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No 174: Forage Update 2012

Forage Update 2012

Over 5600 grass silages and 200 whole crop samples from this year's crops have been analysed so far this year, revealing some key areas of focus through what is going to be a challenging winter.

Since the early results in June (Urgent News 168), grass silage average protein levels have dropped by 0.9%, ME by 0.9 MJ/kg DM and NDF and lignin have increased by 2.9% and 2.6 g/kg respectively, reflecting the effects of the wet summer on delayed cut. Surprisingly, and in contrast to the poor cereal quality on many farms, the early average whole crop cereal silage is marginally better than the previous two years. Dry matter, starch and ME are all higher and protein lower which could be explained by a greater cereal proportion associated with the shorter stem length (straw) reported on many cereal crops this year.

Practical considerations for this year's forages

1. Averages give useful information but every farm is different. The range in forage quality shows enormous variation in all nutrients. It is also very evident that there are large differences in forage quality within the farm. Regular and representative sampling is essential this winter to avoid sudden drops in performance.
2. Second cut grass silages are on average higher dry matter, lower in energy and intake potential than first cuts. That said, unusually high intakes of dry forages are often observed which is not always reflected in performance. Increase energy supply, and particularly rumen energy to 'fire-up' the rumen microbes, will be needed with these forages. Dry forages when used alone in mixed rations are more prone to sorting in the feed passage with the subsequent increased risk of acidosis. Higher rumen energy supply further increase the acidosis risk in these situations. These forages should be at a chop length of 20 – 25 mm to reduce sorting whilst the application of liquids may also help.
3. Mixing of forage cuts and types may be essential this winter to achieve acceptable levels of performance and feed efficiency.
4. Heating in silage clamps due to secondary fermentation is a real issue this year and not only in those forages with clear poor fermentation characteristics (elevated pH, VFA and ammonia nitrogen associated with inadequate lactic acid loading). This heating is often occurring in 'patches' and behind the silage face and as such is hard to control once it starts. Acid applications are difficult to apply with any real effect in these situations. When heating is on the silage face, products such as Selko TMR may be of benefit but silage cutting and face management are particularly important this winter. Temperature checks on silage clamps behind the face will be a useful management activity on many farms this winter.
5. Heating silages will also predispose mixed rations to heating, with subsequent effect on animal performance due to reduced palatability and feed intakes and nutrient loss associated with yeast activity. The control of heating in the mixed rations will be an effective management choice on many farms. Selko TMR has been proven very effective in such situations.
6. Unsurprisingly there are many wet grass silages, the lowest analysed value to date being 13.6% dry matter. These wet forages will be problematical to feed. Dry matter intakes of wet silages are reduced, the intake potential of the wettest 20% of grass silages is only 88g/kg$^{0.75}$ compared to 100.4g/kg$^{0.75}$ for the average. In addition mixed rations are 'heavy and balled' further reducing their palatability and DMI of the ration. The inclusion of dry forages may be the only way to achieve required dry matter intakes. If straw is used it should be chopped to avoid ration sorting.

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7. Preservation quality of wet silages can be variable and many will be prone to secondary fermentation due to inadequate acid loading. These are liable to heating and should be managed accordingly. Where fermentation characteristics are good, intake potential is low due to the large quantity of lactic acid required to achieve pH 4 in the clamp. Rumen health will be a problem and these silages will certainly require an effective rumen buffer to neutralise the acid load. Natural buffering from salivation is also reduced with wet silages. Maxcare Rumen Buffer FP or Rumen Buffer Elite are excellent products developed with compelling titration studies showing effective buffering activities compared to other ingredients and products.
8. Wet silages frequently supply excess rumen nitrogen relative to rumen energy (average excess MPN is 147g/kg DM). This is mainly due to the inadequate supply of rumen energy from these silages as suggested by the low microbial protein yield in the wettest 20% of silages this year. The consequence of this is elevated blood and milk urea which then utilises valuable energy for excretion (5MJ per 400g excess MNP) whilst the excess circulating ammonia reduces fertility. These silages require additional rumen energy supply, typically from cereals, but caution is required not to further increase the incidence of acidosis. Buffers and yeast may be necessary. Clearly, this is a fine balancing act for which the Rumenc model can be used to evaluate fermentation balance and acid load.
9. Where secondary fermentation has occurred and moulds are evident in silages, which is certainly being seen in forages this year, it is important not to feed mouldy material to dairy cows.
This should be disposed of. There are occasions where mycotoxins are unavoidably present in total rations and affect health and performance. In this case an effective broad activity product such as Toxo may be needed.

Whole Crop Cereal Silages

It is fortunate that this year's average whole crop silages analysed so far look good in the key areas.

1. Energy content is higher by 0.2 MJ/kg DM compared to last year associated with a 1.5% increase in starch levels.
2. Protein is marginally lower by 0.3% which is reflected in lower metabolisable protein supply (MPN, MPE and MPB).
3. Mycotoxins have been reported in cereals following this summer's growing conditions. Indications are that whole crop silages are also at risk. In this respect, mycotoxin binders such as Toxo may have a role in preventing any sudden drops in production and health.
4. Whole crop silage is a 'rumen friendly' crop and will be especially useful to compliment this seasons grass silage. It will be important to evaluate forage stocks for the winter to ensure a balanced feeding programme through to turnout.
5. As with grass silages, the range in whole crop quality is very large. Accurate sampling, analysis and rationing will be critical to achieve target performance this winter.

In summary

We are facing a very challenging winter, particularly as cows have come through the summer in generally less than ideal condition. It will take some months for them the achieve target performance as they replenish body reserves. Forage quality is very mixed even within the farm and as such regular accurate sampling and analysis will be central to feed management. Effective solutions such as buffers, acids to prevent heating, mycotoxin binders, ration sieve profile and regular ration checking will be part of the day to day approach to achieve target performance this winter.

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Grass Silage Averages - 3 year comparison

				2012		
		2010	2011	Average	Minimum	Maximum
Dry Matter	%	32.5	31.4	31.2	13.6	85.9
Crude Protein	%	13.4	13.9	13.5	5.5	22.8
D Value	%	68.4	68.4	66.6	54.6	77.2
ME	MJ/kg	10.9	11	10.7	8.7	12.4
pH		4.1	4	4.1	3.5	6.6
NH3N	%	4.6	2.6	3	0.8	40
Sugar	%	2.8	1.3	2.6	0.5	9
Ash	%	8.3	8.4	8.3	2.7	37.5
NDF	%	47.9	46.6	47.2	24.2	76.6
ADF	%	31.3	31.4	32.5	18.1	51.2
AD Lignin	g/kg	42	48	50.4	0.17	102
Oil	%	3.6	3.7	3.6	0.3	7
VFA	g/kg	30.3	23.6	24.6	0.1	98.3
Lactic Acid	g/kg	64.3	69.2	65.2	1.3	193.1
Vitamin E	mg/kg	30.5	64.5	63.5	0.1	290
Intake Potential	g/kg $^{0.75}$	101.5	104.8	100.4	59.5	162.2
PAL	meq/kg	757	689	731	3.4	2483
RSV		291.8	290.4	290	31	447
MPB	g/kg	23.2	26.8	26.9	9.1	76
MPN	g/kg	90.1	94	94.5	36.1	180.7
MPE	g/kg	75.4	75.5	75.2	44.3	110.9

		2010	2011	Average	Min	Max
Dry Matter	%	42.3	41.3	44.1	17.5	72.8
Intake Potential	g/kg	116.2	111.9	117.7	75.2	187.5
D Value	%	66.9	65.7	67.3	55.6	75.9
ME	MJ/kg	10.4	10.3	10.5	8.7	11.8
NDF	%	45.8	44.5	45	35.4	76.9
AD Lignin	g/kg			49.3	15.3	76.6
Starch	%	23	23.3	24.8	6.5	39.8
pH		4.1	4.1	4.2	3.5	4.9
PAL	meq/kg	703.1	734.6	663	93	1287
Crude Protein	%	9.5	9.2	8.9	6.5	13.8
MPB	g/kg	24.5	23.2	22.6	15.2	32
MPN	g/kg	63.1	61.2	58.7	42.2	87.8
MPE	g/kg	74	71.7	67.2	55.6	79.1

Whole Crop Averages September 2012

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Grass Silage Averages 2012

		1st Cut	2nd Cut	Wettest 20%	Driest 20%
Dry Matter	%	30.8	31.6	20.1	44.7
Crude Protein	%	13.6	12.8	13.4	13.3
D Value	%	67.5	64.2	65.6	67.7
ME	MJ/kg	10.8	10.3	10.5	10.8
pH		4.1	4.1	4	4.4
NH3N	%	2.9	3.1	4.2	2.4
Sugar	%	2.6	2.6	2.1	3.2
Ash	%	8.3	8.1	8.2	8.2
NDF	%	46.6	48.8	49.9	45.6
ADF	%	32.1	33.7	33.8	32.5
AD Lignin	g/kg	49.4	52.6	43.4	51.5
Oil	%	3.6	3.5	4	3.1
VFA	g/kg	24.0	24.5	33.4	15.7
Lactic Acid	g/kg	67.8	59.1	97.1	39.6
Vitamin E	mg/kg	65.6	59.0	63.2	62.9
Intake Potential	$g/kg^{0.75}$	101.5	96.2	88	112.6
PAL	meq/kg	724.9	752.3	900	691
RSV		287.2	297.8	290	285.5
MPB	g/kg	26.8	26.9	31.7	22.1
MPN	g/kg	92.5	87.1	91.8	87.7
MPE	g/kg	75.2	74.8	67.6	83.9
Silage intake	kg DM	10	9.5	8.7	11.1
	kg FM	32.5	30.1	43.3	24.8
Milk yield (l/day) from:					
ME	M+	6.5	4.5	3.2	8.8
Metabolisable Protein	M+	8.8	8	6.36	11.75
Excess MPN	g/d	134	95	147	49.5
Microbial Protein Yield	g/d	524	482	379	680

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