

Lewis Barley

Howard F. Bowman, Donald E. Baldrige
and E.A. Hockett¹

Lewis (CI-15856) barley is a two-rowed spring variety developed and released cooperatively by the Agricultural Research Service, USDA, and the Montana Agricultural Experiment Station.

Lewis is recommended as a feed barley for irrigated and dryland conditions. It has genetic potential for malting quality. Its sister selection, Clark, has been accepted for malting by the American Malting Barley Association. Lewis is at least equal to Klages and Clark in malt extract and enzymatic activity, according to small-scale malting tests. It has little, if any, seed dormancy at harvest.

Lewis is higher yielding than Clark, Hector and Klages at all yield levels and higher than Piroline except for the 20 bushel per acre level. Test weight of Lewis under irrigation, high moisture and dryland is equal to Piroline, but heavier than Clark, Hector and Klages. It heads at about the same time as Clark, Hector and Piroline and approximately three days before Klages. Lewis is consistently plumper than Klages under irrigation, and plumper than all four varieties on dryland.

Origin and Development

Lewis was developed from the cross of Hector/Klages by Dr. E. A. Hockett and K.M. Gilbertson. The initial cross was made in 1973, and the first lines selected in 1975. In 1983, five lines were bulked to form the variety Lewis. Lewis is a potential replacement for Klages under irrigation. It is in the process of being tested on a plant-scale basis for malting and brewing. Foundation seed was released to growers in 1985.

Agronomic Characteristics

Lewis is a two-rowed, midseason, feed-type spring barley with malting and brewing potential. The spike has rough awns, the kernels are mid-sized, white, with finely wrinkled, adhered hull. the rachilla hairs are long, and there are no barbs on the lateral veins. The glume awns

are equal in length to the glume. The spikes are midlong, midlax and nodding at maturity. At maturity, Lewis is very similar to the physical appearance of Clark and Hector. Lewis is equal in height to Clark but shorter than Hector (Table 1). It has more resistance to lodging than Klages and the other varieties in Table 1.

TABLE 1
Heading, height and lodging comparison
of Lewis and other barley varieties in Montana.

Variety	Approximate	Plant Height		Lodging Percentage
	Heading Date	Inches	Inches	
Lewis	6-28	I*	D*	11
Clark	6-28	32	26	15
Hector	6-27	34	27	26
Klages	7-01	32	26	14
Piroline	6-30	33	24	21

I*-Irrigated; D*-Dryland

Disease Resistance

Lewis at six locations in Montana showed more resistance to net blotch, spot blotch and root rot than Klages or Hector.

Recommended Areas

Lewis is recommended for irrigated and dryland areas of Montana.

Field Performance

Lewis is compared to Hector, Clark, Klages and Piroline for yield in Table 2. At the lower yield levels (20-60 bu/a), Lewis yields 13 to 24 percent higher than Klages, 5 percent higher than Hector, and is slightly higher than Clark and Piroline. At the high yield levels, Lewis yields 2 to 4 percent higher than Clark and Hector, 7 percent higher than Piroline and approximately 10 percent higher than Klages.

TABLE 2
Yield in bushels per acre for 84 selected barley variety
trials at various Montana locations—1979-83.

Variety	Yield Levels of Hector					
	20	40	60	80	100	120
Lewis	21	42	62	82	102	122
Clark	21	40	60	79	99	118
Klages	17	36	55	74	93	111
Piroline	22	40	59	77	95	114

Test Weight

Lewis, when grown under irrigation, high moisture and dryland conditions, has equaled the test weight of Piroline (Table 3). It has averaged a pound heavier than Clark and Hector and two pounds heavier than Klages under the same growing conditions.

TABLE 3
Test weight comparisons of Lewis and other barley varieties
under several moisture levels in Montana

Variety	Irrigated		High Moisture		Avg.
	1979-83		1979-83		
	Bozeman 5-yr. average	Huntley 3-yr. avg.	Sidney 4-yr. avg.	Kalispell 4-yr. avg.	
<i>Pounds Per Bushel</i>					
Lewis	51.9	50.5	50.2	51.9	51.1
Clark	51.2	50.1	48.1	51.1	50.1
Hector*	50.9	49.2	47.5	51.7	49.8
Klages	50.4	48.7	48.7	50.2	49.5
Piroline	52.5	50.8	49.0	51.9	51.0

Dryland 1979-83

Variety	Havre	Huntley	Moccasin	Sidney	Average
					<i>Pounds Per Bushel</i>
Lewis	51.8	51.2	50.5	49.6	50.7
Clark	50.6	49.7	50.2	47.5	49.5
Hector*	51.5	50.5	50.1	48.6	50.1
Klages	50.2	49.1	48.2	46.0	48.3
Piroline	51.7	50.4	52.3	49.1	50.8

*check variety

¹Agronomists, Montana Cooperative Extension Service, and Research Agronomist, Agricultural Research Service, USDA, respectively.

Lewis Barley

Howard F. Bowman, Donald E. Baldrige
and E.A. Hockett¹

Lewis (CI-15856) barley is a two-rowed spring variety developed and released cooperatively by the Agricultural Research Service, USDA, and the Montana Agricultural Experiment Station.

Lewis is recommended as a feed barley for irrigated and dryland conditions. It has genetic potential for malting quality. Its sister selection, Clark, has been accepted for malting by the American Malting Barley Association. Lewis is at least equal to Klages and Clark in malt extract and enzymatic activity, according to small-scale malting tests. It has little, if any, seed dormancy at harvest.

Lewis is higher yielding than Clark, Hector and Klages at all yield levels and higher than Piroline except for the 20 bushel per acre level. Test weight of Lewis under irrigation, high moisture and dryland is equal to Piroline, but heavier than Clark, Hector and Klages. It heads at about the same time as Clark, Hector and Piroline and approximately three days before Klages. Lewis is consistently plumper than Klages under irrigation, and plumper than all four varieties on dryland.

Origin and Development

Lewis was developed from the cross of Hector/Klages by Dr. E. A. Hockett and K.M. Gilbertson. The initial cross was made in 1973, and the first lines selected in 1975. In 1983, five lines were bulked to form the variety Lewis. Lewis is a potential replacement for Klages under irrigation. It is in the process of being tested on a plant-scale basis for malting and brewing. Foundation seed was released to growers in 1985.

Agronomic Characteristics

Lewis is a two-rowed, midseason, feed-type spring barley with malting and brewing potential. The spike has rough awns, the kernels are mid-sized, white, with finely wrinkled, adhered hull. The rachilla hairs are long, and there are no barbs on the lateral veins. The glume awns

are equal in length to the glume. The spikes are midlong, midlax and nodding at maturity. At maturity, Lewis is very similar to the physical appearance of Clark and Hector. Lewis is equal in height to Clark but shorter than Hector (Table 1). It has more resistance to lodging than Klages and the other varieties in Table 1.

TABLE 1
Heading, height and lodging comparison
of Lewis and other barley varieties in Montana.

Variety	Approximate	Plant Height		Lodging Percentage
	Heading Date	Inches		
Lewis	6-28	I*	D*	11
Clark	6-28	32	26	15
Hector	6-27	34	27	26
Klages	7-01	32	26	14
Piroline	6-30	33	24	21

I*-Irrigated; D*-Dryland

Disease Resistance

Lewis at six locations in Montana showed more resistance to net blotch, spot blotch and root rot than Klages or Hector.

Recommended Areas

Lewis is recommended for irrigated and dryland areas of Montana.

Field Performance

Lewis is compared to Hector, Clark, Klages and Piroline for yield in Table 2. At the lower yield levels (20-60 bu/a), Lewis yields 13 to 24 percent higher than Klages, 5 percent higher than Hector, and is slightly higher than Clark and Piroline. At the high yield levels, Lewis yields 2 to 4 percent higher than Clark and Hector, 7 percent higher than Piroline and approximately 10 percent higher than Klages.

TABLE 2
Yield in bushels per acre for 84 selected barley variety
trials at various Montana locations—1979-83.

Variety	Yield Levels of Hector					
	20	40	60	80	100	120
Lewis	21	42	62	82	102	122
Clark	21	40	60	79	99	118
Klages	17	36	55	74	93	111
Piroline	22	40	59	77	95	114

Test Weight

Lewis, when grown under irrigation, high moisture and dryland conditions, has equaled the test weight of Piroline (Table 3). It has averaged a pound heavier than Clark and Hector and two pounds heavier than Klages under the same growing conditions.

TABLE 3
Test weight comparisons of Lewis and other barley varieties
under several moisture levels in Montana

Variety	Irrigated		High Moisture		Avg.
	1979-83		1979-83		
	Bozeman 5-yr. average	Huntley 3-yr. avg.	Sidney 4-yr. avg.	Kalispell 4-yr. avg.	
<i>Pounds Per Bushel</i>					
Lewis	51.9	50.5	50.2	51.9	51.1
Clark	51.2	50.1	48.1	51.1	50.1
Hector*	50.9	49.2	47.5	51.7	49.8
Klages	50.4	48.7	48.7	50.2	49.5
Piroline	52.5	50.8	49.0	51.9	51.0

Dryland 1979-83

Variety	Havre	Huntley	Moccasin	Sidney	Average
	<i>Pounds Per Bushel</i>				
Lewis	51.8	51.2	50.5	49.6	50.7
Clark	50.6	49.7	50.2	47.5	49.5
Hector*	51.5	50.5	50.1	48.6	50.1
Klages	50.2	49.1	48.2	46.0	48.3
Piroline	51.7	50.4	52.3	49.1	50.8

*check variety

¹Agronomists, Montana Cooperative Extension Service, and Research Agronomist, Agricultural Research Service, USDA, respectively.