

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco *2004*

**UKREC, Princeton, KY
HRES, Springfield, TN
MSU, Murray, KY**

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Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

- **Objective:** Determine burley and dark tobacco growth, yield, and quality response to N and K sources.
- P added as Superphosphate (0-46-0) on all plots prior to transplanting according to soil test. Potassium added as potassium sulfate (0-0-50) on treatments 1 through 5 prior to transplanting according to soil test.
- All N applied sidedress 2 wks after transplanting (250 lb N/A)
- **Locations:**
 - UKREC, Princeton, KY – Burley TN 90
 - HRES, Springfield, TN – Burley TN 90
 - MSU, Murray, KY – Dark Narrowleaf Madole

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

- **Treatments:**
 - 1) Urea (46-0-0)
 - 2) Ammonium nitrate (34-0-0)
 - 3) Sodium nitrate (16-0-0)
 - 4) Calcium nitrate (15.5-0-0)
 - 5) Soda-Potash (15-0-14)
 - 6) Calcium nitrate / sulfate-of-K (12-0-11 or 14-0-14)
 - 7) Soil test K as potassium nitrate (13.5-0-46) with additional N as 34-0-0
 - 8) Soil test K as 13.5-0-46 with additional N as ammonium sulfate (21-0-0)
- N rate: 250 lbs N/A**
4 replications of treatments

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

UKREC – Princeton, KY – Burley TN 90 - 2004

**Soil samples taken on all plots 4 wks after N application*

N source	pH	Buffer pH	P	K	Zn	Mg	Ca
46-0-0	6.55	6.95	160	540	2.98	174	4243
34-0-0	6.68	6.98	146	542	3.13	171	4494
16-0-0	6.53	6.95	134	478	2.73	177	4049
15.5-0-0	6.60	6.95	156	546	3.38	158	4236
15-0-14	6.68	7.03	140	567	3.15	167	4073
12-0-11	6.55	6.95	144	532	3.50	147	4106
13.5-0-46 / 34-0-0	6.60	6.98	151	527	2.98	176	4251
13.5-0-46 / 21-0-0	6.43	6.93	141	584	3.18	162	4136
LSD _{0.05}	0.35	0.13	36	118	0.87	28	708

Comparisons of N and K Sources

UKREC – Princeton, KY – Burley TN 90 - 2004

**Data collected 4 wks after N application*

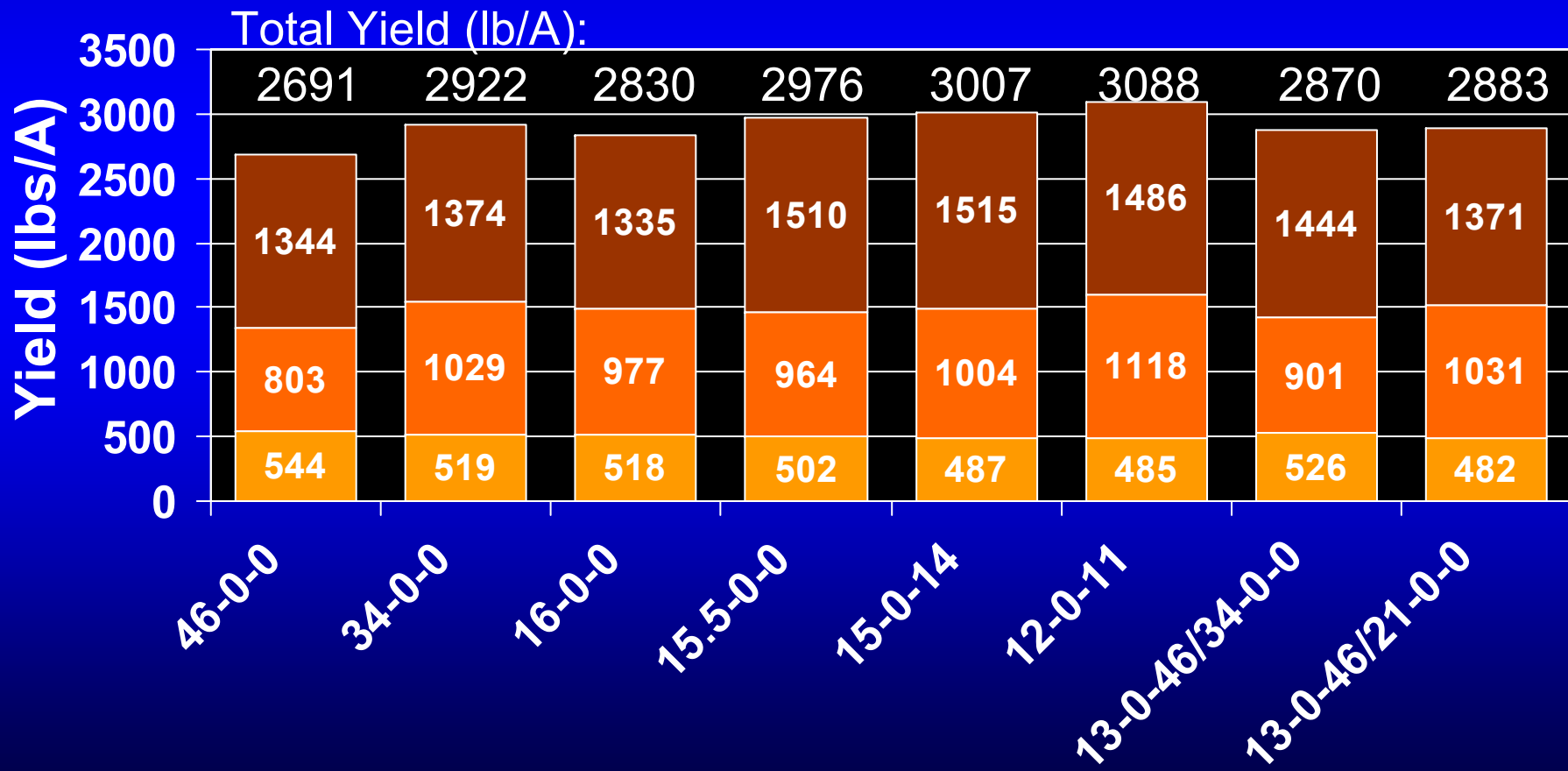
N source	Vigor	Chlorophyll	Leaf Length	Leaf Width	Leaf Area
	(1-10 scale)	Index value	cm	cm	cm ²
46-0-0	8.8	217	51	26	896
34-0-0	8.8	212	49	26	856
16-0-0	8.5	216	49	25	835
15.5-0-0	9.1	217	50	26	884
15-0-14	9.3	213	49	26	859
12-0-11	9.3	219	50	26	885
13.5-0-46 / 34-0-0	8.8	214	50	26	873
13.5-0-46 / 21-0-0	8.8	217	49	26	854
LSD _{0.05}	0.5	13	2.8	1.2	78

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

UKREC – Princeton, KY – Burley TN 90 - 2004

LSD_{0.05} = 81 208 212 289 (total)

■ Lug
 ■ Second
 ■ Leaf



Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

UKREC – Princeton, KY – Burley TN 90 - 2004

**Grade Index and Revenue based on 2004 Federal Grade and Support price for Type 31 Burley Tobacco.*

N source	Grade Index Value	Gross Revenue (\$/acre)
46-0-0	67.4	5230
34-0-0	72.3	5752
16-0-0	72.4	5576
15.5-0-0	70.1	5850
15-0-14	71.4	5845
12-0-11	69.2	5991
13.5-0-46 / 34-0-0	72.1	5655
13.5-0-46 / 21-0-0	71.6	5684
LSD _{0.05}	7.1	658

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

HRES – Springfield, TN – Burley TN 90 - 2004

**Soil samples taken on all plots 4 wks after N application*

N source	pH	Buffer pH	P	K	Zn	Mg	Ca
46-0-0	5.48	6.80	56	282	0.95	190	2545
34-0-0	5.50	6.75	56	265	0.90	198	2639
16-0-0	5.80	6.95	55	268	0.95	184	2498
15.5-0-0	5.68	6.85	57	237	0.93	200	2717
15-0-14	5.75	6.88	53	292	0.90	193	2602
12-0-11	5.73	6.88	47	232	0.83	190	2694
13.5-0-46 / 34-0-0	5.63	6.83	49	236	0.85	199	2564
13.5-0-46 / 21-0-0	5.35	6.75	55	283	0.83	199	2569
LSD _{0.05}	0.23	0.12	27	88	0.38	32	136

Comparisons of N and K Sources

HRES – Springfield, TN - Burley TN 90 - 2004

**Data collected 4 wks after N application*

N source	Chlorophyll	Leaf Length	Leaf Width	Leaf Area
	Index value	cm	cm	cm ²
46-0-0	317	52	23	807
34-0-0	344	52	23	788
16-0-0	328	53	23	830
15.5-0-0	350	53	22	784
15-0-14	301	53	23	799
12-0-11	325	52	23	794
13.5-0-46 / 34-0-0	355	53	24	844
13.5-0-46 / 21-0-0	318	52	23	806
LSD _{0.05}	46	2.2	1.6	79

Comparisons of N and K Sources

HRES – Springfield, TN – Burley TN 90 - 2004

**Grade Index and Revenue based on 2004 Federal Grade and Support price for Type 31 Burley Tobacco.*

N source	Total Yield	Grade Index	Gross Revenue
	Lbs/acre		\$/acre
46-0-0	2754	69.6	5461
34-0-0	2995	73.0	5927
16-0-0	3081	73.1	6104
15.5-0-0	3150	73.2	6242
15-0-14	2845	71.8	5636
12-0-11	2998	73.6	5937
13.5-0-46 / 34-0-0	3185	72.4	6297
13.5-0-46 / 21-0-0	2932	73.9	5815
LSD _{0.05}	177	5.7	345

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

MSU – Murray, KY – Dark NL Madole - 2004

**Soil samples taken on all plots 4 wks after N application*

N source	pH	Buffer pH	P	K	Zn	Mg	Ca
46-0-0	6.25	6.95	79	188	3.6	131	4158
34-0-0	6.15	6.93	113	236	3.9	141	4453
16-0-0	6.40	6.90	133	152	3.9	125	4346
15.5-0-0	6.38	6.95	98	170	3.8	139	4348
15-0-14	6.38	6.93	79	154	3.3	124	3998
12-0-11	6.48	7.00	83	132	3.6	113	4362
13.5-0-46 / 34-0-0	6.43	6.93	93	192	3.6	137	4369
13.5-0-46 / 21-0-0	6.38	6.93	97	186	3.3	120	4280
LSD _{0.05}	0.39	0.11	43	54	0.6	39	526

Comparisons of N and K Sources

MSU – Murray, KY – Dark NL Madole - 2004

**Data collected 4 wks after N application*

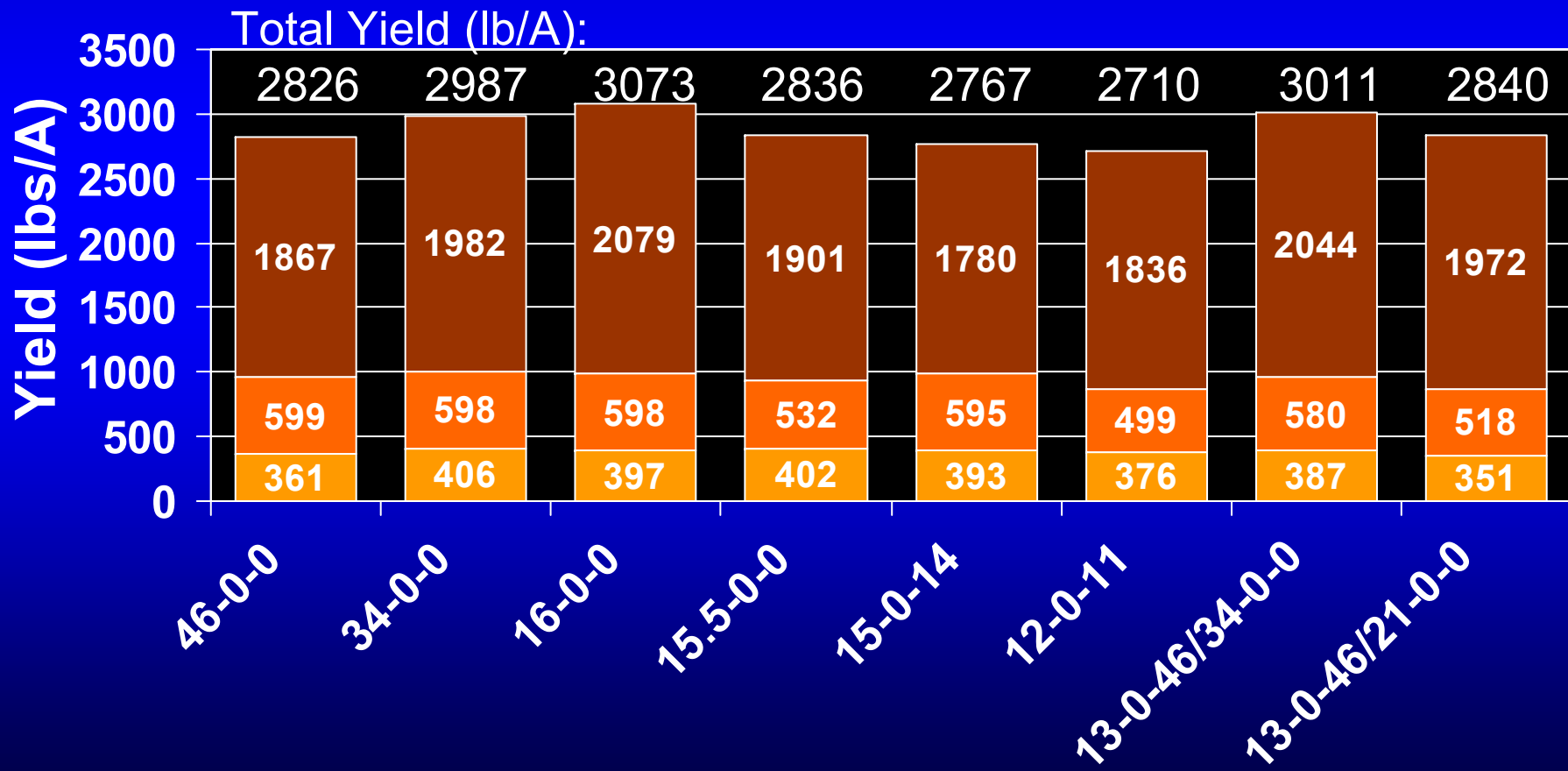
N source	Vigor	Chlorophyll	Leaf Length	Leaf Width	Leaf Area
	(1-10 scale)	Index value	cm	cm	cm ²
46-0-0	8.2	231	50	24	800
34-0-0	8.5	240	51	25	837
16-0-0	9.1	234	51	25	855
15.5-0-0	8.3	233	48	23	743
15-0-14	8.2	230	49	24	789
12-0-11	8.0	217	47	23	724
13.5-0-46 / 34-0-0	8.6	231	50	25	841
13.5-0-46 / 21-0-0	8.3	215	47	24	763
LSD _{0.05}	1.0	28	5.5	2.5	152

Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

MSU – Murray, KY – Dark NL Madole - 2004

LSD_{0.05} = 101 133 391 409 (total)

■ Lug
 ■ Second
 ■ Leaf



Comparisons of Nitrogen and Potassium Sources in Burley and Dark Tobacco

MSU – Murray, KY - Dark NL Madole - 2004

**Grade Index and Revenue based on 2004 Federal Grade and Support price for Type 23 Dark Fire-Cured Tobacco.*

N source	Grade Index Value	Gross Revenue (\$/acre)
46-0-0	64.6	4986
34-0-0	62.2	5138
16-0-0	63.0	5533
15.5-0-0	60.6	4740
15-0-14	59.7	4370
12-0-11	58.5	4181
13.5-0-46 / 34-0-0	66.1	5450
13.5-0-46 / 21-0-0	55.8	4439
LSD _{0.05}	8.4	1187