

N Fertilizer Strategies for Corn Following Cover Crop

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- Keota, IA (Washington County)
- 2017

Hypothesis/questions

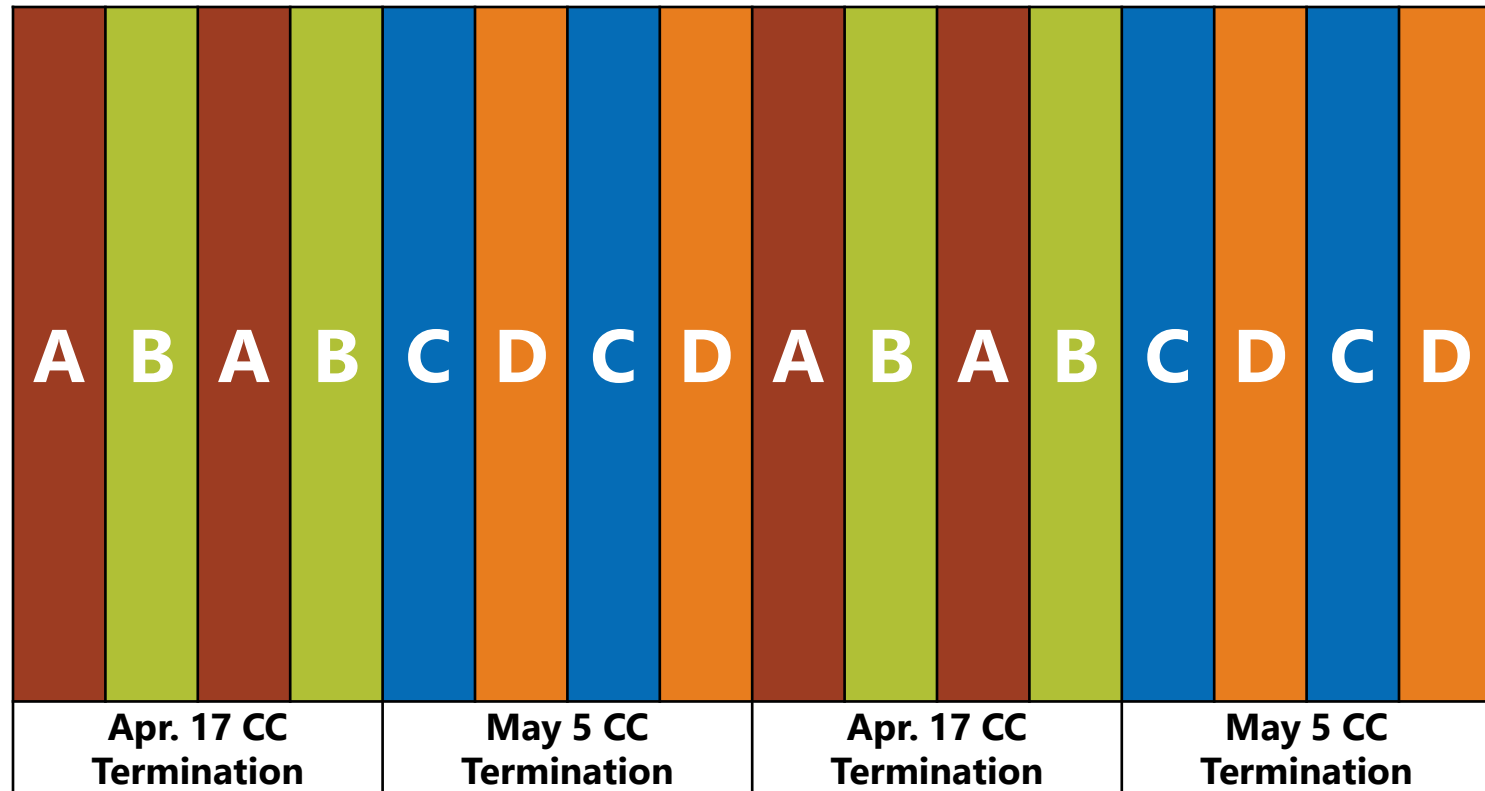
- 1) Can I plant corn "green"? Into a cover crop terminated the day before?
- 2) Is there a fertilizer strategy to do this successfully?
 - N form
 - Application date
 - Hold total rate at 140 lb N/ac

Trial design – 4 “strategies”

Cover Crop Termination Date	N Fertilizer (140 lb N/ac)
19 days before planting corn (Apr. 17)	70#N (UAN) with planter + 70#N (UAN) side-dress
	70#N (NH3) at strip-till + 70#N (UAN) side-dress
1 day before planting corn (May 5)	35#N (UAN carrier) at cover termination + 105#N (UAN) side-dress
	70#N (NH3) at strip-till + 35#N (UAN carrier) at cover termination + 35 #N (UAN) side-dress

Each strategy replicated 4 times

Trial design – 4 “strategies”



Each strategy replicated 4 times

Methods

Previous crop	Soybeans
Cover crop	Oct. 15, 2016: cereal rye, 97 lb/ac; broadcast followed by rolling harrow
Strip-till	Apr. 13, 2017, all strips
Corn planting	May 6, all strips
Population	35,000 seeds/ac
Side-dress	June 3, all strips
Harvest	Oct. 24

4-17-17 Corn plot day of Biomass collection before termination



4-17-17 Before terminating corn plot



5-4-17 Strip tilled passes in corn plot with both termination dates shown



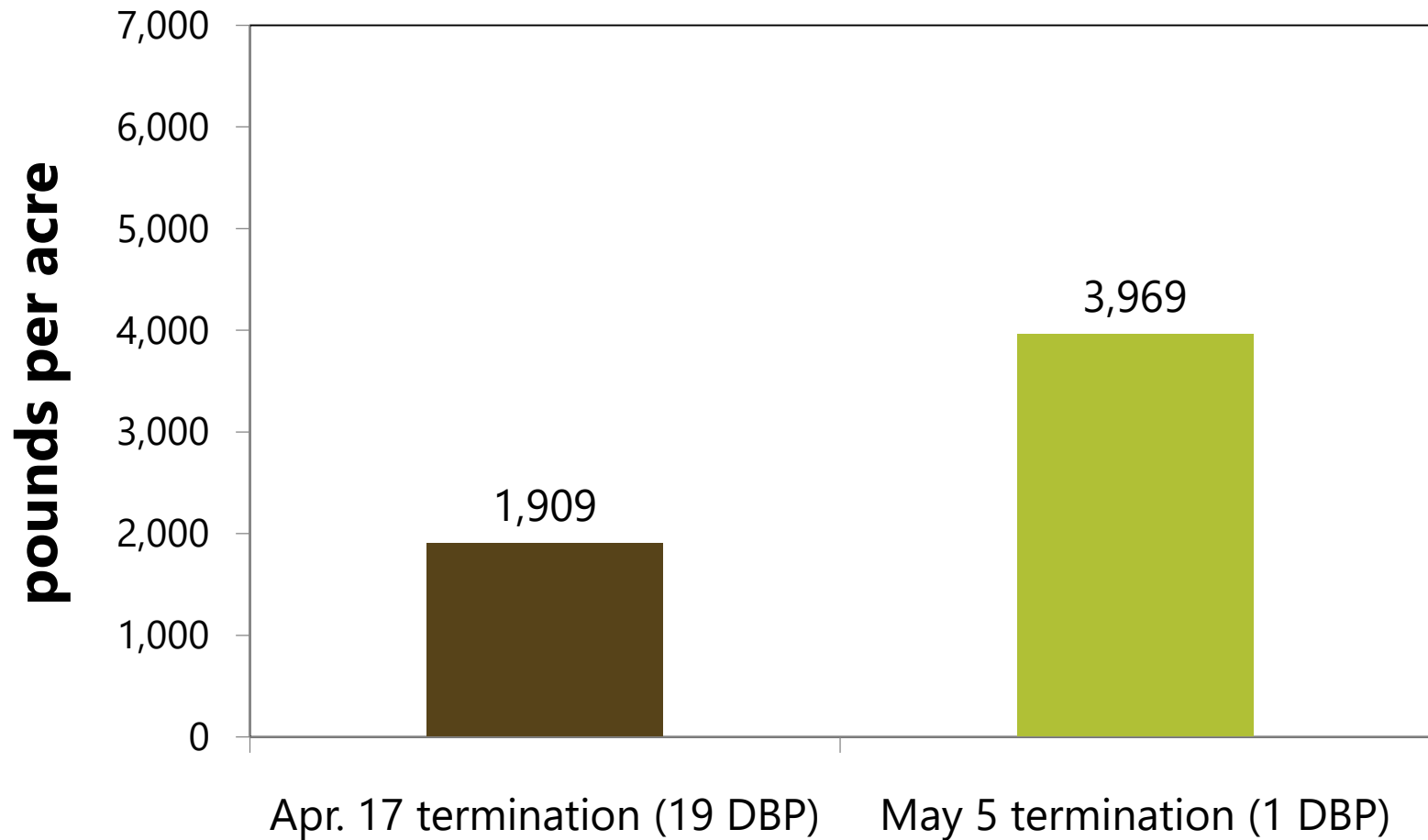
5-4-17 Collecting biomass samples



5-4-17 Strip tilled passes in early terminated strips



Cover crop biomass



Corn

- Stand counts, Sept. 24
 - 34,000 plants/ac
- Stalk [NO₃-N], Sept. 24
 - All low, 50-145 ppm

Corn yields (all planted May 6)

Cover crop termination date N strategy	Yield (bu/ac)
19 DBP (Apr. 17)	
70#N at planting + 70#N at side-dress	222 a
70#N at strip-till + 70#N side-dress	234 a
1 DBP (May 5)	
35#N at termination + 105#N at side-dress	195 b
70#N at strip-till + 35#N at termination + 35#N at side-dress	205 b
<i>LSD (0.05)</i>	13

Costs, ROI

Cover crop termination date N strategy	N Costs (\$/ac)	Revenue (\$/ac)	ROI (\$/ac)
19 DBP (Apr. 17)			
70#N at planting + 70#N at side-dress	50.88	750.36	699.48
70#N at strip-till + 70#N side-dress	46.70	790.92	744.22
1 DBP (May 5)			
35#N at termination + 105#N at side-dress	51.31	659.10	607.76
70#N at strip-till + 35#N at termination + 35#N at side-dress	47.13	692.90	645.77

Conclusions and Next Steps

- Earlier termination (19 DBP) resulted in best yields and ROI.