

- A. B99AL-621 (Adage)
- B. Origin and Breeding History of Adage

Adage (a two-row spring feed barley) was derived by Arizona Plant Breeders, Inc. from a F2 head selection made in a genetic male sterile facilitated recurrent selection population. This population was developed by crossing two dominant dwarf lines (unnamed) from New Farm Crops, Ltd. onto a broad base two-row population developed by Dr. Tom Ramage, USDA, ARS and the University of Arizona and released as composite cross CCXXXIV-87.

The F2 population was grown in Almira, Washington on dryland in the summer of 1998. Heads were selected from this population and grown as F3 rows at Yuma, Arizona in the 1998-1999 season. Four heads were selected from each F3 row at random and the heads were grown as four F4 rows at Almira in 1999. A total of 65 different F4 plots were evaluated for agronomic traits such as earliness, plant height, lodging and test weight. B99AL-621 was the 21<sup>st</sup> F4 plot selected in 1999. A total of 12 heads were selected within one F4 row, which were grown in Arizona as 12 head rows during the 1999-2000 season. Eleven of these rows were bulked together to make up the F6 generation. This F6 generation was used for testing and a bulk increase to the F7 generation in Washington in 2000. The bulk F7 generation was increased to the F8 generation in Arizona in 2000-2001 and tested through the Pacific Northwest in 2001. In 2001-2002 in Arizona, 250 F9 head rows were grown from heads selected in the F8 generation grown in 2000-2001. Uniform head rows selected from these head rows were bulked and increased as Breeders Seed in Moses Lake, Washington in 2002. Seed from this increase will be used to produce Foundation seed at Yuma, Arizona in 2003.

- C. Adage is a spring, two-row feed barley with thin light green leaves and upright growth habit. Adage is most similar to Baronesse, but has much lighter leaves. It is about ½ inch shorter than Baronesse and 1 day earlier than Baronesse. The test weight of Adage is equal to Baronesse and yields have been 5% higher under most test conditions. The best way to separate Adage from Baronesse is the difference of pubescence on the glumes. Baronesse has glumes covered with pubescence that are long. Adage has very few short hairs on the glume. (See completed exhibit C, PVP application)
- D. Tables to support data in section C.  
Table 1- Yield  
Table 2- Agronomics

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
BELTSVILLE, MARYLAND 20705  
OBJECTIVE DESCRIPTION OF VARIETY  
BARLEY (HORDEUM VULGARE)

EXHIBIT C  
(Barley)

INSTRUCTIONS See Reverse.

NAME OF APPLICANT(S)

AZ Plant Breeding Inc  
4343 W. Sahaglik Rd. ARIZONA CITY, AZ 85003

FOR OFFICIAL USE ONLY

P.V.R.O. NUMBER

VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (i.e., 0 8 7 or 0 9 ) when number is either 99 or less or 9 or less.

1. GROWTH HABIT:

1 - SPRING 2 - FACULTATIVE WINTER 3 - WINTER Early Growth: 1 - PROSTRATE 2 - SEMIPROSTRATE 3 - ERECT

2. MATURITY (50% Flowering):

1 - EARLY (California Mariout) 2 - MIDSEASON (Betzes) 3 - LATE (Frontier)

No. of days Earlier than ..... 1 - BETZES 2 - CALIFORNIA MARIOUT 3 - CONQUEST 4 - DICKSON

No. of days Later than ..... 5 - PIROLINE 6 - PRIMUS 7 - UNITAN

3. PLANT HEIGHT (From soil level to top of head):

1 - SEMIDWARF 2 - SHORT (California Mariout) 3 - MEDIUM TALL (Betzes) 4 - TALL (Conquest)

Cm. Shorter than ..... 1 - BETZES 2 - CALIFORNIA MARIOUT 3 - CONQUEST 4 - DICKSON

Cm. Taller than ..... 5 - PIROLINE 6 - PRIMUS 7 - UNITAN

4. STEM:

Exsertion (Flag to spike at maturity): 1 - 0-3 cm. 2 - 3-10 cm. 3 - 10-15 cm Anthocyanin: 1 - ABSENT 2 - PRESENT

NO. OF NODES (Originating from node above ground)

Collar Shape: 1 - CLOSED 2 - V-SHAPED 3 - OPEN 4 - MODIFIED CLOSED OR OPEN Shape of Neck: 1 - STRAIGHT 2 - SNAKY 3 - OTHER (Specify)

5. LEAF:

Basal leaf sheath (seedling): 1 - GLABROUS 2 - PUBESCENT Position of flag leaf (at boot stage): 1 - DROOPING 2 - UPRIGHT

Waxiness: 1 - ABSENT (Glossy) 2 - SLIGHTLY WAXY 3 - WAXY Lvs. WIDTH (First leaf below flag leaf)

CM. LENGTH (First leaf below flag leaf) Anthocyanin in leaf sheath: 1 - ABSENT 2 - PRESENT

6. HEAD:

Type: 1 - TWO-ROWED 2 - SIX-ROWED Density: 1 - LAX 2 - ERECT (Not dense) 3 - ERECT (Dense)

Shape: 1 - TAPERING 2 - STRAP 3 - CLAVATE Waxiness: 1 - ABSENT (Glossy) 2 - SLIGHTLY WAXY 3 - WAXY

Lateral Lemma Overlap: 1 - NONE 2 - AT TIP 3 - 1/4 - 1/2 OF HEAD Rachis (Hair on edge): 1 - LACKING 2 - FEW 3 - COVERED

7. GLUME:

Length: 1 - 1/3 OF LEMMA 2 - 1/2 OF LEMMA 3 - MORE THAN 1/2 OF LEMMA Hair: 1 - NONE 2 - SHORT 3 - LONG

Hair covering: 1 - NONE 2 - RESTRICTED TO MIDDLE 3 - CONFINED TO BAND 4 - COMPLETELY COVERED

Awns: 1 - LESS THAN EQUAL TO LENGTH OF GLUMES 2 - EQUAL TO LENGTH OF GLUMES 3 - MORE THAN EQUAL TO LENGTH OF GLUMES

Awn Surface: 1 - SMOOTH 2 - SEMISMOOTH 3 - ROUGH

8. LEMMA:

- 5 Awn: 1 - AWNLESS 2 - AWNLETS ON CENTRAL ROWS ~~AWNLETS ON ALL ROWS~~  
 3 - SHORT ON CENTRAL ROWS, AWNLETS ON LATERAL ROWS 4 - SHORT (less than equal to length of spike)  
 5 - LONG (longer than spike) 6 - HOODED
- 4 Awn Surface: 1 - AWNLESS 2 - SMOOTH 3 - SEMISMOOTH 4 - ROUGH
- 1 Teeth: 1 - ABSENT 2 - FEW 3 - NUMEROUS 1 Hair: 1 - ABSENT 2 - PRESENT
- 1 Shape of base: 1 - DEPRESSION 2 - SLIGHT CREASE 1 Rachilla Hair: 1 - SHORT 2 - LONG  
 3 - TRANSVERSE GREASE

9. STIGMA:

- 2 Hair: 1 - FEW 2 - MANY

10. SEED:

- 2 Type: 1 - NAKED 2 - COVERED 1 Hair on Ventral Furrow: 1 - ABSENT 2 - PRESENT
- 3 Length: 1 - SHORT (8.0 mm.) 2 - SHORT TO MIDLONG (7.5 - 9.0 mm.) 3 - MIDLONG (8.5 - 9.5 mm.)  
 4 - MIDLONG TO LONG (9.0 - 10.5 mm.) 5 - LONG (10.0 mm.)
- 2 Wrinkling of hull: 1 - NAKED 2 - SLIGHTLY WRINKLED 3 - SEMIWRINKLED 4 - WRINKLED
- 1 Aleurone Color: 1 - COLORLESS (White or Yellow) 2 - BLUE
- 0 1 PERCENT ABORTIVE 4 7 GMS. PER 1000 SEEDS

11. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

- 0 SEPTORIA 2 NET BLOTCH 2 SPOT BLOTCH 2 POWDERY MILDEW  
 1 LOOSE SMUT 2 BACTERIAL BLIGHT 1 COVERED SMUT 0 FALSE LOOSE SMUT  
 2 STEM RUST 2 LEAF RUST 1 SCAB 2 SCALD  
 0 AY 1 BSMV 1 BYDV 0 OTHER (Specify)

12. INSECT: (0 = Not tested, 1 = Susceptible, 2 = Resistant)

- 0 GREEN BUG 1 ENGLISH GRAIN APHID 1 CHINCH BUG 1 ARMYWORM  
 1 GRASS HOPPERS 1 CERIAL LEAF BETTLE 0 OTHER (Specify)
- HESSIAN FLY RACES } 0 GP 0 A 0 B 0 C  
 0 D 0 E 0 F 0 G

13. CHEMICAL (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

- 0 ODT 0 OTHER (Specify)

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	<i>Bronx</i>	Seed size	<i>Bronx</i>
Leaf size	<i>Bronx</i>	Cotyledon elongation	<i>Bronx</i>
Leaf color	<i>Redline</i>	Seedling pigmentation	<i>Bronx</i>
Leaf carriage	<i>Bronx</i>		

REFERENCES: The following publications may be used as a reference aid for the standardization of character descriptions and terms used in this form:

- Wiebe, G. A., and D. A. Reid, 1961, Classification of Barley Varieties Grown in the United States and Canada in 1958, Technical Bulletin No. 1224, U.S. Dept. of Agriculture.
- Reid, D. A., and G. A. Wiebe, 1968, Barley: Origin, Botany, Culture, Winter Hardiness, Genetics, Utilization, Pests, Agriculture Handbook No. 338, U.S. Dept. of Agriculture, pp. 61 - 84.
- Malting Barley Improvement Association, Milwaukee, Wisconsin, 1971, Barley Variety Dictionary.

COLOR: Nickerson's or any recognized color fan may be used to determine color of the described variety.

FORM LRG 270 S (8-80) (REVERSE)