



...**BEYOND FERMENTATION**

## Frequently Asked Questions

**Q: What value does CFT deliver to livestock producers?**

A: CFT delivers “triple stack” benefits of:

1. Increased NDFD (Neutral Detergent Fiber digestibility) by an average of 4 percentage points.
2. Improved “front-end” fermentation (reduces shrink) similar to Pioneer 11C33.
3. Improved bunklife similar to Pioneer® brand 11C33 corn silage inoculant.

**Q: How does CFT increase fiber digestibility?**

A: The *Lactobacillus buchneri* strain in CFT produces specific esterase enzymes that release fiber polysaccharides from the lignin backbone increasing 48-hour NDFD by about 4 percentage points. Decoupling fiber from the lignin increases fiber digestion rates by rumen bacteria. Lignin is not degraded so lignin levels (and peNDF) in the silage remain essentially the same as corn silage from typical conventional hybrids

**Q: What is the advantage of improved fiber digestibility?**

A: Improved NDFD increases the energy density of the corn silage to help support milk production or body condition and helps drive increases in total dry matter intake. This can help improve feed efficiency and provides opportunity to increase income over feed cost (IOFC) by feeding more forage and reducing need for supplemental concentrate sources. Increasing forage levels in the ration also helps ensure optimal rumen and foot health in lactating animals.

**Q: What is the potential economic value of improved fiber digestibility in corn silage?**

A: NDFD meta analysis by ARS/USDA dairy scientist, Dr. H.G. Jung, suggests 0.3 lbs more milk and 0.26 lbs more dry matter intake from every 1% point increase in corn silage NDFD. UW MILK2006 predicts 32 lbs more milk per as fed ton of corn silage that exhibits 4% points higher NDFD. For cows consuming 50 lbs of, as fed, corn silage, this would translate to about 0.8 lbs more potential milk/cow/day. With typical variations in daily milk production of 2-3 lbs/cow/day, this response will be extremely difficult to detect on-farm given the influences of weather patterns, herd health, estrous, changing percentages of fresh cows and heifers, etc.

**Q: What will be the expected visible, on-farm effects of feeding CFT silage?**

A: Feeding CFT silage can result in one or more of the following:

- improved TMR dry matter intake
- improved feed efficiency due to enhanced silage digestibility
- opportunity to improve income over feed cost (IOFC) by feeding more forage and reducing need for supplemental concentrate sources
- improved body condition, especially among heifers and early-lactation cows
- reduced silage heating (similar to using Pioneer® brand 11C33, but much improved over non-*L. buchneri* products)
- potential for more milk.

**Q: Will CFT work on all hybrids?**

A: CFT improves NDFD across genetically diverse conventional hybrids. Studies with BMR hybrids have been mixed as might be expected given the reduced lignin content in these hybrids. It is important to recognize that the starting point for silage NDFD is affected by growing season, harvest maturity, chop height and to a lesser extent, hybrid genetics. Pioneer research showed similar relative improvements in NDFD when the same hybrid was treated with CFT in two distinctly different seasons; however the absolute NDFD values can be very different between growing seasons. Selection of a silage hybrid should be made completely independent of CFT usage decisions.

**Q: How can a dairy capture maximum value for feeding CFT silage?**

A: CFT silage would provide the maximum value to producers:

- Storing CFT silage separately
- Allocating CFT silage primarily to transition and high-string, early-lactation cows
- Feeding relatively high amounts of corn silage (e.g. >30 lbs/cow/day, as fed)

**Q: Can forage labs detect the improvement in NDFd?**

A: Current NIR calibrations and commonly available *in vitro* (test tube) methods do not possess the sensitivity to predict the NDFD improvements that have been proven with *in vivo* (live animal) trials. CFT produces enzymes which cause physio-chemical changes in the fiber-lignin linkages, while not actually changing the amount of lignin or fiber in the silage. Rumen bacteria recognize this change and digest the decoupled fiber at a faster and often greater extent. *In vivo* experiments have consistently detected changes in fiber digestibility, as do *in situ* methods (replicated, 6mm-ground samples placed in nylon bags and hung in fistulated animals). Certain labs utilizing gas-production methods have also been able to detect the effects of CFT.

**Q: Do any competitive products contain enzyme-producing bacteria to increase NDFd? Why not just add enzymes directly to the silage or to the TMR?**

A: No other products are currently known to contain bacteria specifically selected for fiber altering enzyme production. The proprietary strain of *L. buchneri* found in CFT produces specific esterase enzymes suited to low silage pH's and delivers enzymes cost-effectively as the organism multiplies and grows in the silage. Some forage additives do show the addition of enzymes on their label. However, this is primarily "window dressing" because the addition of purified enzymes are too costly to provide in sufficient amounts, tend to lose activity over time, and may not be effective in the low pH conditions found in silage. Furthermore, the use of enzymes can not deliver the added fermentation and bunklife benefits available from CFT.

**Q: Does the use of CFT alter my hybrid selection criteria?**

A: In the 30+ studies Pioneer has conducted with CFT, over a wide range of hybrids, we have not observed what would be interpreted as biologically-meaningful hybrid x inoculant interactions. In other words, the relative response from CFT is not expected to be different with low digestible hybrids compared to highly digestible hybrids. However, the starting, baseline NDFD of the silage will be influenced by growing environment, harvest/storage management and to a lesser degree, hybrid genetics. Selection of a silage hybrid should be made completely independent of CFT usage decisions.

**Q: How soon can I start feeding CFT silage?**

A: CFT-treated corn silage should be stored 2 months before feeding in order to achieve optimum results. This is based on research indicating the enzymatic effect is achieved by 60 days post-ensiling. In transitioning to CFT silage, producers should account for baseline NDFD and starch content in the new crop and the changing sugar level, starch digestibility and nitrogen solubility during the entire storage period. Producers who wait 6-7 months before feeding CFT silage should consider adjusting rations to account for increasing starch digestibility due to the length of time in storage.

**Q: How can a nutritionist balance rations without knowing the exact NDFD?**

A: From the many animal experiments and field trials conducted by Pioneer researchers, a 4% point increase in 48-hour NDFD (over baseline estimates) would be a good starting point to factor in the effect of CFT. Changes in digestion rates (Kd) resulting from the improvement in NDFD can be made in formulation models, such as CPM or CNCPS, by employing the VanAmburgh Rate Calculator spreadsheet available from Pioneer or Dr. Mike VanAmburgh (mev1@cornell.edu) at Cornell University.

**Q: Has data on CFT been published or reviewed by any outside agencies?**

A: Pioneer presented initial CFT research posters at the 2006 Dairy Science Meetings. Subsequent positive studies have been reported at the University of Delaware, University of Illinois and University of Florida. CFT was commercialized in Europe in 2008 and positive research studies at the University of Padova (Italy) and Agricultural Chamber Schleswig-Holstein (Germany) have been published. A paper on the CFT fiber digestion technology has also been published in *American Feed Science and Technology* (v.145, 2008). We have a complete dossier of research studies in the "*CFT Technical Manual*" available upon request to your Pioneer representative. Finally, Pioneer® brand 11CFT also received permission (January 5, 2007) from the Canadian Food and Inspection Agency to make the following product claims in Canada:

1. Improved dry matter intake
2. Improved NDF digestibility
3. Improved gain/ton of silage fed
4. Improved feed efficiency
5. Reduced heating at feeding
6. Reduced dry matter loss at feeding

**Q: What are the ration considerations when feeding CFT silage?**

A: We have developed a separate informational bulletin entitled "*CFT Feeding Considerations*" that should address any nutritional or ration-balancing questions from producers or nutritionists. Please contact your Pioneer representative for a copy.

