

# Kentucky Burley Tobacco Variety Tests

J. H. Smiley · A. M. Wallace · J. R. Calvert · G. B. Collins · C. C. Litton



UNIVERSITY OF KENTUCKY • COLLEGE OF AGRICULTURE • AGRICULTURAL EXPERIMENT STATION  
Department of Agronomy • Lexington

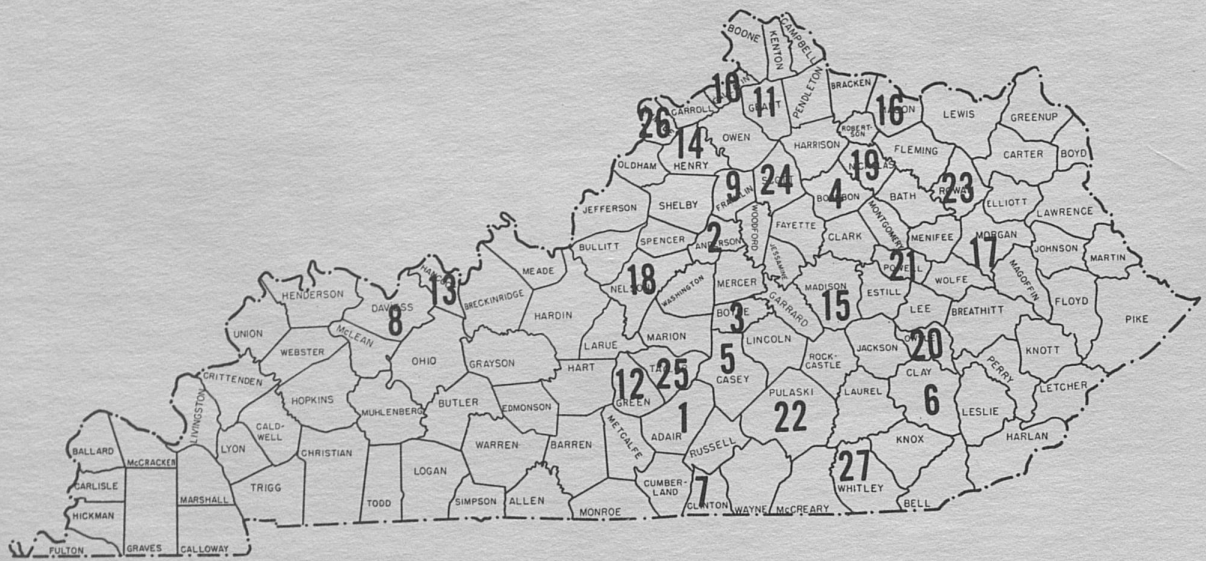


Fig. 1.—Testing Locations of the Kentucky Burley Tobacco Variety Tests—1972-1977.

<u>Location</u>	<u>Cooperator</u>	<u>Location</u>	<u>Cooperator</u>
1. Adair County	William A. Murrell	17. Morgan County	Norman Smith
2. Anderson County	George Cook	18. Nelson County	James Gunning, Jr.
3. Boyle County	Alfred Whitehouse & Danny Devine	" "	Herman Terrell
4. Bourbon County	Randy K. Roberts	19. Nicholas County	H. J. Eaves
5. Casey County	Ed and Terry Mullins	" "	R. S. Wills
" "	T. M. Weddle	20. Owsley County	H. C. Caswell
6. Clay County	John Brown	" "	Dorcie Price
7. Clinton County	Riley Combest	" "	Quenton Callahan
8. Daviess County	Tommy Cecil	21. Powell County	Kenneth Marshall
" "	Clem Cecil	22. Pulaski County	Gary Bowen & Dale Anderson
9. Franklin County	Eugene & Willie Gatewood	" "	Paul Dunagan
" "	Lowell Clark & A. W. Hazelwood	" "	William Simpson
" "	Allen Tracey	23. Rowan County	Wilford Purcell
" "	Wilbert Perkins	" "	Dorsie Jennings
10. Gallatin County	F.S. Connely and John & Ed Brown	24. Scott County	Harve McBrayer
11. Grant County	Grant Co. High School FFA	" "	Cecil Bell, Jr.
12. Green County	Don Mitchell	" "	J. W. Showalter
" "	J. W. Edwards	" "	Walker Kelley
13. Hancock County	Russell House	25. Taylor County	Robert McMillan
14. Henry County	Alvin Croxton	" "	Tommy Noe
15. Madison County	John Carnes	26. Trimble County	Milton Jones
16. Mason County	Eugene Applegate	27. Whitley County	J. C. & Niles Bray
			Drex McKeenan

# Kentucky Burley Tobacco Variety Tests - Summary 1972-1977

*J. H. Smiley, A. M. Wallace, J. R. Calvert, G. B. Collins, and C. C. Litton<sup>2</sup>*

The primary objective of the Kentucky Burley Tobacco Variety Tests is to provide information on the relative performance of burley varieties, hybrids, and breeding lines which may become candidates for varietal release. Such information obtained on varieties and hybrids may be used by farmers, seedsmen, research workers, and extension personnel.

## METHODS

Tests were conducted on the University of Kentucky Agricultural Experiment Station farms and on farms of cooperating tobacco growers throughout the state, with the number of locations ranging from 6 to 15. The locations (Fig. 1, p. 2) were selected to represent the burley tobacco producing areas of Kentucky. At least three replications of each variety were grown at each location.

In addition to these tests which were conducted on disease-free soils, black shank-resistant varieties and breeding lines have been tested at various locations on black shank-infested soils; and black root rot-resistant varieties and breeding lines have been tested on black root rot-infested soils.

## RESULTS

Yield data for on-farm tests conducted on disease-free soils in 1972-77 are summarized in Tables 1-6 for each year by county for all standard varieties and hybrids tested. The yield performance of three standard burley tobacco varieties is summarized in Table 7. Average yields are shown on tests conducted at Lexington 1974-1976, at Princeton in 1976, and in 27 on-farm tests 1974-76. Data on yield (pounds per acre), leaf count, and days to flower are shown for four burley varieties grown at Lexington in 1977 in Table 8.

Average yields for the black shank-resistant burley tobacco varieties tested in 1976 and 1977 on black shank-infested soils are shown by location in Tables 9-10. Average yields for two black shank-resistant varieties and Ky 10 tested on disease-free soil at Lexington 1974-76 are shown in Table 11.

Yields are shown for varieties tested on a black root rot-infested soil in Clinton County in 1976 in Table 12.

## DISCUSSION AND RECOMMENDATIONS

These variety test results should help farmers decide which varieties or hybrids to grow. Note that certain varieties performed well at some locations but not so well at others. However, varieties do not always perform the same, relative to each other, year after year at the same locations.

<sup>1</sup>Cooperative investigations of the Kentucky Cooperative Extension Service, the Kentucky Agricultural Experiment Station, and the Plant Science Research Division, Agricultural Research Service, U.S. Department of Agriculture.

<sup>2</sup>Extension Professor, Research Specialists, and Professor, College of Agriculture, University of Kentucky, respectively; and Research Agronomist, Federal Research, U.S. Department of Agriculture.

In selecting the best variety for a given situation, it is important to consider diseases. If diseases are a factor, selection of the proper variety may mean the difference between a good yield of desirable tobacco and a crop failure. The degree of resistance of the more important standard varieties and hybrids to diseases is shown in Table 13.

For land infested with black root rot or fusarium wilt (or both), Ky 14 and Ky 15 are recommended. If wildfire is a problem, Ky 14, Ky 15 or Burley 21 (B 21) is recommended.

Black shank is one of the most difficult tobacco diseases to control without reducing potential yield. If, however, sufficient land is not available for crop rotation or if rotation does not control black shank, then the use of a resistant variety or hybrid is recommended. Two races of black shank are found in Kentucky. Race 0 is the most common, while race 1 is found on only a few farms. Satisfactory control of race 0 can be obtained from the use of a hybrid of L-8, but control of race 1 is more difficult. Varieties Burley 37 (B 37), Burley 49 (B 49), Burley 64 (B 64) and Ky 17 are moderately resistant to both races. However, if it is necessary to use a field infested with black shank, Ky 17 is the best variety to use because of its high yield and other characteristics.

## CHARACTERISTICS OF SOME VARIETIES

### Kentucky 10

Ky 10 is a rather short, compact, stand-up type, high-yielding variety of fair quality. It has a small percentage of the plants which are slow growing because of an abnormally prolific root system (hairy root). It matures 7-10 days later than B 21 and, when cut immature, the leaves tend to cure with green spots.

### Kentucky 15

Ky 15 is a high quality, stand-up burley tobacco variety which yields extremely well. It possesses near immunity to the black root rot disease. It is also resistant to tobacco mosaic virus, wildfire and the fusarium wilt diseases. Ky 15 is taller than Ky 10, but the leaf size and number are very similar to those of Ky 10. Ky 15 matures 5-6 days earlier than Ky 10. Ky 15 was released cooperatively by the Kentucky Agricultural Experiment Station and the U.S. Department of Agriculture in 1977 for production by producers in 1978.

### Kentucky 17

Ky 17 is a stand-up burley tobacco which produces reasonable yields of high quality leaf. This new variety is distinguished by possessing good field level resistance to both races of black shank. In addition, Ky 17 is resistant to tobacco mosaic virus, wildfire, black root rot and fusarium wilt. Ky 17 is taller than Ky 10 and has a leaf number and size similar to Ky 10. Ky 17 matures 3-4 days earlier than Ky 10. Leaf yields produced by Ky 17 have averaged 400-500 pounds per acre more than Burley 49 in replicated tests.

### Kentucky 14

Ky 14 is a stand-up type, good yielding variety with good quality. The leaves are approximately the same length as those of B 21 but a little wider. The leaf number and plant height are about the same as those of B 21. It matures about 5-7 days later than B 21. There is good retention of bottom leaves on the stalks before and during harvest.

### Burley 21

B 21 is an extreme stand-up type, good-yielding variety of high quality leaf. The plants are early and vigorous. It is one of the easier varieties to work (cultivate, prime, spray) because of its extreme stand-up qualities. There is a tendency for leaves to drop from the stalks in this variety under some conditions, especially when grown in a shallow, compact soil or during a dry season.

### Burley 37

B 37 is moderately resistant to both races of black shank. It is a stand-up type, fair yielding, good quality, broadleaf, uniformly maturing variety.

### Burley 49

B 49 is slightly more resistant to both races of black shank than B 37 and has high resistance to black root rot. It is an extreme stand-up type with more leaves than B 37, but the leaves are shorter and not so wide. Yields of B 49 are about the same as those of B 37, but B 49 matures later than B 37.

### Hybrids

The Kentucky Agricultural Experiment Station released male-sterile B 21 to seedsmen in 1959. The purpose was to encourage the production of hybrids with levels of black shank resistance not available in standard varieties by utilizing the L-8 source of resistance. Seed producers have used male sterile B 21 as the foundation of the present burley hybrid program.

The combined names of the two parents used in making the hybrid are used as the name of the hybrid and are printed on each seed package offered for sale.

No yield or quality differences in reciprocal crosses in the burley hybrids have been found. In other words, no differences have been found in yield or quality of MS B 21 X L-8 and MS L-8 X B 21.

Most hybrids offered for sale will have MS B 21 as one of the parents. This should improve smoking quality and acceptance of the leaf since B 21 is a high quality variety. MS Ky 14 X L-8 should be more useful than MS B 21 X L-8 where black root rot or fusarium wilt is a problem because of the Ky 14 contribution of resistance.

Several cases exist where the hybrid may have a lower degree of resistance to a certain disease than the more resistant parent. For example, the MS B 21 X Ky 10 hybrid has less black root rot resistance than Ky 10. Therefore, if a hybrid is selected, care should be exercised to make sure that the reduced resistance can be tolerated.

TABLE 1.— YIELD OF VARIETIES AND HYBRIDS IN THE 1972 BURLEY TOBACCO ON-FARM VARIETY TESTS, POUNDS PER ACRE

Variety	Owsley County	Franklin County	Taylor County	Average
Ky 14	2835	3679	3803	3439
B 49	2489	2791	2788	2689
Va 509	2512	3132	3653	3099
MS L8 x Ky 14	2831	3297	3779	3302
B21	2554	3345	3482	3127

TABLE 2.— YIELD OF VARIETIES AND HYBRIDS IN THE 1973 BURLEY TOBACCO ON-FARM VARIETY TESTS, POUNDS PER ACRE

Variety	Location					Average
	Hancock	Clay	Bourbon	Taylor	Pulaski	
Ky 14	3219	2192	2638	3490	3081	2924
Ky 15	3021	2405	2589	3390	2954	2872
MS B21 x Ky 14	3061	2075	2768	3438	2626	2794
MS L8 x Ky 14	2952	2252	2628	3492	2827	2830
MS B21 x Ky 10	2383	2192	2484	3799	2694	2690
B 49	3081	1990	2018	2917	2526	2506

TABLE 3.—YIELD OF VARIETIES AND HYBRIDS IN THE 1974 BURLEY TOBACCO ON-FARM VARIETY TESTS, POUNDS PER ACRE

Variety	Nelson Co.	Morgan Co.	Grant Co.	Whitley Co.	Madison Co.	Green Co.	Pulaski Co.	Davies Co.	Average
MS B21 x Ky 14	2674	2615	3067	3228	3101	3190	3782	3793	3181
Ky 14	2748	2317	2867	3782	2882	2408	3811	3263	3010
Ky 15	2006	2142	2953	4037	2808	2456	3791	3822	3002
B 64	3120	1643	2652	3552	3354	2526	3033	3822	2693
B 49	2600	2390	2320	3690	3250	2867	2874	3381	2922
Ga 2019	2451	2260	2265	3148	2704	2153	3365	3763	2764
Ky 41A	2377	1988	2135	2979	3192	2564	3095	2969	2662

TABLE 4.—YIELD OF VARIETIES AND HYBRIDS IN THE 1975 BURLEY TOBACCO ON-FARM VARIETY TESTS, POUNDS PER ACRE

Variety	Anderson Co.	Casey Co.	Clay Co.	Davies Co.	Powell Co.	Pulaski Co.	Rowan Co.	Scott Co.	Taylor Co.	Average
Ky 15	3059	2346	3397	4072	2197	3151	2371	3999	3584	3131
Ky 10	3019	2790	2542	3949	1991	2948	2203	3876	3439	2973
Ky 14	2857	2771	2734	3869	2078	2958	2104	3778	3329	2942
MS B21 x Ky 10	3380	2716	2881	4016	2108	3032	2312	3763	3552	3084
MS B21 x Ky 14	2877	2696	2432	4085	2103	2971	2385	3873	3460	2987
B 49	2415	2468	2332	3488	1905	2017	1812	2923	2500	2429
MS B37 x B 49	2947	2445	3199	3557	1972	2704	2084	3738	2440	2787

TABLE 5.—YIELD OF VARIETIES AND HYBRIDS IN THE 1976 BURLEY TOBACCO ON-FARM VARIETY TESTS,  
POUNDS PER ACRE

Variety	Rowan Co.	Taylor Co.	Owsley Co.	Clay Co.	Boyle Co.	Pulaski Co.	Daviess Co.	Scott Co.	Adair Co.	Powell Co.	Average
Ky 15	2830	3308	2557	2040	3420	3157	3661	2864	3342	2384	3056
Ky 14	3366	3518	2767	2327	3104	3117	3089	2892	2990	2399	2957
MS B21 x Ky 10	3039	2824	2648	2165	3337	3240	3439	3203	3188	2488	2957
Ky 10	3046	3170	2494	2114	3268	3203	3430	2847	2927	2472	2897
MS B 21 x Ky 14	2913	3164	2661	2316	3112	2988	3323	2975	2922	2400	2877



TABLE 6.—YIELD OF VARIETIES AND HYBRIDS IN THE 1977 BURLEY TOBACCO ON-FARM VARIETY TESTS, POUNDS PER ACRE

LOCATION (COUNTY)	VARIETY		
	KY 15	MS B21 X KY 10	KY 14
Mason	2516	2449	2475
Green	2821	2747	2231
Daviess	3059	2910	2833
Nelson	2888	2841	2716
Clinton	2681	2972	2639
Pulaski	3014	3111	3031
Clay	2596	2536	2066
Nicholas	3196	2891	2691
Henry	3151	3088	3174
Powell	2026	2315	2049
Scott	2629	2900	2551
Owsley	2784	2465	2836
Franklin	2758	2237	2634
AVERAGE	2778	2728	2610

TABLE 7.—YIELD OF THREE BURLEY TOBACCO VARIETIES TESTED FOR THREE YEARS AT LEXINGTON, PRINCETON, AND IN ON-FARM TESTS, POUNDS PER ACRE

Variety	Lexington			On Farm*			Princeton	Average Years and Locations
	'74	'75	'76	'74	'75	'76	'76	
Ky 15	3040	3245	3431	3002	3131	3056	2869	3111
Ky 10	2935	3162	3387	3010	2973	2897	2601	2996
B 49	2187	2926	2862	2922	2429	-	2373	2616

\*Nine on-farm tests each year

TABLE 8.—YIELD (POUNDS PER ACRE), LEAF COUNT, AND DAYS TO FLOWER FOR BURLEY TOBACCO VARIETIES TESTED AT LEXINGTON IN 1977

VARIETY	YIELD	LEAF COUNT	DAYS TO FLOWER
B 21	3086	20	63
KY 10	3421	20	68
KY 15	3467	21	67
KY 17	3195	20	64

TABLE 9.—YIELD OF BLACK SHANK-RESISTANT VARIETIES TESTED IN 1976 ON BLACK SHANK-INFESTED SOIL, POUNDS PER ACRE

	County						Ave.
	Franklin*	Trimble	Scott	Gallatin	Casey	Franklin**	
Ky 17	3435	3293	2683	2380	2279	2624	2782
B 49	2940	3073	2484	2045	2230	2192	2494
B 11 A	2446	2794	2132	1856	2496	2172	2308
B 37	2086	2336	2216	2150	2540	2100	2238

\* Allen Tracey farm

\*\* Wilbert Perkins farm

TABLE 10.—YIELD OF BLACK SHANK-RESISTANT VARIETIES TESTED IN 1977 ON BLACK SHANK-INFESTED SOIL, POUNDS PER ACRE

VARIETY	LOCATION (COUNTY)					
	FRANKLIN**	NICHOLAS	CASEY	NELSON	FRANKLIN*	TRIMBLE
Ky 17	2488	2958	1890	2834	2769	3213
VA 509	2430	3132	-----	-----	1985	2726
B 11A	2396	-----	-----	-----	2021	2664
B64	2136	3294	-----	-----	2703	3056
B49	2094	2482	1775	2434	-----	2649

\* Allen Tracey

\*\* Wilbert Perkins

TABLE 11.—YIELD OF TWO BLACK SHANK-RESISTANT VARIETIES AND KY 10 TESTED AT LEXINGTON, 1974-76, POUNDS PER ACRE

Variety	1974	1975	1976	Average
Ky 17	2634	3286	3267	3062
B 49	2599	2771	2544	2638
Ky 10	3129	3328	3155	3204

TABLE 12.— YIELD OF BURLEY TOBACCO VARIETIES AND HYBRIDS TESTED ON BLACK ROOT ROT-INFESTED SOIL IN CLINTON COUNTY IN 1976, POUNDS PER ACRE

Ky 15	Ky 14	Ky 10	MS B 21 x Ky 10
2907	2830	2842	2894

TABLE 13.—RELATIVE DISEASE AND APHID RESISTANCE OF TOBACCO VARIETIES AND HYBRIDS

Variety	Black Root	Mosaic	Fusarium Wilt	Wildfire	Black Shank	Aphid
<u>Standard Varieties</u>						
Ky 10	Medium	High	Medium	*	*	*
Ky 12	Med-High	High	High	High	*	*
Ky 14	Med-High	High	High	High	*	*
Ky 15	High	High	Medium	High		
Ky 16	Low	*	*	*	*	**
B 21	Low	High	*	High	*	Med-Lcw
B 37	Low	*	Low	High	Medium <sup>1</sup>	Med-Low
B 49	High	High	*	High	Medium <sup>1</sup>	**
Ky 17	High	High	High	High	Medium	**
<u>Hybrids</u>						
MS B 21 x Ky 9	Med-Low	High	*	High	*	**
MS B 21 x Ky 10	Med-Low	High	Low	High	*	Low
MS B 21 x Ky 12	Medium	High	Med-High	High	*	*
MS B 21 x L-8	Med-Low	High	*	High	High <sup>2</sup>	Low
MS L-8 x B 37	Low	High	*	High	High <sup>2</sup>	Low
MS Ky 12 x L-8	Medium	High	Med-High	High	High <sup>2</sup>	*
MS Ky 14 x L-8	Medium	High	Med-High	High	High <sup>2</sup>	*

\* Indicates little or no resistance

\*\* Unknown

<sup>1</sup>Resistant to Race 0 and Race 1

<sup>2</sup>Resistant to Race 0

*The College of Agriculture is an Equal Opportunity Organization authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex or national origin.*

5M-12-78