

**Oregon State University  
hooded winter barley selections  
are available for testing**



**These selections have the forage yield and quality of “Hoody” plus barley stripe rust resistance, scald resistance, higher grain yield, and better test weight**

*For further information, please contact*

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***Background:***

- Hooded barley makes high quality hay.
- “Hoody” is the only winter habit hooded barley adapted to the Pacific Northwest.
- “Hoody” is very susceptible to stripe rust. This disease can reduce the yield and quality of forage and grain. Hoody is also susceptible to other diseases, such as scald and leaf rust.
- A stripe rust-resistant, winter habit, hooded variety would therefore be of value to growers, feeders, and the seed industry.
- Non-hooded Oregon State University winter varieties, such as “Kold” are resistant to stripe rust and other diseases.
- With support from the Oregon Grains Commission, the OSU Barley Program developed a set of stripe-rust resistant, winter hooded selections from the cross of “Kold” x “Hoody”.
- Due to the need to further develop the market for winter hooded varieties, these selections are offered for further testing with a Materials Transfer Agreement (MTA). A \$200 shipping and handling fee will be charged for each seed shipment.
- Upon completion of testing, licenses can be negotiated with the OSU Office of Technology Transfer.

### ***Development Process:***

- 2000: Crossed Hoody with Kold (awned and disease-resistant).
- 2001 – 2004: Segregating generations (F2 – F4) advanced at Hyslop Farm (Corvallis, Oregon) with selection for hooded spikes, disease resistance, lodging resistance, and plump seed. Selected F4 head rows were harvested in bulk.
- 2005: Preliminary (F5) grain yield and forage trials at Madras, Oregon (in cooperation with Mylen Bohle) and Tulelake, California (in cooperation with Steve Orloff and Don Kirby). Based on these trials, a subset of lines was selected for further testing.
- 2006: Trials (F6) at Madras, Oregon (in cooperation with Mylen Bohle), Tulelake, California (in cooperation with Steve Orloff and Don Kirby), Davis, California (in cooperation with Lee Jackson), and Corvallis, Oregon. Forage yield data only were obtained from Madras; grain yield data only were obtained from Davis. Forage and grain yield data were obtained from trials at Tulelake and Corvallis. Feed quality analyses on Hoody and two selections (based on available agronomic data) were performed by Mark Keller (Dept. Animal Sciences, OSU) on samples from Corvallis, Madras, and Tulelake. Heads were selected from these and other promising selections.
- 2007: Purification head row blocks (F7) were planted at Corvallis in October, 2006 and harvested in July, 2007.
- Four selections (OR 79, OR 710, OR 711, and OR 712) were advanced to regional extension and breeding trials.

### ***Results:***

- In 2006
  - forage yields averaged 6.5 tons per acre: across locations the four selections are not significantly different from Hoody (6.2 tons/acre).
  - Grain yields averaged 2.2 tons per acre: averaged across all locations, all selections were significantly higher yielding than Hoody (1.4 tons per acre).
  - Grain test weight averaged 49 lbs per bushel: all but one of the selections had significantly better test weights than Hoody (45 lbs pr bushel).
  - Forage quality parameters (NDF, ADF, ash, and crude protein) values for Hoody and the selections were very similar.
  - All selections showed high levels of stripe rust resistance, while Hoody is very susceptible. Some of the selections had better scald resistance than Hoody. The selections all had better leaf rust resistance than Hoody.
- Height and lodging vary with year and location, but overall Hoody averages 45 inches and the selections 35 – 49 inches. Lodging values range from 0 – 80%.
- In 2007, the disease resistance of selections was confirmed in the Corvallis head row purification blocks.
- Four lines were given OR numbers and will be advanced to regional extension and breeding trials in 2007-2008.
- Seed for further testing of selections, and heads for further increase/ purification, are available for planting in the fall of 2007. Larger amounts of bulked seed of selections are available for planting in the fall of 2007.

Table 1. Forage yield, grain yield, and grain test weight of Hoody vs. four selections grown at three locations in 2006.

Line	<i>Forage Yield</i> <i>tons/acre</i>				<i>Grain Yield</i> <i>lbs/acre</i> ***				<i>Test weight</i> <i>lbs/bushel</i> ****		
	Tulelake, CA*	Corvallis, OR**	Madras, OR	<b>Average</b>	Tulelake, CA	Corvallis, OR	Davis, CA,	<b>Average</b>	Tulelake, CA	Corvallis, OR	<b>Average</b>
Hoody	8.0	4.8	5.8	<b>6.2</b>	5397	2897	1070	<b>2899</b>	44	46	<b>45</b>
K/H 7-9	7.3	5.3	6.4	<b>6.3</b>	6778	5558	2900	<b>4741</b>	50	53	<b>52</b>
K/H 31-3-1	7.3	6.7	6.2	<b>6.7</b>	5558	4972	2280	<b>3925</b>	43	48	<b>46</b>
K/H 32-1-5	7.4	6.5	5.6	<b>6.5</b>	6115	4605	3070	<b>4316</b>	48	52	<b>50</b>
K/H 33-5-1	7.7	5.0	6.8	<b>6.5</b>	5350	5948	3590	<b>4555</b>	47	50	<b>49</b>
MEAN <sup>1</sup>	8.6	6.0	6.2	<b>6.6</b>	6178	5379	3030	<b>4406</b>	48	50	<b>48</b>
CV	13.7	16.1	8.0	<b>17.8</b>	10.2	12.9	10.6	<b>12.3</b>	2.9		<b>1.7</b>
LSD (.05)	1.7	2.1	0.8	<b>NS</b>	1062	1172	550	<b>722</b>	2.3		<b>2.2</b>

\*Tulelake: Statistical parameters are from an 18 entry trial which included 13 triticales; the average triticale yield was 9.02 tons/acre.

\*\*Corvallis: Statistical parameters are from a 12 entry yield trial, which included an additional 7 winter forage barley selections.

\*\*\*Grain Yield: statistical parameters for all locations are from a 12 entry yield trial, which included an additional 7 winter forage barley selections.

\*\*\*\*Test weight: statistical parameters for all locations are from a 12 entry yield trial, which included an additional 7 winter forage barley selections. Only one replication at Corvallis.

MEAN<sup>1</sup> : Complete trial mean

Table 2. Forage quality analysis of Hoody vs. two selections grown at three locations in 2006. T= Tulelake, CA; C = Corvallis, OR; M = Madras, Oregon

<i>Variety/selection</i>	<i>Dry matter (%)</i>				<i>NDF (%)</i>				<i>ADF (%)</i>				<i>Ash (%)</i>				<i>Crude protein (%)</i>			
	T	C	M	Avg	T	C	M	Avg	T	C	M	Avg	T	C	M	Avg	T	C	M	Avg
Hoody	93	93	93	93	61	53	57	57	36	30	34	33	9	6	7	7	8	7	8	8
K/H 7-9	93	90	93	92	57	53	51	54	32	30	29	30	9	4	7	7	9	6	7	7
K/H 33-5-1	93	93	93	93	59	57	61	59	34	33	36	34	9	5	7	7	7	5	8	7
<b>Avg</b>	93	92	93	<b>93</b>	59	54	56	<b>56</b>	34	31	33	<b>33</b>	9	5	7	7	8	6	8	7

Table 3. Heading date, stripe rust disease severity and scald rating of Hoody vs. four selections grown at Corvallis in 2006 and 2007 Leaf rust data are from 2005; this disease was not observed in subsequent years.

<i>Variety/ selection</i>	<b>Heading date (Julian days)</b>		<b>Stripe rust (% severity)</b>		<b>Scald ( 1 - 9)</b>		<b>Leaf rust (%)</b>
	2006	2007	2006	2007	2006	2007	2005
Hoody	131	133	70	50	1	6	80
Kold/Hoody 7-9	130	136	0	0	2	1	30
Kold/Hoody 31-3-1	133	133	1	0	1	5	20
Kold/Hoody 32-1-5	134	137	1	0	2	3	60
Kold/Hoody 33-5-1	127	124	1	0	3	5	60

Table 4. Plant height and lodging data of Hoody vs. progeny across years and locations

<i>Variety/ selections</i>	<i>Year</i>	<i>Location</i>	<i>Height (inches)</i>	<i>Lodging (%)</i>
Hoody	06	Madras, Oregon	49	83
	06	Tulelake, California	40	No data
	06	Corvallis, Oregon	45	90
	06	Corvallis, Oregon	55	0
Kold/ Hoody selections	06	Madras, Oregon	46-52	21-77
	06	Tulelake, California	29-41	No data
	06	Corvallis, Oregon	35-49	0-90
	07	Corvallis, Oregon	43-55	0-80

Table 5. Agronomic data from Corvallis, Oregon field tests (2006\_2007) on Kold/Hoody selections advanced to Regional Extension and Breeding trials in 2007-2008

<i>Variety/ selection</i>	<i>Height (inches)</i>	<i>Lodging (%)</i>	<i>Heading (days after January 1)</i>	<i>Stripe rust (%)</i>	<i>Scald (1 - 9)</i>	<i>Extension Trials 07_08</i>	<i>Breeding trials 07_08</i>
OR79	43	0	126	0	3	Rupert, Kimberly, Aberdeen, Idaho	Corvallis, Pendleton (OR) Aberdeen, Filer (ID)
OR710	55	80	136	0	1		Logan (UT)
OR711	51	20	139	0	2	Pullman, WA	Pullman (WA)
OR712	55	0	124	0	5	Parma, Idaho	
Hoody	55	0	136	40	6		

Table 6. Entities and locations testing bulks of Kold/Hoody selections in 2007\_2008

<p>UC-Davis Extension  OSU Extension (Moro, OR)  OSU Animal Science (Corvallis, OR)  OSU Agronomy (Pendleton, Moro, OR)  Crop Quest Agronomic Services, Dodge City Kansas</p>
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