

Like any crop, forages that are harvested for hay production require fertilizer to replace the nutrients removed. While early spring fertilizer application is believed to be the most effective, late fall applications may be more practical due to road bans, time constraints and wet soils. With fall applications of N, there is greater potential for N to be lost through volatilization, leaching and runoff. Enhanced efficiency products can help reduce losses to the surrounding environment by slowing down the release of plant available N to ensure better crop uptake.

A large- and small-scale demo were set up on an old dominantly grass forage stand near Prince Albert in 2018 and 2019. The large-scale trial results are not included in this factsheet but have very similar results to the small-scale trial. There were 17 treatments applied comparing 4 types of nitrogen products (Nitrain, ESN, SuperU, and urea) at two rates (45 and 90 lb N/ac) and two application timings (fall and early spring). These treatments were replicated 4 times. Fall fertilizer was applied October 19, 2018 and spring fertilizer was applied May 9, 2019.

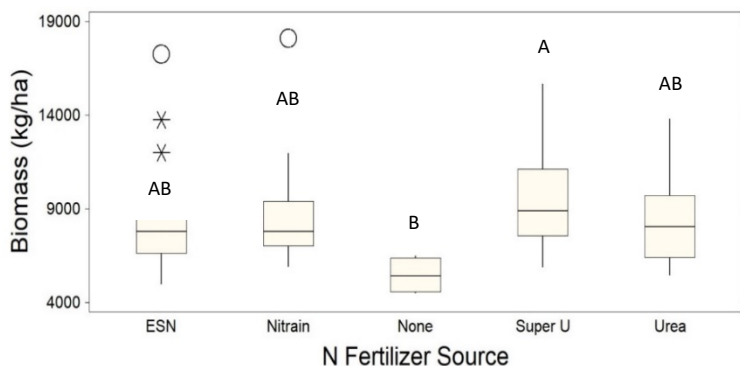


Figure 1. Mean biomass response of a dominantly old grass forage stands to different N efficiency products and urea. Different upper-case letter indicates significant difference at the $p < 0.05$ level.

Based on Figure 1 and Table 1 the addition of N fertilizer increased yields in the first year following application. The treatment of 90 lb N/ac of spring applied Super U was the only treatment that was statistically greater

than the control. Overall SuperU was the best performing N product used. There was no difference in the timing of fertilizer application. The weather in Prince Albert was dry and cool in the fall of 2018 and spring of 2019 and was not conducive to excessive nutrient loss. As a result, the true potential of the efficiency products were not shown. Results would have likely been very different under wetter conditions that are more conducive to nutrient loss.

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Table 5. Results from the small-scale demonstration of mean biomass response of an old grass forage stands when N fertilizer is broadcasted at different rates, timing and with use of efficiency products (n=4)

Timing	Rate (lb N/ac)	N Form	Biomass kg/ha
Fall	0	None	5453
		Urea	7851
	45	ESN	9218
		Nitrain	7259
		Super U	7245
		Urea	9671
	90	ESN	9372
		Nitrain	7860
		Super U	10281
		Urea	6463
Spring	45	ESN	7673
		Nitrain	10231
		Super U	9583
	90	Urea	9270
		ESN	8193
		Nitrain	9545
		Super U	10748