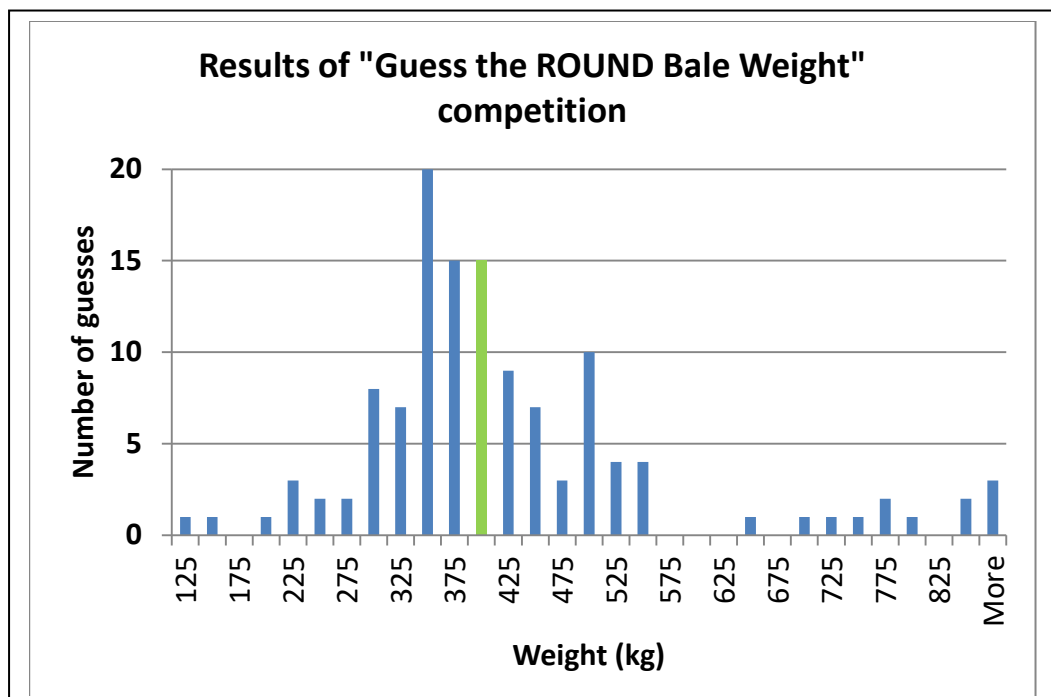
Figure 1 shows the actual fresh weight (green bar) and range of estimated weights of the large square bale of Lucerne hay. The actual weight of the Lucerne bale was 627 kilogram (kg) but weight

estimations ranged from 150 kg to 2145 kg, the average estimated weight being 717 kg. Only twenty nine people (23%) were within 627 kg plus or minus ( $\pm$ ) 50 kg and fifty two (42%) were within ( $\pm$ ) 100 kg. When the six estimates under 300 kg and the four over 1500 kg are excluded, average estimated weight was 707 kg, still way over the actual weight.



**Figure 1. Actual weight, range and number of estimated weights of Lucerne square bale**

Figure 2 shows the actual fresh weight (415 kg) and range of estimated fresh weights of the round pasture bale, the average of the estimated weights being 429 kg. Not too bad, eh? However, the estimated weights ranged from 124 kg to 1650 kg. Now that's shabby! Only thirty six per cent (36%) of estimates were  $\pm 50$  kg of actual weight of 415 kg, of which two thirds underestimated the weight. If the three estimations under 200 kg and three over 1000 kg are ignored, the estimated average weight was the same as the actual weight, 415 kg.



**Figure 2. Actual weight, range and number of estimated weights of Pasture round bale**

Averages mean very little; what really matters is “What would have been your estimate?” Space allows me to look at only one way of several to see the impact of not knowing accurate weights of your bales.

Table 1 show the outcomes when a large Lucerne square bale (8' x 4' x 3') is valued at \$150 per bale and a round pasture bale (5' x 4') at \$80 per bale. The extremely under- and over-estimated weights were not included. If hay was bought or sold on an estimated weight per bale basis, the load of hay will have been prohibitively expensive or ridiculously cheap.

**Table 1. Effect of weight on cost per tonne (\$/tonne) of large square and round bales of hay**

Weight Measure	Weight (kg)	Cost/bale (\$/bale)	Cost/tonne hay (\$/tonne)
<b>ROUND Bale (Pasture)</b>			
AVERAGE of estimated weights	415	80	193
RANGE of estimated weights	200 - 1000	80	400 - 80
<b>Actual</b>	<b>415</b>	<b>80</b>	<b>193</b>
<b>LARGE SQUARE bale (Lucerne)</b>			
AVERAGE of estimated weights	707	150	212
RANGE of estimated weights	400 - 1215	150	375 - 123
<b>Actual</b>	<b>627</b>	<b>150</b>	<b>239</b>

What other lessons can be learnt from this exercise? If we don't have reasonably accurate weights for the hay bales being fed out farmers could be over- or under-feeding animals. Over feeding is usually easy to see but under-feeding is often not so obvious and either can have a large impact of your animal's daily intake and resultant production and needless expense due to waste.

Table 2 shows the average and range of estimated qualities and the actual qualities of the round bale of pasture and large square bale of lucerne hay. The average estimated quality values for the pasture round bale ranged from 6.7 to 11.0 Megajoules of Metabolisable Energy per kilogram Dry Matter (MJ ME), 4.6 to 16.5% Crude Protein (CP) and 53.0 to 80% Neutral Detergent Fibre (NDF) with estimated averages being 9.0 MJ ME, 10.9% CP and 59.6% NDF. The actual nutritive value of the round bale of pasture hay was 9.6 MJ ME, 10.8 % CP and 62.3% NDF, not too surprisingly as there was quite a bit of green leaf when a sample was pulled out of the bale.

**Table 2. Average, ranges and actual estimated nutritive values of pasture and Lucerne hay bales**

Bale Type	Quality Measure		
	MJ ME	CP	NDF
<b>ROUND bale (Pasture)</b>			
AVERAGE of Estimated Quality	9.0	10.9	59.6
RANGE of Estimated qualities	6.7 - 11.0	4.0 - 16.5	9.5 - 80.0
<b>ACTUAL Quality</b>	<b>9.6</b>	<b>10.8</b>	<b>62.3</b>
<b>LARGE SQUARE bale (Lucerne)</b>			
AVERAGE of estimated quality	12.1	20.6	49.3
RANGE of estimated qualities	9.0 - 17.7	14.0 - 28.0	30.0 - 80.0
<b>ACTUAL Quality</b>	<b>9.4</b>	<b>21.8</b>	<b>41.2</b>

The estimations for the Lucerne square ranges from 9.0 to 17.5 MJ ME, 10.2 to 28% CP and 30 to 80% NDF, the estimated averages being 12.1 MJ ME, 20.6% CP and 49.3% NDF. This is typical of lucerne hay having a high protein content but often lower ME than many farmers expect although the NDF was very good despite the bale seeming to have a lot of hard stem. The large square Lucerne bale actual test was 9.4 MJ ME, 21.8% CP and 41.2 % NDF.

To put these figures in context, vegetative ryegrass pastures in late September would be testing about 11.0 MJ ME, over 20% CP and 35 to 40% NDF, and we know how well cow's milk on feed of this quality

This competition re-enforces the need to have fodder weighed and tested to know exactly what is being bought or fed. To make sound financial and more accurate feeding decisions farmers can no longer "guesstimate" weight and nutritive values for their silages and hays.