BURLEY TOBACCO FIELD TEST DATA

2006

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Contents

ACKNOWLEDGMENTS

The information contained in this publication is due to the efforts of many people. Cooperators are indicated with each graph and without their extra efforts the tests would have not been possible. County agricultural agents are an integral part of the on-farm tobacco testing program at the University of Kentucky and are often responsible for locating cooperators and coordinating crop management. Agents in many cases also may suggest projects of importance in their specific county. The following county extension agents deserve considerable credit for their work and supervision of the test plots; Anderson County - Tommy Yankey, Boyle County - Jerry Little, Fayette County – Josh Long, Harrison County - Gary Carter, Madison County – John Wilson, Taylor County - Pat Hardesty, and Woodford County – Ben Meredith. This is by no means a complete list of those agents involved in the tobacco research efforts. Many others were involved in various projects not represented here. Special thanks are due Austin Perkins and Keith Johnson, summer interns, for their help with test plot establishment, chemical and fertilizer application, data collection, and data entry.

The following companies provided support in the form of materials and grants to support the research contained in this report; Chemtura Corporation, Clay's Seed, Inc; Council for Burley Tobacco, FMC Corporation; F.W. Rickard Seed; Yara North America; Newton Seed; Philip Morris, USA; SQM North America; Syngenta Crop Protection; Valent, USA; and Workman Tobacco Seed.

PROCEDURE

Test plots are arranged in a randomized complete block design and each treatment is replicated at least four times. The general plot size is four rows wide by at least 25 feet long unless the experiment requires extra area. The two center rows are used for collection of data with outside rows used as border rows. Four sticks are harvested out of each plot in the experiment for yield determination. The four sticks are tagged with the same individual number representing that plot and combined as a single crop. The tobacco is stripped into three or four grades to determine treatment effects on the plant at different stalk positions. Results are analyzed for statistical difference and mean separation was by least significant difference (LSD). A confidence level of 0.05 was used and the LSD value is included on most of the graphs of means. LSD values are listed on the right side of each yield graph where applicable and are color coded to match stalk positions or other measurements. To determine statistical differences mean differences must be greater than the LSD value to be considered significant at a 95% confidence that the difference is due to treatment effects.

SPECIAL NOTES

Measurable differences between treatments do not necessarily mean statistical differences. A statistical difference is one that would have a high probability of occurring under normal farming conditions. In other words, a farmer could count on similar results under the same conditions.

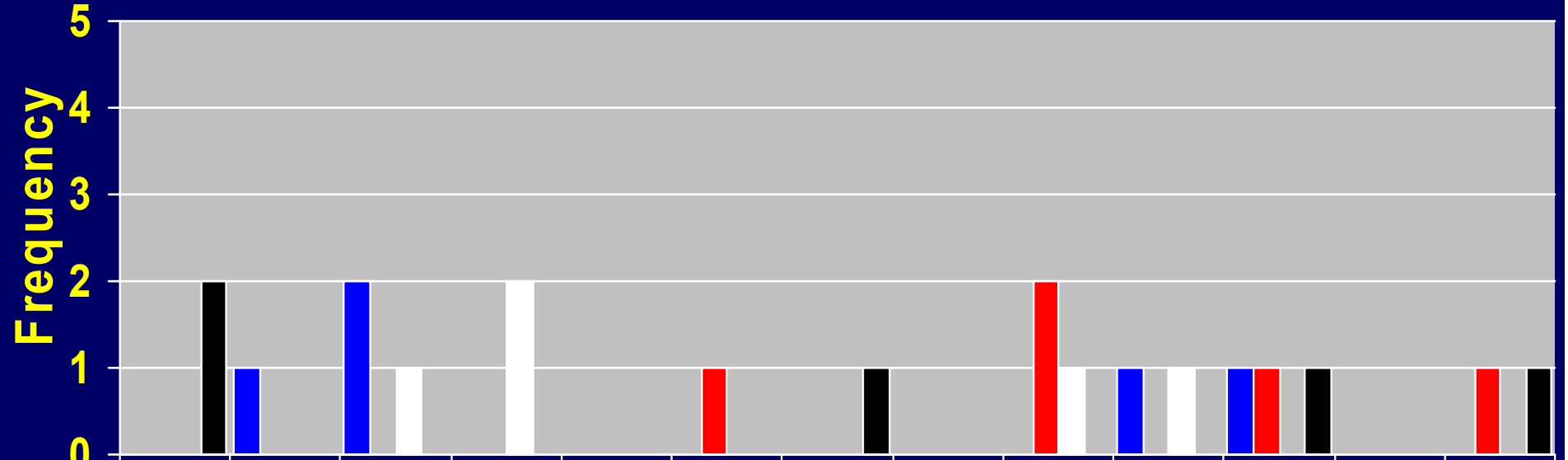
The use of a variety or chemical in a test does not imply endorsement. The use of chemicals on an experimental basis, combinations of chemicals and cultural practices used in experimental tests are not a recommendation of those procedures. Labels should be checked and an appropriate specialist consulted before recommendations are made. Chemicals used for certain tests are for evaluation of application timing and do not imply that other chemicals labeled for the same problem with similar efficacy would not produce similar results. A variety, chemical or cultural practice should never be condemned or praised based only on one test.

Chemicals used on an experimental basis are in the test phase and may never be labeled for use in tobacco. These tests look for effectiveness and best rates. A successful chemical trial does not assure labeling of that chemical. There are many factors that are considered before a particular chemical is labeled for use.

Variety Trials 2006

Weather, as usual, was of significant influence on variety trials in Kentucky during 2006. All varieties performed exceptional well at the Robert Eads farm with KT 204 taking top yield honors as it did in Taylor County where excessive rainfall took it toll on many of the other varieties. Both NC 6 & NC 7 are high yielding varieties but are big and hard to handle. Both suffered under excess rainfall. N 7371 was a good yielder in several locations, but the lowest in one. It has narrow strappy leaves which do not detract from the cured leaf. KT 206 performed well in all locations. In Harrison Co. where the race of black shank is suspected to be predominately race 0. 14 x L8, NC 6, and KT 206 all have a 10 rating for race 0 black shank. However, KT 206 has a 7 rating to race 1 where 14 x L8 has a 0 and NC 6 has a 3 rating. In areas with high incidence of Race 1 KT 206 is expected to outperform 14 x L8 and NC 6. Varieties KTH 2405, KTH 2406, R304 and R307 are all experimental and may not be released.

Yield Ranking of Varieties for Each of 4 Trials

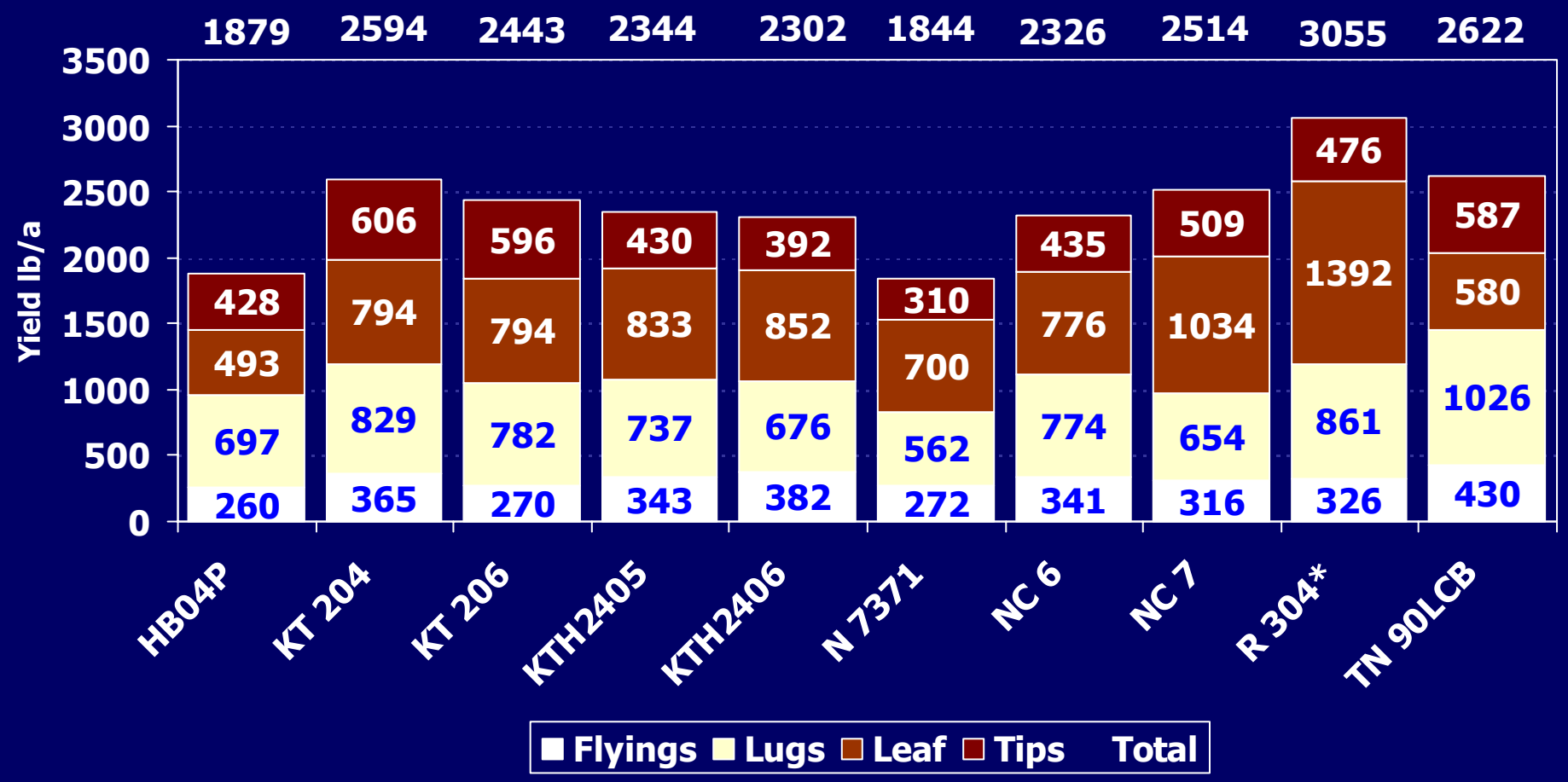


	HB04 P	14 x L8*	KT204	KT206	KTH2405	KTH2406	N 7371	NC 5*	NC 6	NC 7	R304	R 307*	TN 90LCB
1st		1	2							1	1		
2nd						1			2		1		1
3rd			1	2					1	1			
Last	2						1				1		1

1st 2nd 3rd Last

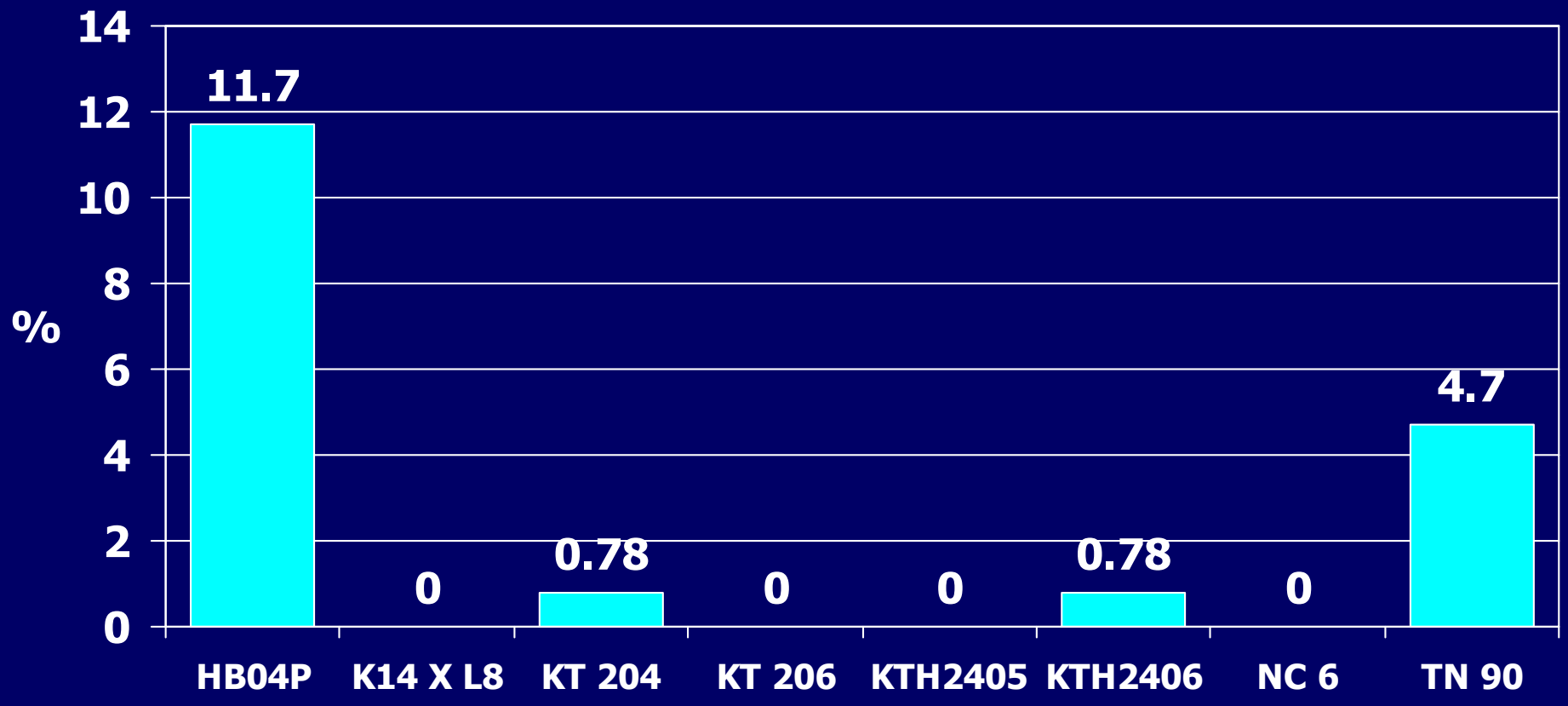
Locations: Anderson, Fayette, Harrison, Taylor, & Woodford (* in only 1 trial)

Burley Tobacco Yield
Anderson Co. – Danny Crouch Farm

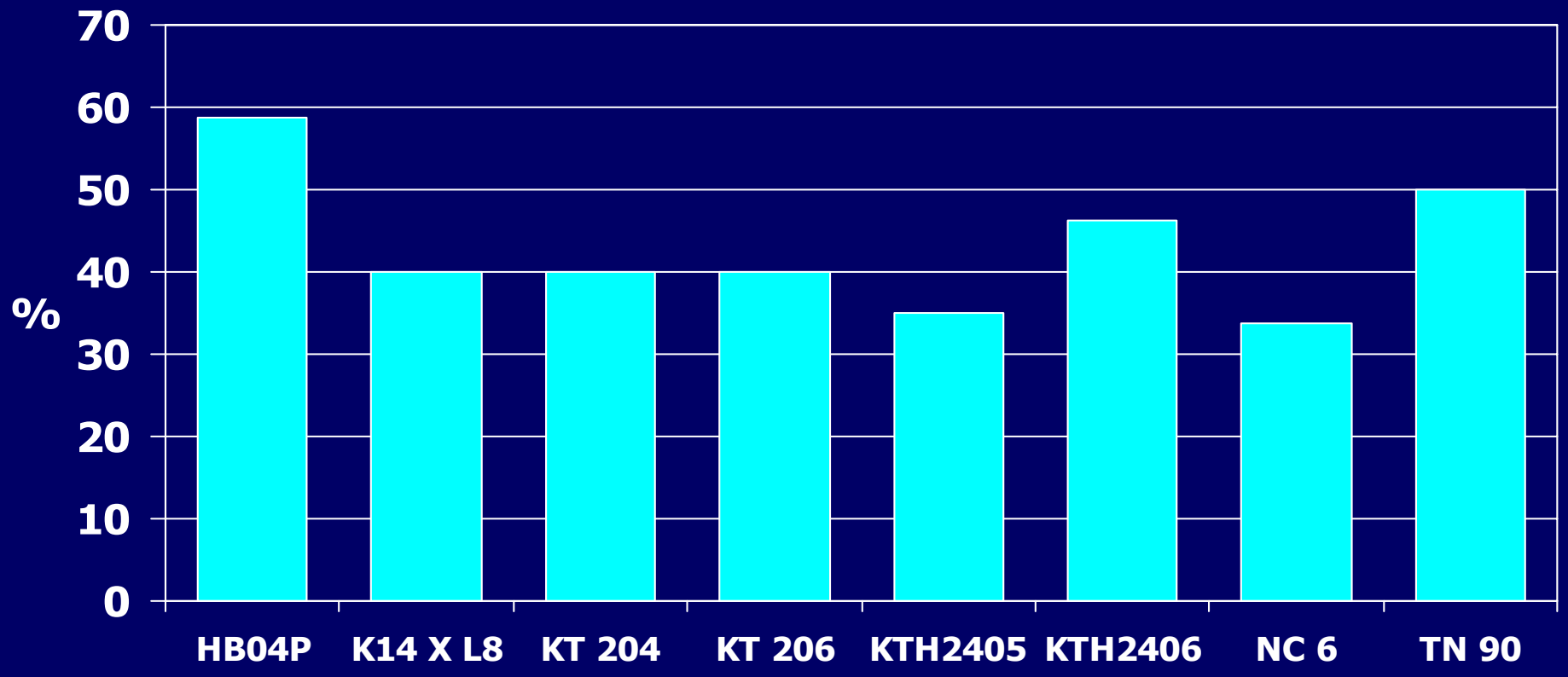


*Only 3 replications of R 304 survived due to severe weather effects.

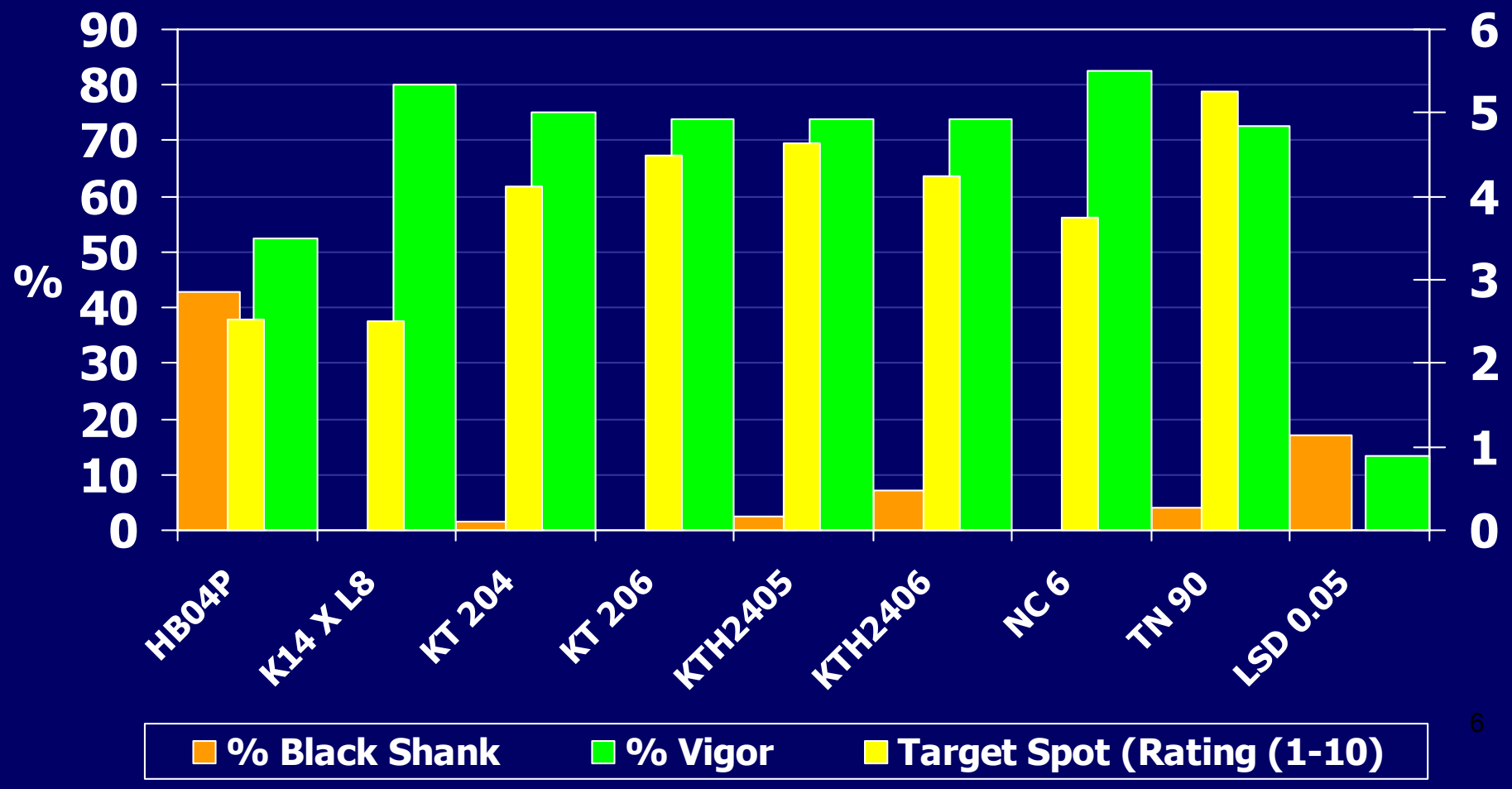
Black Shank Incidence in a Burley Tobacco Trial
Harrison Co. – Ricci Rowland Farm



Burley Tobacco Vigor – Early Season Harrison Co. – Ricci Rowland Farm

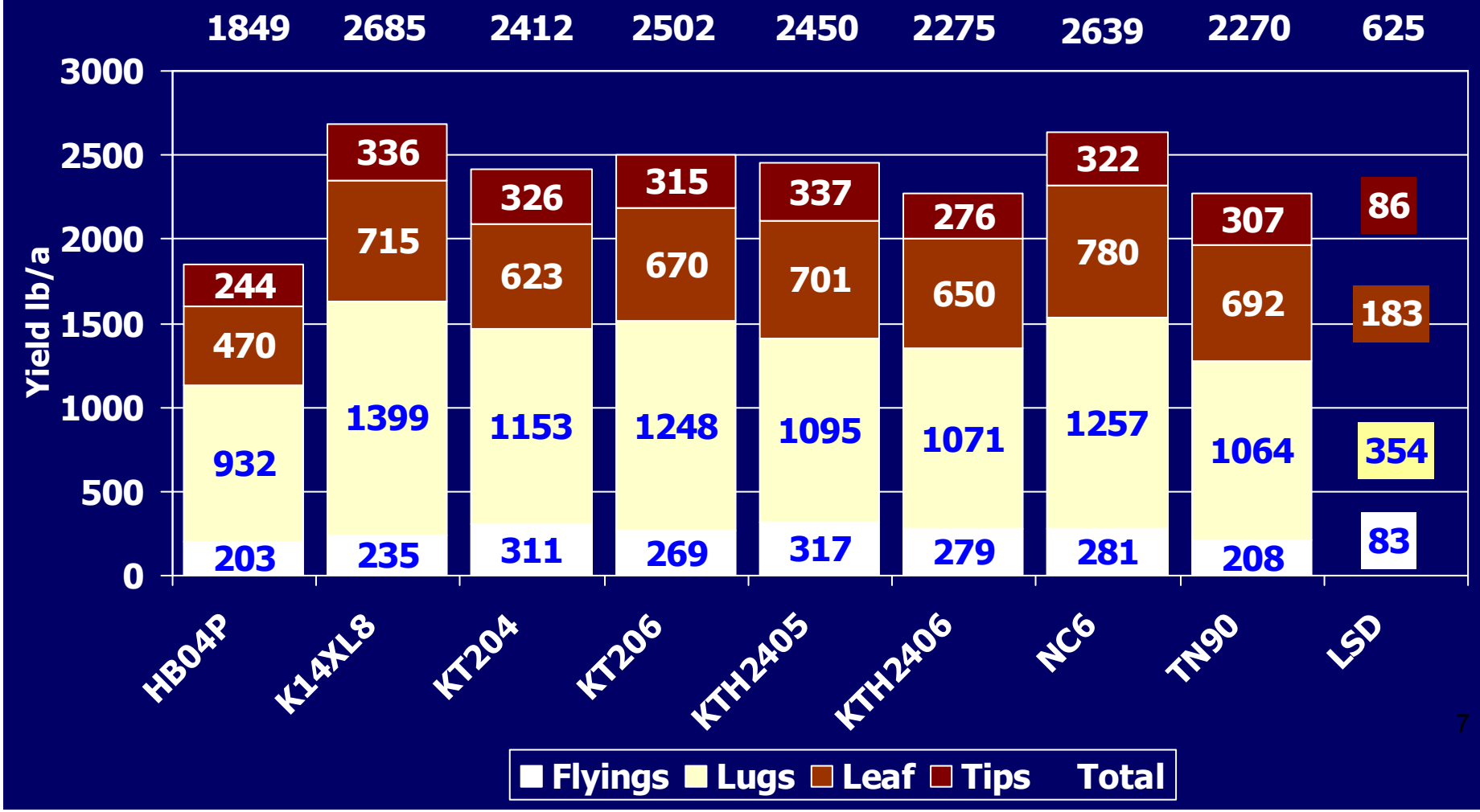


Black Shank, Target Spot Incidence & Burley Tobacco Vigor – Late Season Harrison Co. – Ricci Rowland Farm

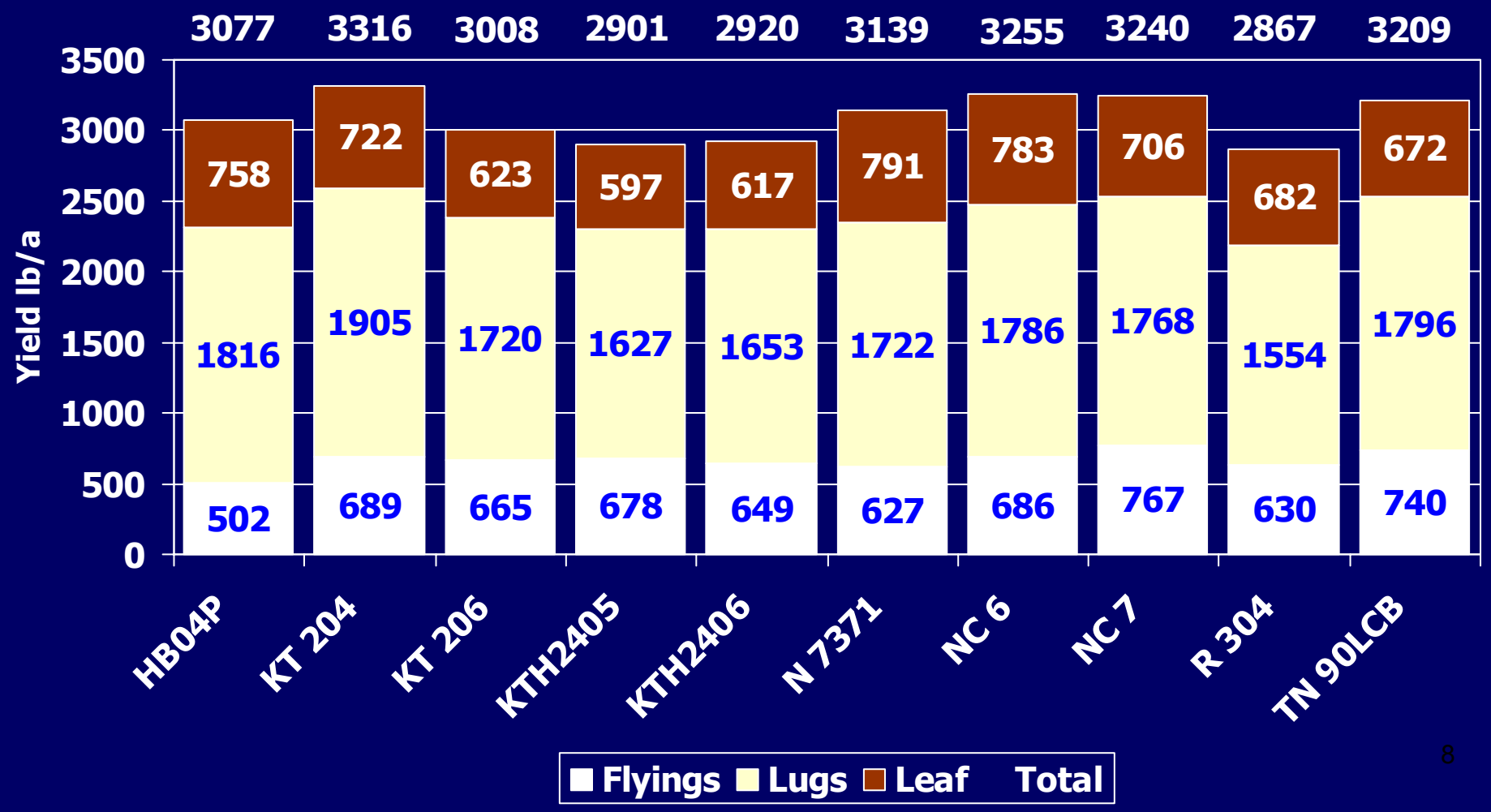


Burley Tobacco Yield

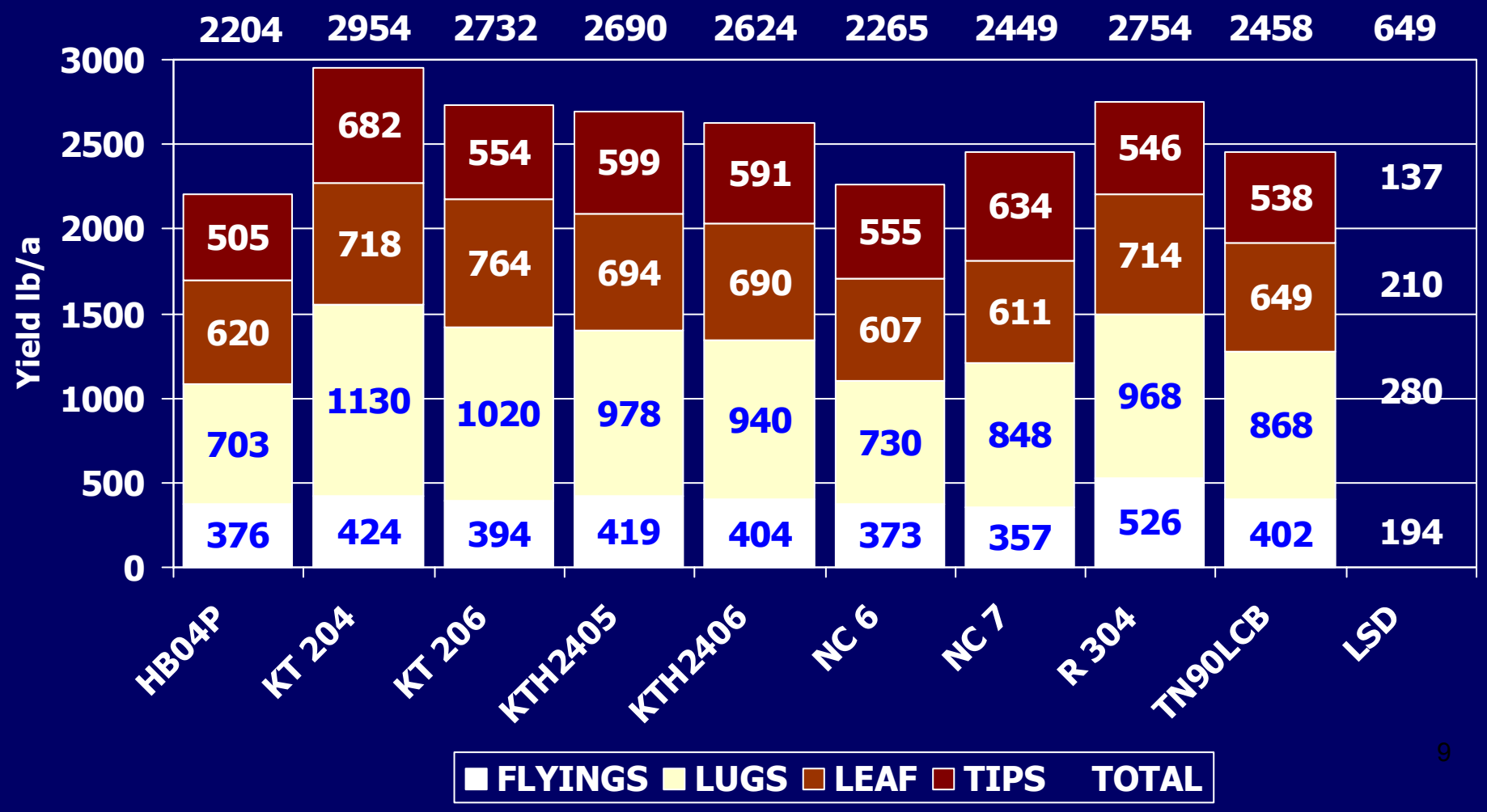
Harrison Co. – Ricci Rowland Farm



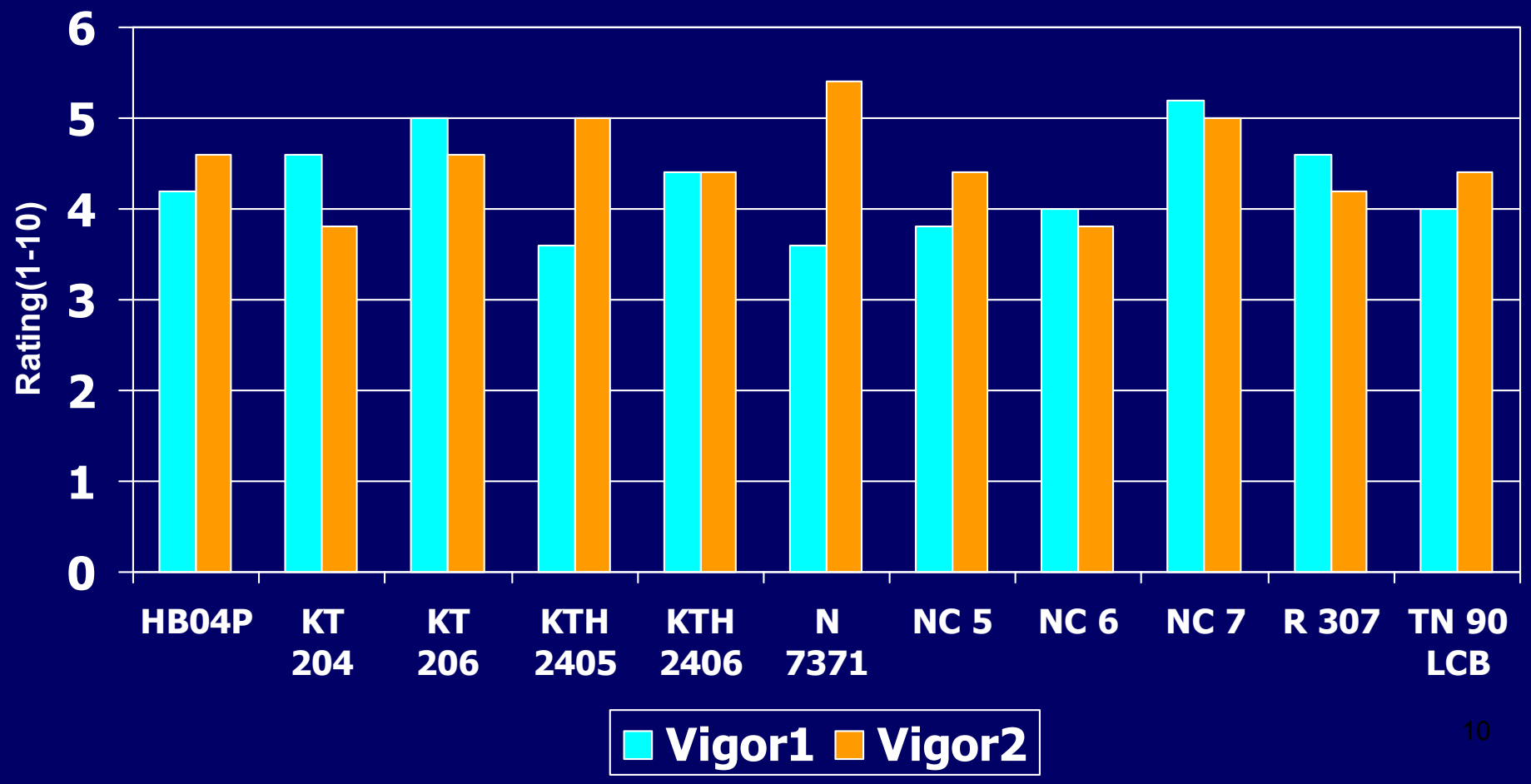
Burley Tobacco Yield
Fayette Co. – Robert Eads Farm



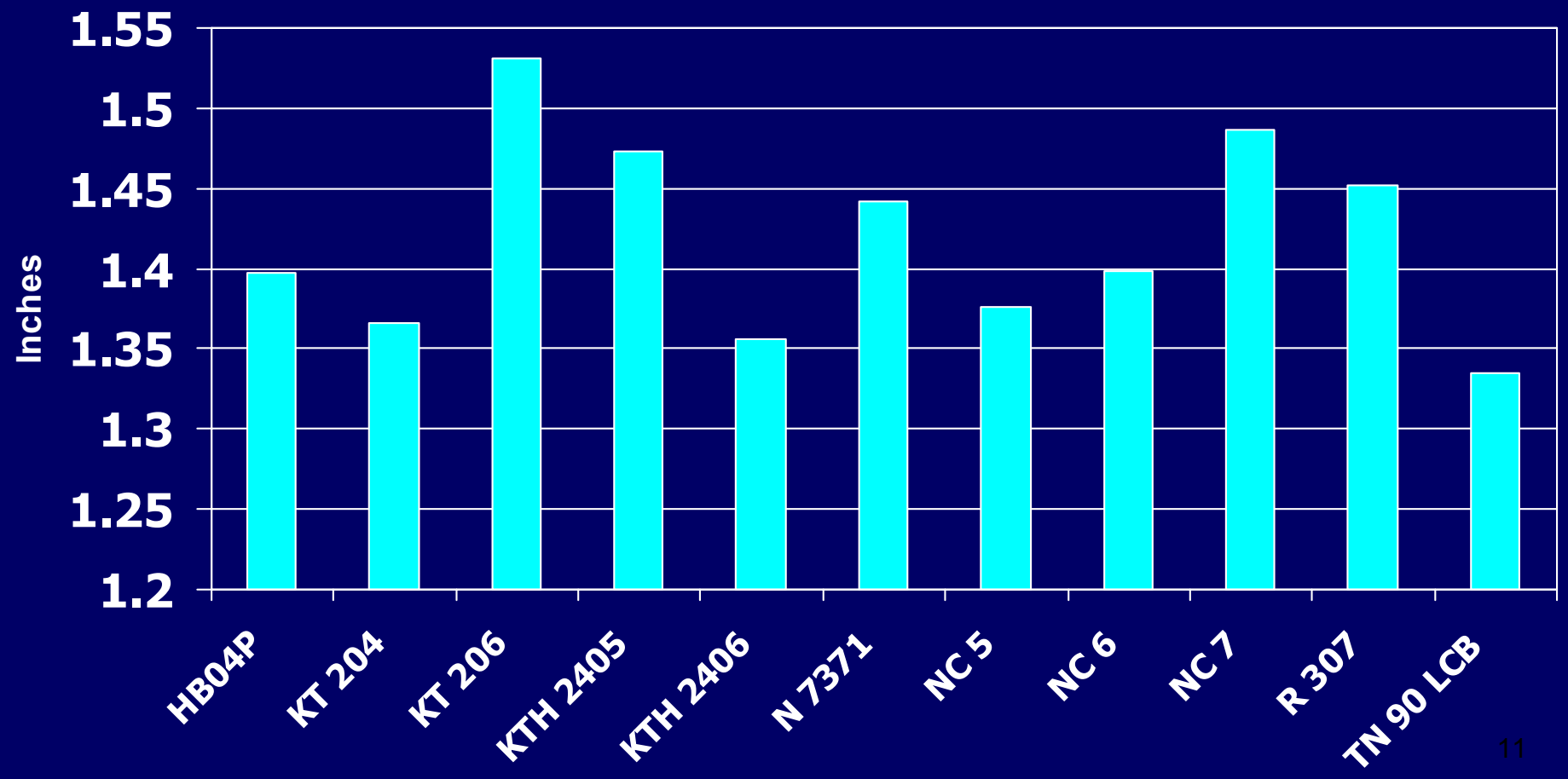
Burley Tobacco Yield
Taylor Co. – Chad Sullivan Farm



Burley Tobacco Vigor
Woodford Co. – Rusty Thompson Farm

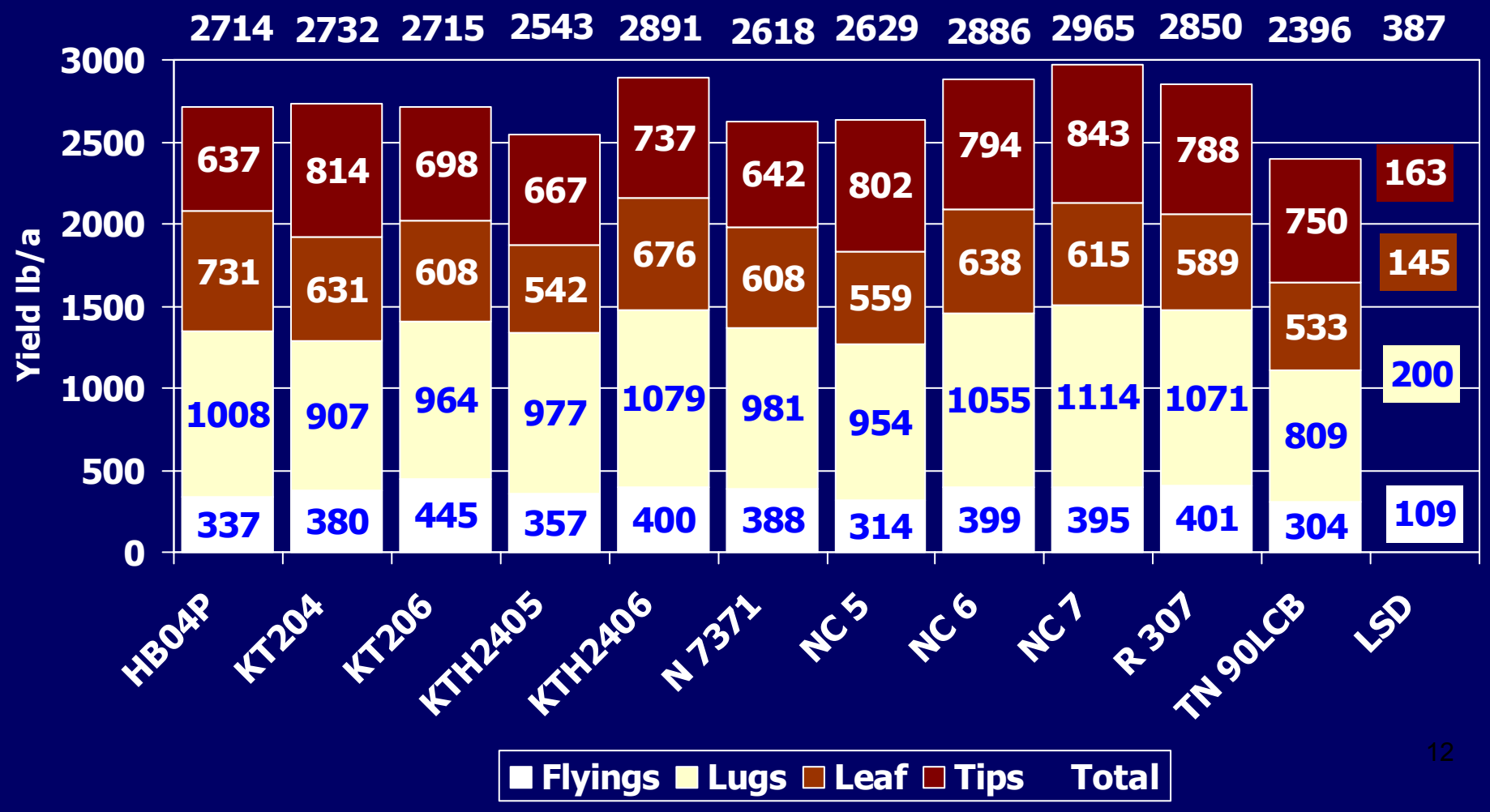


Burley Tobacco Stalk Diameter at Harvest
Woodford Co. – Rusty Thompson Farm



LSD 0.05 = 0.12

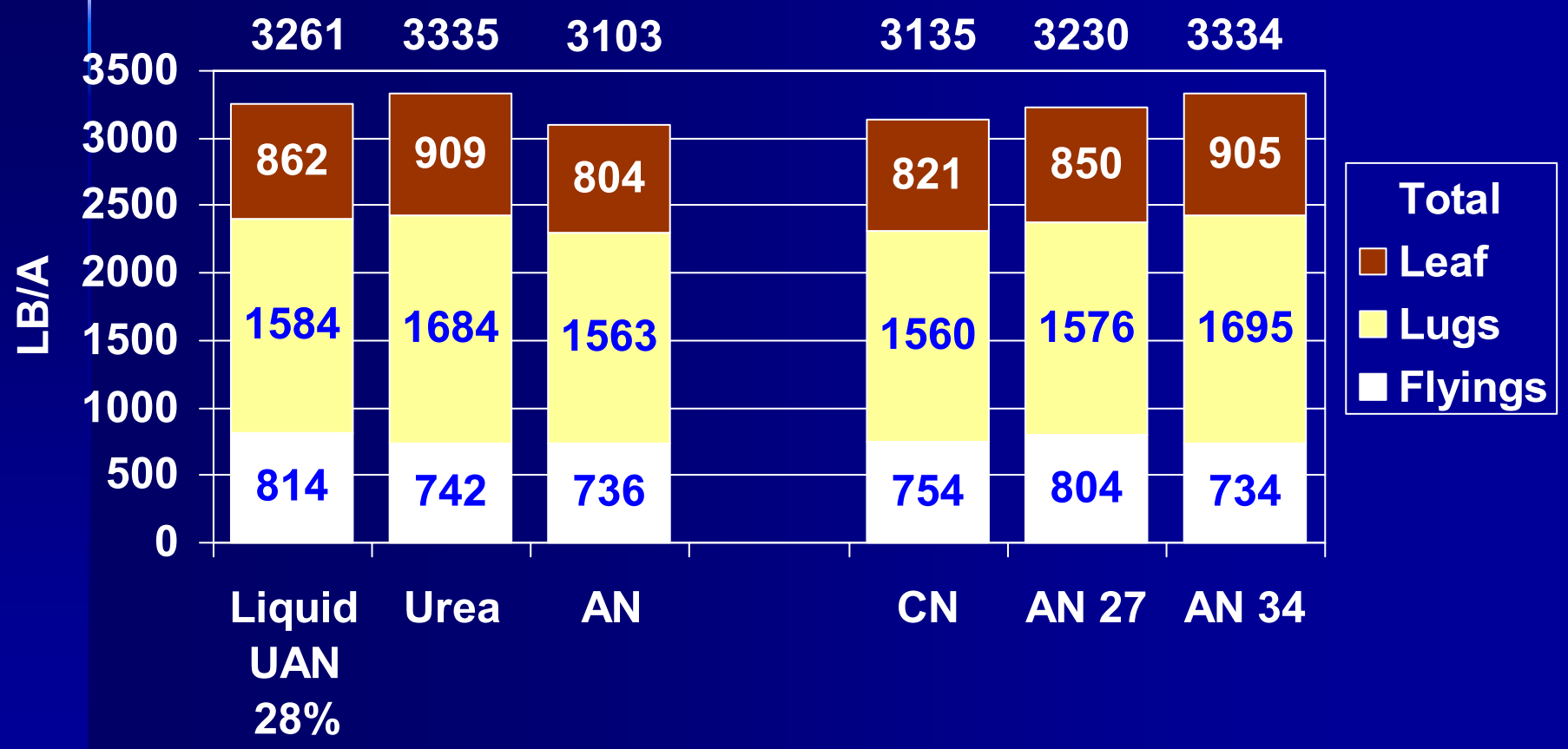
Burley Tobacco Yield
Woodford Co. – Rusty Thompson Farm



Fertility & Curing Studies

Studies were designed to evaluate the effects of nitrogen (N) rate, N source and curing on TSNA formation in burley tobacco. The combined N rate and curing study was conducted at the UK Woodford Co. Farm (ARC) and the N source study was conducted at Robert Eads Farm in Eastern Fayette Co. Evaluation of the effects of N rates on soil nitrates and ammonium levels revealed a linear pattern both before sidedressing and after harvest. Yields were non-responsive to N rates. However, the highest initial rate produced the lowest yield. TSNA including NNN, NAT & Total TSNAs increased with increasing N rate. Sidedressing did not significantly increase TSNA levels. N source at broadcast and sidedressing did not effect TSNA levels.

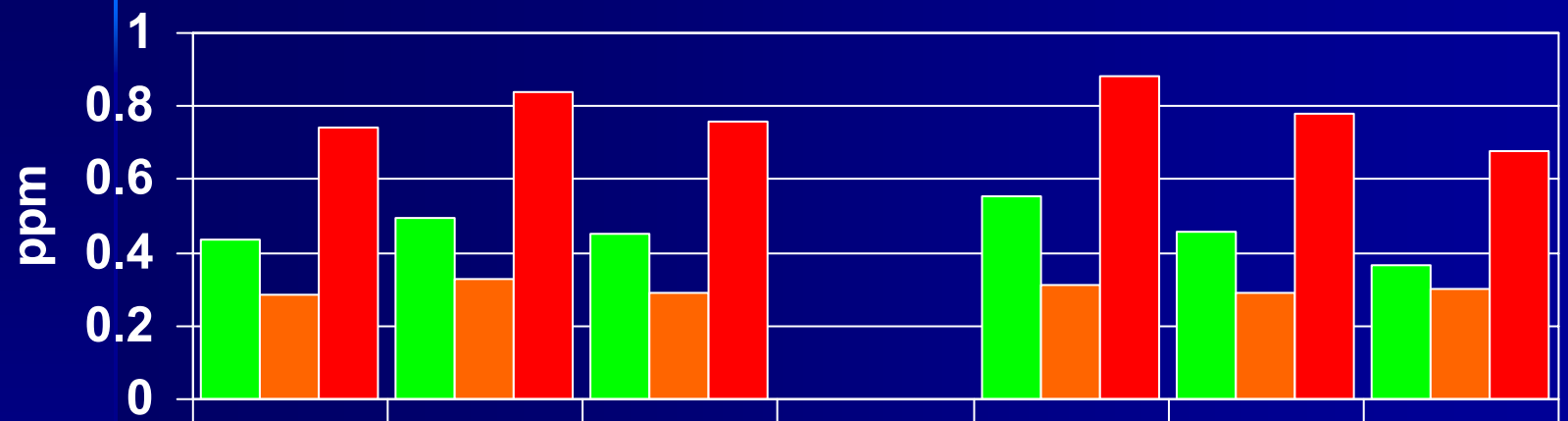
Effect of Broadcast & Sidedress Nitrogen Source on Burley Yield Fayette County – Robert Eads Farm



Broadcast (150 units/ acre) Sidedress (100 Units/ acre)

AN = Ammonium Nitrate, CN = Calcium Nitrate

Effect of Broadcast & Sidedress Nitrogen Source on Burley TSNA Formation – Robert Eads Farm



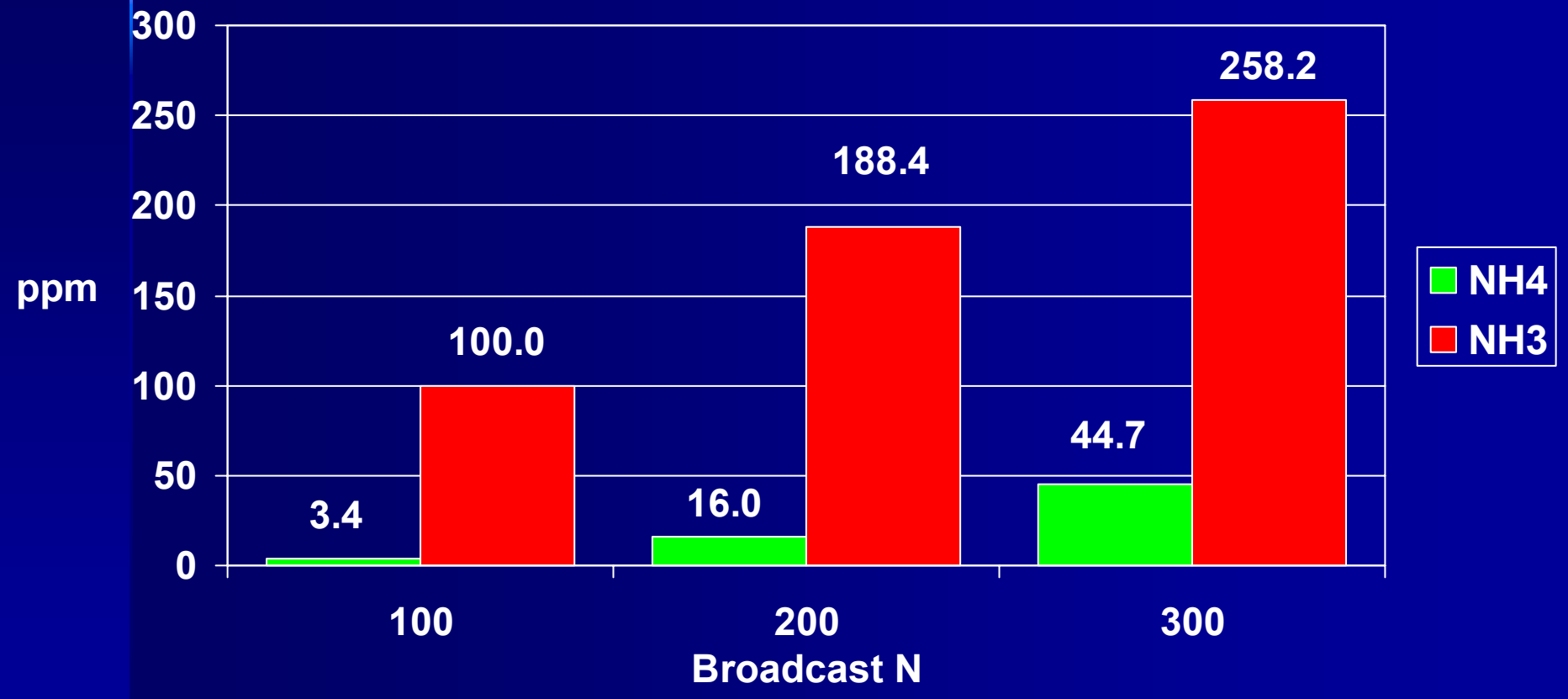
	Liquid	Urea	AN		CN	AN 27	AN 34
NNN	0.4342	0.4969	0.45		0.5542	0.4592	0.3678
NAT	0.2867	0.3261	0.29		0.3125	0.2908	0.2994
TSNA	0.74	0.84	0.76		0.88	0.78	0.68

NNN NAT TSNA

Broadcast (150 units/ acre) Sidedress (100 Units/ acre)

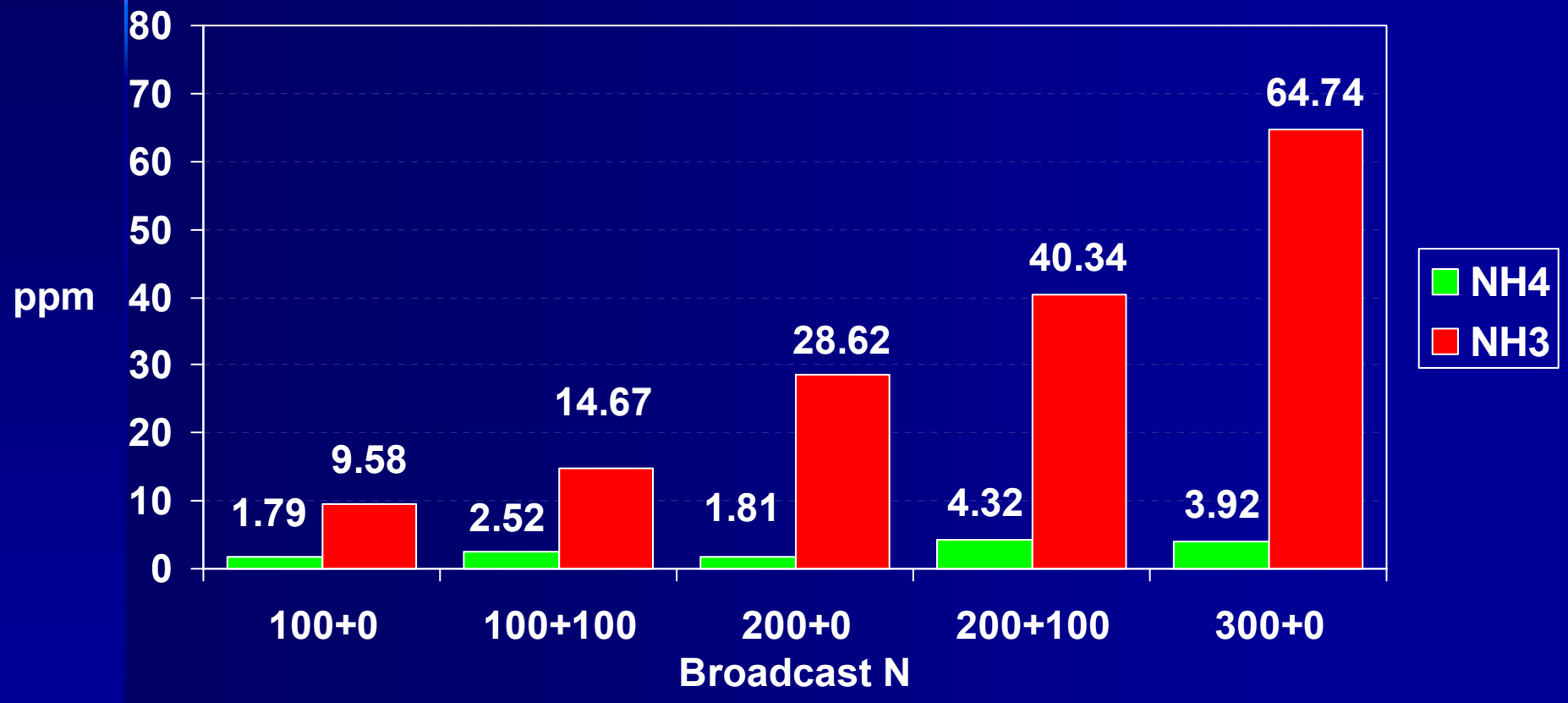
AN = Ammonium Nitrate, CN = Calcium Nitrate

Influence of Broadcast Nitrogen on Ammonium & Nitrate Soil Levels Prior to Sidedressing



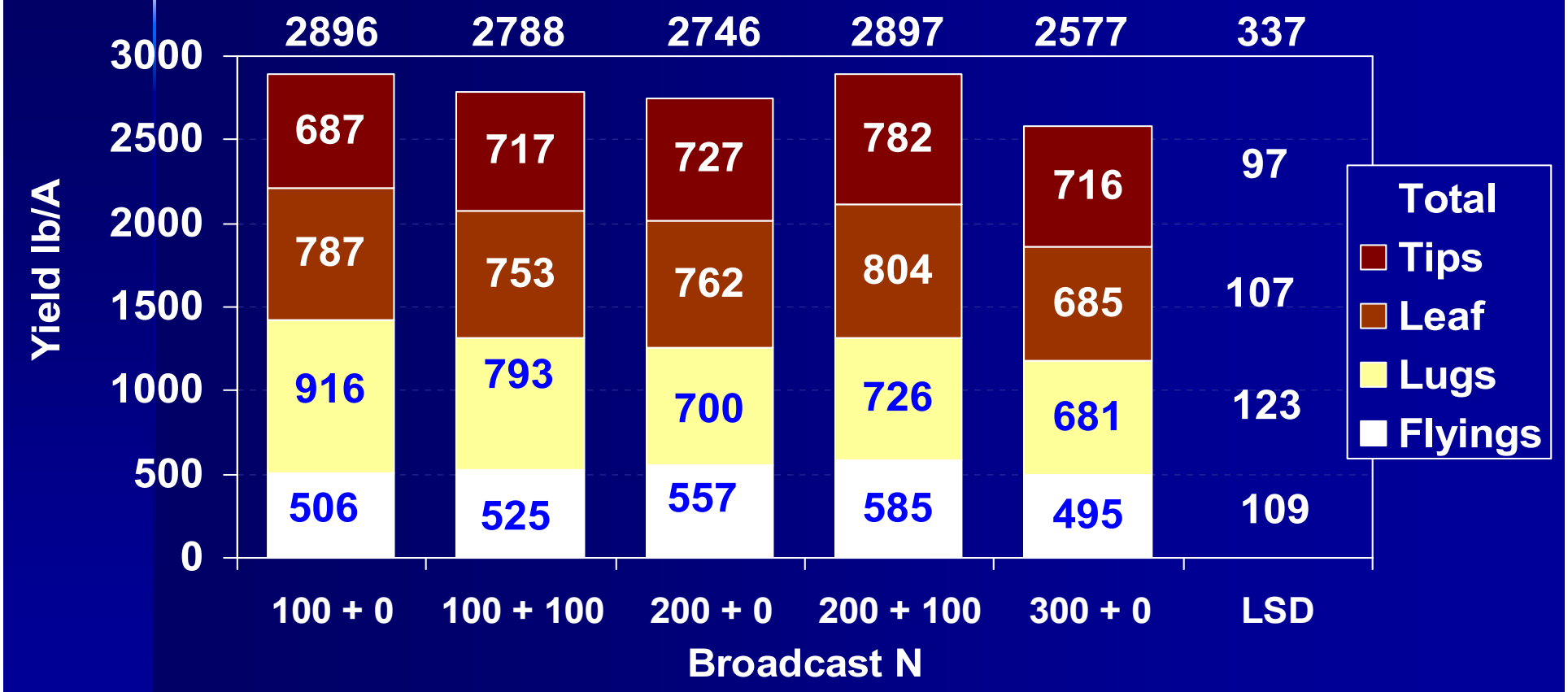
N source = 28% UAN

Influence of Nitrogen Rate on Ammonium & Nitrate Soil Levels After Harvest



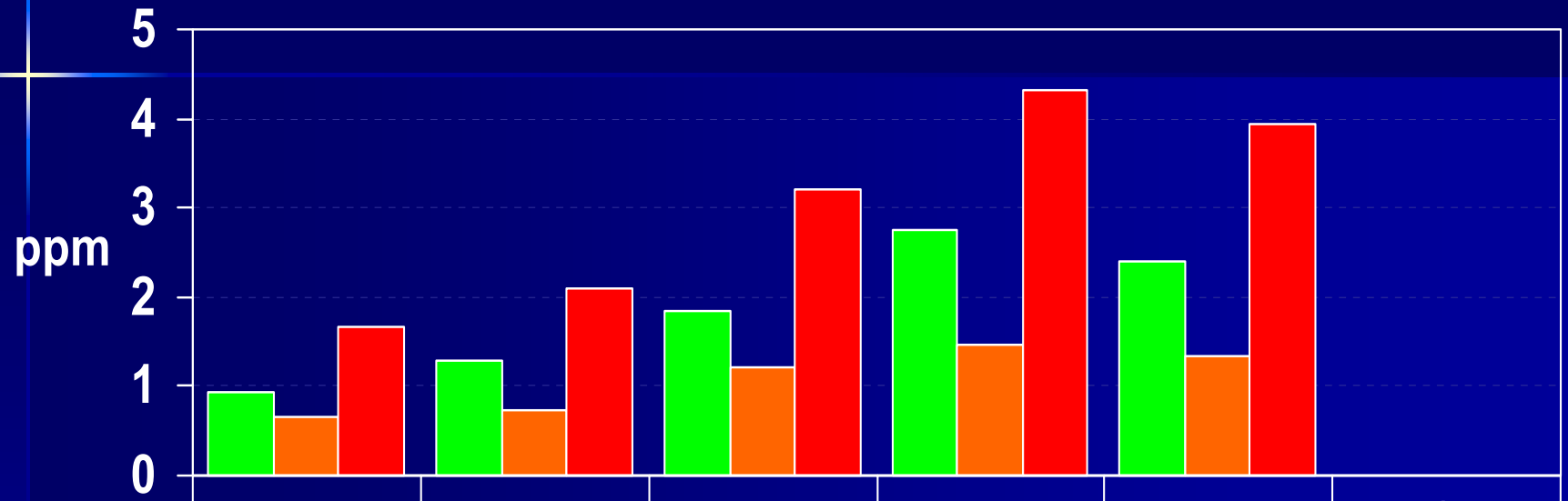
N source = 28% UAN Broadcast units +Ammonium Nitrate Sidedressed units

Influence of Nitrogen Rate on Burley Yield – UK Woodford Co. Farm



N source = 28% UAN Broadcast units +Ammonium Nitrate Sidedressed units

Influence of Nitrogen Rate on TSNA Formation

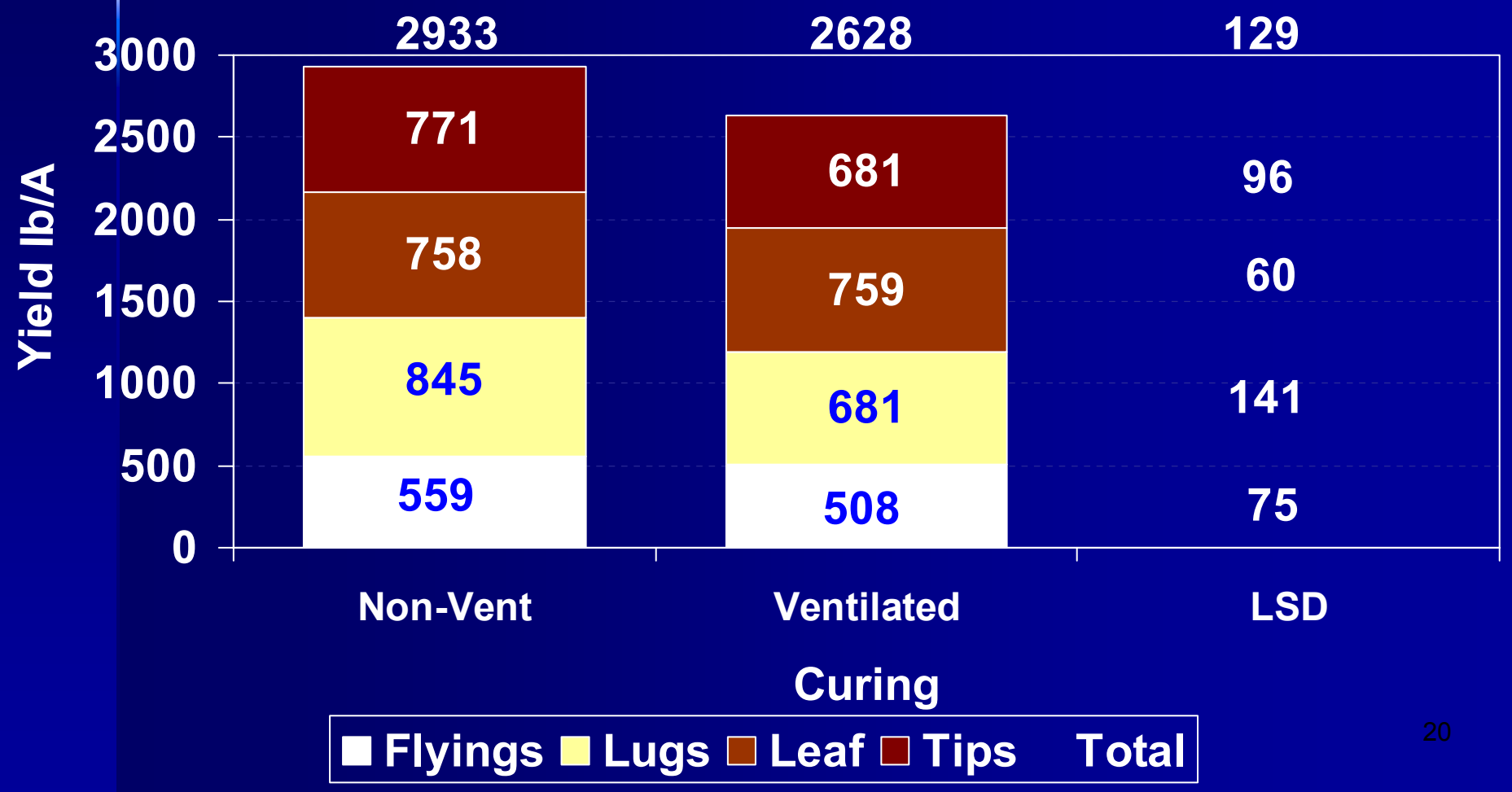


Broadcast N	100+0	100+100	200+0	200+100	300+0	LSD
NNN	0.94	1.28	1.85	2.76	2.40	1.13
NAT	0.66	0.74	1.21	1.46	1.35	0.59
Total TSNA	1.67	2.09	3.22	4.33	3.95	1.62

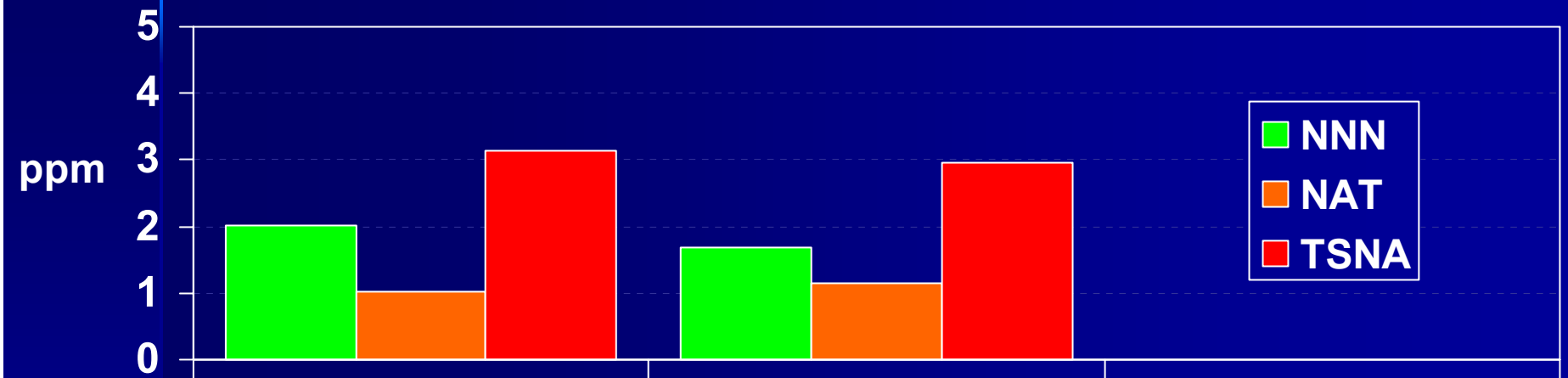
NNN NAT Total TSNA

N source = 28% UAN Broadcast units +Ammonium Nitrate Sidedressed units

Influence of Ventilation During Curing on Burley Yield – UK Woodford Co. Farm



Influence of Ventilation During Curing on Burley Yield – UK Woodford Co. Farm

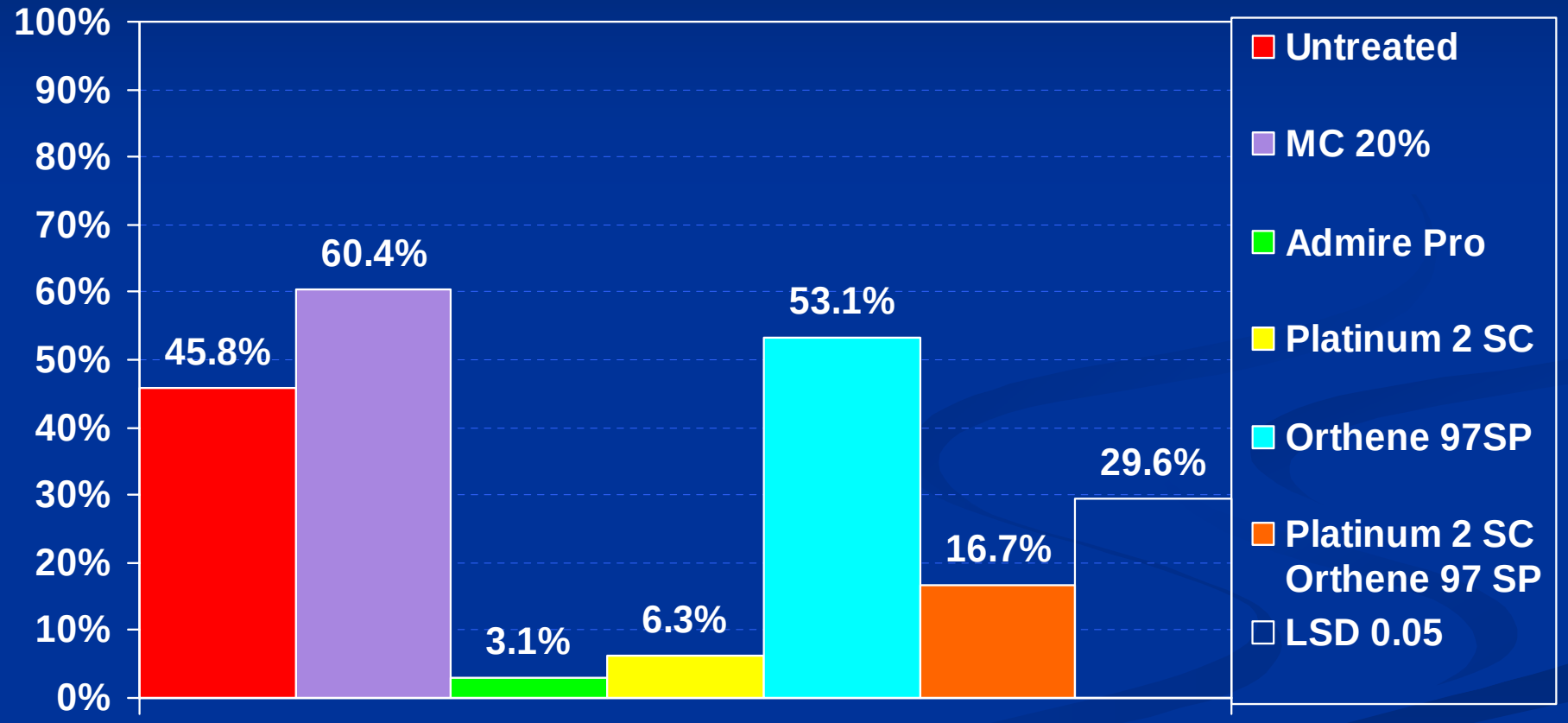


	Non-Vent	Ventilated	LSD 0.05
NNN	2.01	1.68	0.85
NAT	1.03	1.14	0.86
TSNA	3.15	2.96	1.92

Broadcast N

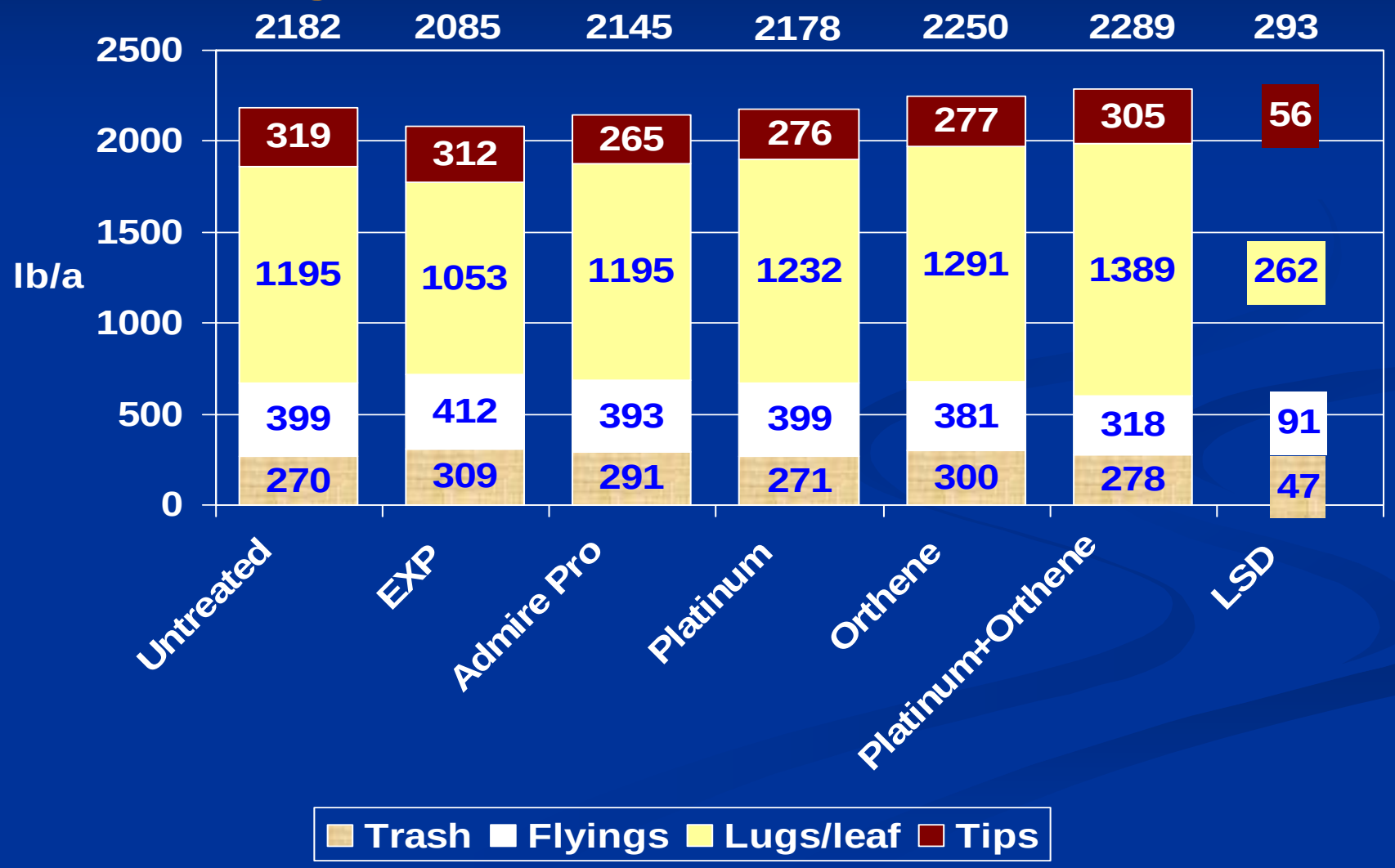
N source = 28% UAN Broadcast units +Ammonium Nitrate Sidedressed units

Effects of Transplant Insecticides on the Percentage of Plants with Aphid Colonies Boyle Co. – John Helm Farm

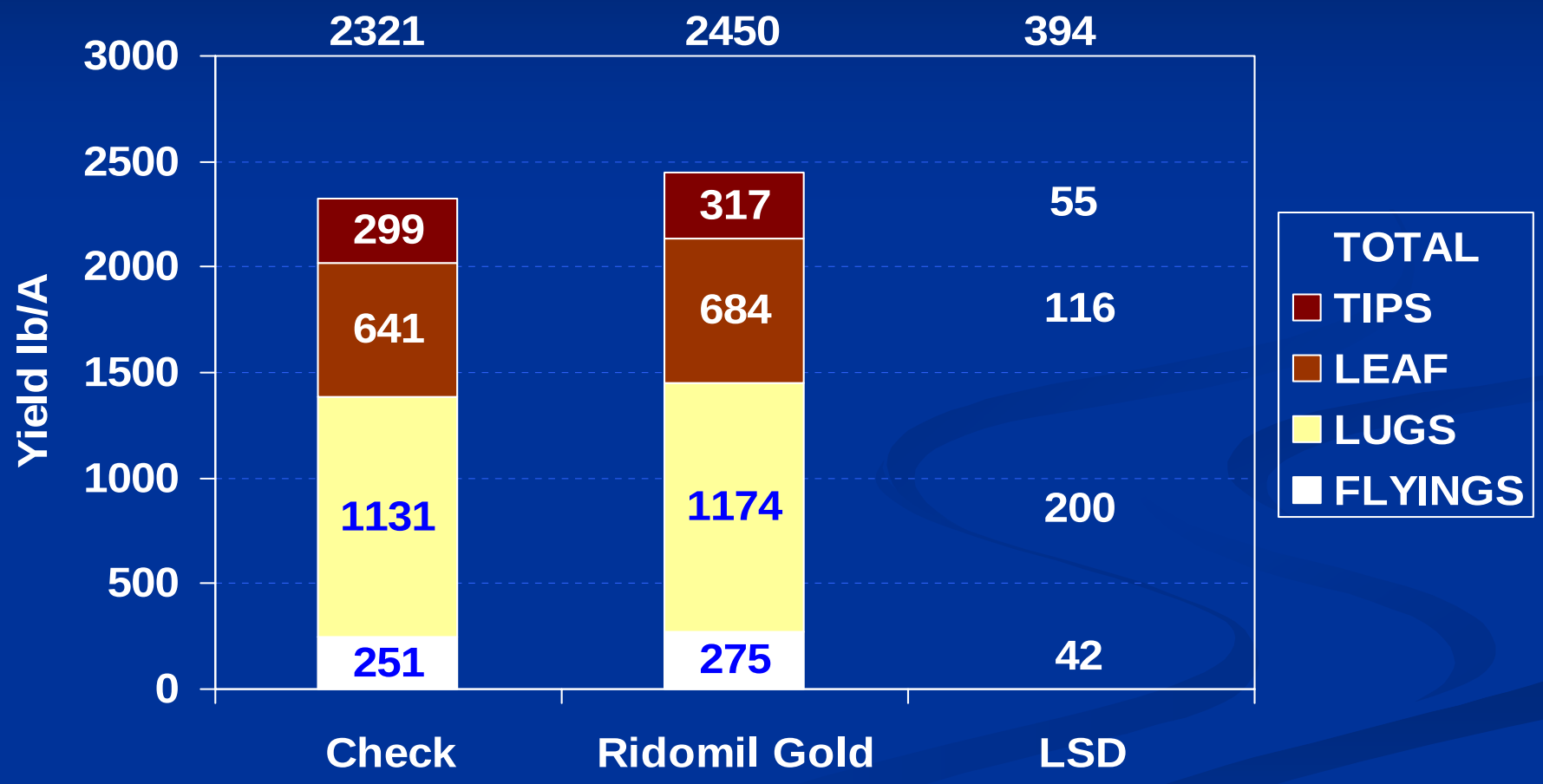


Rating taken at 55 days after transplanting, July 17, 2006

Effects of Transplant Insecticides on the Burley Tobacco Yield Boyle Co. – John Helm Farm



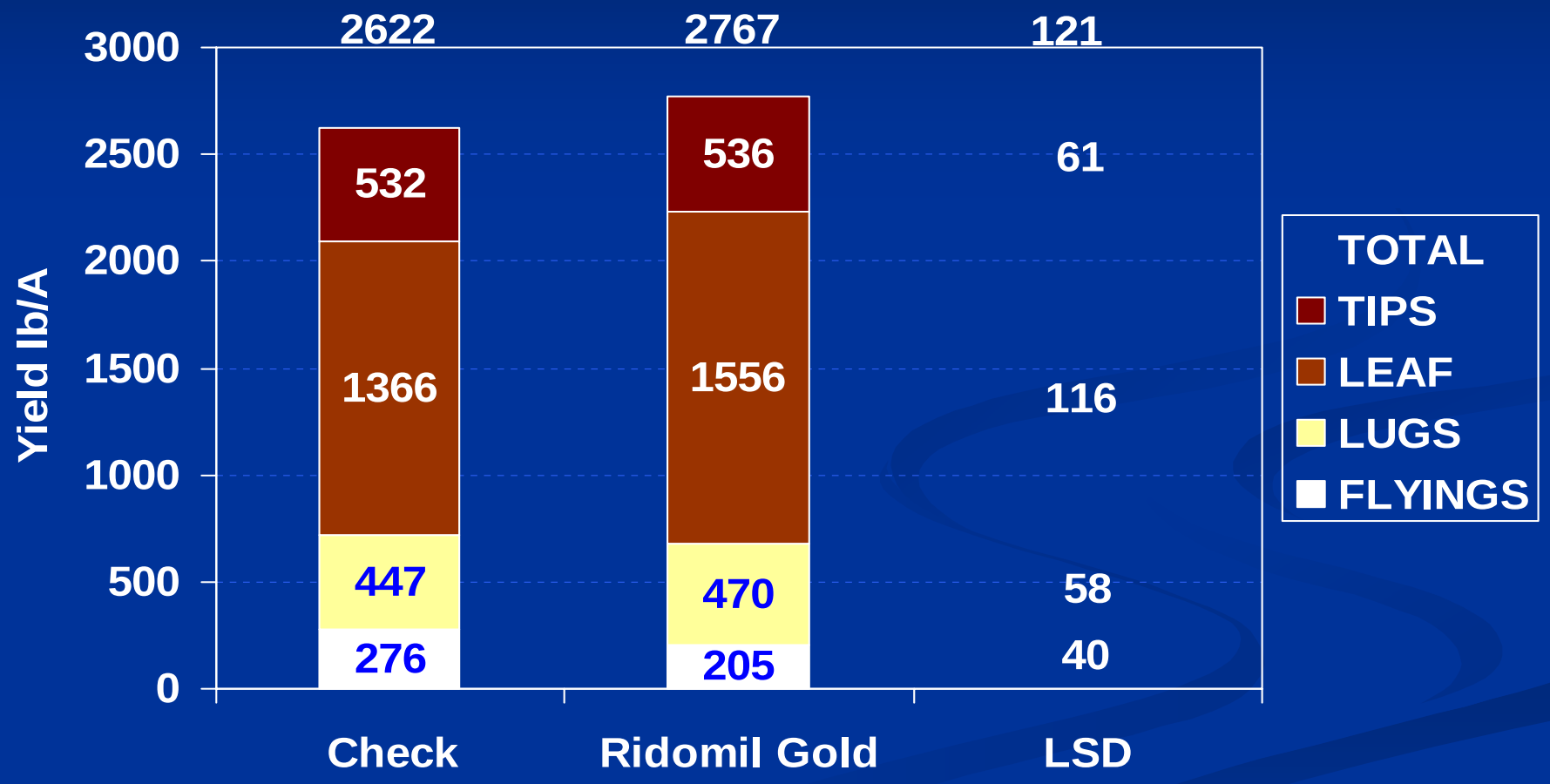
Effects on Ridomil Gold on Burley Yield Under Moderate Black Shank Pressure Harrison County – Ricci Rowland Farm



Ridomil Gold applied at 1 pt/a preplant

See variety trials for black shank and non-black shank varieties used in the test

Effects on Ridomil Gold in the Absence of Black Shank Madison County – Don Long Farm

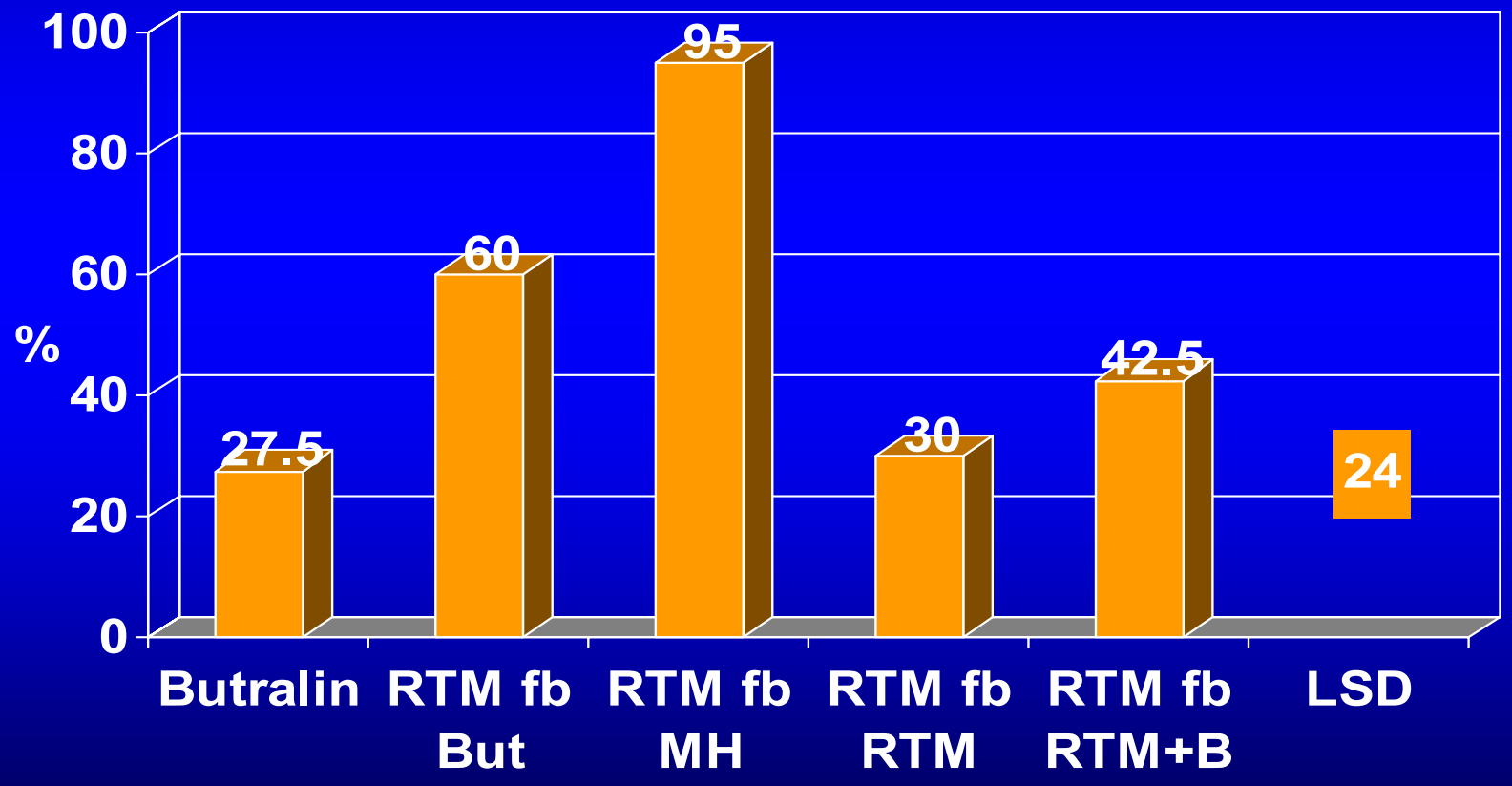


Ridomil Gold applied at 1 pt/a preplant

MH Free Tobacco

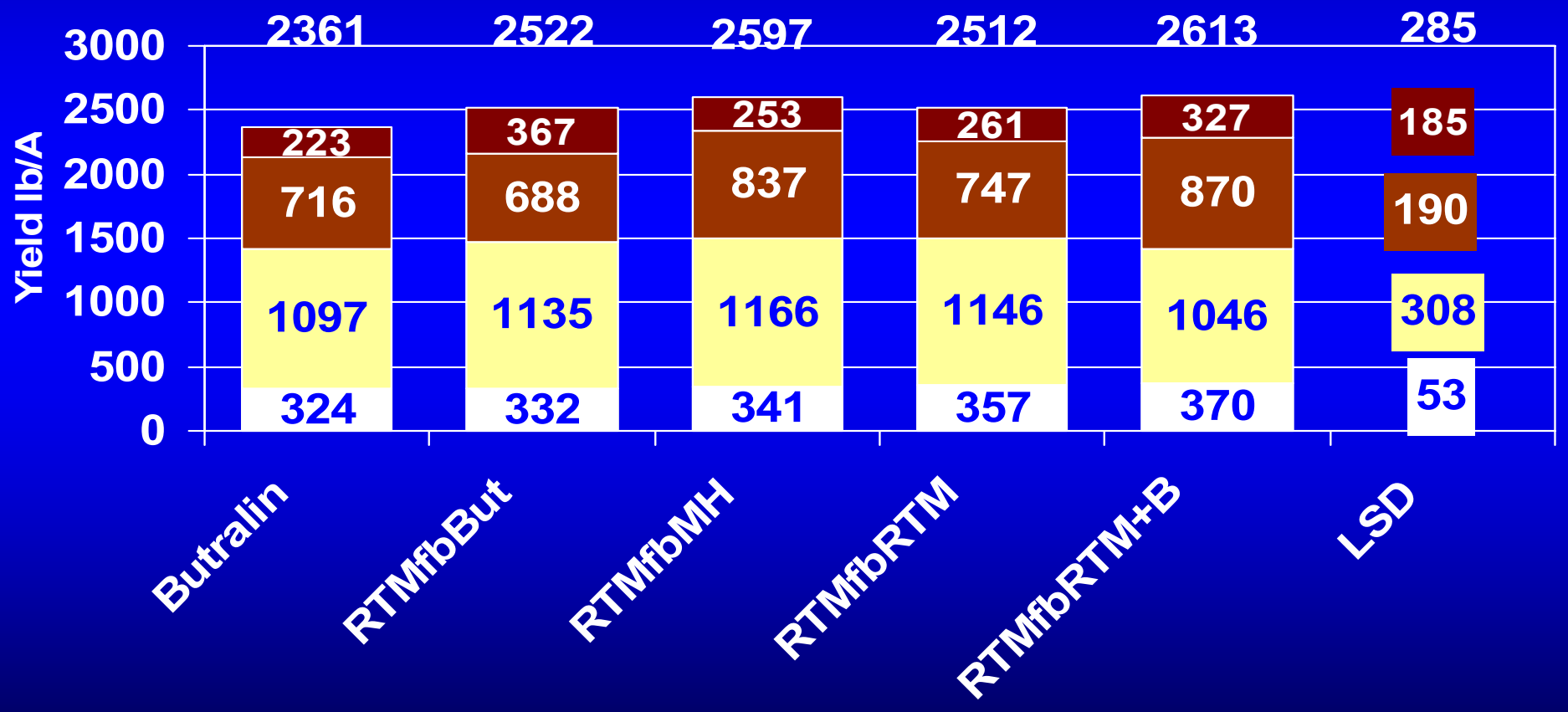
Production of MH free burley tobacco is difficult and labor intensive. To achieve control hand labor is needed to run products like fatty alcohols and local systemics (Butralin or Prime+) down the stalk. Attempts to achieve acceptable sucker control using typical high clearance equipment has largely been unsuccessful. Efforts to find workable methods continue and include many different modifications of existing methods to assess potential.

Comparison of Sucker Control Treatments on Degree of Control Harrison Co. - Ricci Rowland Farm



RTM=Royal Tac M, But=Butralin, MH= Royal MH-30, fb=followed by at 7 days

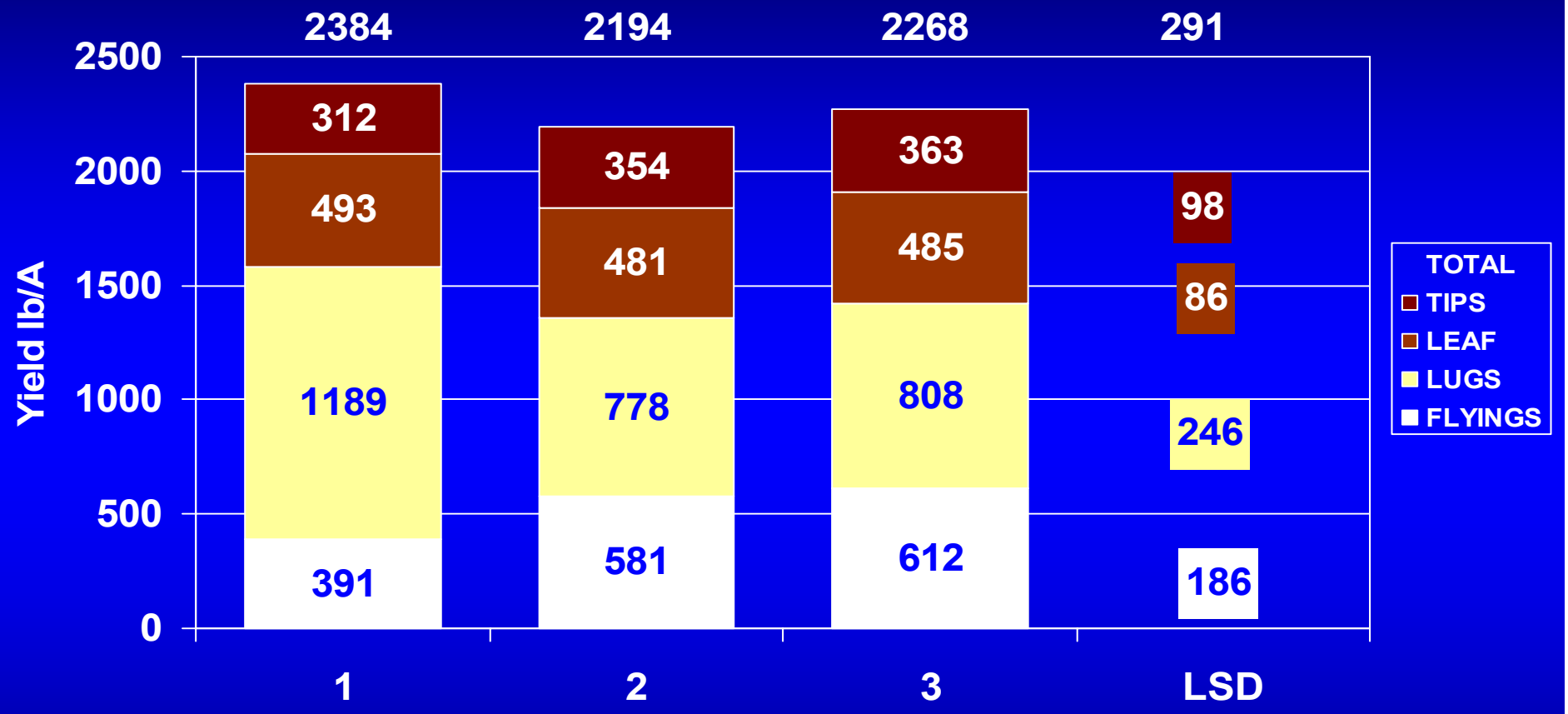
Comparison of Sucker Control Treatments on Yield of Burley Tobacco Harrison Co. - Ricci Rowland Farm



RTM=Royal Tac M, But=Butralin, MH= Royal MH-30, fb=followed by at 7 days

MH Free Topping Study

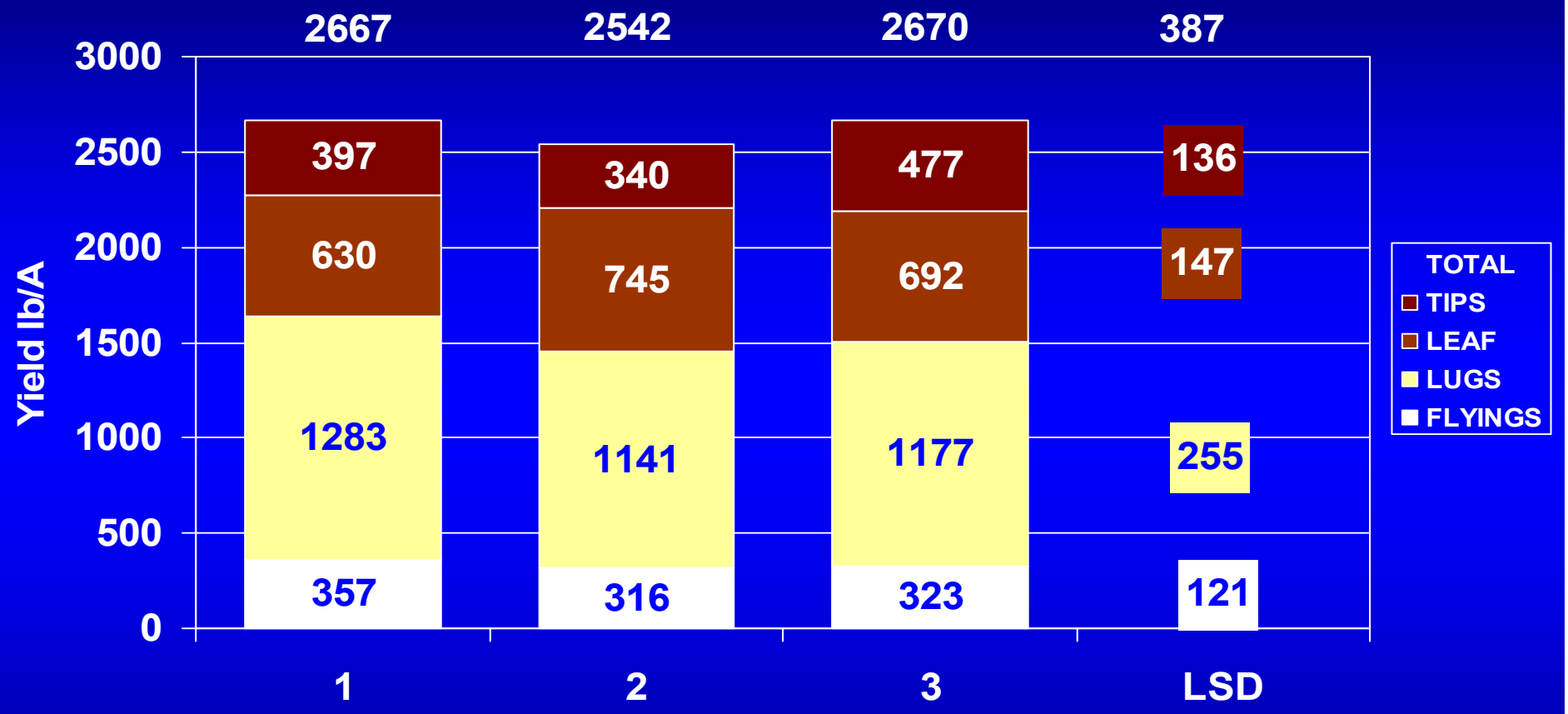
Harrison Co. - Ricci Rowland Farm



TRT	First Top	Re-top	Sucker Control	Rating
1	Normal Topping	None	Fair	4.75
2	High Top (8-10" leaf)	Re-top to Normal 3 days	Moderate	4.5
3	Not Topped	Top to Normal 3 days	Poor	3.25

MH Free Nozzle Study

Harrison Co. - Ricci Rowland Farm



TRT	Nozzle type	PSI	Speed	Rating (0-10 best)
1	TG-3 – TG-4 – TG-3	30	2 mph	5
2	TG-5 – TG-5 – TG-5	25	4 mph	3
3	TG-5 – TG-6 – TG-5	25	4 mph	3