



RESULTS OF THE

*Kentucky Barley
Variety Trials-1970*

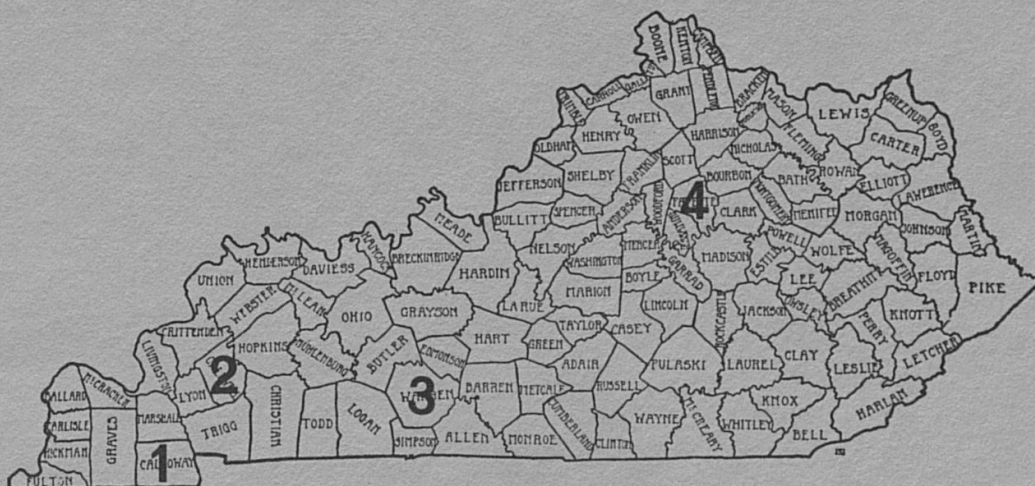
By Charles R. Tutt and Verne C. Finkner

UNIVERSITY OF KENTUCKY ● COLLEGE OF AGRICULTURE
Agricultural Experiment Station ● Department of Agronomy
Lexington ● Progress Report 194

CONTENTS

	Page
Testing Locations of the Kentucky Barley Variety Tests	3
Experimental Method for 1970 Variety Trials	5
Interpretation	7
Kentucky Agricultural Experiment Station 1971 Recommended Barley Varieties	8
Certified Seed	8
Summary of Barley Varieties Evaluated at Lexington, Princeton, Murray, and Bowling Green	9
Barley Production in Kentucky	20

TESTING LOCATIONS OF THE KENTUCKY BARLEY VARIETY TRIALS—1970

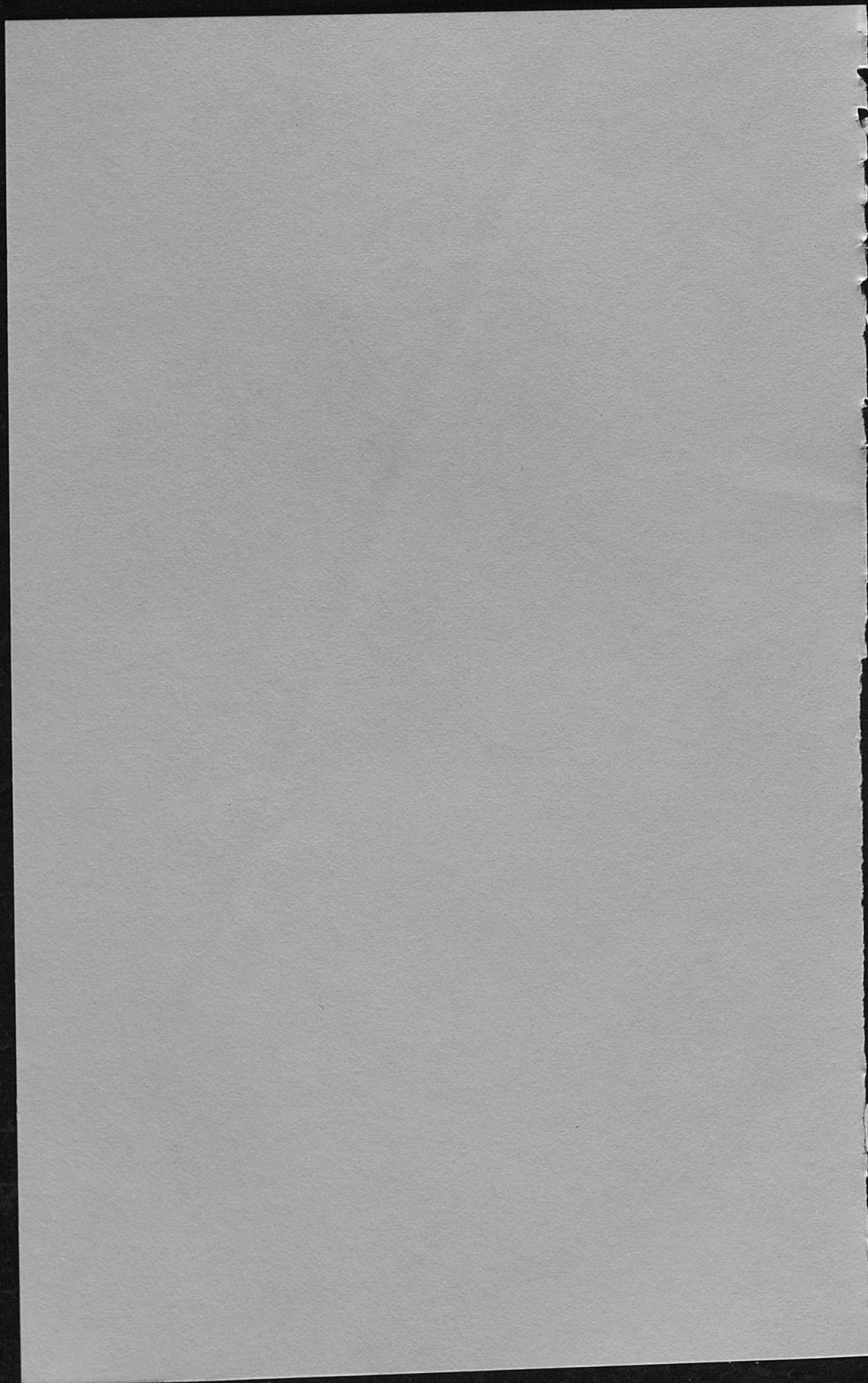


Location

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.



Kentucky Barley Variety Trials--1970

By Charles R. Tutt and Verne C. Finkner

EXPERIMENTAL METHOD FOR 1970 VARIETY TRIALS

Environmental conditions and soil types may cause a variety to respond differently in different areas of Kentucky. For these reasons, the 1970 barley variety trials were conducted at Murray, Princeton, Bowling Green and Lexington. The ultimate test for a variety is how it performs on an individual farm but performance in a test nearest your farm is a reliable selection guide.

Data are also collected for a period of years at each location. Since results vary from year to year, 3- and 4-year results give a more accurate picture of varietal performance than do annual data.

All experimental areas were fallowed the previous year and a legume crop was plowed under prior to the fall seeding.

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 tables 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.

Yield

Yields were taken by cutting a 10-foot section of each of the two center rows and threshing the grain through a stationary plot thresher. The weights of each plot were recorded in grams and then converted to bushels per acre.

Lodged

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

Plant Height

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

Date Headed

Date headed was reported as the number of days after March 31 when 50 percent of the heads have emerged from the plants in each plot.

Survival

Survival was recorded as the percentage of plants which were estimated to have survived the winter when fall planted. This is a measure of winter-hardiness and is an important factor to consider when selecting a small grain variety.

Test Weight

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 the higher the market value, unless the grain has been down-graded because of another quality factor.

INTERPRETATION

It is important to consider other characteristics in addition to yield before choosing a variety. Plant height, lodging resistance, maturity date and grain quality are other important plant characteristics.

Yields reported in these trials should not be considered the maximum potential for the varieties. High fertilization rates were not used, so as to permit differences in lodging to be recorded.

Lodging data are quite 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 normal. It should also be emphasized that a variety reported to be 50 percent lodged does not imply that only 50 percent of the grain can be harvested. With good equipment, one may expect to save almost all of the grain. 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.

The yield of a particular 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 in 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 significant and should be considered important.

For any small grain variety, the ultimate test is how it performs on an individual farm. To make a sound decision, it is wise to plant a few acres of a new variety and then compare the results with those of another variety presently being grown.

Kentucky Agricultural Experiment Station
1971 Recommended Barley Varieties

Barsoy
Dayton

Harrison

Jefferson
Knob

Certified Seed

Planting certified seed is one of the first steps in insuring a good barley crop. The extra cost of certified seed is quite economical 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 Agricultural Experiment Station recommends that Kentucky-certified seed be used whenever possible for growing commercial crops of small grains.

SUMMARY OF BARLEY VARIETIES

EVALUATED AT:

LEXINGTON

PRINCETON

MURRAY

BOWLING GREEN

Table 1. Summary of Barley Varieties Evaluated at Lexington, Kentucky.

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Yield, Bushels Per Acre</u>			
Barsoy	109.9	96.8	86.8	77.3
Dayton	57.9	55.5	55.5	48.1
Hanover	66.0	69.0	--	--
Harrison	72.1	82.6	76.5	77.3
Jefferson	62.0	73.4	65.0	57.5
Knob	62.9	74.2	71.6	59.1
Lakeland	65.6	82.5	81.9	--
McNair 601	54.6	--	--	--
Rapidan	87.7	86.8	--	--
Schuyler	80.0	78.8	81.4	80.8
Average	71.9	77.7	74.1	66.7
	<u>Lodged at Maturity, Percent</u>			
Barsoy	52.5	26.3	--	--
Dayton	62.5	73.8	--	--
Hanover	65.0	38.8	--	--
Harrison	60.0	30.0	--	--
Jefferson	57.5	28.8	--	--
Knob	82.5	43.8	--	--
Lakeland	32.5	16.3	--	--
McNair 601	67.5	--	--	--
Rapidan	60.0	50.0	--	--
Schuyler	65.0	63.8	--	--
Average	60.5	41.3		
	<u>Height, Inches</u>			
Barsoy	34.5	33.5	34.0	33.9
Dayton	33.8	35.9	37.3	37.3
Hanover	35.3	36.1	--	--
Harrison	36.5	38.4	39.0	39.5
Jefferson	36.8	38.9	40.3	41.0
Knob	30.0	31.4	33.6	33.9
Lakeland	35.8	36.5	38.0	--
McNair 601	34.3	--	--	--
Rapidan	34.3	34.4	--	--
Schuyler	34.0	35.1	35.8	35.8
Average	34.5	35.6	36.9	36.9

Table 1. (continued)

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Date Headed, No. Days After March 31</u>			
Barsoy	26.8	30.4	29.4	26.3
Dayton	29.8	33.9	33.2	30.8
Hanover	30.0	34.4	--	--
Harrison	33.8	37.0	35.5	34.3
Jefferson	32.0	37.1	35.8	34.8
Knob	29.3	32.9	32.4	29.8
Lakeland	37.5	41.0	39.3	--
McNair 601	28.5	--	--	--
Rapidan	31.0	34.6	--	--
Schuyler	38.3	42.1	41.2	40.8
Average	31.7	35.9	35.3	32.8
	<u>Survival, Percent</u>			
Barsoy	100.0	100.0	100.0	100.0
Dayton	100.0	95.6	94.6	94.6
Hanover	100.0	90.0	--	--
Harrison	100.0	100.0	100.0	100.0
Jefferson	100.0	100.0	100.0	100.0
Knob	100.0	100.0	98.3	98.3
Lakeland	100.0	100.0	100.0	--
McNair 601	100.0	--	--	--
Rapidan	100.0	96.9	--	--
Schuyler	100.0	100.0	100.0	100.0
Average	100.0	98.1	99.0	98.8
	<u>Test Weight, Pounds Per Bushel</u>			
Barsoy	50.0	49.3	49.3	49.2
Dayton	42.5	41.9	42.4	42.2
Hanover	42.9	43.7	--	--
Harrison	45.8	47.0	47.3	47.6
Jefferson	43.2	44.8	44.9	44.9
Knob	45.6	45.1	45.2	45.2
Lakeland	45.0	45.8	46.2	--
McNair 601	44.1	--	--	--
Rapidan	44.4	43.8	--	--
Schuyler	41.0	43.0	43.7	43.7
Average	44.5	44.9	45.6	45.5

Table 2. Summary of Barley Varieties Evaluated at Princeton, Kentucky.

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Yield, Bushels Per Acre</u>			
Barsoy	76.3	84.3	75.8	63.1
Dayton	86.7	77.2	66.1	53.7
Hanover	84.8	90.1	--	--
Harrison	84.9	80.3	70.8	64.6
Jefferson	88.1	88.4	73.1	64.2
Knob	84.2	75.9	66.6	56.0
Lakeland	87.8	87.2	75.7	--
McNair 601	77.5	--	--	--
Rapidan	86.1	88.0	--	--
Schuyler	78.6	80.1	71.6	59.8
Average	83.5	83.5	71.4	60.2
	<u>Lodged at Maturity, Percent</u>			
Barsoy	0.0	1.3	9.2	11.3
Dayton	7.5	42.5	60.8	61.3
Hanover	6.3	31.3	--	--
Harrison	0.0	16.3	27.5	23.8
Jefferson	0.0	10.0	28.3	22.5
Knob	0.0	22.5	28.7	33.4
Lakeland	0.0	1.9	16.3	--
McNair 601	5.0	--	--	--
Rapidan	0.0	21.9	--	--
Schuyler	0.0	13.1	26.3	25.4
Average	1.9	17.9	28.2	29.6
	<u>Height, Inches</u>			
Barsoy	31.3	33.9	34.4	31.5
Dayton	36.3	39.6	40.8	36.9
Hanover	37.3	39.9	--	--
Harrison	37.3	40.8	41.6	38.3
Jefferson	40.3	43.0	43.8	39.8
Knob	33.5	36.6	37.1	33.9
Lakeland	36.3	38.9	40.1	--
McNair 601	34.5	--	--	--
Rapidan	35.5	37.9	--	--
Schulyer	33.3	35.5	36.2	33.0
Average	35.6	38.5	39.2	35.6

Table 2. (continued)

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Date Headed, No. Days After March 31</u>			
Barsoy	20.0	21.5	22.2	20.5
Dayton	24.5	25.9	26.5	25.4
Hanover	29.3	29.4	--	--
Harrison	30.8	31.8	31.9	30.6
Jefferson	29.8	31.5	31.8	30.5
Knob	27.0	28.6	24.8	26.3
Lakeland	35.3	35.5	35.3	--
McNair 601	26.0	--	--	--
Rapidan	29.5	29.5	--	--
Schuyler	38.0	37.0	36.8	36.4
Average	29.0	30.1	29.9	28.3
	<u>Survival, Percent</u>			
Barsoy	83.8	91.9	94.6	95.9
Dayton	100.0	100.0	100.0	100.0
Hanover	93.8	96.9	--	--
Harrison	95.0	97.5	98.3	98.8
Jefferson	98.8	99.4	99.6	99.7
Knob	92.5	96.3	97.5	98.1
Lakeland	86.3	93.1	95.4	--
McNair 601	95.0	--	--	--
Rapidan	98.8	99.4	--	--
Schuyler	96.3	98.1	98.8	99.1
Average	94.0	97.0	97.7	98.6
	<u>Test Weight, Pounds Per Bushel</u>			
Barsoy	49.3	49.9	49.8	48.5
Dayton	46.2	46.0	45.0	43.2
Hanover	43.0	43.5	--	--
Harrison	48.7	49.1	49.0	48.4
Jefferson	44.8	45.4	44.5	44.0
Knob	47.5	46.7	46.2	44.6
Lakeland	48.0	47.9	47.5	--
McNair 601	46.6	--	--	--
Rapidan	44.3	44.7	--	--
Schuyler	45.6	45.5	44.9	43.3
Average	46.4	46.5	46.7	45.3

Table 3. Summary of Barley Varieties Evaluated at Murray, Kentucky.

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Yield, Bushels Per Acre</u>			
Barsoy	58.0	47.8	48.6	54.0
Dayton	59.2	52.1	52.1	52.2
Hanover	46.3	39.2	--	--
Harrison	58.0	42.1	49.0	53.0
Jefferson	50.2	42.3	45.8	47.4
Knob	60.4	49.4	49.3	53.4
Lakeland	59.4	45.8	48.5	--
McNair 601	72.0	--	--	--
Rapidan	48.4	46.5	--	--
Schuyler	40.6	37.0	42.7	47.4
Average	55.3	44.7	48.0	51.2
	<u>Lodged at Maturity, Percent</u>			
Barsoy	0.0	0.0	0.0	0.0
Dayton	0.0	0.0	1.3	9.7
Hanover	0.0	0.0	--	--
Harrison	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0
Knob	0.0	0.0	0.0	1.3
Lakeland	0.0	0.0	0.0	--
McNair 601	0.0	--	--	--
Rapidan	0.0	0.0	--	--
Schuyler	0.0	0.0	0.0	0.0
Average	0.0	0.0	0.2	1.8
	<u>Height, Inches</u>			
Barsoy	28.5	25.9	28.3	28.8
Dayton	33.8	30.6	34.4	34.1
Hanover	32.5	29.8	--	--
Harrison	32.5	30.4	34.4	35.0
Jefferson	36.3	34.8	37.3	37.2
Knob	33.3	30.0	31.9	31.9
Lakeland	31.8	29.8	31.9	--
McNair 601	33.8	--	--	--
Rapidan	30.3	26.9	--	--
Schuyler	26.5	23.9	27.3	28.8
Average	31.9	29.1	32.2	32.6

Table 3. (continued)

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Date Headed, No. Days After March 31</u>			
Barsoy	17.5	17.9	17.9	15.1
Dayton	22.3	23.3	23.0	21.2
Hanover	24.8	26.4	--	--
Harrison	27.8	30.9	29.6	27.4
Jefferson	26.3	28.6	27.9	26.4
Knob	23.3	25.6	25.0	22.9
Lakeland	30.8	32.1	30.9	--
McNair 601	19.8	--	--	--
Rapidan	26.3	27.1	--	--
Schuyler	31.5	34.1	33.3	32.0
Average	25.0	27.3	26.8	24.2
	<u>Survival, Percent</u>			
Barsoy	71.3	85.6	90.4	92.8
Dayton	86.3	93.1	95.4	96.6
Hanover	81.3	90.6	--	--
Harrison	88.8	94.4	96.3	97.2
Jefferson	83.8	91.9	94.6	95.9
Knob	85.0	92.5	95.0	96.3
Lakeland	83.8	91.9	94.6	--
McNair 601	91.3	--	--	--
Rapidan	82.5	91.3	--	--
Schuyler	81.3	90.6	93.8	95.3
Average	83.5	91.3	94.3	95.7
	<u>Test Weight, Pounds Per Bushel</u>			
Barsoy	48.3	48.4	48.7	48.5
Dayton	45.7	46.1	45.8	46.1
Hanover	41.1	42.4	--	--
Harrison	46.9	47.5	47.9	47.7
Jefferson	44.1	44.7	45.0	44.8
Knob	44.8	45.0	44.9	44.6
Lakeland	45.8	46.2	46.8	--
McNair 601	43.5	--	--	--
Rapidan	42.8	43.3	--	--
Schuyler	44.5	44.9	45.2	44.8
Average	44.8	45.4	46.3	46.1

Table 4. Summary of Barley Varieties Evaluated at Bowling Green, Kentucky.

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Yield, Bushels Per Acre</u>			
Barsoy	41.7	57.8	61.3	47.7
Dayton	48.2	60.1	59.9	49.8
Hanover	40.8	55.7	--	--
Harrison	38.4	47.6	49.3	43.6
Jefferson	47.4	54.6	54.7	45.4
Knob	30.7	47.2	51.8	43.6
Lakeland	33.8	55.2	57.4	--
McNair 601	32.0	--	--	--
Rapidan	39.4	51.0	--	--
Schuyler	32.6	54.0	51.4	42.7
Average	38.5	53.7	55.1	45.5
	<u>Lodged at Maturity, Percent</u>			
Barsoy	0.0	0.0	0.0	0.0
Dayton	0.0	0.0	30.0	28.8
Hanover	0.0	4.4	--	--
Harrison	0.0	0.0	7.9	5.9
Jefferson	0.0	0.0	0.0	0.0
Knob	0.0	0.0	13.3	10.0
Lakeland	0.0	0.0	0.0	--
McNair 601	0.0	--	--	--
Rapidan	0.0	12.5	--	--
Schuyler	0.0	0.0	16.7	12.5
Average	0.0	1.9	9.7	9.5
	<u>Height, Inches</u>			
Barsoy	27.8	29.8	32.1	28.9
Dayton	31.3	35.4	36.8	33.9
Hanover	29.0	32.9	--	--
Harrison	28.5	33.4	35.5	33.4
Jefferson	31.5	35.3	37.9	34.8
Knob	27.5	31.4	33.8	30.8
Lakeland	26.3	32.0	34.6	--
McNair 601	26.5	--	--	--
Rapidan	25.0	30.3	--	--
Schuyler	21.3	27.6	30.0	28.0
Average	27.5	32.0	34.4	31.6

Table 4. (continued)

Variety	1-Year Average 1970	2-Year Average 1969-70	3-Year Average 1968-70	4-Year Average 1967-70
---------	---------------------------	------------------------------	------------------------------	------------------------------

Survival, Percent

Barsoy	100.0	100.0	100.0	100.0
Dayton	100.0	100.0	100.0	100.0
Hanover	100.0	100.0	--	--
Harrison	100.0	100.0	100.0	100.0
Jefferson	100.0	100.0	100.0	100.0
Knob	100.0	100.0	100.0	100.0
Lakeland	100.0	100.0	100.0	--
McNair 601	100.0	--	--	--
Rapidan	100.0	100.0	--	--
Schuyler	100.0	100.0	100.0	100.0
Average	100.0	100.0	100.0	100.0

Test Weight, Pounds Per Bushel

Barsoy	49.4	49.8	49.9	49.9
Dayton	47.8	47.5	46.5	44.2
Hanover	44.6	44.8	--	--
Harrison	49.3	49.7	49.5	47.5
Jefferson	46.1	46.5	46.2	45.6
Knob	48.7	48.3	47.6	46.3
Lakeland	49.1	49.3	49.4	--
McNair 601	45.6	--	--	--
Rapidan	44.4	44.3	--	--
Schuyler	48.6	47.7	47.0	46.0
Average	47.4	47.5	48.0	46.6

Table 5. All Location Summary of Barley Varieties.

Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Yield, Bushels Per Acre</u>			
Barsoy	71.5	71.5	68.1	60.5
Dayton	63.0	61.2	58.4	51.0
Hanover	59.5	63.5	--	--
Harrison	63.4	63.2	61.4	59.6
Jefferson	61.9	64.7	59.7	53.6
Knob	59.5	61.7	59.8	53.0
Lakeland	61.7	67.7	65.9	--
McNair 601	59.0	--	--	--
Rapidan	65.4	68.1	--	--
Schuyler	58.0	62.5	61.8	57.7
Average	62.3	64.9	62.2	55.9
	<u>Lodged at Maturity, Percent</u>			
Barsoy	13.1	6.9	7.3	7.1
Dayton	17.5	29.1	40.6	41.7
Hanover	17.8	18.6	--	--
Harrison	15.0	11.6	15.9	12.9
Jefferson	14.4	9.7	13.7	10.8
Knob	20.6	16.6	20.1	18.8
Lakeland	8.1	4.5	8.0	--
McNair 601	18.1	--	--	--
Rapidan	15.0	21.1	--	--
Schuyler	16.3	19.2	24.2	19.4
Average	22.8	15.3	18.5	18.5
	<u>Height, Inches</u>			
Barsoy	30.5	30.8	32.2	30.8
Dayton	33.8	35.4	37.3	35.6
Hanover	33.5	34.7	--	--
Harrison	33.7	35.7	37.6	36.6
Jefferson	36.2	38.0	39.8	38.2
Knob	31.1	32.3	34.1	32.7
Lakeland	32.5	34.3	36.2	--
McNair 601	32.3	--	--	--
Rapidan	31.3	32.3	--	--
Schuyler	28.8	30.5	32.3	31.3
Average	32.4	33.8	35.6	34.2

Table 5. (continued)

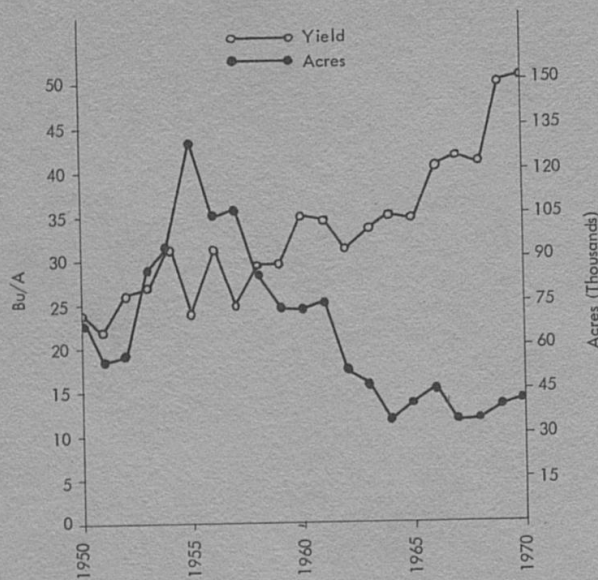
Variety	1-Year	2-Year	3-Year	4-Year
	Average 1970	Average 1969-70	Average 1968-70	Average 1967-70
	<u>Date Headed, No. Days After March 31</u>			
Barsoy	21.4	23.3	23.2	20.6
Dayton	25.5	27.7	27.6	25.8
Hanover	28.0	30.0	--	--
Harrison	30.8	33.2	32.3	30.8
Jefferson	29.3	32.4	31.8	30.6
Knob	26.5	29.0	28.6	26.3
Lakeland	34.5	36.2	35.2	--
McNair 601	24.8	--	--	--
Rapidan	28.9	30.4	--	--
Schuyler	35.9	37.8	37.1	36.4
Average	28.6	31.1	30.8	28.4
	<u>Survival, Percent</u>			
Barsoy	88.8	94.4	96.3	97.0
Dayton	96.6	97.2	97.5	98.0
Hanover	93.8	94.4	--	--
Harrison	95.9	98.0	98.7	98.9
Jefferson	95.6	97.8	98.5	98.8
Knob	94.4	97.2	97.7	98.2
Lakeland	92.5	96.3	97.5	--
McNair 601	96.6	--	--	--
Rapidan	95.3	96.9	--	--
Schuyler	94.4	97.2	98.1	98.5
Average	94.4	96.6	97.8	98.2
	<u>Test Weight, Pounds Per Bushel</u>			
Barsoy	49.3	49.3	49.4	49.0
Dayton	45.5	44.9	44.6	43.8
Hanover	42.9	43.6	--	--
Harrison	47.7	48.1	48.3	47.8
Jefferson	44.5	45.3	45.2	44.8
Knob	46.6	46.1	45.9	45.2
Lakeland	47.0	47.1	47.3	--
McNair 601	44.9	--	--	--
Rapidan	44.0	44.0	--	--
Schuyler	44.9	45.0	45.0	44.4
Average	45.7	45.9	46.5	45.8

BARLEY PRODUCTION IN KENTUCKY

Importance

The 1970 barley crop contributed more than \$2 million dollars to the agricultural income of Kentucky. Barley acreage increased from 1,000 acres in 1969 to 43,000 acres in 1970. The average yield per acre was a record 54 bushels in 1970, compared with 50 bushels in 1969. The acreage of barley has increased from 41,000 acres in 1969 to 43,000 acres in 1970. use of barley in double cropping and the release of improved, high-yielding varieties suitable for double cropping.

1950-70 Kentucky Barley Acreage and Yield



Seedbed Preparation

Seedbed preparation for barley may range from no preparation to plowing plus two or three diskings. The degree of soil preparation will depend upon the cropping system involved. If barley is to be sown conventionally following a corn or soybean crop, two diskings will usually be sufficient to prepare a good seedbed.

Fertilizer and Lime

Barley grows best when the soil pH is from 6.0 to 6.5. To accurately determine lime requirements, a soil test should be made. If lime is needed it should be applied before seeding. The following can be used as a guide for lime requirements:

<u>Soil pH</u>	<u>Lime Needed, Tons/A</u>
Below 5.3	3-4
6.1-6.7	2-3
Above 6.7	None

A soil test should be used also to determine the amounts of phosphorus and potassium to be applied. Phosphorus is particularly important in the fall during early growth when plant roots are established. It stimulates early growth and vigorous root systems that help plants survive the winter. Potassium helps plants develop stronger straw which aids in reducing lodging. The following can be used as a guide for phosphorus and potassium applications:

<u>Phosphorus Soil Test</u>	<u>Phosphorus (P_2O_5) Needed, Lb/A</u>
Low	80-120
Medium	40-80
High	None

<u>Potassium Soil Test</u>	<u>Potassium (K_2O) Needed, Lb/A</u>
Low	40-80
Medium	0-40
High	None

Barley grain yield will respond to nitrogen applications up to the point where lodging becomes a problem. Most of the

better barley varieties will stand up well under applications of 30 to 50 pounds of nitrogen per acre. A split application is more effective than a single application. One-half of the nitrogen should be applied at planting time and the remainder top dressed next spring about the first of March.

Method of Planting

There are three general methods of seeding barley—conventional drilling, broadcasting, and aerial seeding.

Drilling barley with a grain drill is the most common method. The use of a grain drill has several advantages. The seeds are placed at a uniform depth which can be regulated according to soil moisture conditions. Seed distribution is very good, with no skipped places in the field.

The broadcast method of seeding barley, however, is becoming more popular because of the reduced labor requirements and reduced equipment expense. The barley seed may be mixed with the fertilizer and this mixture broadcast in one trip over the field. One disadvantage of this seeding method is that stands may not be as uniform as with drilling. Skips may be left in turning, and there may be strips through the field left unseeded owing to improper overlapping. A light disking may be required to cover the seed.

Aerial seeding is being used more and will be discussed under the section on double cropping.

Planting Rate

Drilled barley should be planted at the rate of 1½-2 bushels per acre. The broadcast and aerial seeding rate should be increased to 2-2½ bushels per acre to compensate for some loss in stands owing to poor seedling survival if weather conditions are unfavorable. Planting rates should be increased up to 3 bushels per acre if seeding is delayed.

Planting Date

Planting date will effect the yield of barley more than it will the yield to wheat. To insure maximum yields, barley should be planted during the first two weeks in October. Yields are likely to be sharply reduced on late planted barley.

Disease, Insect and Weed Control

Wild garlic may be a problem in barley fields. This weed can be controlled by spraying with 2,4-D in March or early April. The rate of 2,4-D per acre should be one-half to one pint of 4 lb/gal of the amine or ester formulation. At this rate 2,4-D will also control dock and plantain.

Two diseases which may be a problem in barley fields are smuts and the rusts. If smuts have been a problem, planting certified seed is the best way to eliminate this disease. Rusts are most easily controlled by growing resistant varieties.

Armyworms and grasshoppers are the two insects most likely to be a problem. Both of these can be controlled with the use of Sevin applied at the rate of 2 pounds of the 50% wettable powder per acre.

Double Cropping

Double-cropping barley with soybean has become quite popular in Kentucky in recent years. Barsoy, a variety developed by the Kentucky Agricultural Experiment Station, was developed especially for double-cropping programs. Barsoy is a high-yielding, very early-maturing variety with short, stiff straw which resists lodging.

The maturity date of a barley variety is an important factor to consider when choosing a variety to use in double cropping. An early maturing variety is desirable since an early barley harvest will allow earlier soybean planting. It is important to plant soybeans as early as possible so as to take advantage of a longer growing season.

Aerial seeding of barley in standing soybeans has been successful. One advantage of aerial seeding is that it allows barley to be sown early enough for the plants to become established and make sufficient growth before the first hard freeze. The ideal time for aerial seeding of barley in soybeans is just before the big lower leaves of the soybean plants fall. The leaves will provide a protective mulch for the germinating barley seed. The seeding rate should be increased to $2\frac{1}{2}$ bushels per acre to allow for some stand reduction. The seed is not covered, and some stand loss can occur during dry weather. Aerial seeding also saves time which is quite important during the harvest-time rush. To get uniform seed distribution and avoid skipped strips through the field an experienced pilot should be used.

Barley seeded the conventional way with land preparation following the harvest of soybeans can also be successful in double cropping. The soybeans should be harvested early enough to permit seeding barley within the optimum planting period.