

Direct Comparison of Alfalfa Nitrogen Credits to Corn and Wheat

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Alfalfa N credits to corn:

- Infrequent fertilizer N responses
 - sands
 - poor stands
 - top growth removed
 - cold, wet spring
- Credit ranges from 40-190 lb N/a; typical credit 90-110 lb N/a
- Little tillage or time of death effect

Alfalfa N credits to wheat:

1. Credit 40-80 lb N/a
2. Excess N resulted in lodging
3. No benefit to killing alfalfa earlier
4. Wheat tillage affects response
5. No-till may be “safer” system



Effect of alfalfa killdate, tillage and N rate on wheat yields

N Rate	No-till		Moldboard	
	Aug	Sep	Aug	Sep
lb N/a	----- bu/a -----			
0	74	75	68	70
20	74	76	49	61
40	75	74	45	50
60	56	74	52	49
80	57	66	52	52

Lancaster, 2001; significant factors: K, T, N, TxN

Effect of alfalfa killdate, tillage, and N rate on wheat lodging

N Rate	No-till		Moldboard	
	Aug	Sep	Aug	Sep
lb N/a	----- % -----			
0	1	1	3	2
20	2	1	6	2
40	2	4	29	12
60	16	4	22	17
80	28	7	24	10

Lancaster, 2001; significant factors: N



Note:

- Arlington results similar
- Results similar to previous years
- 2000-2001 was “normal” year

Oct. - Dec. temps

- 2.1° F Arlington

- 3.1° F Lancaster

Effect of alfalfa killdate and N ratio on wheat yield

N Rate	Aug	Sep
lb/a	----- bu/a -----	
15	48	48
35	55	43
55	52	51
75	62	49

Ashland, 2001; significant factors: K, KxN

Effect of alfalfa killdate, tillage and N rate on corn grain yields

N Rate	No-till		Moldboard	
	Aug	Sep	Aug	Sep
lb N/a	----- bu/a -----			
0	163	175	201	209
20	151	169	217	202
40	160	181	219	212
60	155	179	221	221
80	200	179	224	221

Arlington, 2001; significant factors: T, N

Effect of alfalfa killdate, tillage and N rate on corn grain yields

N Rate	No-till		Moldboard	
	Aug	Sep	Aug	Sep
lb N/a	----- bu/a -----			
0	118	116	129	124
20	134	125	135	147
40	146	142	143	153
60	137	121	127	147
80	140	136	142	143

Lancaster 2001; significant factor: N

Conclusions:

1. Wheat following alfalfa generally responds negatively to N
2. Still got negative response in “normal” years
3. Cold environments may need some fertilizer N
4. Tillage system and alfalfa killdate affect amount of N available to wheat

Conclusions:

5. Corn responded positively to some N in 2001
6. Tillage and killdate less important to corn
7. No corn response above 40-60 lb N/a



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