All the following lines are new barley lines with low nitrogen and phosphorus tolerance, bred by the Economic Crops and Beer Material Institute, Gansu Academy of Agricultural Sciences.

Line 1267-2 was bred in 2012 by crossing 0321-40 as the female parent with the local salt-tolerant line 0401 as the male parent. It is a two-rowed hulled barley, with spring habit and a growth period of about 100 days, belonging to a medium-maturing variety. The seedlings are prostrate, with green leaves. The plant height is about 84.5 cm, the stem is yellow, with 5-6 above-ground nodes. The stem is thick and strong, with shorter basal internodes, long internodes under the ear, and good elasticity. At heading, the plant type is moderately compact, the ears are fully 抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the stems bend, the ear layer is neat, and the ear length is about 9.2 cm. The number of grains per ear is about 26, with a loose ear type. Under normal density conditions, the effective tillers per plant are 3-4. It has long awns with yellow serrations. The 1000-grain weight is about 56 g, the grain color is light yellow, the seed coat is thin, the grain size is large, with delicate wrinkles, and the grains are elliptical, plump, and farinaceous.

Line 1749-1 was bred in 2017 by crossing Ganpi 6 and 1312. It is a two-rowed hulled barley, with spring habit and a medium-maturing variety. The seedlings are prostrate, with green leaves. The plant height is about 85.0 cm, the stem is yellow, thick and strong, with shorter basal internodes, long internodes under the ear, and good elasticity. At heading, the plant type is moderately compact, the ears are fully 抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the stems bend, the ear layer is neat, and the ear length is about 9.0 cm. The number of grains per ear is about 22.5, with a loose ear type. The effective tillers per plant are 5-6. It has long awns without serrations. The grain color is light yellow, the grains are elliptical, plump, and farinaceous. It has high yield, wide adaptability, relatively good lodging resistance, and is resistant to dry hot wind, stripe disease, and other barley diseases. The original wheat indicators are as follows: 1000-grain weight 52.35 g, 3-day germination rate 99%, 5-day germination rate 100%, protein content 11.3%, and grain selection rate (≥2.5 mm) 93.5%. The malt indicators are: color 5.3 EBC, malt extract 81.3%, α-amino nitrogen content 158.0 mg/100 g, Kolbach index 43.0%, and diastatic power 361 WK.

Line 1149-3 was bred in 2011 by crossing Y0317-0-3 and 8810. It is a two-rowed hulled barley, with spring habit and a medium-late maturing variety. The seedlings are prostrate, with green leaves. The plant height is about 88 cm, the stem is yellow, with 5-6 above-ground nodes, thick and strong, with shorter basal internodes, long internodes under the ear, and good elasticity. At heading, the plant type is moderately compact, the ears are fully 抽出, with cleistogamous pollination, and the ears are rectangular. The ear layer is neat, and the ear length is about 8.2 cm. The number of grains per ear is 34, with a loose ear type. The effective tillers per plant are 3-4. It has long awns with yellow serrations. The grain color is light yellow, the seed coat is thin and easy to fall off, the grain size is large, with delicate wrinkles, and the grains are elliptical, plump, and farinaceous. It has high yield, disease resistance, relatively good lodging resistance, and is resistant to dry hot wind, stripe disease, and other barley diseases.

Line 2017Y-2 is a single plant selected from salt-alkali tolerant line resources in 2017. It is a

two-rowed hulled barley, with spring habit and a medium-maturing variety. The seedlings are prostrate, the plant height is about 91 cm, and the ear length is about 10.0 cm. It has a loose ear type, long awns with serrations, and the awn color is yellow. The number of grains per ear is about 26. The grain color is light yellow, the seed coat is thin, the grain size is large, with delicate wrinkles, and the grains are elliptical, plump, and farinaceous. It has strong tillering ability and high ear-bearing rate. The original wheat indicators are: 1000-grain weight 52.37 g, 3-day germination rate 95%, 5-day germination rate 97%, protein content 12.8%, and grain selection rate (≥2.5 mm) 97.0%. It has relatively good lodging resistance, and is drought-resistant, low nitrogen-tolerant, and salt-alkali tolerant. It is highly resistant to stripe disease, moderately resistant to net blotch, and immune to yellow dwarf disease and stripe rust.

Line 2017Y-16 is a single plant selected from salt-alkali tolerant line resources in 2017. It has spring habit, is a two-rowed hulled barley, with a growth period of 100-105 days. The seedlings are semi-prostrate, the plant height is 75-85 cm, the stem has good elasticity. At heading, the plant type is moderately compact, the ears are fully 抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the ear axis is slightly curved, the ear layer is neat, and the ear length is 12.0 cm. The number of grains per ear is about 28-35, with a dense ear type. Under normal density conditions, the effective tillers per plant are 2.5-3.0. It has long awns with yellow non-serrated awns. The 1000-grain weight is 48-57 g, the grain color is yellow, the seed coat is thin, with delicate wrinkles, and the grains are elliptical, plump, and farinaceous. It belongs to a medium-maturing variety, with high lodging resistance, and is resistant to dry hot wind, stripe disease, and other barley diseases.

Line 2017Y-17 is a single plant selected from salt-alkali tolerant line resources in 2017. It is a two-rowed hulled barley, with spring habit and a growth period of about 110 days, belonging to a medium-late maturing variety. The seedlings are semi-prostrate, with dark green leaves. The plant height is 85 cm, the stem is yellow, with 5 above-ground nodes, thick and strong, with shorter basal internodes, long internodes under the ear, and good elasticity. The leaves have a large opening angle, and the canopy has good light transmission. At heading, the plant type is moderately compact, the ears are fully 抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the stems bend, the ear layer is neat, and the ear length is about 10.0 cm. The number of grains per ear is 30-36, with a dense ear type. The protein content is 9.9%, the 1000-grain weight is 47-57 g, the selection rate is 83.5%, and the 5-day germination rate is 99%. It has long awns with yellow serrations, the grain color is light yellow, the seed coat is thin, the grain size is large, with moderate wrinkles, and the grains are elliptical, plump, and farinaceous. It has relatively good lodging resistance, and is resistant to dry hot wind, stripe disease, and other barley diseases.

Line 2017Y-18 is an excellent single plant selected from salt-alkali tolerant line resources in 2017. It is a two-rowed hulled barley, with spring habit and a growth period of about 110 days, belonging to a medium-late maturing variety. The seedlings are prostrate, with dark green leaves. The plant height is 72 cm, the stem is yellow, with 5 above-ground nodes, thick and strong, with shorter basal internodes, long internodes under the ear, and good elasticity. The leaves have a large opening angle, and the canopy has good light transmission. At heading, the plant type is

moderately compact, the ears are semi-抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the stems bend, the ear layer is neat, and the ear length is about 9.0 cm. The number of grains per ear is 28-33, with a loose ear type. The protein content is 11.6%, the 1000-grain weight is 45-48 g, and the selection rate is 81.6%. It has long awns with yellow serrations, the grain color is single yellow, the seed coat is thin, the grain size is large, with delicate wrinkles, and the grains are elliptical, plump, and farinaceous. It is resistant to lodging, relatively resistant to dry hot wind, stripe disease, and other barley diseases.

Line 2017Y-19 is an excellent single plant selected from salt-alkali tolerant line resources in 2017. It is a two-rowed hulled barley, with spring habit and a growth period of about 110 days, belonging to a medium-late maturing variety. The seedlings are prostrate, with dark green leaves. The plant height is 90 cm, the stem is yellow, with 5 above-ground nodes, thick and strong, with shorter basal internodes, long internodes under the ear, and good elasticity. The leaves have a large opening angle, and the canopy has good light transmission. At heading, the plant type is moderately compact, the ears are semi-抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the stems bend, the ear layer is neat, and the ear length is about 11.0 cm. The number of grains per ear is 28-33, with a loose ear type. The protein content is 10.7%, the 1000-grain weight is 48.2 g, and the selection rate is 76.9%. It has long awns with yellow serrations, the grain color is light yellow, the seed coat is thin, the grain size is large, with delicate wrinkles, and the grains are elliptical, plump, and farinaceous. It has relatively good lodging resistance, relatively resistant to dry hot wind, stripe disease, and other barley diseases.

Line XBZ17-1-61 is an excellent line selected through anther culture in 2017. It is a two-rowed hulled barley, with spring habit and a growth period of 105 days, belonging to a medium-maturing variety. The seedlings are prostrate, with dark green leaves. The plant height is 80 cm, the stem is yellow, with 5 above-ground nodes, medium thickness, with shorter basal internodes, long internodes under the ear, and good elasticity. The leaves have a large opening angle, and the canopy has good light transmission. At heading, the plant type is moderately compact, the ears are fully 抽出, with cleistogamous pollination, and the ears are rectangular. In the late filling stage, the stems bend, the ear layer is neat, and the ear length is about 9.0 cm. The number of grains per ear is 24-28, with a loose ear type. The protein content is 11.2%, the 1000-grain weight is 48-57 g, and the selection rate is 82.6%. It has long awns with yellow serrations, the grain color is yellow, the seed coat is thin, the grain size is small, with moderate wrinkles, and the grains are slender, plump, and farinaceous. It is resistant to lodging, dry hot wind, relatively resistant to stripe disease, and other barley diseases.