

## Cellulo-Gest® to Overcome the "New Crop Slump"

### The Problem:

The corn silage total digestible nutrient content (TDN) for dairy and beef cattle improves as fermentation (ensiling) progresses. Corn silage fermented for less than 90 days is often referred to as "new crop" corn silage and corresponds to recently harvested forage.

Field experience suggests the new crop of corn silage often yields less energy for gain and production than the corn silage being fed from the previous year's harvest. Dairies feeding freshly chopped or minimally (<90 d) fermented corn silage often experience decreased performance and increased milk butterfat and protein concentrations. The reasons behind the performance changes have been debated for years and this circumstance is referred to as the "new crop slump".

### Why?

The "new crop slump" results from inhibited rumen starch digestion. The grain pericarp and prolamin (zein) protein both impede solubilization in rumen fluid and bacterial attachment to starch, which are the first necessary steps for rumen bacteria starch digestion or enzymatic breakdown in the intestines.

The reason starch digestion improves with time in the silo is that prolamin proteolysis takes place during fermentation, cleaving the endosperm protein matrix, improving bacterial access to starch granules, and effectively decreasing particle size.

**Table 1: Rumen 7h lab bench in vitro starch digestion (ivSD) differences for harvest (fall) and spring corn silages (Data adapted from Huibregtse et al.,2013)**

Item	Harvest (Fall)	Spring
ivSD 7h, % of Starch	83.7	90.3
ivSD 7h Range, % units	35.8	13.7

### A Solution – Cellulo-Gest® Supplementation

Cellulo-Gest® supplies fungal metabolites and an enzyme profile to aid starch digestibility as well as fiber digestibility. The enzyme profile of Cellulo-Gest® is as follows:

Enzyme	Activity
Amylase	530,000 MWU/lb.
Hemicellulase	84,000 HCU/lb.
Cellulase	5,000 CU/lb.
Glucanase	550 GU/lb.
Pectinase	500 PSU/lb.

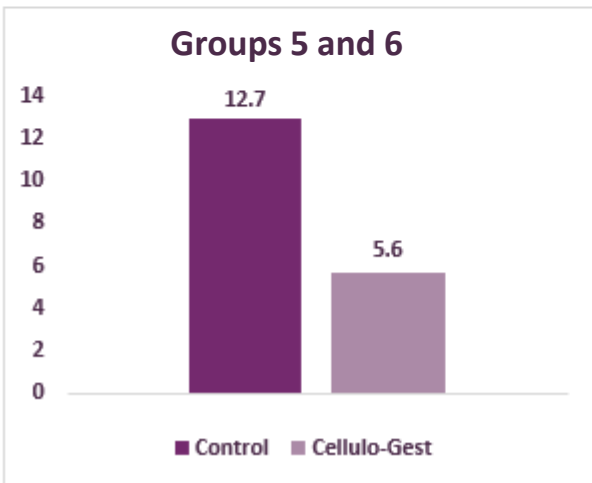
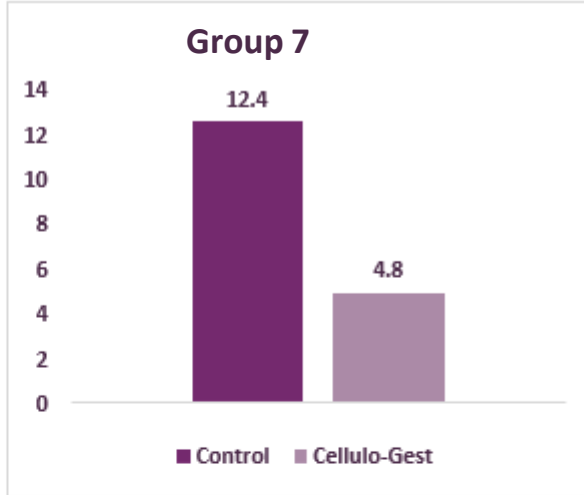
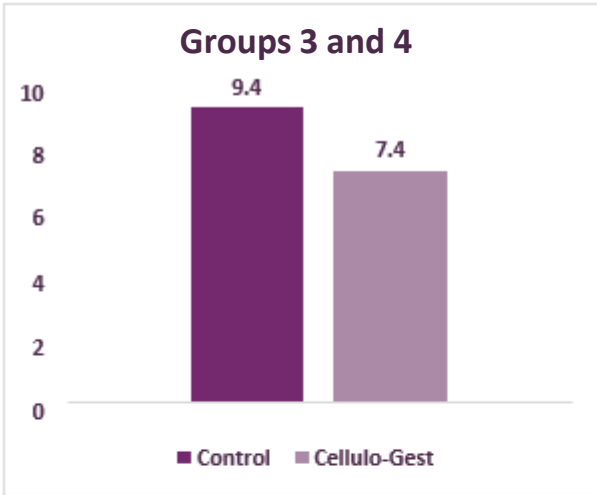


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Besides positively impacting fiber digestibility, we have noted improvements in starch disappearance when analyzing manure samples. This are associated with improvements in milk production.

### Starch in Manure as Percent of Starch in TMR



Florida field trial (2015) with rations containing corn silage, alfalfa hay and citrus pulp.

Corn was ground to 380 microns in particle size with 1.8% variation

Customers have been able to minimize the impact of the “*new crop slump*” by supplementing the diets with Cellulo-Gest. A couple of examples of field demonstrations illustrating the milk production impact of Cellulo-Gest® are attached for your reference.

Our research data and field work demonstrate that a Cellulo-Gest® investment of ~8¢ per cow daily can return **a net of ~50¢!** Is this a time where your customers can benefit from this technology? How can we assist you?