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BARLEY CULTIVARS FOR CALIFORNIA

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The following are descriptions of barley cultivars evaluated in California from 1981 to 2011. The descriptions are based on published cultivar releases and data from the UC Regional Cereal Evaluation Tests conducted each year throughout California. Yield performance data for most of the cultivars can be found in University of California, Davis, Agronomy Progress Reports (No.'s 118, 128, 144, 155, 168, 180, 201, 209, 217, 223, 229, 233, 236, 244, 249, 254, 259, 262, 265, 272, 276, 279, 286, 288, 290, 293, 295, 296, 301, 303, 304 for 1980-2011, respectively). Reports #262 through 304 also can be seen at <http://smallgrains.ucdavis.edu>.

CURRENT CULTIVARS

WINTER BARLEY

EIGHT-TWELVE

Eight-Twelve is a six-rowed winter feed barley. It was released by the USDA-ARS and the Idaho AES in 1991. It was selected from the cross Steveland/Luther//Wintermalt. Its experimental designation was 79Ab812. It has rough awns, midseason maturity, good winter hardiness, and is medium height with intermediate lodging resistance. Spikes are short and dense. Kernels have white aleurone and short rachilla hairs. It is susceptible to stripe rust, scald, and snow mold, and moderately susceptible to BYD. It was evaluated as Entry 697 in the UC Regional Cereal Testing program from 1982-2006 for fall planting in the intermountain region of northern California. *Crop Science* 32(3):828 (1992)

MAJA

Maja is a six-rowed winter feed/malt barley. It was released by the Oregon AES in 2006 and licensed to AgriSource (Burley, Idaho). It is a doubled haploid developed from the F₁ of the cross of Strider/88Ab536. Its experimental designation was STAB 113. Maja, like the 88Ab536 parent, is a facultative cultivar: it has a “winter” allele at the Vrn-H1 locus on chromosome 5H but lacks the repressor encoded by the Vrn-H2 locus on 4H. This configuration of vernalization genes can lead to early maturity under some environmental conditions, and this feature could be an advantage in terms of flexibility in planting date, irrigation savings, and drought avoidance. It is a standard height selection (averages about 42 inches in plant height, with fair straw strength) with rough awns and a semi-compact spike. The grain has white aleurone. Maja has high test weight and showed promise as malting barley in repeated micro-malting tests, but it was ultimately not approved by the American Malting Barley Association (AMBA). It has a lower grain protein and enzyme level than is desired for production of lighter beers. At the time of evaluation it was resistant to stripe rust and susceptible to scald. It was evaluated as Entry 1129 in the UC Regional Cereal Testing program from 2001-2006 for fall planting in the intermountain region of northern California. *Oregon AES* (2006)

STRIDER

Strider is a six-rowed winter feed barley. It was released by the Oregon AES in 1997. It is a doubled-haploid line produced from the cross I1162-19/J-126//WA1245///Stephoe. Its experimental designation was ORW-6. It is medium height (averages about 41 inches, slightly taller than Kold) and medium early maturing with fair straw strength. It has rough awns and a semi-compact spike. At the time of evaluation it was resistant to stripe rust and moderately susceptible to scald, net blotch, and BYD. It was evaluated as Entry 964 in the UC Regional Cereal Testing program from 1997-2006 for fall planting in the intermountain region of northern California and in 2008 for fall planting in the Central Valley of California. *Oregon AES* (1997)

CURRENT CULTIVARS

SPRING BARLEY

AC METCALFE

AC Metcalfe is a two-rowed spring malting barley. It was released by Agriculture and Agri-Food Canada in 1997. It was selected from the cross AC Oxbow/Manley. Its experimental designations were TR 232 and WM8612-1. It is widely adapted to western Canada and has excellent malting and brewing quality, particularly malt extract. It is tall (averages about 40 inches in plant height) with fair straw strength and is medium late maturing (about one day later than Harrington). At the time of release it was resistant to stripe rust, stem rust, loose smut, moderately resistant to the surface-borne smuts and the spot-form of net blotch (and had adult plant resistance to some net-form pathotypes), and susceptible to scald, leaf rust, speckled leaf blotch, common root rot, and BYD. It was evaluated as Entry 1217 in the UC Regional Cereal Testing program from 2007-present for spring planting in the intermountain region of northern California.

BARONESSE

Baronesse is a two-rowed spring feed barley. It was developed in Germany and first marketed in the United States by Western Plant Breeders in 1991. It was selected from the cross [(Mentor x Minerva) x mutant of Vada] x [(Carlsberg x Union) x (Opavsky x Salle) x Ricardo] x (Oriol x 6153 P40). It is mid-late season in maturity (similar to Klages and 3-5 days later than Steptoe). It is medium height (2 inches shorter than Steptoe) and has moderately stiff straw. When lodging is minimal, it has higher yield potential than other 2-rowed barleys and most 6-rowed barleys. Awns are rough. Glumes are covered with long hairs. Hulls are adhering and wrinkled. Aleurone is colorless. Rachilla hairs are long. Veins are well defined. There are no barbs on lateral veins. The crease is narrow in the lower half and flared toward the beard end. The kernel is plump and broad in relation to length. At the time of evaluation Baronesse was moderately resistant to BYD, moderately susceptible to scald and net blotch, and susceptible to stripe rust, leaf rust, and powdery mildew. It was evaluated as Entry 900 in the UC Regional Cereal Testing program from 1993-present for spring planting in the intermountain region of northern California.

CDC COPELAND

CDC Copeland is a two-rowed spring malting barley. It was developed by the Crop Development Center, University of Saskatoon and registered in Canada in 1999. It was selected from the cross WM861-5/TR118. Its experimental designation was TR150. It is medium late maturing (3 days earlier than Manley, 1 day later than Harrington). CDC Copeland averages 7 cm taller than Harrington and 5 cm taller than Manley, and has good resistance to lodging (much stronger straw than Harrington, slightly stronger straw than Manley). It has higher test weight and plumper kernels than Manley, and kernel plumpness similar to Harrington. It has much lower beta-glucan than Harrington and Manley. Heads are dense and semi-nodding. Awns are rough with weak anthocyanin in awn tips and equal to or longer than the spike. Glumes and awns of the median spikelet are equal to the length of the grain. The hull is adhering and the aleurone is colorless. Rachilla hairs are long. There is no pigment in the lemma nerves. Kernels are plump, symmetrical, and broad in relation to length. CDC Copeland has good resistance to wheat stem rust (better than Manley and Harrington), is moderately resistant to net blotch (similar to Manley), moderately susceptible to stripe rust, and susceptible to scald, Septoria leaf blotch (as are Manley and Harrington), and loose smut. It is more susceptible to common root rot than Manley. It was evaluated as Entry 1297 in the UC Regional Cereal Testing program from 2011-present for spring planting in the intermountain region of northern California.

CELEBRATION

Celebration is a six-rowed spring malting barley. It was developed by Busch Agricultural Resources, Inc. and released in 2008. It was derived from the cross 6B94-7378/C96-2292. It is a Midwestern cultivar, well adapted for Minnesota, North Dakota, Idaho and Montana. Celebration has medium-early maturity, medium-short height and excellent agronomic performance and malt quality. It has a mid-lax head type, rough awns, short rachilla hairs, and colorless aleurone. It has improved reaction to Fusarium head blight and consistently lower DON content than Legacy and Tradition. At the time of release it was moderately resistant to Septoria and net blotch. It was evaluated as Entry 1301 in the UC Regional Cereal Testing program from 2011-present for spring planting in the intermountain region of northern California.

COMMANDER

Commander is a six-rowed spring feed barley. It was released by World Wide Wheat. It was selected from a male-sterile facilitated recurrent selection population (MSFRS Short Straw Population). Its experimental designation was 7128. It is a semi-dwarf with stiff straw (fair lodging resistance) and medium late season maturity. At the time of evaluation it was moderately susceptible to BYD and susceptible to scald, net blotch, stripe rust, leaf rust, and powdery mildew. It was evaluated as Entry 1085 in the UC Regional Cereal Testing program from 2002-2005 and in 2011 for late fall planting in

the Central Valley and the south-central coastal regions of California.

CONRAD

Conrad is a two-rowed spring malting barley. It was released by Busch Agricultural Resources in 2005. It was selected from the cross B1215/B88-5336. Its experimental designation was 2B96-5057. It has consistently plump grain. It has medium late maturity (heads about a half day earlier and matures about a half day later than B1202) and medium-tall plant height (averages about 3 cm shorter than B1202 and about 5 cm shorter than Harrington). Straw strength is similar to B1202 (fair). It has malt protein levels similar to Merit and Harrington, high levels of enzymes like Merit, and higher levels of extract and better malt modification than B1202. At the time of release, its resistance to scald was similar to B1202 and slightly better than Harrington (moderately susceptible), and its resistance to net blotch (net form) was slightly better than B1202 and Harrington (moderately resistant). At the time of evaluation it was resistant to stripe rust. It was evaluated as Entry 1082 in the UC Regional Cereal Testing program from 2001-02 and from 2005-present for spring planting in the intermountain region of northern California.

ISHI

Ishi is a six-rowed spring feed barley. It was released by the California AES in 2005. It was selected from the cross UC 828/UC 960. Its experimental designations were UC 1047 and UCD PYT99 A-13. Ishi has the *sdw1* gene and is short statured, averaging 84.6 cm, and is similar to UC 937 and 3.6 cm taller than UC 933, averaged over 32 location-years in Central Valley and Central Coast environments. For lodging resistance (fair) it was superior to UC 937 but similar to UC 933 over 20 environments where lodging occurred. For days to heading it averaged 4 days earlier than UC 937 and 3 days later than UC 933, but all three cultivars were similar for time to maturity (medium late). It is heterogeneous for rough and smooth awns, having less than one-percent smooth awned plants. The spike is waxy and semi-erect. The kernels are covered and the aleurone is non-blue. Grains are long (>10mm) and wrinkled, with hairs on the ventral furrow. Rachilla hairs are long. At the time of release Ishi was resistant to scald and powdery mildew, moderately resistant to stripe rust, BYD and net blotch, and moderately susceptible to leaf rust. It subsequently became moderately susceptible to net blotch. It was evaluated as Entry 1047 in the UC Regional Cereal Testing program from 2000-present for late fall planting in the Central Valley and the south-central coastal region of California and for spring planting in the intermountain area of northern California. *Crop Science* 46:1396 (2006)

MELTAN

Meltan is a two-rowed spring feed barley. It was marketed by Adams Grain Company in California. Plants are late maturing and moderately short (averaging about 32 inches in plant height) with fair straw strength. At the time of evaluation it was resistant to leaf rust and powdery mildew, moderately resistant to stripe rust, and susceptible to scald, net blotch and BYD. It was evaluated as Entry 951 in the UC Regional Cereal Testing program in 1995 and from 2000-present for late fall planting in the Central Valley and the south-central coastal regions of California.

MERIT 57

Merit 57 is a two-rowed spring malting barley. It was released by Busch Agricultural Resources in 2009. It was selected from the backcross Merit//Merit/2B94-5744 made in 1996 in Fort Collins, Colorado. It has high levels of enzymes, α -amylase and diastatic power, similar to the cultivar Merit. Overall malting profile is equivalent to or superior to Merit, with complete and balanced modification and superior levels of malt extract. Merit 57 is rough awned and late maturing, with high yield potential. It has intermediate plant height and straw strength, and slightly better lodging resistance than AC Metcalfe. It has good resistance to shattering and fair to good tolerance of straw breakage and drought. Merit 57 has denser pubescence on the blade of the flag leaf than Merit. The anthocyanin coloration of the flag leaf auricles is weaker than Merit. The spike emergence is earlier than Merit. The tips of the lemma awns of Merit 57 have weaker anthocyanin coloration than Harrington. Merit 57 has a laxer spike than Merit. The spike is shorter than Merit and Harrington. The basal marking on the kernel of Merit 57 is horseshoe shaped while it is transverse creased in Harrington. Merit 57 has a longer kernel than Harrington. Merit 57 has better scald resistance than Merit. At the time of release Merit 57 was moderately susceptible to scald, net blotch, race MCC of stem rust, and spot blotch, and susceptible to BYD. It was evaluated as Entry 1299 in the UC Regional Cereal Testing program from 2011-present for spring planting in the intermountain region of northern California.

MILLENNIUM

Millennium is a six-rowed spring feed barley. It was released by the Utah AES in 2000. It was selected from the cross WA Sel 3564/Unitan//UT Short2*2. Its experimental designations were UT94B1058-4603 and UT 4603. Millennium is

recommended for production under irrigation. Millennium is a erect-growing semi-dwarf (averages about 38 inches in plant height) with good straw strength and early to midseason maturity (heads at the same time as Steptoe). Spikes are tapering, erect (lax to dense) with some overlap of lateral kernels at the tip of the head. Rachis edges are covered with hairs. Millennium has waxy leaves and spikes. Glumes are long with extremely long, rough glume awns. Glumes are completely covered with long hairs. Lemma awns are erect (non-flaring), long, and rough. The seed is covered, mid-long, semi-wrinkled, with long rachilla hairs and a depression at the base. Aleurone color is white. Most stems have a straight neck and most spikes are marked by a closed collar at the base. At the time of release it was resistant to loose smut and covered smut, moderately susceptible to powdery mildew, and susceptible to stripe rust and BYD. It was evaluated as Entry 1010 in the UC Regional Cereal Testing program from 1998-present for spring planting in the intermountain region of northern California. *Crop Science* 42:665-666 (2002)

PINNACLE

Pinnacle is a two-rowed spring malting barley. It was released by the North Dakota AES in 2006. It was derived from the cross ND18172/ND19130. It is a high yielding, lower protein cultivar that accumulates about 40% less DON than Robust. Pinnacle has excellent quality characteristics. Compared with Conlon, Pinnacle has lower protein and a higher percentage of plump kernels. Pinnacle has greater resistance to spot blotch than Conlon, and approaches that of Lacey and Drummond. Pinnacle has a white hull, long rachilla hairs, smooth awns, white aleurone, medium-late maturity, medium height, and strong straw strength. At the time of release it was moderately resistant to spot blotch, moderately susceptible to net blotch, and susceptible to stem rust and loose smut. It was evaluated as Entry 1300 in the UC Regional Cereal Testing program from 2011-present for spring planting in the intermountain region of northern California.

SOLAR

Solar is a six-rowed spring feed barley. It was released by the Arizona AES in 2006. It is a selection from the male sterile facilitated recurrent selection population, Composite Cross 39. Its experimental designation was Entry 2. It was released as a winter crop for low water use environments in the Southwestern United States and Arizona where only one or two irrigations (6-12 inches) are applied. It is early maturing (heads about 2 days later than Solum). It is tall (averages about 46 inches in plant height, about 2 inches taller than Solum) with erect early growth and good straw strength. The spikes are lax and erect with rough awns. The glumes are more than one-half the length of the lemma and have long hairs confined to a band. The glume awns are longer than the length of the glumes. Kernels are covered, white, and mid-long to long with semi-wrinkled hulls. At the time of evaluation it was susceptible to stripe rust and scald. It was evaluated as Entry 1211 in the UC Regional Cereal Testing program from 2007-2008 for late fall planting in the Central Valley and the south-central coastal regions of California. *Arizona AES* (2006)

STELLAR-ND

Stellar-ND is a six-rowed spring malting barley. It was released by the North Dakota AES in 2006. It was derived from the cross Foster//ND12200/6B88-3213. It has semi-smooth awns, covered kernels, long-rachilla hairs, and white aleurone. It is three cm shorter and heads similar to Drummond. It has stronger straw and yields about 8% more than Robust. At the time of release it was resistant to spot blotch and prevalent pathotypes of wheat stem rust except Pgt-QCC, moderately susceptible to net blotch, and susceptible to loose smut. It was evaluated as Entry 1302 in the UC Regional Cereal Testing program from 2011-present for spring planting in the intermountain region of northern California. *Crop Sci* 46(2):980.

STEPTOE

Steptoe is a six-rowed spring feed barley. It was released by Washington State University in 1973. It was selected from the cross WA 3564/Unitan (= selection from CC V/Unitan) made in 1959. The selection 6428-66 was made in 1966. This selection was in the F12 generation when approved for release in 1972. Its experimental designation was WA6428-66. Steptoe is tall when planted in high yielding conditions, is susceptible to lodging and has early to intermediate maturity. It is tolerant of cold and may be fall-seeded in areas where winter killing is not a serious problem. It produces erect spikes with rough awns. Kernels are large and plump, with white aleurone and long rachilla hairs. It is adapted to high and low rainfall areas of eastern Washington, as well as Idaho, eastern Oregon and Montana. It was the standard for California's Intermountain region and was the highest yielding barley in the Pacific Northwest for many years. At the time of evaluation it was moderately resistant to powdery mildew, moderately susceptible to scald and leaf rust, and susceptible to net blotch, BYD, and stripe rust. It was evaluated as Entry 204 in the UC Regional Cereal Testing program from 1980-present for spring planting in the intermountain region of northern California. *Crop Science* 13:770 (1973)

TAMALPAIS

Tamalpais is a six-rowed spring hulless feed/food barley. It was released by the California AES in 2007. It was selected from the cross Ataco/Achira//Higo x UC 960. Its experimental designation was UCD YP03-9/3. It is medium maturing, medium-short height (averages about 32 inches in plant height), with good straw strength. It has full, rough awns and has good resistance to shattering. Kernels are beige (non-blue, transparent aleurone which is classified as white). As a hulless (naked) feed/food barley, Tamalpais should appeal to growers of organic barley for human consumption uses in breakfast cereal and soups. Tamalpais is high in Beta-glucan (above 6%), a measure of soluble fiber, and may be useful in lowering human cholesterol levels. Other markets include the bird seed and pet food industries. At the time of release it was resistant to leaf rust and powdery mildew, moderately resistant to scald, net blotch, and BYD, and moderately susceptible to stripe rust. It was evaluated as Entry 1134 in the UC Regional Cereal Testing program from 2004-present for late fall planting in the Central Valley and the south-central coastal region of California.

UC 603

UC 603 is a six-rowed spring feed barley. It was released by the University of California AES in 1988. It is a pure line selection from the cross Mari/Luther//Traill/3/Briggs/Prato sib. Its experimental designation was UC80206. The cross was intended to develop an early maturing, lodging resistant barley with net blotch and scald resistance. UC 603 has medium short stature, good lodging resistance, and early maturity (about 1 day later than CM 72). The basal rachis internode is curved. The rachis edges are covered with hairs. The spike is parallel, mid-dense, and inclined at maturity. The lemma awn is long and rough. The glume awn is longer than the glume and is rough. The glume is longer than one-half the length of the lemma. The rachilla has long hairs. Kernels are mid-long to long with semi-wrinkled hulls and white aleurone. At the time of release, UC 603 was resistant to BYD (carries the Yd2 gene for resistance to BYD), and resistant to moderately resistant to net blotch, scald, powdery mildew, and leaf rust. It subsequently became susceptible to net blotch, moderately susceptible to stripe rust and leaf rust, and moderately resistant to BYD. It was evaluated as Entry 603 in the UC Regional Cereal Testing program from 1984-present for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 30:1154-1155 (1990)

UC 933

UC 933 is a six-rowed spring feed barley. It was released by the California AES in 2001. It was selected from the cross Sma1/Sunbar 401/3/Gus/Kombyne//Sma1. Sma1 has the parentage Steptoe/2*Diamant /3/Minn Dwarf 64.98-8/Briggs/4/Asse. The final hybridization was made by Robert Matchett from whom segregating material was received in 1987. Subsequent generations were handled in a pedigree selection program. A final head row was selected by Lynn Gallagher in 1992, bulked, and designated UCD 92-10,585 for preliminary yield trials. In 1994 it was designated UC 933 and placed into UC regional yield trials for statewide evaluation. UC 933 was released primarily for resistance to stripe rust. UC 933 has spring growth habit, medium early maturity (heads 3-4 days earlier than UC 937 and about 4 days later than UC 603), is medium height (about 1 inch shorter than UC 937 and one inch taller than UC 603), and has fair straw strength (similar to UC 937 but inferior to UC 603). Spikes are fully awned, erect, and waxy. Glumes are completely covered with long hairs. Glume awns are rough and equal in length to glumes. Lemma awns are long and rough. Kernels are beige (non-blue aleurone), long, and slightly wrinkled. At the time of release UC 933 was resistant to scald, net blotch, stripe rust, and leaf rust, and moderately resistant to BYD and powdery mildew. It subsequently became susceptible to leaf rust. It was evaluated as Entry 933 in the UC Regional Cereal Testing program from 1995-present for late fall planting in the Central Valley and the south-central coastal regions of California and for spring planting in the intermountain region of northern California. *Crop Science* 43:437 (2003)

UC 960

UC 960 is a six-rowed spring feed barley. It was released by the California AES in 1999. UC 960 was selected among the progeny from the hybrid Sma1/Sunbar 401/3/Gus/Kombyne//Sma1. Sma1 has the parentage Steptoe/2*Diamant/3/Minn Dwarf 64.98-8/Briggs/4/Asse. The final hybridization was made at Woodland, CA in 1983 by Robert Matchett. Subsequent generations were handled in a pedigree selection program. An F3- derived seed sample of NK 2867 (86Woodland 41017) was received in the F6 generation by the University of California from Robert Matchett in 1987. A single head row was selected and bulked by Y. P. Puri in the 1987-88 growing season. NK 2867 was selected for agronomic appearance and resistance to barley stripe rust in 1995 at Tulelake, CA by Lynn Gallagher, designated UC 960, and subsequently evaluated for grain yield in the northern intermountain areas of California from 1996 to 1998. UC 960 is intended primarily for spring planting in the southern Klamath Basin. UC 960 is short-statured with excellent straw strength (similar to Gustoe for height, presumably as a result of the *sdw* gene either from Diamant or Minn Dwarf 64.988). UC 960 is early maturing (about one week earlier than Gustoe and similar to Steptoe for time to

heading at Tulelake, CA). The spike is rough awned, mid-dense, waxy, and semi-erect. The kernels are beige (the aleurone non-blue) and covered. At the time of release UC 960 was resistant to stripe rust and moderately resistant to BYD, leaf rust, net blotch and scald. It was evaluated as Entry 960 in the UC Regional Cereal Testing program from 1996-present for spring planting in the intermountain region of northern California. *Crop Science* 42:1374 (2002)

UC 969

UC 969 is a six-rowed spring feed barley. It was released by the California AES in 2001. It was selected from the cross Sma1/Sunbar 401/3/UC 337. Sma1 has the parentage Steptoe/2*Diamant/3/Minn Dwarf 64.98- 8/Briggs/4/Asse. The final hybridization was made by Paul Puri in 1991. Subsequent generations were handled in a pedigree selection program. A final head row was selected for agronomic appearance in 1995 by Lynn Gallagher and designated UCD 95-2,407 for preliminary yield trials. UC 969 is intended as a replacement for UC 603 primarily in marginal environments where early heading is advantageous. UC 969 has spring growth habit and early maturity (about 3 days earlier than UC 603 and eight days earlier than UC 933). It is tall (averaging 35.4 inches, about 2 inches taller than UC 933 and UC 937), with good lodging resistance (better than UC 933 and UC 937, but less than UC 603). Spikes are fully awned and erect, with either waxy or non-waxy glumes. Glume hairs are short and confined to a band along the central rib but covered toward the base. Glume awns are smooth and less than equal in length to glumes. Lemma awns are long and smooth. Kernels are beige (non-blue aleurone), mid-long, and slightly wrinkled. Shatter resistance is good. At the time of release UC 969 was moderately resistant to BYD, leaf rust, powdery mildew, scald and net blotch, and moderately susceptible to stripe rust. Its early maturity allows it to escape serious damage from stripe rust. It was evaluated as Entry 969 in the UC Regional Cereal Testing program from 1997-present for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 43:438 (2003)

WB-CHAMPION

WB Champion is a two-rowed spring feed barley. It was released by Westbred LLC in 2007. It was selected from the cross Camas/Baronesse. Its experimental designation was YU501-385. It has midseason maturity, medium plant height (averages about 40 inches in plant height), and fair straw strength. The stem has a slight waxy coating, and anthocyanin can be present. It has a closed collar and the neck is straight. The leaves are slightly waxy in appearance and anthocyanin is absent in the leaf auricle. Anthocyanin can be present in the veins of the lemma. The head is erect, tapering shaped, slightly waxy and nodding at maturity. The glume length is 1/2 the length of the lemma and the glume is covered with short hairs. The glume awns are equal to the length of the glumes and the surface is rough. The lemma is awned, and the awns are rough. Lemma teeth are absent and lemma hairs are present, and the rachilla hair is long. The seed is long, wrinkled, and has a white (or colorless) aleurone. It is susceptible to stripe rust. It was evaluated as Entry 1218 in the UC Regional Cereal Testing program from 2007-2009 for spring planting in the intermountain region of northern California.

CULTIVAR ARCHIVES (Cultivars previously evaluated by UC Small Grains Program)

WINTER BARLEY

BOYER

Boyer is a six-rowed winter feed barley. It was released by the Washington State University Agricultural Research Center in 1975. It was developed from a single plant selection made in 1967 from the cross Luther//Rufflyn/White Winter. Its experimental designations were WA 1094-67 and WSU-1094-67. Boyer was bred to replace other winter barleys, Luther and Kamiak, and is moderately winter hardy. Winter survival is somewhat better than for Luther and about equal to Kamiak. Boyer is mid-season in maturity (about 5 days later than Kamiak and about one week earlier than Luther), has stiff straw and is medium tall (several inches shorter and more lodging resistant than Kamiak and Luther). The spike is erect and mid-dense with little overlapping of the lateral kernels. It has rough awns. Rachis edges and glumes are covered with numerous long hairs. The rachilla has numerous long hairs. Kernels are medium size with smooth hulls and white or colorless aleurone. It is adapted to areas in the Pacific Northwest favorable to winter barley survival. It is susceptible to stripe rust and moderately susceptible to scald and BYD. It was evaluated as Entry 574 in the UC Regional Cereal Testing program from 1982-2006 for fall planting in the intermountain region of northern California. *Crop Science* 17(4):672 (1977)

DEVORA

Devora is a two-rowed winter feed barley. It was released by Cebeco Seeds, the Netherlands. It was selected from the cross Mosar x E82011-8805 x Magie. It is medium-late maturing and mid-tall with good straw strength. At the time of evaluation it was resistant to net blotch, stripe rust, and leaf rust. It was evaluated as Entry 1181 in the UC Regional Cereal Testing program in 2006 for fall planting in the intermountain region of northern California and late fall planting in the Central Valley and the south-central coastal region of California.

GWEN

Gwen is a six-rowed winter feed barley. It was released by the Oregon AES in 1991. It was selected from the cross Ohio 67-23/Lakeland. Its experimental designation was ORFB 77796. It is small headed, early maturing with medium height, good lodging resistance, and excellent winter hardiness (similar to Boyer). It has good yield in areas with low to medium yield potential; it is not meant for high yield environments. At the time of evaluation it was tolerant to BYD, moderately susceptible to scald, and susceptible to stripe rust. It was evaluated as Entry 879 in the UC Regional Cereal Testing program from 1993-1995 for fall planting in the intermountain region of northern California.

HESK

Hesk is a six-rowed winter feed barley. It was released by the Oregon AES in 1980. It was selected from the cross Ione/Luther. It has medium-late season maturity, medium height, good lodging resistance, and fair winter hardiness. It performs well in high pH soils. Spikes are nearly lax and erect. Rachis edge hairs are long. Awns are rough and medium long. Glumes are covered with short hairs. The glume awn is nearly equal to glume length. Hulls are adhering and smooth. The kernel is medium size and medium long. Aleurone is colorless, occasionally light blue. Rachilla hairs are long. Kernel veins are prominent, with several barbs on lateral veins. The crease is narrow, V-shaped. At the time of evaluation it was susceptible to scald, BYD, covered smut, and stripe rust. It was evaluated as Entry 568 in the UC Regional Cereal Testing program from 1982-1985 and from 1987-2003 for fall planting in the intermountain region of northern California.

HOODY

Hoody is a six-rowed winter (hooded) forage barley. It was released by the Oregon AES in 1995. It was selected from a three-way cross, [Dicktoo/Cascade//Hiproly (winter hardy/winter-adapted//spring-high lysine)] by [Missouri early Beardless/CI 10432 (Hooded-foliar disease resistance/hardy)]. The cross was made from selections from bulk populations provided by Dr. Charles Rhodes, retired Oregon State University plant breeder. That cross was then crossed to a selection from a population of [SC714662/Nebar (BYDV + scald resistance/winter hardy)]. Its experimental designation was Fbw1001hdd. It is moderately winter hardy and has good BYD tolerance. It is tall with medium maturity and fair straw strength. The spike is mid-dense. The rachis is short and straight. The collar is closed to V-shaped. The glume is normal with a hooded awn. The rachis edge has short hairs. The kernel is covered. Lemma nerves appear smooth. Rachilla hairs are short and abortive. The hull is white. The aleurone is white. It is moderately resistant to scald, moderately susceptible to net blotch, and susceptible to stripe rust and leaf rust. At the time of release hay yields were superior to those of eastern United States winter hay barleys. It was evaluated as Entry 1130 in the UC Regional Cereal Testing program in 2004 for fall planting in the intermountain region of northern California and in 2008 for fall planting in the Central Valley of California.

HUNDRED

Hundred is a six-rowed winter feed barley. It was released by the Washington Agricultural Research Center and Idaho and Oregon AESs in 1989. It was selected from the cross Luther/Hudson//Alpine/Svalof//White Winter/Triple Bearded Mariout-305. Its experimental designations were WA 066739 and WA1574-77. It is a semi-dwarf with medium height and medium late maturity. It is slightly shorter than Boyer, similar in maturity and lodging resistance, with very good winter-hardiness. It is adapted to dryland or irrigated conditions in eastern Washington and adjacent areas of Idaho and Oregon. It has club-shaped erect spikes with long rough awns. The relatively small, globose kernels have semi-smooth, tightly adhering hulls with white aleurone, short rachilla hairs, and prominent veins. The crease is narrow at the base and flaring toward the awn. At the time of evaluation it was more resistant to scald, *Cephalosporium* stripe and powdery mildew than Kamiak, Boyer and Showin, moderately resistant to BYD, and susceptible to stripe rust. It was evaluated as Entry 877 in the UC Regional Cereal Testing program in 1991 and from 1993-1996 for fall planting in the intermountain region of northern California. *Crop Science* 31(1): 227 (1991)

KAMIAK

Kamiak is a six-rowed winter feed barley. It was released by the Washington, Idaho and Oregon AESs in 1971. It was

selected from the cross Böre/Hudson. Its experimental designation was WA 2084-63. It was bred to replace Hudson in the winter barley areas of eastern Washington. It is more lodging resistant, 6 cm shorter and similar in winterhardiness compared to Hudson. It is rough-awned, mid-tall and early maturing. The spike is semi-dense and kernels are medium size and plump. The aleurone is light blue and rachillas are short haired. At the time of evaluation it was moderately resistant to scald and susceptible to stripe rust. It was evaluated as Entry 129 in the UC Regional Cereal Testing program in 1982, 1987, and from 1989-1991 for fall planting in the intermountain region of northern California. *Crop Science 13(5):579 (1973)*

KOLD

Kold is a six-rowed winter feed barley. It was released by the Oregon and Idaho AESs in 1993. It was selected from the cross B-1285/Astrix. Its experimental designation was ORWM8407. It has midseason maturity and mid-short height. It has moderate resistance to lodging and fair winterhardiness. The spikes are lax with rough awns. Aleurone is white. At the time of release it was resistant to stripe rust, moderately resistant to scald and net blotch, and moderately susceptible to BYD. It was evaluated as Entry 908 in the UC Regional Cereal Testing program from 1994-2006 for fall planting in the intermountain region of northern California. *Crop Science 35(5): 1503 (1995)*

MAL

Mal is a six-rowed winter feed barley. It was released by the Oregon AES in 1980. It has mid-late season maturity, medium height, moderate resistance to lodging, and good winter hardiness. At the time of evaluation it was moderately resistant to scald and susceptible to stripe rust and BYD. It was evaluated as Entry 569 in the UC Regional Cereal Testing program from 1982-1985, in 1987, and from 1989-1996 for fall planting in the intermountain region of northern California.

ROBUR

Robur is a six-rowed winter feed barley. It was released by the Oregon AES. It has midseason maturity and fair straw strength. It was evaluated as Entry 650 in the UC Regional Cereal Testing program from 1983-1987 for fall planting in the intermountain region of northern California.

SCHUYLER

Schuyler is a six-rowed winter feed barley. It was released by the New York AES in 1968. It was selected from the cross Hudson/Alpine. Its experimental designation was NY 5619B-3B-1. It has a compact spike, rough awns, medium late maturity, medium short height, fair lodging resistance, and good winterhardiness. It has higher yields than Hudson but lower test weight. Kernels are medium large and plump with white aleurone. At the time of release it was moderately resistant to scald, stripe rust and powdery mildew, and susceptible to BYD. It subsequently became susceptible to stripe rust. It was evaluated as Entry 131 in the UC Regional Cereal Testing program from 1985-1995 for fall planting in the intermountain region of northern California. *Crop Science 12:124 (1972)*

SCIO

Scio is a six-rowed winter feed barley. It was released by the Oregon AES in 1981. Its experimental designation was WA006747. It has midseason maturity, medium-short height, good lodging resistance, and fair winterhardiness. At the time of evaluation it was moderately susceptible to scald and BYD, and susceptible to stripe rust. It was evaluated as Entry 567 in the UC Regional Cereal Testing program from 1982-1985 and from 1987-2003 for fall planting in the intermountain region of northern California.

SHOWIN

Showin is a six-rowed winter feed barley. It was released by the Washington State University and Idaho AES in 1985. It was selected from the cross 68-1448/2116-67. Its experimental designation was WA 2905-75. It has mid-late season maturity and good winterhardiness. It is a semi-dwarf with mid-short straw and resistance to lodging. It has a prostrate growth habit until jointing. The spike is lax and mid-long with some nodding. The awns are rough and long. Seed is relatively small, long, and thin with semi-smooth, tightly adhering hulls, white aleurone, short rachilla hairs, and semi-prominent veins. The crease is narrow at the base and flaring toward the awn. At the time of evaluation it was moderately resistant to *Cephalosporium* stripe, moderately susceptible to scald, and susceptible to stripe rust and BYD. It was evaluated as Entry 878 in the UC Regional Cereal Testing program from 1986-1987, from 1989-1991, and from 1993-1998 for fall planting in the intermountain region of northern California. *Crop Science 26:1079 (1986)*

SUNSTAR DOUBLE

Sunstar Double is a six-rowed facultative (winter/spring) feed barley. It was released by Sunderman Breeding Co. in 1995. It was selected from the cross Eight Twelve/Steptoe. Its experimental designation was SDM 208B. It has intermediate height and good straw strength. At the time of evaluation it was moderately resistant to BYD and susceptible to stripe rust. It was evaluated as Entry 950 in the UC Regional Cereal Testing program from 1995-1998 for fall planting and spring planting in the intermountain region of northern California.

SUNSTAR PRIDE

Sunstar Pride is a six-rowed winter feed barley. It was released by Sunderman Breeding Co. in 1997. It was selected from the cross Eight Twelve/Steptoe. Its experimental designation was SDM 204 B-1. It has intermediate height and good straw strength. At the time of evaluation it was moderately resistant to BYD and susceptible to stripe rust. It was evaluated as Entry 952 in the UC Regional Cereal Testing program from 1996-1998 for fall planting in the intermountain region of northern California.

WESTBRED SPRINTER

Westbred Sprinter is a six-rowed facultative (winter/spring) feed barley. It was released by Western Plant Breeders in 1986. It was selected from a winter barley composite population developed by Neil Jensen at Cornell University. It can be planted in the winter or spring planting seasons. It has late season maturity (7 days later than Westbred 501 and 3-5 days later than Schuyler), semi-dwarf height with stiff straw, and excellent lodging resistance. It is awned and has white aleurone. It is moderately resistant to scald, net blotch, stripe rust, powdery mildew, and bacterial leaf blight, and susceptible to leaf rust, stem rust and BYD. It was evaluated as Entry 748 in the UC Regional Cereal Testing program from 1986-1988, in 1991, and from 1993-2006 for fall planting and spring planting in the intermountain region of northern California.

CULTIVAR ARCHIVES (Cultivars previously evaluated by UC Small Grains Program)

SPRING BARLEY

ADVANCE

Advance is a six-row spring malting and feed barley. It was released by the Washington Agriculture Research Center and the Idaho and Oregon AESs in 1979. It is a reselection made in 1973 at Pullman, Washington from WA6591-69 which was selected from the cross Foma/Triple Bearded Mariout/White Winter (WA6194- 63)/3/Blazer. Its experimental designation was WA 6591-69. Advance was accepted for malting and brewing by the MBIA in 1982. Advance has medium short (about 2 inches shorter than Steptoe) stiff straw and early maturity (about 5 days earlier than Steptoe). The spike is erect, mid-dense, and mid-long with little or no overlapping of lateral rows. Awns are rough and long, the rachis edge is hairy, and the glumes are medium length and covered with hairs. The glume awn is twice the length of the glume. The rachilla hairs are short. Kernels are medium-sized with a smooth to slightly wrinkled hull, and white or colorless aleurone. At the time of evaluation Advance was moderately susceptible to powdery mildew and BYD. It was evaluated as Entry 583 in the UC Regional Cereal Testing program from 1981-1993 for spring planting in the intermountain region of northern California. *Crop Science 23:1218 (1983)*

ALEXIS

Alexis is a two-row spring malting and feed barley. It was released by Western Plant Breeders. It was selected from the cross BI1622a/Triumph. It is midseason in maturity and is mid-tall with fair straw strength. At the time of evaluation it was resistant to stripe rust. It was evaluated as Entry 966 in the UC Regional Cereal Testing program in 1997 for spring planting in the intermountain region of northern California.

ANDRE

Andre is a two-row spring malting and feed barley. It was released by the Washington State University in 1983. It was selected from the cross Klages/Zephyr. It is adapted to higher rainfall areas of eastern Washington, eastern Oregon and northern Idaho. It has midseason maturity (3-4 days earlier than Klages). It is mid-tall with moderately stiff straw. Spikes are lax, mid-long, and nodding. Awns are long and rough. Glumes have medium hairs. The glume awn is slightly longer than the glume. Rachilla hairs are short. Seeds are plump with white aleurone. The hull is tightly adhering and finely

wrinkled. Veins are prominent. The crease is narrow and shallow at the base and flaring toward the beard end with a well defined fold in the distal half. At the time of release, it was susceptible to BYD and moderately resistant to powdery mildew. It was evaluated as Entry 655 in the UC Regional Cereal Testing program from 1983-1984 for spring planting in the intermountain region of northern California. *Crop Science* 25:1123 (1985)

APEX

Apex is a two-row spring malting and feed barley. It was developed by Wilbur-Ellis Co. It was selected from the cross Aramir*((Cebaco 6721*(Julia/3/Volla*L100)). It is late maturing and is mid-tall with fair straw strength. At the time of evaluation it was resistant to leaf rust, net blotch, and powdery mildew. It was evaluated as Entry 721 in the UC Regional Cereal Testing program in 1985 and in 1987 for late fall planting in the Central Valley and south-central coastal regions of California and for spring planting in the intermountain region of northern California.

AQUILA

Aquila is a six-row spring feed barley. It was released by the Utah AES in 2003. It was selected from the cross UT-S.D. B1-1009/M72-395/3/Utah Short #2//ID633019/Woodvale/4/Steptoe/M27//Westbred Gustoe. Its experimental designation was UT97B1480-1632. It is early heading and has very good lodging resistance. Plant height is mid-tall, similar to Steptoe. It has a lax spike with limited overlapping of upper lateral spikelets. The peduncle is slightly curved. The rachis has short hairs on its edges. At the bottom of the spike, the collar is of closed type or V-shaped. The basal rachis internode has a short-straight to curved shape. The length of the rachis internodes is relatively constant from top to bottom of the spike. Glumes are hairy on dorsal surfaces and edges. Glume awns are longer than the glumes. No hairs or only a few are visible on the ventral surface of glumes. The awns are long, and of the fully rough type. The seed is covered, mid-long with a depressed crease at the lemma base. Lemma teeth are few and confined to nerves, the rachilla is of the short-haired type, hulls are slightly wrinkled, and the aleurone color is white. At the time of release it was resistant to loose smut and covered smut, and susceptible to stripe rust. It was evaluated as Entry 1152 in the UC Regional Cereal Testing program from 2004-2007 for spring planting in the intermountain region of northern California. *Crop Science* 45: 1160 (2005)

ARIVAT

Arivat is a six-rowed spring feed barley. It was released by the Arizona AES in 1940. It was recommended and approved for certification in California in the late 1940's. It was selected from the cross Atlas/Vaughn made in 1927 in California. It was adapted to the southwestern United States. Arivat has erect early growth, early maturity, short stature, but relatively weak straw. The spike is short to mid-long, lax, erect to inclined. Lateral kernels overlap at the tip. The rachis edges are long-haired. Awns are semi-smooth and long. The glume is covered with long hairs or hairs confined to wide bands. The glume awn is one-and-one half to two times the length of the glume. Rachilla hairs are long. Kernels are large with slightly wrinkled hulls and white or colorless aleurone. At the time of evaluation it was moderately susceptible to leaf rust and net blotch, and susceptible to stripe rust, scald, and BYD. It was evaluated as Entry 1 in the UC Regional Cereal Testing program from 1980-1981 and from 1991-2001 for late fall planting in rainfed barley areas of the Central Valley and south-central coastal regions of California. *Agronomy Journal* 52:661 (1960)

ATLAS 68

Atlas 68 is a six-rowed spring feed and malting barley. It was released by the California AES in 1969. It was selected from the cross Atlas *3/CIho 3920-1//Atlas 46/3/4* Atlas/CIho 1179//2* Atlas 57. It has erect early growth and early to midseason maturity. The straw is mid-tall and moderately stiff with medium-dense, erect spikes with semi-smooth awns. The kernels are large, with white aleurone and a short-haired rachilla. At the time of evaluation it was resistant (tolerant) to BYD, powdery mildew and scald. It was evaluated as Entry 6 in the UC Regional Cereal Testing program from 1980-1981 for late fall planting in the Central Valley and south- central coastal regions of California. *Crop Science* 9(4):521 (1969)

AZURE

Azure is a six-rowed spring malting barley. It was released by the North Dakota AES in cooperation with the USDA-ARS in 1982. It was selected from the cross Bonanza//Nordic/NDB130. Its experimental designation was ND 1894. It was adapted to barley growing areas of North Dakota, Minnesota and South Dakota. It is medium early maturing and mid-tall with moderately strong straw. Spikes are medium lax, mid-long, and semi- nodding. Awns are smooth. The glume awn is 1 to 2 times the length of the glume. A broad band of appressed hairs occur down the center of the glume. Hulls are adhering and slightly wrinkled. Aleurone is blue. Rachilla hairs are long. Veins are moderately prominent and

there are few to no barbs on lateral veins. The crease is V- shaped. Kernels are broad at the center; lateral kernels are moderately twisted. At the time of release it was resistant to stem rust, moderately resistant to spot blotch and net blotch, and susceptible to loose smut, false loose smut, covered smut, powdery mildew, and barley stripe mosaic. It was evaluated as Entry 690 in the UC Regional Cereal Testing program from 1984-1985 for spring planting in the intermountain region of northern California. *Crop Science* 22:1083 (1982)

B1201

B1201 is a two-rowed spring malting barley. It was released by Busch Agricultural Resources. It is late maturing and mid-tall (similar in plant height to Klages). It was evaluated as Entry 770 in the UC Regional Cereal Testing program from 1987-89 for spring planting in the intermountain region of northern California.

B1202

B1202 is a two-rowed spring malting barley. It was released by Busch Agricultural Resources in 1989. It was selected from the cross RDB70-268/2B75-1223//Klages. Its experimental designation was 2B81-4038. It is medium late maturing and mid-tall (similar in maturity and plant height to Klages). It is susceptible to lodging but has higher yield potential than Klages. Spikes are lax. Awns are rough. Glumes are covered with long hairs. Hulls are adhering and slightly wrinkled. Aleurone is colorless. Rachilla hairs are long. The central vein is weakly developed, inner lateral vein is moderately developed, and outer lateral vein is weakly developed. There are no barbs on lateral veins. The crease is narrow at the base and flared toward the beard end. Kernels are plump and very broad in relation to length. At the time of evaluation it was moderately resistant to powdery mildew and BYD, moderately susceptible to scald and net blotch, and susceptible to stripe rust. It was evaluated as Entry 771 in the UC Regional Cereal Testing program from 1987-2004 for spring planting in the intermountain region of northern California.

B1215

B1215 is a two-rowed spring malting barley. It was released by Busch Agricultural Resources. It is medium late maturing and mid-tall with fair straw strength. It was evaluated as Entry 906 in the UC Regional Cereal Testing program from 1990-1991 and from 1993-1995 for spring planting in the intermountain region of northern California.

B1603

B1603 is a six-rowed spring malting barley. It was released by Busch Agricultural Resources. It is medium late maturing and mid-tall with poor straw strength. It was evaluated as Entry 826 in the UC Regional Cereal Testing program from 1990-1991 for spring planting in the intermountain region of northern California.

B1614

B1614 is a six-rowed spring malting barley. It was released by Busch Agricultural Resources. It is medium late maturing and mid-tall with fair straw strength. At the time of evaluation it was moderately susceptible to stripe rust. It was evaluated as Entry 871 and Entry 907 in the UC Regional Cereal Testing program from 1992-1995 for spring planting in the intermountain region of northern California.

B2601

B2601 is a six-rowed spring malting barley. It was released by Busch Agricultural Resources in 1989. It was selected from the cross M31/6-rowed high extract composite cross. It is medium late maturing, about 4 days later than Morex. It is a semi-dwarf, about 10 inches shorter than Morex, and has strong straw. It has smooth awns. Glumes are covered with short hairs. Hulls are adhering and wrinkled. Rachilla hairs are short. The central vein is moderately prominent and weakly developed at the center of the kernel. The inner lateral vein is moderately developed, and the outer lateral vein is weakly developed. There are few barbs on lateral veins. The kernel has a humped back and is plump in relation to length. At the time of release it was susceptible to scald, net blotch, stripe rust, and powdery mildew. It was evaluated as Entry 797 in the UC Regional Cereal Testing program from 1989-1991 for spring planting in the intermountain region of northern California.

BACON

Bacon is a two-rowed spring malting barley. It was received for testing from Lynn Gallagher, UC Davis, in 1999. It is medium maturing and medium height with good straw strength. At the time of evaluation it was moderately susceptible to BYD. It was evaluated as Entry 1037 in the UC Regional Cereal Testing program in 1999 for spring planting in the

intermountain region of northern California.

BANCROFT

Bancroft is a two-rowed spring feed barley. It was developed cooperatively by the USDA-ARS and the Idaho, Colorado, and Oregon AESs and released in 2000. It was selected from the cross Hector/60Ab1810-53. Its experimental designation was 78Ab10274. It is midseason in maturity, 3 days earlier than Crystal and 2 days earlier than Harrington. It is mid-tall, similar in plant height to Crystal and Harrington, but inferior in straw strength. Spikes are lax. Awns are rough. Kernels are covered and have white aleurone. Rachilla hairs are long. Barbs on lateral veins are few to none. Lemmas are typically wrinkled. Glumes are covered with long hairs. Rachis edges have numerous hairs. At the time of release it was resistant to stripe rust. It was evaluated as Entry 1014 in the UC Regional Cereal Testing program in 1998 for spring planting in the intermountain region of northern California. *Crop Science* 41:265-266 (2001)

BARETTA

Baretta is a six-rowed spring feed barley. It was released by Arizona Plant Breeders. It was selected from a male-sterile facilitated recurrent selection population (MSFRS POP, SEL B91-3). Its experimental designation was APB B-712. It is medium-late maturing, medium-short height with fair to poor straw strength. At the time of evaluation it was moderately resistant to BYD, moderately susceptible to net blotch and leaf rust, and susceptible to scald and stripe rust. It was evaluated as Entry 944 in the UC Regional Cereal Testing program from 1995-1996 and in 1998 for late fall planting in the Central Valley and south-central coastal regions of California.

BEARPAW

Bearpaw is a two-rowed spring feed barley. It was released by the Montana AES in cooperation with the USDA-ARS in 1989. It was selected from the cross TR440/Clark = Klages//Zephyr/Centennial/3/Clark. Its experimental designation was MT 81616. It has midseason maturity and is mid-tall with fair straw strength. Spikes are mid-lax, mid-long and nodding at maturity. It has rough awns. Kernels are mid-size with long-haired rachillas and adhering finely wrinkled, thin hulls, and white aleurone. It is 2 days later in heading, has a similar percentage of plump kernels, is 3 cm shorter and has stiffer straw than Hector. It was adapted to dryland and irrigated areas in central and north central Montana, Pacific Northwest and Northern Great Plains. At the time of evaluation it was resistant to powdery mildew and net blotch and susceptible to leaf rust. It was evaluated as Entry 774 in 1988 and as Entry 822 in 1990 in the UC Regional Cereal Testing program for spring planting in the intermountain region of northern California and for late fall planting in the Central Valley and south-central coastal regions of California. *Crop Science* 30(2): 421 (1990)

BELFORD

Belford is a six-rowed hooded spring barley. It was developed at the Washington AES and released in 1943. It was selected from the cross Beldi Giant/Horsford. Early growth is erect to semi-prostrate. It has medium maturity, tall plant height, and moderately weak straw. The basal rachis internode is curve or straight, 1-3 mm long. The rachis is tough with short-haired edges. The spike is lax, short to mid-long, parallel, slightly waxy, erect to inclined. The lemma is hooded and the hoods are elevated, without appendage on the middle lobe or with a very short one. The glume awn is equal to the length of the glume and is rough. Glumes are one-half to two-thirds the length of the lemma and are covered with short hairs. The rachilla is short haired. Kernels are blue. Hulls are slightly wrinkled to semi-wrinkled. It is moderately susceptible to scald and susceptible to stripe rust, leaf rust, and BYD.

BELLA UNION

Bella Union is a six-rowed spring feed barley. It was developed by CIMMYT. It has early maturity, mid-tall plant height, and poor straw strength. At the time of evaluation it was resistant to powdery mildew, net blotch, scald, and stripe rust and moderately resistant to BYD. It was evaluated as Entry 1120 in the UC Regional Cereal Testing program in 2003 for late fall planting in the Central Valley and south-central coastal regions of California.

BELLONA

Bellona is a two-rowed spring malting barley. It was released by Cebeco Seeds, the Netherlands, in 1983, and distributed by Wilbur-Ellis Co. It was selected from the cross Aramir//Aramir/Bomi. Its experimental designation was Cebeco 7931. It has late maturity, short plant height, and good straw strength. Spikes are long, initially erect and semi-drooping during ripening, and rather narrow with moderately strong anthocyanin coloration of the awns. It has long rachilla hairs. It was evaluated as Entry 722 in the UC Regional Cereal Testing program from 1985-1986 for spring planting in the intermountain region of northern California.

BOB

Bob is a two-rowed spring malting and feed barley. It was released by the Washington State University Agriculture Research Center in cooperation with the Idaho and Oregon Agricultural Experiment Stations, and USDA-ARS in 2002. It was selected from the cross A308 (Lewis somaclonal line)/Baronesse. Its experimental designation was WA8682-96. It has midseason maturity, medium plant height (about 3 cm taller than Baronesse), fair straw strength, lax nodding spikes, rough long awns, and plump white kernels with long rachilla hairs. It has mixed deficiens-wild type head types at a ratio of about 44%/56%. It was widely adapted across eastern Washington and in general across Idaho and Oregon. Yield averages 98% of Baronesse in eastern Washington. Test weight and kernel plumpness average 90% and 85%, respectively, of Baronesse. Maturity is 1 day later than Baronesse. Malting quality is comparable to Harrington, based on 4-year average. At the time of release it was moderately resistant to leaf rust, moderately susceptible to stripe rust, and with unknown reaction to other diseases. It was evaluated as Entry 1097 in the UC Regional Cereal Testing program from 2002-2004 for spring planting in the intermountain region of northern California. *Crop Science* 43:1132-1133 (2003)

BOWMAN

Bowman is a two-rowed spring feed barley. It was released by the North Dakota AES in cooperation with the USDA-ARS in 1984. It was selected from the cross Klages//Fergus/Nordic/3/ND1156/4/Hector. Its experimental designation was ND 4994. It has early maturity, medium height, and moderately strong straw. Spikes are medium-long, medium-lax and semi-erect. Awns are smooth. Seeds are very plump with white aleurone. Test weight is high. At the time of release it was resistant to stem rust and susceptible to leaf rust, BYD and loose smut. It was evaluated as Entry 689 in the UC Regional Cereal Testing program from 1984-1985 for spring planting in the intermountain region of northern California. *Crop Science* 25:883 (1985)

BRIGGS

Briggs is a six-rowed spring feed barley. It was released by the California AES in 1966. It is a pure line selection from the backcross 2*California Mariout/Arivat. Its experimental designation was UCD 27. Briggs is adapted to the Sacramento Valley and Coastal area of California. It is similar to Arivat in many characteristics. It has short stature, but relatively weak straw compared to more recently released cultivars, and early maturity. Collars are closed and the basal rachis internode is straight. The spike is parallel, lax, and nodding at maturity. The lemma awn is long and semi-smooth. The glume awn is equal in length to the glume and is semi-rough. The glume is half the length of the lemma. Rachilla hairs are long. Kernels are long with slightly wrinkled hulls and white aleurone. At the time of release, Briggs was moderately resistant to scald, leaf rust and powdery mildew, and susceptible to BYD and net blotch. It was evaluated as Entry 2 in the UC Regional Cereal Testing program from 1980-1994 for late fall planting, particularly in the Central Valley and the south-central coastal regions of California. *Crop Science* 8:776 (1968)

BRIGHAM

Brigham is a six-rowed spring feed barley. It was released by the Utah AES in 1998. It was selected from the cross Woodvale//Primus/SD67-297/3/Steptoe/4/UT Short #1. Its experimental designations were UT90B772-2120 and UT002120. Brigham is an erect-growing semi-dwarf with early maturity. Spikes are erect (lax to dense) with essentially no overlap of lateral kernels and rachis edges covered with short hairs. Brigham has waxy leaves and slightly waxy spikes. Glumes are medium length and essentially covered with long hairs and have medium-length, semi-rough glume awns. Lemma awns are widely long, flaring, and semi-rough. The seed is covered, mid-long, slightly wrinkled, with long rachilla hairs and a slight crease at the base. Aleurone color is white. Most stems have a snaky shaped neck and most spikes are marked by a closed collar at the base. Brigham is recommended for production under irrigation. At the time of evaluation it was resistant to loose smut and covered smut, moderately resistant to BYD, moderately susceptible to powdery mildew, and susceptible to stripe rust. It was evaluated as Entry 1009 in the UC Regional Cereal Testing program from 1998-2003 for spring planting in the intermountain region of northern California. *Crop Science* 42:666 (2002)

CALIBER

Caliber is a six-rowed spring feed barley. It was released by World-Wide Wheat. It was selected from a male-sterile facilitated recurrent selection population (CCXXXII-78). Its experimental designation was BA 2139. It has medium late maturity, medium plant height, and fair straw strength. At the time of evaluation it was moderately susceptible to scald, net blotch, and leaf rust, and susceptible to stripe rust. It was evaluated as Entry 983 in the UC Regional Cereal Testing

program in 1998 for late fall planting in the Central Valley and south- central coastal regions of California.

CAMELOT

Camelot is a two-rowed spring feed barley. It is medium late maturing and mid-tall with poor straw strength. It was evaluated as Entry 851 in the UC Regional Cereal Testing program in 1991 for spring planting in the intermountain region of northern California.

CENTURY

Century is a six-rowed spring feed barley. It was released by the Utah AES in 1997. It was selected from the cross WA641566/Bracken. Its experimental designation was UT1705-L. It has midseason maturity and medium height with fair straw strength. It has strap-shaped, lax spikes with little overlap of lateral kernels at the tip of the spike and short hairs on the rachis edges. It has waxy leaves and spikes. Glumes are long, with short hairs confined to a band, and have medium length, semi-smooth glume awns. Lemma awns are long and rough. Stigmas are heavily feathered. Seed is covered, mid-long-to-long, semi-wrinkled, with numerous long rachilla hairs, and a transverse crease at the base. Aleurone color is white. The base of most spikes is marked by a closed collar. At the time of evaluation it was resistant to covered smut but less resistant to loose smut than Steptoe, Rollo, Walker, or Statehood. At the time of evaluation it was moderately resistant to powdery mildew and susceptible to stripe rust. It was evaluated as Entry 1015 in the UC Regional Cereal Testing program in 1998 for spring planting in the intermountain region of northern California. *Crop Science 40:1506 (2000)*

CLARK

Clark is a two-rowed spring feed and malting barley. It was jointly developed by the USDA-ARS and Montana AES and released in 1981. It was selected from the cross Hector/Klages. Its experimental designation was MT 547234. It is adapted to irrigated and dryland conditions in Montana and dryland conditions in the Great Plains area. It has midseason maturity (2 days earlier in heading than Klages) and is mid-tall with fair straw strength (similar to Klages in lodging). Spikes are mid-lax, mid-long, nodding, with rough awns and long haired rachilla. Veins are moderately prominent. There are no barbs on lateral veins. The crease is narrow and shallow at the base tending to flare at the tip. Kernels are mid-size with finely wrinkled hulls. Aleurone is colorless. At the time of release it had more tolerance to spot blotch, net blotch and common root rot than Klages. It was evaluated as Entry 636 in the UC Regional Cereal Testing program from 1982-1985 for spring planting in the intermountain region of northern California. *Crop Science 25:197 (1985)*

CM 67

CM 67 is a six-rowed spring feed barley. It was released by the California AES in 1968. It was selected from the cross California Mariout*5/CIho 2376//6*California Mariout/2*Club Mariout. It is short-statured with early maturity. It is rough awned with medium dense spikes. Kernels are large with white aleurone and long-haired rachilla. At the time of release it was highly tolerant to BYD (carries the Yd2 gene from CIho 2376) and susceptible to scald and powdery mildew. It yields similar to California Mariout under disease-free conditions, but 22% greater in virus infected areas. It was evaluated as Entry 4 in the UC Regional Cereal Testing program for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science 9:521 (1969)*

CM 72

CM 72 is a six-rowed spring feed barley. It was released by the California AES in 1974. It was selected from the cross California Mariout*4/CIho 1179//2*California Mariout*/Club Mariout/3/CM 67. CM 72 is the second backcross-derived strain of the original California Mariout. It differs from the earlier release, CM 67, by the addition of the Mla gene for resistance to powdery mildew. CM 72 also carries resistance to the barley yellow dwarf virus (Yd2 gene from CI 2376). It was adapted to areas where CM 67 or California Mariout were grown. CM 72 has short, weak straw (is very susceptible to lodging) and is early maturing. The spike is parallel, mid-dense, and nodding at maturity. The basal rachis internode is straight and the rachis edges are completely covered with hair. The rachilla is long-haired. The lemma awn is long and semi-smooth. The glume awn is greater in length than the glume and is rough. The glume is greater than one-half the length of the lemma. The kernels are large, with semi-wrinkled hulls and white aleurone. At the time of release CM 72 was resistant to BYD and powdery mildew, moderately resistant to leaf rust and net blotch, and susceptible to scald. It was evaluated as Entry 191 in the UC Regional Cereal Testing program from 1980-1994 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science 17:485 (1977)*

COLTER

Colter is a six-rowed spring feed and malting barley. It was released by the USDA-ARS and the Idaho, Oregon, and Washington AESs in 1991. It was selected from the cross Steptoe/Larker//Karla. Its experimental designation was 79Ab10719-66LC. Colter is similar to Steptoe in height and heading date (medium early), but has better lodging resistance and slightly better grain yield and test weight. It has moderately lax spikes, smooth awns, and kernels with white aleurone. Lemma barbs are few to none. Rachilla hairs are long. It has relatively low kernel plumpness, is high in malt extract, but low in protein content, and relatively low in diastatic power and alpha amylase levels. At the time of evaluation it was susceptible to stripe rust, powdery mildew, BYD, and kernel blight (caused by *Alternaria* spp.). It was evaluated as Entry 853 in the UC Regional Cereal Testing program in 1991 and from 1993-1998 for spring planting in the intermountain area of northern California. *Crop Science* 33:1401 (1993)

COLUMBIA

Columbia is a six-rowed spring feed barley. It was released by Western Plant Breeders in 1982. It was selected from the cross Gus/Kombar. Columbia is derived from F8 head selections from an F7 bulk tested as BFP-78-63. Columbia is a semi-dwarf (5-12 cm taller than Gus) with stiff straw (good lodging resistance) and late season maturity (4-6 days later than Gus). It has a semi-prostrate growth habit when planted in the fall (north-central to southern California) and an erect growth habit when planted in the spring (northern California). The spike is erect, but not dense, and is strap-shaped. Lemma awns are long and semi-smooth. The kernels are mid-long, covered, and white with blue aleurone. The hull is semi-wrinkled, lemma teeth are numerous, and the rachilla hairs are long. The glumes are approximately one-half the length of the lemma and covered with short hairs. The glume awns are less than equal to the length of the glumes and have a rough surface. At the time of release Columbia was resistant to moderately resistant to scald, powdery mildew and net blotch, and susceptible to moderately susceptible to leaf rust, BYD, and spot blotch. It subsequently became susceptible to scald. It was evaluated as Entry 637 in the UC Regional Cereal Testing program from 1983-1991 for spring planting in the intermountain area of northern California and for late fall planting in the Central Valley and the south-central coastal regions of California.

COMPANA

Compana is a two-rowed spring feed barley. It was released by the Montana AES in 1941. It was a selection from Composite Cross I, CIho 4116. It is drought resistant, shattering resistant, and less susceptible to attack by grasshoppers than other varieties available at the time of its release. It is early maturing and has semi-smooth awns. Plants are short and erect. It has long hairs covering the glume or in a band, and the glume awn is equal to the length of the glume. The hull is adhering, slightly wrinkled on back and wrinkled on the crease side. It has colorless aleurone. Rachilla hairs are long. The central vein is weakly developed and lateral veins are moderately prominent. There are no barbs on lateral veins. The crease is narrow at the base and flared at the beard end. Kernels are large, wide, and plump. At the time of release, Compana was moderately resistant to covered smut and susceptible to stripe mosaic virus. It was evaluated as Entry 465 in the UC Regional Cereal Testing program in 1981 for spring planting in the intermountain region of northern California. *Journal of American Society of Agronomy* 33:252 (1941)

CONLON

Conlon is a two-rowed spring malting barley. It was developed by North Dakota AES and released in 1996. It was selected from the cross Bowman*2/Brigitta mutant//ND10232. It is best adapted to western North Dakota and adjacent western states. Test weight and yield is better than Bowman. Yield is equal to Stark. Conlon heads earlier than Bowman and shows good heat tolerance by maintaining kernel plumpness. It is prone to lodging under high yield growing conditions. It is resistant to powdery mildew and net blotch but is moderately susceptible to spot blotch. It was evaluated as Entry 1298 in the UC Regional Cereal Testing program in 2011 for spring planting in the intermountain region of northern California.

COUGBAR

Cougar is a six-rowed spring feed barley. It was released by the Washington State University Agriculture Research Center in cooperation with the Idaho and Oregon AESs in 1985. It was selected from the cross Beacon//7136-62/6773-71. Its experimental designation was WA 14583-77. Plants are medium height with stiff straw. Maturity is similar to Steptoe and Morex (early). Heads are lax, 10% erectoides. The awns are rough and long and glumes have medium length hairs. Kernels are mid-long and moderately plump with smooth adhering hulls, short rachilla hairs, prominent veins, a crease that is closed at the base and flared at the tip, and a white aleurone. Yield is higher than Morex and Advance, and equal to Steptoe. Test weight is similar to Morex. At the time of release, it was resistant to powdery mildew and

moderately susceptible to BYD. It was evaluated as Entry 745 in the UC Regional Cereal Testing program from 1989-1991 for spring planting in the intermountain region of northern California. *Crop Science* 26:1079 (1986)

CRAFT

Craft is a two-rowed spring malting barley. It was released by the Montana AES in 2004. It was selected from the cross Klages/Baronesse. Its experimental designation was MT 970116. It was bred to incorporate the excellent flavor profile and malting characteristics of the variety Klages into a high yielding cultivar capable of competing with today's malting and feed cultivars. It has medium early maturity, tall plant height, and fair to poor straw strength. It was evaluated as Entry 1195 in the UC Regional Cereal Testing program from 2006-2007 for spring planting in the intermountain region of northern California.

CREEL

Creel is a six-rowed spring feed barley. It was developed cooperatively by the USDA-ARS and the Idaho AES and released in 2005. It was selected from the cross M44/80Ab4952//79Ab10719. Its experimental designation was 93Ab688. It is best adapted to rainfed production areas in Idaho and eastern Oregon, and has good production under irrigation in southeastern Idaho. Creel has early to mid-season maturity (similar in heading to Colter). It is mid-tall (3 cm shorter than Colter) and lodges more than Colter. It has medium-lax spikes, smooth awns, and long rachilla hairs. Kernels are covered and have white aleurone. Creel's kernel plumpness is equal to Colter but 6% less than Morex under irrigation at Aberdeen. At the time of release, Creel was moderately susceptible to BYD, net blotch, and scald, and susceptible to stripe rust. It was evaluated as Entry 1079 in the UC Regional Cereal Testing program from 2001-2009 for spring planting in the intermountain region of northern California. *Crop Science* 46:1812 (2006)

CREST

Crest is a two-rowed spring malting and feed barley. It was released by Washington State University and Idaho and Oregon AESs in 1992. It was selected from the cross Klages/2 WA8537-68. Its experimental designation was WA 8771-78. It is widely adapted, with highest relative yield in areas where rainfall is less than 450 mm. It has midseason maturity (two days earlier than Klages), medium height (similar to Klages), and is susceptible to lodging. Spikes are lax and nodding, awns are long and rough. Kernels are mid-long and plump. Hulls are slightly wrinkled and adhering. Veins are prominent and the crease is narrow to broad. Rachilla hairs are long. The aleurone is white. It has good malting and nutritional quality. At the time of release it had partial resistance to powdery mildew and stripe rust and was susceptible to Russian wheat aphid. It was evaluated as Entry 902 in the UC Regional Cereal Testing program from 1993-1995 for spring planting in the intermountain region of northern California. *Crop Science* 32:1506-1507 (1992)

CRITON

Criton is a two-rowed spring feed barley. It was released by the Idaho AES in 2002. It was selected from the cross Gallatin/Targhee//Bowman. Its experimental designation was 91Ab3148. It is early maturing, has tall plant height, and is susceptible to lodging. At the time of release it was moderately susceptible to stripe rust. It was evaluated as Entry 1078 in the UC Regional Cereal Testing program from 2001-2004 for spring planting in the intermountain region of northern California.

CRYSTAL

Crystal is a two-rowed spring malting barley. It was developed cooperatively by the USDA-ARS and the Idaho AES and released by the USDA-ARS and the Idaho and Oregon AESs in 1989. It was selected from the cross Columba/Klages. Its experimental designation was 78Ab6871. It has midseason maturity and is mid-tall (similar to Klages) with poor straw strength. Spikes are lax, mid-long to long, with rough awns. Rachilla hairs are long. Glumes are covered with long hairs. The hull is adhering and wrinkled. Aleurone is white. It has moderately prominent lateral veins. The central vein is not well defined. There are no barbs on lateral veins. The crease is narrow at the base and flared toward the beard end. Malting quality is acceptable, similar to Klages. Kernel color retention is good. At the time of release it was susceptible to stripe rust and had good field tolerance to kernel blight. It was evaluated as Entry 657 in the UC Regional Cereal Testing program from 1983-1984, in 1987, and from 1989-1995 for spring planting in the intermountain region of northern California. *Crop Science* 31:481 (1991)

DRUMMOND

Drummond is a six-rowed spring malting barley. It was released by the North Dakota AES in 2000. It was selected from the cross Hazen*2/WPG821/4/Stander/3/Bumper/Hazen//Azure. Its experimental designation was ND15477. Drummond

is tall (similar in height to Stander and about 5 cm shorter than Robust) and has fair straw strength (straw strength superior to Robust, Stander and Foster). It is medium late maturing (has a heading date similar to Robust). Drummond has semi-smooth awns and its covered kernels have long rachilla hairs and a white aleurone. Spikes are medium-lax, medium-long, and semi-erect. It has more plump kernels and higher malt extract than the 6-rowed industry standard Morex. Grain protein, wort protein, and the ratio of wort protein to total protein of Drummond are slightly lower than that of Morex. Enzymatic activity of Drummond and Morex are similar. At the time of release Drummond was resistant to spot blotch, moderately susceptible to stem rust (race Qcc), net blotch, and BYD, and susceptible to loose smut, scald, several *Septoria* sp and *Fusarium* spp that attack barley in the Midwest. It was evaluated as Entry 1080 in the UC Regional Cereal Testing program from 2001-2002 for spring planting in the intermountain region of northern California. *Crop Science* 42: 664-665 (2002)

EARLY 28

Early 28 is a six-rowed spring feed barley. It was released by the University of Arizona. It was selected from a male-sterile facilitated recurrent selection population (CCXXIX). Its experimental designation was 80-MA-666-172. It is very early maturing. It was evaluated as Entry 625 in the UC Regional Cereal Testing program in 1982 for spring planting in the intermountain region of northern California.

EARLY 32

Early 32 is a six-rowed spring feed barley. It was released by the University of Arizona. It was selected from a male-sterile facilitated recurrent selection population (CCXXIX). Its experimental designation was 80-MA-666-173. It is very early maturing and has medium-short plant height and poor straw strength. At the time of evaluation it was moderately resistant to net blotch, moderately susceptible to leaf rust, and susceptible to scald, BYD, and powdery mildew. It was evaluated as Entry 624 in the UC Regional Cereal Testing program in 1982 for late fall planting in the Central Valley and the south-central coastal regions of California.

ELLINOR

Ellinor is a two-rowed spring malting and feed barley. It was received for testing from Lynn Gallagher, UC Davis, in 1999. It is late maturing and has medium plant height and fair straw strength. At the time of evaluation it was moderately susceptible to BYD. It was evaluated as Entry 1038 in the UC Regional Cereal Testing program in 1999 for spring planting in the intermountain region of northern California.

EXCEL

Excel is a six-rowed spring malting barley. It was released by the Minnesota AES in 1990. It was selected from the cross Cree/Bonanza/Manker/3/2*Robust. Its experimental designation was MN 52. It is medium late maturing (similar to Robust) and is mid-tall (shorter than Morex or Robust) with fair straw strength (similar to Robust in lodging reaction). Spikes are medium-lax, medium-long, and semi-erect. Excel has smooth-awns, covered medium-sized kernels that have long hairs on the rachilla and a white aleurone. Hulls are adhering and wrinkled. Central and lateral veins are moderately prominent. There are few to no barbs on lateral veins. The crease is narrow at the base and flared toward the beard end. Lateral kernels are moderately twisted. Excel's malting quality is similar or superior to Morex. At the time of release it was resistant to stem rust (contains the T-gene for resistance) and spot blotch, moderately resistant to net blotch, and susceptible to loose smut. It was evaluated as Entry 823 in the UC Regional Cereal Testing program from 1990-1991 and in 1993 for spring planting in the intermountain region of northern California. *Crop Science* 31:227 (1991)

FARMINGTON

Farmington is a two-rowed spring feed barley. It was released by Washington State University Agricultural Research Center, Idaho and Oregon AESs, and USDA-ARS in 2001. It was selected from the cross Klages/WA8189-69//Pirolina SD Mutant/Valticky SD Mutant/3/Maresi. Its experimental designation was WA9504-94. It is a semi-dwarf with adaptation to mid to high precipitation and irrigated areas in eastern Washington and adjoining areas of Idaho and Oregon. It has medium-short plant height (averages 60 cm compared to 68 cm for Baroness) and good straw strength. It has mid-season maturity, similar to Baroness. Spikes are lax and slightly nodding. Awns are long and rough. Kernels are covered, with white aleurone, long rachilla hairs, a narrow crease, prominent veins, and wrinkled lemma and palea on the distal half. Kernels are plump and tapering at both ends. At the time of release it was resistant to leaf rust and had partial resistance or tolerance to stripe rust. It was evaluated as Entry 1096 in the UC Regional Cereal Testing program from 2002-2004 for spring planting in the intermountain region of northern California. *Crop Science* 42:2209-2210 (2002)

FIESTA

Fiesta is a six-rowed spring feed barley. It was released by Western Plant Breeders in 1986. It was selected as a single F2 plant from the F2 bulk of crosses between WPB's short-strawed, male sterile barley populations and WPB's advanced lines. It is derived from F6 plant selections from an F5 bulk tested under the experimental number PH 583-10. Fiesta is a semi-dwarf with stiff straw (good lodging resistance) and medium early to early maturity. Early growth is prostrate. The spike is strap-shaped, erect but not dense, with rachis edges covered with hairs. Glumes are more than one-half the length of the lemma with rough awns that are more than equal to the length of the glumes. Lemma awns are long and rough with few teeth and no hairs. Kernels are mid-long to long with long rachilla hairs, semi-wrinkled hulls, and white aleurone. At the time of evaluation Fiesta was resistant to BYD, and susceptible to moderately susceptible to net blotch, leaf rust, stripe rust, scald and powdery mildew. It was evaluated as Entry 703 in the UC Regional Cereal Testing program from 1985-1997 for late fall planting in the Central Valley and the south-central coastal regions of California.

FOSTER

Foster is a six-rowed spring malting and feed barley. It was released by North Dakota AES in 1995. It was selected from the cross Robust/6/Glenn/4/Nordic//Dickson/Trophy/3/Azure/5/Glenn/Karl. Its experimental designation was ND11055. It has midseason maturity (heads 1 day earlier than Robust), is mid-tall (4 cm shorter than Robust), and has moderately strong straw. Foster has semi-smooth awns. The spike is medium lax, medium long, and semi-erect. Kernels are covered. Rachilla hairs are long. Aleurone is white. Central and lateral veins are moderately prominent. There are no barbs on lateral veins. The crease is V-shaped, narrow at the base. Lateral kernels are moderately twisted. Percent grain protein is up to 1.5 percentage units lower than Robust. Foster has more plump kernels and similar malt extract and enzymatic activity as the six-rowed industry standard Morex. At the time of release it was resistant to spot blotch and stem rust (except race QCC), moderately susceptible to net blotch and BYD, and susceptible to loose smut, scald, stripe rust, and to several *Septoria* sp and *Fusarium* spp that attack barley in the Midwest. It was evaluated as Entry 963 in the UC Regional Cereal Testing program from 1996-1997 and from 2001-02 for spring planting in the intermountain region of northern California. *Crop Science* 37:1018 (1997)

GALENA

Galena is a two-rowed spring malting barley. It was released by Coors Brewing Company in 1993. It was selected from the cross Triumph/Crystal. It was grown primarily under irrigation in southern Idaho, Wyoming, and Montana. It has medium late maturity (1 day earlier than Triumph and 1 day later than Crystal), and short to medium length strong straw. Spikes are semi-lax and nodding. Rachis edges are hairy. Awns are rough. The glume is half the length of the lemma. Long hairs completely cover the glume. Glume awns are equal in length to the glume. The hull is finely wrinkled. The aleurone is colorless. Rachilla hairs are long. Lateral veins are moderately prominent. There are no barbs on lateral veins. The crease is narrow, slightly V-shaped from the base. At the time of evaluation it was moderately susceptible to stripe rust and susceptible to scald and BYD. It was evaluated as Entry 1006 in the UC Regional Cereal Testing program from 1998-2000 for spring planting in the intermountain region of northern California.

GALLATIN

Gallatin is a two-rowed spring feed barley. It was jointly released by the USDA-ARS and the Montana and Idaho AESs in 1986. It was selected from the cross Summit/Hector. Its experimental designation was MT 313104. It was adapted to dryland and irrigated areas of the Pacific Northwest and Northern Great Plains. It has midseason maturity (1 day earlier in heading than Hector). It is mid-tall with fair straw strength (3 cm shorter with much stiffer straw compared to Hector). Spikes are semi-nodding before maturity with rough awns. Kernels are white, midsized with short rachilla hairs and adhering, finely wrinkled hulls. Veins are moderately prominent. There are no barbs on lateral veins. The crease is narrow at the base, tending to flare at the beard end. Gallatin has slightly higher test weight with a similar percentage of plump kernels compared to Hector. At the time of evaluation it was moderately resistant to net blotch and susceptible to scald. It was evaluated as Entry 717 in the UC Regional Cereal Testing program from 1985-1989 for spring planting in the intermountain region of northern California. *Crop Science* 27:815 (1987)

GARNET

Garnet is a two-rowed spring feed and malting barley. It was released by the USDA-ARS and the Idaho AES in 1999. It was selected from the cross Harrington/78Ab6871(Crystal). Its experimental designation was 86Ab2317. It has good malting quality characteristics and was expected to compete favorably with existing two-rowed spring barley cultivars in irrigated and many non-irrigated or dryland environments in Idaho and other western states. Garnet has midseason

maturity (similar to Klages, Crystal, and Harrington). It has tall plant height (similar to Klages, Crystal, and Harrington) and poor straw strength (similar to Crystal). It has medium-lax spikes and rough awns. Kernels are covered and have white aleurone. Rachilla hairs are long, barbs on lateral veins are absent, lemmas are typically wrinkled, glumes are covered with long hairs or in a band, and rachis edges have numerous hairs. At the time of release it was susceptible to stripe rust and to Russian wheat aphid. It was evaluated as Entry 1076 in the UC Regional Cereal Testing program from 2001-2004 for spring planting in the intermountain region of northern California. *Crop Science* 40:851(2000)

GLENN

Glenn is a six-rowed spring malting barley. It was released by the North Dakota Agricultural Experiment Station and USDA-ARS in 1978. It was selected from the cross BR5755-3/Trophy//ND B138. Its experimental designation was ND 718. It is medium-early, mid-tall and has moderately strong straw. Spikes are rough-awned, medium-lax, medium-long and semi-erect. Kernels are medium-sized and covered with colorless aleurone and long rachilla hairs. It yields 8% higher than Larker and is superior to Larker in total protein content, wort protein, extract and enzyme activity. At the time of release it was resistant to loose smut, covered smut and stem rust, and was more resistant than Larker to *Septoria passerini*, *Helminthosporium teres* and *H. sativum*. It was evaluated as Entry 575 in the UC Regional Cereal Testing program from 1980-1984 for spring planting in the intermountain region of northern California. *Crop Science* 19:409(1979)

GOLDENEYE

Goldeneye is a six-rowed spring feed barley. It was released by the Utah AES in 2005. It was selected from the cross ID633019/Woodvale//Steptoe//OR3. Its experimental designation was UT95B1216-4087. It is erect-growing and early heading. Plant height is similar to Steptoe (mid-tall). It has a lax spike with limited overlapping of upper lateral spikelets. The basal rachis internode has a short straight to curved shape, and the collar is closed to a V-shaped type. The length of the rachis internodes is relatively constant from top to bottom of the spike, and the rachis edges have few hairs. The awns are long and semi-smooth. The glumes are hairy on dorsal surfaces and edges. No hairs are visible on the ventral surface of the glumes. Length of glume awns is more than equal to length of glumes. The seed is covered. Lemma teeth are missing or few and confined to the nerves. The rachilla is short haired. The shape of lemma base is a transverse crease type. Hulls are slightly to semi-wrinkled and aleurone color is white. At the time of release it was resistant to loose smut and covered smut and susceptible to stripe rust. It was evaluated as Entry 1107 in 2002 and as Entry 1173 from 2005-2006 in the UC Regional Cereal Testing program for spring planting in the intermountain region of northern California. *Crop Science* 45:2658 (2005)

GRANDE

Grande is a six-rowed spring feed barley. It was released by the California AES and USDA-ARS in 1963. It was a F21 selection from Composite Cross II. Its experimental designation was CAS 1358. Its best adaptation is in areas where late rains or high soil moisture holding capacity favor the use of a medium late cultivar. It has medium late maturity. Its growth habit is prostrate during winter. Plant height (tall), shatter and straw strength (poor) characteristics are similar to Atlas 57. It is intermediate between Arivat and Winter Tennessee for plant height. Spikes tend to droop at maturity. Awns are long and rough. The rachilla is long with short hairs. Kernels are large and deep blue. At the time of release it was resistant or tolerant to powdery mildew, net blotch, and scald, and moderately susceptible to BYD. It was evaluated as Entry 8 in the UC Regional Cereal Testing program for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 5:198 (1965)

GUS

Gus is a six-rowed spring feed barley. It was released by Western Plant Breeders in 1977. It was selected as a F2 plant from a male-sterile facilitated recurrent population which contained southwestern United States-adapted germplasm crossed to short-strawed genotypes. This population was later released by Dr. R. T. Ramage (USDA/ARS) as Composite Cross XXXII-76. Its experimental designation was WPB6-3. Gus is a semi-dwarf with moderately stiff to stiff straw and midseason maturity. It has wide leaves and a semi-prostrate early growth habit. The spike is erect, not dense, with kernels overlapping at the tip. Very little wax is present on the head, which makes it appear glossy. The rachis edges have a few hairs. The rachilla has few long hairs. Kernels are mid-long to long with semi-wrinkled hulls that tend to peel off towards the tips, and blue aleurone. Veins are slightly prominent and there are no barbs on lateral veins. The crease is open and shallow in the lower half, flaring at the beard end. At the time of release Gus was moderately resistant to scald and net blotch, but susceptible to loose smut, leaf rust, BYD, and powdery mildew. It was evaluated as Entry 355 in the UC Regional Cereal Testing program from 1980-1987 for spring planting in the intermountain area of northern

California and for late fall planting in the Central Valley and the south-central coastal regions of California.

HANNCHEN

Hannchen is a two-rowed spring malting barley. It was developed by the Swedish Seed Association, Svalof, Sweden in 1904. It originated as a pureline selection from Hanna in 1893. It has medium to late maturity with weak to moderately stiff straw strength and mid-tall height. Spikes are lax, long, and nodding. Rachis edges are long-haired. Awns are rough and long. The glume is covered with long hairs and the glume awn is equal in length to the glume. The hull is adhering and finely wrinkled. The aleurone is colorless. Rachilla hairs are long. Veins are weakly developed. There are no to few barbs on lateral veins. The crease is narrow and shallow. It was adapted to the Klamath Falls-Tulelake region of Oregon and California. Its 34-year average yield at Corvallis, Oregon was 33.6 bushels per acre, compared to 32.9 for Trebi. It is resistant to some races of stripe and susceptible to powdery mildew. It was evaluated as Entry 467 in the UC Regional Cereal Testing program for spring planting in the intermountain area of northern California. *Agronomy Journal* 50(11): 708 (1958)

HARLAND

Harland is a six-rowed spring feed barley. It was released by the California AES and USDA-ARS in 1967. It was developed by evolutionary breeding from Composite Crosses II, V, XII, XIV, and XV through the use of male sterility in a basic parentage of 700 lines. Harland is the F13 of composite Cross XVI. It has white, awned, covered kernels. There are some traces of two-rowed spikes with black and hullless seeds. At the time of release its reaction to major foliar diseases varied conspicuously from plant to plant, but presented a favorable average. It was evaluated as Entry 9 in the UC Regional Cereal Testing program for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 8:514 (1968)

HARRINGTON

Harrington is a two-rowed spring malting barley. It was released by the University of Saskatchewan in 1981. It was selected from the cross Klages/3/Gazelle/Betzes//Centennial. Its experimental designation was TR441. It has midseason maturity (similar to Klages), is mid-tall and is susceptible to lodging. Spikes are medium long, medium lax and nodding, with rough awns. The glume is covered with numerous long hairs, glume awns are longer than the glume, and the glume is half the length of the lemma. The hull is adhering and slightly wrinkled. The aleurone is colorless. Rachilla hairs are medium to long. Veins are well defined. There are no barbs on lateral veins. Kernels are plump, broad in relation to length, and diamond shaped. It has higher yield potential than Klages. At the time of release it was susceptible to stripe rust, stem rust, net blotch, speckled leaf blotch, and loose and covered smut, and moderately susceptible to common root rot. It was evaluated as Entry 821 in the UC Regional Cereal Testing program from 1990-1991, 1993-1994, 1996-2001, and 2011 for spring planting in the intermountain region of northern California.

HAXBY

Haxby is a two-rowed spring feed barley. It was released by the Montana AES in 2002. Its experimental designation was MT950186. It has medium early maturity (two days earlier than Baronesse), mid-tall plant height (3 inches taller than Baronesse), and fair to poor straw strength. Yield is equal to Baronesse and test weight is higher. It is non-Baronesse derived and has superior performance in lower moisture conditions. It was evaluated as Entry 1193 in the UC Regional Cereal Testing program from 2006-2007 for spring planting in the intermountain region of northern California.

HAYBET

Haybet is a two-rowed spring hooded forage barley. It was released by the Montana AES and USDA-ARS in 1989. It was selected from the cross Betzes*7/'Strip Tease'. Its experimental designation was MT 4061. It is similar in agronomic, spike, and kernel characteristics to Betzes. It is medium-late maturing (3-days later than Horsford), tall and susceptible to lodging. It is best adapted to dryland and irrigated areas in the Pacific Northwest and northern Great Plains. *Crop Science* 30: 230 (1990)

HAZEN

Hazen is a six-rowed spring malting and feed barley. It was released by the North Dakota AES in 1984. It was selected from the cross Glenn/4/Nordic//Dickson/Trophy/3/Azure. Its experimental designation was ND 5569. It is medium-early maturing, mid-tall, with straw strong. Spikes are medium-long, medium-lax, and semi-erect. Seeds are plump with white aleurone. Test weight is moderate to high. At the time of release it was more field resistant than Glenn to *Helminthosporium sativum*, equal to Glenn in resistance to net blotch, resistant to stem rust, and susceptible to leaf rust,

loose smut, covered smut and BYD. It was evaluated as Entry 691 in the UC Regional Cereal Testing program from 1984-1985 for spring planting in the intermountain region of northern California. *Crop Science* 24:1210 (1984)

HEAVYWEIGHT

Heavyweight is a two-rowed spring feed barley. It was developed by Greenway Seeds, Idaho. Its experimental designation was PB 29. It is medium maturing and has mid-tall plant height and good straw strength. It was evaluated as Entry 693 in the UC Regional Cereal Testing program from 1984-1985 for spring planting in the intermountain region of northern California.

HECTOR

Hector is a two-rowed spring feed barley. It was released by Agriculture Canada at Lethbridge, Alberta, in 1973. It was selected from the cross Betzes/Palliser. It is medium maturing and has mid-tall plant height and poor straw strength. Hector has a rough awn, yellow aleurone, and a horseshoe depression tending to crease. It has a mid-sized to small kernel and the rachilla is mid-to-long with long hairs. It has been recommended as a dryland feed barley. It was evaluated as Entry 629 in the UC Regional Cereal Testing program from 1982-1984 for spring planting in the intermountain region of northern California.

HOCKETT

Hockett is a two-rowed spring malting barley. It was developed by the Montana AES and released in 2008. It was derived from the cross ND7293/Bearpaw. It is adapted for dryland production, and when compared to Harrington, Hockett has a higher yield and better malt quality under dryland conditions. It averages 37 inches in plant height and has poor straw strength (susceptible to lodging). It is susceptible to stripe rust. It was evaluated as Entry 1197 in the UC Regional Cereal Testing program in 2006 and 2011 for spring planting in the intermountain region of northern California.

HORSFORD

Horsford is a six-rowed spring hooded forage barley. It includes a number of similar barleys of separate origins, the first of these produced in Vermont in 1879. It was selected from a cross of Nepal with one of the common six-rowed bearded barleys of the Eastern states. It is the first known hybrid barley produced in the United States. It was grown extensively in Washington at the turn of the century (1900's). It is medium-late maturing, tall and susceptible to lodging. The basal rachis internode is straight or sometimes curved. The rachis is tough with short-haired edges. The spike is lax, short to mid-long, parallel, slightly waxy, erect to inclined. The lemma is hooded and hoods are elevated without an appendage on the middle lobe or with a very short one. The glume awn is equal in length to the glume and is rough. Glumes are one-half to two-thirds the length of the lemma and are covered with short hairs. The rachilla is short haired. Kernels are blue, mid-long to long, and hulls are slightly wrinkled to wrinkled. Horsford is best adapted to dryland and irrigated areas in the Pacific Northwest and northern Great Plains. It was evaluated as Entry 1224 in the UC Regional Cereal Testing program in 2007 as a forage barley for spring planting in the intermountain region of northern California.

IDAGOLD

Idagold is a two-rowed spring feed barley. It was released by Coors Brewing Company in 1993. It is very late maturing and is short with stiff-straw. It has high test weight and good feed quality (digestibility). At the time of evaluation it was moderately resistant to BYD and moderately susceptible to stripe rust. It was evaluated as Entry 1007 in the UC Regional Cereal Testing program from 1998-2000 for spring planting in the intermountain region of northern California.

IDAGOLD 2

Idagold 2 is a two-rowed spring feed barley. It was released by Coors Brewing Company in 2001. Its experimental designation was C32. It is medium-late maturing (earlier maturing than Idagold) and is short with stiff-straw (height is comparable to Idagold and its straw strength is as good as Idagold). It has better test weight than Idagold. It was evaluated as Entry 1074 in the UC Regional Cereal Testing program in 2001 and in 2009 for spring planting in the intermountain region of northern California.

JERSEY

Jersey is a two-rowed spring feed barley. It was developed by Western Plant Breeders and Cebeco Seeds. It was selected from the cross Apex/Alexis. Its experimental designation was Cebeco 9538. It is late maturing and has mid-tall plant height and fair straw strength. At the time of evaluation it was resistant to stripe rust and BYD. It was evaluated as Entry

1041 in the UC Regional Cereal Testing program from 1999-2001 for spring planting in the intermountain region of northern California.

KARL

Karl is a six-rowed spring malting barley. It was released by USDA-ARS and the Idaho AES in 1974. It was selected from the cross Traill//Good Delta/Everest/3/Traill. Its experimental designation was 63Ab2987. It has midseason maturity. It has superior lodging resistance, is 7-10 cm shorter and heads 2-3 days earlier than Traill. It is more susceptible to shattering than Steveland. Spikes are lax, mid-long to long with rough awns and short rachilla hairs. The aleurone is white and the hull is adhering and wrinkled, with few to several barbs occurring on moderately prominent lateral veins. The central vein of the kernel is prominent. The crease is shallow, relatively narrow, closed at the base and flaring toward the awn end. The glume is covered with short hairs. It has good test weight and kernel weight when grown under irrigation in southern Idaho. At the time of release it was susceptible to covered and loose smut and powdery mildew. It was evaluated as Entry 360 in the UC Regional Cereal Testing program in 1980 for spring planting in the intermountain region of northern California. *Crop Science* 16:737 (1976)

KARLA

Karla is a six-rowed spring malting barley. It was released by USDA-ARS and the Idaho AES in 1981. It was selected from the cross 63Ab2987-9/2*Conquest. 63Ab2987-9 is a sister selection of Karl. Its experimental designation was 74Ab4302. It is intended as a replacement for Karl. It has midseason maturity. It heads 3 days later, is similar test weight, and has lower kernel plumpness than Steptoe. It is mid-tall (averages 3 inches taller than Steptoe) and has superior lodging resistance compared to Steptoe. It yields 93-97% of Steptoe in irrigated and dryland trials. Spikes are semi-erect, lax, mid-long to long with smooth awns. Rachis edges are smooth. Glumes have relatively short hairs confined to the midline of the glume. Kernels have long rachilla hairs and white aleurone. Hulls are adhering and wrinkled. Lateral veins are moderately prominent with few barbs. The crease is relatively narrow, closed at the base and flaring toward the awn end. Lateral kernels are moderately twisted. At the time of release it was susceptible to powdery mildew and bacterial leaf streak. It was evaluated as Entry 628 in the UC Regional Cereal Testing program from 1982-1985 for spring planting in the intermountain region of northern California. *Crop Science* 25:570 (1985)

KLAGES

Klages is a two-rowed spring malting barley. It was released by USDA-ARS and the Idaho and Oregon AESs in 1973. It was selected from the cross Betzes/Domen. It is a composite of 35 F11 lines selected from the bulk population designated 60Ab1810. The line 60Ab1810 was derived from an F3 selection made at Aberdeen in 1960. Klages has mid-season maturity and is medium tall with stiff straw. The basal rachis internode is curved. Rachis edges are covered with hairs. The spike is parallel, lax, and nodding at maturity. The lemma awn is long and rough. The glume awn is more than equal in length to the glume and is rough. The glume is one-half the length of the lemma and is covered with long hairs. Rachilla hairs are long. Kernels are mid-long with wrinkled hulls with weakly developed barbless veins and white aleurone. The crease is narrow and shallow at the base, flaring toward the awn end. It is susceptible to BYD, scald and stripe rust. It was evaluated as Entry 209 in the UC Regional Cereal Testing program from 1980-1996 for spring planting in the intermountain region of northern California. *Crop Science* 14: 337-338 (1974)

KOMBAR

Kombar is a six-rowed spring feed barley. It was released by Northrup-King & Co. in 1975. It was selected from the cross Minn.64-98-8/2*Briggs. Its experimental designation was Exp. 314. It is adapted for irrigated conditions in California and Arizona. It is higher yielding than Briggs and CM67. It has semi-smooth awns and midseason to late maturity. It is mid-tall with stiff, strong straw. Spikes are lax, mid-long and strongly inclined at maturity. Rachis edges are covered with hairs. Kernels are mid-long, white with slightly wrinkled hulls, and colorless aleurone. Rachilla hairs are short. Veins are prominent and there are no or few barbs on lateral veins. The crease is closed in the lower two-thirds and moderately flared at the awn end. Lateral kernels are moderately twisted. At the time of release it had field tolerance to BYD and was susceptible to scald. It subsequently became susceptible to net blotch. It was evaluated as Entry 231 in the UC Regional Cereal Testing program from 1980-1981 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 16:738 (1976)

KOMBYNE

Kombyne a six-rowed spring feed barley. It was released by Northrup-King & Co. in 1975. It was selected from the cross Minnesota 64-98-8/Numar//CM 67. Its experimental designation was Exp. 214. It has higher yields than UC 566,

Briggs and Arivat. It is adapted to irrigated culture in California and Arizona. It has midseason maturity, similar to Briggs. It has semi-prostrate juvenile growth and short, strong straw. Spike are lax, mid-long and erect to inclined at maturity. The rachis edges are long haired. Awns are semi-smooth. Glumes possess long hairs restricted to the middle region. The glume awn is equal in length to the glume. Kernels are mid-long with white hulls with long haired rachillas. Aleurone is 70% colorless and 30% light blue. It has similar resistance to BYD as CM 67. At the time of release it was moderately susceptible to scald. It was evaluated as Entry 249 in the UC Regional Cereal Testing program from 1980-1981 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 18:692 (1978)

KRIS

Kris is a two-rowed spring feed barley. It was released by USDA-ARS and the Idaho AES in 1981. It was selected from the cross 60Ab1810/61Ab4965. Its experimental designation was 72Ab3633. The parents are related to Klages and Kimberly. It is intended primarily as a replacement for Klages in production areas where the earlier maturity of Kris will represent a significant production advantage over Klages. It is similar to Klages in malting quality and most agronomic characteristics with the principal advantages being earlier maturity and greater kernel plumpness. It has midseason maturity (three days earlier in heading than Klages) and is mid-tall with moderately stiff straw. Spikes are lax, mid-long to long, nodding, with rachis edges hairy. Awns are rough. The glume is covered with long hairs and the glume awn is equal in length to the glume. Hulls are adhering and finely wrinkled. The aleurone is colorless. Veins are moderately prominent and there are no barbs on lateral veins. The crease is narrow and shallow at the base and flared at the awn end. It was evaluated as Entry 627 in the UC Regional Cereal Testing program from 1982-1984 for spring planting in the intermountain region of northern California.

KURTFORD

Kurtford is a six-rowed spring forage (hooded) barley. It was released by Western Plant Breeders. It is medium maturing and mid-short with good straw strength. At the time of release it was resistant to scald, net blotch, and BYD, moderately resistant to powdery mildew, and susceptible to stripe rust. It was adapted for fall planting in the Central Valley and the south-central coastal regions of California.

LACEY

Lacey is a six-rowed spring malting barley. It was released by the Minnesota AES in 2000. It was selected from the cross M44/Excel//M46/M44/3/M44/Excel//Stander. Its experimental designation was M98. It is adapted to the barley-growing area of the upper Midwest of the United States and possibly in neighboring regions of Canada. It was intended to replace the cultivars Robust and Stander. Malting quality traits appear to be similar to Robust, the industry six-rowed quality standard. Lacey is tall (about 6 cm shorter than Robust), with fair straw strength, and has early maturity (similar to Robust in heading date and maturity). It is similar to Robust and Stander, with smooth awns, covered kernels, short rachilla hairs, and white aleurone. The spike is medium-lax, medium-long, and semi-erect. It possesses the ND B112 gene for resistance to spot blotch and carries the Rpg1 (T) gene for resistance to stem rust. It is susceptible to smut and Fusarium head blight. At the time of evaluation it was moderately resistant to stripe rust. It was evaluated as Entry 1075 in the UC Regional Cereal Testing program from 2001-2004 and in 2011 for spring planting in the intermountain region of northern California. *Crop Science* 41:1991 (2001)

LAMONT

Lamont is a two-rowed spring feed barley. It was released by USDA-ARS and the Idaho and Oregon AESs in 1985. It was selected from the cross Zephyr/61Ab4965. The parent 61Ab4965 is a sib of Kimberly. Its experimental designation was 74Ab10167. It has midseason maturity. Spikes are lax, mid-long to long, and rough awned. Aleurone is white. Rachilla hairs are long. Malting and brewing qualities are unacceptable by AMBA. It is similar to Klages in test weight, height (mid-tall) and lodging resistance (fair) in Idaho trials. It heads 1 day earlier and has plumper kernels than Klages. At the time of release it had good field resistance to kernel blight (caused by *Pseudomonas syringae* pv. *syringae*). It was evaluated as Entry 656 in the UC Regional Cereal Testing program from 1983-1984 for spring planting in the intermountain region of northern California. *Crop Science* 28:373 (1988)

LARKER

Larker is a six-rowed spring malting barley. It was released by the North Dakota AES in 1961. It was selected from the cross Traill/colorless aleurone selection of U.M. 570, CIho 10002. Its experimental designation was ND B117. It is adapted to the North Central U.S. and has yield similar to Traill. Plants are mid-tall with moderately strong straw and

early to midseason maturity. Spikes are medium lax, mid-long, inclined to nodding. It has semi-smooth awns. Glumes have a band of long hairs and the glume awn is three times the length of the glume. Hulls are adhering and slightly to semi-wrinkled. It has long rachilla hairs and colorless aleurone. Lateral veins are moderately prominent and the central vein is broad and raised over the germ but often indistinct at the center of the kernel. There are several barbs on lateral veins. The crease is V-shaped from the base and relatively narrow. Kernels are plump, wide at the center, tapering uniformly to both ends. Lateral kernels are moderately twisted. At the time of release it was resistant to stem rust, tolerant to BYD, moderately susceptible to spot blotch, net blotch and loose smut, and susceptible to Septoria leaf blotch and powdery mildew. It was evaluated as Entry 234 in the UC Regional Cereal Testing program for spring planting in the intermountain region of northern California. *Crop Science* 4:239 (1964)

LEGACY

Legacy is a six-rowed spring malting barley. It was released by Busch Agricultural Resources in 2000. It was selected from the cross 6B86-3517/Excel, a complex cross involving the parental cultivars Bumper, Karl, Manker, and Excel. Its experimental designation was 6B93-2978. Plants are tall with fair to poor lodging resistance and early maturity. It has semi-smooth awns, long rachilla hairs, and colorless aleurone. It is resistant to spot blotch and has slightly better net blotch resistance than Robust. At the time of evaluation it was susceptible to scald, BYD, and stripe rust. It was evaluated as Entry 1084 in the UC Regional Cereal Testing program from 2001-2011 for spring planting in the intermountain region of northern California.

LEWIS

Lewis is a two-rowed spring feed and malting barley. It was released by the USDA-ARS and the Montana AES in 1985. It was selected from the cross Hector/Klages. Its experimental designation was MT 547123. It is recommended as a feed barley under irrigation in Montana. It has higher yields than Klages in both dryland and irrigated trials and similar malting quality. It has midseason maturity and heads 3 days earlier than Klages. It has 11% more plump kernels, similar height and better lodging resistance than Klages. Its spikes are mid-lax, mid-long and nodding with rough awns. Glume awns are equal in length to the glume, and glumes are covered with long hairs. Rachis edges have long hairs. It has finely wrinkled hulls without barbs on the lateral veins, a long-haired rachilla and white aleurone. The crease is narrow at the base, tending to flare at the awn end. It has more tolerance to spot and net blotch and common root rot than Klages. It was evaluated as Entry 686 in the UC Regional Cereal Testing program from 1984-1987 for spring planting in the intermountain region of northern California. *Crop Science* 25:570-571 (1985)

LINDY

Lindy is a six-rowed spring feed barley. It was developed by CENEX, Oregon. It is late maturing and has tall plant height and poor straw strength. At the time of evaluation it was resistant to scald and leaf rust and susceptible to BYD. It was evaluated as Entry 700 in the UC Regional Cereal Testing program from 1985-1987 for spring planting in the intermountain area of northern California and for late fall planting in the Central Valley and the south-central coastal regions of California.

LUD

Lud is a two-rowed spring feed barley. It was released by North American Plant Breeders in 1975. It was selected from the cross Vada/Zephyr//RMGH 59114. It has midseason maturity (similar to Klages), medium short plant height (2-4 inches shorter than Klages) and strong straw. It has long, rough awns. Glumes have short hairs confined to the midline. Hulls are adhering and slightly wrinkled. The aleurone is colorless. Rachilla hairs are short. Veins are prominent and there are no barbs on lateral veins. The crease is closed in the lower one-third of the kernel, flaring at the awn end. At the time of release it was resistant to powdery mildew, loose smut, and covered smut and susceptible to scald, stem rust, net blotch and spot blotch. It was evaluated as Entry 582 in the UC Regional Cereal Testing program from 1980-1985 for spring planting in the intermountain region of northern California.

MADERA

Madera a six-rowed spring feed barley. It was released by Western Plant Breeders in 1992. It was selected from a male-sterile facilitated recurrent selection population (UZU-POP). Its experimental designation was DA 587- 71. It is late maturing and has medium plant height and fair to poor straw strength. At the time of evaluation it was moderately resistant to scald, net blotch, BYD, stripe rust and powdery mildew, and moderately susceptible to leaf rust. It was evaluated as Entry 814 in the UC Regional Cereal Testing program from 1990-1995 for late fall planting in the Central Valley and the south-central coastal regions of California.

MANKER

Manker is a six-rowed spring malting barley. It was released by the Minnesota AES in 1974. It was selected from the cross Cree/4/Parkland *2/NDB112/3/Vantage//Kindred/Jotun. Its experimental designation was M16. It is medium-early maturing, mid-tall, and has moderately strong straw. Spikes are rough-awned, medium-lax, long and semi-erect. Kernels are covered, medium sized with short-haired rachilla and white aleurone. It has more kernels per spike, fewer tillers and lower tiller mortality than Larker. It is adapted to the Red River Valley of Minnesota. At the time of release it was resistant to stem rust and spot blotch. It was evaluated as Entry 581 in the UC Regional Cereal Testing program from 1980-1984 for spring planting in the intermountain region of northern California. *Crop Science 15:603 (1975)*

MARANNA

Maranna is a six-rowed spring feed barley. It was released by the Oregon, Idaho, and Washington AESs in 1993. It was selected from the cross OSB74133/M33. Its experimental designation was ORS-2. It has very high yield potential under irrigated or high rainfall conditions with high inputs. It is several days later in heading than Steptoe, short statured (average height of 68 cm), and resistant to lodging. It has smooth awns and white aleurone. Spikes are semi-lax. At the time of release it was susceptible to stripe rust and to the Russian wheat aphid. It was evaluated as Entry 854 in the UC Regional Cereal Testing program from 1991-1997 for spring planting in the intermountain region of northern California. *Crop Science 35:1504 (1995)*

MAX

Max is a six-rowed spring feed barley. It was released by Farmers Marketing Corporation in 1992 and is distributed by World Wide Wheat. It was selected from a male-sterile facilitated recurrent selection population (CCXXXII). Its experimental designation was FMC 7024. It is late maturing with short stature and fair lodging resistance. At the time of evaluation it was resistant to BYD, moderately susceptible to leaf rust and susceptible to scald, powdery mildew, net blotch and stripe rust. It was evaluated as Entry 816 in the UC Regional Cereal Testing program from 1990-2011 for late fall planting in the Central Valley and the south-central coastal regions of California.

MENTOR

Mentor is a two-rowed spring malting barley. It was received for testing from Lynn Gallagher, UC Davis, in 1999. It is late maturing and has medium plant height and fair to poor straw strength. At the time of evaluation it was moderately susceptible to BYD. It was evaluated as Entry 1036 in the UC Regional Cereal Testing program in 1999 for spring planting in the intermountain region of northern California.

MENUET

Menuet is a two-rowed spring feed barley. It was developed by CENEX, Oregon. It is medium maturing (heads about 7 days later than Steptoe, similar to Clark) and medium height (it averages about 3 inches shorter than Steptoe or Klages under irrigated conditions) and has fair straw strength (less lodging than Klages). It has high test weight. At the time of evaluation it was resistant to leaf rust and susceptible to scald and BYD. It was evaluated as Entry 699 in the UC Regional Cereal Testing program from 1985-1987 for spring planting in the intermountain area of northern California and for late fall planting in the Central Valley and the south-central coastal regions of California.

MERIT

Merit is a two-rowed spring malting barley. It was released by Busch Agricultural Resources. It was selected from the cross Manley/2B80-350. Its experimental designation was BA 2B91-4947. It is medium late maturing, mid-tall and has poor straw strength. At the time of evaluation it was resistant to net blotch and leaf rust, moderately resistant to BYD, and susceptible to scald and stripe rust. It was evaluated as Entry 977 in the UC Regional Cereal Testing program from 1997-1998, from 2001-2006, and in 2011 for spring planting in the intermountain region of northern California.

MICAH

Micah is a six-rowed spring feed barley. It is late maturing, short, and has fair straw strength. It was evaluated as Entry 772 in the UC Regional Cereal Testing program from 1987-1991 for spring planting in the intermountain region of northern California.

MORAVIAN 14

Moravian 14 is a two-rowed spring malting barley. It was released by Coors Brewing Company in 1991. It was selected

from the cross Gimple/Nairn. It was developed through doubled haploid production using the *Hordeum bulbosum* method. It is early maturing (heads about 3 days earlier than Moravian III) with medium short plant height (about 7 inches shorter than Moravian III) and good straw strength. Spikes are semi-lax and nodding. Rachis edges are hairy. Awns are rough. The glume is more than half the length of the lemma and completely covered with short hairs. The hull is slightly wrinkled. The aleurone is colorless. Rachilla hairs are long. Lateral veins are moderately prominent. There are no barbs on lateral veins. The crease is narrow at the base and flared toward the awn end. At the time of evaluation it was moderately susceptible to stripe rust and BYD. It was evaluated as Entry 1043 in the UC Regional Cereal Testing program from 1999-2000 for spring planting in the intermountain region of northern California.

MORAVIAN 22

Moravian 22 is a two-rowed spring malting barley. It was developed by Coors Brewing Company. It is late maturing, medium short, and has good straw strength. At the time of evaluation it was resistant to stripe rust and moderately resistant to BYD. It was evaluated as Entry 1044 in the UC Regional Cereal Testing program from 1999-2000 for spring planting in the intermountain region of northern California.

MOREX

Morex is a six-rowed spring malting barley. It was released by the Minnesota AES in 1978. It originated from an F5 plant selected from the cross Cree/Bonanza made in 1969. Its experimental designation was M25. The name Morex (more extract) was chosen because the extract percentage of Morex exceeded that of other Midwestern six-rowed barleys at the time of its release. It is adapted to barley growing areas in Minnesota, North Dakota and South Dakota. It is superior to Larker in lodging reaction, yield and disease resistance. Morex is medium early in maturity, with medium tall, moderately strong straw. Kernels are covered, medium-sized, with short rachilla hairs, wrinkled hulls, and white aleurone. The spike is medium lax, medium long, and semi-erect with smooth awns. At the time of release Morex was resistant to stem rust and loose smut, and moderately resistant to spot blotch. It subsequently became susceptible to stripe rust. It was evaluated as Entry 576 in the UC Regional Cereal Testing program from 1980-1984 for spring planting in the intermountain region of northern California. *Crop Science 19:293 (1979)*

MUCHO

Mucho is a six-rowed spring feed barley. It was released by Arizona Plant Breeders in 1993. It was selected from a male-sterile facilitated recurrent selection population (CCXXXII). Its experimental designation was APB F-3. It is early maturing, short-statured with poor straw strength. At the time of evaluation it was moderately resistant to leaf rust, powdery mildew, and BYD, and susceptible to scald and net blotch. It was evaluated as Entry 872 in the UC Regional Cereal Testing program from 1992-1995 for late fall planting in the Central Valley and south-central coastal regions of California.

MULTUM

Multum is a six-rowed spring feed barley. It was marketed by Agricultural Products, Arizona. It is late maturing and has medium tall plant height with good straw strength. At the time of evaluation it was resistant to net blotch, leaf rust, and powdery mildew, moderately susceptible to scald, and susceptible to BYD. It was evaluated as Entry 573 in the UC Regional Cereal Testing program from 1982-1983 for spring planting in the intermountain area of northern California and for late fall planting in the Central Valley and the south-central coastal regions of California.

NEBULA

Nebula is a six-rowed spring feed barley. It was released by Western Plant Breeders in 1996. It was selected from the cross Madera/PH 585-6. Its experimental designation was DA 592-47. It is medium late maturing with medium height and good straw strength. It is awned and has blue aleurone. At the time of evaluation it was moderately susceptible to leaf rust, net blotch and BYD, and susceptible to scald and stripe rust. It was evaluated as Entry 941 in the UC Regional Cereal Testing program from 1995-2001 for late fall planting in the Central Valley and south-central coastal regions of California.

NK BARLEY BLEND 50

NK Barley Blend 50 is a six-rowed spring feed barley. It was released by Northrup King & Co. It is a 50/50 blend of two lines. It is medium late maturing with medium-short height and good straw strength. At the time of evaluation it was resistant to powdery mildew, moderately resistant to leaf rust and BYD, and moderately susceptible to scald and net blotch. It was evaluated as Entry 585 in the UC Regional Cereal Testing program from 1982-1984 for late fall planting in

the Central Valley and south-central coastal regions of California.

NOVA

Nova is a two-rowed spring feed barley. It was developed by Wilbur-Ellis Co. It is early maturing with medium height and poor straw strength. It was evaluated as Entry 724 in the UC Regional Cereal Testing program in 1985 for spring planting in the intermountain region of northern California.

NUMAR

Numar is a six-rowed spring feed barley. It was released by the California AES in 1966. It was selected from the cross California Mariout *4/Arivat. Its experimental designation was UCD 1520. It is adapted to the San Joaquin and Imperial Valleys and Southern California. It is similar to California Mariout but 2 days later in maturity, slightly taller, and has appreciably stiffer straw. It is equal or superior to both parents in yield. It is smooth awned and early maturing. It has short stiff straw and medium-dense erect spikes. Kernels are large with medium to dark blue aleurone and long-haired rachillas. At the time of evaluation it was moderately resistant to net blotch and susceptible to scald. It was evaluated as Entry 3 in the UC Regional Cereal Testing program from 1980-81 for late fall planting in the Central Valley, the south-central coastal region, and Southern California. *Crop Science* 8:776 (1968)

ORCA

Orca is a two-rowed spring feed barley. It was released by the Oregon AES in 1998. It was selected from the cross Calicuchima-sib/Bowman-derivative. It is one of 110 doubled haploid lines derived from the F1 of Calicuchima-sib/Bowman-derivative. The doubled haploids were developed by the *Hordeum bulbosum* technique. Its experimental designations were BSR 45 and Icaro. It has quantitative resistance to barley stripe rust and BYD. Quantitative trait loci (QTLs) determining resistance to barley stripe rust were mapped on chromosomes 4 (4H) and 7 (5H). Resistance to BYD is conditioned by the Yd2 gene on chromosome 3 (3H). It is early maturing and medium height with good straw strength. It has rough-awns, white-aleurone, and short rachilla hair. It has very plump grain, high test weight, and an acceptable yield record under irrigated conditions and under dryland conditions where earliness is an advantage. It has a novel quality profile of high starch content, high enzymes, and low beta glucan. At the time of evaluation it was resistant to stripe rust, moderately resistant to BYD, and susceptible to leaf rust. It was evaluated as Entry 976 in the UC Regional Cereal Testing program from 1997-2005 for spring planting in the intermountain region of northern California. *Crop Science* 40:849-850 (2000)

OTHELLO

Othello is a two-rowed spring feed barley. It was released by the Oregon AES. It was selected from the cross Harrington/Orca//D172 (Shyri/Galena). Its experimental designations were OR2967102 and BCD 47. It is late maturing and short-statured with fair straw strength. At the time of release it was resistant to stripe rust and susceptible to BYD. It was evaluated as Entry 1013 in the UC Regional Cereal Testing program from 1998-2004 for spring planting in the intermountain region of northern California.

PATTI

Patti is a six-rowed spring feed barley. It was developed by Farmers Marketing Corporation and released in 1998 and is distributed by World-Wide Wheat. It was selected from a male-sterile facilitated recurrent selection population (CCXXXII 78). Its experimental designation was FMC 8055. It is medium-early maturing and short-statured with good straw strength. At the time of evaluation it was moderately resistant to net blotch and BYD, moderately susceptible to stripe rust, and susceptible to scald and leaf rust. It was evaluated as Entry 885 in the UC Regional Cereal Testing program from 1993-2006 for late fall planting in the Central Valley and the south-central coastal region of California.

PENBAR

Penbar is a six-rowed spring feed barley. It was released by Resource Seeds, Inc. in 1997. It was selected from the cross SMA/4161//1248/3/CIN/2505/4/X1275. Its experimental designation was RSI 32306. It is medium maturing and medium-short with fair straw strength. At the time of evaluation it was resistant to net blotch and powdery mildew, moderately resistant to scald, BYD, and leaf rust, and susceptible to stripe rust. It was evaluated as Entry 919 in the UC Regional Cereal Testing program from 1994-1997 for late fall planting in the Central Valley and the south-central coastal regions of California.

PISTON

Piston is a two-rowed spring feed barley. It was developed by CENEX, Oregon. It is medium maturing (heads about 7 days later than Steptoe) and has medium plant height (2 inches shorter than Steptoe) and good straw strength. At the time of evaluation it was moderately resistant to leaf rust and susceptible to scald and BYD. It was evaluated as Entry 698 in the UC Regional Cereal Testing program from 1985-1987 for spring planting in the intermountain area of northern California and for late fall planting in the Central Valley and the south-central coastal regions of California.

POCO

Poco is a six-rowed spring feed barley. It was developed by D.G. Lorange for Anderson Clayton Co., and released in 1981. Poco was selected from an early maturing CIMMYT line from the cross HJA C4715*Olli- M64-69. Its experimental designations were CMB73-383-2Y-2B-Y-0B and PC238. Poco has very early maturity, very short stature, and good straw strength. The spike is parallel, mid-dense, and inclined at maturity. The basal rachis internode is curved and the rachis edges are covered with hairs. The lemma awn is long and rough. The glume awn is longer than the glume and rough. The glume is one-half the length of the lemma. Rachilla hairs are short. Kernels are short to mid-long with semi-wrinkled hulls and white aleurone. At the time of evaluation it was moderately resistant to BYD, moderately susceptible to net blotch, powdery mildew, and leaf rust, and susceptible to scald. It was evaluated as Entry 579 in the UC Regional Cereal Testing program from 1981-1983 for fall planting in the Central Valley and south-central coastal regions of California and for spring planting in the intermountain area of northern California.

PRATO

Prato is a six-rowed spring feed barley. It was released by the California AES in 1978. It is an F5 selection made in 1975 from the modified backcross CM 67/3*Briggs/4/Briggs*4/3/California Mariout*4/CIho 1179//2*California Mariout*6/Club Mariout. Its experimental designation was UC76137. Prato has medium short stature, fair straw strength, and medium early maturity (about 2 days later than Briggs). The spike is parallel, medium dense, medium long, and inclined at maturity. The basal rachis internode is straight. The rachis edges have few hairs. Rachilla hairs are long. The lemma awn is long and semi-smooth. The glume awn is more than equal in length to the glume and is rough. The glume is one-half the length of the lemma. Kernels are mid-long to long, with semi-wrinkled hulls and white aleurone. At the time of evaluation Prato was resistant to BYD (Yd2 gene), moderately resistant to scald, leaf rust, and powdery mildew, and susceptible to net blotch. It was evaluated as Entry 316 in the UC Regional Cereal Testing program from 1980-1994 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 19:741 (1979)

PREMIER

Premier is a two-rowed spring malting barley. It was developed by Busch Agricultural Resources, Inc and released in 1985. It was selected from the cross Klages/Summit. Its experimental designation was 2B78-471. Premier has relatively short, stiff straw with fair lodging resistance and medium late maturity. Spikes are lax, mid-long to long, nodding, with rough awns. Rachis edges are covered with hair. The glume awn is equal in length to the glume. Kernels have long rachilla hairs, slightly wrinkled hulls, and white aleurone. Veins are moderately prominent and there are no barbs on the lateral veins. The crease is V-shaped and closed in the lower quarter of the kernel. It was evaluated as Entry 633 in the UC Regional Cereal Testing program from 1982-1985 for spring planting in the intermountain region of northern California.

RADIANT

Radiant is a two-rowed spring feed and malting barley. It was released by the Washington State University Agricultural Research Center and the Idaho and Oregon AESs and USDA-ARS in 2003. It was selected from the cross (Induced mutant in Harrington) ant29-667/Baronesse. Its experimental designation was 98-NZ 223. It is a proanthocyanidin-free two-rowed spring feed and potentially malting barley. The lack of proanthocyanidins is a brewing quality trait, which eliminates permanent and chill haze formation in beer. A lack of proanthocyanidins may also improve barley as livestock feed (digestibility) and human food (white color retention). It is well adapted to Pacific Northwest growing conditions, essentially equal to the leading Washington cultivar, Baronesse, in yield based on state and regional tests conducted 2000-2002. It is similar to Baronesse in pest resistances and other agronomic traits, except that it is late maturing (heads 2-5 days later than Baronesse). It is medium height with poor straw strength. Micro-malting data indicate a quality profile similar to Harrington. It has particularly high malt extract and low beta-glucan content. At the time of release it was moderately resistant to stripe rust, powdery mildew, net blotch, and scald. It was evaluated as Entry 1160 in the UC Regional Cereal Testing program in 2004 for spring planting in the intermountain region of northern California. *Crop Science* 44:1859-1860 (2004)

ROBUST

Robust is a six-rowed spring malting barley. It was released by the Minnesota AES in 1983. It was selected from the cross Morex/Manker. Its experimental designation was M36. It is adapted to barley growing areas in the upper Midwest. It is smooth-awned with medium early maturity (matures 2-3 days earlier than Morex). Plants are mid-tall with moderately strong straw. Spikes are medium-lax, medium-long and semi-erect. Kernels are covered, medium-large with short haired rachilla and white aleurone. The central vein is moderately prominent, lateral veins are less prominent and disappearing near the center of the kernel. There are no barbs on the lateral veins. The crease is V-shaped and narrow at the base. Lateral kernels are moderately twisted, plump, wide at the center, and full on the crease side. It is superior to Morex in grain yield, kernel plumpness and lodging resistance. At the time of release it was highly resistant to stem rust and spot blotch and susceptible to loose smut. It was evaluated as Entry 688 in the UC Regional Cereal Testing program from 1984-1985, in 1993, and in 2011 for spring planting in the intermountain region of northern California. *Crop Science 23:1216 (1983)*

ROLLO

Rollo is a six-rowed spring feed barley. It was released by the Utah AES in 1991. It was selected from the cross Bracken/UT75B65-532 (ID633019/Woodvale). Its experimental designation was UT 1075. It has midseason maturity and is similar to Steptoe in plant height, and lodging (susceptible). Compared to Steptoe, its heads 3 days later, is equal in test weight and 1 cm shorter, but has stronger straw (30 vs. 51% lodging for Steptoe). Spikes are erect with little or no overlap of the lateral kernels, and sparse hairs on the rachis edges. Glumes are long, with hairs restricted to the middle, and have medium-to-long, semi-smooth glume awns. Lemma awns are long and semi-smooth and have distinctly purple tips prior to maturity. The seed is covered, mid-long, slightly wrinkled, with long rachilla hairs and a transverse crease at the base. Aleurone color is white. At the time of release it had field resistance to barley loose smut and covered smut and moderate resistance to powdery mildew. It subsequently became susceptible to stripe rust. It was evaluated as Entry 903 in the UC Regional Cereal Testing program from 1993-1998 for spring planting in the intermountain region of northern California. *Crop Science 33:1412-1413 (1993)*

RUSSELL

Russell is a six-rowed spring feed and malting barley. It was released by the USDA-ARS and the Idaho and Oregon AESs in 1985. It was selected from the cross Karla/ND1265. Its experimental designation was 78Ab9009-5RC. Plants are "Karla-type" with improved kernel plumpness, slightly shorter straw, and earlier heading. It is susceptible to lodging, but lodges less than Steptoe. It is superior in test weight and similar in height (mid-tall) and heading date to Steptoe (heads about 1 day earlier than Steptoe at Tulelake). Spikes are relatively lax and mid-long. Awns are smooth. Glumes are covered with short hairs. The hull is adhering and wrinkled. The aleurone is colorless. Rachilla hairs are short. Veins are moderately prominent and there are numerous barbs on lateral veins. The crease is narrow to closed at the base and flared toward the awn end. Lateral kernels are relatively plump and slightly twisted. At the time of evaluation it was susceptible to stripe rust, kernel blight (caused by *Alternaria* spp) and powdery mildew, and moderately susceptible to scald. It was evaluated as Entry 658 in the UC Regional Cereal Testing program from 1983-1984 and from 1993-1995 for spring planting in the intermountain region of northern California. *Crop Science 28:574 (1988)*

SAMISH 23

Samish 23 is a two-rowed spring feed and malting barley. It was developed by Fossum Cereals in Washington. It was selected from the cross 85Ab2323/Aclaim. It is late maturing and short-statured with good straw strength. At the time of evaluation it was resistant to stripe rust. It was evaluated as Entry 1176 in the UC Regional Cereal Testing program in 2005 for spring planting in the intermountain region of northern California.

SARA

Sara is a six-rowed spring hooded feed barley. It was developed by the Oregon AES and exclusively released to Winema Elevators Inc. of Tulelake, CA in 2001. It was selected from the cross Marco/Fragil//Cali92/3/Gloria-Bar/Come-b//Esperanza. Sara is a stripe rust resistant hooded spring barley developed by Hugo Vivar (retired; CARDA/CIMMYT). Pat Hayes, OSU barley breeder, brought a collection of ICARDA/CIMMYT stripe rust resistant hooded lines to Oregon in 1998 and two lines ('Sara I' and 'Sara II') were selected from plots grown at the Klamath Falls Experiment Station, based on stripe rust resistance and phenotypic appearance. Sara I was identified by J.W. Cope (Winema Elevators; Tulelake, California) as having potential for inclusion in forage mixes. The OSU Statewide Variety Testing Program conducted a forage trial at Corvallis in 2001. Sara and Washford were included in this test. Sara was taller, earlier, and

had a higher grain yield than Washford. Sara has white aleurone. In addition its resistance to stripe rust, Sara is resistant to scald and moderately resistant to BYD. Sara was tested in a fall-sown spring barley nursery at Davis, CA in 2006 and was evaluated as Entry 1226 in the UC Regional Cereal Testing program in 2007 for spring planting for hay in the intermountain region of northern California. *Oregon AES (2001)*

SECO

Seco is a six-rowed spring feed barley. It was released by USDA-ARS, USDA-SCS, and the Arizona AES in 1987. It is a selection from the male sterile facilitated recurrent selection population, Composite Cross 39. Its experimental designations were AZ 2-22-1, 9047432, and T47432. It is a robust, rough-awned type. It is early maturing and tall, with poor straw strength. Spikes are lax and non-waxy. Lemmas are slightly wrinkled to wrinkled and have purple veins. Kernels predominantly have a white aleurone, occasionally blue, and have long rachilla hairs. Vertical root development extends beyond 2.5 m under favorable conditions, which provides excellent drought tolerance. It is recommended for planting as a winter cover crop, green manure crop or for erosion control. It is adapted to west Texas and southern portions of Arizona, New Mexico and California. It is drought and salt tolerant. At the time of evaluation it was resistant to net blotch and leaf rust, moderately susceptible to scald, and susceptible to BYD. It was evaluated as Entry 701 in the UC Regional Cereal Testing program in 1985 and from 1991-1994 for late fall planting in rainfed production areas of the Central Valley foothills and the south-central coastal regions of California. *Crop Science 29:487-488 (1989)*

SIGRA

Sigra is a hooded spring forage barley. It was developed in Germany. It is late maturing and medium tall, with good straw strength. At the time of evaluation it was resistant to scald, net blotch, leaf rust, and powdery mildew. It was evaluated as Entry 796 in the UC Regional Cereal Testing program in 1989 for late fall planting in the Central Valley and the south-central coastal regions of California.

SOLUM

Solum is a six-rowed spring feed barley. It was jointly released by the USDA-ARS and Arizona and California AESs in 1992. It is a selection from the male sterile facilitated recurrent selection population, Composite Cross 39. Its experimental designation was AZ 2-22-9. Solum was developed for low water use environments in the Southwestern United States: in Arizona where only one or two irrigations (6-12 inches) are applied and in California under rainfed conditions where rainfall is usually less than 15 inches. It has erect early growth, early maturity (matures about 3 days later than Seco and 5 days earlier than Arivat), and is mid-tall to tall with poor straw strength. Spikes are lax, mid-long, with rough awns. Kernels are covered, white and long with slightly wrinkled to semi-wrinkled hulls. At the time of evaluation it was resistant to net blotch and leaf rust and susceptible to scald and BYD. It was evaluated as Entry 702 in the UC Regional Cereal Testing program in 1985 and from 1991-1996 for late fall planting in rainfed production areas of the Central Valley foothills and the south-central coastal regions of California.

SPAULDING

Spaulding is a two-rowed spring feed barley. It was developed by Plant Breeders 1 (Idaho) and the Genetic Marketing Group (Washington) and released in 2005. It was selected from the cross PB1-88-2R-801/VD403582. Its experimental designation was PB1-95-2R-522. It is medium maturing and medium tall, with fair straw strength. At the time of evaluation it was susceptible to stripe rust. It was evaluated as Entry 1151 in the UC Regional Cereal Testing program from 2004-2006 for spring planting in the intermountain region of northern California.

STANDER

Stander is a six-rowed spring malting barley. It was released by the Minnesota AES in 1993. It was selected from the cross Excel//Robust/Bumper. Its experimental designation was M64. It is of similar height to Steptoe and Excel, and 6 cm shorter than Robust. It is moderately susceptible to lodging, but lodges less than Steptoe. It has intermediate maturity (heads slightly earlier than Steptoe at Tulalake, and 1-2 days later than Robust). Spikes are medium long, medium lax, and semi-erect. Awns are smooth. Glumes are covered with long hairs. Hulls are adhering and wrinkled. It has white aleurone and short rachilla hairs. Central and lateral veins are moderately prominent. There are few to no barbs on lateral veins. The crease is V-shaped and narrow at the base. Kernels are plump, wide at the center and tapering at both ends. Lateral kernels are moderately twisted. It is similar or superior to Morex in malting quality, and has 36% higher alpha-amylase and 1.2% higher extract compared to Morex. At the time of evaluation it was resistant to spot blotch and stem rust, had some tolerance to net blotch, and was susceptible to loose smut, BYD, and stripe rust. It was evaluated as Entry 905 in the UC Regional Cereal Testing program from 1993-1998 for spring planting in the intermountain region of

northern California. *Crop Science* 33:1403 (1993)

STATEHOOD

Statehood is a six-rowed spring feed barley. It was released by the Utah Agricultural Experiment Station in 1997. It was selected from the cross WA641566/Bracken. Its experimental designation was UT1705-D. It has early to midseason maturity and is erect-growing, medium height, and has good straw strength. It has a tapering, dense head with no overlap of lateral kernels, short hairs on the rachis edges, and waxy leaves and heads. Glumes are long with short hairs restricted to the middle, and have long, semi-smooth glume awns. Lemma awns are long and wrinkled with numerous long rachilla hairs and a transverse crease at the base. Aleurone color is white and 1000-kernel weight averages 43 g. The base of most spikes is marked by a closed collar. At the time of release it was resistant to loose smut and covered smut, moderately resistant to powdery mildew, and susceptible to stripe rust and BYD. It was evaluated as Entry 1016 in the UC Regional Cereal Testing program in 1991 and from 1998-2011 for spring planting in the intermountain region of northern California. *Crop Science* 40:1507-1508 (2000)

STOCKFORD

Stockford is a two-rowed hooded spring forage barley. It was released by WestBred LLC. It is medium maturing, tall with fair straw strength, and produces a high yielding, high quality and uniform hay crop. It has a fine stems which aids in feeding and digestibility. At the time of release it was moderately susceptible to stripe rust and susceptible to scald, net blotch, and BYD. It is adapted for spring planting in the intermountain region of northern California.

SUMMIT

Summit is a two-rowed spring malting barley. It was released by North American Plant Breeders in 1977. It was selected from the cross HP1203*(Zephyr*Tern). It has mid-season maturity and is medium short (1-3 inches shorter than Klages and Steptoe) and has strong straw. Awns are long and rough. Glumes have short hairs that are confined to the midline of the glume. Hulls are adhering. Aleurone is colorless. Rachilla hairs are short. There are no barbs on lateral veins. The crease is closed in the lower one-third of the kernel and flared at the awn end. At the time of evaluation it was resistant to powdery mildew, moderately resistant to common root rot, and susceptible to net blotch and spot blotch. It was evaluated as Entry 580 in the UC Regional Cereal Testing program from 1981-1984 for spring planting in the intermountain region of northern California.

SUNBAR 458

Sunbar 458 is a six-rowed spring feed barley. It was released by Northrup-King & Co. in 1989. Its experimental designations were NK80W41558 and NK41558. It is medium late maturing and medium tall, with good straw strength. At the time of evaluation it was resistant to powdery mildew, moderately resistant to leaf rust and net blotch, moderately susceptible to scald, and susceptible to BYD and stripe rust. It was evaluated as Entry 647 in the UC Regional Cereal Testing program from 1983-1984 and from 1989-1997 for late fall planting in the Central Valley and the south-central coastal regions of California.

SUNBAR BARLEY BLEND 82-2

Sunbar Barley Blend 82-2 is a six-rowed spring feed barley. It was released by Northrup-King & Co. in 1983. It is a 50/50 blend of NK41248 (SB425) and NK31275. NK41248 has medium maturity, excellent straw strength, and white seed with medium test weight. NK41248 is slightly later than NK31275, has slightly taller, weaker straw, white seed and medium test weight. The chief contribution of NK31275 to the blend is its higher yield potential. Sunbar Barley Blend 82-2 is short statured, stiff-strawed (good lodging resistance), with medium-late maturity. Kernels are white with medium test weight. At the time of evaluation Sunbar Barley Blend 82-2 was resistant to moderately resistant to BYD, scald, and net blotch, and moderately susceptible to powdery mildew and leaf rust. It was evaluated as Entry 584 in the UC Regional Cereal Testing program from 1982-1993 for late fall planting in the Central Valley and south-central coastal regions of California.

SUNBAR BRAND 400

Sunbar Brand 400 is a six-rowed spring feed barley. It was released by Northrup-King & Co. in 1980. Sunbar Brand 400 has short stature, medium strong straw, and medium maturity. The basal rachis internode is straight. Rachis edges have few hairs. The spike is parallel, lax, and inclined at maturity. The lemma awn is long and semi-smooth. The glume awn is equal in length to the glume, and is semi-smooth. The glume is one-half the length of the lemma. Rachilla hairs are short. Kernels are long with slightly wrinkled hulls and white aleurone. At the time of evaluation, Sunbar Brand 400 was

moderately resistant to leaf rust and net blotch, and susceptible to BYD, scald, and powdery mildew. It was evaluated as Entry 365 in the UC Regional Cereal Testing program from 1980-1984 and from 1988-1990 for late fall planting in the Central Valley and south-central coastal regions of California.

SUNBAR BRAND 401

Sunbar Brand 401 is a six-rowed spring feed barley. It was released by Northrup-King & Co. in 1980. It was selected from the cross MINN 64-98-8/NU//CM67. Its experimental designation was NK214W. It has medium maturity, short stature, very good straw strength and characteristics similar to Kombyne. It has white aleurone. At the time of evaluation it was moderately resistant to net blotch, leaf rust, and BYD, moderately susceptible to powdery mildew, and susceptible to scald. It was evaluated as Entry 466 in the UC Regional Cereal Testing program from 1980-1986 for late fall planting in the Central Valley and south-central coastal regions of California.

SUNBAR BRAND 550

Sunbar Brand 550 is a two-rowed spring feed barley. It was developed by Northrup-King & Co. It was evaluated as Entry 634 in the UC Regional Cereal Testing program from 1982-1983 for spring planting in the intermountain region of northern California.

SUNBAR BRAND 560

Sunbar Brand 560 is a two-rowed spring feed barley. It was developed by Northrup-King & Co. It is medium maturing and medium tall, with fair straw strength. It was evaluated as Entry 660 in the UC Regional Cereal Testing program from 1983-1987 for spring planting in the intermountain region of northern California.

SUNSTAR DOUBLE

Sunstar Double is a six-rowed facultative (winter/spring) feed barley. It was released by Sunderman Breeding Co. in 1995. It was selected from the cross Eight Twelve/Steptoe. Its experimental designation was SDM 208B. It has intermediate height and good straw strength. At the time of evaluation it was moderately resistant to BYD and susceptible to stripe rust. It was evaluated as Entry 950 in the UC Regional Cereal Testing program from 1995-1998 for fall planting and spring planting in the intermountain region of northern California.

SUNSTAR PRINCE

Sunstar Prince is a six-rowed spring feed barley. It was released by Sunderman Breeding Co. in 1995. It was selected from the cross Eight Twelve/Steptoe. Its experimental designation was SDM 306B. It has medium maturity, medium height (several inches shorter than Steptoe) with fair straw strength (stronger straw than Steptoe). At the time of evaluation it was susceptible to BYD and stripe rust. It was evaluated as Entry 929 in the UC Regional Cereal Testing program in 1994 and from 1996-1997 for spring planting in the intermountain region of northern California.

SUTTER

Sutter is a six-rowed spring feed barley. It was released by the University of California AES in 1971. It was selected from the cross CIho 1237/2*Winter Tennessee. It is tall with moderately strong straw and long, medium-dense erect heads. Early growth is semi-prostrate. It is late maturing (matures 4 days later than other cultivars grown in the Central Valley of California at the time of release). It is rough awned and kernels are moderately large with colorless aleurone and long rachilla with short hairs. It is similar to Winter Tennessee in ability to tolerate cold, wet soils. At the time of evaluation it was resistant to BYD (carries the Yd2 gene from CIho 1237), and moderately resistant to scald, powdery mildew, leaf rust and net blotch. It was evaluated as Entry 18 in the UC Regional Cereal Testing program from 1980-1985 for late fall planting in the Central Valley and the south-central coastal region of California. *Crop Science* 13:285 (1973)

TANGO

Tango is a six-rowed spring feed barley. It was released by the Oregon AES in 2000. It was developed by molecular marker assisted selection for quantitative trait loci (QTL) determining quantitative resistance to stripe rust. It was selected from the cross Orca-sib/2*Steptoe. The source of stripe resistance is Calicuchima sib developed by the ICARDA/CIMMYT Program in Mexico. Its experimental designations were SR58-4 and OR2967007. It is early maturing, mid-tall, with fair straw strength (the same height, lodging reaction and maturity as Steptoe). Two cycles of molecular marker-assisted backcrossing were used to transfer the resistance QTL alleles from BSR-41 to Steptoe. BSR-41, a sister line of Orca, is Calicuchima-sib/Bowman. Tango has long and smooth awns, white aleurone and short

rachilla hairs. At the time of evaluation it was resistant to stripe rust and susceptible to BYD. It was evaluated as Entry 979 in the UC Regional Cereal Testing program from 1997-2001 for spring planting in the intermountain region of northern California. *Crop Science* 43:729-731 (2003)

TARGHEE

Targhee is a two-rowed spring feed barley. It was released by the USDA-ARS and the Idaho, Oregon, and Washington AESs in 1991. It was selected from the cross 60Ab1810-53/Hector = Betzes/Domen//Hector. Its experimental designation was 78Ab10099-B. It is meant primarily for rainfed conditions and is susceptible to lodging under irrigation. It has mid-season maturity and is similar to Klages in height (mid-tall) and about 1 day later to head. It has white aleurone, lax spikes, rough awns, and long rachilla hairs. Lateral veins are moderately prominent with few to no barbs. Lemmas are typically wrinkled and glumes are covered with hairs. At the time of evaluation it was susceptible to stripe rust. It was evaluated as Entry 901 in the UC Regional Cereal Testing program from 1993-1995 for spring planting in the intermountain region of northern California. *Crop Science* 35:1209-1210 (1995)

TETON

Teton is a six-rowed spring feed barley. It was developed by the USDA-ARS and the Idaho AES. It is early maturing, medium tall height, with fair straw strength. It was evaluated as Entry 725 in the UC Regional Cereal Testing program from 1985-1991 for spring planting in the intermountain region of northern California.

TETONIA

Tetonia is a two-rowed spring feed barley. It was developed cooperatively by the USDA-ARS and the Idaho AES and released in 2007. It was selected from the cross 85Ab2323/Baronesse. Its experimental designation was 98Ab11720. It is medium maturing and medium tall (averages about 41 inches in plant height) with fair straw strength. It is moderately susceptible to stripe rust. It was evaluated as Entry 1215 in the UC Regional Cereal Testing program from 2007-2009 for spring planting in the intermountain region of northern California.

TIPTON

Tipton is a six-rowed spring feed barley. It was released by Resource Seeds, Inc. It was selected from the cross X1275/Sunbar 458//Gloria 'S'/Copal 'S'. Its experimental designation was RSI 212. It is medium early maturing and medium height with fair straw strength. At the time of evaluation it was moderately resistant to scald, BYD, leaf rust and powdery mildew, moderately susceptible to net blotch and susceptible to stripe rust. It was evaluated as Entry 890 in the UC Regional Cereal Testing program from 1993-1996 for late fall planting in the Central Valley and the south-central coastal regions of California.

TRADITION

Tradition is a six-rowed spring malting barley. It was released by Busch Agricultural Resources in 2003. It was selected from the cross 6B89-2126/ND10981. Its experimental designation was 6B95-2482. Plants are tall with fair lodging resistance and early maturity. It has semi-smooth awns, long rachilla hairs, and colorless aleurone. It is resistant to spot blotch and has slightly better net blotch resistance than Robust. At the time of evaluation it was susceptible to scald, BYD, and stripe rust. It was evaluated as Entry 1083 in the UC Regional Cereal Testing program from 2001-2006 and in 2011 for spring planting in the intermountain region of northern California.

TRIUMPH

Triumph is a two-rowed spring malting barley. It originated in the German Democratic Republic and was released in 1976. It was selected from the cross Diamant/St. 1402964-9. It has midseason maturity, short to medium tall plants and strong straw. Spikes are narrow, medium length, medium lax to medium dense, and nodding. Awns are rough. Glumes have long hairs and the glume awn is equal in length to the glume. Hulls are wrinkled and aleurone is colorless. Rachilla hairs are long. Veins are moderately prominent and there are no barbs on lateral veins. The crease is deep with defined folds, well defined at the center and flared at the tip. Kernels are plump, and long in relation to width. At the time of evaluation it was resistant to stripe rust and scald, and susceptible to powdery mildew. It was evaluated as Entry 804 in the UC Regional Cereal Testing program from 1989-1990 for spring planting in the intermountain region of northern California.

UC 337

UC 337 is a six-rowed spring feed barley. It was released by the University of California AES in 1985. It is a F5

generation selection from the cross Sutter/Numar//Numar*4/Mildew Resistant White California Mariout. Its experimental designation was 76264. The cross was designed to develop a Numar-type cultivar with resistance or tolerance to scald, net blotch, powdery mildew and BYD, together with improved straw quality. UC 337 is mid-tall (2-3 inches taller than UC 476 and Prato) with moderately strong straw and medium early maturity (comparable to Prato and Briggs). The basal rachis internode is straight. Rachis edges are covered with hair. The spike is parallel, dense and inclined at maturity. The lemma awn is long and smooth. The glume awn is one-half the length of the lemma. The few rachilla hairs are long and occur mainly at the tip. Kernels are mid-long to long with slightly wrinkled hulls and blue aleurone. At the time of release UC 337 was resistant to moderately resistant to BYD, scald, net blotch, powdery mildew, and leaf rust. It subsequently became moderately susceptible to scald, leaf rust, and powdery mildew, and susceptible to stripe rust. It was evaluated as Entry 337 in the UC Regional Cereal Testing program in 1980 and from 1982-1997 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 30:1154 (1990)

UC 476

UC 476 is a six-rowed spring feed barley. It was released by the University of California AES in 1985. It is a F6 generation selection from the cross Sutter/Briggs//Prato sib made in 1971. Its experimental designation was 78011. The cross was designed to develop a later maturing Prato-type with increased disease resistance and improved straw quality. UC 476 is mid-tall (similar to Briggs and slightly taller than Prato) with good straw strength and medium maturity (about three days later than Prato and about 7 days later than CM 72). The basal rachis internode is straight. The rachis edges have few hairs. The spike is parallel, lax to dense, and inclined at maturity. The lemma awn is long and semi-smooth. The glume awn is longer than the glume and is semi-smooth. The glume is one-half the length of the lemma. The rachilla has few long hairs. Kernels are mid-long to long with wrinkled hulls and white aleurone. UC 476 is superior to Prato in kernel assortment and test weight. At the time of release UC 476 was resistant to moderately resistant to scald, net blotch, leaf rust, BYD (carries the Yd2 gene for resistance to BYD) and powdery mildew. It subsequently became susceptible to scald and moderately susceptible to net blotch, leaf rust and stripe rust. It was evaluated as Entry 476 in the UC Regional Cereal Testing program in 1980 and from 1982-2002 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 30:1154 (1990)

UC 566

UC 566 is a six-rowed spring feed barley. It was released by the University of California AES in 1972. It is a composite of 19 F7 generation lines from the backcross CM 67/Numar*2. Its experimental designation was 69-566F. The original cross was made in 1966 and the final selection was completed in 1972. The cross was designed to develop a BYD resistant Numar-type. It is adapted to areas where Numar and CM 67 are grown. UC 566 has short stature but weak straw (susceptible to lodging). It is early in maturity. The basal rachis internode is straight. The rachis edges have few hairs. The spike is parallel, lax, and nodding at maturity. The lemma awn is long and semi-smooth. The glume awn is equal in length to the glume and is semi-smooth. The glume is greater than one-half the length of the lemma. The rachilla has long hairs. Kernels are long with semi-wrinkled hulls and blue aleurone. At the time of evaluation it was resistant to BYD (carries the Yd2 gene for resistance to BYD), moderately resistant to leaf rust and powdery mildew, moderately susceptible to net blotch, and susceptible to scald. It was evaluated as Entry 190 in the UC Regional Cereal Testing program from 1980-1988 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 13:770 (1973)

UC 828

UC 828 is a six-rowed spring feed barley. It was released by the California AES in 1995. It was selected from the cross [(Numar*2/CI 2376)/Yellow Dwarf Resistant Numar]/2*UC 75012W. Its experimental designation was UCD 87-10395. UC 828 was intended for late fall to early winter sowing in the Central Valley of California. It is medium maturing (heads 1 to 4 days later than UC 337). It is short-statured (about 11 inches shorter than UC 337) as a result of the sdw gene, lodging resistant, and has excellent grain yield potential. The spike is awned, mid-dense, waxy, and erect. There are few hairs on the rachis edge. Glumes are more than one-half the length of the lemmas, completely covered by short hairs, and have smooth awns less than equal in length to glumes. Lemmas have neither hair nor teeth. Rachilla hairs are long. Lemma awns are long and semi-smooth. The peduncle is intermediate in length. The kernels are beige (non-blue) and similar in size to those of UC 337. At the time of release it was moderately resistant to BYD, leaf rust, powdery mildew, and net blotch, and susceptible to scald and stripe rust. It subsequently became moderately susceptible to net blotch and BYD. It was evaluated as Entry 828 in the UC Regional Cereal Testing program from 1991-1997 for late fall planting in the Central Valley and the south-central coastal regions of California. *Crop Science* 36:466 (1996)

UC 937

UC 937 is a six-rowed spring feed barley. It was released by the California AES in 1999. UC 937 was selected among progeny from the hybrid Sma1/Sunbar 401/3/Gus/Kombyne//Sma1. Sma1 has the parentage Steptoe/2*Diamant /3/Minn Dwarf 64.98-8/Briggs/4/Asse. The final hybridization was made at Woodland, CA in 1983 by Robert Matchett. Subsequent generations were handled in a pedigree selection program. An F3-derived seed sample in the F6 generation (86Woodland 41233) was received by the University of California, Davis from Robert Matchett in 1987. A head row was selected for agronomic appearance in 1992 by Lynn Gallagher and designated UCD 92-10,615 for preliminary yield trials. In 1993 it was designated UC 937 and placed in UC regional yield trials for statewide evaluation. UC 937 was released primarily for resistance to stripe rust. It is intended for late fall to early winter (November-December) sowing in the Central Valley of California. UC 937 is a medium tall semi-dwarf (moderately short-statured as a result of the *sdw* gene, but averages two inches taller than UC 828) with fair straw strength. It is medium-late maturing (heading time is 2 to 5 days later than UC 828 with mid-November to mid-December emergence under short daylength in California). Spikes are fully awned, semi-erect, mid-dense and waxy. Glumes are more than 1/2 of the length of the lemma and completely covered with short hairs. Glume awns are semi-smooth and greater than equal in length to glumes. Lemma awns are long and semi-smooth. The kernels are beige (the aleurone non-blue), covered, short to mid-long and semi-wrinkled. At the time of release UC 937 was resistant to stripe rust and scald, and moderately resistant to BYD, leaf rust, powdery mildew, and net blotch. It subsequently became susceptible to leaf rust and moderately susceptible to powdery mildew. It was evaluated as Entry 937 in the UC Regional Cereal Testing program from 1995-2008 for late fall planting in the Central Valley and the south-central coastal regions of California and for spring planting in the intermountain region of northern California. *Crop Science* 42:1374 (2002)

UC SIGNAL

UC Signal a six-rowed spring feed barley. It was released by the California AES in 1973. It originated as a single plant selection from the F12 generation of a population synthesized from male sterile selection from CC XIV and CC XV as female parents and CC II, CC V and CC XII as pollen sources. Its experimental designations were IV 363 and UC Holt. It yielded 13-27% more than other commercially grown cultivars in the Imperial Valley prior to its release. It is adapted to the lower desert areas of California, particularly the Imperial Valley. It is semi-smooth awned and early maturing. It has medium short, weak straw and medium dense, erect spikes. Kernels are large with medium blue aleurone and short-haired rachilla. At the time of release it was moderately susceptible to scald and susceptible to BYD and powdery mildew. It was evaluated as Entry 55 in the UC Regional Cereal Testing program for late fall planting in the southern desert valleys of California. *Crop Science* 15:603 (1975)

WALKER

Walker is a six-rowed spring feed barley. It was released by the Utah AES in 1991. It was selected from the cross Steptoe/M27. Its experimental designation was UT 1731. It is recommended only for growing under irrigation. It has early maturity (equal to Steptoe in heading date), is mid-tall (about 4 cm taller than Steptoe), and has good lodging resistance. Spikes are erect, tapering, with little or no overlap of lateral kernels, and profuse hairs on the rachis edges. Glumes are long, covered with short hairs, and have medium-to-long, rough awns. Lemma awns are long and rough with hair present and numerous teeth. The seed is covered, long, semi-wrinkled, with short rachilla hairs, and a slight crease at the base. Aleurone color is white. The base of the spike is marked with a V-shaped collar. Grain yield is equal to Steptoe, and test weight and protein exceed Steptoe. At the time of evaluation it was resistant to loose smut and covered smut, moderately resistant to powdery mildew, and susceptible to stripe rust. It was evaluated as Entry 904 in the UC Regional Cereal Testing program from 1993-1996 for spring planting in the intermountain region of northern California. *Crop Science* 33:1413 (1993)

WESTBRED 501

Westbred 501 is a six-rowed spring feed barley. It was released by Western Plant Breeders in 1982. It was selected from a male-sterile facilitated recurrent population (CCXXXII-76*Arivat F2 Bulk). Its experimental designation was WPB78-20. It has medium early maturity, short stature (plant height averages 29-33 inches), and good straw strength. Early growth is semi-prostrate. Spikes are slightly waxy, erect, strap-shaped with no kernels overlapping. Rachis edges have few hairs. Awns are long and semi-smooth. Glumes are one-half the length of the lemma, with no glume hairs. Glume awns are semi-smooth and more than equal to the length of the glumes. Hulls are adhering and semi-wrinkled. Aleurone is colorless. Rachilla hairs are long. Veins are slightly prominent and there are no barbs on lateral veins. The crease is closed in the lower one-third and shallow, flaring at the awn end. Kernels are very plump, about one-half as wide as they are long, and lateral kernels are only slightly twisted and nearly the same shape as the central kernels. At the time of

evaluation it was resistant to scald, net blotch, and powdery mildew, moderately susceptible to BYD, and susceptible to loose smut and leaf rust. It was evaluated as Entry 577 in the UC Regional Cereal Testing program from 1981-1984 for late fall planting in the Central Valley and the south-central coastal regions of California.

WESTBRED BARCOTT

Westbred Barcott is a six-rowed spring feed barley. It was released by Western Plant Breeders. It originated as an F2 selection from the male-sterile facilitated recurrent selection population CCXXII-78. It was developed to be used in rotation with cotton in the desert southwest. It is very early maturing (10 days earlier than Westbred 501). It is short with excellent straw strength. It has short awns. At the time of evaluation it was moderately susceptible to leaf rust, net blotch, powdery mildew, and bacterial leaf blight, and susceptible to stem rust, scald, and BYD. It was evaluated as Entry 727 in the UC Regional Cereal Testing program in 1986 for late fall planting in the Central Valley and south-central coastal regions of California.

WESTBRED GUSTOE

Westbred Gustoe is a six-rowed spring feed barley. It was released by Western Plant Breeders in 1982. It is a selection from the resultant F2 of the intercrossed short F2 plants in the bulk F2 of the cross CCXXXII-76/Arivat. It is derived from F8 plant selections from an F7 bulk tested as BFP-79-22. Its experimental designation was WPB 79-22. Westbred Gustoe is a semi-dwarf with fair straw strength. It is late in maturity and has a semi-prostrate growth habit in the Southwest when planted in November to February. It heads about 2 days later than Steptoe when planted in the spring at Tulelake. The spike is medium in length, parallel, mid-dense, and erect at maturity. The basal rachis internode is straight and the rachis edges are covered with hairs. The lemma awn is long and rough. The glume awn is longer than the glume and is rough. The glume is one-half the length of the lemma. The rachilla hairs are long. Kernels are mid-long with semi-wrinkled hulls and blue aleurone. The collars are closed. The leaves and spikes have a slight waxy coating. At the time of evaluation it was moderately resistant to BYD, moderately susceptible to scald and net blotch, and susceptible to leaf rust, stripe rust and powdery mildew. It was evaluated as Entry 618 in the UC Regional Cereal Testing program from 1982-2001 for spring planting in the intermountain area of northern California and for late fall planting in the Central Valley and the south-central coastal regions of California.

WESTBRED SPRINTER

Westbred Sprinter is a six-rowed facultative feed barley. It was released by Western Plant Breeders in 1986. It was selected from a winter barley composite population developed by Neil Jensen at Cornell University. It can be planted in the winter or spring planting seasons. It has late season maturity (7 days later than Westbred 501 and 3-5 days later than Schuyler), semi-dwarf height (medium short) with stiff straw, and excellent lodging resistance. It is awned and has white aleurone. At the time of evaluation it was moderately resistant to scald, net blotch, stripe rust, powdery mildew, and bacterial leaf blight, and susceptible to leaf rust, stem rust and BYD. It was evaluated as Entry 748 in the UC Regional Cereal Testing program from 1986-1988, in 1991, and from 1993-2006 for fall planting and spring planting in the intermountain region of northern California.

WESTFORD

Westford is a six-rowed spring forage (hooded) barley. It was released by Western Plant Breeders. Its experimental designation was BFC 79-18. It was developed for maximum forage production for growers needing additional forage and feed without committing to an alfalfa rotation. It has produced 2950 lbs/acre more forage than Horsford. It is late maturing and tall with good straw strength. At the time of evaluation it was resistant to scald, net blotch, and powdery mildew, and susceptible to BYD and stripe rust. It was evaluated as Entry 801 in the UC Regional Cereal Testing program as a forage barley from 1989-1990 for late fall planting in the Central Valley and the south-central coastal regions of California and in 2007 for spring planting in the intermountain region of northern California.

WINTER TENNESSEE

Winter Tennessee is a six-rowed spring feed barley. It was released by the California AES in 1916. It originated as a selection from Coast. It does not in any way resemble the true Tennessee Winter type. It produces better on wet and poorly drained soils than other varieties available at the time of release. It has erect early season growth, and mid-season to late maturity. It is mid-tall with moderately weak straw. Basal rachis internodes are straight. Spikes are lax, short to mid-long, parallel, slightly waxy and slightly nodding. Lemma awns are long and rough. Glume awns are rough and equal in length to glumes. Glumes are half the length of lemmas and covered with short hairs. The rachilla is short-haired. Hulls are slightly wrinkled to semi-wrinkled. Aleurone is blue. Veins on kernels are moderately prominent and

there are numerous barbs on lateral kernels. The crease is wide, particularly at the awn end. The kernel has a hump on the back, particularly on plump kernels. Lateral kernels are moderately twisted. Winter Tennessee is less susceptible to the major diseases than Atlas. At the time of evaluation it was resistant to scald and susceptible to BYD. It was evaluated as Entry 10 in the UC Regional Cereal Testing program from 1980-1981 for late fall planting in the Central Valley and the south-central coastal regions of California.

WOCUS 71

Wocus 71 is a six-rowed spring feed barley. It was released by the University of California AES in 1972. It is a composite of 500 head rows selected from Wocus on the basis of improved straw quality (height and strength), earlier maturity, and increased kernel size. Wocus, which originated from the cross Coast/Lion//Winter Club made at Logan, Utah in 1949, was released by the Oregon Agricultural Experiment Station in 1958. Wocus 71 has stiffer straw, is 3 to 5 inches shorter, and 4 to 6 days earlier in maturity than Wocus. The spike is dense and medium long, with awns (semi-smooth) about three times as long as the spike. The rachis is tough with good shatter resistance. Kernels are large, with short rachilla hairs and white aleurone. It is adapted to fertile irrigated areas of the Tulalake Basin, intermountain valleys of northern California and Klamath, Jackson and Josephine counties of Oregon. It was evaluated as Entry 184 in the UC Regional Cereal Testing program from 1980-1984 for spring planting in the intermountain region of northern California. *Crop Science 19:409 (1979)*

XENA

Xena is a two-rowed spring feed barley. It was released by Western Plant Breeders in 1999. It was selected from the cross Stark/Baronesse. Its experimental designation was WPB BZ 594-19. It has medium maturity (3-5 days later than Steptoe), medium plant height (2-3 inches taller than Baronesse), and fair straw strength. The stem has waxy coating, a closed collar and the neck is straight. The leaves are slightly waxy in appearance and there is no anthocyanin in the leaf sheath or stem. However, there is anthocyanin in the veins of the lemma. The head is semi-erect (not dense), strap shaped, slightly waxy and semi nodding at maturity. The glume length is more than 1/2 the length of the lemma and the glume is covered with short hairs. The glume awns are equal to the length of the glumes and the surface is rough. The lemma is awned, and the awns are rough. Both lemma teeth and lemma hairs are absent, and the rachilla hair is long. The seed is mid long, wrinkled, and has a white (or colorless) aleurone. The lateral florets are extremely reduced in size. At the time of evaluation it was moderately resistant to scald and BYD, moderately susceptible to net blotch and stripe rust, and susceptible to leaf rust, stem rust, and powdery mildew. It was evaluated as Entry 1008 in the UC Regional Cereal Testing program from 1998-2009 for spring planting in the intermountain region of northern California.