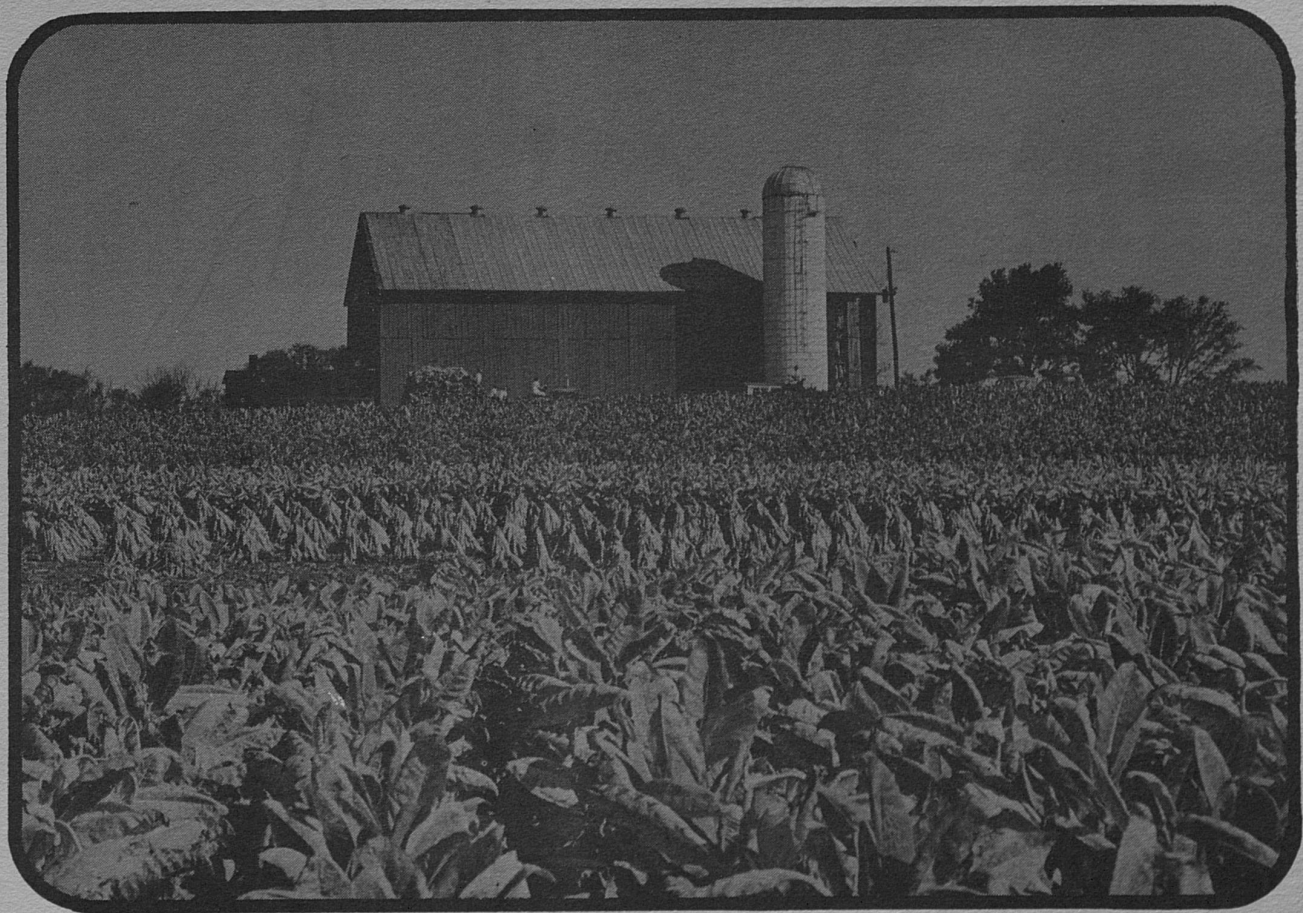


KENTUCKY BURLEY TOBACCO VARIETY TESTS 1964-71

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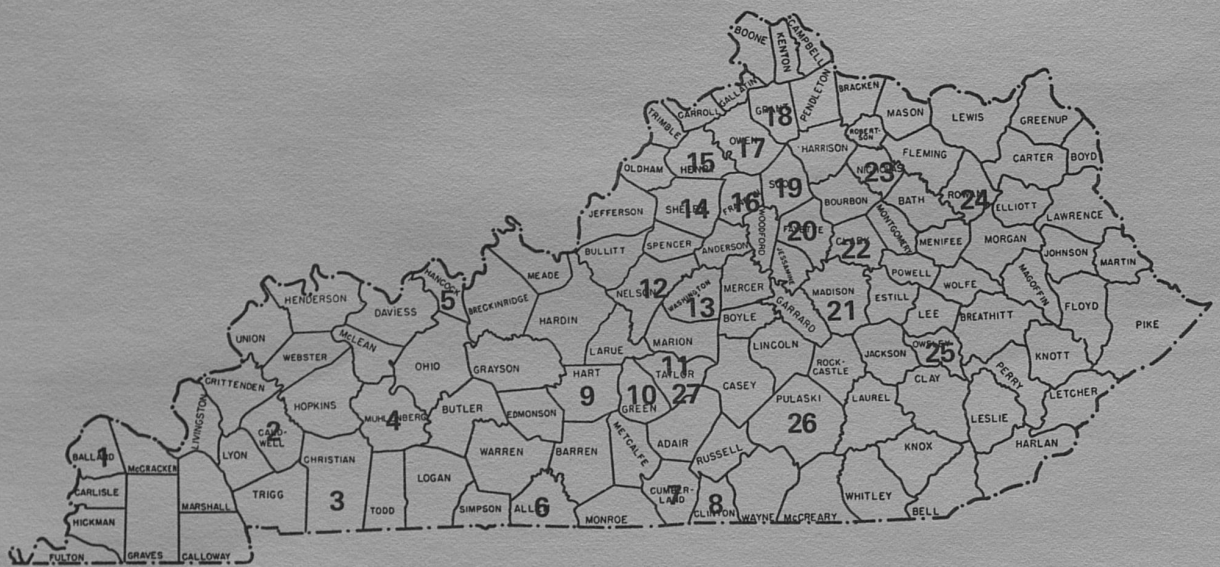


Fig. 1. - Testing Locations of the Kentucky Burley Tobacco Variety Tests - 1968, 1969, 1970, and 1971.

Location

Cooperator

1. Ballard County	Wyatt H. Bennett, 1968
2. Caldwell County	Homer Mitchell, 1968, 1969, and 1970
3. Christian County	W. D. Bailey, 1971
4. Muhlenberg County	B. J. Winn, 1968
5. Hancock County	Russell House, 1971
6. Allen County	Robert Whitlow, 1968, 1969, and 1970
7. Cumberland County	Charlie Wilson, 1969 and 1970
8. Clinton County	Riley Combest, 1970 and 1971
9. Hart County	K. S. Grady, 1971
10. Green County	Shreve Loy & Sons, 1968 and 1969
11. Taylor County	Tommy Noe, 1970 and 1971
12. Nelson County	Thomas E. Gunning, 1968
13. Washington County	Joe Cleveland, 1969
14. Shelby County	Louis Payne, 1969
15. Henry County	Alvin Croxton, 1968
	Gerald T. Steverson, 1969
16. Franklin County	Carey Sheets, 1969
17. Owen County	Billy Karsner, 1969
18. Grant County	Clarence P. Hutchinson, 1970
19. Scott County	Billy Easley, 1968
	Elbert True, 1971
20. Experiment Station, Lexington	1968, 1969, 1970, and 1971
21. Madison County	James M. Adams, 1969
	Lowell Mulliken, 1971
22. Clark County	F. W. Rickard, 1968
23. Nicholas County	Glen Clay, 1968, 1969, 1970, and 1971
24. Rowan County	Gordon Lewis, 1968 and 1969
25. Owsley County	Edward Harvey, 1970
26. Pulaski County	Wilford Purcell, 1971
27. Soils Experiment Station, Campbellsville	1971

Kentucky Burley Tobacco Variety Tests—Summary 1964-1971¹

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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

An expanded program of variety testing began in Kentucky in 1968. In addition to the tests at the University of Kentucky Agricultural Experiment Station at Lexington and those at Campbellsville, others were conducted in 1968 on farms of 11 cooperating tobacco growers throughout the state, in 1969 at 12 locations, in 1970 at 6 locations, and in 1971 at 9 locations. The locations (Fig. 1, p. 2) were selected to represent the burley tobacco producing areas of Kentucky.

Each test was conducted on disease-free soil and consisted of 15 entries in 1968, 13 in 1969, 6 in 1970, and 9 in 1971, in 1/50-acre plots with 3 replications. Fertilizer was applied to each plot at the recommended rates based on soil tests. In 1968, 33 varieties, hybrids, and breeding lines were tested. Some were tested at all locations, but all tests did not contain the same varieties. In 1969, 1970, and 1971 all tests consisted of the same entries with an occasional exception where substitution had to be made. Black shank resistant varieties were grown in on-farm tests on black shank infested soil at one location in 1969 and 1970, and a black root rot test was carried out on disease-infested soil at one location in 1971.

RESULTS

The yield performance of four widely grown standard varieties and hybrids is summarized in Table 1. Average yields are shown on tests conducted at Lexington in 1964-71, at Princeton 1965-67, and in on-farm tests at 6 locations in 1968, 9 locations in 1969, and 6 locations in 1970.

Average yields for the black shank-resistant burley tobacco hybrids and varieties and for the susceptible check variety Ky 14 are shown for tests conducted at Lexington, Princeton and at on-farm tests with disease-free field conditions (Table 2). Yields for these varieties and hybrids on a black shank-infested soil at one location are also given in Table 2. Yields are shown for nine varieties and hybrids tested on a black root rot-infested soil and on a disease-free soil on the same farm in 1971 (Table 3). Yield data for 1968, 1969, 1970, and 1971 are summarized by county for all varieties tested in Tables 4, 5, 6, and 7, respectively.

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

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DISCUSSION AND RECOMMENDATIONS

These variety test results should be helpful as a farmer attempts to decide which variety or hybrid to grow. Note that a certain variety may perform well at one location yet not do well at other locations. Also, varieties do not always perform the same, relative to each other, year after year at the same locations. For example, in Caldwell County in 1968, Ky 10 yielded 350 pounds per acre more than Ky 14, but in 1969 Ky 14 yielded 183 pounds per acre more than Ky 10.

In selecting the best variety for a given farm, it is important to consider the disease situation. If a disease problem exists, selection of the proper variety may mean the difference between a good yield of desirable tobacco or a crop failure. The degree of resistance of the more important standard varieties and hybrids to diseases is shown in Table 8.

For land infested with black root rot, Burley 49 and Ky 14 are recommended. If wildfire is a problem, Ky 14, Burley 21 (B 21), and Ky 12 are recommended. Note that Ky 10 is susceptible to wildfire and should not be grown where wildfire is a problem.

Black shank is one of the hardest tobacco diseases to control with our present varieties. If sufficient land is not available for the grower to use an uninfested field, a good field rotation and use of a resistant variety or hybrid are 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 an L-8 hybrid, but control of race 1 is more difficult. Varieties Burley 37 (B 37) and Burley 49 (B 49) are moderately resistant to both races, but they have other disadvantages. Both B 37 and B 49 have a low level of resistance to fusarium wilt, and B 37 is susceptible to mosaic. B 49 is late maturing and has relatively small leaves. However, if it is necessary to use a field infested with black shank and the grower does not know which race is present, then he should use B 37 or B 49 as a safeguard against crop failure.

To determine which race of the black shank organism is present in a field, grow a stick row of one of the L-8 hybrids such as MS Ky 14 x L-8 or MS B 21 x L-8. If these hybrids do not become diseased, race 0 is present, and the next year the entire field can be grown in one of the black shank-resistant hybrids.

In making a choice of which specific black shank-resistant hybrid to grow for the control of race 0 black shank, the grower should take into consideration any other disease situation on the farm. For example, MS Ky 14 x L-8 is resistant to mosaic, fusarium wilt, black root rot, and wildfire, as well as to race 0 of the black shank fungus.

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 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 14

Ky 14 is a stand-up type, high-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.

Table 1. Yield (pounds per acre) of the five burley tobacco varieties and hybrids tested at Lexington, Princeton, and in on-farm tests.

Location	Year	B 21	Ky 10	Ky 14	MS B 21 x Ky 10
Lexington	1964-1971	2510	2700	2728	2691
Princeton	1965-1967	2496	2744	2705	2697
On-Farm Tests (6 Locations)	1968	3027	3109	3206	3234
On-Farm Tests (9 Locations)	1969	2641	3103	3176	2924
On-Farm Tests (6 Locations)	1970	----	3217	3177	3265

Table 2. Yield (pounds per acre) of black shank resistant burley tobacco varieties and hybrids tested on disease-free soil at Lexington, Princeton, and in on-farm tests on black shank infested soil at one location in 1969 and 1970.

Location	Year	B 37	MS B 37 x L-8	MS B 21 x L-8	MS Ky 12 x L-8	Ky 14 (Check)
Lexington	1965-1968	2170	2265	2335	2432	2660
Lexington	1970	2524	2705	2725	----	2845
Princeton	1965-1967	2340	2533	2568	2591	2705
On-Farm Tests (4 Locations)	1968	2501	2758	2877	----	3160
On-Farm Tests (10 Locations)	1969	2609	2875	2962	3022	3202
On-Farm Tests (6 Locations)	1970	----	----	----	3102	3177
On-Farm Tests (9 Locations)	1971	----	----	----	2833	2914

Cumberland Co. (Black Shank Infested Soil)	1969	2537	3100	3124	3092	893
	1970	2608	2779	2842	2673	746

Table 3. Yield (pounds per acre) of nine burley tobacco varieties and hybrids tested on black root rot infested soil and on disease-free soil on the same farm in Clinton County in 1971.

	B 49	Ky 14	MS Ky 14 x L8	Ky 16	MS Ky 12 x L8	MS B 21 x L8	MS L8 x Ky 14	MS B 37 x L8	MS L8 x Ky 12
Disease-free soil	3429	3326	3062	2800	2685	2606	2584	2574	2547
Infested soil	1863	1988	1726	1273	2067	1872	1833	1619	2019

Table 4. Yield (pounds per acre) of varieties and hybrids in the 1968 Burley Tobacco On-Farm Variety Tests

Variety	Ballard Co.	Caldwell Co.	Muhlenberg Co.	Allen Co.	Green Co.	Nelson Co.	Henry Co.	Scott Co.	Sta Farm Lexington	Clark Co.	Nicholas Co.	Rowan Co.
B 21	2498	2904	2787	3175	2859	3404	2808	2505	3012	-----	2783	2146
Ky 10	2702	3246	2879	3217	3177	3488	2704	2595	2821	3582	2842	2204
Ky 12	2543	3092	3000	3250	2903	3910	2333	2700	2971	-----	3000	1844
Ky 14	2711	2896	3208	3458	3257	3737	2946	2865	2940	3458	3083	2579
B 37	2470	2537	2535	2888	2732	3055	2362	2385	2433	-----	2492	1675
Ky 9	-----	-----	-----	3367	3316	3154	2721	-----	2975	3677	-----	2303
B 21 x Ky 10	2757	-----	3079	-----	-----	-----	-----	2850	2990	3666	3367	2217
MS B 21 x Ky 10	-----	3372	-----	3292	3192	3550	3088	-----	2910	-----	-----	-----
MS B 21 x Ky 12	-----	2829	3000	3400	3189	3492	2817	2805	3036	-----	-----	2117
MS B 21 x Ky 9	-----	-----	-----	3333	3269	3458	2834	2995	2810	3500	-----	2313
MS B 37 x L-8	-----	-----	-----	3100	2876	3096	2413	2655	2895	-----	-----	2179
MS B 21 x L-8	-----	-----	-----	3208	-----	3367	-----	2640	3060	3531	-----	2292
MS Ky 12 x L-8	-----	-----	-----	-----	3242	-----	2871	-----	2746	-----	-----	-----

----- (not planted)

Table 5. Yield (pounds per acre) of varieties and hybrids in the 1969 Burley Tobacco On-Farm Variety Tests

Variety	Allen Co.	CaIdwell Co.	Franklin Co.	Green Co.	Henry Co.	Madison Co.	Nicholas Co.	Owen Co.	Rowan Co.	Shelby Co.	Washington Co.	Station Farm Lexington
Ky 14	2886	2643	3516	3157	3019	3094	2939	3261	3158	3432	3931	2823
Ky 10	2819	2460	3293	3183	3071	2871	3004	3182	3299	3391	3815	2887
MS Ky 12 x L8	2838	2466	3256	3042	2766	2751	2543	3078	2963	3600	3670	-----
Ky 9	2831	2381	3333	2976	2445	2618	2523	3139	3318	3047	3710	-----
MS B 21 x 10	2710	2558	3251	2976	2641	2444	2644	3127	3055	3016	3556	2759
MS B 21 x L8	2749	2303	3211	3021	2896	2274	2533	2953	3217	3330	3407	2626
MS B 37 x L8	2795	2290	3093	3003	2735	2931	2386	2875	3186	2953	3430	2671
Va 509	2629	2130	3255	3290	2520	2708	2567	2937	2975	3286	3349	2641
Ky 12	2559	2218	3105	2544	-----	2907	2623	2857	3060	-----	3573	2677
Ky 16	2375	2339	3052	2835	2929	2648	2511	3001	2837	3111	3357	2632
B 21	2405	2359	3010	2903	2558	2788	2394	2620	2775	2997	2513	2640
B 37	2266	2359	2971	2592	2393	-----	2194	2797	2699	2637	3185	2287
B 49	2644	2326	2825	2270	2151	2647	2379	2749	2696	2877	3063	2364

Table 6. Yield (pounds per acre) of varieties and hybrids in the 1970 Burley Tobacco On-Farm Variety Tests

Variety	Owsley Co.	Allen Co.	Caldwell Co.	Clinton Co.	Taylor Co.	Grant Co.	Sta Farm Lexington	Average 6 Locations	Average 7 Locations
MS B 21 x Ky 14	2884	3255	2714	3523	4173	3054	-----	3267	-----
MS B 21 x Ky 10	2944	3395	2788	3468	4032	2963	2846	3265	3205
Ky 10	2882	3234	2766	3076	4128	3216	2932	3217	3176
Ky 14	2891	3235	2684	3260	4064	2926	2845	3177	3129
MS L8 x Ky 14	2982	3297	2405	3394	3668	3046	-----	3132	-----
MS Ky 12 x L8	2906	3499	2585	3168	3617	2834	-----	3102	-----

Table 7. Yield (pounds per acre) of varieties and hybrids in the 1971 Burley Tobacco On-Farm Variety Tests

Variety	Madison Co.	Hart Co.	Taylor Co.	Christian Co.	Hancock Co.	Pulaski Co.	Scott Co.	Sta Farm Lexington	Nicholas Co.	Average
Ky 14	2945	2843	3576	2651	2764	2884	3028	2770	2763	2914
MS L8 x Ky 14	2791	2927	3491	2822	2935	2861	3122	2653	3110	2968
MS Ky 14 x L8	2826	2977	3523	2659	2951	2665	3347	2472	2921	2927
MS L8 x Ky 12	2803	2647	3119	2346	2547	2649	2974	2595	2780	2718
MS Ky 12 x L8	2880	2710	3172	2442	2745	2710	3080	2897	2860	2833
B 21	2659	2670	3407	2221	2529	2565	2756	2422	2613	2649

Table 8. Yield (pounds per acre) of burley tobacco varieties tested on the Soils Experiment Station, Campbellsville, in 1971.

Variety	Y/A	Variety	Y/A	Variety	Y/A
Ky 12	3,330	Ky 41 A	3,117	Burley 37	2,971
Ky 9	3,257	Burley 2	3,077	Burley 11 A	2,907
Ky 16	3,239	Ky 14	3,005	Burley 49	2,901
Ky 10	3,206	Burley 1	2,998	Burley 21	2,860
				Burley 11 B	2,742

Table 9. 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 16	Low	*	*	*	*	**
B 21	Low	High	*	High	*	Med-Low
B 37	Low	*	Low	High	Medium ¹	Med-Low
B 49	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 21 x L-8	Med-Low	High	*	High	High ²	Low
MS L-8 x B 37	Low	High	*	High	High ²	Low
MS Ky 12 x L-8	Medium	High	Med-High	High	High ²	*
MS Ky 14 x L-8	Medium	High	Med-High	High	High ²	*

* Indicates Little or No Resistance

** Unknown

1 Resistant to Race 0 and Race 1

2 Resistant to Race 0

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 as 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.

3.5M---2-73