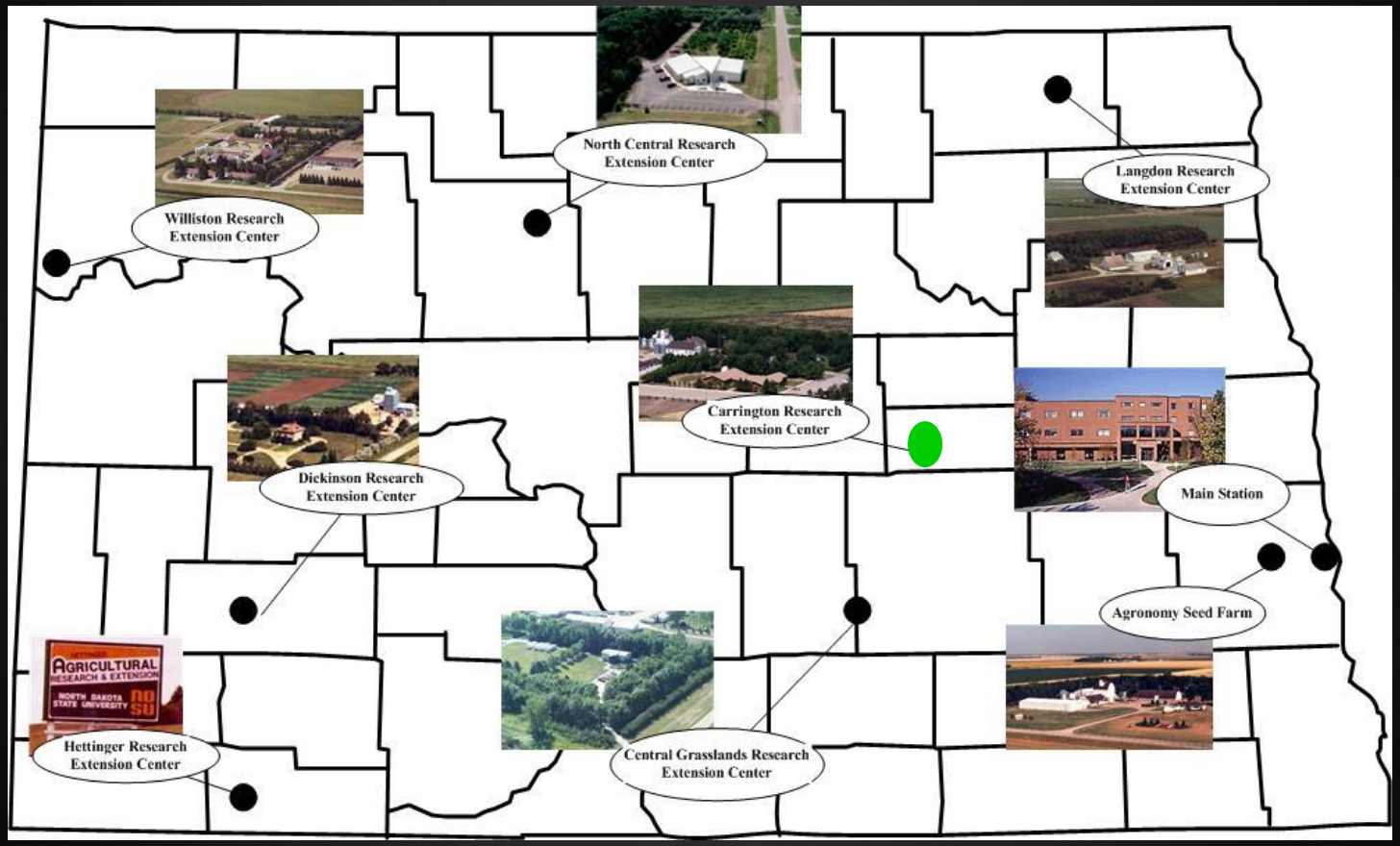
Corn, Soybean and Dry Bean Research: Data to Aid Your Fertilizer Decisions

Greg Endres, Extension area agronomist
NDSU Carrington Research Extension Center
gregory.endres@ndsu.edu 701-652-2951
www.facebook.com/NDSUExtServ.CRECagronomy

North Dakota State University



Corn starter P fertilizer research, Carrington REC, 2007-16

- Loam soil
  - ✓ Heimdal-Emrick or Fram-Wyard
- 2.6-3.8% org matter
- 5.9-8.2 pH
- 3-20 ppm P
  - ✓ generally low to medium (≤7 ppm)
- 10-34-0

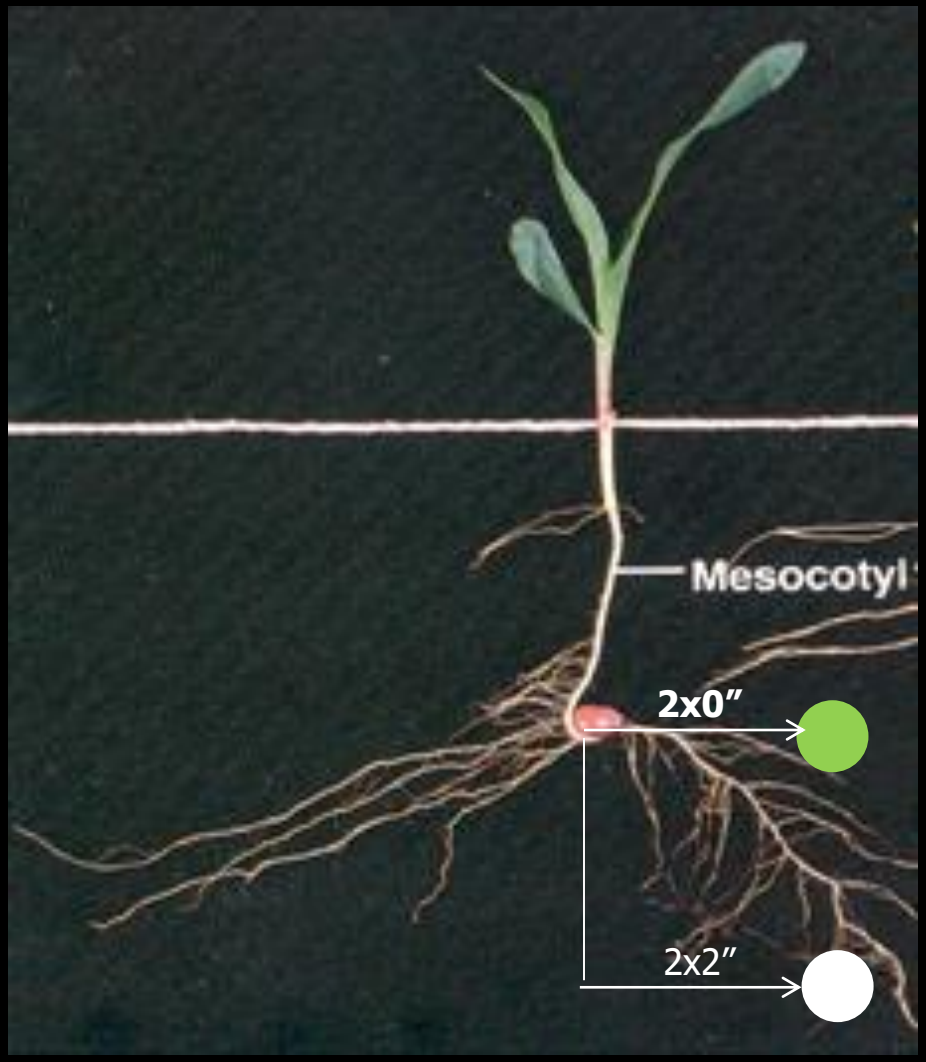
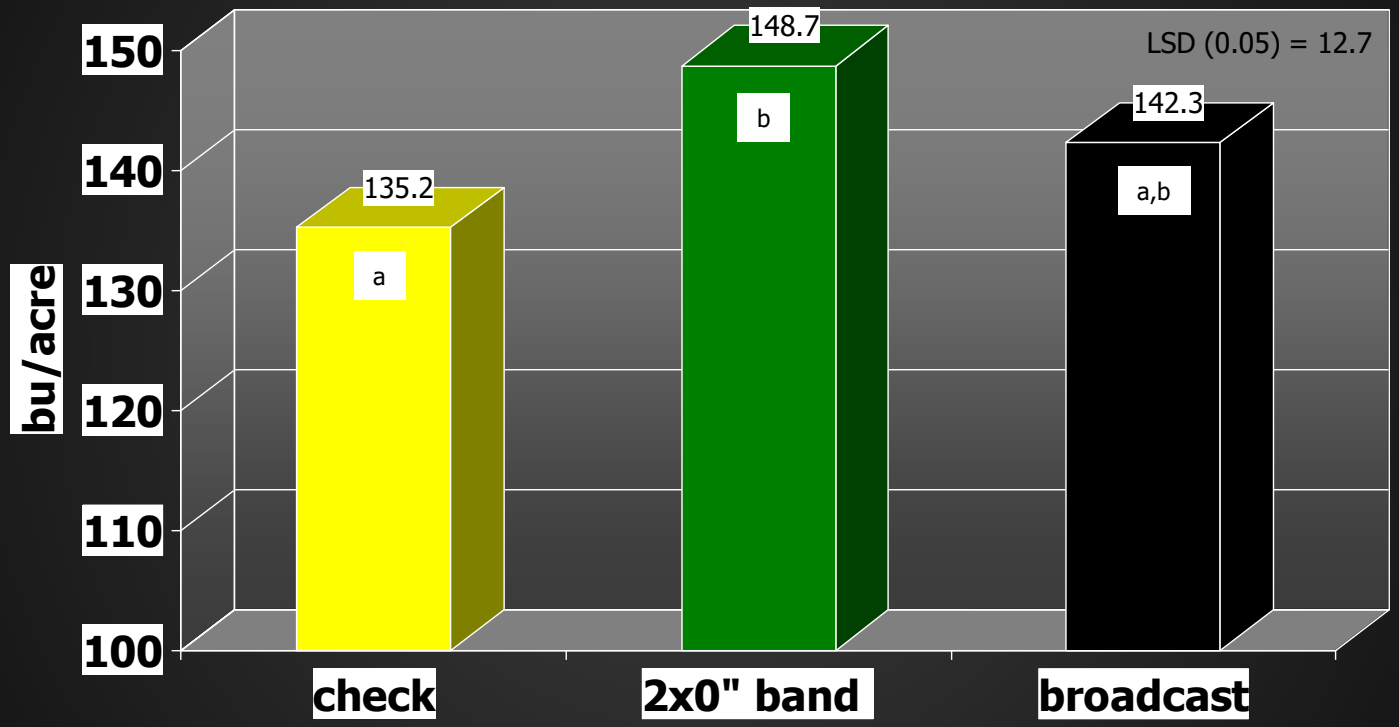

Mesocotyl
2x0”
2x2”

Figure 1. Corn grain yield among 10-34-0 application methods, Carrington, 2013-15 (3 site-years)*



*soil P: 3-5 ppm (very low to low). 10-34-0 broadcast application: 2013=PRE, 2014-15=PPI; rate (gpa): 2013=18, 2014=17.4, 2015=9. 10-34-0 band application rate (gpa): 2013-14=12, 2015=6.

Corn TW and harvest seed moisture with band application of 10-34-0 compared to untreated check, Carrington, 2008-16 (11 site-years)

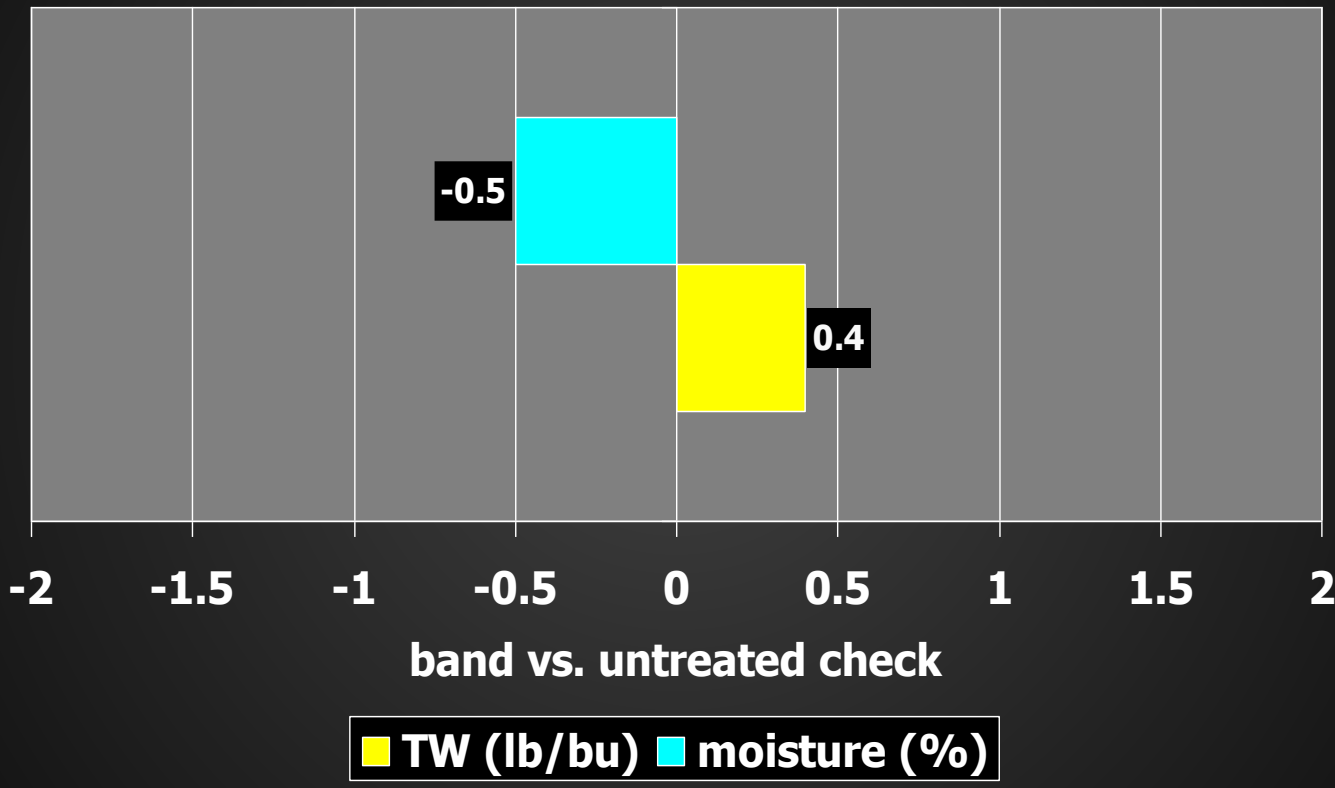
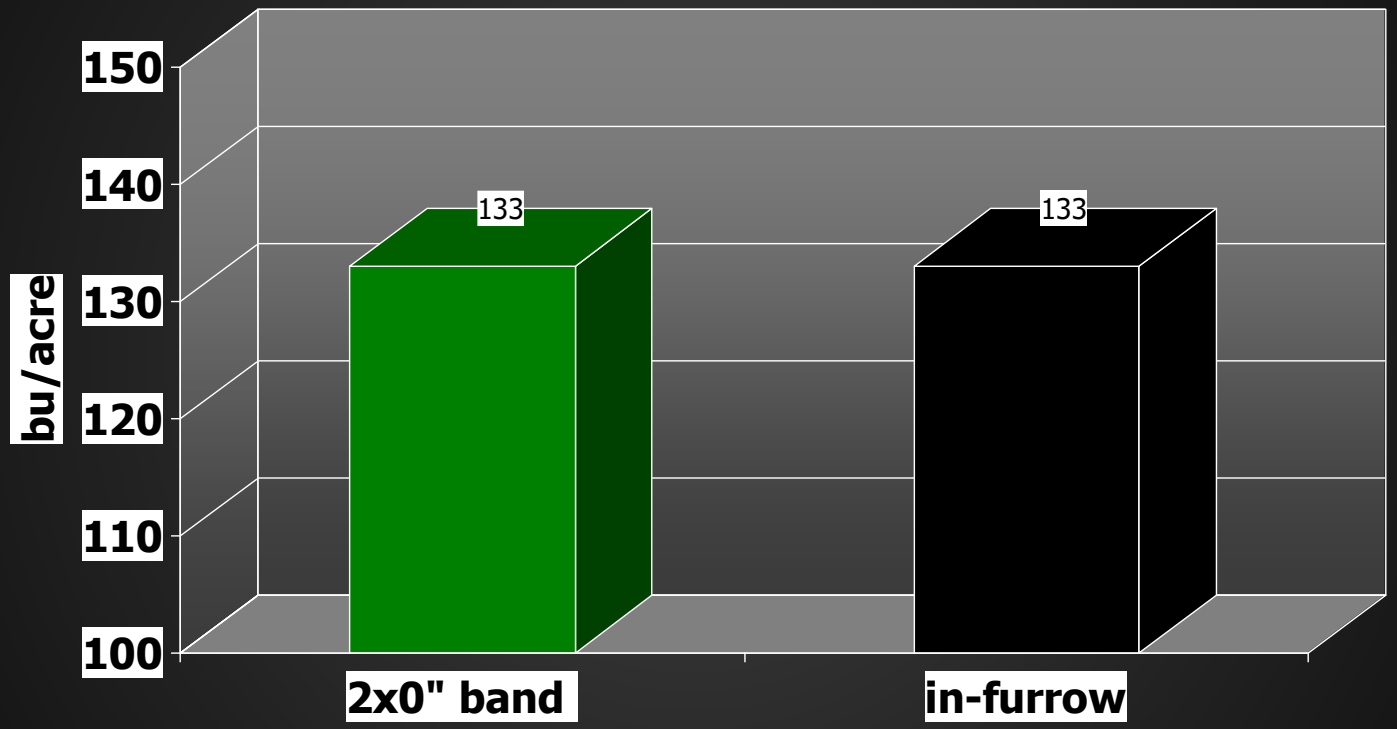
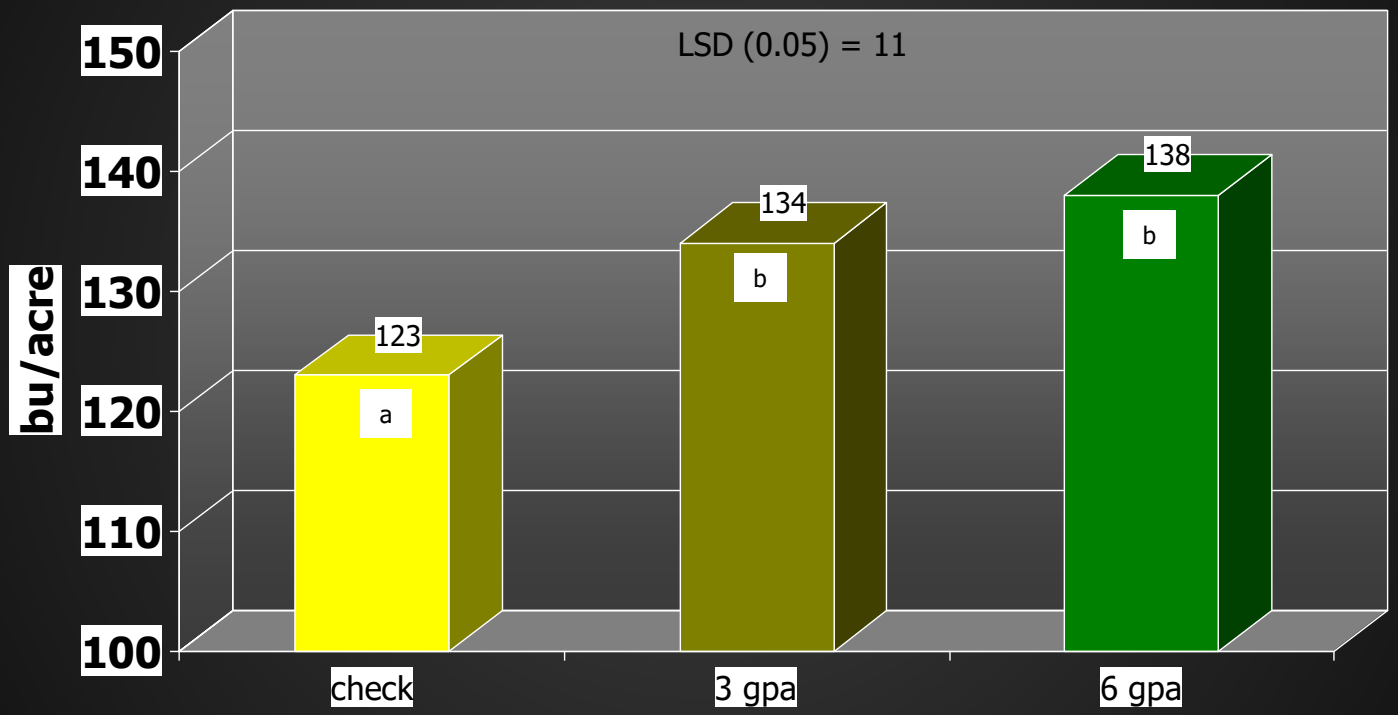


Figure 3. Corn grain yield between 10-34-0 application methods, Carrington, 2008-16 (9 site-years)*



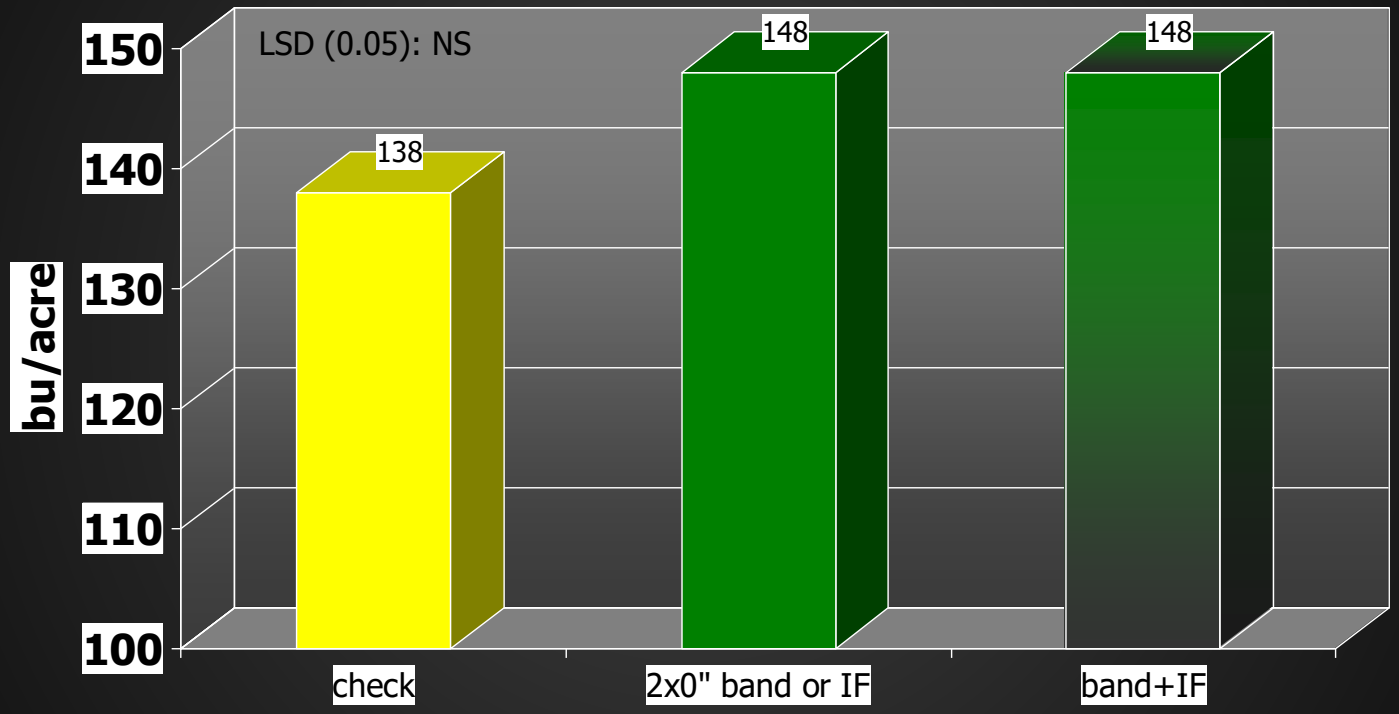
*10-34-0 application rate (gpa): 2.5-6.

Figure 4. Corn grain yield among rates of in-furrow applied 10-34-0, Carrington, 2007-16 (6 site-years)*



*Soil P: 3-10 ppm (very low to medium).

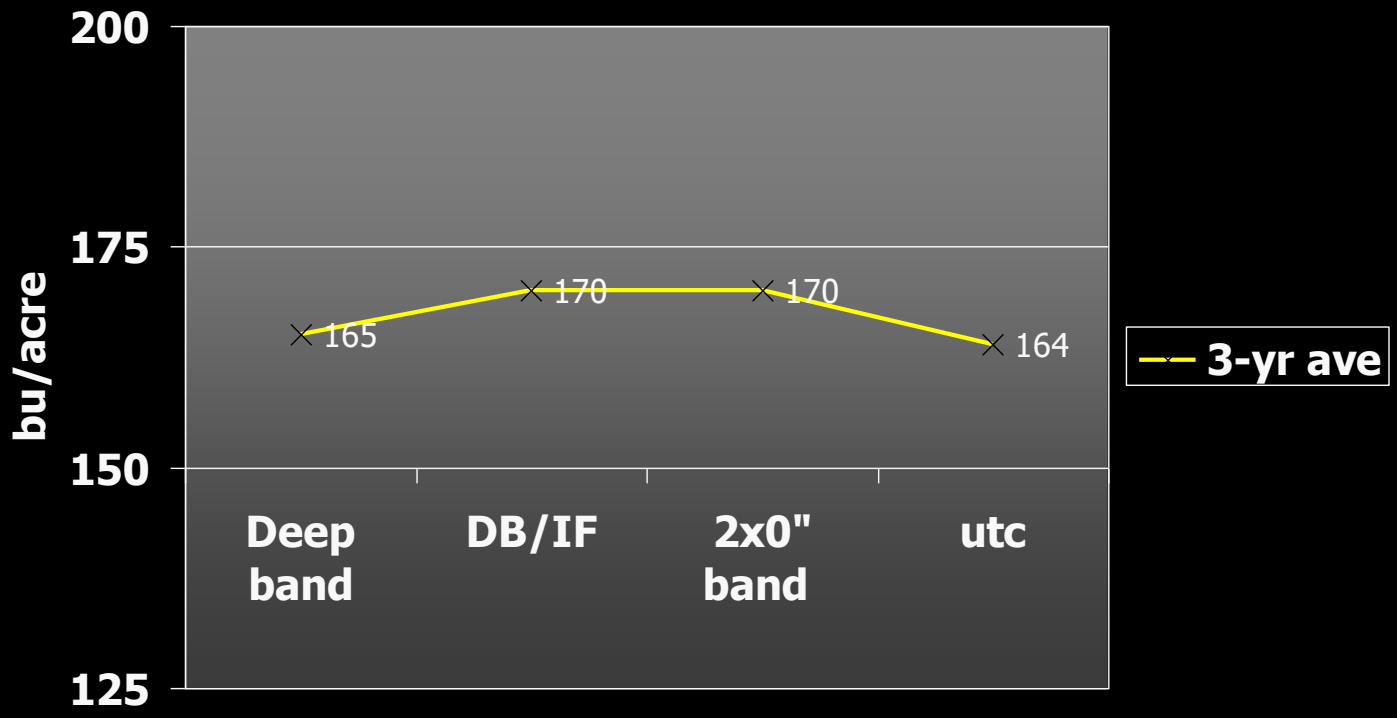
Figure 5. Corn grain yield between 10-34-0 fertilizer placement methods during planting, Carrington, 2014-16 (3 site-years)*



*Soil P: low. 2014 rates (gpa): band=12 and band+IF=6+6; 2015-16 rates (gpa): band or IF=6 and band+IF=3+3. Early season plant stand similar among treatments.

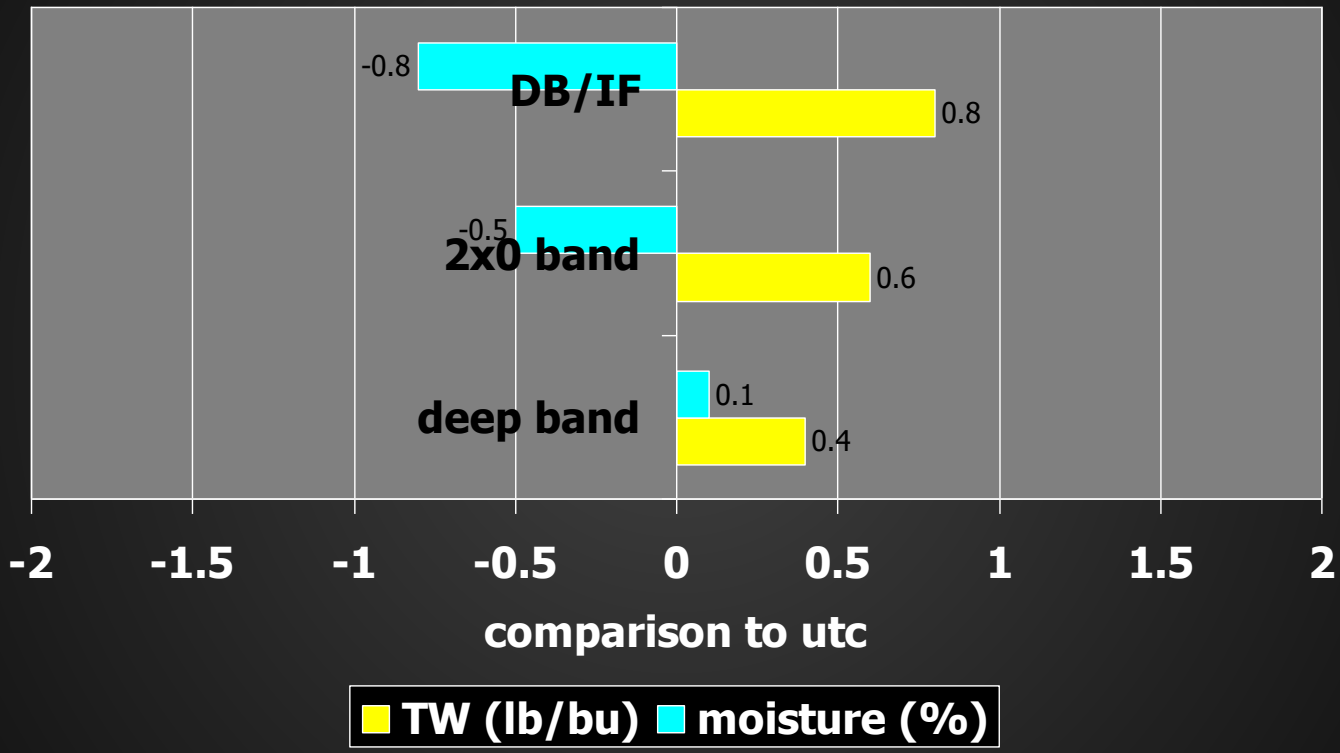
Fertilizer (10-34-0) placement methods:
Deep band (during strip tilling)

Strip-till corn grain yield among fertilizer placement methods, Carrington, 2010 and 2012-13 (3 site-years)*



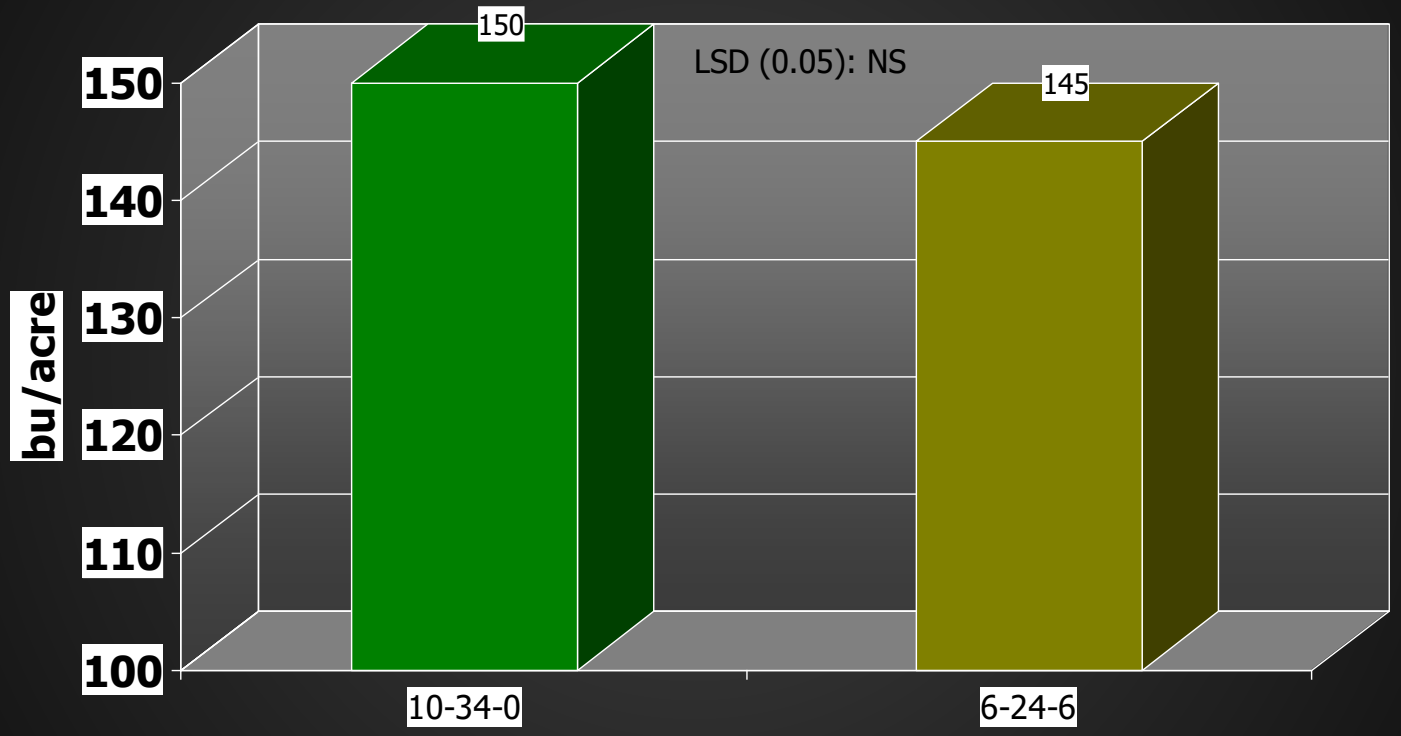
*P: 2010=med (10 ppm), 6 or 3/3 gpa 10-34-0; 2012-13=low (5-6 ppm); 12 or 6/6 gpa 10-34-0. LSD (0.05) = NS each year.

Strip-till corn TW and harvest seed moisture differences among fertilizer placement methods, Carrington, 2010, 2012-13 (3 site-yr)*



*Statistically significant (LSD=0.05): 2012=TW and moisture.

Figure 6. Corn grain yield between in-furrow 10-34-0 and 6-24-6 fertilizer sources, Carrington, 2014-16 (3 site-years)*



*Soil: P=5-7 (low); K=high. 2014: 6 gpa 10-34-0 and 9 gpa 6-24-6; 2015: 3 gpa 10-34-0 and 4.5 gpa 6-24-6. Plant stand similar between treatments.

SUMMARY: Corn grain yield response with starter P fertilizer (10-34-0), Carrington REC, 2007-16

- 2x0” band > untreated check
- band = in-furrow
- 6 gpa = 3 gpa in-furrow > untreated
- band plus in-furrow = band or in-furrow
- deep-band plus in-furrow = band < DB
- in-furrow 6-24-6 = 10-34-0