

CASE STUDY 6: ENHANCED EFFICIENCY FERTILIZER

Modern air seeders have incredible logistical capability, enabling multiple products to be applied with VR, and often with different placement options. This case study highlights the use of an EEF to mitigate nitrogen losses in wetter parts of the landscape (zones 7-10 in this field) in a field near Naicam, Saskatchewan, Canada, in 2020. Figure 1 presents the seed/fertilizer prescription, as well as a heatmap of as-applied EEF.

Two forms of nitrogen were applied: layer 4 contained SuperUë , a product with dual nitrification and urease inhibitors, while layer 5 contained untreated urea. While every part of the field had a mix of N sources, the percent of protected urea varied by zone. For example,

while both zones 2 and 9 had the same amount of total N applied (98 lb/ac), only 28% of N in zone 2 was protected while 75% of N in zone 9 was protected. *By focusing the EEF in areas prone to losses, most of the benefits of the inhibitors can be realized without the significant cost of applying them at full rate over the entire field.*

A similar strategy could be applied to areas with sandy soil types prone to leaching; the point being variable landscapes result in varying risk of nitrogen loss that can be precisely managed with SWAT MAPS and EEFs.

APPLICATION SUMMARY

Zone	Area Acres	Yield Goal bu/ac	Layer 1 L233	Layer 2 L255	Layer 3 PK Blend	Layer 4 Super U	Layer 5 Urea	Applied Actuals
1	2.2	45	0	4.5	170	60	120	98-69-20-0
2	9	50	0	4.5	170	60	120	98-69-20-0
3	14.8	60	0	4.5	170	60	120	98-69-20-0
4	17	65	0	4.5	180	60	130	103-73-22-0
5	17.5	80	1.5	3	190	80	130	113-78-23-0
6	18.8	80	3	1.5	190	120	110	123-78-23-0
7	13.9	80	4.5	0	170	140	60	107-69-20-0
8	8.4	75	5.7	0	140	150	50	104-57-17-0
9	2.9	65	6.1	0	120	160	30	98-49-14-0
10	3.4	50	6.2	0	110	160	30	97-45-13-0
	107.9	69.9	2.1	2.5	172.7	96.8	103	107-70-21-0

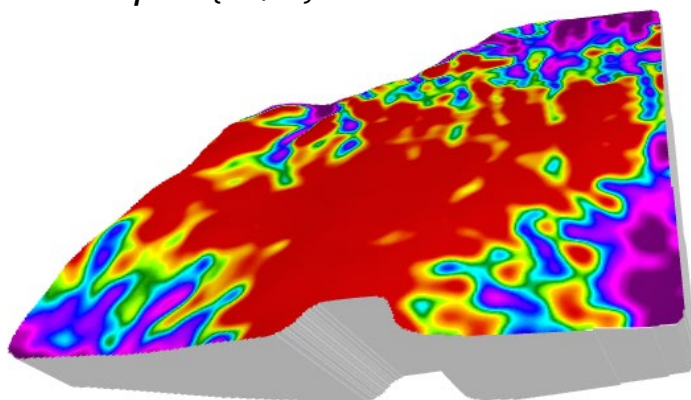
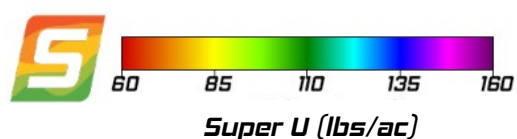
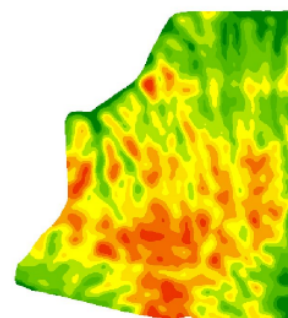


Figure 1. Prescription for SuperU™ layer (top, Layer 4) showing higher rates in lower landscape areas and heatmap of as-applied SuperU™ (bottom).