Evaluation of Nitamin 30L and GP-43G as Nitrogen Sources for Dark Tobacco

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Methods

- Previous crop: medium fescue sod
- Conventional tillage tobacco, no nutrients applied prior
- Initial soil pH (March) 6.6, no lime, P, or K required
- Soil: Crider silt loam (fine-silty, mixed, Typic Paleudalfs)
  - CEC 12 meq/100g
  - 1.6% OM
  - 10-20% sand; 60-80% silt; 10-20% clay
- ‘Narrowleaf Madole LC’ dark tobacco transplanted on May 23, 2006
  - 40” row spacing, 32” plant spacing = 4900 plants/A
- Plots 4-row, 40 ft. long
- Experimental Design: RCBD with 4 replications
- Dry N treatments applied June 5
- Liquid N treatments applied June 6
- Tobacco harvested September 7, fire-cured

Treatments

Trt	N source	N-P-K	Rate (lbs N/A)	Timing
1	Urea	46-0-0, dry	200	AT
2	Urea	46-0-0, dry	300	AT
3	Ammonium nitrate	34-0-0, dry	200	AT
4	Ammonium nitrate	34-0-0, dry	300	AT
5	Calcium nitrate	15.5-0-0, dry	200	AT
6	Calcium nitrate	15.5-0-0, dry	300	AT
7	GP-43G	43-0-0, dry	200	AT
8	GP-43G	43-0-0, dry	300	AT
9	Nitamin 30L	30-0-0, liquid	200	AT
10	Nitamin 30L	30-0-0, liquid	300	AT

*AT=at transplanting or within 2 wks after transplanting.
Trial is 5 (N source) x 2 (N rate) factorial.

Mid-Season Soil Sample Data

Samples taken July 20 (8.5 wks after transplanting)

N source	N rate	P	K	pH	Buffer pH	Ca	Mg	Zn
Urea	200	100 a	382 a	6.1 b	7.0 a	3099 ab	166 a	3.0 a
Urea	300	102 a	433 a	6.0 b	7.0 a	2920 b	162 a	3.0 a
Am Nit	200	104 a	441 a	6.3 b	7.0 a	3250 ab	165 a	3.1 a
Am Nit	300	108 a	437 a	6.3 b	7.0 a	3365 ab	172 a	3.1 a
Ca Nit	200	93 a	409 a	6.7 a	7.1 a	3635 a	165 a	2.9 a
Ca Nit	300	112 a	397 a	6.3 b	7.1 a	3126 ab	136 a	3.0 a
GP-43G	200	107 a	392 a	6.3 ab	7.0 a	3128 ab	148 a	2.9 a
GP-43G	300	100 a	415 a	6.1 b	7.0 a	3081 ab	158 a	2.9 a
Nitamin30L	200	104 a	379 a	6.3 ab	7.0 a	2898 b	143 a	2.9 a
Nitamin30L	300	96 a	391 a	6.2 b	7.0 a	3244 ab	161 a	2.9 a
LSD(0.05)		20	68	0.38	0.13	648	62	0.26

Main Effects of N source and Rate on Mid-season Soil pH

N source	pH
Urea	6.05 b
Am Nit	6.28 ab
Ca Nit	6.48 a
GP-43G	6.21 ab
Nitamin 30L	6.26 ab
LSD(0.05)	0.27

N rate	pH
200	6.34 a
300	6.17 b
LSD(0.05)	0.17

Late-Season Plant Vigor and Chlorophyll Index

10 days prior to harvest

N source	N rate	Late Vigor (1-10)	Chlorophyll Index
Urea	200	7.4 d	198 e
Urea	300	8.1 c	226 d
Am Nit	200	8.3 c	230 cd
Am Nit	300	8.9 ab	251 abc
Ca Nit	200	9.0 ab	261 ab
Ca Nit	300	9.3 a	267 a
GP-43G	200	8.9 ab	243 abcd
GP-43G	300	8.9 ab	260 ab
Nitamin30L	200	8.8 b	242 bcd
Nitamin30L	300	8.9 ab	243 abcd
LSD(0.05)		0.40	24

Main Effects of N source and Rate on Late-Season Plant Vigor

N source	Late Vigor
Urea	7.8 d
Am Nit	8.6 c
Ca Nit	9.1 a
GP-43G	8.9 ab
Nitamin 30L	8.8 bc
LSD(0.05)	0.3

N rate	Late Vigor
200	8.5 b
300	8.8 a
LSD(0.05)	0.2

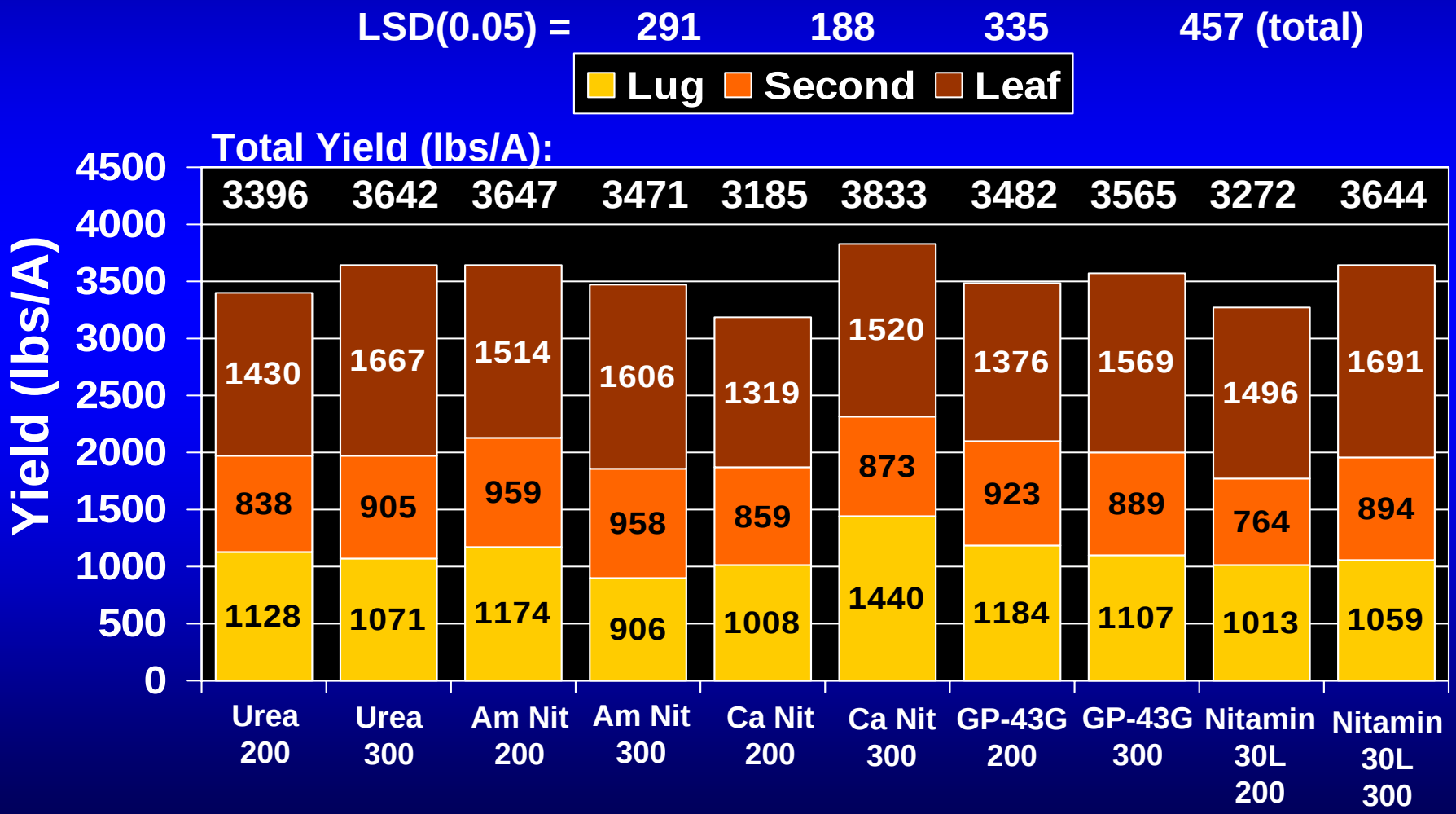
Main Effects of N source and Rate on Late-Season Chlorophyll Index

N source	Late Chlor
Urea	212 c
Am Nit	241 b
Ca Nit	364 a
GP-43G	252 ab
Nitamin 30L	242 b
LSD(0.05)	17

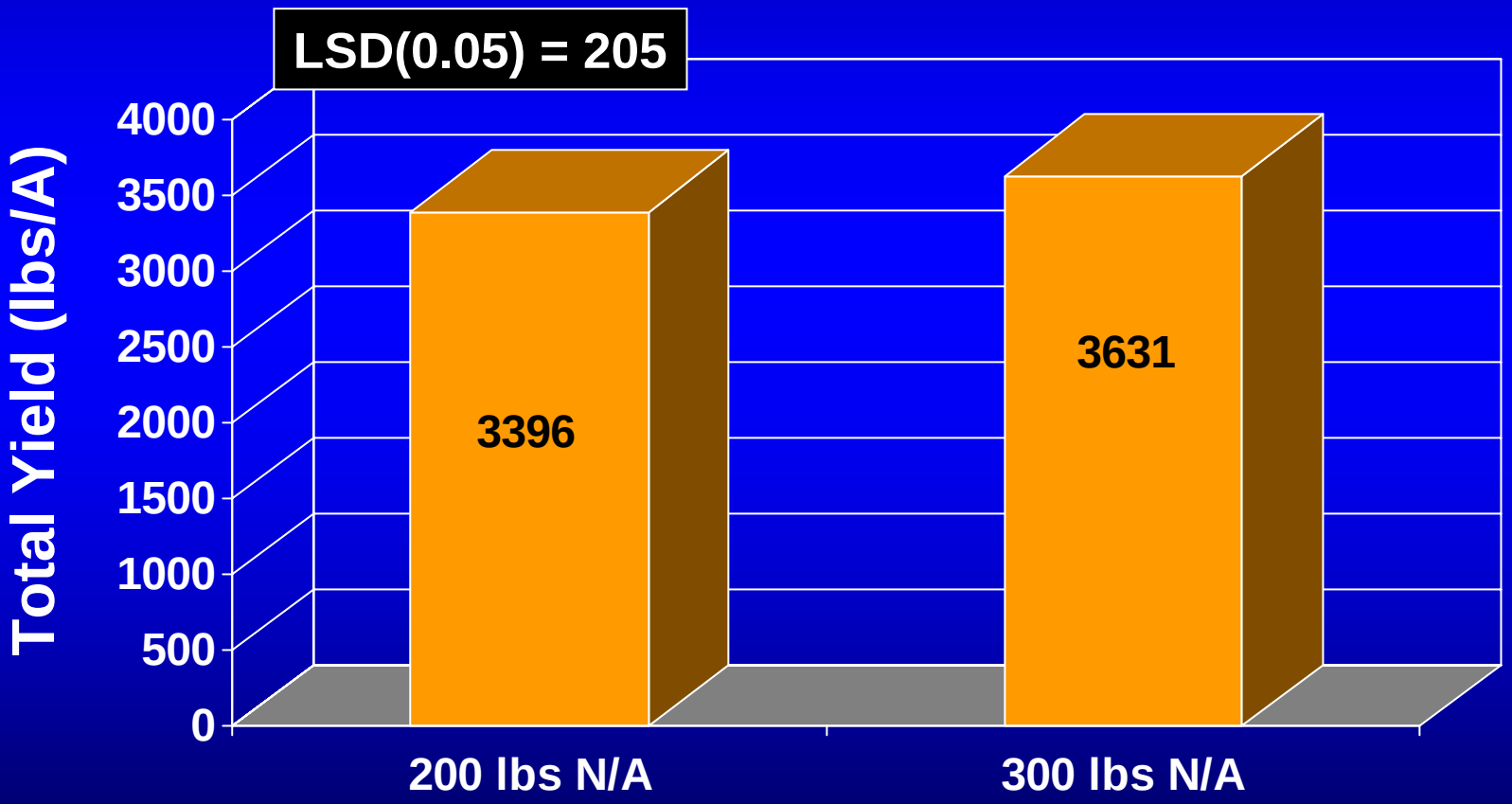
N rate	Late Chlor
200	235 b
300	249 a
LSD(0.05)	11

Dark-Fired Tobacco Yield

Nitamin Trial – UKREC, Princeton, KY - 2006



Main Effect of Nitrogen Rate on Total Dark Tobacco Yield



*Data averaged over all nitrogen sources.

Quality Grade Index and Gross Revenue

***Based on Federal Grade and 2004 USDA Price Support for Type 22 Dark-Fired Tobacco**

N source	N rate	Grade Index (1-100)	Gross Revenue ($/A)
Urea	200	53.9 a	5520 a
Urea	300	49.2 a	5651 a
Am Nit	200	46.5 a	5314 ab
Am Nit	300	27.8 b	3678 b
Ca Nit	200	52.1 a	5106 ab
Ca Nit	300	49.5 a	5806 a
GP-43G	200	41.5 ab	4407 ab
GP-43G	300	56.3 a	6026 a
Nitamin30L	200	51.9 a	5038 ab
Nitamin30L	300	48.8 a	5471 a
LSD(0.05)		18	1704

Main Effect of Nitrogen Source on Quality Grade Index

N source	Grade Index
Urea	51.6 a
Am Nit	37.1 b
Ca Nit	50.8 a
GP-43G	48.9 ab
Nitamin 30L	50.4 a
LSD(0.05)	12.7