

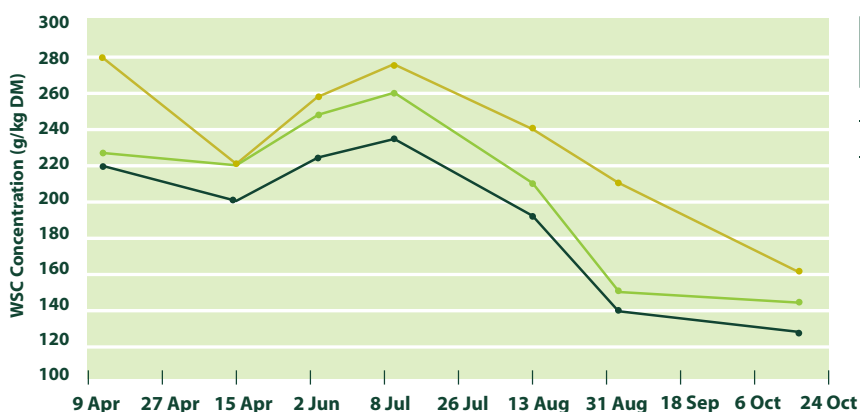
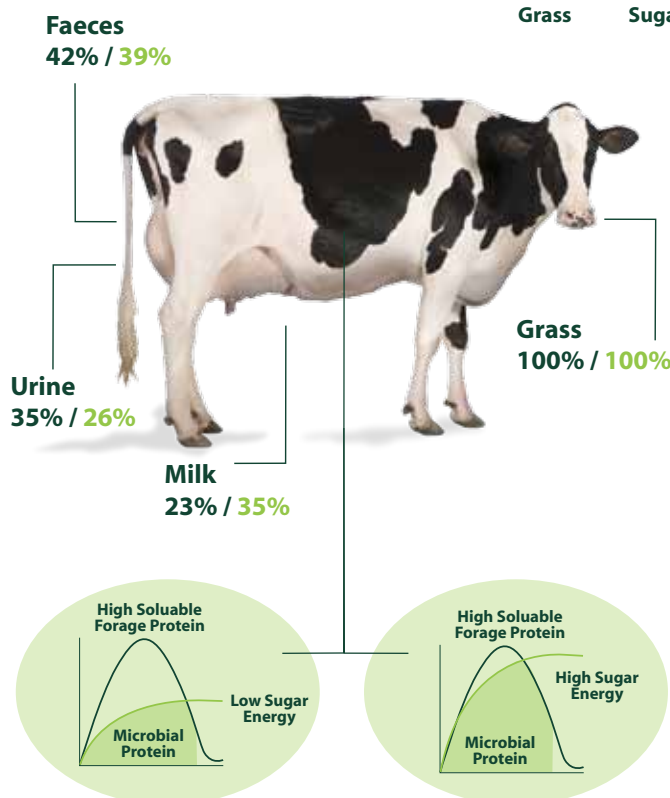
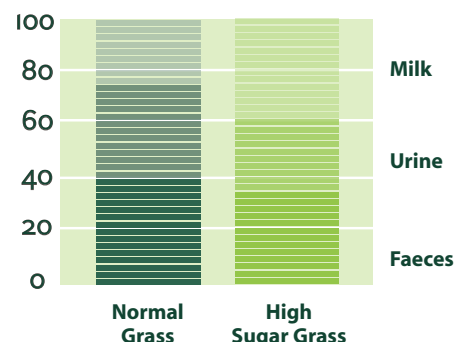
The Science behind High Sugar Grasses

Cattle and sheep are actually poor converters of grass protein into milk and meat. When grazing grass, livestock use only about 20% of protein from the herbage for production - most of the rest is waste in methane, faeces and urine. This is not only financially costly but also detrimental to the environment.

A major reason for these losses is the imbalance between readily available energy and protein within the grass. To overcome this, High Sugar Grasses (Aber®HSG) provide more available energy soon after forage enters the rumen, allowing rumen microbes to process more grass protein. This protein can then be used in the production of meat and milk. Research at IBERS has shown that HSG varieties have consistently higher levels of sugars than standard varieties throughout the grazing season.

WSC or Water-soluble carbohydrate (sugar) concentration of pasture grasses is considered an important grazing factor because it increases the amount of readily available carbohydrate, so affecting the efficiency of conversion of nitrogen to microbial protein in the rumen. Extensive trials have been carried out by DARD at the Plant Testing Station, Crossnacreevy

and these have shown the higher levels of WSC in Aber®Dart over standard diploid varieties, by margin of 14%. Aber®Dart offers the advantages of the higher WSC in tetraploids with none of the disadvantages. Now mixtures can contain 100% Aber® High Sugar Grasses thus giving improvements in animal performance.



Type	2001	2002	2003	3 Year Mean	% Over Diploid
Diploid	182	199	201	194	
Tetraploid	194	224	225	214	10%
Aber®Dart	205	223	235	221	14%

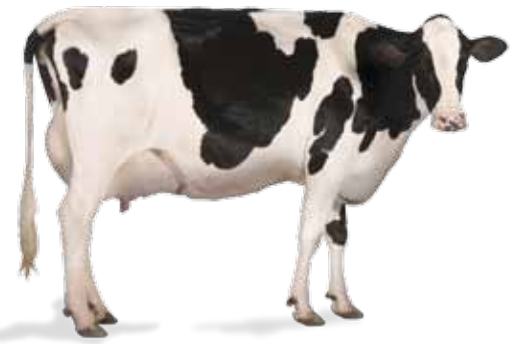
- Aber®Dart
- Tetraploids
- Normal Dipoles

Aber® High Sugar Grass for Milk Production

Results of several studies conducted on commercial dairy farms and by IBERS at Aberystwyth, show that grass protein is used more efficiently for milk production when extra energy is provided by feeding Aber®HSG varieties.

High Sugar, High D-value Aberystwyth Grass Varieties. Research shows up to 6% increase in milk output compared to other new grass varieties. Aber® varieties will give up to:

Milk Price	20 pence/litre	25 pence/litre	30 pence/litre
Extra Value of Milk/Acre	£60	£75	£90



Up to 6% more milk per cow over grazing season

Dry matter intakes up by 2Kg/head per day

3% Improvement in diet digestibility

24% Less feed nitrogen lost in urine

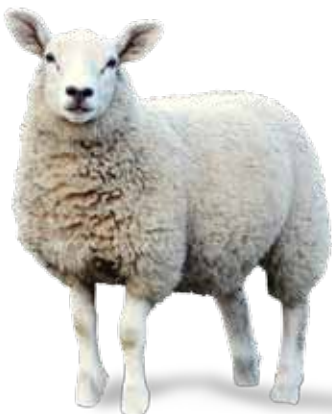
Aber® High Sugar Grass for Beef Production

Dry matter intakes increased by around 25%	Higher forage intakes
Up to 20% higher daily liveweight gains	Slaughter weights reached more quickly

Research involved beef steers offered either a high sugar variety or a recommended control ryegrass variety. No additional feed was given, grass intakes and live weight gains were monitored regularly.



Aber® High Sugar Grass for Lamb Production



In both upland and lowland situations, IBERS grazing trials have shown HSG varieties to be superior in terms of animal performance when compared with standard grass swards.

Up to 20% higher liveweight gains

20% Higher carrying capacity of HSG sward

Higher forage intakes



Grass Quality Pays Dividends

It is widely recognised that grass quality not total yield is key to optimising the performance of stock at grass. One measure of grass quality is D-value. Although there is often a compromise between getting a good yield and not allowing the quality to fall too much, some varieties are bred specifically to ease this problem. These are the Aber® High Sugar Grasses (HSG's) sold by Morton's. A drop of only one unit of D-value (digestibility) can result in a loss of 5% in animal performance. Young leafy grass will have a D-value in excess of 70% but once stems begin to extend this can fall to 67%. When seed is set, D-value can have fallen to 60% or lower. Importantly, there is a direct link between Metabolisable Energy (ME) and D-value.

1 unit of D value= 0.17 MJ/kg ME

As a guide 5.4MJ ME equates to 1L of milk or 40MJ of ME equate to 1kg of liveweight gain in beef and sheep (based on a 300kg growing beef animal or a 30kg store animal). So when grazing grass- the cheapest feed on your farm, the aim should be to utilise 70% or more of the DM produced. It is also vital to sow varieties that are naturally high in grass quality as this directly improves the profitability of the enterprise. Using the D-value figures from the DARD Grass and Clover Recommended Varieties for Northern Ireland 2012/13 it is possible to calculate the financial value that this can provide.

Summarised below is a comparison of Aber® High Sugar Grass (HSG) mixtures from the DARD Recommended List with the average of the other Bold Type mid and late maturing varieties from that list. We have called this 'Morton's HSG Energiser' and it shows the type of financial benefits that can be gained for the future, by choosing these mixtures for reseeding this year.

Morton's HSG Energiser - Dairy Advantage

Mixture	Morton's HSG MJ/Ha	Dard Average MJ/Ha	Morton's HSG Gain	Utilization & Value		
				MJ/Ha	Litres Milk	70% @ 28p/L
Stoneleigh	157722	150104	+7618	+1410	+£276.36	+£315.84
Smithfield	159261	152176	+7085	+1312	+£257.15	+£293.88
Benvarden	158606	150104	+8502	+1574	+£308.50	+£352.57
Killyleagh	161682	152055	+9627	+1782	+£349.27	+£399.16
Belmoral	161339	152175	+9164	+1697	+£332.51	+£380.01
Cloverdale Sheep	159296	152641	+6655	+1232	+£241.47	+£275.96
Cloverdale Cattle	159006	152521	+6485	+1201	+£235.39	+£269.02

Financial gains are in £ sterling per hectare per year for 70% and 80% utilization at a milk price of £0.28 per litre

Morton's HSG Energiser - Beef Advantage

Mixture	Morton's HSG MJ/Ha	Dard Average MJ/Ha	Morton's HSG Gain	Utilization & Value		
				MJ/Ha	Kgs/Beef 55% kill out	70% @ £3.20/kg
Stoneleigh	157722	150104	+7618	+190.45	+£234.63	+£268.15
Smithfield	159261	152176	+7085	+177.12	+£218.21	+£249.38
Benvarden	158606	150104	+8502	+212.55	+£261.85	+£299.26
Killyleagh	161682	152055	+9627	+240.67	+£296.49	+£338.85
Belmoral	161339	152175	+9164	+229.1	+£282.25	+£322.57
Cloverdale Sheep	159296	152641	+6655	+166.37	+£204.96	+£234.24
Cloverdale Cattle	159006	152521	+6485	+162.12	+£199.73	+£228.26

Financial gains are in £ sterling per hectare per year for 70% and 80% utilisation at 55% killout and beef at £3.20 per kilo