

# Valuating Nutritive Value of Alfalfa with Meadow Fescue Varieties for Optimal Quality in Dairy Production Systems

R. Tacoma-Fogal  
Department of Animal Science  
Cornell University

## Introduction

Dairy forage production systems in New York State are unique in that over 85% of alfalfa sown in the state is done in combination with a perineal grass. The soils in the state tend to have suboptimal drainage characteristics needed for optimal alfalfa production. Introducing a grass species into the alfalfa stand increases the neutral detergent fiber (NDFD) of the forage, and alfalfa-grass mixtures often have greater yield than pure alfalfa stands. Meadow fescue (*Festuca pratensis*), the underdog of perennial grasses in the US has recently been brought to the attention of forage extension specialists in the MidWest at the U.S. Dairy Forage Research Center, Dr. Michael Casler and at Cornell University, Dr. Jerry Cherney in the School of Integrated Plant Sciences, and Dr. Debbie Cherney in the Department of Animal Science. Originating from Europe, meadow fescue varieties show potential as a high-yielding, winter-hardy, high quality grass to be adopted into the dairy forage systems. The goals of the research were to 1) evaluate the growth of nineteen different meadow fescue varieties in combination with alfalfa while maintaining a 20-30% grass inclusion in the mix throughout the season, 2) achieve the highest possible quality of grass at harvest, and 3) provide region-specific management protocols to encourage home-grown forage use on dairy farms in the northeast.

## 2020 Growing Season and Take Home Message

Spring grass growth was delayed in 2020 due to drought conditions early in the season where grass development was delayed about 10 days. Subsequently rapid changes in plant development were observed as the stands phased into the reproductive mode (stem elongation with inflorescence) at a high rate. Average nutritive value of MF varieties in spring changed linearly between May 22 and May 30, 2020, where NDFD significantly decreased from 890 to 750 g/kg NDF ( $R^2 = 0.999$ ) over the 8-day period at 1.7% units/day. Crude protein content in meadow fescue varieties declined at 0.7% units/day ( $R^2 = 0.99$ ) and NDF concentration increased from 430 to 550 g/kg ( $R^2 = 0.996$ ) over the 8-day period at a rate of 1.25% units/day. Grass proportion of alfalfa-grass mixtures ranged from 0.08 to 0.38 in the spring of 2019, and the range increased from 0.37 to 0.55 in the spring of 2020. The range in NDFD in the spring of 2020 was 7 g/kg, with Hidden Valley and Driftless ranking the highest. Research consistently highlights the potential economic advantage of improved grass to alfalfa forage quality where a 1% unit rise in NDFD translates to a 0.5 to 1 lb milk/cow/day increase in milk production. At this rate, everything needs to be done to ensure top quality forage is grown and harvested on time to achieve optimal forage yields and quality.