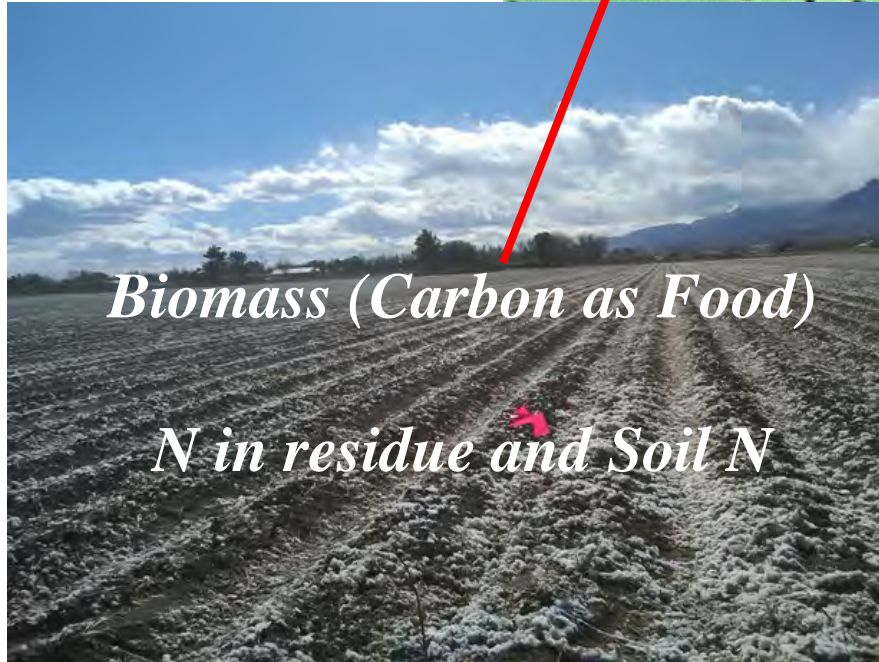


Durum Wheat N Management with Crop Rotation Considerations

Sam Wang

Maricopa Ag Center

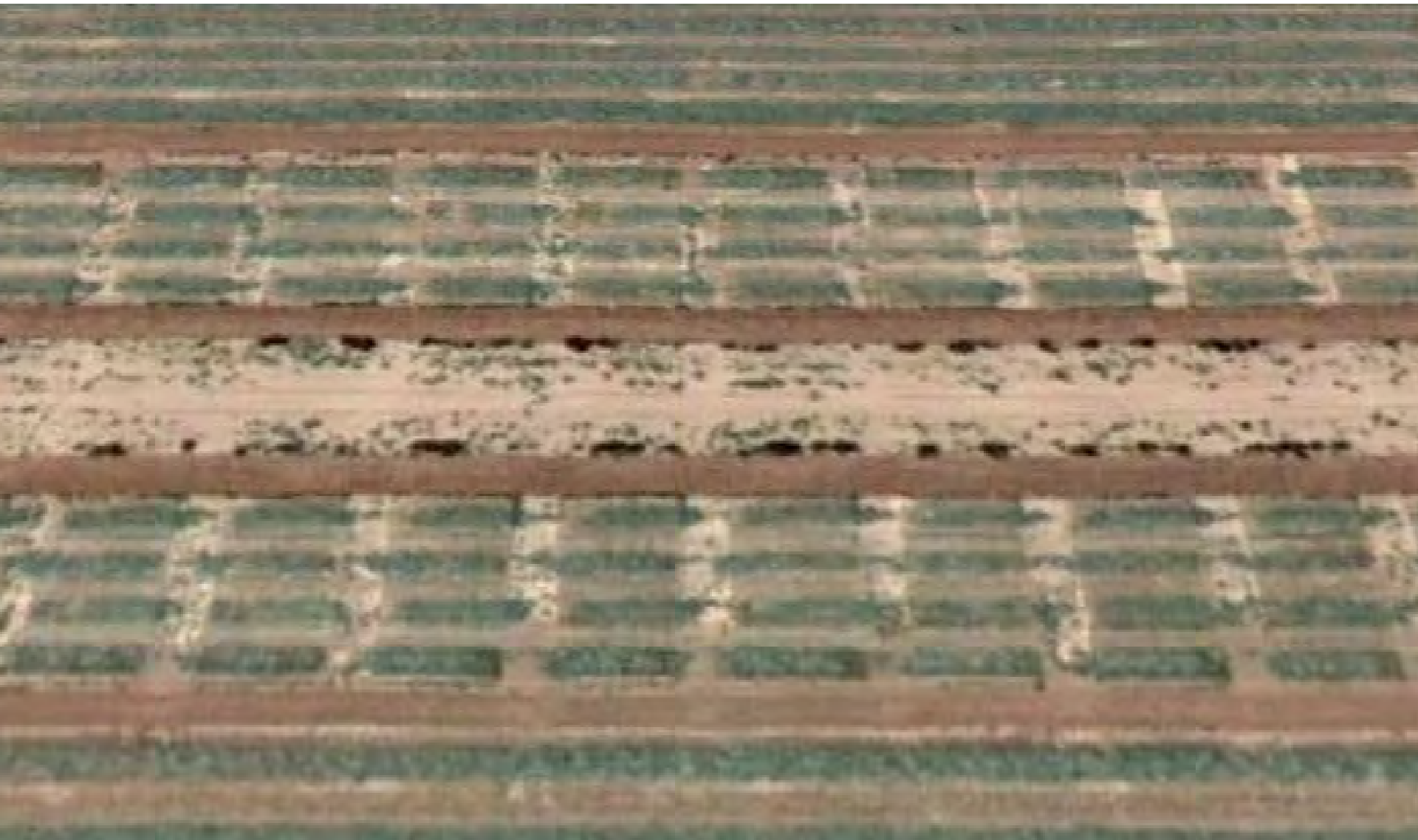
Include rotational crop factor in your nitrogen management at early stage



Residue Carbon:Nitrogen ratio

<u>C:N</u>	<u>N Availability</u>	<u>Examples</u>
<10:1	High	Manure, organic fertilizer
15:1 – 30:1	Medium-Low	Legume cover crops
60:1 – 75:1	Negative	Cotton stalk
50:1 – 80:1	Negative	Sorghum and corn residue
>80:1	Negative	Wheat straw

Alfalfa field before 2012 wheat crop



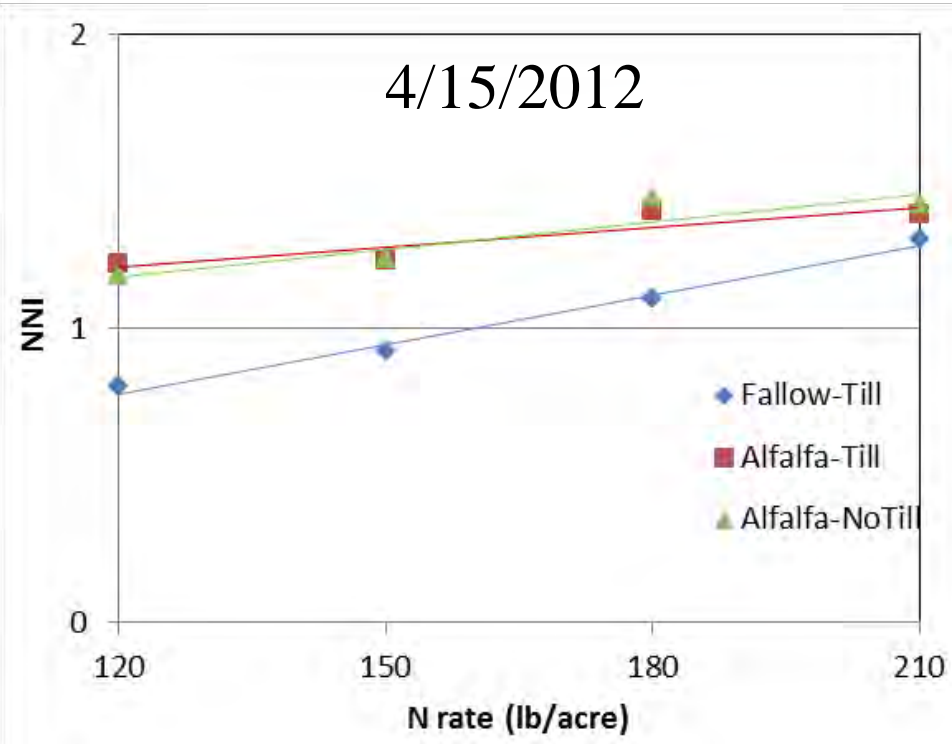
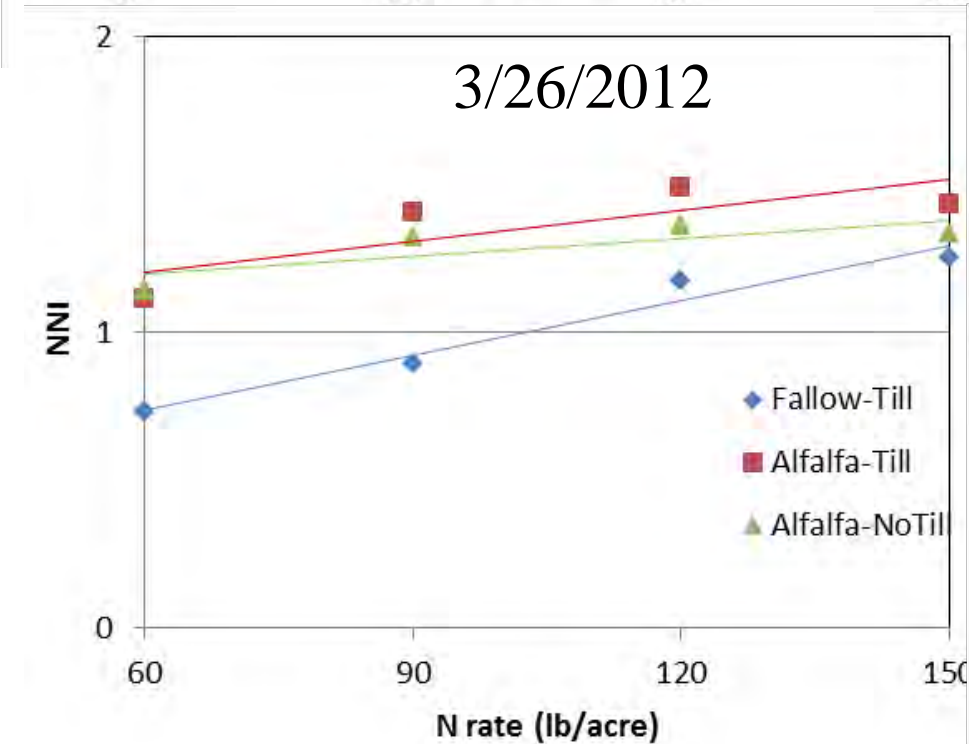
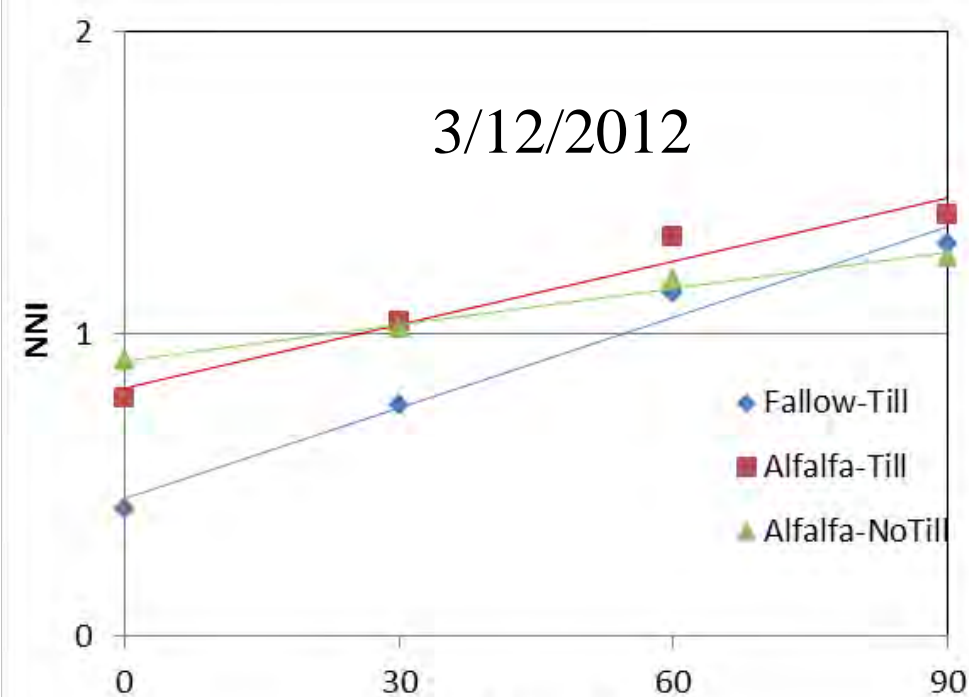
Nitrogen rate for 2012 study at MAC (Sandy loam soil)

Stage	180 lb N/A	210 lb N/A	240 lb N/A	270 lb N/A
Planting	0	0	0	0
3-4 leaf	0	30	60	90
Jointing	60	60	60	60
Booting	60	60	60	60
Flowering	60	60	60	60
Total	180	210	240	270



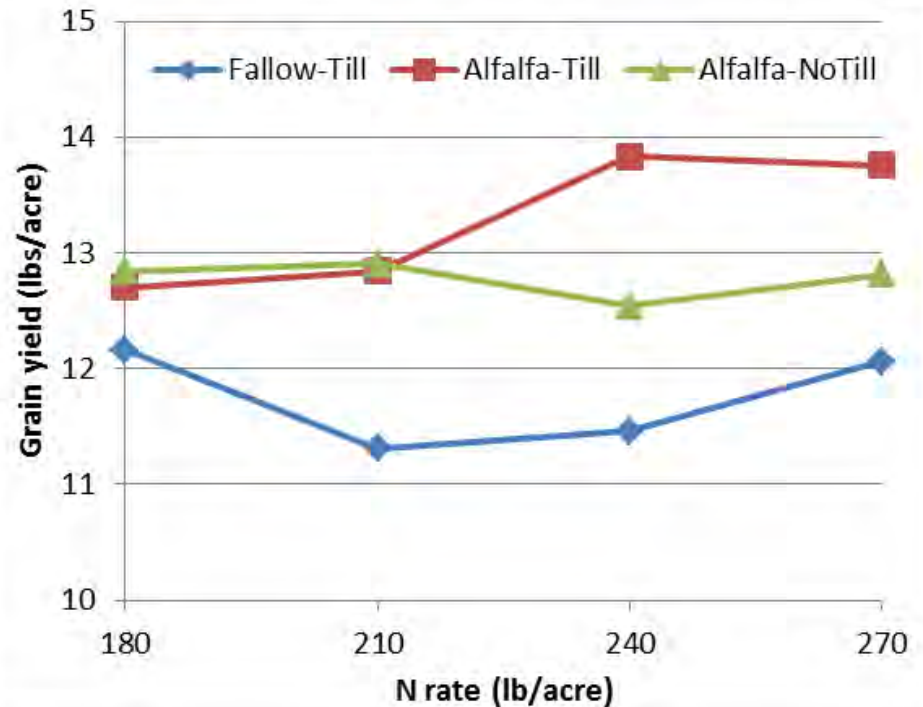
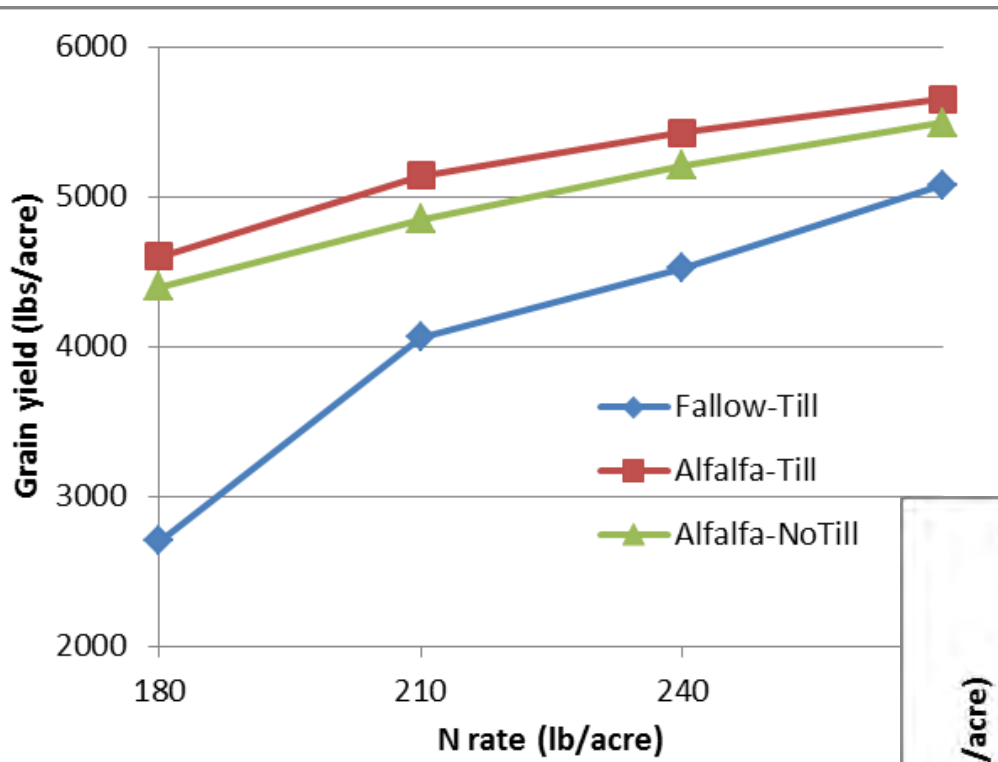


Nitrogen nutrition index





Grain yield and protein



2010 field trial at MAC (Clay loam soil)

❖ Tillage treatments:

- Till
- No-Till

❖ N treatments:

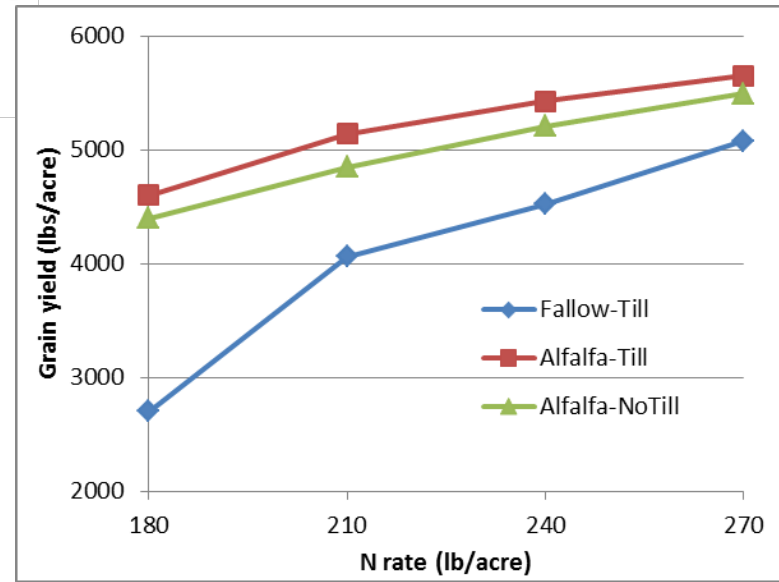
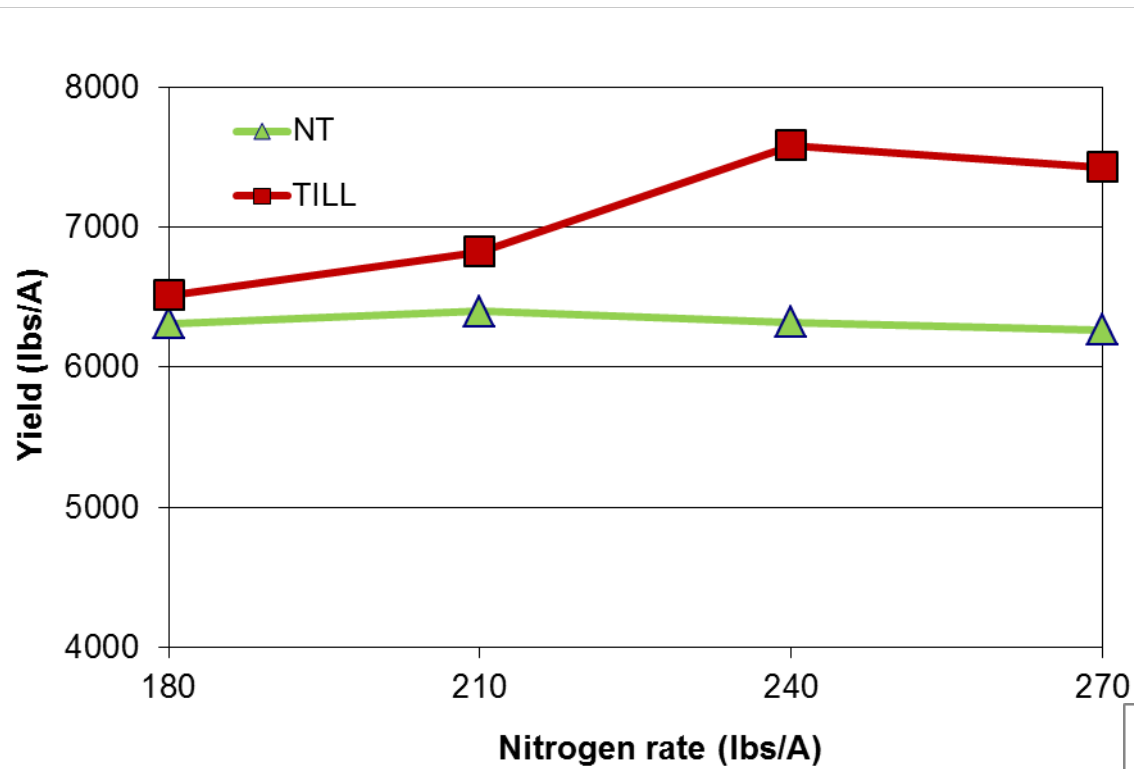
- 180
- 210
- 240
- 270





JD 1590 Drill

Wheat yield at 2010 trial (Clay loam soil)



On-farm study at Sacaton, AZ



No-Till

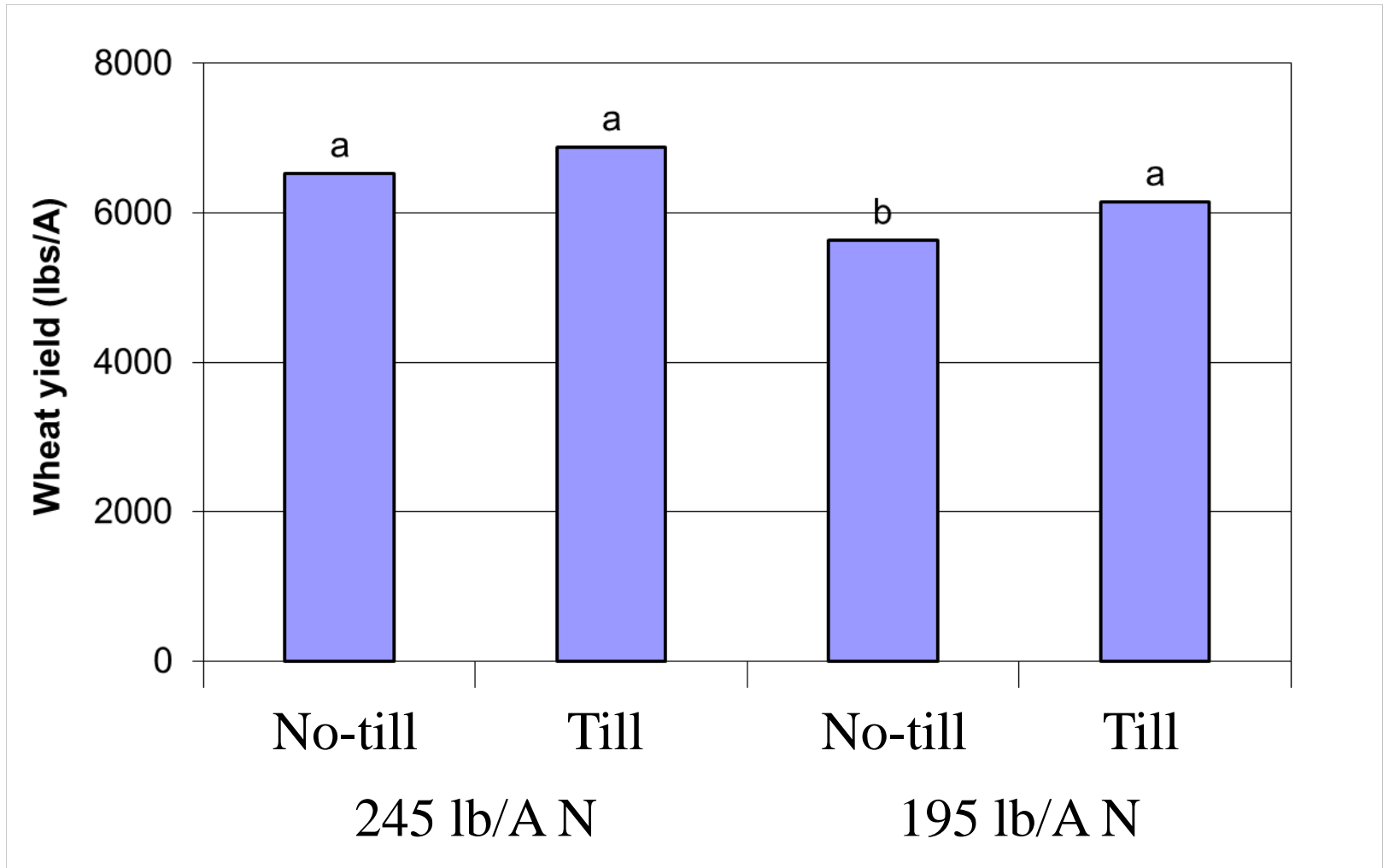
Till

2009 1 5

N rates for Sacaton study

Stage	Low N treatment (lb N/A)	High N treatment (lb N/A)
Planting	15	15
3-4 leaf	50	100
Jointing	50	50
Booting	50	50
Flowering	30	30
Total	195	245

Wheat yield at Sacaton



Tillage costs

Cost to till the field to
plant wheat after alfalfa
(per acre rate):

Disk:	\$12-14
Rip:	\$24-26
Disk:	\$12-14
Land prep:	\$10
<hr/>	
Total:	\$58-64

Yield increase by Tillage

Sacaton:

245 lb/acre normal N rate: 354 lbs/A

195 lb/acre low N rate: 515 lbs/A

Conclusions

- **About 30 lb/acre of N should be applied at early growth stage for wheat planted after alfalfa.**
- **Weigh the benefits and costs of no-till operations.**
- **More benefits of tillage with heavy soil types.**
- **Alfalfa residue may contribute about 90 lb/acre of N to wheat crop.**

Beds and Furrows



March 5th, 2009



May 10th, 2010

Wheat following cotton at Marana in 2010

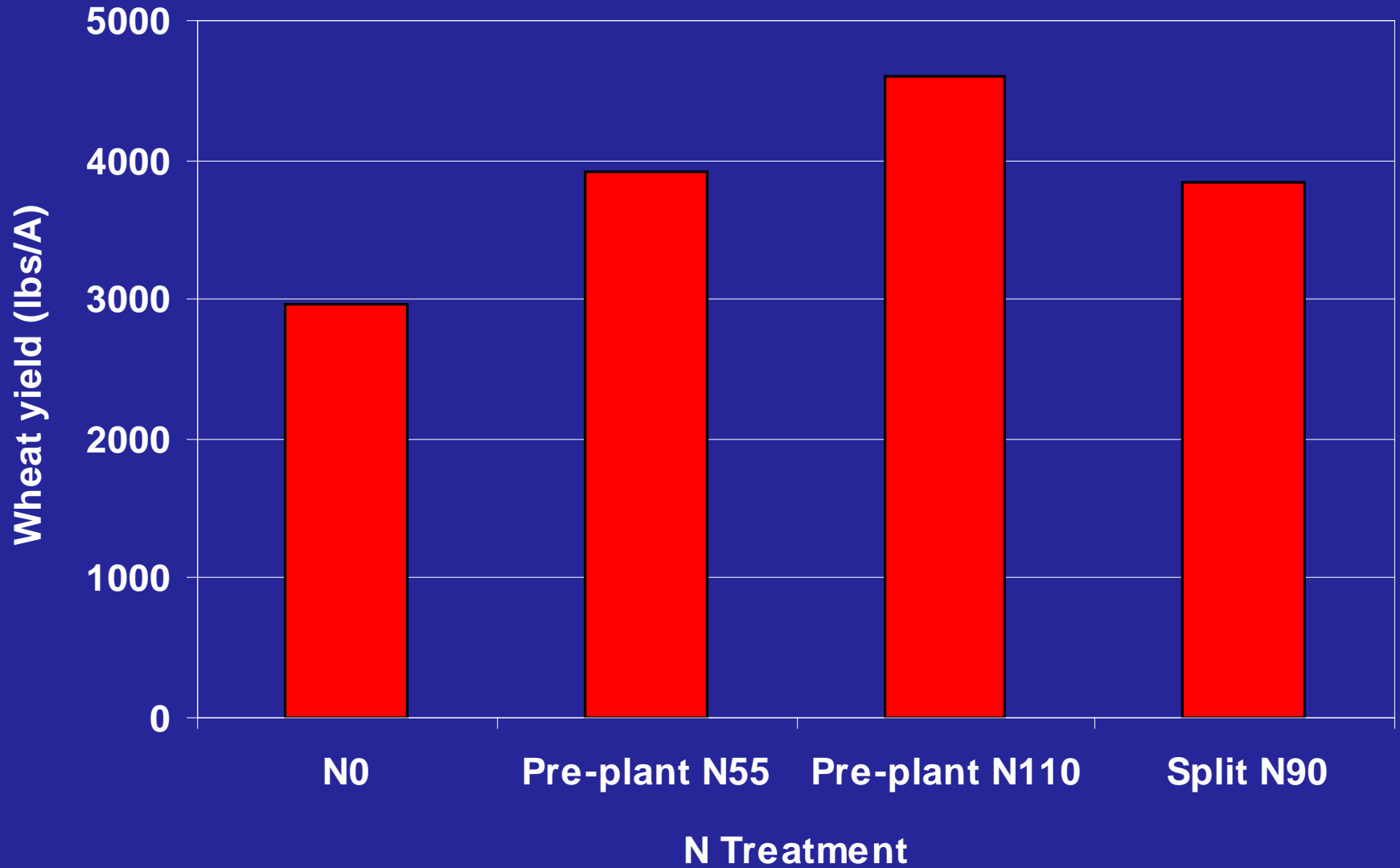


N0

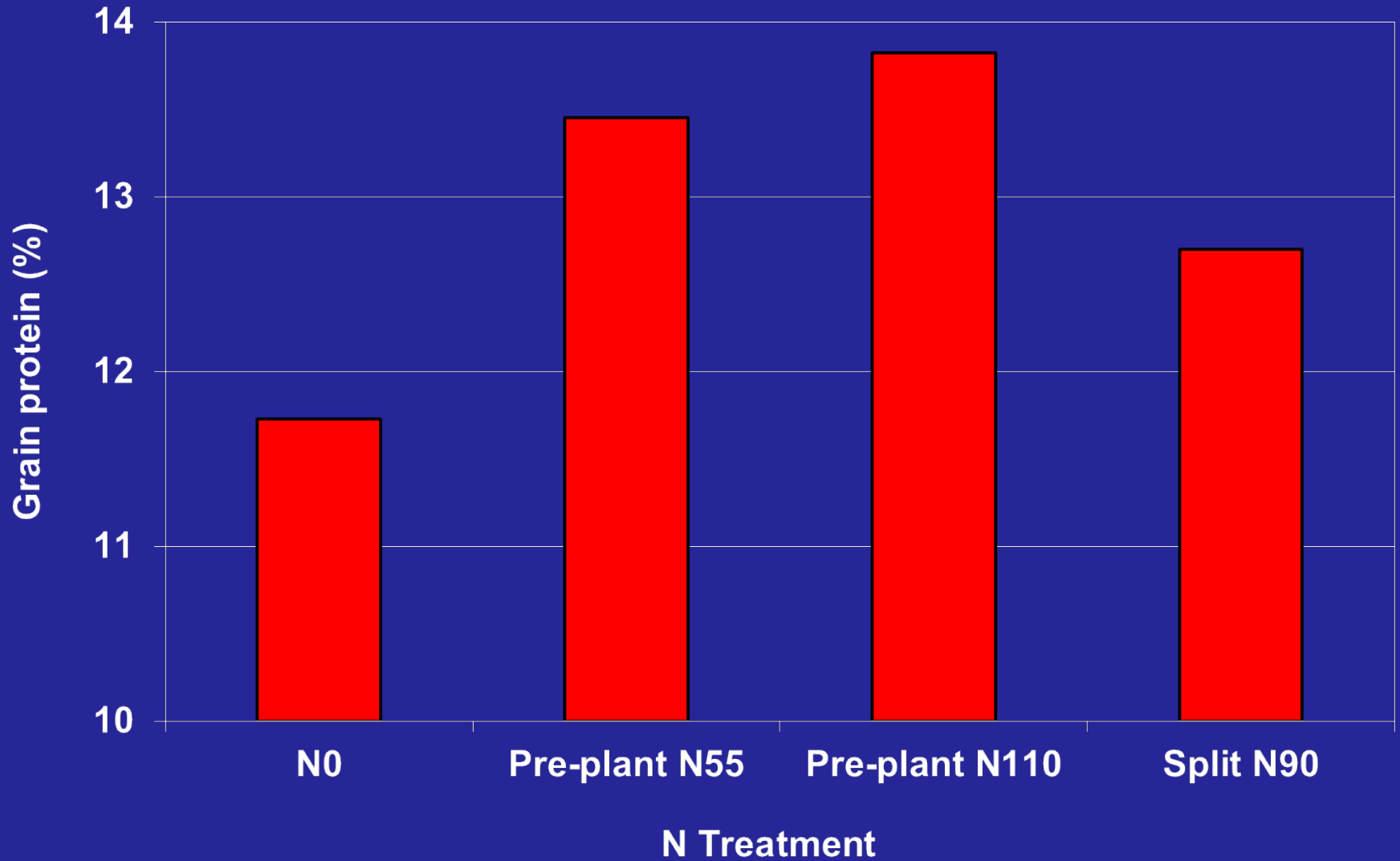
Pre-plant N55 Pre-plant N110

Split N90

Durum wheat yield



Grain protein

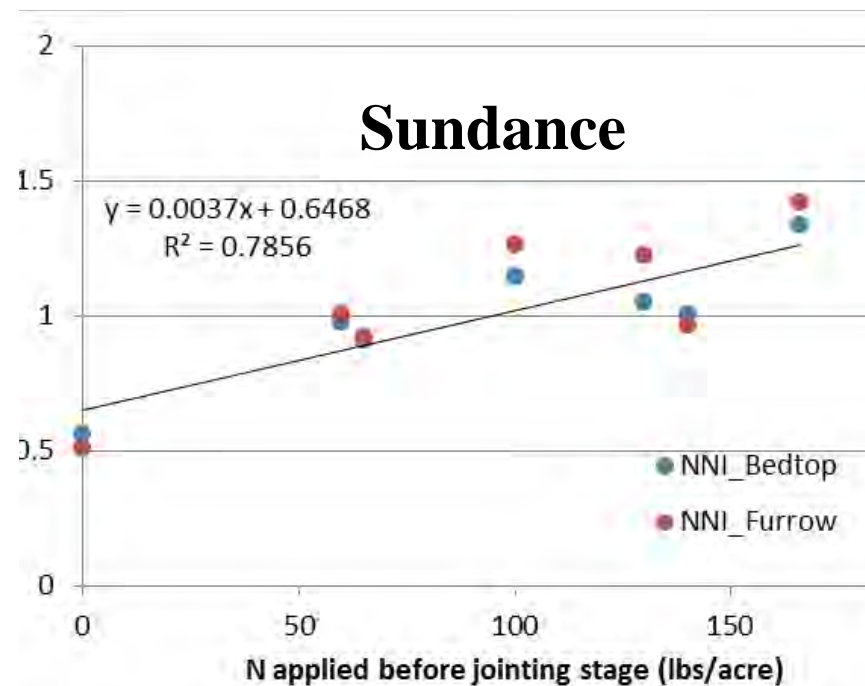
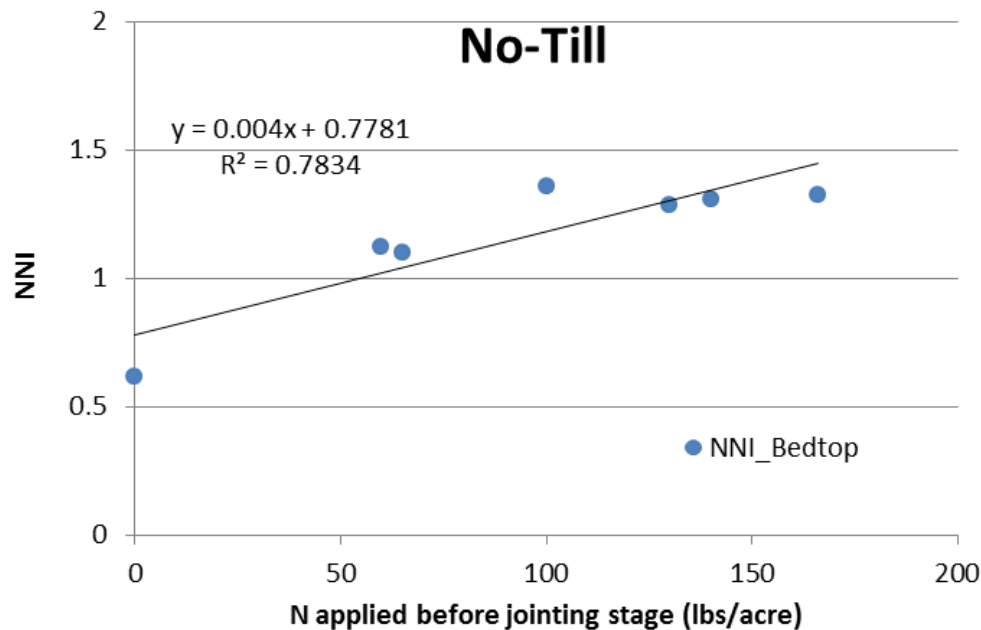
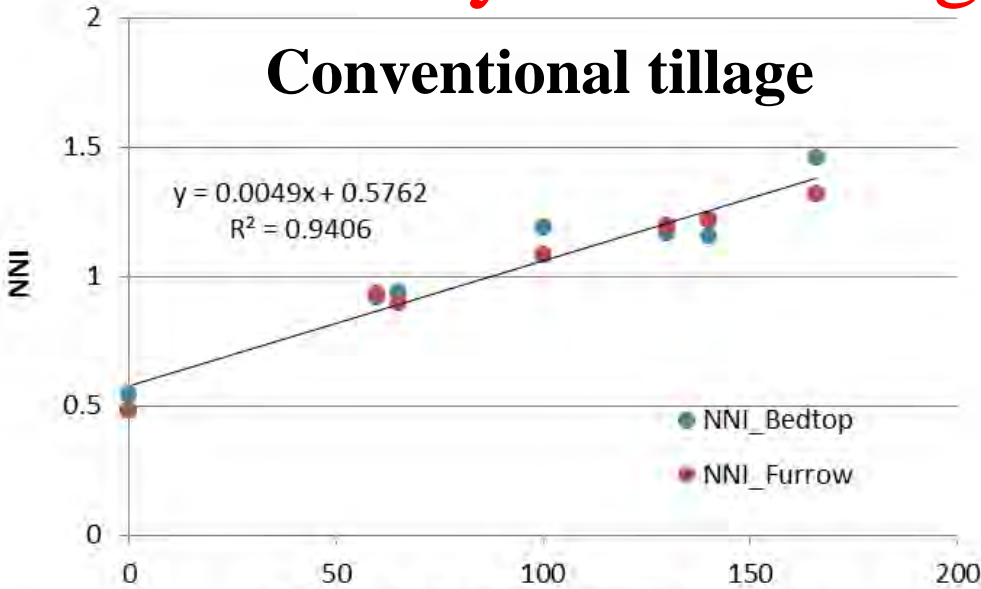


2012 Experiment at MAC: Tillage and N treatments

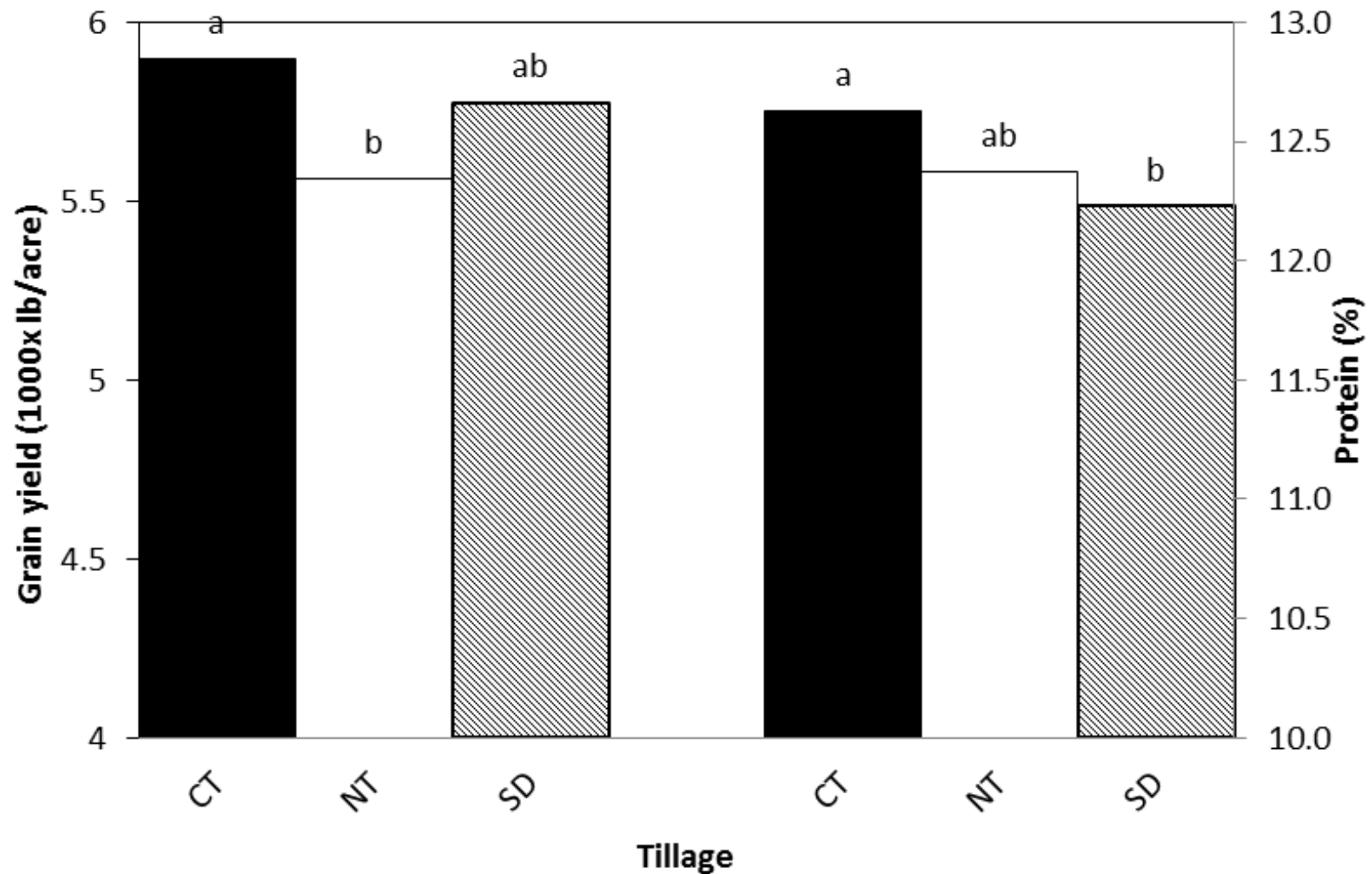




Early N on nitrogen nutrition index



Tillage on grain yield and protein



Tillage costs

Cost to till the field to
plant wheat after cotton
(per acre rate):

Rip:	\$24-26
Disk 2X:	\$24-28
List:	\$10
Cultipacker:	\$10

Total:	\$68-74
---------------	----------------

Yield increase by Conventional Tillage

From no-till: 335 lbs/A

From Sundance: 122 lbs/A

Conclusions

- **With conventional tillage and sundance tillage, 90 lb/acre of nitrogen before jointing stage with 4 bales of cotton crop with no nitrogen application after peak bloom.**
- **50 lb/acre of nitrogen for no-till.**
- **Weigh the benefits and costs of no-till operations.**

THANKS

Any questions?

Sam Wang
samwang@ag.arizona.edu
520-381-2259