Topdress UAN

Objective: Compare 100% preplant N vs 100% preplant N + 30 lbs N/acre as UAN at the boot stage.

Trials included 3-4 replications of Topdress and No Topdress strips applied as liquid UAN at 10 gal/acre with streamer nozzles and a urease inhibitor (Limus). This was done with cooperator equipment along the full length of the field. Harvested strips were weighed in a weigh wagon and sampled to measure moisture, test weight, and protein content.

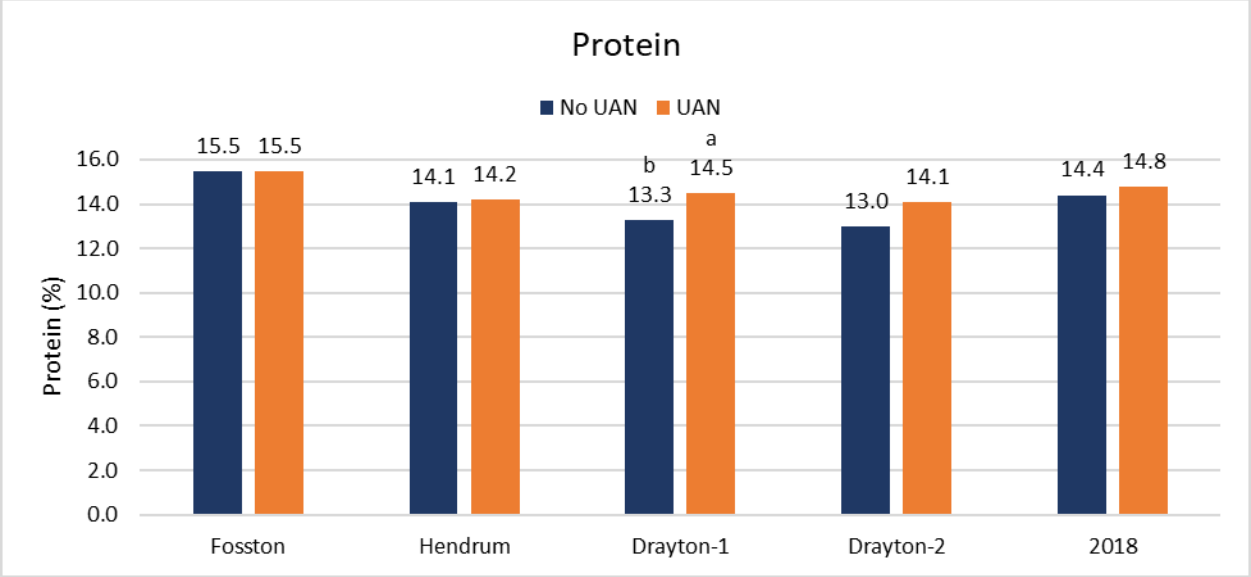

Figure 1. Protein content between No UAN and UAN treatments at 4 locations in NW MN in 2018. Differing lowercase letters indicate significant differences between treatments at the 90% confidence level.

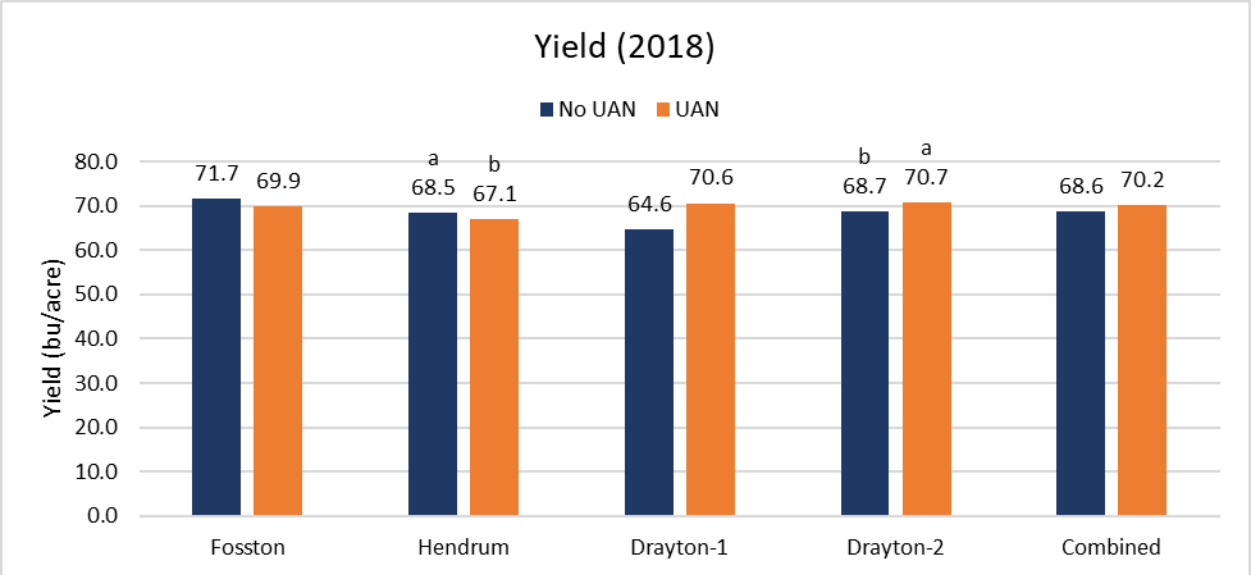

Figure 2. Yield between No UAN and UAN treatments at 4 locations in NW MN in 2018. Differing lowercase letters indicate significant differences between treatments at the 90% confidence level.

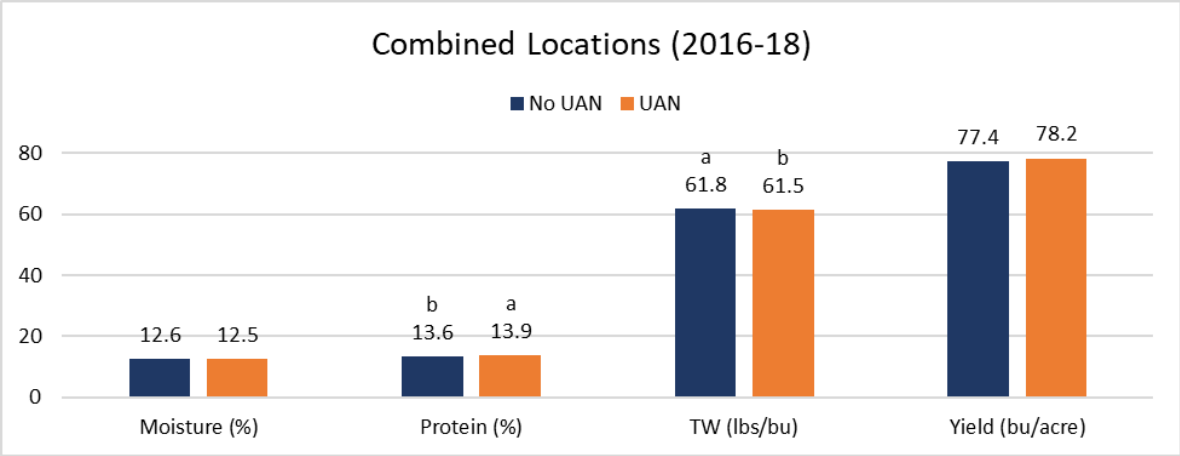

Figure 3. Moisture, protein, test weight (TW), and yield between No UAN and UAN treatments at 25 locations in NW MN from 2016-2018. Differing lowercase letters indicate significant differences between treatments at the 90% confidence level.

Table 1. Economic analysis of boot-stage UAN topdress application.

		Fosston	Hendrum	Drayton-1	Drayton-2	2018
		LCS Rebel	SY Valda	ND Vitpro	MN Lang	
Protein	No UAN	15.5	14.1	13.3	13.0	14.4
	UAN	15.5	14.2	14.5	14.1	14.8
	Increase	0	0.1	1.2	1.1	0.4
	$ Premium[1]	$ 0.00	$ 0.02	$ 0.12	$ 0.10	$ 0.04
	Protein gain	$ 0.00	$ 1.34	$ 8.47	$ 7.07	$ 2.81
Yield	No UAN	71.7	68.5	64.6	68.7	68.6
	UAN	69.9	67.1	70.6	70.7	70.2
	Increase	-1.8	-1.4	6.0	2.0	1.6
	Yield gain	$ (9.96)	$ (8.16)	$ 33.95	$ 11.19	$ 8.86
Total $	UAN cost[2]	$ 25.94	$ 25.94	$ 25.94	$ 25.94	$ 25.94
	Net gain	$ (35.90)	$ (32.75)	$ 16.48	$ (7.68)	$ (14.27)

1 Protein premium of +$0.02 per fifth above 14.0% with a max of $0.10 and a protein discount of -$0.02 per fifth below 14.0 to 12.0 or a max discount of $0.20

2 December wheat price of $5.69/bu. Considering 1 bu/ac lost due to tire tracks from the application. $8.00/ac application cost for machinery and time. $11.00ac for 10 gallons of 28-0-0. $1.25/ac for the Limus.

Conclusions:

- Topdressing an additional 30 lbs/acre N as UAN at the boot stage does not increase yield, but can increase protein content by 0.3%.
- The same amount of N applied post-anthesis has shown a 0.5%-1.0% increase in protein content in university small-plot research which makes it the more economical timing.
- Individual location responses vary widely by environment.