

VARIETY PERFORMANCE TRIALS OF FIELD CROPS

Corn Oats Wheat Barley Cotton

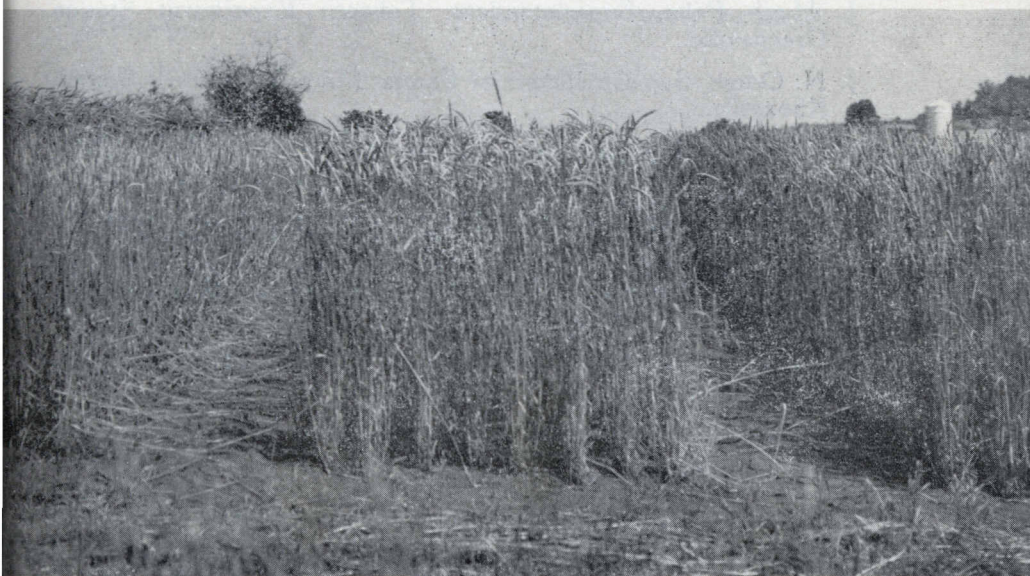
Soybeans Alfalfa Red Clover

Data for 1949 with Summaries of Results from Previous Years

By

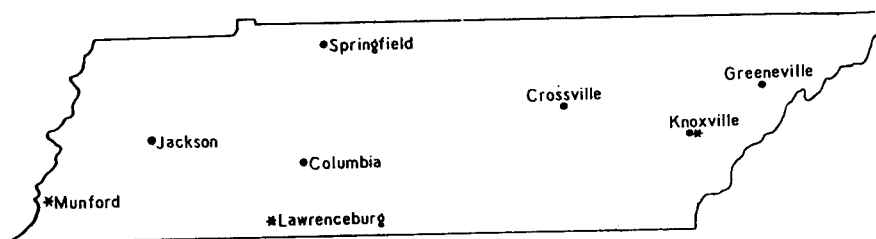
SAM F. McMURRAY

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THE UNIVERSITY OF TENNESSEE
AGRICULTURAL EXPERIMENT STATION
KNOXVILLE

LOCATION OF VARIETY TESTS



● Location of Experiment Stations where all experiments except cotton were conducted.

* Location of cotton tests which were conducted on the USDA cotton field station, Knoxville; A. T. Adams' farm, Lawrenceburg; and Wooten Brothers farm, Munford.

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RECOMMENDED VARIETIES FOR TENNESSEE**CORN****White Hybrids**

Dixie 17

Tennessee 10

Dixie 33

Yellow Hybrids

Dixie 22

Tennessee 602

N. C. 27

Funk G711

Dixie 44

White (open-pollinated)

Jellicorse

Neal Paymaster

Yellow (open-pollinated)

None recommended

Note: Where early hybrids are desired, see explanation in text on corn.

SOYBEANS

S-100 (early)

Ogden (midseason)

Volstate (late)

COTTON

See Text.

SMALL GRAINS**Winter Oats**

LeConte

Forkeddeer

Stanton

Fulgrain (early)

Spring Oats

Columbia

Clinton

Barley

Jackson No. 1

Missouri Early Beardless
(early, hooded)**Wheat**

Fulcaster 612

Thorne

Carala (early)

RED CLOVER

Tennessee Resistant

Cumberland

Kenland

ALFALFA

Kansas Common

Oklahoma Common

VARIETY ORIGIN

Origin of varieties tested in 1949 for which seed is available commercially.

ENTRY	ORIGIN
CORN	
Dixie 33.....	Tenn. Agr. Exp. Sta., Knoxville, and U.S.D.A.....
Dixie 22.....	do.....
Dixie 17.....	do.....
Dixie 44.....	do.....
Tennessee 10.....	do.....
Tennessee 602.....	do.....
Jellicorse.....	Long-time open-pollinated corn in Tennessee.....
Neal Paymaster.....	do.....
N. C. 27.....	N. C. Agr. Exp. Sta., Raleigh, and U.S.D.A.....
Georgia 101.....	Ga. Agr. Exp. Sta., Experiment.....
Kentucky 405B.....	Ky. Agr. Exp. Sta., Lexington.....
Kentucky 203.....	do.....
Kentucky 103.....	do.....
Kentucky 102.....	do.....
Kentucky 158.....	Purdue Univ. Agr. Exp. Sta., Lafayette, Ind. and U.S.D.A.....
Indiana 901.....	do.....
Indiana 750.....	W. Va. Agr. Exp. Sta., Morgantown.....
West Virginia 1163.....	do.....
Funk G711.....	Funk Brothers Seed Co., Bloomington, Ill.....
Funk G80.....	do.....
Funk G145.....	do.....
DeKalb 923.....	DeKalb Agr. Assn., Dekalb, Ill.....
Broadbent 235W.....	S. D. Broadbent & Sons, Cobb, Ky.....
Ed. J. Funk 505W.....	Ed. J. Funk & Sons, Kentland, Ind.....
Ed. J. Funk 840.....	do.....
U. S. 13.....	U. S. Department of Agriculture, Washington, D. C.....
Pioneer 336.....	Pioneer Hi-Bred Corn Co., Tipton, Ind.....
Missouri 313.....	Mo. Agr. Exp. Sta., Columbia.....
Missouri 148.....	do.....
WINTER OATS	
LeConte.....	Tennessee Agr. Exp. Sta., Knoxville.....
Forkedeer.....	do.....
Stanton.....	Coker Pedigreed Seed Co., Hartsville, S. C.....
Fulgrain.....	do.....
Hardwick.....	Hardwick Farms, Cleveland, Tenn.....
BARLEY	
Jackson No. 1.....	Tennessee Agr. Exp. Sta., Knoxville.....
Kentucky No. 1.....	Ky. Agr. Exp. Sta., Lexington.....
Missouri Early Beardless.....	Mo. Agr. Exp. Sta., Columbia.....
Calhoun Strain 2.....	Marett Farm and Seed Co., Westminster, S. C.....
Wong.....	Cornell Agr. Exp. Sta., Ithaca, N. Y.....
WHEAT	
Fulcaster 612.....	Tennessee Agr. Exp. Sta., Knoxville.....
Thorne.....	Ohio Agr. Exp. Sta., Wooster.....
Carala.....	N. C. Agr. Exp. Sta., Raleigh.....
Vigo.....	Purdue Univ. Agr. Exp. Sta., Lafayette, Ind.....
Nured.....	Cornell Agr. Exp. Sta., Ithaca, N. Y.....
Vahart.....	Va. Agr. Exp. Sta., Blacksburg.....
SOYBEANS	
Ogden.....	Tennessee Agr. Exp. Sta., Knoxville.....
Volstate.....	do.....
Roanoke.....	N. C. Agr. Exp. Sta., Raleigh.....
Maccupin.....	Elmer Hulcher, Nilwood, Ill.....
Arksoy.....	Ark. Agr. Exp. Sta., Fayetteville.....
S-100.....	Mo. Agr. Exp. Sta., Columbia.....
Wabash.....	Ill. and Ind. Agr. Exp. Sta. and U.S.D.A.....
COTTON	
Tennessee 241.....	Tennessee Agr. Exp. Sta., Knoxville.....
Coker 100 Staple.....	Coker Pedigreed Seed Co., Hartsville, S. C.....
Coker 100 Wilt.....	do.....
Delfos 9169.....	Stoneville Pedigreed Seed Co., Stoneville, Miss.....
Stoneville 2B.....	do.....
Stoneville 62.....	do.....
Deltapine 15.....	Delta and Pine Land Co., Scott, Miss.....
White Gold Wilt.....	Marett Farm and Seed Co., Westminster, S. C.....
Empire Wilt.....	Ga. Agr. Exp. Sta., Experiment.....
Pandora.....	Coastal Plains Agr. Exp. Sta., Tifton, Ga.....
Plains (CSS-9).....	Alabama Agr. Exp. Sta., Auburn.....
Hi-Bred.....	B. F. Summerour Seed Co., Narcross, Ga.....
Paula.....	Deering Farms, Deering, Missouri.....

VARIETY PERFORMANCE TRIALS OF FIELD CROPS

Data for 1949 with Summaries of Results from Previous Years

By

SAM F. McMURRAY

INTRODUCTION

Variety performance trials are conducted to provide information about the adaption and yielding ability of the many varieties of field crops and serve as a basis for making recommendation of varieties that are best adapted for the State. The tests have been conducted primarily at the six Experiment Stations which are located in the principal agricultural regions of Tennessee (Fig. 1).

The varieties or hybrids recommended by the Station in this publication have been tested two or more years and have superior yielding ability as well as other desirable characteristics. Varieties on the list that have a brief explanation such as early, late, awnless, hooded, etc. may have been included because these characteristics are desired by some farmers over higher yielding varieties because they fit into their farm plan more efficiently. In selecting a variety, look over the recommended list and then check the text and tables which give the origin, general characteristics, yield at each of the six Experiment Stations, the average yield of the six tests, and a three-year average where it is available for the variety selected. New varieties can be compared with the familiar varieties that have been grown in the State for many years. When looking up variety performance records in the tables always check the "least significant difference" (l.s.d.) figures at the bottom of each table. If the yield of any two varieties being compared differ by as much as the l.s.d. or more, the chances are very good that one variety is better than the other under conditions similar to those of the test.

Tennessee, due to its narrowness north and south, has about the same length of growing season over the entire area. Because of this fact, and possibly for other reasons, a variety that does well in one part of the State usually does well state-wide. The variety tests have shown that the varieties that take advantage of the full growing season are usually the ones that lead in yield. However, this is not always true and usually the exceptions occur at the higher elevations of the State, such as the Cumberland Plateau and Upper East Tennessee.

In the tables that follow, the entries, except cotton, are listed in order of their 1949 yield, the highest yielding entry being first. The average yield of two or three years is much more reliable than that of one year's test and should be kept in mind when the varieties are being compared.

Since the testing procedure used in 1949 was primarily the same as that used and published in 1947 and 1948, it will not be discussed in detail in this bulletin.

CORN

The high yields in the 1949 corn tests reflect, among other things, the effect of a near-perfect corn season at all six locations. Sufficient fertilizer for good growth, as determined by soil test, was applied at planting time and all plots were side-dressed with nitrogen. The number of plants per acre was increased to 8,400 in 1949 from the previous rate of 6,000. This should be credited for some of the increase in yield over previous years' tests. The plots consisted of two rows, 20 feet long and 3.5 feet wide, with 18 inches between plants in the row.

The corns tested that are commercially available were chosen from those being sold to farmers in Tennessee. The seed was bought on the open market and represents what the farmer gets when he buys

Table 1—Average acre yields of dry shelled corn (15.5% moisture) at 6 locations in Tennessee.

Average of 6 replications at each location

Entry ¹	Av. Yield 1947, '48, '49	1949 Tests						1949 Yield (6 tests)
		Greene- ville	Knox- ville	Cross- ville	Colum- bia	Spring- field	Jack- son	
	Bushels	Bushels	Bushels	Bushels	Bushels	Bushels	Bushels	Bushels
(w) T7108 (Exp.).....	90.9	95.0	116.5	84.9	124.3	104.3	119.3	107.4
(w) T8116 (Exp.).....	.....	97.6	111.6	84.0	123.4	106.5	108.6	105.3
(w) T9107 (Exp.).....	.....	92.2	112.6	80.0	117.8	103.0	124.9	105.1
(w) Dixie 33.....	90.7	103.5	111.8	81.0	114.9	102.2	116.2	104.9
(w) Georgia 101.....	.....	103.8	105.8	86.9	113.6	95.7	115.6	103.7
(w) T9101 (Exp.).....	.....	89.2	113.3	85.0	114.9	104.4	112.9	103.3
(w) Tennessee 10.....	85.8	95.4	113.8	81.6	110.4	96.9	115.4	102.3
(w) Dixie 17.....	86.3	96.6	115.5	80.7	98.9	102.1	109.2	100.5
(y) North Carolina 27.....	80.8	96.3	99.3	79.8	99.8	100.0	97.5	95.5
(y) Dixie 22.....	81.8	95.6	99.9	71.8	103.4	96.7	100.7	94.7
(y) Funk G711.....	76.6	87.4	99.0	72.5	91.2	90.5	97.5	89.7
(w) Neal Paymaster (O.P.).....	75.5	74.8	97.3	77.7	92.8	89.3	103.8	89.3
(w) Jelllicorse (O.P.).....	78.2	83.3	97.2	67.5	91.5	88.1	107.8	89.2
(y) Tennessee 602.....	77.6	73.5	97.6	70.8	103.1	92.2	95.8	88.8
(y) Kentucky 203.....	69.9	79.4	96.9	67.2	90.1	87.0	89.3	85.0
(y) Funk G145.....	.....	77.6	91.0	71.8	86.6	90.8	93.6	84.7
(w) DeKalb 923.....	.....	76.7	88.8	64.7	88.1	89.9	90.9	83.2
(w) Kentucky 405B.....	.....	74.0	90.1	61.6	82.5	93.2	92.2	82.3
(y) Kentucky 102.....	72.2	70.4	85.7	68.5	88.8	97.0	85.4	81.8
(y) Dixie 44.....	70.6	72.8	89.8	71.6	89.9	82.6	81.5	81.4
(w) Broadbent 235W.....	.....	77.3	91.0	70.7	79.8	85.0	81.4	80.9
(w) Ed. J. Funk 505W.....	.....	77.7	88.9	64.2	81.7	89.9	80.3	80.5
(w) Indiana 901.....	.....	69.2	88.3	66.2	84.5	86.5	83.3	79.7
(w) Indiana 750.....	.....	79.2	82.5	79.8	75.8	85.3	75.1	79.6
(y) Kentucky 103.....	69.9	69.2	83.1	64.6	82.5	90.5	78.6	78.1
(y) Ed. J. Funk 840.....	.....	70.5	84.6	67.2	82.6	88.6	73.7	77.9
(y) Kentucky 158.....	.....	65.3	84.7	66.3	80.2	79.3	79.9	76.0
(y) Funk G80.....	.....	60.5	84.5	60.9	73.3	81.7	81.6	73.8
(y) National 134.....	.....	65.2	82.3	58.1	76.2	81.5	79.0	73.7
(y) U. S. 13.....	65.0	60.8	75.6	67.6	77.9	82.3	76.2	73.4
(y) Missouri 313.....	.....	67.0	81.4	49.4	80.0	81.7	77.9	72.9
(y) Missouri 148.....	.....	60.6	87.3	59.8	62.0	79.9	84.1	72.3
(y) Pioneer 336.....	.....	63.5	79.0	57.7	77.0	82.0	73.8	72.2
(y) West Virginia 1163.....	.....	63.8	72.3	63.7	63.8	68.3	66.3	66.4
L. s. d. (5%).....	.....	11.0	10.8	13.1	9.9	9.9	10.3	4.4

¹Bold-face type indicates that the variety or hybrid is available commercially. Other entries are experimentals.

these hybrids. The results of the tests, therefore, are comparable to those he would obtain under similar climatic, soil and fertility conditions. A few new hybrids from adjacent states that might have value for Tennessee also were included. It seemed unnecessary to include those hybrids in the 1949 experiments which had been poor in previous tests. Thus, the following hybrids were not included as they had been found low in yield and otherwise unsatisfactory in 1947 and 1948: Funk G94, DeKalb 898, Pfister 170 and Hunerkoch H14. Their performance record is shown in Station Bulletin 208, January 1949.

Four experimental hybrids from the Tennessee corn breeding program were entered for final testing. These are listed under a number preceded by "T." They are not available commercially and may or may not be given a name and be released as new hybrids. Some of the current Tennessee commercial hybrids came from a similar source; the most recent ones being Dixie 22 and Dixie 33, which were tested as experimental hybrids in 1947 and 1948 under the numbers "T6013" and "T7112," and were reported under those numbers in Station Bulletins 206 and 208.

Table 2—Summary of yields and general characteristics of corns tested in 1949.

Entry	1949 yield (6 tests)	Av. yield 1947, '48, '49	Erect Plants		Husk grade	Ears per 100 plants	Growing season required
			Average 6 tests	Average 2 tests			
	Bushel	Bushel	Percent	Percent			
(w) T7108 (Exp.).....	107.4	90.9	88	77	Good	174	Full
(w) T8116 (Exp.).....	105.3	.....	90	82	Good	172	Full
(w) T9107 (Exp.).....	105.1	.....	89	84	Good	169	Full
(w) Dixie 33.....	104.9	90.7	90	80	Good	166	Full
(w) Georgia 101.....	103.7	.....	79	60	Good	184	Long
(w) T9101 (Exp.).....	103.3	.....	87	74	Good	172	Full
(w) Tennessee 10.....	102.3	85.8	81	66	Good	184	Full
(w) Dixie 17.....	100.5	86.3	81	68	Good	183	Full
(y) North Carolina 27.....	95.5	80.8	89	80	Good	167	Full
(y) Dixie 22.....	94.7	81.8	88	74	Good	152	Full
(y) Funk G711.....	89.7	76.6	72	52	Fair	133	Full
(w) Neal Paymaster (O.P.).....	89.3	75.5	86	77	Good	154	Full
(w) Jellicorse (O.P.).....	89.2	78.2	89	78	Good	166	Full
(y) Tennessee 602.....	88.8	77.6	85	72	Good	143	Full
(w) Kentucky 203.....	85.0	69.9	85	77	Fair	109	Medium
(y) Funk G145.....	84.7	.....	85	74	Fair	120	Short
(y) DeKalb 923.....	83.2	.....	91	89	Fair	104	Short
(w) Kentucky 405B.....	82.3	.....	95	93	Fair	118	Medium
(y) Kentucky 102.....	81.8	72.2	84	72	Fair	123	Medium
(y) Dixie 44.....	81.4	70.6	93	88	Fair	118	Medium
(w) Broadbent 235W.....	80.9	.....	94	90	Fair	105	Short
(w) Ed. J. Funk 505W.....	80.5	.....	95	90	Poor	107	Short
(w) Indiana 901.....	79.7	.....	93	88	Fair	112	Medium
(w) Indiana 750.....	79.6	.....	96	95	Fair	108	Short
(y) Kentucky 103.....	78.1	69.9	89	81	Poor	120	Short
(y) Ed. J. Funk 840.....	77.9	.....	94	89	Poor	110	Short
(y) Kentucky 158.....	76.0	.....	93	87	Poor	112	Short
(y) Funk G80.....	73.8	.....	91	86	Poor	114	Short
(y) National 134.....	73.7	.....	92	89	Poor	113	Short
(y) U. S. 13.....	73.4	65.0	93	89	Poor	110	Short
(y) Missouri 313.....	72.9	.....	90	85	Poor	115	Short
(y) Missouri 148.....	72.3	.....	86	81	Poor	117	Short
(y) Pioneer 336.....	72.2	.....	92	88	Poor	110	Short
(y) West Virginia 1163.....	66.4	.....	96	95	Poor	124	Very short

The list of corn varieties recommended for Tennessee has been revised in line with the results of these experiments. No corns are recommended on the basis of less than two years' results. The new yellow hybrid, Dixie 22, and the new white hybrid, Dixie 33, have been added to the recommended list. All of the recommended corns are certified in this or one of the adjoining states. Dixie 44 continues on the list not because of its yielding ability, but because of a reasonable yield combined with large ears and resistance to lodging, both of which are desirable when corn pickers are used. Kentucky 102 and Kentucky 103, which have been on the recommended list in previous years as corns that could be used where earliness is of major importance, have not been included this year. The reason for dropping them is the fact that they are not significantly better than most of the other short-season "early" corns tested and available on the market. **Accordingly, it is suggested that if early hybrids are desired they be selected from among the certified hybrids listed in the tables, on the basis of relative yield and general characteristics.**

Lodging in corn is a serious fault. Resistance to lodging, therefore, is of the utmost importance. Accordingly, in Table 2, lodging has been reported for all experiments, and also separately for the two experiments in which lodging was severe. The results of these two experiments illustrate and emphasize that differences in lodging resistance become greater under conditions of stress.

Corn grown in Tennessee should have good husk protection. A husk that extends well over the tip of the ear, and fits tightly, is fast becoming a "must" in this State. Probably because of the mild winters for the past few years, as well as for other reasons, the grain moth damage in the field was excessive in 1949. Good husk protection helps keep insect, bird, and weather damage to a minimum and adapted hybrids should have a husk rating of "good" or better. The Corn-Belt hybrids had only a fair to poor husk rating which is reflected in a lower quality of grain, especially when the crop is harvested late.

SMALL GRAINS

The field plots for small grains were 6 feet by 60 feet and each variety was replicated four times in a simple randomized block design. In most cases plots were harvested with a binder and threshed on a small "TVA" thresher. Adequate amounts of fertilizer were applied, based on results of soil tests. Observations were made periodically to obtain that data on winter-hardiness, standing ability, relative maturity, relative height and disease severity.

Winter Oats—LeConte is a new winter oat released by the Tennessee Experiment Station for certification in 1949 and will be available to farmers for the 1950 seeding. This oat has been tested in previous years as "1884 X Bond 138—." The LeConte oat was released primarily because of its resistance to lodging; it has a very stiff straw. It does not yield as high as Forkeddeer, but is just as winter hardy and can be seeded as late. This oat can be used on highly fertile soil where the tall vigorous-growing Forkeddeer and Stanton varieties tend to lodge.

Stanton and Forkeddeer are tall, vigorous-growing and medium in maturity. They are inclined to lodge if grown on highly fertile soils. Stanton is not as winter-hardy as Forkeddeer, but has an advantage over the latter in being rust resistant.

Fulgrain has been recommended in the past for early seeding on highly fertile soil; it does not have as good winter-hardiness and yielding ability as LeConte and should always be seeded early. It is not a growthy type, which probably contributes to its good standing ability. Fulgrain is one of the earliest maturing oats grown in Tennessee and this is the chief reason for continuing to keep it on the recommended list.

Hardwick, a short-strawed early variety, has been dropped from the 1950 tests because of low relative yields and its tendency to lodge. For a more complete discussion of oats, the reader is referred to a recent bulletin on that crop.¹

Table 3—Average acre yields of winter oats, barley and wheat at 5 locations in Tennessee.

Average of 4 replications at each location.

Variety	Average yield 1947, 48, 49	1949 Tests					1949 yield average of 5 tests
		Knox- ville	Cross- ville	Colum- bia	Spring- field	Jack- son	
OATS							
	Bushels	Bushels	Bushels	Bushels	Bushels	Bushels	Bushels
Forkeddeer.....	78.5	82.4	68.5	76.9	60.7	68.1	71.3
LeConte.....	73.7	75.0	72.5	68.2	47.4	70.3	66.7
090 x Bond-23 (Exp.).....		69.8	52.7	69.3	53.0	81.6	65.3
Stanton.....	75.9	72.9	71.1	49.0	47.1	82.2	64.5
Coker 45-67.....		75.2	54.4	57.9	51.6	81.6	64.1
Hardwick.....	68.7	56.9	33.2	41.3	54.4	73.1	51.8
Fulgrain.....	61.2	69.6	39.6	33.0	34.9	60.2	47.5
L. s. d. (5%).....	.....	13.1	8.2	9.9	7.6	8.7	4.1
BARLEY							
Jackson No. 1.....	45.5	43.9	.....	44.3	26.9	63.4	44.6
Kentucky No. 1.....	42.4	39.1	.....	48.2	27.3	60.0	43.7
Calhoun Strain 2.....		41.1	.....	40.2	28.2	55.9	41.4
Hooded 921-14 (Exp.).....		33.5	.....	37.7	25.6	57.0	38.5
Mo. Early Beardless.....	35.5	28.4	.....	38.8	30.4	52.5	37.5
Wong.....		43.4	.....	27.8	20.7	39.8	32.9
Awnless 10-9 (Exp.).....		33.1	.....	32.9	22.0	34.9	30.7
Erect D20-7 (Exp.).....		28.4	.....	31.5	17.8	39.0	29.2
L. s. d. (5%).....	.....	8.2	.....	6.5	7.9	7.7	3.6
WHEAT							
Thorne.....	34.1	35.9	29.7	39.3	31.5	49.5	37.2
Tennessee 47:13 (Exp.).....		38.9	27.3	34.6	29.0	52.8	36.5
Tennessee 46:1-1 (Exp.).....	34.8	39.5	31.1	33.7	27.1	50.7	36.4
Nured.....		31.7	28.2	37.0	29.4	46.2	34.5
Fulcaster 612.....	32.9	32.6	27.7	35.5	27.9	47.4	34.2
Tennessee 47:1-20 (Exp.).....		37.6	24.6	25.0	25.2	50.7	32.6
Vigo.....		29.0	24.3	30.3	25.5	46.2	31.1
Vahart.....		29.0	25.5	35.3	26.8	42.9	31.9
Carala.....	29.0	14.9	11.7	27.7	29.2	38.7	24.4
L. s. d. (5%).....	.....	4.7	4.3	4.4	6.0	42.2	2.1

¹Hancock, N. I., and Long, O. H., Oat Variety Studies in Tennessee. Tenn. Agr. Exp. Sta. Bul. No. 199, 1946.

Barley—The awned (bearded) types of barley led the tests in yield again this year with the smooth-awned Jackson No. 1 being first as it has been consistently since its release by the Tennessee Experiment Station in 1944. Jackson No. 1 does not have the saw-tooth barbs on the awns which are characteristic of Kentucky No. 1. It threshes easily and will stand well enough to be cut by combine. Calhoun Strain 2, a true awnless barley, has been in the variety tests for two years. It is early, yields and stands well, but has shown only a limited degree of winter hardiness. Due to the mild winters the two years this barley has been in the tests, Calhoun Strain 2, has not been tested adequately in Tennessee for winter hardiness and therefore cannot be recommended at this time.

As with many other crops, earliness is desirable in some cases so that the land will be available sooner for other uses. Late spring freezes, however, may injure early barleys. Missouri Early Beardless, a hooded variety, is early maturing. It does not yield as high as many of the later varieties, partly because of its tendency to shatter and because of the relatively low test weight of the grain. For a more complete discussion of barley varieties, the reader is referred to a recent publication on the subject.²

Wheat—Leaf rust and mildew, both common wheat diseases, attacked some of the 1949 experiments. All three of the Tennessee experimental strains showed leaf-rust resistance and the Tennessee 46:1-1 was also resistant to mildew. The commercial varieties showed different degrees of tolerance to the two diseases except Carala which suffered a marked reduction in yield. As has been explained in previous publications, Carala is an early maturing wheat and is recommended primarily where earliness is desired. Other wheats on the recommended list are Fulcaster 612, a tall, awned variety, of good quality and high test weight; and Thorne, a late, red-chaff, awnless wheat. Vigo, a smooth-awned wheat that has received much publicity in recent years, has not been outstanding in the variety tests. However, it is the most attractive appearing wheat at harvest time, which is one of the reasons for its wide popularity.

Spring Oats—The spring oat variety tests produced higher yields in 1949 than they have for the past three years. However, the highest yielding variety was 10 bushels lower than the lowest yielding entry in the winter oat variety test. Many years of testing have shown that the winter oats will out-yield spring oats almost every time when both are seeded at the proper time. Even though spring oats do not yield as high as winter oats, there is a place for them in Tennessee farming. For instance, when farmers are unable to harvest their corn in time to seed small grain in the fall, spring oats can be seeded in the spring. Winter oats have advantages other than yield, such as winter cover and possible winter grazing. Columbia and Clinton have been the leading spring-type varieties, but some of the newer varieties look very promising.

²Hancock, N. I., and Long, O. H., Barley Variety Studies in Tennessee. Tenn. Agr. Exp. Sta. Bul. No. 203, 1947.

Table 4—*Summary of yields and general characteristics of small grains tested in 1949.*

Entry	1949 Yield	Average yield 1947, '48 '49	Winter Hardi- ness	Stand- ing Ability	Relative Maturity	Relative Height	Type of Awn
OATS¹	Bushels	Bushels					
Forkeddeer	71.3	78.5	Good	Fair	Med. Early	Tall	.....
LeConte	66.7	73.7	Good	Good	Med. Late	Tall	.....
090 x Bond-23 (Exp.)	65.3	.....	Fair	Good	Med. Early	Tall	.....
Stanton	64.5	75.9	Fair	Fair	Med. Early	Tall	.....
Coker 45-67	64.1	.....	Fair	Good	Med. Early	Med.	.....
Hardwick	51.8	68.7	Fair	Poor	Early	Short	.....
Fulgrain	47.5	61.2	Poor	Good	Early	Short	.....
BARLEY							
Jackson No. 1	44.6	45.5	Good	Good	Med. Early	Tall	Smooth Awned
Kentucky No. 1	43.7	42.4	Good	Fair	Late	Tall	Rough Awned
Calhoun Strain 2	41.4	.....	Fair	Good	Early	Short	Awnless
Hooded 921-14 (Exp.)	38.5	.....	Good	Good	Early	Med.	Hooded
Mo. Early Beardless	37.5	35.5	Good	Fair	Early	Hooded	Hooded
Wong	32.9	.....	Fair	Good	Med. Early	Med.	Short Awned
Awnless 10-9 (Exp.)	30.7	.....	Fair	Good	Med. Early	Med.	Awnless
Erect D20-7 (Exp.)	29.2	.....	Fair	Good	Med.	Tall	Smooth Awned
WHEAT							
Thorne	37.2	34.1	Good	Good	Late	Med.	Awnless
Tennessee 47:13 (Exp.)	36.5	.....	Good	Poor	Med.	Tall	Awnless
Tennessee 46:1-1 (Exp.)	36.4	34.8	Good	Good	Med.	Tall	Awned
Nured	34.5	.....	Good	Good	Med.	Med.	Awnless
Fulcaster 612	34.2	32.9	Good	Good	Med.	Tall	Awned
Tennessee 47:1-20 (Exp.)	32.6	.....	Good	Good	Med.	Tall	Awnless
Vigo	31.1	.....	Good	Good	Late	Tall	Awnless
Vahart	31.9	.....	Good	Good	Med.	Med.	Awnless
Carala	24.4	29.0	Fair	Fair	Early	Short	Awnless

¹LeConte oat, released and certified in 1949, was tested in 1947 and 1948 as 1884 x Bond 138.

Table 5—*Average acre yields of spring oats at 4 locations in Tennessee.*
Average of 4 replications at each location.

Variety	Average Yield 1947 '48, '49	1949 Tests				
		Knox- ville	Cross- ville	Colum- bia	Jack- son	Average Yield (4 tests)
	Bushels	Bushels	Bushels	Bushels	Bushels	Bushels
Mindo.....	.....	31.7	38.8	38.9	38.9	37.1
Benton.....	.....	31.6	36.9	40.3	36.1	36.2
Clinton 59.....	.....	33.5	36.1	43.8	26.5	35.0
Eaton.....	.....	31.6	35.0	47.2	22.0	34.0
Columbia	35.0	30.7	36.1	33.7	27.0	31.9
Clinton	33.5	29.5	33.5	36.2	24.8	31.0
L. S. D. (5%).....	.....	6.4	6.9	11.9	8.3	4.1

COTTON

In 1949 cotton trials were conducted in Knox County in East Tennessee and in Lawrence County, Middle Tennessee. An experiment was planted in Tipton County in the Delta, but poor stands and damage from *Verticillium* wilt made the results worthless for comparison of varieties. These tests were conducted in cooperation with the U. S. Department of Agriculture and are part of the regional program for studying yield, fiber properties, and spinning value of the more important commercial varieties and experimental strains. Another trial was conducted at the West Tennessee Experiment Station, Jackson, under the supervision of N. I. Hancock, as part of the Experiment Station's cotton breeding program. It is included in this bulletin in order to make this report more complete.

The 1949 season was excellent for cotton production as shown by the better than two bale per acre yields at Jackson and Knoxville. Rapid early season growth and the late date of the first killing frost in the fall gave ample time for maturity of a heavy top crop. This was especially advantageous to the late and medium-late varieties in the Knox County Test.

Although no boll weevil infestation occurred at Knoxville, these plots were dusted regularly during June and July for the control of so-called minor insects, such as striped flea beetle, tarnished plant bugs, and plant lice. The plots at the other two locations were not dusted.

Table 6—Average acre yields and fiber data of cotton varieties tested at E. T. Adam's farm in Lawrence County.
Average of 6 replications of each variety.

Variety	1948, '49 Data ¹	1949 Data						
		Acre Yields		Gin turn- out	Staple Length	Staple Strength	Bolls per Pound	Relative Maturity
		Seed Cotton	Lint					
	Pounds	Pounds	Pound	Percent	Inches	lbs/mg	Number	
Ute 4C.....	.....	1807	725	40.1	1.15	6.24	57	early
Acala x Empire F4.....	.....	1635	693	42.4	1.12	6.49	54	early
Plains (CS5-9).....	.....	1781	679	38.1	1.11	6.20	62	late
Cobal T416.....	704	1745	675	38.7	1.15	6.10	60	early
Cobal T411.....	653	1753	671	38.3	1.18	6.28	61	early
Stoneville 62.....	.....	1771	669	37.8	1.04	5.72	65	early
Delfos 9169.....	.....	1685	664	39.4	1.17	6.00	61	medium
Mix 2A.....	.....	1669	663	39.7	1.15	6.24	65	early
Pandora.....	657	1741	651	37.4	1.11	6.45	63	late
Coker 100 Wilt.....	646	1653	643	38.9	1.17	6.24	63	med. late
Hi-Bred.....	691	1484	641	43.2	0.90	5.89	67	early
Coker 100 Staple.....	579	1626	631	38.8	1.19	6.28	67	med. late
White Gold Wilt.....	646	1508	629	41.7	1.08	6.23	69	med. late
Empire Wilt.....	633	1622	626	38.6	1.14	6.23	57	early
Deltapine 15.....	631	1472	612	41.6	1.10	5.97	69	late
Cemp 310.....	664	1693	611	36.1	1.10	6.19	67	early
Tennessee 241.....	.....	1576	604	38.3	1.11	6.32	60	early
Stoneville 2B.....	571	1568	601	38.3	1.14	6.32	60	med. late
Acala 5675.....	604	1316	563	42.8	1.11	6.82	62	late
(T x T578)xEmpire.....	.....	1294	542	41.9	1.12	6.53	57	early
L. S. D. (5%).....	.....	336						

¹This column shows an average of two tests conducted in Shelby County in 1948 and one test conducted in Lawrence County in 1949.

There was heavy damage to the top crop from boll weevils in August at the Lawrence County location. Yields, however, were good, all varieties averaging better than a bale per acre. The plots at Jackson were not damaged by weevils.

The varieties are listed in order of their lint yields in Tables 6, 7, and 8. The differences in yield among the varieties at any location is not large, but one can easily see there is no advantage in planting short staple inferior varieties of the Half and Half type even when the cotton is to be sold on the "hog-round" market. Dollar values per acre are not presented in these tables, but the longer-stapled varieties make a favorable showing when premiums for extra staple length are considered. In comparing the cotton varieties on the basis of value per acre, however, it should be borne in mind that premiums for extra staple length diminish sharply if the grade is lower than middling; furthermore, premiums are not always obtainable on local markets. Under normal conditions it is easier to get a high grade of cotton from the early varieties.

There are several good cotton varieties suitable for growth in Tennessee, many of which are shown in these tables. **Since no one variety is superior in all characteristics, the Experiment Station has refrained from recommending specific cotton varieties for Tennessee.** Although no definite conclusions can be drawn from one year's results, there is good evidence that high-yielding early varieties with adequate staple length, good fiber strength, and good boll size, are available for Tennessee.

Table 7—Average acre yields and fiber data of cotton varieties tested at U. S. Cotton Field Station, Knoxville.

Average of 6 replications of each variety.

Variety	1947, '48, '49 Data	1949 Data						
		Acre Yields		Gin Turn- out	Staple Length	Staple Strength	Bolls per Pound	Relative Maturity
	Acre Yields Lint	Seed Cotton	Lint					
	Pounds	Pounds	Pounds	Percent	Inches	Lbs/mg	Number	
Ute 4C.....	.....	2895	1155	39.9	1.17	6.95	54	early
Cemp 314.....	.....	2744	1144	41.7	1.07	7.10	67	early
Tennessee 241.....	.....	2737	1114	40.7	1.15	6.77	56	early
Delfos 9169.....	.....	2785	1114	40.0	1.22	6.59	59	medium
Plains (CSS-9).....	.....	2830	1112	39.3	1.14	6.80	55	late
Ute 5B.....	.....	2956	1100	37.2	1.20	6.96	58	medium
Cemp 310.....	.....	2717	1084	39.9	1.14	6.91	61	early
Acala x Empire F4.....	818	2673	1083	40.5	1.15	7.46	56	early
Empire Wilt.....	815	2769	1080	39.0	1.17	6.79	53	early
Stoneville 2B.....	766	2816	1073	38.1	1.17	6.70	54	med. late
Cobal T416.....	792	2647	1072	40.5	1.19	6.67	57	early
Mix 2A.....	.....	2656	1068	40.2	1.18	6.72	55	early
Mix 3A.....	.....	2637	1052	39.9	1.22	7.06	58	early
(T x T578)xEmpire.....	.....	2518	1035	41.1	1.16	7.10	57	early
White Gold Wilt.....	.....	2504	1034	41.3	1.13	6.78	67	med. late
Acala 5675.....	796	2446	1032	42.2	1.15	7.56	63	late
Cobal T411.....	770	2586	1019	39.4	1.22	7.09	58	early
Pandora.....	.....	2616	999	38.2	1.14	7.35	55	late
Coker 100 Wilt.....	725	2651	994	37.5	1.18	6.50	60	med. late
Coker 100 Staple.....	.....	2508	961	38.3	1.24	6.97	66	med. late
L. s. d. (5%).....	.....	279	.....	.....	.....	.....	.....	.....

Table 8—Average acre yields and fiber data of cotton varieties tested at the West Tennessee Experiment Station, Jackson.¹

Variety	1947, '48 '49 Data	1949 Data						
	Acre Yields Lint	Acre Yields		Gin Turn- out	Length	Strength	Bolls per Pound	Relative Maturity
		Seed Cotton	Lint					
	Pounds	Pounds	Pounds	Percent	Inches	lbs/mg	Number	
Tennessee 241.....	1021	2888	1077	37.3	1.15	6.68	59	early
Empire Wilt.....	1005	3095	1136	36.7	1.14	6.81	53	early
Stoneville 2B.....	996	3275	1225	37.4	1.14	7.09	58	med. late
Coker 100 Wilt.....	965	3034	1153	38.0	1.15	6.64	61	med. late
Delfos 9169.....	958	3071	1112	36.2	1.19	6.64	61	medium
White Gold Wilt.....	953	2836	1072	37.8	1.11	7.11	67	med. late
Deltapine 15.....	944	2861	1144	40.0	1.15	6.57	67	late
Tennessee 818.....		3183	1210	38.0	1.16	6.52	59	early
Paula.....		3194	1137	35.6	1.15	6.92	60	med. late
Coker 100 Staple.....		3011	1135	37.7	1.20	6.83	66	med. late
L. s. d. (5%).....		339						

¹This experiment was conducted and the data analyzed under the supervision of N. I. Hancock, as part of the Experiment Station's cotton breeding program.

SOYBEANS

The varieties S-100 (early), Ogden (midseason), and Volstate (late), are recommended for seed and hay in Tennessee. These varieties mature about October 1, October 15, and November 1 respectively, making it possible for a grower to distribute his soybean harvest over a period of a month or more. These varieties are recommended on the basis of their high oil content and good quality of beans, as well as yield.

The performance of the better varieties for Tennessee is shown in Table 9. These data indicate that the performance of varieties differing in date of maturity is about equal over a period of several years, although in any one year the rainfall distribution may favor either an early or late variety. The new variety, Wabash, was added to the trials this year. It is even earlier than S-100, and may have a place among the soybean varieties grown in Tennessee, but further testing is necessary to determine its merits.

Table 9—Summary of yields and general characteristics of soybeans tested in 1949. Average of 4 replications at each location.

Entry	Average Yields 1946, 1947, 1948, 1949	1949 Av. Yield (2 tests)	1949 Test Locations		Oil Con- tent	Average Hay Yield 1946, '47, '48	Relative Maturity
			Knoxville	Jackson			
	Bushels	Bushels	Bushels	Bushels	Percent	Tons	
S-100.....	25.6	38.5	35.0	42.0	19.5	2.44	early
Ogden.....	24.7	36.6	30.9	42.3	20.8	2.83	midseason
Volstate.....	24.7	36.8	26.9	46.7	21.4	3.97	late
Arksoy.....	24.5	37.7	32.0	43.4	19.9	2.55	midseason
Roanoke.....	24.4	37.8	28.9	46.7	21.7	2.98	late
Macoupin.....	23.9	37.0	29.8	44.2	21.0	2.24	early
Wabash.....	.....	37.4	30.7	44.2	.....	.....	very early
L. S. D. (5%)....		4.4	6.0	6.8			

ALFALFA

Past experiments have shown Kansas Common and Oklahoma Common to be the best yielding and longest lived under Tennessee conditions, of the many varieties of alfalfa on the market. In recent years, however, several new varieties have been developed and released. Some of these varieties show resistance to certain diseases and appear to be adapted to Tennessee conditions. Therefore, alfalfa variety trials were established in 1949 at the six Tennessee Experiment Stations to compare some of the more promising of these new varieties with a few of the older varieties that are being sold in this State. The entries in the test are as follows:

Atlantic	Williamsburg	New Mexico Common
Buffalo	Kansas Common	California Common
Narragansett	Oklahoma Common	Argentina

RED CLOVER

The recommended red clover varieties include Tennessee Resistant, Cumberland, and Kenland. As with alfalfa, these recommendations are based on past experiments. Red clover variety trials have been established at the six Experiment Stations to further check Kenland, and the experimental variety, Tennessee Purple Seeded, with some of the established commercial strains. The following varieties are in these trials:

Tennessee Resistant	Midland
Cumberland	Virginia Adapted
Tennessee Purple Seeded, (Experimental)	Van Fossen
	Kenland