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UNIVERSITY OF IDAHO
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RELEASE OF 'Lenetah' (PI XXXXX)
SPRING TWO-ROWED FEED BARLEY VARIETY

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'Lenetah' (Reg. No. CV- , PI) spring two-rowed spring barley (*Hordeum
vulgare* L.) was tested under the experimental line number 01Ab11107 and developed by
the Agricultural Research Service, United States Department of Agriculture, and the
Idaho Agricultural Experiment Station. It is set for public release due to its superior yield
across Idaho, but especially in north Idaho. It has been evaluated and performed very well
in three north Idaho counties: **Lewis**, **Nez Perce**, and **Latah**, and was thus named for
these three counties.

Lenetah was selected from the cross 94Ab12981/91Ab3148. 94Ab12981 has the pedigree
85Ab2323/ND9147. 85Ab2323 has the pedigree 79Ab19542/'Crystal' (Wesenberg et al.,
1991) and is also a parent of 'Tetonia' (Obert et al., 2007). 79Ab10542 is a selection
from the cross 'Klages'/'Hector' (Wells, 1973). Klages (Wesenberg et al., 1974) was the
two-rowed malting standard for many years and is the progenitor of the majority of
current two-rowed malting barleys. 91Ab3148 has the pedigree
'Gallatin'/'Targhee'/'Bowman'. Gallatin (Hockett et al., 1987) and Bowman
(Franckowiak et al., 1985) are both two-rowed barleys which have performed well in
Idaho, especially under non-irrigated conditions. Targhee (Wesenberg et al., 1995) is a
two-rowed spring feed barley best adapted to Idaho.

Lenetah is a two-rowed hulled, spring barley with a moderately lax spike which nods at
maturity. The spike has smooth awns, long rachilla hairs, glume hairs that are banded,
and glume awns equal in length to the glume. Laterals are sterile with a barbed apex. The
kernel has white aleurone, veins with few barbs, and a crease that is open to slightly
flaring. The hull is adhering, slightly wrinkled, tending to smooth. The rachis is glabrous
to very few hairs.

Lenetah was developed using a pedigree selection procedure with all early generation population and line development done under irrigation at Aberdeen, ID. The cross between the two parents was made in January 1996 and F₁ seed was planted in April 1996 as a single 3.1m row. F₂ seed was harvested in bulk and planted in April 1997 in a 3.1x1.4m plot with 35cm row spacing. 50 random F_{2:3} spikes were harvested and planted as F_{2:3} rows in 1998. This process continued for both the F_{3:4} in 1999 and F_{4:5} generations in 2000. One-hundred spikes were randomly selected in 2000, individually threshed, and planted as progeny rows 2m in length for visual observation in 2001. The line which became Lenetah, was selected from among progeny rows based on resistance to lodging, suitable maturity, acceptable height and spike characteristics, and superior seed quality. It was row number 11107 and thus assigned the experimental designation 01Ab11107. For all non-replicated and replicated yield trials the seeding rate was 105.3 and 79.0 kg ha⁻¹ for irrigated and rain-fed conditions, respectively. Lenetah was evaluated in a non-replicated yield trial in 2002 under irrigation at Aberdeen. A single plot 4.05m x 1.25m with row spacing 17.8cm was evaluated for yield, test weight, percentage plump kernels, and malt quality. Based on low values of malt extract and diastatic power compared to Harrington, the two-rowed industry standard, it was removed from consideration for further malt evaluation and was assigned to the feed barley program. From this point forward, plots were 4.25m x 1.25m with row spacing of 17.8cm. Lenetah entered preliminary yield trials in 2003 and was evaluated under irrigation at Aberdeen and Filer, ID, and under rain-fed conditions at Soda Springs, ID. In 2004 it was tested under irrigation at Aberdeen and under rain-fed conditions in Idaho at Craigmont, Soda Springs, Tammany, and Tetonia. It entered the elite feed trial in 2005 and was evaluated under irrigated conditions at Aberdeen and Filer and under rain-fed conditions at Potlatch, Soda Springs, Tammany, and Tetonia. In 2006 it was again evaluated in the elite feed trials under irrigation at Aberdeen and Filer, although the nursery was lost at Filer. It was evaluated under rain-fed conditions at Fenn, Potlatch, Soda Springs, and Tetonia. In 2007 it was again evaluated in the elite feed trial under irrigation at Aberdeen and Filer, as well as rain-fed trials at Fenn, Potlatch, and Tetonia, in addition to Uniontown, WA. Plots at Soda Springs were abandoned due to severe drought stress exacerbated by non-uniform plot conditions. In 2007 Lenetah was entered into both the irrigated Western Regional Spring Barley Nursery (WRSBN) and non-irrigated Western Regional Dryland Barley Nursery (WRDSBN) trials across Idaho, Washington, Oregon, Montana, Utah, Wyoming, and North Dakota. At the time of this writing data from several locations had not yet been reported, but yield data from Aberdeen, Idaho Falls, Tetonia, and Potlatch, ID, along with Pullman, WA, Fairfield and Conrad, MT was available and included in the summarized data. It was also entered into University of Idaho extension trials, and yield data from north Idaho is reported here.

The yield performance of Lenetah has been higher than Baronesse, the most widely grown feed barley in Idaho under all conditions, but not significantly better under irrigation. Lenetah has yielded 105.9, 109.0, and 112.1 percent of Baronesse across all, non-irrigated, and north Idaho locations, respectively. Both the non-irrigated and north Idaho values are significant at P=0.01 (Tables 1-4).

Table 1. Yield performance of Lenetah, Tetonia, and Spaulding compared to Baronesse across all ARS, Western regional, and University of Idaho locations.

Entry	Location Years	Entry mean	Mean of Baronesse	Mean % of Baronesse	Prob.
Lenetah	31	96.8	91.4	105.9	0.004 ^{***}
Tetonia	46	84.2	80.8	104.2	0.005 ^{***}
Spaulding	41	89.1	87.4	102.0	0.244 ^{ns}

***denotes significance at P=.01

Irrigated locations: ⁺Aberdeen, ID, 2004-07; Filer, ID, 2006-07; Tetonia, ID, 2004, Fairfield, MT and Idaho Falls, ID, 2007; Non-irrigated locations: Craigmont, ID, 2004; ⁺Potlatch, ID, 2005-07; ⁺Soda Springs, ID, 2004-06; Tammany, ID, 2004-05; Fenn, ID, 2006-07; ⁺Tetonia, ID, 2005-07, Uniontown and Pullman, WA, 2007, Greencreek and Moscow, ID, 2007.

Table 2. Yield performance of Lenetah, Tetonia, and Spaulding compared to Baronesse across irrigated ARS and Western regional locations.

Entry	Location Years	Entry mean	Mean of Baronesse	Mean % of Baronesse	Prob.
Lenetah	10	132.6	129.9	102.1	0.3973 ^{ns}
Tetonia	12	127.4	119.9	106.2	0.0496 ^{**}
Spaulding	12	125.2	124.0	100.9	0.7513 ^{ns}

**denotes significance at P=.05

⁺Aberdeen, ID, 2004-07, Filer, ID, 2006-07; Tetonia, ID, 2004; Fairfield, MT and Idaho Falls, ID, 2007. ⁺ Two trials at same location.

Table 3. Yield performance of Lenetah, Tetonia, and Spaulding compared to Baronesse across non-irrigated ARS, Western regional, and Univ. of Idaho trials.

Entry	Location Years	Entry mean	Mean of Baronesse	Mean % of Baronesse	Prob.
Lenetah	21	79.7	73.1	109.0	0.004 ^{***}
Tetonia	36	72.3	70.7	102.3	0.089 [*]
Spaulding	27	78.0	76.7	101.6	0.461 ^{ns}

*, ***denotes significance at P=.10 and .01, respectively. Craigmont, ID, 2004; Fenn, ID, 2006-07; ⁺Potlatch, ID, 2005-07; Soda Springs, ID, 2004-06; Tammany, ID, 2004-05; ⁺Tetonia, ID, 2005-07; Uniontown and Pullman, WA, 2007. ⁺Multiple trials at same location.

Table 4. Yield performance of Lenetah, Tetonia, and Spaulding compared to Baronesse across all non-irrigated ARS, Western regional, and Univ. of Idaho locations in North Idaho and Pullman, WA.

Entry	Location Years	Entry mean	Mean of Baronesse	Mean % of Baronesse	Prob.
Lenetah	13	88.6	79.0	112.1	0.002 ^{***}
Tetonia	21	80.3	78.4	102.4	0.169 ^{ns}
Spaulding	19	81.1	80.4	101.0	0.736 ^{ns}

***denotes significance at P=.01 Craigmont, ID, 2004; Fenn, ID, 2006-07; ⁺Potlatch, ID, 2005-07; Tammany, ID, 2005-06; Pullman and Uniontown, WA, 2007. Greencreek and Moscow, ID, 2007. ⁺Multiple trials at same location.

Table 5. Agronomic performance of Lenetah compared to Baronesse across all locations

Entry	Yield (Bu/A)	TW	Plumps	Heading (Julian days)	Height (cm)	Lodging (1-9) ⁺
Location-Years	31	14	14	13	10	7
Lenetah	96.8***	51.8	86.0**	180	80.5	1.7
01Ab11107	91.4	51.2	74.3	180	78.5	0.8

** , *** denotes significance at P=.05, and .01, respectively.

⁺ taken only from irrigated and non-irrigated conditions where significant lodging occurred. If all locations were averaged into this, the values for each would be 0.4 and 0.2, respectively.

In 2007 three hundred spikes were randomly selected from a F_{5,9} drill strip and F_{9,10} progeny rows were grown at Yuma, AZ under isolation to derive breeder seed. In the spring of 2008 we will deliver approximately 500# of breeder seed to the University of Idaho for seed increase. Foundation seed of Lenetah will be maintained by the Idaho Agricultural Experiment Station, Foundation Seed Program, Kimberly Research and Extension Center, 3793 N 3600 E, Kimberly, ID 83341. Small quantities of seed may be obtained from the corresponding author for up to five years. It is requested that appropriate recognition of source be given when this cultivar contributes to development of new germplasm or cultivars.

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