Limerick Park Fodder Hay Test
Results for 2021-2022 Season from Equi Analytical

If your horse owners have horses which are prone to sub clinical laminitis you can state your hays are low in Fructan as some people are starting to ask for this figure as well.
Fructans = WSC% - ESC%
Starch is starch & 4% is considered low. (For Example: Oats content can be ~44% starch %)
NSC% = WSC% + Starch % (10% or lower, if possible, best up to 12% okay for horses with metabolic issues). In doubt to soak hay for approx. an hour to soak out ~30% sugars.

If their horses have ***PSSM*** or are prone to "***Tie Up" mostly*** to do with faulty issues with muscles they will want to know the figures that contain ESC% + Starch again people will like to see these figures all well below 10%

Hay Samples for 2021-2022	*WSC%*	*Starch %*	*NSC%*	*ESC%*	*Fructan= (WSC%-ESC%)*	*ESC% + Starch%*
Gelmi Paddock Sample	***13.8***	***0.9***	***14.7***	***9***	***4.8***	***9.9***
Cross Paddock Sample	***12.9***	***0.5***	***12.4***	***10.1***	***2.8***	***10.6***

Hay Samples for 2021-2022	*DE Mcal/kg*	*ADF %*	*NDF %*	*Crude Protein%*
Gelmi Paddock Sample	***1.87***	***36.6***	***57.1***	***8.1***
Cross Paddock Sample	***1.86***	***36***	***58.1***	***7.5***

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 7 to 10% CP. Whereas legumes (e.g., lucerne, clover) can range from 17-20%. Grain hays (oats, wheat) generally have a lower CP than grass hay.

Acid detergent fibre (ADF) and Neutral Detergent fibre (NDF) - both measure fibres (there are 5 types). Since fibres are digested by the microbes living in the hindgut (caecum and large colon), a healthy microbial population is important for the horse to derive calories from fibre. However, there is one type of fibre that is indigestible lignin. Lignin is increased as the plant matures. The higher

these two values, the more lignin the hay contains. This means the horse is not able to thrive on this hay since much of it ends up in the manure. The ideal ADF is less than 31%; ideal NDF is less than 40%. However, most hays have values 10 points or higher than these desired levels. To compensate, more hay will need to be consumed. This can be easily solved by allowing your horse to have free access to hay 24 hours a day.

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.

So, if a person's horse needs to have low sugar/low starch forage, the NSC% should be ~10%-12%.

If a horse has PPID & or/ IR/EMS ESC + Starch % should be 10% & below & if lower even better.

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.