

2007 Waxy Barley Variety X Nitrogen Rate Trials – NE Oregon

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Objective:

Evaluate the potential adaptation, production and grain quality of selected specialty spring barley varieties and irrigated cropping systems of NE Oregon. Specialty waxy barley varieties have those qualities sought for processing into functional components for use in the nutraceutical, food-grade, animal feed, and aquaculture industries. Grain quality components of waxy barley include high protein, beta-glucan, and waxy starch content levels.

Procedure:

Three trials have been established in Union and Wallowa Co. to evaluate the agronomic performance and grain quality of 3 **waxy** (Salute, Merlin, YU599-06) and 3 **feed-type** (Baronesse, Camas, Radiant) spring barley varieties grown under dryland and irrigated production systems. Fertilizer comparisons include the standard nitrogen fertilizer rate applied by the grower (GP = grower practice) and the grower practice plus 30 additional pounds of nitrogen (GP + 30) to investigate fertilizer interactions with grain quality. Grain will be analyzed for quality characteristics such as yield, test weight, moisture, % protein, % waxy starch, % beta glucan, etc. through cooperation with Dr. Andrew Ross, OSU Cereal Chemist.

Drill: Fabro direct seed plot drill with double disk openers on 10 inch row spacing with capability of applying starter fertilizer with the seed and banding fertilizer approximately 2 inches below and 2 inches to the side of the seed row. In this study, no starter fertilizer was applied with the seed. Additional 30 lbs/a nitrogen in the GP+30 treatments were banded below seed as previously described. Seeding Rate: target seeding rate for all varieties in trial = 25 seeds/ft².

Merlin	10,784 seeds/lb = 101 lbs seed/acre
Salute	9,361 seeds/lb = 116 lbs seed/acre
YU 599-06	9,978 seeds/lb = 109 lbs seed/acre
Baronesse	10,413 seeds/lb = 105 lbs seed/acre
Camas	12,011 seeds/lb = 91 lbs seed/acre
Radiant	11,350 seeds/lb = 96 lbs seed/acre

Trial Site Descriptions:

Union County – Dryland Site: Trial located on the Elwyn Bingaman farm near Imbler, OR. Dryland spring barley re-crop after winter wheat (2006 yield = 85 bu/acre). Soil Type = Imbler fine sandy loam. Field seeded to spring barley variety “Baronesse” with double disk drill on April 9. Grower broadcast applied and incorporated 85 lbs N and 15 lbs P of fertilizer prior to seeding spring barley. Plots were seeded on April 13 and harvested on August 7, 2007.

Wallowa County – Dryland Site: Trial located on the Melvin Stonebrink Farm near Lostine, OR (Leap region of Wallowa Co.). Grower applied 35 lbs of N/acre plus 10 lbs of S/acre broadcast and incorporated prior to seeding. Commercial field was seeded to “Boulder” spring barley. Plots were seeded on April 26 and harvested on August 16, 2007.

Wallowa County – Irrigated Site: Trial located on the Alan Klages Farm near Joseph, OR. Grower applied 80 lbs of N/acre, 30 lbs of P/acre, plus 10 lbs of S/acre incorporated prior to seeding. Commercial field was seeded to “Baronesse” spring barley. Plots were seeded on May 4 and harvested on August 30, 2007.

Variety Descriptions:

Merlin: hullless, waxy-type (w), semi-dwarf, recommended irrigated, high test and yield, mid-late season maturity, good disease resistance, scald, net blotch. 1995 WestBred.

Salute: hulled, waxy-type (w), high B-glucan content, WestBred.

YU 599-06: hulled, waxy-type (w), high Beta glucan content, WestBred.

Baronesse: hulled, non-waxy, feed-type. Rough awned, medium short height, good straw strength, medium maturity, excellent yields. Heavy test weight in irrigated/dryland. Tolerant to barley yellow dwarf. Susceptible to leaf – stem rust, powdery mildew. 1988 Westbred.

Camas: hulled, non-waxy, feed-type. High yielding with good test weight. Shorter with less lodging. Resistant to net and spot blotch. Susceptible to stripe rust. 1998 ID.

Radiant: hulled, non-waxy, feed-type. Rough awned, mid-tall, relatively stiff straw, mid-season, widely adapted. First proanthocyanidin-free barley with excellent yield performance. Moderately resistant to stripe rust and other disease. 2003 WA.

Table 1. Yield and test weight for Union Co. (dryland) waxy barley trial - 2007

Variety	N-tmt	Yield (ton/ac)	Test Wt. (lb/ac)
Radiant	GP+30	1.4 a	50.4 bcd
Salute (w)	GP	1.4 a	51.9 b
Radiant	GP	1.4 ab	50.5 bcd
Baronesse	GP+30	1.4 ab	50.2 bcd
Camas	GP	1.4 abc	52.2 b
Camas	GP+30	1.2 abc	51.1 bc
Baronesse	GP	1.2 abc	50.6 bcd
Salute (w)	GP+30	1.2 abc	50.6 bcd
Merlin (w)	GP	1.1 abc	56.8 a
YU 599-06 (w)	GP	1.1 abc	48.9 cd
YU 599-06 (w)	GP+30	1.0 bc	48.3 d
Merlin (w)	GP+30	1.0 c	54.9 a
LSD (0.05)		0.4	2.5

(w) = indicates waxy-type spring barley cultivar.

Table 2. Yield and test weight for Wallowa Co. (dryland) waxy barley trial – 2007.

Variety	N-tmt	Yield	Test Wt.
		(ton/ac)	(lb/ac)
Camas	GP	0.4	46.2 b
Camas	GP+30	0.4	45.8 b
Merlin (w)	GP+30	0.3	53.8 a
Radiant	GP	0.3	42.2 bc
Baronesse	GP+30	0.3	43.1 bc
YU 599-06 (w)	GP+30	0.3	41.4 c
Merlin (w)	GP	0.3	53.7 a
Salute (w)	GP	0.2	39.9 c
Baronesse	GP	0.2	42.1 bc
Radiant (w)	GP+30	0.2	41.1 c
YU 599-06 (w)	GP	0.2	41.1 c
Salute (w)	GP+30	0.2	40.6 c
LSD (0.05)		NS	4.3

(w) = indicates waxy-type spring barley cultivar.

Table 3. Yield and test weight for Wallowa Co. (irrigated) waxy barley trial – 2007.

Variety	Additional N	Yield	Test Wt.
		(ton/ac)	(lb/ac)
Radiant	GP+30	2.6 a	52.9 bc
Camas	GP	2.5 a	52.8 bc
Baronesse	GP	2.3 abc	52.8 bc
Baronesse	GP+30	2.2 abc	51.5 cd
Merlin (w)	GP	2.1 abc	58.2 a
Camas	GP+30	2.1 bcd	52.7 bc
Salute (w)	GP+30	2.1 bcd	53.1 b
YU 599-06 (w)	GP+30	1.9 bcd	49.9 e
Merlin (w)	GP+30	1.9 bcd	58.2 a
Radiant	GP	1.9 cd	52.2 bc
YU 599-06 (w)	GP	1.7 cd	49.2 e
Salute (w)	GP	1.7 d	50.5 de
LSD (0.05)		NS	1.5

(w) = indicates waxy-type spring barley cultivar.