FEED YOUR STEED

Limerick Park Fodder Hay Test
Results for 2022-2023 Season from Equi Analytical

Hay Samples for 2022-2023	WSC%	Starch %	NSC%	ESC%	Fructan= (WSC%-ESC%)	ESC% + Starch%
Henty Dale Farm	19.7	0.8	20.5	10.8	8.9	11.6
Bobs Farm	10.8	1	11.8	6.5	4.3	7.5
Triskele Farm East	17.7	0.7	18.4	9.2	8.5	9.9
Triskele Farm West	20.4	1	21.4	11.2	9.2	12.2
Gelmis Farm	15.2	1.1	16.3	7.4	7.8	8.5

Hay Samples for 2022-2023	DE Mcal/kg	ADF %	NDF %	Crude Protein%
Henty Dale Farm	1.92	34.2	54.2	6.1
Bobs Farm	1.78	37.2	61.7	8.5
Triskele Farm East	1.89	34.2	55.5	6.7
Triskele Farm West	1.9	35	55.2	6.1
Gelmis Farm	1.88	35.6	57.9	6.9

Common terms and what they mean for your horse from hay test results:

Crude protein (CP) - this is an estimation of total protein based on the amount of nitrogen in the hay. It does not tell you anything about the amino acid composition or the protein quality. To create a high-quality protein, one that will help your horse maintains and repair tissue, combine grass hay with a lesser amount of a legume (typically lucerne). Most grass hay for WA contain 6 to 10% CP. Whereas legumes (e.g., lucerne) can range from 20-30%. Cereal based hays (oats, wheaten) generally have a lower CP than grass hay.

Acid Detergent Fibre (ADF) - ADF is composed of cellulose, lignin & other poorly digested components. Lower the ADF value, more digestible the nutrients in the hay. Values of 30 to 35% are good for horses & values over 45% are of little nutritional value.

- ADF is a sub-fraction of NDF, consisting primarily of lignin and cellulose. ADF represents the portion of the hay that doesn't dissolve in an acid detergent solution.

- It has a strong (negative) relationship with total forage digestibility. As ADF increases, forage quality declines.

Neutral Detergent Fibre (NDF) - NDF is a measurement of the insoluble fibre.

- In theory, higher the NDF, the less a horse will eat. NDF levels around 40 and 50 are good & those over 65% likely not be consumed by most horses. For some horses with sensitive digestive systems use hay with 60% as the max NDF%.
- **NDF** - consists of the slowly digested fibrous portion of the plant: hemicellulose, cellulose and lignin, which is most of the cell wall material.
- As the total dietary NDF level increases, *voluntary feed intake* tends to decline.
- However, if NDF is too low, stomach upsets e.g., acidosis may occur.
- NDF is being increasingly used for ration balancing.
- NDF% percentage too high ~ 65-70% horses will not eat the hay & for some classes of horse can cause digestive issues.

Digestible energy (DE) - Measure of the digestible energy in the hay & used to balance the energy portion of the equine diet.

- DE is the energy in forage that is not lost in faeces.
- For a horse working in light work weight ~500kg ~ DE should be approx. 20 Mcal/day & most hays range from 1.67 to 2.07 Mcal/kg of DE.

Non-Structural Carbohydrates (NSC) - *the* total amount of sugar, starch, and fructan.

To obtain NSC% the easy way to work it out without having to be a maths wiz is just to add together %WSC (water soluble carbohydrates) + %Starch.

Water-soluble carbohydrates (WSC) – is a measure of simple sugars and fructan levels. This includes simple & digestible sugars (sucrose, glucose, fructose), non-digestible simple plant sugars & short chains of fructan (storage sugar for plants). Simple sugars are digested in the foregut and raise insulin levels. Too much can lead to laminitis because of elevated blood insulin.

Fructans, on the other hand, are digested in the hind gut. Too much can result in laminitis caused by endotoxins in the bloodstream. I appreciate there is a certain population of horse owners state fructan has nothing to do with laminitis & in certain times when laminitis occurs in horse & ponies then I agree Fructans have no part to play in the cause of laminitis.

But the jury is still out on what fructans actually do to the horse's hind gut. We know they are do something & with the research happening over in Northern Hemisphere more will become clear as to how they are affecting the biome of the horse.

Ethanol-soluble carbohydrates (ESC) – These are simple sugars extracted in a blend of ethanol & water. ESC contains glucose, fructose, sucrose, lactose & FOS (fructo- oligosaccharides). FOS are very short chain fructans which are highly fermentable fructans & can lead to abdominal issues.

ESC is a subset of WSC and gives you a better idea of the simple sugar level. WSC minus ESC provides a rough measurement of fructan levels.

From research we can state ESC% & Starch% are important for horses with PPID /IR or laminitis/EMS as it is the section of the hay which causes insulin to elevate.

Starch – *is Starch*. Normally digested in the foregut down to individual glucose (blood sugar) molecules; therefore, it has a strong elevating effect on blood insulin levels.

Starch gets digested to 100% glucose. For an example if a feed is 20% Starch (DM basis) this means 200g per kilo DM is starch.