High Quality Fescue Silages for Lactating Dairy Cattle

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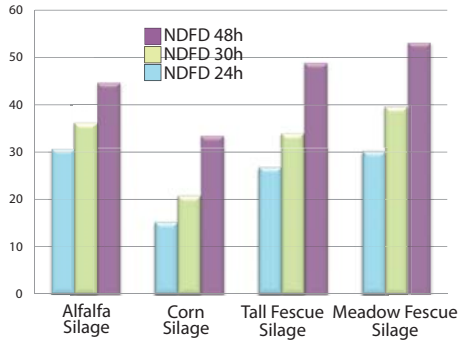
Many dairy producers in the Midwest are taking a closer look at incorporating grass silages into rations of high producing cows. When harvested early, grasses fit well with alfalfa and corn silage because they are a good source of highly digestible fiber. In addition, grasses can provide more flexibility in manure management if grown as a stand-alone crop and can improve yields and reduce the risk of winterkill when grown with alfalfa.

Figure 1. In vitro NDF digestibility of alfalfa, tall fescue, meadow fescue, and corn silage.



Tall fescue and meadow fescue are top choices of many dairy producers who are looking for a grass to add to alfalfa and corn silage forage production systems. When managed for silage, tall fescue is among the highest yielding perennial grasses grown in Wisconsin. Newer, low endophyte-soft leaf varieties of tall fescue are more palatable and higher in digestibility than the older varieties. Tall fescue also has excellent heat and drought tolerance which helps it out-yield most other grasses in mid-summer and autumn and makes it an excellent grass to incorporate with alfalfa. Meadow fescue has excellent forage quality and palatability, relatively high drought tolerance, and excellent cold tolerance. Meadow fescue may yield less than tall fescue, however, and may not tolerate mechanical harvesting as well as tall fescue.

Newer varieties of meadow fescue and tall fescue will contain approximately 50-55% NDF with an in vitro 48 hour NDF digestibility of 65-75% of NDF when harvested at the boot stage. In a recent study, researchers found the NDF digestibility of tall and meadow fescues were similar to the in vitro NDF digestibility of alfalfa (Figure 1). Corn silage NDF digestibility is significantly lower than NDF digestibility of tall fescue or meadow fescue.

Tall fescue and meadow fescue contain relatively low levels of highly fermentable sugars, so extra care must be taken when ensiling to assure the grasses will preserve well. They must be finely chopped and packed at high density to optimize the ensiling process. If ensiling in ag bags or bunkers, the best silages will result if meadow fescue or tall fescues are harvested relatively wet, ideally about 75% moisture. It is recommended that an inoculant containing both *lactobacillus plantarum* and *lactobacillus buchneri* be applied to improve silage quality and aerobic stability.

Tall fescue and meadow fescue work best in rations that contain excellent quality alfalfa and corn silage. The nutrient profile of high quality fescue silage complement the excesses and deficiencies of rations formulated with excellent quality corn silage and alfalfa. Diets with excellent corn silage and alfalfa are often marginal in fiber, and high in NFC content. To balance these diets, it becomes necessary to incorporate feeds that are highly digestible yet contain relatively low amounts of NFC and high amounts of digestible fiber. This approach would suggest that high quality grass silages could be used much like nutritionists use high fiber co-products, such as beet pulp or soy hulls, to add fiber and maintain optimal rumen pH.

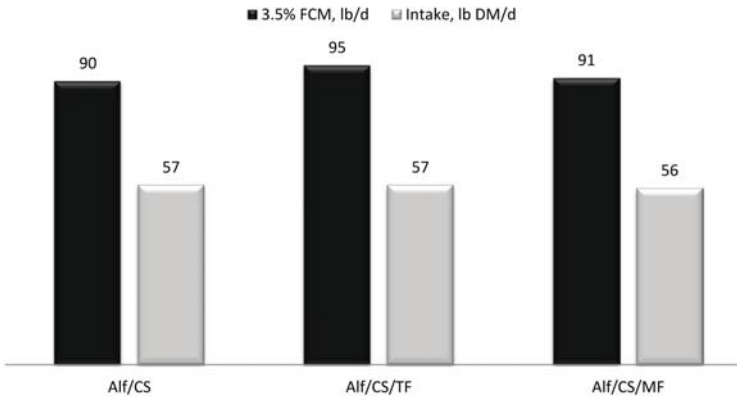
To test this approach, a study with high quality tall fescue or meadow fescue silages were used as a source of digestible fiber in dairy cattle diets. Researchers tested a control diet and two diets with either tall fescue or meadow fescue (Table 1) in high producing-early lactation cows. The control diet, formulated with corn silage and alfalfa silage as the only sources of forage, was designated as a 'hot' diet that was high in NFC and low in

Table 1. Composition of test diets containing either alfalfa and corn silage (Alf/CS), or alfalfa, corn silage, and tall fescue (Alf/CS/TF) or alfalfa, corn silage, and meadow fescue (Alf/CS/MF) (Verbeten et al., University of Wisconsin, 2012).

Feed	Alf/CS	Alf/CS/TF	Alf/CS/MF
	----------% of Diet DM----------		
Corn Silage	26	17	17
Alfalfa Silage	26	17	17
Tall Fescue Silage[a]	0	17	0
Meadow Fescue Silage[b]	0	0	17
High Moisture Corn	26	25	26
Protein/Mineral	22	24	23

[a]*Soft leaf-low endophyte tall fescue (Bariane, Barenbrug seeds)*
[b]*(Pradel, Barenbrug seeds)*

Figure 2. Milk yield and intake of cows when tall fescue (TF) or meadow fescue (MF) partially replaced alfalfa (Alf) and corn silage (CS) (Verbeten and Combs, 2012, Univ. Wisconsin).



NDF (Alf/CS). Tall fescue or meadow fescue were used in the test diets to replace about one third of the corn silage and alfalfa (Alf/CS/TF or Alf/CS/MF).

Replacement of about a third of the corn silage and alfalfa mix with the fescue silages raised the total fiber content and lowered the dietary NFC of the diet. Thus, the amount of ruminally-digested NFC was decreased and the amount of ruminally-digested NDF was increased by adding the fescues to the diets. Cows fed the diets with tall fescue or meadow fescue produced the same amount of 3.5% fat corrected milk as cows fed the diet with alfalfa and corn silage as the only sources of forage (Figure 2). Adding grass to the diets did not depress feed intake. Including grass in dairy rations appears to be a feasible strategy to reduce the NFC level of early lactation diets and increase levels of fiber without reducing milk yield.

High quality, well managed grasses have potential as a source of highly digestible fiber for high producing dairy cows. The fiber in early maturity grasses is more digestible than alfalfa fiber, and when grasses are used to replace alfalfa fiber, milk production, and intake of high producing cows do not appear to be affected. Perhaps the greater opportunity for grasses in dairy rations is as a feedstuff that is high in digestible fiber and low in NFC. There appears to be a need for these types of feedstuffs when excellent quality corn silage and alfalfa are the core forages in dairy rations.