WINTER OAT VARIETIES

Winter oats are the least winterhardy of the winter grains. Early seeding, good fertilization practices, and planting on well-drained soils are recommended to minimize winter killing. Most winter oats are susceptible to the crown rusts so the variety must be selected in respect to maturity, lodging resistance, and yielding ability. Winter oats are excellent also for fall grazing and silage. The performance of the winter oat varieties is presented in Tables 9-12.

SPRING OATS FOR KENTUCKY

The *only* small grain suitable for spring seeding by farmers in Kentucky is spring oats. Spring oats are used mainly for hay or silage and as a companion crop for grasses and legumes. Grain and forage yields of spring oats are lower than those of the recommended winter oat varieties when yields of winter oats are not severely reduced from winterkilling or disease. Two spring oat varieties (Otee and Jaycee) are being recommended for Kentucky in 1975 by the Kentucky Agricultural Experiment Station. These varieties are being recommended because of their high level of resistance to Barley Yellow Dwarf Virus which is a serious problem in winter oats.

Otee has yielded slightly higher, is superior in Barley Yellow Dwarf Virus resistance, and is definitely superior in lodging resistance (particularly in after-ripening standability) of that of Jaycee. If Jaycee is grown, it should be harvested immediately after ripening to prevent serious lodging.

CERTIFIED SEED

Planting certified seed is one of the first steps in insuring a good small grain crop. The extra cost of certified seed is justified in view of the high quality of seed obtained. Certified seed is seed which has been grown in such a way as to insure the genetic identity and purity of a variety. Certified seed also helps to maintain freedom from weed and other crop seed and, in some cases, freedom from disease. The Kentucky Agricultural Experiment Station recommends that Kentucky-certified seed be used whenever possible for growing commercial crops of small grains.

12M–3-75

Kentucky Small Grain Variety Trials–1974

By Charles R. Tutt and Morris J. Bitzer

UNIVERSITY OF KENTUCKY • COLLEGE OF AGRICULTURE
Agricultural Experiment Station • Department of Agronomy
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TESTING LOCATIONS OF THE KENTUCKY SMALL GRAIN VARIETY TRIALS– 1974

Location	*Cooperator*
1. Murray	Murray State University Agriculture Department
2. Princeton	West Kentucky Substation
3. Bowling Green	Western Kentucky University Agriculture Department
4. Lexington	Kentucky Agricultural Experiment Station

Acknowledgment is made to John Byars, of the Department of Agronomy, and the University of Kentucky Computing Center, for assistance in summarizing the results reported in this progress report and to Harold Vaught, Area Agronomy Specialist, for his assistance in collecting field data at Bowling Green.

Kentucky Small Grain Variety Trials—1974

By Charles R. Tutt and Morris J. Bitzer

Small grains are becoming increasingly important to Kentucky agriculture, both in respect to acreage and in dollar value contributed to Kentucky agricultural income.

In 1974, Kentucky farmers harvested 390,000 acres of wheat, 48,000 acres of barley and 10,000 acres of oats for a total of 448,000 acres of small grain. This was a sharp increase over the 252,000 acres harvested in 1973.

TEST OBJECTIVES

Purpose of the Kentucky small grain variety trials is to evaluate varieties of barley, wheat and oats that are commercially available or may soon be available to Kentucky farmers. New varieties are continually being developed by agricultural experiment stations and commercial firms. Continued testing and evaluation of small grain varieties and selections are essential if farmers, seedsmen and other agricultural workers are to be provided with current information to help them select the varieties best adapted to their locality and individual requirements.

Since weather, soil and other environmental factors will alter varietal performance from one location to another, tests are grown in four locations in the state (Lexington, Bowling Green, Princeton, and Murray) as shown on page 3.

Recommendations are revised each year because of the availability of new varieties, improvements in production practices, and continually changing disease and insect hazards.

1974 CROP CONDITIONS

The fall weather conditions were nearly ideal for seeding the 1974 small grain crop. The winter season was relatively mild,

resulting in very little winter-killing. However, the mild fall and winter were very favorable for the spread of several small grain diseases. The severity of these diseases resulted in a slight yield loss in some areas and almost complete crop failure in other areas.

PERFORMANCE DATA

As previously mentioned, performance data were collected at Murray, Bowling Green, Princeton, and Lexington. In some instances, uncontrollable factors such as excessive rainfall, high winds, and damage by birds adversely affected an experiment so that the data were judged unreliable and do not reflect actual varietal performance. When this occurred, results are not given for that location and year. Data are also presented for a period of years, since this gives a more accurate picture of varietal performance than do annual data.

EXPERIMENTAL METHODS

Each experimental plot consisted of four rows 1 foot apart and 13 feet long. Each variety was grown in four plots placed at random over the test area, and the results presented in the table are the average response of the four plots. The plots were planted with a specially built four-row seeder, and the data were taken from a 10-foot section of the two center rows of each plot.

DATA COLLECTED

It is important to consider characteristics other than grain yield when selecting a variety.

Grain yield was taken by cutting the two center rows of each plot and threshing the grain with a stationary plot thresher. The weights of each plot were recorded in grams and converted to bushels per acre.

Test weight, or the weight of a bushel of grain, is a measure of the quality of grain. The higher the test weight, the higher the quality and market value, unless the grain has been downgraded because of another quality factor.

Lodging was recorded as the percentage of the total plants lying on the ground or leaning at a 45-degree angle from the vertical when the grain was mature. The term "maturity" as used in this report refers to the date the grain was ready to be combine-harvested.

Plant height was reported as the number of inches from the ground to the tip of the upright grain head.

Survival was recorded as the percentage of plants estimated to have survived the winter. This is a measure of winterhardiness and is an important factor to consider when selecting a variety.

Heading date was reported when 50% of the heads had emerged from the plants in each plot. This is a measure of maturity and is important when selecting a variety for use in a double-cropping system.

RESULTS AND DISCUSSION

Since genetic expression of a variety is greatly influenced by environmental conditions, it is best to have several years' data from which to draw conclusions. Performance of a variety that has been tested for only one year should not be compared with a 3-year average of another variety, since it is possible that results in one of the other years were extremely good or poor and, thus, not comparable.

The yield of a variety is relative and should be compared with the yields of the other varieties in the same experiment and at the same location. Small differences in yield of only a few bushels per acre between two varieties from an individual test should not be interpreted to indicate the superiority of one variety over another. However, if one variety consistently out-yields another over a period of several years, the chances are that the differences are real and should be considered important.

Lodging data are very difficult to interpret. A high-yielding variety should not necessarily be down-graded because of a high percentage of lodging for a given year and at a given location. Local weather conditions, such as heavy wind and rain, may cause a variety to lodge much more than it normally does. It should also be emphasized that a report that a variety was 50% lodged does not imply, however, that only 50% of the grain could be har-

vested. With good equipment, it may be expected that almost all of the grain could be saved. Lodging data for a period of years should receive more consideration than annual lodging data since they will give a more accurate picture of varietal performance.

Small grain yields in 1974 were very low at Princeton, Murray, and Bowling Green. The variety trials at Princeton and Murray were badly infested with Barley Yellow Dwarf disease, and the test at Bowling Green was also infested to a lesser extent. This disease infested all three crops: wheat, oats, and barley. Another disease identified as Scald was very severe on barley at Princeton and Murray. The wheat varieties at Princeton and Murray were also infected with Septoria Leaf Blotch, Glume Blotch, and a new disease in Kentucky identified as Wheat Spindle Streak. Good yields were obtained at the Lexington location where little disease was noted.

Because of the very complex disease situation, the 1974 variety trial results should be examined and interpreted very carefully. Only the yields are reported in this publication since the other data collected were judged to be unreliable. The other varietal characteristics reported in the tables are for previous years and where possible are the average of the three previous years.

The yields reported for 1974 do not reflect the true potentials of the varieties but give only an indication of the severity of the disease problem in 1974 and of the varietal performance under those adverse conditions.

The performance of varieties in the 1974 trials and for previous years is presented by crop and location in tabular form in Tables 1 to 12.

Table 1.—Results of Barley Performance Trials at Lexington, Ky.

Variety	1974 Yield	Three-Year Average 1971, 1972 and 1973 Yield	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	%	In.	%	
Barsoy	45.2	89.6	25.8	34.8	99.2	4-27
Dayton	43.4	61.4	42.5	37.8	74.2	5-9
Harrison	42.2	82.5	20.0	39.2	98.8	5-6
Jefferson	34.3	71.3	27.5	40.7	99.6	5-11
Knob	33.3	69.3	42.5	32.3	90.4	5-1
Lakeland	50.1	78.8	10.8	37.9	99.2	5-13
McNair 601	41.3	65.4	32.5	35.2	85.9	5-9
Paoli	48.6	71.4	43.3	32.6	98.3	5-10
Schuyler	56.4	80.4	40.0	36.8	98.4	5-12

Table 2.—Results of Barley Performance Trials at Princeton, Ky.

Variety	1974 Yield	Three-year Average 1971, 1972 and 1973 Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Barsoy	7.7	47.4	47.4	5.0	30.7	94.2	4-21
Dayton	13.0	30.3	41.9	27.5	33.8	87.5	5-5
Harrison	24.8	56.7	47.6	6.3	38.1	99.2	5-4
Jefferson	27.6	58.9	43.7	7.9	39.1	98.3	5-5
Keowee	25.8	42.9	45.6	33.3	34.6	96.7	5-4
Knob	10.0	54.0	41.8	29.6	32.3	96.7	4-30
Lakeland	25.8	58.2	46.2	7.9	37.4	98.8	5-5
McNair 601	11.3	48.0	42.9	22.9	33.5	91.7	4-30
Paoli	28.4	56.1	45.1	19.2	31.8	98.3	4-30
Schuyler	6.4	48.8	40.1	26.3	35.3	99.6	5-8

Table 3.—Results of Barley Performance Trials at Bowling Green, Ky.

Variety	1974 Yield	Three-year Average 1971, 1972 and 1973 Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Barsoy	16.7	43.4	46.4	20.8	29.0	100.0	4-19
Dayton	21.2	34.4	43.0	15.0	31.3	100.0	4-25
Harrison	36.5	44.3	45.4	0.0	32.7	100.0	5-1
Jefferson	34.9	48.8	44.5	0.0	34.8	100.0	4-30
Keowee	16.9	39.4	45.2	17.5	31.1	100.0	4-30
Knob	21.2	41.4	42.3	15.0	29.3	100.0	4-25
Lakeland	16.5	36.6	44.0	10.8	32.2	100.0	5-2
McNair 601	20.1	43.4	43.6	8.3	30.1	100.0	4-26
Paoli	30.5	40.9	44.5	10.8	27.1	100.0	4-26
Schuyler	16.3	39.7	43.7	3.3	28.8	100.0	5-5

Table 4.—Results of Barley Performance Trials at Murray, Ky.

Variety	1974 Yield	Three-year Average 1969, 1970 and 1972 Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Barsoy	19.1	41.7	47.6	0.0	23.5	87.9	4-17
Dayton	16.8	46.1	45.8	0.0	28.4	88.3	4-23
Harrison	14.3	36.0	47.5	0.0	28.1	95.0	4-30
Jefferson	14.3	39.5	44.0	0.0	31.9	93.8	4-28
Knob	19.8	43.0	44.5	0.0	26.5	94.2	4-25
Lakeland	26.5	40.4	45.8	0.0	28.2	93.8	4-30
Paoli	10.6	37.8	45.5	0.0	23.8	95.4	4-27
Schuyler	8.5	30.5	44.6	0.0	22.9	92.9	5-5

Table 5.—Results of Wheat Performance Trials at Lexington, Ky.

Variety	1974 Yield	Two-year Average 1972-1973 Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Abe	46.8	53.0	58.2	6.9	37.6	96.3	5-11
Arthur	49.1	56.0	58.1	4.4	39.8	97.5	5-11
Arthur 71	38.7	54.5	58.6	8.1	38.4	95.0	5-11
Benhur	--	40.6	54.9	4.4	41.9	91.3	5-12
Blueboy	--	38.2	53.2	0.6	42.1	68.8	5-15
Blueboy II	34.5	38.4	53.1	8.8	40.5	66.3	5-15
Coker 68-15	39.9	24.2	56.9	1.9	32.4	47.5	5-14
Fredrick	53.2	--	--	--	--	--	--
Knox 62	43.5	35.9	58.4	17.5	43.0	75.0	5-13
Lewis	--	35.7	54.0	8.8	42.3	80.0	5-13
McNair 701	30.8	27.9	54.5	6.3	36.1	49.4	5-13
McNair 4823	52.5	44.8	54.9	4.4	37.0	82.5	5-16
Monon	--	39.6	56.1	5.0	41.1	81.3	5-13
Oasis	45.6	48.7	57.5	11.3	39.4	86.3	5-12

Table 6.—Results of Wheat Performance Trials at Princeton, Ky.

Variety	1974 Yield	Two-year Average 1972-1973 Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Abe	26.6	38.3	59.6	0.0	32.5	100.0	5-3
Arthur	18.2	38.3	59.4	1.3	34.5	100.0	5-3
Arthur 71	16.6	30.7	59.0	3.8	33.1	100.0	5-4
Benhur	19.1	22.1	57.1	6.9	38.5	100.0	5-4
Blueboy	6.0	25.4	52.1	3.1	36.5	100.0	5-7
Blueboy II	8.3	28.7	53.5	7.5	37.9	100.0	5-6
Coker 68-15	10.8	21.8	56.2	0.0	29.5	100.0	5-6
Fredrick	22.4	--	--	--	--	--	--
Knox 62	9.9	24.0	58.3	36.3	38.8	100.0	5-5
Lewis	8.0	28.3	56.8	0.0	39.3	100.0	5-5
McNair 701	8.1	28.5	52.9	10.0	32.6	100.0	5-2
McNair 4823	24.8	36.2	56.9	0.0	34.3	100.0	5-14
Monon	7.2	26.8	55.7	18.8	38.4	100.0	5-3
Oasis	21.0	34.6	58.5	1.9	36.3	100.0	5-5

Table 7.—Results of Wheat Performance Trials at Bowling Green, Ky.

Variety	1974 Yield	Two-year Average 1972-1973 Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Abe	38.5	48.6	59.0	1.3	36.0	100.0	4-28
Arthur	37.2	43.1	58.5	0.0	38.5	100.0	4-28
Arthur 71	31.5	45.8	59.6	0.0	37.4	100.0	4-28
Benhur	28.7	38.2	58.1	2.5	41.8	100.0	4-27
Blueboy	26.8	30.6	53.4	0.0	39.5	100.0	5-4
Blueboy II	30.7	41.7	55.5	1.3	41.0	100.0	5-3
Coker 68-15	31.9	32.8	59.8	1.3	35.0	100.0	4-27
Fredrick	29.3	--	--	--	--	--	--
Knox 62	24.6	33.9	58.2	11.9	41.6	100.0	4-28
Lewis	30.0	38.4	57.4	2.5	42.6	100.0	4-30
McNair 701	25.4	37.5	55.5	10.0	33.8	100.0	4-26
McNair 4823	37.1	34.4	57.9	0.0	36.5	100.0	5-9
Monon	23.7	35.0	56.8	2.5	41.5	100.0	4-28
Oasis	39.5	43.4	59.5	0.0	37.3	100.0	4-30

Table 8.—Results of Wheat Performance Trials at Murray, Ky.

Variety	1974 Yield	1973 Results					
		Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Abe	27.9	38.0	56.2	0.0	29.0	100.0	4-28
Arthur	20.4	27.9	56.3	0.0	29.3	100.0	4-29
Arthur 71	22.0	27.9	56.0	0.0	28.8	100.0	4-29
Benhur	17.3	23.4	55.3	0.0	25.3	100.0	4-30
Blueboy	6.3	25.7	54.5	0.0	35.5	100.0	5-3
Blueboy II	14.4	23.3	54.5	0.0	36.0	100.0	5-3
Coker 68-15	8.1	17.7	55.3	0.0	28.8	100.0	4-29
Fredrick	35.0	22.1	53.3	0.0	41.8	100.0	5-14
Knox 62	13.0	24.9	57.2	0.0	38.5	100.0	4-28
Lewis	20.8	26.8	55.0	0.0	37.5	100.0	4-29
McNair 701	8.3	34.0	52.2	0.0	32.5	100.0	4-29
McNair 1587	7.6	30.2	51.2	0.0	31.5	100.0	4-29
McNair 4823	23.5	19.1	55.9	0.0	29.8	100.0	5-12
Monon	14.7	23.8	55.5	0.0	36.8	100.0	4-26
Oasis	22.6	23.1	54.8	0.0	29.3	100.0	4-30

Table 9.—Results of Winter Oat Performance Trials at Lexington, Ky.

Variety	1974 Yield	Two-year Average 1970-1971					
		Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Chilocco	56.7	--	--	--	--	--	--
Coker 66-22	75.2	90.0	34.9	57.5	43.1	80.0	5-20
Coker 70-16	100.5	--	--	--	--	--	--
Compact	64.4	92.3	34.7	56.3	35.9	90.6	5-30
Dubois	56.4	75.3	37.8	57.5	42.8	82.5	5-25
Norline	58.0	81.1	34.4	68.8	46.0	87.5	5-26
Pennlan	97.8	--	--	--	--	--	--
Walken	71.6	88.0	34.0	42.5	40.4	77.5	6-3

Table 10.—Results of Winter Oat Performance Trials at Princeton, Ky.

Variety	1974 Yield	Two-year Average 1971 and 1973					
		Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/B	Bu/A	Lb/Bu	%	In.	%	
Chilocco	24.8	--	--	--	--	--	--
Coker 66-22	30.0	77.5	29.6	64.8	42.4	76.3	5-13
Coker 70-16	32.2	--	--	--	--	--	--
Compact	38.9	73.6	29.7	68.2	37.1	93.8	5-21
Dubois	10.0	59.4	31.0	53.2	43.7	77.5	5-17
Norline	16.1	54.6	28.4	87.5	44.7	88.8	5-19
Pennlan	25.8	--	--	--	--	--	--
Walken	14.3	80.9	31.0	10.7	45.7	96.9	5-26

Table 11.—Results of Winter Oat Performance Trials at Bowling Green, Ky.

Variety	1974 Yield	Two-year Average 1971-1972					
		Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Chilocco	36.5	--	--	--	--	--	--
Coker 66-22	40.5	65.4	37.8	0.0	34.3	95.0	5-9
Coker 70-16	36.5	--	--	--	--	--	--
Compact	48.4	57.7	39.9	0.0	27.0	96.3	5-18
Dubois	19.9	47.8	37.9	0.0	34.7	93.1	5-14
Norline	34.7	63.6	36.8	0.0	36.8	96.9	5-16
Pennlan	39.2	--	--	--	--	--	--
Walken	38.8	49.3	37.8	0.0	31.8	85.6	5-23

Table 12.—Results of Winter Oat Performance Trials at Murray, Ky.

Variety	1974 Yield	1973 Results					
		Yield	Test Weight	Lodging	Plant Height	Survival	Date Headed
	Bu/A	Bu/A	Lb/Bu	%	In.	%	
Chilocco	20.9	76.5	35.5	0.0	41.5	100.0	5-3
Coker 66-22	41.5	85.8	34.4	0.0	41.3	100.0	5-3
Coker 70-16	31.2	--	--	--	--	--	--
Compact	30.2	72.0	36.8	0.0	33.5	100.0	5-12
Dubois	15.7	84.1	36.1	0.0	42.0	100.0	5-9
Norline	21.8	74.1	35.4	0.0	42.0	100.0	5-10
Pennlan	30.2	75.3	35.3	0.0	33.3	100.0	5-4
Walken	15.1	71.4	33.8	0.0	41.5	100.0	5-19

RECOMMENDATIONS FOR 1975

Recommended varieties are those which are superior in one or more characteristics important for the crop and have been tested by the Kentucky Agricultural Experiment Station for 3 or more years. Varieties that have been recommended for Kentucky, recently certified in another state or approved by an appropriate National Varietal Review Board, may be certified for production. The certified list will include, in addition to the recommended varieties, (1) varieties that may have potential for Kentucky and (2) older varieties that are still acceptable for production in Kentucky but are not as good as the recommended varieties.

A summary of the characteristics of the recommended and certified small grain varieties is presented in Table 13. All varieties listed are eligible for certification in Kentucky, and those varieties designated by an asterisk (*) are recommended by the Kentucky Agricultural Experiment Station.

WINTER BARLEY VARIETIES

Recommended winter barleys are less winter-hardy than winter wheat but more hardy than winter oats. The degree of winterhardiness, straw strength, and maturity are important characteristics when choosing a variety. Barley performs poorly on soils not well-drained. It is an excellent feed grain for livestock when fed with other grain crops. Varietal performance data are presented in Tables 1-4.

SOFT RED WINTER WHEAT VARIETIES

Kentucky's climate and soils are well suited for the production of high quality soft red winter wheat. No one variety has all the desirable characteristics; each has certain advantages. Yielding ability, straw strength, height, earliness, grain quality and disease resistance are important in choosing a variety. Wheat is an excellent feed grain for livestock. Varietal performance is presented in Tables 5-8.

Table 13.—Characteristics of Recommended and Certified Small Grain Varieties.

WHEAT

Variety	U.S.[1] Protected Variety	Origin	Date of Release	Straw Strength	Relative Height	Maturity	Winter Hardiness	Hessian Fly	Powdery Mildew	Leaf Rust	Septoria Leaf Blotch
Abe*	Yes	Indiana	1972	Excellent	Short	Early	Excellent	Excellent	Excellent	Excellent	Poor
Arthur*	No	Indiana	1968	Good	Short	Early	Excellent	Fair	Excellent	Good	Poor
Arthur 71*	Yes	Indiana	1971	Good	Short	Early	Excellent	Excellent	Excellent	Excellent	Poor
Blueboy II	Yes	N.Carolina	1971	Excellent	Short	Medium	Very Good	Poor	Poor	Excellent	Poor
McNair 4823*	Yes	McNair Seed	1972	Excellent	Short	Late	Very Good	Poor	Poor	Poor	Poor
Oasis	Yes	Indiana	1973	Good	Short	Early	Excellent	Excellent	Excellent	Excellent	Good

OATS

Variety	U.S.[1] Protected Variety	Origin	Date of Release	Straw Strength	Relative Height	Maturity	Winter Hardiness	Smut
Coker 66-22*	No	Coker's Pedigree Seed Co.	1969	Excellent	Medium	Early	Good	
Compact*	No	Kentucky	1968	Excellent	Very Short	Med. to Late	Very Good	
Dubois*	No	Indiana	1952	Good	Medium	Medium	Good	
Norline*	No	Indiana	1960	Good	Med. to Tall	Med. to Late	Very Good	
Walken*	No	Kentucky	1970	Excellent	Short	Late	Very Good	

BARLEY

Variety	U.S.[1] Protected Variety	Origin	Date of Release	Straw Strength	Relative Height	Maturity	Winter Hardiness	Loose Smut
Barsoy*	No	Kentucky	1966	Excellent	Very Short	Very Early	Good	Susceptible
Harrison*	No	Indiana	1963	Excellent	Short	Med. to Late	Excellent	Susceptible
Knob*	No	Kentucky	1969	Good	Very Short	Early	Good	Susceptible

[1]"Unauthorized propagation prohibited." Seed of these varieties must be sold by variety name only as a class of certified seed. This includes varieties for which protection has been applied and those for which protection has been granted.

*Recommended varieties for Kentucky.