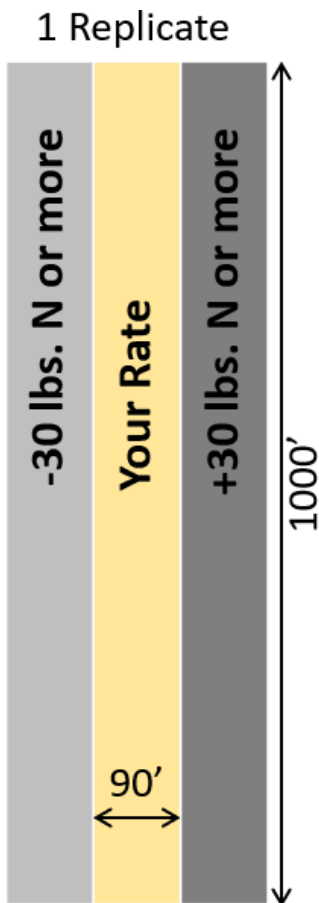


Cost/Benefit of Nitrogen Fertilizer Strip Trails.

Many of our N strip trials have documented farmer rate was below optimum.

Objective

Document the cost of lost yield from a nitrogen strip trial.



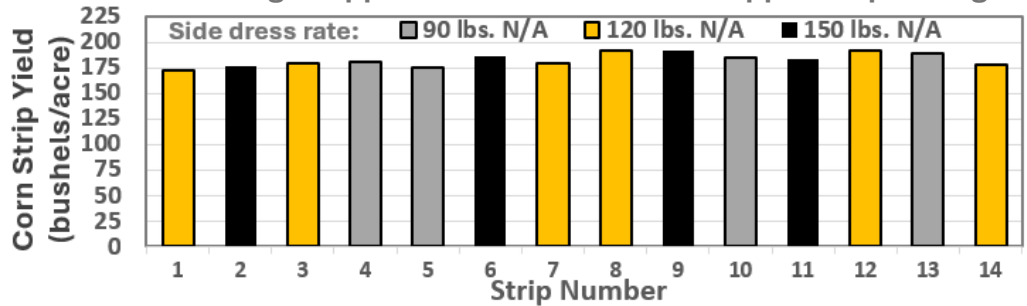
Example Study Design

Trial size:

- Applicator width 90 feet.
- Strip length 1000 feet.
- Strip size two acres.
- 3 treatments X 5 replicates = 15 strips cover 30 Acres.

Case 1: Your rate is above optimum.

Side-dress nitrogen applied as urea. 50 lbs. N/A applied a planting.

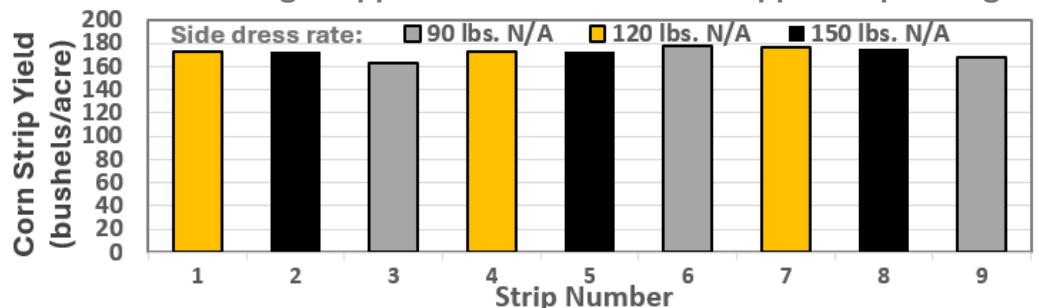


Sidedress Delta	Yld (bu/A)	Delta (bu/A)
-30 lbs. N/A	183	+1
Your Rate	182	-
+ 30 lbs. N/A	184	-2

➔ N greater than optimum: No clear response to N.

Case 2: Your rate is optimum.

Side-dress nitrogen applied as urea. 50 lbs. N/A applied a planting.



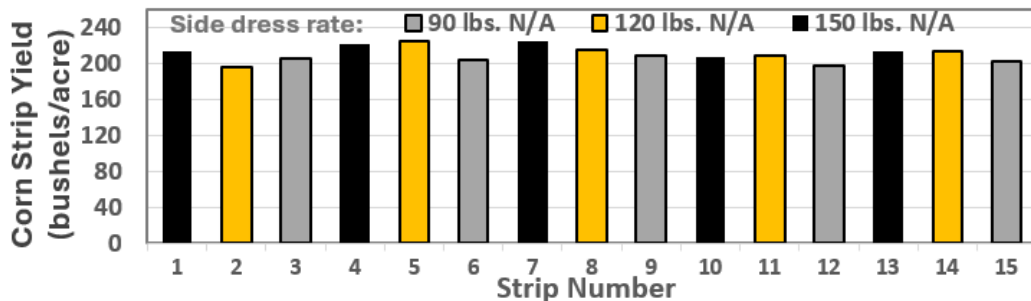
Sidedress Delta	Yld (bu/A)	Delta (bu/A)
-30 lbs. N/A	168	-6
Your Rate	174	-
+ 30 lbs. N/A	174	0

➔ N near optimum: Lose yield on low N rate.



Case 3: Your rate is below optimum.

Side-dress nitrogen applied as urea. 50 lbs. N/A applied a planting.



Sidedress Delta	Yld (bu/A)	Delta (bu/A)
-30 lbs. N/A	204	-8
Your Rate	212	-
+ 30 lbs. N/A	216	+4

➔ N below optimum: Yield increases at every rate.

How much does knowledge about your N rates cost?

Case : Your N rate	Net Yield Loss	Cost of a 30-acre trial	
		Corn \$5/B	Corn \$7/B
Above Optimum (1)	~0	0	0
Near optimum (2)	$(0+0-6)/3 = -2$	\$300	\$420
Below optimum (3)	$(-8+0+4)/3 = -4$	\$600	\$840

- Other good options:**
- High N strips at planting to highlight if N needed at side dress.
 - A plus N trial – costs some extra fertilizer but tests if your rate is too low.
 - Recommend tracking N response over multiple years to understand to year-to-year variability.
 - Shorter strips cover less ground but may miss key areas of the field.

- Case 1: Your rate above optimum - yield not affected by N rate so no cost to trial.
- Case 2: You are near optimum - Some lost yield in low-N strips (the cost of knowledge)
- Case 3: You are below optimum - significant money lost on the low N strips – but it documents you were losing \$20 to \$30 per acre on the rest of your field!
- Extra cost of fertilizer = 0 because higher rate is offset by lower rate strip.

Nitrogen Trials supported by Missouri Soybean Merchandising Council, Missouri Corn Grower Association and their Checkoff, and Missouri Fertilizer Board

Contact your local Extension Office or “MU Certified” Strip Trial Program if interested in a nitrogen trial (<https://extension.missouri.edu/programs/strip-trial-program>).