

## ADDRESSING 2019 AGRICULTURAL CHALLENGES

Resources for Ohio's farmers to navigate the impacts of extreme weather conditions

### Question: What can I do to stretch forage supplies at my dairy farm?

**Answer:** Dairy cows require forage fiber. It is needed to produce milk fat which currently is valuable, and it is needed to maintain digestive efficiency and animal health. However with proper diet formulation we can maintain cow health and milk fat production on lower forage diets. The critical factors that will determine minimum concentrations of forage in lactating cow diets are: concentration of fiber (measured as NDF) in the forage, particle size of the forage, and source and concentration of dietary starch. Under research conditions, diets with as little as 14% of the diet dry matter (DM) as forage NDF have been successfully fed. However, under real world conditions 16% is probably a safer minimum. On a forage basis, 16% forage NDF in diet DM is equal to 38% of diet DM when the forage contains 42% NDF ( $16/0.42 = 38\%$ ). A realistic minimum forage concentration is 35 to 40% of the diet when the forage contains at least 40% NDF. With low forage diets, cows must be fed low starch diets. This means that the forage is not replaced with corn grain but rather with byproducts such as soyhulls, corn gluten feed, wheat midds, and distillers grains. Because of its fat concentration and mineral profile, distiller grains should be limited to about 10% of the diet DM. Whole fuzzy cottonseed fed at rates up to about 10% of the diet DM are an excellent substitute for forage and should be included in low forage diets. Starch concentrations should be around 20% of DM when low forage diets are fed and dry corn grain is primary starch source.

There are some caveats for these types of diets:

1. If high moisture corn is fed, forage concentrations must be higher than discussed above even when starch concentrations are low. Low forage diets work much better with dry corn.
2. Forage particle size must be adequate. For corn and alfalfa silage 60-70% of the particles should be on the top two screens of the Penn State Shaker Box. If silage is finer than that you must feed more forage.
3. TMR mix quality is always important but even more important with low forage diets. Pre-chop hay rather than chopping it while you make the TMR. This prevents excessive particle size breakdown of silage and gives a more uniform mix. Make sure the TMR contains adequate moisture to prevent separation (50 to 60% dry matter in the final TMR is recommended). Ensure that the mix is well-blended but do not over mix because of particle size reduction of the forage.

4. Feeding more than once per day reduces meal size and helps maintain rumen health with low forage diets.

5. Forage is the primary source of potassium in most diets. Adequate potassium is needed to maintain milk fat and help cows handle heat stress. Dietary cation-anion difference (DCAD) is also often too low with low forage diets. With low forage diets, mineral supplementation may need to be altered. Dietary potassium should be at least 1.2 to 1.4% and DCAD should be at least 200 mEq/kg (closer to 300 may be better).

6. Low forage diets are often less efficient than higher forage diets. This means more feed will be needed to produce the same amount of milk and milk components. Often feed efficiency (pounds of energy-corrected milk/pound of DM intake) will be about 5% lower on low forage diets. This is because some of the byproduct particles flow out of the rumen before being digested.

7. Because milk fat is extremely valuable right now, you do not want to feed diets that reduce fat production. Milk fat tests should be monitored continuously and if milk fat concentrations drop diets should be re-evaluated.

If forage supplies are limited, work with your nutritionists now to formulate lower forage diets.

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