

Dairy One Forage Lab Updates: February 2013

Digestible Starch

Due to higher corn prices, many farms have opted to increase the percentage of corn silage fed on their farm. It is important to recognize and manage this feeding change through routine nutrient analysis of all ration components, including overall starch digestibility. By monitoring starch digestibility we can maintain the balance of rapidly and slowly degradable starch for optimum rumen efficiency.

Last Fall, **Dairy One** introduced digestible starch through our standard NIR packages (F321 & G322) for the following feeds: green chopped corn, corn silage, high moisture corn, dry shelled corn, ear corn, and snaplage. The digestible starch value we provide represents the rumen fermentable starch reported as a percent of the total starch.

There is no standardized procedure for the determination of digestible starch. Dairy One calibrations are based on samples ground at 4mm and incubated in rumen fluid for 7 hours. We feel this procedure results in better differentiation of starch digestibility across the spectrum from low to high. Expected ranges are listed below and will also appear on your reports to aid in interpretation.

Table 1. Expected ranges for digestible starch

	Corn Silage	Hi-moist Corn*	Dry Corn Grain
High	> 88%	> 82%	> 68%
Medium	79 - 87%	62 - 81%	52 - 67%
Low	< 78%	< 61%	< 51%

* Unfermented green chopped whole plant corn and snaplage also fall in this category.

Starch digestibility is affected by moisture, particle size, vitreousness and fermentation. Analysis results are used to rank or qualify samples with respect to relative digestibility. For example, a corn silage sample that falls in the high range would best be fed along with dry shelled corn as opposed to high moisture corn to balance out the availability of starch in the rumen.

While there are no standard recommendations for ration digestible starch at this time, the following guidelines are generally accepted.

Table 2. Feeding guidelines for digestible starch

Group	Ration Starch % of DM	Digestible Starch % of Starch
Close up	16 -18	80
Early lactation	25 - 27	74
Peak lactation	26 - 28	83
Mid lactation	24 - 26	78
Late lactation	23 - 25	76

Remember, these are only guidelines and will likely change with more research in this area. Practical experience in the field will best determine how to effectively utilize this information.

NPN

In order to accommodate NPN in CNCPS based models, we have been asked to report ammonia as a percentage of the soluble protein. This will appear automatically on your reports when a sample receives both soluble protein and ammonia analyses.

New Forage Lab Services 2013

Dairy One has recently introduced an updated and expanded list of services to help customers measure and manage their feed ingredients for optimum performance.

NIR Services

Forages - there are now two forage packages.

(321) **Forage NIR Prime** - DM, CP, SP, RDP, ADICP, NDICP, est. lysine & methionine, ADF, NDF, lignin, starch, WSC, ESC (simple sugars), NFC, fat, ash, RFV, RFQ + MILK2006 values, TDN, NEI, NEm, NEg, ME, DE, Ca, P, Mg, K, S, Cl. Select either NDFD 24hr, 30hr, or 48hr. Silages receive lactic acid, acetic acid, and ammonia CPE. Corn silages receive starch digestibility (7hr, 4mm grind).

(325) **Forage NIR** - DM, CP, SP, RDP, ADICP, NDICP, est. lysine & methionine, ADF, NDF, lignin, starch, WSC, ESC (simple sugars), NFC, fat, ash, RFV, TDN, NEI, NEm, NEg, ME, DE, Ca, P, Mg, K, S, Cl.

Grains - a commodity package has been developed and added for 15 common commodities.

(322) **Grain NIR** - DM, CP, SP, RDP, ADICP, NDICP, est. lysine & methionine, ADF, NDF, lignin, starch, NFC, fat, ash, TDN, NEI, NEm, NEg, ME, DE, Ca, P, Mg, K, S. Available for corn, barley, oats, wheat, triticale, distillers and brewers grains. Corn samples receive starch digestibility (7hr, 4mm grind).

(326) **Commodity NIR** - DM, CP, SP, ADF, NDF, NFC, fat, ash, TDN, NEI, NEm, NEg, ME, DE, Ca, P, Mg, K, S. Available for beet pulp, canola meal, canola seed, cottonseed meal, corn gluten feed, corn gluten meal, corn germ meal, grain screenings, hominy, wheat midds, soybeans, roasted soybeans, soybean meal, heat treated soybean meal, and soy hulls.

Total Mixed Rations

(323) **TMR NIR** - DM, CP, SP, ADF, NDF, lignin, starch, NFC, fat, ash, TDN, NEI, NEm, NEg.

Wet chemistry supplemental minerals

(329) **Wet chemistry minerals** - substitute/add wet chemistry Ca, P, Mg, K, Na, Fe, Zn, Cu, Mn, Mo to any of the above NIR packages. Not available as a stand alone service or add-on to wet chem. packages.

(331) **DCAD** - (329) + Sulfur + Chloride for DCAD calculation. Not available as a stand alone service or add-on to wet chem. packages.

Specialized Services

Mineral, mineral mix, animal byproduct and liquid packages were assembled to provide the most relevant analyses for these feed types. Any samples arriving at the lab in which one of the standard packages is assigned, will automatically be assigned the appropriate Specialized Service as determined by our staff. This is to insure that you receive nutritionally relevant data. For example, it doesn't make much sense to perform fiber analyses on liquids or animal byproducts. Results, if any, reflect residues of unknown composition, meaning that whatever appears in these results is not fiber (lignin, cellulose or hemi-cellulose).

(314) **Animal Byproducts** - **must** be used for all products of animal tissue origin. Any animal product requesting any other package will automatically be assigned this service and charged accordingly. DM, CP, SP, fat, ash, TDN, NEI, NEm, NEg, ME, DE, Ca, P, Mg, K, Na, Fe, Zn, Cu, Mn, Mo, S.

(19) **Liquids** - **must** be used for all liquid products (whey, molasses, juices, etc). Any liquid requesting any other package will automatically be assigned this service and charged accordingly. DM, CP, fat, ash, est. carbs., TDN, NEI, NEm, NEg, ME, DE, Ca, P, Mg, K, Na, Fe, Zn, Cu, Mn, Mo, S.

(12) **Mineral Ingredient or Mixture** - **must** be used for all mineral products. Any mineral requesting any other package will automatically be assigned this service and charged accordingly. DM, Ca, P, Mg, K, Na, Fe, Zn, Cu, Mn, Mo, S, Co, Cl.

The Dairy One Forage Lab is committed to providing analytical services that allow you and your nutritionist to make informed decisions.

Visit our web site for updated sample information sheets and pricing.