# 11CFT Feeding Considerations

**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 in the silage remain essentially the same as corn silage from typical conventional hybrids.

**Q - What is the on-farm observations expected when 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 (about the same as expected with Pioneer® brand 11C33, but much improved over non-*L. buchneri* products)
- potential for more milk. 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 -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 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 - 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 - 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 - What are the ration considerations when feeding CFT silage?**
**A** - Producers and nutritionists with experience feeding BMR silage should already know what to expect when adapting to feeding CFT silage. Here is some general CFT silage feeding considerations:

- Intakes may be elevated and this will increase intake of total daily starch. This will be magnified if corn silage inclusion rates are significantly increased. Adjustments may be needed to compensate for increased starch digestibility over time in storage for corn silage (and high moisture corn).
- Where CFT has been compared against control silage using gas-production methods, CFT has been shown to: 1) increase the rate of slow ($B_3$) pool digestion, 2) reduce the time required to achieve slow ($B_3$) pool maximum digestion rate and 3) cause slow pool nutrients (e.g. hemicellulose) to digest at rates more commonly observed among fast ($B_2$) pool components (e.g. soluble fiber).
- Feeding CFT silage often allows for some reduction in fast pool nutrients (e.g. reducing grain in the TMR) to offset increased availability of hemicellulose and shifting “slow pool” nutrients into the “fast pool”.
- When feeding significant amounts of highly digestible forages, it is helpful to frequently monitor cud-chewing, TMR particle size consistency and sorting issues due to changes in TMR mixing and delivery, along with ensuring adequate levels of ration NDF and peNDF (>23%). The peNDF or fragility of CFT silage appears similar to that of conventional corn silages.
- Field experience with herds who were borderline for effective fiber and/or acidosis issues and began to experience fat-test depression problems when starting to feeding CFT-silage resolved the problem quickly (and cheapened up the ration) by reducing grain (especially HM corn), increasing corn silage inclusion rates and adding co-products such as soyhulls (an additional source of soluble fiber to fuel rumen fiber digesters).
- CFT silage-based rations may require attention to the degradable protein and lysine: methionine amounts & ratios; possibly allowing for the reduction of bypass protein given higher rumen bacterial protein flow.
- As with any ration, observing animal performance, intakes, effective fiber levels, and manure consistency can help nutritionists further refine CFT-based silage rations.